CHAPTER 3
AMPHIBIOUS EMBARKATION PLANNING AND EXECUTION

It is essential that the LF embarkation officer and amphibious task force (ATF) CCO develop coordinated embarkation milestones to be included in the amphibious force's (AF's) deployment Plan of Action and Milestones. Embarkation milestones provide the baseline for all embarkation. Any changes to the published milestones must be coordinated through the commander, amphibious task force (CATF) and commander, landing force (CLF). See appendix G for embarkation reports.

Embarkation Planning Conferences

Embarkation planning conferences are announced and jointly run by the ATF CCO and the LF embarkation officer. For the typical ARG, this is the PHIBRON CCO and the MEU embarkation officer. When a ship deploys independently, the ship's CCO and the TEO perform these duties. Planners should conduct an initial, mid, and final embarkation conference. Recommended topics include:

- Embarkation and ammunition reporting requirements.
- Load plan preparation and submission requirements.
- International Organization for Standardization (ISO) container loading policy, constraints, and criteria.
- NSE lift footprint and assignment to shipping.
- LFORM/MLA loading status and forecasted top-off dates (Classes I, III, IV, and V A/W).
- Marine Training Allowance/MEU Training Package spread loading.
- Port of embarkation joint inspections.
- MOGAS storage capacities, retrograde capabilities, and safety considerations.
- The requirement for personnel working on the flight deck to be Aircraft Firefighting School trained and qualified.
- Aviation ground support equipment (AGSE) embarkation requirements.
- LF accommodations inspection timeline, reporting requirements, and methodology.
- M1A1 tank and M88 tank retriever planning.
- United States Customs Service (USCS) and United States Department of Agriculture (USDA) requirements.
- Landing craft mix and landing craft availability table (LCAT) development.
- Shipboard policies relative to planning, coordinating, and scheduling training.
- Contents and importance of the embarked troop regulations.
- Schedule of event development, submission, and modifications.
- Loading LF personnel, supplies, and equipment while in port.
- Compilation and distribution of command points of contact listings.
- Munitions cross-decking and retrograde policy development.
- Hazardous material embarkation requirements; e.g., lithium battery, MOGAS, sulfuric acid, calcium or hypochlorite.

There is one CCO per ship and one TEO per ship. All LF embarkation/debarkation matters should be directed to the CCO via the TEO. Before the planning conference, the CCO should—

- Provide the TEO with a copy of the ship's current SLCP (including Computer Aided Embarkation Management System diagrams).

- Have a personal copy with key points of interest highlighted onhand and plan time with the TEO for discussion.
- Walk the ship, allowing the TEO to make notes on printed deck diagrams of low overheads, monorail stowage areas, no stow areas, sounding tubes that require access, etc.
- Emphasize restrictions that must be considered when developing the load plan.
- Provide a detailed review of the diagrams with embarked elements followed by a ship's tour that will facilitate planning and aid in resolving questions on ship's capabilities.
- Provide the TEO with a copy of the ship's schedule.
- Provide copies of embarked troop regulations, digitized and/or hardcopy.
- Review SLCP and troop regulations.
- Review previous load plans.
- Review ship's policies and regulations.

During the initial embarkation conference, the TEO should provide an initial listing of anticipated personnel, supplies, and equipment to the CCO. This list and other information inform the command of the status of embark planning and allows command input and guidance.

The shipboard inspection of LF spaces should occur concurrent with the scheduled final embarkation planning conference. Also during this conference, the final load plan is presented for review and signature by the ship's CO. Prior to submitting the load plan to the ship's CO, the team embarkation commander/COT should have already signed the load plan. The TEO is responsible for the development of the detailed load plan. The CCO's function is to review the load plan and to ensure all of the appropriate department heads have had an opportunity to review and concur with its contents prior to the ship's CO's review and signature. It is important to note that changes to the signed/approved load plan require the concurrence of both the ship's CO and embarkation team commander.

When the ship deploys independently, the ship's CCO provides copies of signed/approved detailed load plans, with associated load plan documentation to the Navy chain of command. When ships are OPCON to an ATF, the ATF CCO obtains copies of each ship's signed/approved detailed load plan and distributes copies to the Navy chain of command.

Advance Party Composition

Embarking units should plan for advance parties to embark the ship 48 to 96 hours before loading. This provides time for training and familiarization with the ship before embarking the main body.

The billeting officer should receipt for troop linen, and inspect and sign for all required troop spaces. Once the LF space turnover process is complete, the billeting officer assumes responsibility for maintaining these spaces. Generally, he will have a representative from each unit or the senior man in each compartment sub-sign for their respective spaces.

