FMFRP 4-17

Intermodal Containerization in the MAGTF

U.S. Marine Corps

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DEPARTMENT OF THE NAVY
Headquarters United States Marine Corps
Washington, DC 20380-1775

14 July 1995

FOREWORD

In the 1950's, the commercial maritime shipping industry developed intermodal containers to reduce labor costs of stuffing and unstuffing trucks and freight cars at a port for the reloading or unloading of breakbulk ships. It found that by eliminating the rehandling of cargo inside a container, total shipping and distribution time was reduced. Loss, damage, and pilferage were also reduced due to the security afforded by a sealed, unitized steel container.

Initially, the maritime shipping industry was the sole user of intermodal containerization for import and export traffic. The domestic U.S. transportation industry relied on the traditional highway trailer for intermodal transportation within North America. Recent developments in railroad freight car equipment now allow containers to be double-stacked on special flat car equipment, significantly reducing the cost of moving containers overland. Domestic shipping industries developed the container as a replacement for the trailer. The U.S. container fleet includes more than 2.7 million 20-foot equivalent units. Eighty-two percent are owned/controlled by intermodal equipment leasing companies with the remaining 18 percent owned/controlled by U.S. flag shipping companies. The

U.S. container fleet consists of primarily 20- and 40-foot containers. Twenty-foot containers represent over 50 percent of the total U.S. inventory; 40-foot containers represent approximately 46 percent. Containers being manufactured for international marine shipments are normally 20- or 40-foot varieties.

The military began using intermodal containers during the Vietnam War to supplement traditional breakbulk shipping. They were primarily used for specialized cargo. During Operation Desert Storm, they were the dominant envelopes for transporting general sustainment cargoes into the theater to minimize cargo handling between modes of transportation, reduce shipping times from origin to destination, and make use of the large number of containers available.

The Marine Corps' goal is to optimize the use of containers to improve the use of strategic lift, improve force closure for unit equipment and sustainment supplies, improve field warehousing, and improve material distribution.

FMFRP 4-17, *Intermodal Containerization in the MAGTF*, promulgates the doctrine for the use and management of intermodal containers to move supplies ashore and warehouse and distribute their contents. It is designed to assist MAGTF planners in planning, integrating, and executing intermodal container operations in military conflicts. It will be used as a basis for instruction and training by the Marine Corps Combat Development Command (MCCDC).

Recommendations for improving this manual are invited from commands as well as directly from individuals. Forward suggestions using the User Suggestion Form format to—

Commanding General
Doctrine Division (C 42)
Marine Corps Combat Development Command
3300 Russell Road Suite 318A
Quantico, Virginia 22134-5021

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

C.E. WILHELM
Lieutenant General, U.S. Marine Corps
Commanding General
Marine Corps Combat Development Command
Quantico, Virginia

DISTRIBUTION: 140 041700 00

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User Suggestion Form

From:

To: Commanding General
Doctrine Division (C 42)
Marine Corps Combat Development Command
3300 Russell Road Suite 318A
Quantico, Virginia 22134-5021

Subj: RECOMMENDATIONS CONCERNING FMFRP 4-17, *INTERMODAL CONTAINERIZATION IN THE MAGTF*

1. In accordance with the Foreword to FMFRP 4-17, which invites individuals to submit suggestions concerning this FMFRP directly to the above addressee, the following unclassified recommendation is forwarded:

____	____________	______	____________
Page	Article/Paragraph No.	Line No.	Figure/Table No.

Nature of Change: ☐ Add ☐ Delete ☐ Change ☐ Correct

2. Proposed new verbatim text: (Verbatim, double-spaced; continue on additional pages as necessary.)

3. Justification/source: (Need not be double-spaced.)

NOTE: Only one recommendation per page.

Record of Changes

Change No..	Date of Change	Date of Entry	Organization	Signature

Intermodal Containerization in the MAGTF

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Chapter 1
Fundamentals

STANDARDIZATION

An intermodal container is an article of transport equipment that meets International Standards Organization (ISO) standards. Containers are designed to facilitate and optimize the carriage of goods by one or more modes of transportation (highway, rail, sea, etc.) without intermediate handling of the contents. They are equipped with special features permitting ready handling and transfer from one mode to another. This capability demands standardization for ease of handling. The goal is to make effective use of the large, fast commercial intermodal transportation system available on a day-to-day basis that provides a rapid, continuous flow of cargo from shipper to receiver in support of Department of Defense (DOD) and national security objectives.

The National Transportation Policy requires that DOD use existing commercial transportation to the maximum extent possible. DOD components are to attain and maintain a container-oriented distribution system of sufficient capability to meet DOD-established mobilization and deployment goals while ensuring commonality and interchangeability of intermodal containers, hardware, and equipment between the military and commercial industries. Containerized shipment shall be the preferred method.

Marine Corps policy is to optimize the use of intermodal containers from origin to destination to support peacetime operations, deliberate planning actions, and crisis support. The Marine air-ground task force (MAGTF) will containerize general cargo and ammunition of the assault follow-on echelon (AFOE) to the maximum extent possible consistent with support and operational considerations. However, some AFOE equipment/cargo will be shipped in amphibious shipping and may not be containerized due to limited stowage space or a lack of organic container handling capabilities.

Although techniques for stuffing, controlling, and transporting containers are the same in all operating scenarios, the organization for control, container capabilities, and limitations differ. The four employment situations where containers could be planned for use are in—

- Maritime prepositioning force (MPF) operations.

- The movement of the assault echelon (AE).

- The movement of the AFOE.

- Conjunction with the deployment of follow-up sustainment supplies and materials.

MARITIME PREPOSITIONING FORCE OPERATIONS

Each maritime prepositioned ship has a self-offloading capability for transferring containers from the ship to a lighter or commercial pier. The Navy cargo handling force (CHF) with Marine Corps augmentation offloads MPF ships using the ship's organic cargo handling equipment. When conducting instream offloads, the transfer is executed via naval beach group-manned causeway ferries prepositioned aboard MPF ships. Causeway ferries are maneuvered directly to the beach for offload by rough terrain cargo handlers (RTCHs) (organic prepositioned equipment aboard MPF ships). Control and distribution of containers in an MPF environment are the same as those used in support of the AFOE. NWP 22-10/FMFM 1-5, *Maritime Prepositioning Force (MPF) Operations*, describes MPF operations in detail.

ASSAULT ECHELON

Containers used in the movement of the AE are limited to field logistic system (FLS) modules, specialized maintenance containers, and specialized containers for moving ammunition. The standard 20-foot ISO container is not the preferred container to be stowed in amphibious shipping due to interior height limitations and the lack of organic cargo handling equipment. In all cases, FLS containers must be mobile-loaded on motor transport equipment. These containers would ideally be loaded on the MK18 variant of the logistics vehicle system (LVS), when available.

ASSAULT FOLLOW-ON ECHELON

The composition of Military Sealift Command (MSC) and commercial shipping available necessitates using containers to move AFOE sustainment supplies, ammunition, and equipment. It is the co-responsibility of the Navy component commander and the MAGTF commander to ensure that the capability exists to offload containers in an amphibious in-stream ship-to-shore (STS) operation. The joint logistics over-the-shore (JLOTS) system accompanies AFOE shipping so container offloads can be accomplished expeditiously. During the initial stages of the AFOE offload, the MAGTF relies on a unique configuration of the Navy's container offloading and transfer system (COTS) deployed in amphibious shipping and strategic sealift ships.

A fully capable JLOTS system is employed as the situation warrants. Container throughput will be limited during the early stages of offload, but will gradually increase as logistics systems are developed and improved. Operations eventually transition from amphibious operations to JLOTS or logistics over-the-shore (LOTS) operations and support the offload of follow-up sustainment.

Chapter 2
Containers and Handling Equipment

Intermodal containers are classified as DOD-owned or commercial containers. Intermodal containers are employed to support common-user transportation requirements, Service/program-unique mission requirements, and unit deployment or sustainment requirements.

The broad range of standard ISO, special purpose, and service-specific containers gives the MAGTF commander flexibility in transporting a variety of commodities to and within the area of responsibility (AOR).

COMMON-USER CONTAINERS

Common-user containers are leased, procured, or made available from DOD-owned inventories to support intermodal transportation requirements of all Services. The standard 20', end-opening ISO container is the most common intermodal container in the inventory.

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Standard 20', End-Opening ISO Container (Length 20' x Width 8' x Height 8.5')

This steel general cargo container (fig. 2-1) has hardwood flooring and plywood-lined walls. It can transport 44,800 pounds of general cargo or ammunition. Because there is no permanent cargo restraining system, wooden blocking and bracing secures cargo. It is structurally designed to be stacked. End doors can be locked for greater security. It can be easily transported with organic motor transport and MHE assets although gross weight should not exceed 45,000 pounds, the maximum capacity of the LVS. There is a 40' variant; however, the Marine Corps does not have the optimum equipment to handle it. Forty-foot containers will not be pushed to forward areas. Inter-Service or host nation support is normally required to support the movement of 40' containers within the AOR.

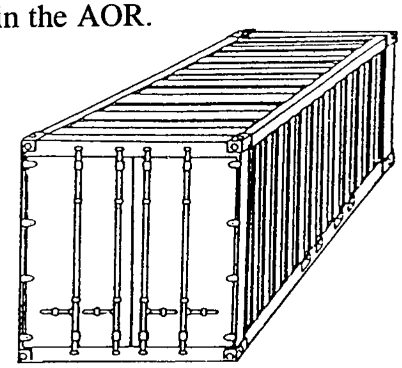


Figure 2-1. End-Opening 20' ISO Container.

SPECIALIZED CONTAINERS

All specialized containers either are ISO dimensionally standard or can be arrayed into dimensionally standard configurations. This allows the MAGTF to take advantage of commercial container ships and reduces the requirement for unique handling and motor transport equipment. Specialized containers move fuel modules and water purification units and protect unique equipment from the elements. They can also be configured as maintenance vans and working areas.

Shipping Frames (Length 10' x Width 8' x Height 8')

These frames (fig. 2-2) transport fuel/water modules. They protect the tank without special blocking and bracing when deploying.

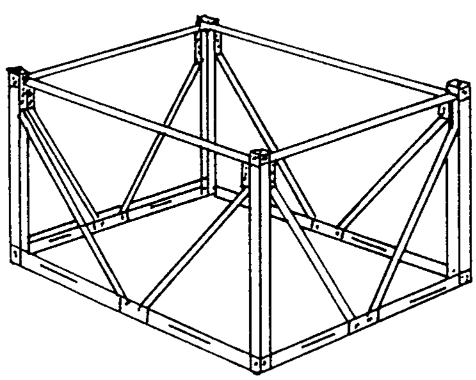


Figure 2-2. Standard Shipping Frames.

Open Top Container, Gondola/Type (Length 20' x Width 8' x Height 6')

The open top container (fig. 2-3) is used primarily for transporting cargo that is too high for a standard container. They have roof bows and tarpaulins with tarpaulin ropes.

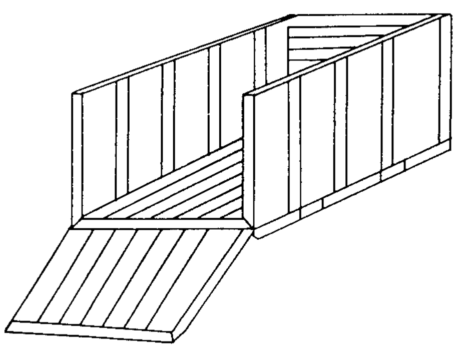


Figure 2-3. Open Top Container.

Half-Height Container (Length 20' x Width 8' x Height 4.25')

Half-height containers (fig. 2-4) have the same footprint as the standard ISO container with ISO standard structural members and corner fittings. They are approximately half the height of a standard end-opening container, and are often used to ship packaged petroleum, oils, and lubricants (POL) or ammunition having a high weight-to-volume ratio.