Food service attendants and cooks should be embarked and integrated into their designated work areas. Food service attendants should be assigned for a minimum period of 30 days or the duration of the deployment (whichever is shorter). Mess physicals should be completed prior to embarking and presented to the ship's food service officer upon arrival of the advance party. It is highly recommended that all mess personnel be berthed in the same compartment when possible.

Each embarking unit should provide at least one Marine to act as a berthing guide. These guides are the key to all personnel settling in smoothly during the first days of embarkation. Berthing guides should—

- Berth personnel in their unit's area.
- Take personnel on at least three ship tours prior to embarkation of the main body.

- Issue apparel to readily distinguish them as a berthing guide (i.e., tape on cover, vest, etc.).
- Provide a diagram (ship SLCP) of the ship with unit berthing assignments indicated.
- Accomplish bunk assignments as required by their unit.
- Assign additional billeting guides for 48 hours after the main body is embarked.
- Assist in the issue/turnover/turn-in of linen.

The LF may be required to embark a portion or all of the guard force if supplies/equipment are loaded before the ship's scheduled arrival at the port of embarkation. This requirement should be addressed at the load planning conferences and documented in conference wrap-up messages.

The ship's platoon functions as a separate entity under the operational control of the CCO, as assisted by the TEO. Once organized, it should remain intact during the entire period the embarkation team is deployed due to safety equipment (safety boots), training, and certification requirements.

The ship's platoon should embark at least 48 to 96 hours before loading or receiving any cargo. Portions of the ship's platoon will embark before the advance party; e.g., when cargo and equipment are loaded pierside before the remainder of the advance party arrives. Figure 3-1, on page 3-4, shows a recommended ship's platoon organization.

The ship's platoon is not a replacement for the ship's 1 Alpha personnel. The ship's platoon is an augmentation force whose mission is to assist ship's company personnel during LF cargo and equipment stowage, embarkation/debarkation, and administrative movement operations. Upon arrival, the ship's platoon will receive detailed training and instruction in their respective duties. Normally, the ship provides nearly all of the safety/protective equipment while the LF provides steel-toed safety boots. The following breakdown provides examples of the duties normally performed by the ship's platoon.

Ship's platoon personnel will be assigned to the flight deck in accordance with the ship's troop regulations. Examples of the duties normally performed by flight deck ship's platoon personnel include—

- Verifying passenger manifests for helicopter transport.
- Acting as passenger guides for heli-teams to/from helicopters.
- Assisting passengers with baggage/cargo.
- Recovering cranials/life preservers from helicopters and delivering to passengers.
- Briefing passengers on boarding sequence and aircraft safety procedures.
- Ensuring all cargo and equipment arriving/departing is accounted for.
- Ensuring that the owning unit has properly prepared the cargo for movement.
- Integrating with ship's crew and fighting fires on the flight deck.
- Operating shipboard forklifts (only if required; requires the approval of the ship's CO; operators must be properly licensed prior to operating shipboard forklifts).

Ship's platoon personnel will be assigned to the well deck in accordance with the ship's troop regulations. Examples of the duties normally performed by well deck ship's platoon personnel include—

- Verifying passenger manifests for landing craft transport.
- Supervising onload operations to ensure vehicles and cargo are placed aboard ship in accordance with the approved load plan.
- Ensuring that all vehicles and cargo are properly lashed and secured for sea.
- Validating vehicles and cargo loaded to ensure compliance with the approved load plan.

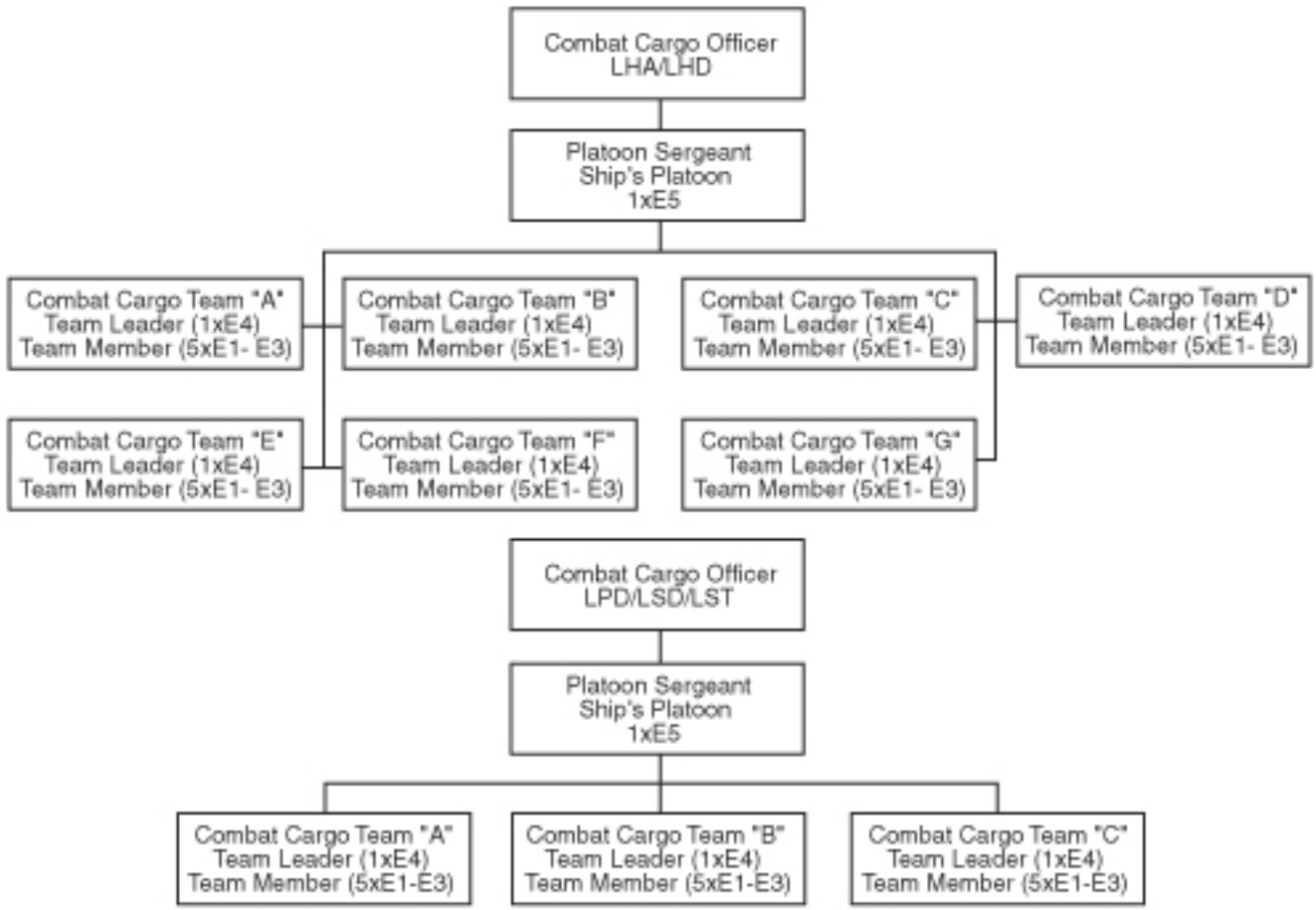

Figure 3-1. Ship's Platoon Organization.

- Inspecting vehicles to ensure mobile loads, tarps, etc., are properly secured prior to landing craft air cushion (LCAC) transport.
- Ensuring all cargo and equipment arriving/departing is accounted for and ensuring that the responsible unit has properly prepared the cargo for movement.
- Observing activities in the vehicle and cargo stowage areas ensuring that vehicles and cargo are properly secured during and after daily operations.
- Contacting the unit representatives to correct equipment discrepancies.
- Operating shipboard forklifts (only if required; requires the approval of the ship's CO; operators must be properly licensed before operating shipboard forklifts).

Shipboard Coordination

A joint meeting between the ship and embarking LF elements should be conducted before cargo loading/offloading to discuss areas of concern and to address areas of support. Recommended topics include:

- Personnel augmentation requirements.
- Communications.
- MHE readiness, availability, and current locations.
- Safety.
- Cargo handling systems.
- Securing of cargo/vehicles.
- Traffic routes.

- Loading/offloading points.
- Types and amount of cargo/vehicles with an emphasis on those requiring special handling/stowage considerations.
- Operational checks of cargo handling equipment/systems 24 hours prior to load/offload.

Cargo Loading Before Embarkation

Units may desire to load palletized cargo and maintenance vans prior to the scheduled embarkation date. If so, some key points to coordinate include:

- An advance echelon to assist in stowage of material.
- Delivery date and time.
- Delivery location.
- Coordination with base security for clearance and routing of vehicles on base.
- Crane and MHE support. The Fleet and Industrial Supply Center, Norfolk, VA; Public Works Center, San Diego, CA; and Commander, Fleet Activities, Okinawa, Port Operations, White Beach, should be included in all discussions and message traffic relative to onload support and requirements.

Final Staging

A pre-embarkation inspection in the staging area at the port of embarkation is the final chance to prevent problems from occurring during embarkation. Combat cargo and LF embarkation personnel should inspect equipment for proper preparation, condition, and hazardous material identification/verification at least 24 hours before loading. Figure 3-2, on page 3-6, is a sample vehicle inspection checklist.