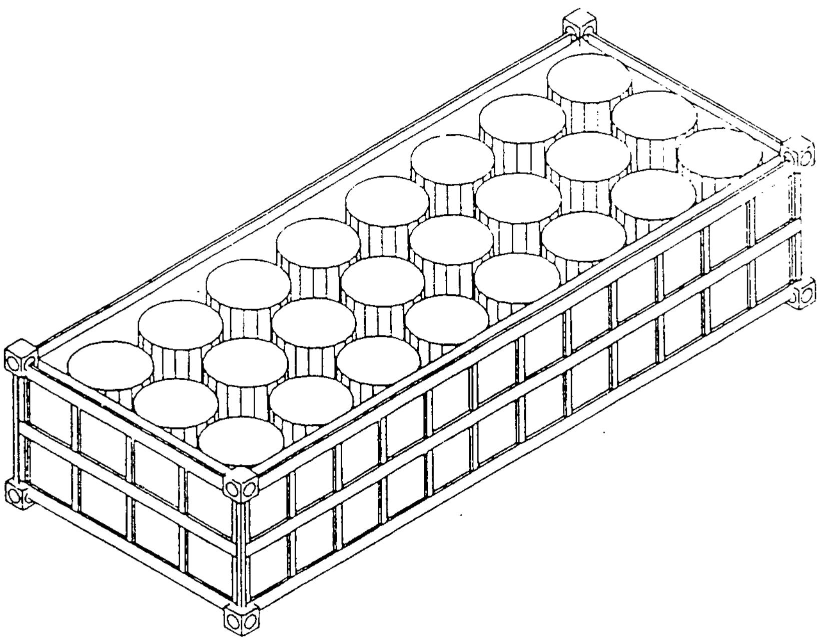


Figure 2-4. Half-Height Container.

Flatracks (Length 20' x Width 8' x Height 8' or Length 40' x Width 8' x Height 8')

Flatracks enable container ships to transport bulk items and heavy and/or outsized cargo. The flatrack is a structural steel frame, decked over and fitted with tiedown points. One can be used as an individual intermodal container or several can be placed side-by-side in a container cell to create a false deck. Some flatracks have corner posts while others have end walls. Corner post/endwalls on most flatracks fold down for stacking and storage. Figure 2-5 shows the three most common flatracks.

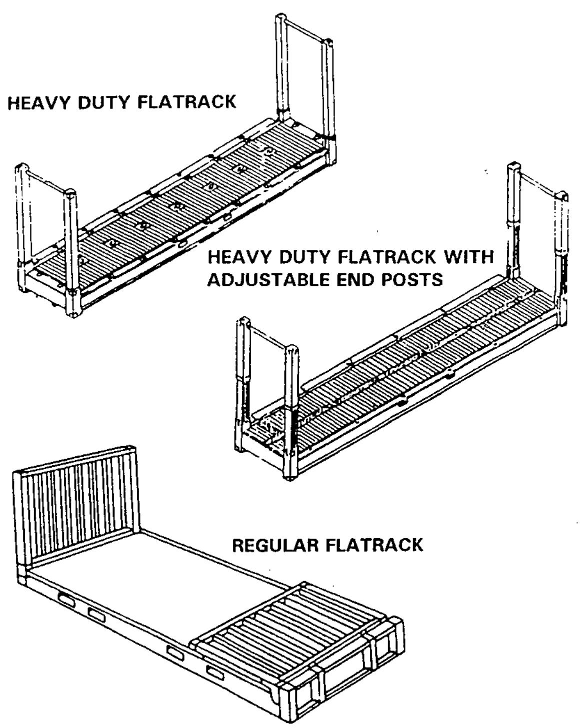


Figure 2-5. Military Flatracks.

Marine Corps Expeditionary Shelter System (MCESS) (Length 20' x Width 8' x Height 8')

These multiple-use facilities can be used as support facilities for medical, communications, messing, air control, or operations centers. Figure 2-6 shows the general purpose 20' MCESS shelter.

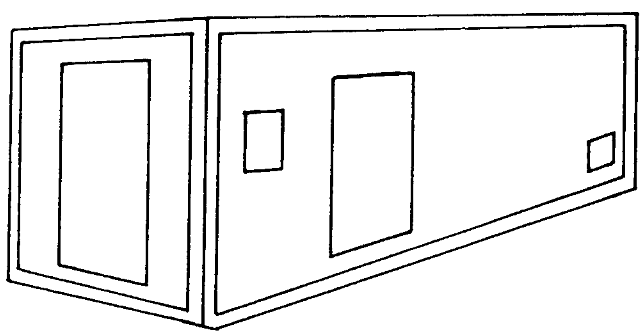


Figure 2-6. MCESS.

Refrigerated Containers

Perishable commodities requiring refrigeration or insulation can be moved in special containers that contain heating and refrigeration units or are insulated to protect from extreme temperature variation. Refrigerated units can be plugged into external power sources or run off their own generators.

FIELD LOGISTIC SYSTEM MODULES

The FLS is a unique Marine Corps-owned containerization system that is designed for easy handling in an expeditionary environment yet can be shipped as a 20' ISO-configured unit. When mobile-loaded, these containers can be embarked aboard amphibious shipping.

When authorized by the theater commander, these containers are used for temporary storage by MAGTF units and for unit distribution to forward units. FLS modules are controlled by the MAGTF commander through the designated container control officer (CCO). The FLS consists of the pallet container (PALCON), quadruple container (QUADCON), and the six module container (SIXCON).

PALCON (Length 48" x Width 40" x Height 50")

The PALCON is a palletized container that provides a weatherproof, reusable container that can be arranged into a "cube-shaped" configuration for easy storage and movement of supplies on the standardized motor transport vehicle (5-ton truck, LVS). The PALCON is also compatible with the Air Force's 463L pallet system. The PALCON is intended as a replacement for the standard 50-cube wooden box, offering better security for unit cargo. (See fig. 2-7.)

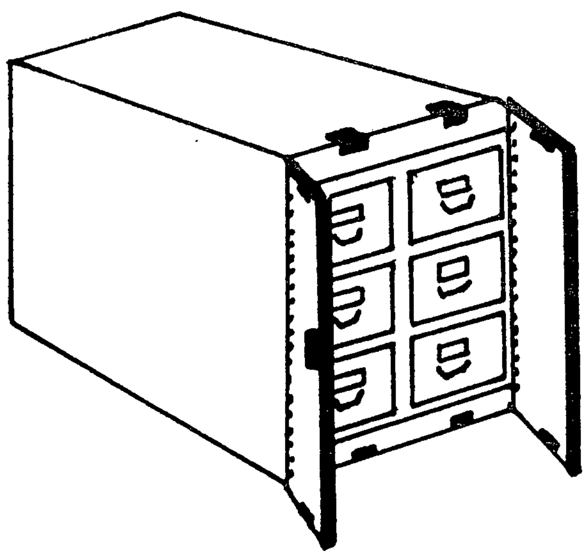


Figure 2-7. PALCON.

QUADCON (Length 57½" x Width 96" x Height 82")

The QUADCON is one quarter the size of a 20' ISO container with ISO corner fittings to allow for coupling the QUADCON into arrays of up to four units. An array of four QUADCONS has the same external length and width dimensions as a 20' ISO container and is designed to be lifted as a 20' unit. The QUADCON stores and moves organizational property as well as consumable supplies. (See fig. 2-8.)

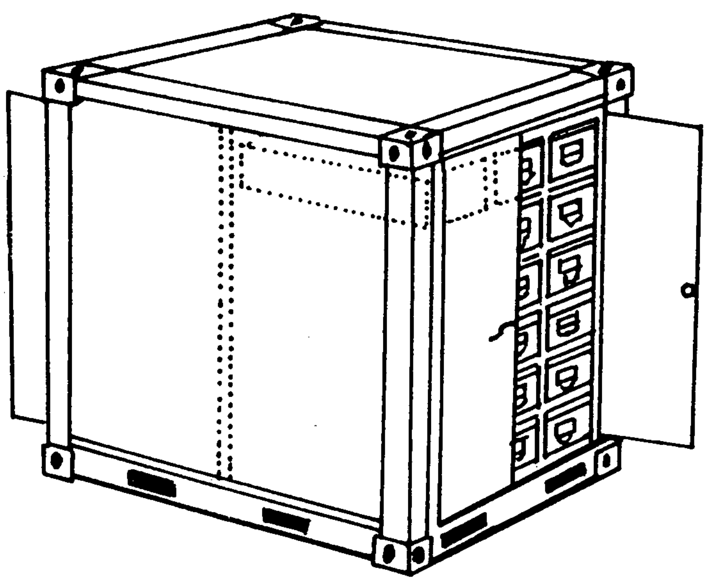


Figure 2-8. QUADCON.

SIXCON (Length 80" x Width 96"x Height 48")

The SIXCON is essentially a shipping frame that carries liquids (fuel/water) and pumps. Six SIXCONS can be interlocked in a standard ISO configuration. SIXCONS can be transported within the standardized motor transport system, by external lift, or within the 463L pallet system. (See fig. 2-9.)

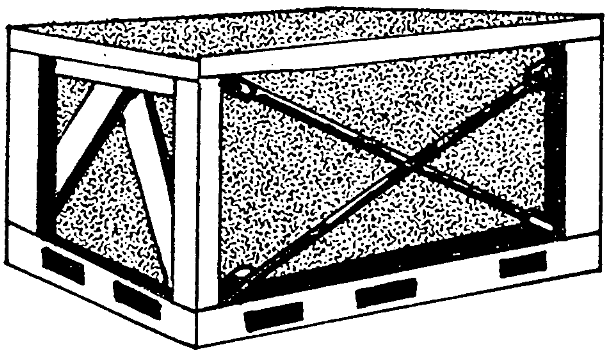


Figure 2-9. SIXCON.

CONTAINER HANDLING EQUIPMENT

Four units within the MAGTF have organic container handling capabilities. Within the combat service support element (CSSE), the landing support, motor transport, and engineer support units have the largest container handling capability. Within the aviation combat element (ACE), the Marine wing support squadron (MWSS) engineer unit has limited container handling capabilities.

Depending on the concept of employment, the landing support detachment normally has the container handling capability to support operations for the entire beach support area (BSA) or port. It may also be required to augment a section of the MWSS. The container handling capability of the ACE would, most likely, be fully committed to handling the large volume of Class V(A) ordnance containers and mobile facilities (MFs). Motor transport sections would provide container transportation support between the beach or port and container marshalling areas (CMAs) as well as unit distribution.

50,000-LB Rough Terrain Container Handler (RTCH)

The RTCH (fig. 2-10) is a modified Caterpillar, front-end loader capable of lifting, carrying, and stacking (two high) standard 20' ISO containers and FLS modules. The RTCH is a rough terrain truck designed for operating in soft soil conditions such as unimproved beaches. The RTCH is four-wheel drive and can operate in up to 5 feet of seawater. Top handler units are placed on the forks of the RTCH to allow for handling the ISO container. Gross weights up to 50,000 pounds can be lifted. The RTCH is the most efficient method for off-loading causeway ferries and lighters. Double handling of containers is eliminated as the RTCH removes the container directly from the causeway or landing craft and places it on the trailer or LVS on shore. Containers are then transported to the CMA well clear of off-load operations. The RTCH is maintained within the landing support battalion (LSB) and the MWSS.

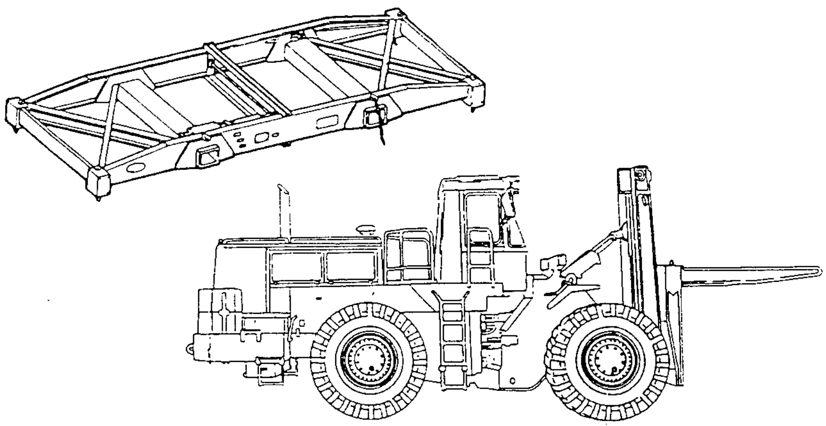


Figure 2-10. RTCH and Top Handler.