Vehicle fuel tanks should not exceed three-fourths full. Trailer mounted (towed-load) items should not exceed one-half tank full of fuel, however, there maybe items that must be empty due to stowage location (stowed on ramp) or understowed (tongue on deck) in which fuel can leak or slosh out. Each vehicle must have its own installed lifting devices. Five-gallon fuel cans will be filled with MOGAS or empty. If they are filled, a seal must be affixed; if empty, they should be certified gas free.

Pallets must have four-way access, be clean, serviceable (pallet wings) for sling hoisting, and properly banded.

Container express boxes/quadruple containers (QUADCONS) should be serviceable and with no hazardous material inside. The weight must be accurate. Remember, if it has to be moved aboard ship, ship's forklifts normally have a 6,000-pound maximum capacity.

All cargo must be free of fuel unless designated as POL. As an example, field ranges are known to have some residual fuel in their tanks.

Hazardous Material

The four hazardous materials embarked by the LF that cause the greatest concern are—

- Lithium batteries.
- Sulfuric acid.
- Fuel (kerosene, white gas, MOGAS).
- Calcium hypochlorite.

Vehicles must be staged to support the embarkation plan.

Hazardous materials must be properly identified (a problem exists when embarking units do not advise the ship of what hazards they are embarking).

SHIP: _____ **EXERCISE:**_____ **DATE:**_____

Nomenclature							
Serial Number							
Placard. Contains landing serial, priority number, driver name, and owning unit.							
Fluid Leaks. No leaks.							
Tire Pressure. Within prescribed limits.							
Vehicle Start-Up. Starts without external support or aid.							
Brakes. Operational.							
Emergency Brake. Operational.							
Fuel Level. 3/4 prime mover, 1/2 trailer-mounted equipment. Some items with fuel tank cap in front must be empty. Fuel trucks/SIXCONS empty.							
Height. Does not exceed the maximum height of its intended stowage location.							
Lashing Points. Ensure all shackles/ cotter pins are in place and serviceable.							
Cargo/Mobile Loads. Lashed with minimum 1/2 inch rope or cargo straps.							
Pintle Hook. Operational with cotter pin and chain attached.							
Vehicle Doors are Secured. Removable doors must not come off during LCAC operations.							
Tarp/Canvas Lashing. Secured at all prescribed points.							
Vehicle Cleanliness. Free of dirt, mud, insects, and trash.							
Fuel Cans. Stored in approved racks permanently installed on vehicle.							
Towed Loads. Within the prescribed weight rating for the prime mover.							
Shoring. On-hand for all tracked vehicles, trailer tongues, and other special equipment.							
Hazardous Cargo. Secured, authorized, and identified on signed load plan.							
Fire Extinguishers. Stored in approved vehicle-mounted racks.							
Vehicle Lights and Horn. Operational.							
Water Trailers. Empty.							
Windshield/Side Mirrors. Serviceable.							
Vehicle Weight. Vehicle does not exceed rated cross-country weight.							

Figure 3-2. Sample Vehicle Inspection Checklist.

Embarkation Day

CCO/CCA's are advisors. Deck department, assisted by the ship's platoon, is responsible for—

- Moving, placing, and securing of cargo in accordance with the load plan. The CCO and TEO must approve deviations to the plan. Once the onload is complete, the TEO is responsible for providing updated load plans to the CCO.
- Guiding and stowing all vehicles in accordance with the approved load plan using vehicle guides; no vehicles moving without the guides.
- Ensuring assistant drivers will be in the vehicle during loading or unloading operations.

The TEO/team embarkation assistants and CCO/CCA should be in the area of cargo/vehicle loading to resolve any issues that may arise.

Problems will occur and adjustments to the load plan are possible. Knowledge of embarkation, proper preparation of the embarking unit's supplies and equipment, and familiarization of the ship are paramount.

Only those items that have been inspected and are included in the signed and approved load plan are loaded.

The CCO keeps the ship's CO/XO informed of the onload/offload status.

ATF mandated reports are submitted in a timely manner. This normally includes the personnel, cargo, vehicle, and estimated time of completion report.

Vehicle and Cargo Lashing Material

Vehicles and cargo are lashed to protect the ship, cargo, and personnel. This requires that the ship's lashing equipment be in proper working condition. Ensuring this material is in good repair is a responsibility of the ship's deck department. Ensuring the correct number of lashings is onboard and in serviceable condition is required prior to deployment. This information is critical when evaluating load plan supportability.

Stowing Vehicles on Inclined Decks or Ramps

For LPD/LSD class ships—

- No vehicles (wheeled or tracked) shall be stowed on any fixed ramps.
- No vehicles shall be stowed on any removable and/or portable ramp.
- Within structural design limitations, vehicles will only be stowed on hinged (between decks) ramps when they are in the raised/up position and locked.
- No vehicles shall be permanently stowed on the false beach.

For LHA/LHD class ships—

- No tracked vehicles shall be stowed on any fixed inclined deck or ramp.
- Within structural design limitations, vehicles will only be stowed on hinged ramps when they are in the raised/up position and locked. The temporary storage or parking of vehicles on hinged ramps is authorized provided the ship's SLCP specifically authorizes such action. This temporary storage/parking is normally accomplished to support selective offload or load reconfiguration requirements.
- No vehicles shall be permanently stowed on the false beach. Specific weight limitations associated with the temporary parking of vehicles/equipment on the false beach must be addressed in the SLCP.
- (LHA only) No wheeled vehicles may be stowed between frames 83 and 93 on the inclined portion of the third deck.

Auxiliary 5-Gallon MOGAS Can Storage Precautions

Auxiliary cans must be stowed in permanently attached auxiliary 5-gallon MOGAS can storage racks or other authorized areas approved by the ship CO.

Auxiliary 5-gallon MOGAS cans must be certified and comply with MIL-C-1283E.

After filling with MOGAS, cans are inspected to assure no leaks. Seals are applied to cans to aid in detecting loosened caps or tampering.

After operations ashore, used fuel cans shall be refilled (when possible), inspected, and sealed before embarking. Empty fuel cans must be certified gas free; partially filled cans will not be embarked.

MOGAS shall not be transferred to or from 5-gallon auxiliary cans while aboard ship unless specifically authorized in the SLCP and only after coordination with the appropriate ship's department heads.

International Standards Organization Containers

The International Safe Container Act, outlined in Public Law 95-208, requires that new and existing ISO-configured equipment and containers meet the Convention for Safe Containers (CSC) certification requirements. This means that all ISO equipment and containers, military van (containers) (MILVANs), QUADCONs, mobile maintenance facility vans, and shelters must meet the mandated CSC Certification requirements or they will not be loaded.

Compliance with this requirement is evidenced when viewing CSC safety approval plate, located on each item. Placement of a valid DD Form 2282, *Reinspection Decal Convention for Safe Container,* on the approval plate confirms its structural serviceability. Specific inspection and certification criteria are contained in MIL-HNDBK-138A.

In addition to the above safety and certification requirements, the following prohibitions also apply:

- Commercial ISO containers, which are not part of embarking units organic assets, will not be loaded. This prohibition includes all containers, especially those 20-foot in length or greater.
- Embarking units, which have organic specialized maintenance containers, field logistics systems modules, e.g., six containers together (SIXCONS) or MILVANs, may load these assets aboard assigned shipping. However, the preferred method for embarking these assets is in the mobile loaded configuration.
- Certified/approved containers may be deck loaded provided they do not exceed 10,000 pounds and the LF embarks organic MHE capable of loading and offloading these assets.
- QUADCONs are the only container assets approved for double stacking aboard amphibious shipping. When double stacked, the QUADCONs must be secured/lashed in accordance with the Naval Sea Systems Command (NAVSEASYSCOM) prescribed procedures (PEO CLA Washington DC// PMS377// 011150Z Apr 97). Embarking units must observe minimum clearance restrictions and maintain the prescribed distances between the top of the QUADCONs and the installed fire fighting systems as defined in the SLCP.
- Individual QUADCONs shall be secured to the deck with four 35K lashings.
- Double-stacked QUADCONs should also use four 35K lashings if they are a single tier.
- A pair of double-stacked QUADCONs shall be secured to the deck using four 70K lashings. All lashings shall be crossed at 45 degrees to the deck.
- Side-by-side stacks of double-stacked QUADCONs shall be joined together with Peck and Hale container conlinks (Model No. CTC1012) or the standard ISO horizontal/vertical connectors (often

referred to as "pineapples"). These connectors are normally fielded as a component of the QUADCON. The 70K and 35K lashings should be connected to the QUADCONs using a Peck and Hale plug hooks (Model No. H159) or an equivalent hook. Another alternative is to run the chain through the ISO corner fitting.

Tank and Tank Retriever Planning

In 1990, NAVSEASYSCOM conducted a structural analysis of LHA, LHD, LPD, LSD (36/41/41aircraft carrier [CV]), and landing ship, tank (LST) class ships to determine their capability to embark and transport the M1A1 tank and M88 tank retriever. Figure 3-3 summarizes the MARCORSYSCOM weight data for the embarked and combat ship-to-shore planning weights for the M1A1 tank.

The NAVSEASYSCOM structural analysis was conducted using the weights reflected in figure 3-3 and appropriate ship motion factors. It was assumed that parking of the M1A1 tank will occur during storm sea conditions and that traversing will occur in sea state 3. The results of this analysis indicate that parking and traversing operations can be accomplished as indicated in figure 3-4, on page 3-10.