Crane, High-Speed, High-Mobility

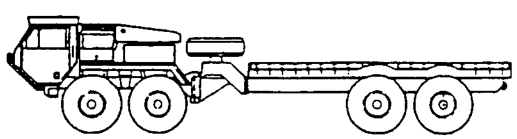
The crane, high-speed, high-mobility is a diesel-powered, rubber-tired crane with a hydraulic boom. It can mount and operate the pile driver. It can perform all general crane operations, clamshell, container handling, and general lifting up to 50,000 pounds. It can operate over rough terrain and in 60 inches of water.

Other MHE

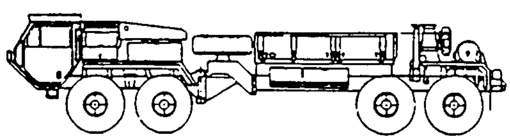
There are other items of MHE that are primarily used in stuffing and unstuffing containers and moving empty containers within the combat service support area (CSSA) or CMA. Due to its height, the RT4000 cannot enter the container for unstuffing and must therefore winch palletized cargo. The extendible boom forklift (EBFL) can stuff/unstuff containers while mobile-loaded on a trailer or on the ground. The tractor, rubber tired, articulated steering, multipurpose (TRAM) with 10,000-pound lift capacity and the light crane (7½-ton capacity) can move empty containers when the RTCH is not available.

LVS

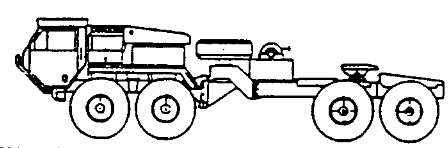
The LVS consists of the front powered unit MK48 and any one of five rear body unit configurations. Three provide the capability to move containers; two provide support capability for the movement of containers and include the MK15 wrecker recovery and the MK16 5th wheel semitrailer adapter. The MK14 container hauler is an ISO twist-lock equipped, 22.5-ton capacity, rear body unit designed to transport containers with the standard 20' footprint. The MK14 can also transport the Marine Corps' FLS modules. The MK17 dropside cargo with crane is a rear body trailer with an 8' x 16' loading area designed to carry 8' x 8' x 10' containers and fuel and water modules. The MK18 self-loading ribbon bridge transporter/container hauler is a hydraulically powered tilt bed rear body trailer designed to load/offload ISO containers, ribbon bridge components, or fill material without the assistance of material handling equipment. (See fig. 2-11 for the LVS and various configurations.)



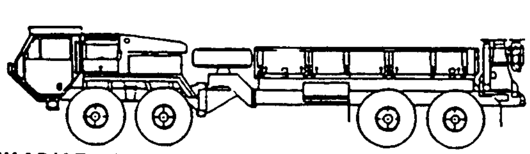
MK48/14 ARTICULATED LOGISTICS PLATFORM TRUCK
(WITH ISO CONTAINER PLATFORM)



MK48/15 ARTICULATED RECOVERY VEHICLE
(WITH CRANE AND 60,000 LBS./27 216 Kg WINCH)



MK48/16 ARTICULATED TRUCK TRACTOR
(WITH 60,000 LBS./27 216 Kg WINCH)



MK48/17 ARTICULATED DROPSIDE CARGO TRUCK
(WITH MATERIAL HANDLING CRANE)

Figure 2-11. LVS.

5-Ton Truck with Extended ISO Bed

This system provides an ISO-equipped cargo body replacement for the 5-ton tactical truck. (ISO beds replace the 5-ton's current standard cargo bodies and are fully compatible with the M813, M813A1, M923, 925, and 939 series vehicles.) Type 1 transports SIXCONs; type 2 transports the standard 20' ISO container. ISO beds are fitted with ISO locking devices. Figure 2-12 shows the type 2.

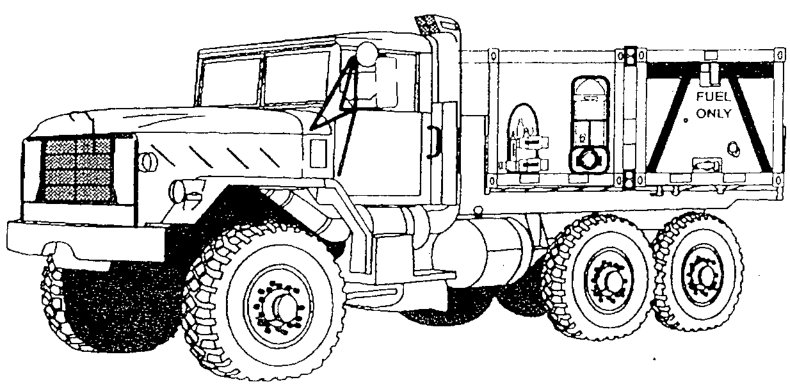


Figure 2-12. 5-Ton Truck With ISO Bed (Type 2).

Container Spreader Bars

Spreader bars prevent damage to container lifting points by evenly distributing the bearing capacity along the entire lifting surface.

SEALIFT SYSTEMS

Assault Echelon

The majority of motor transport and material handling support requirements during the initial assault phase of any amphibious operation is limited to hauling standard pallet loads and PALCONS. These items are mobile-loaded on vehicles or carried in the cargo stowage spaces of amphibious ships. Mobile-loaded vehicles are transferred to the surfline on lighterage (LCACs, LCU, LCM or floating causeway sections). PALCONS carried in the cargo holds are normally transferred ashore via LCAC or LCU. QUADCONS or other outsized containers are mobile-loaded and transferred ashore as indicated above. Figure 2-13 shows nominal characteristics and capabilities for the various lighterage.

CLASS	LENGTH	BEAM	SPEED	CARGO AREA	CAPACITY	RAMP
LCU	135' 3"	29' 0"	12 KTS	121'x25'	160.0 TONS	14'/18'
LCM-8	74' 3"	21' 0"	12 KTS	42.9'x14.6'	65 TONS	14' 6"
CSNP	92' 0"	21' 0"	N/A	92'x21'	90 TONS	N/A
LCAC	87' 11"	47' 0"	40 KTS	71'x27'	60 TONS	27'/15'

Figure 2-13. Lighterage Characteristics.

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Assault Follow-on-Echelon

Containers arrive in a variety of strategic sealift shipping (combination carriers, self-sustaining/non-self-sustaining (SSC/NSSC) and auxiliary crane ships (T-ACS)). These ships are either fully cellular (a containership designed specifically to carry only containers) or are partial containerships to provide a wide range of cargo carrying capabilities from container roll-on/roll-off (RO/RO) to breakbulk cargoes.

SSC. These ships (fig. 2-14) are highly desired because of their ability to self-load/unload containers in-stream or at virtually any worldwide port.

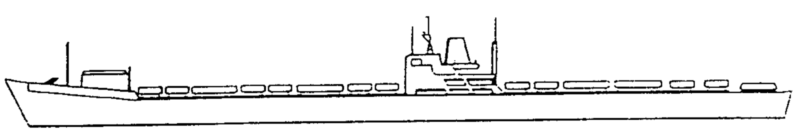

Figure 2-14. Self-Sustaining Containership.

NSSC. The full containership (NSSC) will transport the majority of AFOE containerized equipment to the amphibious objective area. These ships (fig. 2-15) have no organic offload capability (there are no cranes onboard that can load/unload containers). They must be offloaded in-stream by the T-ACS or pierside with fixed facilities.

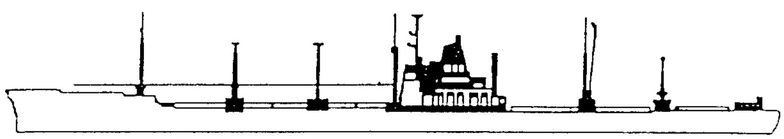

Figure 2-15. NSSC.

Auxiliary Crane Ship (T-ACS). The T-ACS (fig. 2-16) can offload containers and other outsized cargo from container and cargo ships offshore where no ports exist or where existing ports are damaged or inadequate. It can lift both 20- and 40-foot containers and conduct self-offload onto lighterage in-stream. The T-ACS, with its heavy lift cranes, is intended to be the primary discharge interface with the NSSC and the lighterage of the Navy support element (NSE). The NSSC and the T-ACS are moored together for in-stream offload/onload.

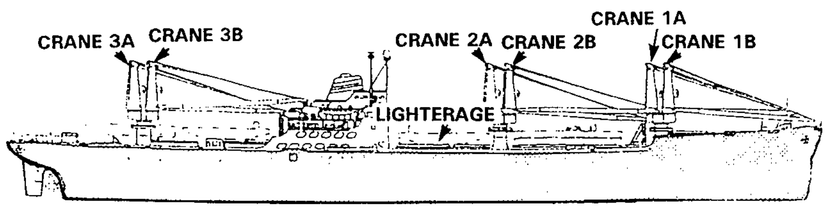

Figure 2-16. (T-ACS).

Cargo Offload and Transfer System (COTS). The COTS is made up of the Navy standard system of components. The basic building block is the 5' x 5' x 7' pontoon can. Cans are configured in various ways to make up lighterage components. Components support the AFOE container offload. The principal components of the COTS follow.

Side Loadable Warping Tug (SLWT). The SLWT is the workhorse of the COTS. It installs, tends, and maintains other causeway system components. The SLWT is 85' long. It is equipped with a dual-drum winch and A-frame to support a variety of warping tug functions. The SLWT installs the elevated causeway system (ELCAS) and the RO/RO discharge facilities (RRDF) systems. (See fig. 2-17.)

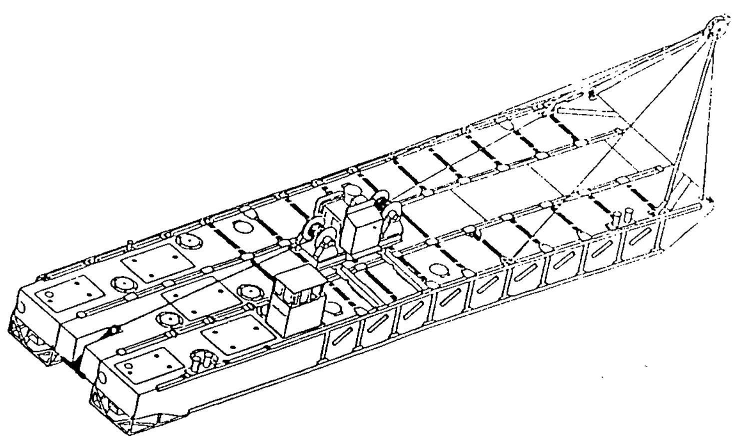

Figure 2-17. SLWT.

Causeway Section, Powered (CSP). The CSP (fig. 2-18) is the normal power unit for causeway ferries. The SLWT also performs the same function. The CSP propulsion system is identical to that of the SLWT except its hull is 5' longer and it does not have a winch, A-frame, or stern anchor installed.

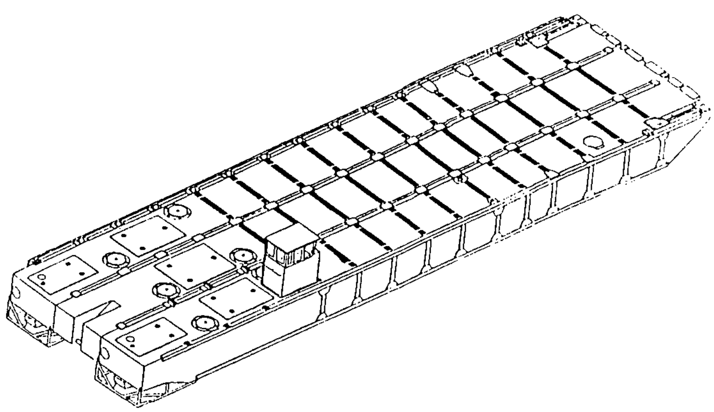

Figure 2-18. CSP.

Causeway Section, Nonpowered (CSNP). The CSNP is made up of three 7' wide and six 15' long configurations of the basic pontoon can to produce the 90' x 21' sections. Figures 2-20 through 2-23 describe the different configurations.

Causeway Section, Nonpowered (Intermediate) (CSNP-I). The CSNP-I has flexor units at both ends to permit coupling with other powered or nonpowered causeway sections. Some sections also have side-mounted flexor slots for assembly into the three-causeway wide by two-causeway long RRDF. A further variant has side connector slots and internal spud wells and is used in the pierhead of the ELCAS. (See fig. 2-19.)

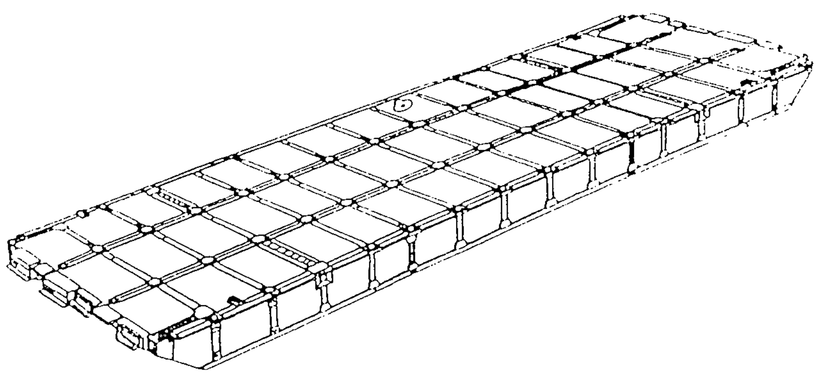

Figure 2-19. CSNP-I.

Causeway Section, Nonpowered (Beach End) (CSNP-BE). The CSNP-BE (fig. 2-20) is equipped with a folding beach ramp. It is used as the beach end of causeway ferries permitting rolling stock to drive off over-the-shore from the causeway ferry. Container handlers can drive onto the causeway and pick up containers. It is used as the shore end of the causeway pier used by Navy assault forces as an administrative pier during LOTS operations.

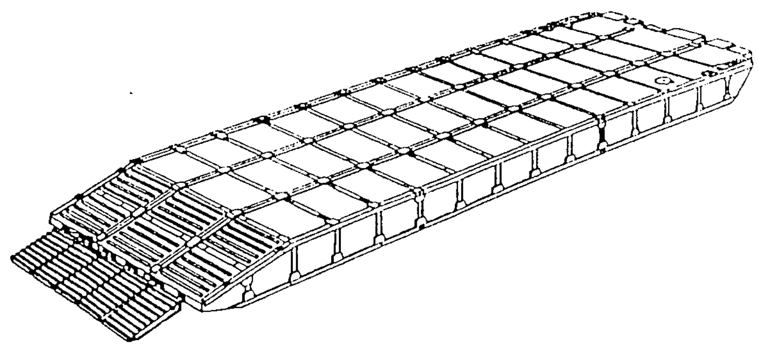

Figure 2-20. CSNP-BE.

Causeway Section, Nonpowered (Sea End) (CSNP-SE). The CSNP-SE (fig. 2-21) is equipped with a sloping notch and rhino horn. It is used as the seaward end of a causeway pier used by assault forces. The notch is designed to receive the bow of an LST, an LCU, or LCM. The rhino horn slips through a hole in the bow ramp of the LCU or LCM to hold the landing craft in position while vehicles embark/debark.

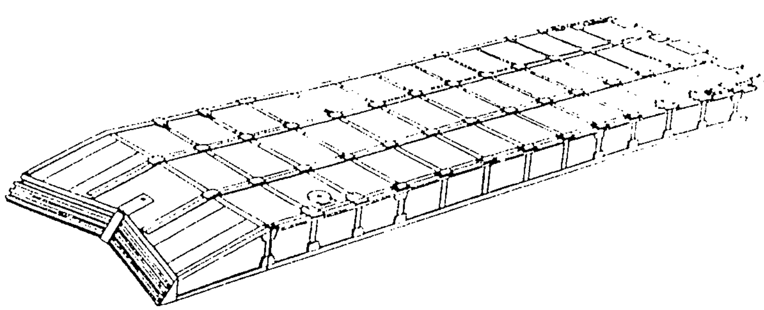

Figure 2-21. CSNP-SE.

ELCAS. The ELCAS (fig. 2-22) is a rapidly installable pier facility that delivers containers across the beach. It also removes rolling stock (within the capacity of the container crane) and breakbulk cargo from lighterage. The ELCAS is a key element in moving cargo ashore. It offloads lighterage from beyond the surf zone and difficult beach gradients (such as sandbars) that may cause conventional lighterage to ground far from a dry beach. A 7-day installation time makes it imperative that installation begins as early as possible and continues uninterrupted until completed so that it does not become a critical operational bottleneck.

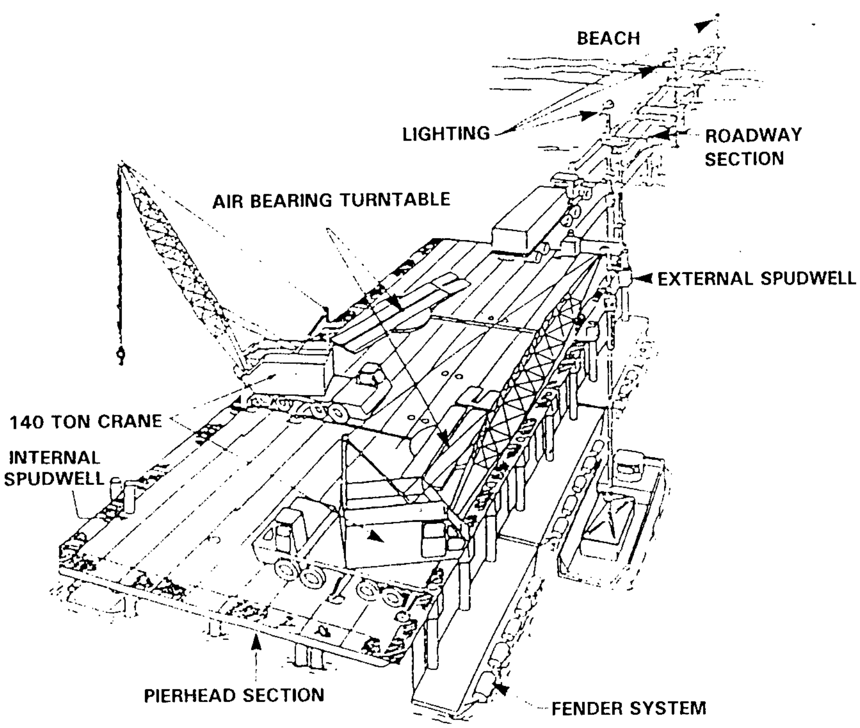

Figure 2-22. ELCAS.

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Chapter 3
Management and Control

UNITED STATES TRANSPORTATION COMMAND

The United States Transportation Command (USTRANSCOM) exercises operational command of DOD container system assets, except Service-unique (FLS) or theater-assigned, and provides management support to the Services. USTRANSCOM develops agreements with industry to provide intermodal capability during contingencies for containers, chassis, containerships, terminal services, and in-transit visibility systems, etc. During operations, USTRANSCOM provides the DOD a container capability through purchase or lease or, when appropriate, by requesting transfer of Service-owned container capability not in use.

Through the Military Traffic Management Command (MTMC), USTRANSCOM manages and monitors the status of DOD-owned, -leased, and commercial intermodal surface containers while the containers are in the Defense Transportation System (DTS). MTMC develops and maintains contingency plans and positions DOD common-use and containerized ammunition distribution system (CADS) containers based on requirements of the DOD components once validated by USTRANSCOM and the Services, respectively.

The MSC acts as the DOD agent for procurement (lease and/or buy) of commercial ISO intermodal containers, flatracks, and support equipment for DOD common-user container system service.

HEADQUARTERS MARINE CORPS (CODE LPO)

Code LPO is the focal point for Marine Corps containerization policy. It develops and maintains the Marine Corps container master action plan (MCCMAP) and Marine Corps Order 4680.5A, *Containerization Policy* (under development). Code LPO also chairs semi-annual Marine Corps container working group (MCCWG) meetings.

MARINE FORCES ATLANTIC/PACIFIC AND MARINE FORCES RESERVE

The Marine Forces identify requirements for Marine Corps-owned containers and container transport and handling equipment to MCCDC. The Marine Forces are also responsible for identifying requirements for leased containers for exercise/contingency to base and station traffic management offices (TMO). Organically-owned containers should be inspected and recertified, and the status reported to the Container Control Office (CCO), MCLB, Albany.

MARINE CORPS COMBAT DEVELOPMENT COMMAND

MCCDC validates Fleet Marine Force (FMF) commanders' requirements and forwards, as appropriate, to the Marine Corps Systems Command (MARCORSYSCOM) for procurement action. MCCDC also develops and promulgates doctrine and operational procedures/techniques, as required, and incorporates containerization training into applicable military occupational specialty training.

MARINE CORPS SYSTEMS COMMAND

MARCORSYSCOM procures containers, container systems, container transport, materials handling equipment (MHE), and container handling equipment (CHE) as required.

MARINE CORPS LOGISTICS BASE, ALBANY

MCLB, Albany manages the Marine Corps Container Control Office (MCCCO). It performs management duties on Marine Corps-owned containers and maintains a Marine Corps technical manual (under development) on container management procedures. MCLB, Albany identifies the level of in-store prepositioned war reserve material stocks which can be moved as containerized cargo in each supported operation plan's (OPLAN's) time-phased force and deployment

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data (TPFDD). It conducts annual inventories of Marine Corps-owned ISO containers and acts as the single point of contact for requesting/deleting ISO serial numbers from the DOD Container Registry maintained by Container Fleet Division (CFD), MTMC-Eastern Area (MTMC-EA).

BASES AND STATIONS

Base and station commanders will submit requirements for commercial-leased containers to HQMC (Code LPO) for action. They will ensure container outloading capability supports the tenant operational commander's OPLAN(s) requirements. Commanders will contract and/or lease commercial MHE/CHE to support the loading and transfer of containers. Installation outload plans will be prepared as appendixes to the supporting plan for each major OPLAN.

THE MAGTF

The wide variety of Service-owned and commercial leased containers presents unique control and accountability requirements for the MAGTF. The many types, special purposes, and separate owning agencies require multifaceted control mechanisms. Accountability and control ultimately lies with the individual MAGTF unit that owns or leases containers. The foundation for effective control begins before deployment. The MAGTF establishes the container control element (CCE) (normally elements of the CSS unit) to oversee container management. The CCE ensures that the container's contents and controlling unit are documented. The CCE is actively involved in planning and estimating container requirements as well as all phases of embarkation. Within the theater of operations, the MAGTF CCE ensures accountability is maintained for Marine Corps-owned and commercial-leased containers. Containers will not be used for bunkers, underground storage, etc. If containers are approved by the MAGTF commander for this purpose, action must be taken to prevent the container from collapsing. Containers are not designed to withstand the tons of weight associated with sandbags and covering or fill material.

CONTAINER DOCUMENTATION

Documentation and control of containers should be accomplished using a container control information system. The system should use the combined capabilities of the MAGTF logistics automated information system (MAGTF LOGAIS). The logistics applications for marking and reading of symbols (LOGMARS) system should be used to track all supplies from the point of origin to final destination in the AOR and retrograde movement.

Certain elements of information on each container are essential in managing their control. Whether a container is commercially-owned or USMC-owned/controlled, its ISO number preceded by an owner's code, ID number, or unit tactical designator is paramount to the efficient control and delivery of the container as well as identification of contents. Since many different ID numbering systems are in place, container control information systems used by the MAGTF must accommodate alphanumeric ID of varying field sizes. When a control record for deploying containers is established, the following essential elements of information must be included:

- The container ISO serial number including owner's code or the letters "USMC" if USMC-owned or -leased or "USMU." A code letter or number which designates the agency possessing ultimate control of the container; e.g., steamship line, USTRANSCOM, or USMC. The designation assists the CCE in determining a retrograde disposition or possible re-use by the MAGTF within the AOR.