Project Handclasp Materials

Project Handclasp is a people-to-people program administered by a San Diego-based project office. Material used by this program is obtained from a variety of private sector sources (industrial, civic, religious, and individuals). It is then carried overseas on Navy ships on a space-available basis. Material donated to Handclasp includes paint and painting supplies; educational materials (books and school supplies); medical equipment, supplies, and nonnarcotic medicines; food; clothing; and sewing machines.

These materials have stowage requirements that are not normally included during load plan development. All Handclasp materials must be stowed in covered/secured areas. They cannot be stowed on the weather decks, tied down to the main deck or stowed in any open area. These restrictions may limit the amount of material requested. If the ship initiates the request for Handclasp materials, the CCO can coordinate with the ship's SupO, chaplain, and XO with regards to space/storage limitations. If the material is requested by an external organization/agency, the ship will have to inform both the Director, Project Handclasp and the requesting activity of the space limitations. This will allow the package to be tailored and preclude unnecessary shipping expenses.

	EMBARKED WEIGHT (lbs)	SHIP-TO-SHORE WEIGHT (lbs)
Factory Configuration	124,950	124,950
75 Percent Fuel Load	2,666	2,666
B11 and Collateral Equipment	1,243	1,243
Deep Water Fording Kit	315	315
Crew	0	837
Main and Subcaliber Ammo	0	3,003
Organizational Equipment	0	1,219
Total	129,174	134,223
Short Tons	64.59	67.12

Figure 3-3. Planning Weights for the M1A1 Tank.

CLASS SHIP	LOCATION	EMBARKED WEIGHT PARKED/TRAVERSING	SHIP-TO-SHORE WEIGHT PARKED/TRAVERSING
LHA 1	Well Deck	Y/Y	Y/Y
	3d Deck FR 42-65	Y/Y	N/Y
	3d Deck FR 65-89	Y/Y	Y/Y
LHD 1	Well Deck	Y/Y	Y/Y
	3d Deck	Y/Y	Y/Y
LPD 4-6	Well Deck	Y/Y	N/Y
	3d Deck	N/R1	N/N
LPD 7-15	Well Deck	Y/Y	Y/Y
	3d Deck	N/R1	N/N
LSD 36	Well Deck FR 52-105	Y/Y	Y/Y
	Well Deck FR 105-184	N/R1	N/N
	Well Deck FR 184-270	Y/Y	Y/Y
LSD 41-43	Well Deck FR 35-42	Y/Y	Y/Y
	Well Deck FR 42-67	R2/Y	R2/Y
	Well Deck FR 67-74	Y/Y	Y/Y
	Well Deck FR 74-98	R2/Y	R2/Y
	Well Deck FR 98-145	Y/Y	Y/Y
LSD 44-48	Well Deck	Y/Y	Y/Y
LSD 41 (CV)	Well Deck	Y/Y	Y/Y
	Ramp to 2d Deck	N/Y	Y/Y
	2d Deck	Y/Y	Y/Y
LPD 17	Well Deck	Y/Y	Y/Y
	Ramp to 2d Deck	N/Y	N/Y
	2d Deck	Y1/Y	Y1/Y

Y - The deck is certified structurally without restrictions.

N - The deck is not certified structurally.

R1 - The tank may traverse over the area when the ship is pierside or close to shore under calm sea conditions only.

R2 - Tanks may be positioned two abreast symmetrically about the ship's centerline. Tanks must be centered on frames 50, 60, 80, and 90.

Y1 - The M1A1 tank is certified for parking on the hinged ramp going from the 2d deck (main vehicle deck) to lower vehicle provided the ramp is in the up and locked position.

Figure 3-4. Shipboard M1A1 Tank Stowage Limitations.

The director's office will forward a letter before receiving the Handclasp materials. The letter will provide detailed information as to the quantity and types of material being shipped and the shipping configuration. This data provides the necessary physical characteristics (length, width, height, and weight) of each pallet to effect load planning. The letter will also include a copy of the appropriate transportation control and movement document for each shipment. The transportation control and movement document also provides the details on transportation modes and

container/seal numbers for the materials. Normally, this material is shipped to the Fleet and Industrial Supply Center at the respective naval base for further transfer to the ship.

Noncombatant Evacuation Operation Package

On occasion, ships may embark a noncombatant evacuation operation (NEO) package. Normally, the ship's SupO controls the ordering, receipt, and storage of this package and its distribution. The ship's CCO should contact the SupO early in the planning stages to determine if such a package will be embarked and gauge the potential impact on the load plan. At a minimum, the CCO should provide the TEO with a detailed list that defines the NEO package composition and storage location, thus aiding in LF operational planning.

Consult the Safe Engineering and Operations (SEAOPS) Manual Volume III to determine M1A1 tank loading procedures for LCAC. This same instruction will also outline the lashing procedures and restrictions imposed when parking an LCAC on its fly-over blocks. An important note is that all ship classes are structurally capable of transporting preloaded M1A1 tanks on LCACs parked in the well deck up to a sea state of 8.