- For specialized DOD and USMC containers, a code which designates the type of container; e.g. maintenance shelter, tank container, special ammunition container, special interior fixtures or features.

- The reporting unit code (RUC) for the controlling unit of USMC-owned or leased containers.

- A manifest or freight bill reference number which allows for the identification of container contents through data base integration. A manifest of contents by national stock number (NSN) and/or table of authorized material control number (TAMCN) requires input cross-referencing the container ID.

- An embarkation serial number/unit identification number which cross-references to the MAGTF embarkation loading plan.

MAGTF Deployment Support System II

MDSS II is one of the integrated systems used by the MAGTF for unit-level container deployment planning and execution. It develops data on container contents, unique container control information, and embarkation planning data. MDSS II allows a unit to create the "parent" package of the container itself and load the "children" packages (or the actual contents of the container), identifying NSN, equipment TAMCN, and owning unit code.

LOGMARS

The LOGMARS technology incorporated into MDSS II provides tremendous tracking capabilities in support of the containerization program. LOGMARS scanners and/or other automated systems determine the contents, final destination, and end use of containerized material by scanning bar codes and accessing the comprehensive data bases that contain detailed information on each container. The LOGMARS function of MDSS II allows the MAGTF to—

Track containers from ship-to-shore with real time updates.

Create bar code labels for each container to associate contents with specific units and destinations by scanning the bar code with handheld scanners.

Update the MAGTF MDSS II database by downloading from LOGMARS data collection devices or via wireless modem.

Remote Micro-Circuit Technology

Key CCE personnel located at various control points will use remote micro-circuit technology, hand-held devices to scan bar codes, access the container control system data base, and update that data base with changes in container location and status. These devices, commonly called portable data carriers, can positively identify an item at a distance and store its maintenance history.

MAINTENANCE, REPAIR, AND INSPECTION

Units are responsible for identifying unserviceable containers and ensuring they are repaired, inspected, recertified, and/or removed from the system. Container condition inspections are the responsibility of using/receiving units. Unit commanders must ensure that owned/leased containers are operationally sound and safe to operate. Commands that contract for or handle containers must have trained personnel qualified to inspect and certify containers and associated equipment. Personnel who recertify containers must attend a 3-day Intermodal Dry Cargo Container/Convention for Safe Container Reinspection course at the U.S. Army Defense Ammunition Center and School.

All containers should be inspected before use, including USMC table of equipment (T/E) items with standard ISO fittings. Containers must be recertified 5 years after their manufacture date and every 30 months thereafter for serviceability. To ensure all containers (whether owned or leased) are in a safe and serviceable condition, conduct the following limited technical inspection, before and after each use:

- Check for internal/external damage that might affect material strength, function, or sealing.

- The container should be free from odor which may taint cargo.

- Check for debris from previous cargo that may interfere with loading, endanger the cargo, or create a safety hazard to personnel and equipment.

- Check for a current DD Form 2282, Convention of Safe Container (CSC) decal. It must be attached to the outside of the container.

- Inspect door seals for serviceability. Watertight integrity of the container must be sound.

• Check the adequacy and condition of the interior fitting for securing cargo. Tie-down cleats and rings should be serviceable.

• Ensure that all doors can be locked and sealed.

• Check exterior fitting. Pay particular attention to top and bottom castings. Ensure they are not damaged or unsafe.

Leased containers that do not satisfactorily pass inspection should be returned to industry for replacement. See MIL-Handbook 138A, *Container Inspection Handbook for Commercial Military Intermodal Containers*, for a detailed discussion of container maintenance procedures and ammunition containers inspection criteria.

LEASING AND PROCUREMENT

Marine Corps container requirements will be developed as part of the MAGTF commander's deliberate planning process and satisfied by leasing containers from commercial sources and through limited procurement. Procurement of containers is limited to the number required to meet training and initial surge deployment requirements that cannot be met by the timely lease of commercial containers.

As an exception to this policy, the Commanders, Marine Corps Logistics Bases (COMMARCORLOGBASES) are authorized to procure containers used for the MPS that are unique (i.e., not for common-user service) to the maritime prepositioning ship program. Authorization to procure commercial ISO containers above the quantity required for training and initial 15-day surge deployment requirements will be submitted to the HQMC (Code LPO) for approval. Requirements for Marine Corps-owned containers, including specially configured containers, will be determined using the same procedures as other tactical equipment in the combat development process.

TRAINING

Specific containerization goals in MCO 4680.5A call for developing and incorporating containerization planning and usage training into CSS schools. Operational commanders are responsible for incorporating container employment into training exercises and operations. Unit training should include container usage, determining container requirements, blocking and bracing, stuffing/unstuffing, and container control. The container control officer should provide centralized control for unit training programs.

Chapter 4
Deliberate Planning Process

DETERMINING CONTAINER REQUIREMENTS

During the deliberate planning process, the MAGTF commander establishes policy and guidance for use of containers by subordinate commands and determines container requirements for all deploying units by location. These requirements represent the total number of containers that will be required for deployment at a particular base/station. Containers must also be identified for specific operational needs such as maintenance, work shelters, equipment platforms, bulk liquid transportation, storage platforms, Class V ammunition, and warehousing. These requirements are intended to serve as a baseline for use in assessing container load-out capability. Container requirements and capabilities for load-out at bases/stations are updated quarterly. This information provides a means for determining other MAGTF operational requirements within the AOR such as MHE/CHE, container transportation equipment, host nation support, and training.

The MAGTF commander also identifies the number and type of containers that each unit will require as a permanent organic T/E item. Acquisition of containers should be limited to containers that facilitate a unit in performing a specific mission such as field medical facilities, maintenance shelters, etc. Transportation and warehousing of unique organic equipment requiring specialized containers as well as specialized containerization of Class IX repair parts must also be determined. Requirements for Marine Corps-owned containers will be determined using the combat development process.

Unit Requirements

At the using unit level, detailed lift requirements are developed using MDSS II. MDSS II supports development of accurate unit movement requirements and identification of containerizable material. MDSS II allows feasibility analysis and "what if" alternatives because it incorporates development of "plan dependent" variations of force structure and associated embarkation data. MDSS II also allows aggregation of unit-level cargo/equipment data at the MAGTF level and facilitates the transfer of actual lift requirements into MAGTF II for interface with the Joint Deployment System (JDS).

Sustainment Requirements

As the MEF generally deploys with up to 60 days of sustainment with 30 days of supply carried in the AFOE, planners must compute all container requirements based on a 60-day level of supply. When possible, accompanying supplies and equipment that cannot be accommodated on amphibious shipping are containerized to the maximum extent possible and manifested on AFOE shipping. Follow-up supplies are also containerized to the maximum extent possible. The MAGTF planner inputs containerization data into MAGTF II for OPLAN TPFDD. Planners should approach gross containerization requirements determination using current base/station OPLAN equipment and troop lists.

OPLAN TPFDD Planning

Shipment of containerized cargo to support the AFOE only takes place if Joint Operation Planning and Execution System (JOPES) and TPFDD procedures are adhered to. Shipment of all cargo must be considered in each OPLAN TPFDD. The requirement for inducting containers/cargo data into the TPFDD allows USTRANSCOM/MTMC/MSC and HQMC ample time to review requirements and establish adequate shipment support. Failure to properly project container shipping requirements into the TPFDD will result in insufficient sealift sourcing by MSC.

Requirements by Commodity

The MAGTF must choose container types that can best support specific operational needs within the AOR. Certain classes of supply lend themselves to specific container types: tank containers for bulk chemicals and lubricants, flat-rack containers for large equipment items, and drop side containers for maintenance. Specialized containers offer a full range of uses including transportation, warehousing, and work facilities. All packaged consumable supplies either palletized or deck-loaded can be transported in standard ISO containers.

PLANNING CONTAINER LOADS

Units must develop stowage plans before stuffing containers to ensure optimal use of the container's capacity and to simplify and increase the speed of stuffing and unstuffing. A container stowage plan should include the exact weight and cube of cargo to be loaded, and the internal dimensions and permissible load limits of the container.

Capability Sets

Container load planning is performed by capability sets. The term "capability set" refers to a group of related or dependent NSN or TAMCN items, such as a bulk fuel handling system. A relatively large amount of equipment and supplies can be consolidated into capability sets and stowed in one or more containers to be embarked aboard containerships. Planners should give consideration to identifying capability sets and organizing cargo configurations accordingly. Embarkation serialization should support the movement of capability sets.

Outsized Equipment. Outsized equipment can be transported in open frame and flatrack containers that allow access from three sides and allow equipment larger than the 20-foot container footprint to be loaded on container ships. In this case, frame modules are built around the equipment allowing other ISO containers to be loaded on top or beneath the outsized equipment.

Bulk Liquids. Bulk liquids can be transported in special 20-foot tank containers. These containers are no more than container frames housing tanks of up to 20,000-gallon capacity. They store liquids such as petroleum, oils, lubricants, and water. They may also be used for unit distribution.

Refrigeration. Perishable commodities requiring refrigeration or insulation can be moved in special containers that contain heating and refrigeration units or are insulated to protect from extreme temperature variation.

Aviation Logistics and Maintenance Equipment. Drop side containers ship aviation ordnance and equipment that must be sealed in a watertight container that cannot be end-loaded due to size. Aviation logistics and maintenance equipment is also best loaded in drop side containers. Drop side containers can also be configured for habitation, administration, or work shelters.

Class V Ordnance and Ammunition Requirements. All Class V can be transported in standard ISO containers which meet international maritime dangerous goods code standards (IMDG). Other special containers are equipped with internal sleds that facilitate the unstuffing of palletized Class V.

Selective Access

In many instances the MAGTF will require access to specific containers for selective offload. When planning container loads, consider proper loadout, transportation, and access. Bulk-stow cargo planning factors are the baseline for determining the capacities of selective-access containers given the application of an appropriate factor for lost cube due to warehousing operations. It is acknowledged that an imperfect measure of nominal cargo per container is inherent in all such computations; however, for planning purposes, these imperfections are tolerable pending detailed container load planning and precise definition of container type/quantity requirements.

Where selective access is planned for an end-opening container (length 20' x width 8' x height 8'6"), or for the end-opener/side-opener container variant (length 20' x width 8' x height 8'), the planner must decrease the nominal cargo cubic foot volume capacity to allow for walk aisles. Selective access should be planned for the following circumstances:

- Multiple NSN repair parts are loaded in the same container when the MAGTF plans to warehouse the contents within the AOR.

- Any container is specifically marked for early offload and contains high priority items.

- Items of equipment are heavy and difficult to maneuver.

To ensure that a proper mix of ammunition is available early on in the AFOE offload, the spread-loading of ammunition containers on the top deck of AFOE shipping is appropriate when possible. To comply with ship loading constraints and handling capabilities ashore, these designated containers might require light loading and be loaded, blocked, and braced for ease in unstuffing.

Limitations

The payload for standard ISO containers is limited to 45,000 pounds due to the maximum lift capacity of the LVS. Containers loaded for MAGTF employment should not, when possible, be loaded to more than 25,000 pounds due to the potential for limited MHE/CHE early on during the operation. In no case should early-on, high-priority containers (which require top-loading aboard ship) be stuffed to more than 25,000 pounds. The Marine Corps unique FLS configurations (i.e., QUADCON, SIXCONs, and PALCONS) may not always conform to the weight limitations and must be carefully inspected and weighed prior to lifting. The sum weight of the special types of containers connected into a 20-foot footprint should not exceed 45,000 pounds. Never exceed the weight indicated on the container data plate and/or any weight restrictions established by cognizant highway authorities.

The heavier (denser) the load, the less a container's cubic capacity can be used. Blocking and bracing requirements will also reduce effective cubic capacity. The broken stowage factor is much greater in container loading than in traditional breakbulk operations due to weight capacities being maximized well before cubic foot capacities and the requirements to block and brace. The MAGTF commander must plan for using more overall cubic capacity in container operations than in traditional breakbulk loading.

STUFFING CONTAINERS

Stuffing is loading and securing equipment, supplies, or other material into a container. Containers must be stuffed to support the eventual unstuffing in support of operations. This will maximize the use of containers and allow MAGTF logistics efforts to be more responsive. Container stuffing efforts should be decentralized to the lowest unit level practical. It is preferred that containers be stuffed for shipment at the point of origin. This should be done at bases/stations by deploying units augmented by contracted or mobilization manpower. If the point of origin is an integrated material manager/supply source, it is the responsibility of that agency to coordinate stuffing of the containers. There will be instances where the containers are not available at the point of origin for load-out. In these cases, it will be necessary to stuff the containers at a continental United States marshalling area before load-out.

Stuffing Material within the Same Container

Heavy equipment and Class V ammunition should be palletized. When available, specialized containers equipped with retractable floor rollers, slip sheets, or skids should be used. This equipment facilitates the unstuffing of unitized loads in a tactical environment and accommodates pulling out loads when MHE is not available.

Ammunition (both air and ground) should be stuffed at the source, in accordance with appropriate orders for movement of hazardous materials.

MEF-held stocks should be stuffed at the base/station.

COMMARCORLOGBASES-held stocks should be stuffed at the appropriate MCLB.

IMM-held stocks should be stuffed at IMM storage depots. Quantities inappropriate for stuffing at IMM storage depots should be stuffed at the point of Marine Corps receipt — either the MEF or at the MCLB.

Securing Cargo

Shoring, blocking, or bracing vary with the contents of the container and must be determined during the planning of specific container loads. *The National Cargo Bureau Shippers' Guide to Proper Stowage of Intermodal Containers with Emphasis on Ocean Transport* provides guidance for proper container stowage procedures. After containers have been stuffed and cargo secured, a poststuffing inspection should be made to ensure that the container contains the cargo planned for, that adequate blocking/bracing is installed, that a copy of the packing list is affixed both to the inside and outside right-hand door as you face the container, and that doors or tarpaulins are secure.

UNSTUFFING CONTAINERS

Unstuffing is removing the contents of a container. How a container is stuffed is critical to how quickly and efficiently a container can be unstuffed. General policy is to transport containers as far forward as possible before unstuffing and stockpiling supplies, or transferring palletized or breakbulk cargo to general purpose vehicles. The degree of implementation of this policy has significant impact on transport vehicle mix, MHE/CHE, and supply accountability. Sufficient MHE, a suitable unstuffing area, manpower, and transportation are normally the key logistics considerations.

Containers should be placed on level, hard surfaces with suitable drainage. They should not be unstuffed while on vehicles except when the extended boom forklift (EBFL) is available or in remote areas where CHE/MHE is not available. Within the AOR, the MAGTF should only unstuff containers at designated marshalling areas. This allows for the concentration of required CHE/MHE, minimizes the preparation of suitable ground surfaces, and facilitates the control of containers and cargo. Containers transporting unit organic supplies and specialized equipment should be unstuffed at unit locations only when the unit possesses suitable MHE equipment for unstuffing.

Specialized containers designed for moving certain classes of supplies can be taken directly to using units for supply distribution. Bulk tank containers containing specialized bulk liquids may be used for unit distribution. These containers can remain on their transportation vehicles for ease of distribution.

Certain Class V(A) ordnance and Class V(W) ammunition which remain warehoused in specialized containers may be delivered directly to using units when transported on self-loading and -unloading vehicles.

THROUGHPUT PLANNING

During offshore discharge operations, throughput is limited by the rate of discharge from the ship. The motor transport assets required to support this discharge are affected by the percent of containerization, distance of travel, and CHE cycle time. As a general planning figure, container transporters should be expected to maintain a 20-hour work day at an average of 20 miles per hour over normal access routes.

To enhance throughput by rapid vehicle turn-around and to ensure safety, containers are unstuffed after being offloaded from vehicles. This permits the vehicle to continue cycling between loads. The RTCH or crane are required to unload containers from vehicles. The LVS MK18 variant is a self-sufficient unit capable of loading and unloading containers on its own. Only the 4,000-pound low mast commercial forklift can gain access to containers. Palletized cargo that cannot be accessed by a 4,000-pound rough terrain forklift should be winched out of the container using chains attached to other vehicles or MHE. Ramps should be fabricated to minimize damage to the container and to preclude tipping pallets as the forklift exits the container.

Transportation Planning

The degree of containerization will significantly impact motor transport assets. While breakbulk cargo increases material handling time and decreases throughput, additional containerization, conversely, increases the throughput rate when sufficient CHE and motor transport support are available. Unlike the traditional breakbulk cargo scenario (which relies on common vehicle types for distribution of cargo from the beach to the combat service support area (CSSA) to the using unit), the introduction of containers requires a mix of specialized vehicles to first transport containers, then distribute the unstuffed contents to using units.

State/federal and ultimate destination weight limits for truck/rail transport must be taken into consideration before stuffing containers. Distribution of weight/cargo must be loaded evenly throughout the container. Bottom cross members constitute the load-bearing elements of the container (heavier items loaded on the bottom to balance out over as many cross members as possible). Proper use of dunnage (layered in different directions with the first layer laid lengthwise) will also evenly distribute the weight of heavy items that are small in size. Maximum payload of a container is determined by subtracting the weight of the container from the gross weight allowed.

The MAGTF commander must ensure that motor transport functions are part of the overall distribution management system that integrates the container transportation, distribution, and documentation functions. The requirement for the centralized control of motor transport and MHE/CHE support becomes a significant consideration in MAGTF operations. Combinations of motor transport and MHE in optimum quantities and corresponding capabilities must be made available to meet material throughput/transfer requirements.

Plans for the employment of organic motor transport must first consider the availability of other modes of transportation (rail, barge), host nation support (contract haulage), and Army support capabilities The U.S. Army is tasked with providing the heavy lift for container movement within the theater of operations within the scope of joint motor transport doctrine and beyond MAGTF capability. In addition, the rate of container throughput, the radius of operation, the number of beaches, the number of container marshalling areas (CMAs) and CSSAs, and distances from a port facility to CSSAs will determine organic motor transport asset mix and requirements for augmentation. When faced with the need to transport containers a significant distance from a port facility to the AOR, rail must also be considered. Most established port facilities, even in third world nations, have rail service. The use of rail, with its high throughput rate, reduces the requirement for line haul truck transport.

Navigable coastal and inland waterways can also be considered for moving containers from the port of offload to the AOR. Naval and Army lighters, LCUs, and LCMs could be used as well as civilian barges and small container feeder vessels capable of navigating in shallow waters.

The MAGTF should assess the availability and capability of both rail and water transport within the AOR and plan for their potential use.

EMBARKATION

The same planning considerations used in embarking follow-on supplies in the traditional breakbulk mode are used with containers. Container ships are loaded to support tactical requirements. This requires a less efficient loadout of each ship. The resulting effect is that each ship will not be loaded to its maximum tonnage or container capability.

Each ship participating in offload operations requires a well-conceived offload/discharge plan. Detailed plans are required for the tactical loading of container ships. These plans maintain unit integrity and offload flexibility and must ensure that offload priorities are maintained. The serialization of containers or groups of containers by specific ship in accordance with established tactical embarkation procedures must be planned. Containers should be loaded and offloaded in a manner that supports a certain prioritization of need ashore. From the basic offload plan, additional plans (such as crane lift plans for each hold) should be prepared. An offload command center should be formed and charged with the responsibility of executing the offload plan. The offload plan is executed by the ship-to-shore organization under the direction of the offload coordinator.

Container ships require that each top layer be offloaded first before the bottom layer can be accessed. Containers with priority cargo must be loaded on the top layer of each container ship.

Ammunition represents the densest commodity loaded in containers. Care should be taken to not load all ammunition containers in the bottom layers as would be called for under an administrative loadout. Ammunition containers required for priority offload must be light-loaded to avoid a top-heavy situation (critical in container ship operations) and to facilitate handling ashore.

The conduct and sequencing of the offload will, in many cases, be constrained by the availability of offload systems. At anchorage, self-sustaining ships are constrained by anchorage locations and lighterage availability. Non-self-sustaining ships will be further constrained by the availability of specialized shipping or systems for offload. At the beach, cargo movement from both self-sustaining and non-self-sustaining ships will be constrained by the number and availability of beach offload points.

T-ACS will normally be given priority for assignment to offload anchorage. They will then be positioned to receive NSSCs alongside.

The lengthy lead time required for installing elevated causeway systems (ELCAS) necessitates priority offload of ELCAS components and delivery to the beach to begin installation.

JOINT LOGISTICS OVER-THE-SHORE

The Joint Staff, Services, USTRANSCOM, and the Unified Commanders have the collective responsibility for developing, evaluating, and advancing DOD's JLOTS capabilities. USTRANSCOM is responsible within DOD for maintaining oversight of JLOTS. JLOTS operations are defined as logistics over-the-shore (LOTS) operations conducted jointly by two or more service component forces of a unified commander. LOTS is the loading and unloading of ships without the benefit of fixed port facilities in either friendly or undefended territory and, in time of war, during phases of theater development. This includes containers that would move on MSC and commercial shipping. (See Joint Pub 4-01.6, *Joint Tactics, Techniques, and Procedures for Joint Logistics Over-The-Shore*, for more information.)

Chapter 5
Execution

SHIP-TO-SHORE MOVEMENT

Ship unloading of containers is accomplished by the normal Navy ship-to-shore (STS) control and support agencies. CATF exercises overall control of the STS movement. CATF is responsible for debarkation and offload until termination of the amphibious operation at which time the responsibilities for debarkation or offload are passed to another offload organization designated by higher authority. The amphibious operation would not normally be terminated until the AFOE is ashore. The CLF informs the CATF of his requirements for units, materials, and supplies and specifies the time at which they will be required. The CLF is responsible for moving cargo within the BSA and into inland CSSAs.

Since most MSC-provided ships have neither the organic offload capabilities nor the organic ability to control debarkation of embarked troops or cargo, their offload is conducted by the ATF with Navy or landing force personnel and equipment. Components of the Navy's COTS deployed on amphibious shipping and strategic sealift support the offload of containers. Follow-up shipping delivers reinforcements and supplies after the AE and AFOE land. Upon disestablishment of the AOA, control of follow-up shipping passes from the CATF to the Navy OTC or JLOTS commander. Upon termination of the amphibious operation, a transition to LOTS or JLOTS operations is conducted.

SITE SELECTION

Initially, port survey team(s) supplied by the port operations officer survey all facilities at the prospective port or beach and the transportation support network within the area. Based on survey results and agreements with other Services and host nation support representatives, the port operations officer establishes specific guidelines on interface and operation of these organizations. The number, size, and configuration of CMAs are determined by the mission, geography, available port facilities, and number of operating beaches. The following guidelines are critical when selecting sites for container operations:

- Study the topography of the area with respect to size, defensibility, and accessibility. Because container operations are difficult to camouflage, it may be necessary to locate marshalling in areas that have natural terrain features to disguise these operations. CMAs will be noisy and create dust from container handling which will be easily detected by an enemy force.

• Ingress and egress to main supply routes, adequate hard surface roads, railroads, rivers, or canals should be available to move containers from beach or port facilities to CMAs. CMAs must be located nearer to the beach when there is a lack of hard surface roads.

• Physical preparation of sites is the MAGTF commander's responsibility. Careful selection is key.

CONTAINER CONTROL ELEMENT

The CCE coordinates the retrograde of all containers, loaded or empty, from CSSAs and CMAs to the beach or port for transfer to appropriate shipping. The CCE determines if the container will be held at a staging area or sent directly to the beach.

The MAGTF's CCE and its equipment must start moving ashore early in the offload to set up distribution systems to move containers forward from the landing beach/port to CMAs. Container transfer points established within the BSA are needed to support the AE and will continue to function during the AFOE throughput phase. Data processing and other electronic equipment, software, and files required to support distribution and control of containers must deploy with the CCE. Electronic equipment and procedures should be established ashore before containers are offloaded from shipping. The CCE's area of expertise will span beach and port operations, transportation, and supply management.