Currently, the landing craft, utility is restricted from carrying more than two M1A1 tanks.

The constraints and load limitations outlined in the preceding paragraphs also apply to the M88 tank retriever.

CHAPTER 4
SHIP-TO-SHORE MOVEMENT

STS movement is designed to ensure the rapid landing of troops, equipment, and supplies at the prescribed times and places and in the formation required by the LF to support the scheme of maneuver ashore.

With an approved concept of operations ashore, LF and ATF requirements to accomplish the AF mission are consolidated and compared with the means available to CATF (forces, lift, logistics, etc.). If means available do not satisfy requirements, additional means are requested from higher authority or the concept of operations is adjusted accordingly.

STS movement begins with the landing of the first scheduled wave and ends when unloading assault shipping is completed. This movement is divided into the assault and initial unloading period and the general unloading period. The first period is primarily tactical and must be instantly responsive (selective unloading) to LF requirements ashore. The second period is primarily logistical and emphasizes speed and volume.

The landing plan is prepared after final allocation of means is made. It is composed of ATF and LF documents that provide detailed instructions for executing the helicopterborne and waterborne movement. It consists of the movement, supporting fire, and combat service support (CSS) plans. The principal determining factor when developing the landing plan is the concept of operations ashore. As the basis for the landing plan, the concept of operations ashore is influenced by many factors; e.g., intelligence on enemy dispositions, the combat power available, and the available landing zones (LZs). The concept of operations is the basis on which all subsequent, inverse planning for the amphibious operation as a whole is predicated.

The STS movement plan must support the LF scheme of maneuver by landing the right units, equipment or supplies at the right place at the right time. Planning considerations are:

- Means.
- Beaches and landing zones locations.
- Assault waves composition.
- Tactical integrity of the LF.
- Assault shopping dispersal.
- Assault waves timing.
- Oceanographic features of beach approaches.
- Beach capacity for moving supplies to support the landing plan.
- OTH or near shore launch.

The STS movement plan is issued by CATF and CLF as an appendix to the operation order, message operation order supplements or an Allied Procedural Publication 4, *Allied Tactical Messages (U)*, formatted message such as the operational tasking amphibious.

Landing Serials

Discussion of the movement consideration listed below requires a detailed knowledge of landing serials. A serial is a troop unit or grouping of supplies and equipment that are to be—

- Embarked entirely in one ship.
- Landed as a unit on a specified beach, craft landing zone (CLZ) or helicopter landing zone (HLZ).
- Landed at the same time.

Serial numbers act as codes to identify grouping of units or equipment; provide speed, brevity, and security in communication; and to verify that all elements ordered to land are landed.

Serial numbers are a means of identification—not a statement of priority—and are published in the serial assignment table, which is included in the landing plan. The planned order for landing serials is published in the landing sequence table of the landing plan. It is an arbitrary number assigned to identify each element of the LF, in either the assault echelon or assault follow-on echelon, to be landed before general unloading commences.

Supply Categories and Movement Categories

STS movement of LF troops, supplies, and equipment is broadly classified as waterborne movement and helicopterborne movements. For convenient reference in planning and to promote flexibility during its execution, two categories of supplies and five categories of movement are employed.

Supply Categories

Landing Force Supplies

LF supplies are all supplies and equipment that accompany the LF in assault echelon and assault follow-on echelon shipping and comprise the projected initial supply support to sustain the LF until arrival of resupply in the amphibious objective area (AOA). This supply category is further broken down into basic loads, pre-positioned emergency supplies, and remaining supplies.

Basic loads are types and quantities of supplies that the commander directs the unit to carry. Basic loads are often referred to as D-1 supplies.

Pre-positioned emergency supplies replenish early in the assault. They may be further broken down into floating dumps that can be delivered by surface craft or helicopter.

Remaining supplies are the major portion of supplies from the assault echelon and assault follow-on echelon. They are mostly unloaded during general unloading and may be used to build dumps ashore.

Resupply consists of the supply support transported into the AOA by follow-on shipping subsequent to the landing of the assault echelon and assault follow-on echelon shipping. Resupply also includes host-nation and inter-Service support in on-call status from aircraft or ships.

Floating Dumps

Because of the limited amount of combat supplies initially loaded, it is necessary to replenish supplies ashore soon after the assault begins. This need is met by establishing floating dumps in proximity of beaches. Floating dumps consist of propellant, balanced loads of emergency supplies in landing craft, helicopters or amphibious vehicles that are landed on request. Once these stocks are landed, the requirement to immediately reconstitute like packages may surface.