The CCE establishes a container control point (CCP) within the beach transfer point (BTP) of the beach support area (BSA) or the port of debarkation. The CCE then directs containers to the appropriate CMA for staging or unstuffing, to an ammunition supply point (ASP), to a forward CSSA or, in limited cases, directly to the using unit. The MAGTF commander determines disposition based on tactical requirements. Specific functions of the CCE include—

- Identifying each container being offloaded by container serial number, contents, and controlling unit or agency.

- Arranging for the transportation of containers from the BTP or debarkation port to designated destinations based on urgency of need.

- Coordinating with the landing force shore party (LFSP) which prepares plans for starting containerized cargo discharge. When the beach is prepared for containerized cargo throughput, container operations begin.

• Ensuring motor transport units responsible for transporting containers are trained and equipped to report the status of containers under their control and to assist the CCE in locating container assets.

MARSHALLING

The principles of marshalling containers within the MAGTF area of operations are the same as those with traditional breakbulk cargo operations ashore. The techniques, facilities, and equipment required for handling *differ*. Containers generate a larger "footprint" and have a greater density than palletized breakbulk cargo. Equipment used in support of container operations is large, is not very maneuverable, and requires a considerable amount of area to move and store containers.

CMAs are established to gather, identify, organize, unload and/or distribute containers to using units and CSSAs. Under certain conditions, CMAs can serve as repair facilities and container control sites (CCS) from which containers are managed. The CCE oversees all aspects of container operations. Within that section, the MAGTF commander appoints the container control officer to oversee all operations of the CCE. CMA structure and operations are dictated by tactical necessity, including logistical supportability.

Containers move from the beach or dock to container control sites located at established CMAs. These marshalling areas could be located at designated CSSAs. The number and configuration of CMAs required to support a MAGTF depends on the size of the MAGTF, the mission, the type of landing being made (amphibious, MPF, port or instream), and the number of CSSAs established.

Organization within a Port Environment

The organization within a port environment is essential to the total distribution system that must be established for sustained operations ashore. Joint Publication 4-01.5, *Joint Doctrine for Water Terminal Operations*, contains information useful in conducting port operations in a joint or combined contingency environment.

Established port facilities offer the most effective means of unloading and staging containers for movement to CMAs. A centralized CMA can be located at the port if trafficability of roads or railroads within the port can support the required throughput. Normally, port areas are in built-up areas where trafficability is marginal. Space limitations and tactical considerations could require that marshalling areas be outside the port, requiring a transportation network.

Should a seaport be available for use, the MAGTF commander should provide a port operations group (POG), comprised of landing support battalion personnel within the CSSE to be responsible for preparing the port before arrival of merchant shipping and the throughput of supplies and equipment from the AFOE. The POG provides a CCE which establishes a CCP within the port facility. The POG (with its associated CCE) manages the reception, initial processing/staging of containers, and movement of containers to marshalling areas. Figure 5-1 shows a standard CMA within a port environment. Figure 5-2 details one method for grouping containers.

The Navy cargo handling battalion (CHB) provides the support required to accomplish a port off-load of containers. Containers are offloaded pierside using gantry cranes and/or the individual ship's cranes. If the port is equipped with pierside unloading cranes, they are used to unload container ships. The offload throughput rate will be highest using this capability. If no pierside unloading capability exists, then ships with self-contained unloading cranes or T-ACS must be used. When self-unloading container ships are not used, then T-ACS must be docked pierside with the unequipped container ship anchored on the seaward side of the T-ACS.

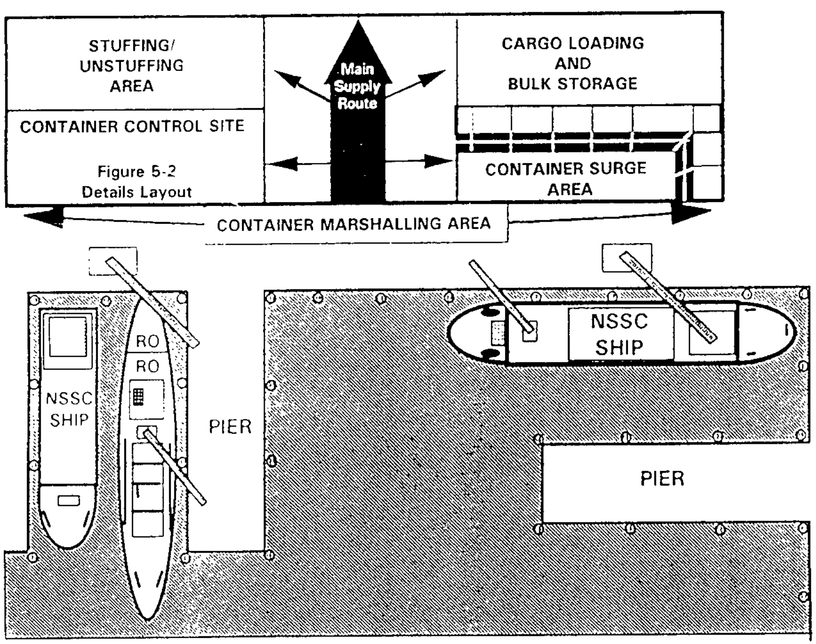

Figure 5-1. CMA in a Port Environment.

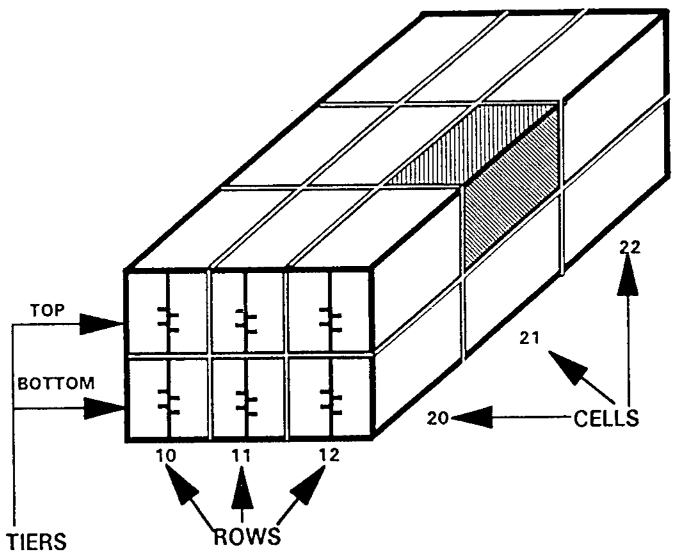

Figure 5-2. Grouping Containers.

Organization in a Beach Environment

Locations on a secure beach must be established and clearly marked for lighterage carrying containers and for the staging and transportation of containers to marshalling areas. The BTP is the location within the BSA where lighterage delivers containers from the offshore shipping to the beach for movement inland. Control of the BTP is the responsibility of the NSE for MPF operations and the beach party group in amphibious operations. The NSE coordinates and supports the landing force in amphibious operations. Details on the organization and control in amphibious operations are contained in Joint Pub 3-02, *Joint Doctrine for Amphibious Operations*, and Joint Pub 3-02.1, *Joint Doctrine for Landing Force Operations*.

Beach Support Area. The BSA is the first installation established ashore during amphibious operations. The BSA is located on or near the beach and is considered a temporary site, although operational factors may warrant development of the BSA into a more permanent facility. The number of BSAs established depends on the landing force commander's concept of operations ashore and the number of beaches employed. Once the BSA is selected, organization of the beach for acceptance of containers begins. The MAGTF commander has the responsibility to provide MHE/CHE and transportation for containers to accomplish beach clearance. As the AFOE offload begins, BSAs expand to include 20-foot container operations. Initially, the CCS is established within the BSA, and the CCE temporarily functions within the BSA. Once CMA sites have been prepared sufficiently to begin accepting containers, the CCS is relocated. Traditional beach organization and CSS installations and operations may need to be modified to support container operations. When installations and operations are changed, specialized CHE/MHE container control functions and special motor transport procedures need to be adjusted. If more than one designated beach is employed in an operation, separate CCSs and CCEs will need to be established for each beach. One CMA should be established for each beach.

Organization of Container Marshalling Area

Centralized Facilities. Centralized facilities are designed for maximum efficiency yet have the lowest tactical survival rate. A centralized facility is designed to throughput the maximum number of containers economizing on facility area, equipment, and personnel. Centralized facilities have a container surge area (CSA) which affords the maximum density of container storage. Centralized facilities also contain areas for stuffing and unstuffing containers, a cargo loading dock, bulk storage areas, a repair facility, and a retrograde area. The CCE administers and controls from this site. One CSA would be required for each designated beach. Figure 5-3 shows the initial centralized CMA.

Decentralized Facilities. Once the MAGTF has been established ashore and CSS has been fully developed, CMAs should be decentralized for tactical survivability. CSAs should function until more developed decentralized facilities are constructed. Under the decentralized configuration, each CMA is split into separate decentralized container distribution points (CDPs) and ready issue points (RIPs). Figure 5-4 shows the decentralized CMA.

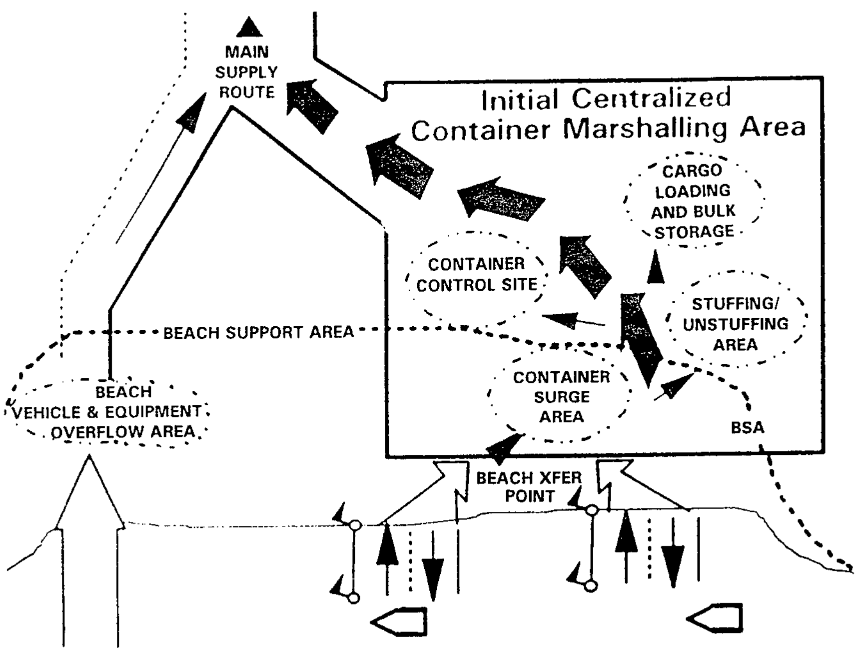

Figure 5-3. Centralized CMA.

Container Distribution Point. It is recommended that each CDP consist of three hard surface pads. Each pad should hold a maximum of five clusters of 48 containers each. Each CDP should contain a repair yard, control office, and bivouac area. The CDP lies between the port/BSA and the RIPs and adjacent to the main supply route.

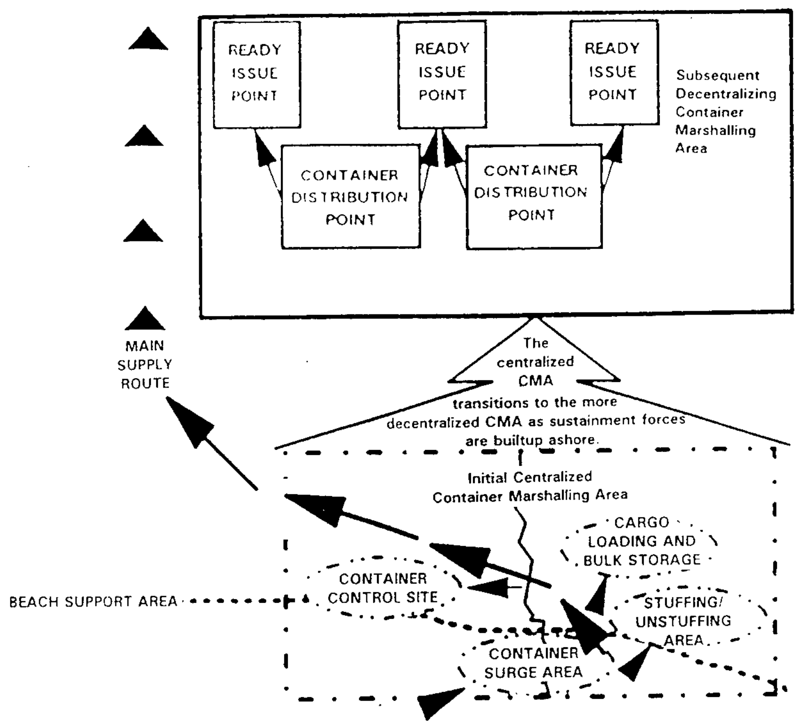

Figure 5-4. Decentralized CMA.

RIP. Each RIP should be several miles forward of the CDP. Five storage/issue pads for a MEF is recommended. These pads are used to unstuff and palletize cargo for distribution to using units. Each pad should be an improved stabilized surface for containers stacked two high. Also connected with the RIP should be a container retrograde area, inventory control points, a bulk storage area, staging area for helicopter operations, and associated administrative and bivouac areas. Figure 5-5 shows the RIP.

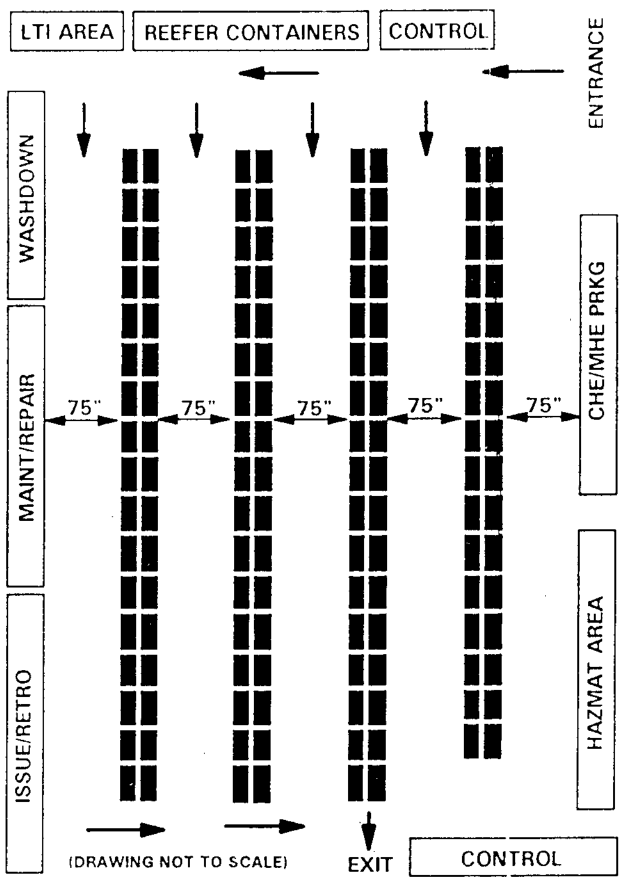

Figure 5-5. RIP.

CMA Site Organization and Layout. Containers stuffed with hazardous materials (hazmat) should be isolated in staging areas, separated, and collocated by control point so rapid assistance can be provided in case of spill or explosion. Berms should be constructed to provide safeguards in the event of a spill.

Electrical power facilities for refrigerated containers must be established before movement.

Container stuffing/unstuffing areas should be isolated from CSAs as this is a space-consuming, cleanup-intense operation. The risk of increased maintenance problems due to flat tires from nails, etc., are then minimized.

All drivers tasked with transporting containers should be made familiar with CMA site configurations. Drivers should be given specific locations by row and section when entering the compound to pick up/drop off a container.

A key factor in establishing an effective CMA is maintaining a minimum of 75 feet between the designated rows of containers. This allows the safe and efficient operation of CHE/MHE. Containers should be staged/located by section, row, cell, and tier.

These requirements plus predetermined throughput rates and total number of containers in the MAGTF will determine the size of staging and marshalling areas.

CMA Organization Functions. The following functions should be performed:

- Control movement of containers in and out of the facility through the use of control points at both entrances and exits.

- Record the receipt, condition, and unit number, and identify the contents and/or owning organization upon arrival using automated electronic processing means.

- Stage containers by destination, owning organization, and unit priority.

- Process requests for movement and load containers onto chassis, transporters, rail car or barge/lighter for movement to RIP, beach/port, or using unit.

- Perform container maintenance, repair, servicing, and inspection.

- Stuff/unstuff containers for repair, inspection, and forwarding of priority cargo.

• Perform the container control function for the MAGTF. If more than one CMA exists within the AOR, the larger CCE should be designated the controlling entity for the MAGTF.

• Ensure blocking and bracing materials are maintained with the original shipping container for retrograde.

DISTRIBUTION CYCLE

The distribution cycle takes a container from the BTP or debarkation port to a CMA, then to a RIP for unstuffing, or to the controlling unit or to the CSSA for warehousing. When empty, the container will reverse and return to retrograde staging areas within the CSSA or CMA, then back to the BSA or port for reloading on MSC or commercial shipping.

Unit distribution of containerized supplies directly from the BSA or ASP to the supported unit may be possible for units possessing the MHE capability for unstuffing and/or offloading containers. Aviation units, command elements in static locations, artillery units, and engineer units are potential beneficiaries of unit distribution of containerized supplies because of their ability to handle cargo.

Ammunition containers are directed from the BTP to the ASP control point. From the ASP control point, containers are directed to the ASP offloading site or directly to a bomb or ammunition dump for unstuffing or storage. Containers staged at the ASP are placed in a containerized ammunition storage area until they are ready for unstuffing or movement to forward using units. Movement of empty containers rearward from the ASP for retrograde is coordinated by the ASP control point and the CCE.

Petroleum and packaged POL consist of specific bulk liquids. POL is delivered directly to the POL dump established within the CSSA. POL containers are directed to the unstuffing location for immediate attention or to a POL container storage site within the POL dump to await retrieval and unstuffing.

Upon identification of container contents, the CCE directs movement of the container to the CMA or directly to an appropriate CSSA for offload and unstuffing. Containers unstuffed at each CSSA are then moved to the container retrograde storage area established within the BSA or CMA to await transfer to the BTP. Depending on the available area at the beach, containers may be directed from the CSSA straight to the BTP for immediate movement to offshore shipping. Containers directed to the CSSA from the BTP remain there until the respective dumps request their delivery for unstuffing. Containerized cargo may also be retrieved from the

CSSA and transported directly to a remote CSSE or to a using unit for unstuffing.

A reconnaissance and classification of the road networks should be made and necessary improvements made to handle a high volume of container transport vehicles. Constructing a hard surfaced road from the container transfer point within the BSA to the CMA(s) is recommended when in an unimproved road environment for an extended period. The need to transport containers great distances from a port of debarkation to the MAGTF AOR places considerable demands for transportation command and control. When Marine Corps vehicles are used, maintenance, driver rest and rotation, and coordination of civilian contract and augmented assets will require a coordinated effort. Integrating other transportation modes and coordination with the CCE may require establishing a separate transportation management infrastructure above and beyond that required for tactical motor transport movement.

RETROGRADE

Both the BSA and the CMA establish retrograde storage areas for control of empty containers. The CCE oversees loading evacuated equipment into containers and coordinates the retrograde of all containers, loaded or empty, to the beach for transfer to appropriate shipping. Transporters returning from the forward areas with empty containers are directed to the retrograde storage areas within the BSA. The CCE determines if the container will be held or sent directly to the beach for retrograde. Documentation showing the retrograde contents (referencing the container ID and owning unit of the contents) must be prepared and entered into the container control system.

Transporters returning from the forward areas with empty containers are directed to the retrograde storage areas within the BSA. The CCE determines if the container will be held or sent directly to the beach for retrograde. Retrograde of containers from forward locations within the AOR (to the BSA or ASP) is accomplished using any asset that can transport a container. An ASP retrograde container storage area is established at or near the ASP for control of empty ammunition containers. The ASP coordinates with the CCE to determine if empty containers will be retrograded to the CMA or transported directly to the BTP for retrograde aboard ship. MPF containers will be segregated from other USMC containers to ensure sufficient containers are available to support the MPF retrograde. Marine Corps-owned containers will not be allocated to non-Marine Corps units.

Appendix A
Acronyms

ACE .... aviation combat element
AE .... assault echelon
AFOE .... assault follow-on echelon
AOA .... amphibious objective area
AOR .... area of responsibility
ASP .... ammunition supply point
ATF .... amphibious task force

BSA .... beach support area
BTP .... beach transfer point

CADS ...... containerization ammunition distribution system
CATF .... commander, amphibious task force
CCE .... container control element
CCO .... Container Control Office
CCP .... container control point
CCS .... container control sites
CDP .... container distribution point
CFD .... Container Fleet Division
CFO .... container fleet division
CHB .... cargo handling battalion

CHE .... container handling equipment
CHF .... cargo handling force
CLF ....commander, landing force
CMA ....container marshalling areas
COMMARCORLOGBASES .... Commander, Logistics Bases
COTS .... cargo offloading and transfer system
CSA ....container surge area
CSC .... Convention of Safe Container
CSNP .... causeway section, nonpowered
CSNP-BE ....causeway section, nonpowered (beach end)
CSNP-I .... causeway section, nonpowered (intermediate)
CSNP-SE .... causeway section, nonpowered (sea end)
CSP ....causeway section, powered
CSSA .... combat service support area
CSSE .... combat service support element

DOD ....Department of Defense
DTS .... defense transportation system

EA .... eastern area
EBFL .... extended boom forklift
ELCAS .... elevated causeway system

FLS .... field logistic system
FMF ....Fleet Marine Force
FMFRP...............Fleet Marine Force reference publication

hazmat .... hazardous material

IMDG .... international maritime dangerous goods code standards
IMM .... integrated material manager
ISO .... International Standards Organization

JDS .... Joint Deployment System
JLOTS .... joint logistics over-the-shore
JOPES .... Joint Operation Planning and Execution System

LACH .... lightweight amphibious container handler
LCAC .... landing craft air cushion
LCM .... landing craft mechanized
LCU .... landing craft utility
LFSP .... landing force shore party
LOGAIS .... logistics automated information system
LOGMARS .... logistics applications for marking and reading of symbols
LOTS .... logistics over-the-shore
LSB .... landing support battalion
LST .... tank landing ship
LVS .... logistics vehicle system

MAGTF .... Marine air-ground task force
MARCORSYSCOM ...... Marine Corps Systems Command
MCCCO .... Marine Corps Container Control Office
MCCDC ....Marine Corps Combat Development Command
MCCMAP .... Marine Corps container master action plan
MCCWG ....Marine Corps container working group
MCESS ....Marine Corps expeditionary shelter system
MCLB .... Marine Corps logistics base
MDSS .... MAGTF deployment support system
MEB .... Marine expeditionary brigade
MEF ....Marine expeditionary force
MF .... mobile facility
MHE ....materials handling equipment
MMF .... mobile maintenance facilities
MPF .... maritime prepositioning force
MSC ....Military Sealift Command
MTMC ....Military Traffic Management Command
MWSS .... Marine wing support squadron

NGB ....naval beach group
NSE .... Navy support element
NSN .... national stock number

OPLAN .... operations plan
OTC .... officer in tactical command

PALCON .... pallet container
POG .... port operations group
POL .... petroleum, oils, and lubricants

QUADCON .... quadruple container

RIP .... ready issue point
RO/RO .... roll-on/roll-off
RRDF .... RO/RO discharge facility
RTCH .... rough terrain container handler
RTF .... rough terrain forklift
RUC .... reporting unit code

SIXCON .... six module container
SLWT .... side loadable warping tug
SSC/NSSC .... self-sustaining/
non-self-sustaining carriers
STS .... ship-to-shore

T-ACS .... auxiliary crane ships
TAMCN .... table of authorized
material control number

T/E .... table of equipment
TMO .... traffic management office
TPFDD .... time-phased force and deployment data
TRAM .... tractor, rubber-tired, articulated steering, multipurpose

USTRANSCOM .... U.S. Transportation Command