Movement Categories (Troops and Equipment)

Scheduled Waves

Scheduled waves transport the initial assault elements of the LF (i.e., battalion landing team) with their basic loads of equipment and supplies via surface craft, helicopter or a combination of the two modes. The time, place, and formation for the AF landing are predetermined jointly by the CATF and CLF. For helicopterborne movement, scheduled waves may require multiple lifts to completely land the helicopterborne assault elements. The assault schedule and helicopter employment and assault landing table (HEALT) represent the two source documents for identifying scheduled wave composition, timing, and sequencing.

On-call Waves

On-call waves consist of the elements of the LF and their initial combat or emergency supplies whose need ashore at an early hour is expected, but whose time and place of landing cannot be

accurately predetermined. They are elements subject to immediate or emergency call and are positioned so as to be available for landing shortly after H-hour. Because the units in on-call waves have a high priority for landing, their number should be kept to a minimum consistent with transportation asset availability and expected requirements ashore. The landing of any other elements may be preempted to permit the landing of on-call waves.

Nonscheduled Units

Requested by serial number, nonscheduled units are not landed until requested and normally not loaded until requested. They are second in priority for use of helicopters. The need for such elements ashore is usually not of an emergency nature. Therefore, they are landed when their employment ashore is appropriate, normally upon completion of scheduled landings. Once started, landing of nonscheduled units may be interrupted to permit landing of on-call waves, prepositioned emergency supplies or other selected supplies or equipment for which there is a greater requirement ashore. This category can include combat, combat support, and CSS elements of the LF not included in the scheduled or on-call waves. Examples are LF reserve, general support artillery, LF support party elements, antiaircraft units, aviation ground support units, headquarters elements of LF ground combat, aviation combat, and CSS elements.

Pre-positioned Emergency Supplies

Pre-positioned emergency supplies are designated by the CLF to meet expected critical needs for supply replenishment. These supplies are available for immediate delivery to units ashore. This category is further divided into floating dumps (surface ship to shore) and pre-staged helicopter-lifted supplies. Pre-staged helicopter-lifted supplies are prepackaged units of selected supplies that are positioned aboard helicopter transports and other suitably configured ships for rapid air delivery to units ashore. They may be employed in support of both helicopterborne and surface assault units.

Remaining Landing Force Supplies

This category is comprised of replenishment supplies and equipment not included in the unit commander's prescribed loads, floating dumps or prestaged helicopter lifted supplies. It constitutes a major portion of the supplies transported into the area of operation in assault echelon and assault follow-on echelon shipping. LF supplies are selectively delivered ashore until prescribed dump levels are reached. The bulk of the remaining supplies are landed during general unloading.

Landing Plan Documents (Surface Assault)

Listed in the order they are prepared, these documents represent the end-state of detailed, integrated, and concurrent planning between the LF and ATF staff. Preparing these documents cannot occur until the LF concept of operations is completed and the number and type of landing craft and amphibious vehicles are identified. Each document details how the assault will be conducted. Landing force planning documents for STS movement are enclosures and tabs to appendixes of annex R to the LF operations order.

Assault Area Diagram

This diagram is an AF overlay developed by the ATF. It is drawn to an appropriate level scale to support the charts being used and identifies—

- Beach designations.
- Boat lanes.
- Landing ship areas.
- Transport areas.
- LCAC lanes, penetration points, and LZs.
- Line of departure (LOD).
- Fire support areas in vicinity of boat lanes.

Transport Area Diagram

This diagram is an overlay also prepared by the ATF. It covers the area extending from at least 1,000 yards off the beach to the seaward edge of the outermost anchorage/operating area. It contains—

- Transport area and anchorage assignments.
- Landing ship areas and anchorages.
- Boat and approach lanes.
- Amphibious assault vehicle (AAV) launch areas.
- LCAC launch area and lanes.
- LCAC LZs.
- LHA/LHD/amphibious assault ship areas.
- Control ships.
- Line of departure.
- Causeway areas.
- Control/penetration points.

Sea Echelon Plan

Prepared by the ATF, this plan shows—

- Individual ship sea echelon areas.
- Primary control officer (PCO) stations.
- LHA/LHD areas.
- Fire support areas.
- LCAC launch areas and lanes.
- LCAC LZs.
- Swept lanes.
- LODs.
- In-bound/out-bound lanes.
- Beach designations.
- Control and penetration points.

Landing Diagram

Prepared by the LF, this diagram provides information on the tactical deployment of units for the beach assault by showing the timing and composition of scheduled waves.

Landing Craft and Amphibious Vehicle Assignment Table

This table, prepared by the LF, indicates the organization of LF units into boat teams and the assignment of boat teams to scheduled waves, on-call waves, and nonscheduled units.

Landing Craft Availability Table

This table, prepared by the ATF, shows—

- Type and number of landing craft available by ship.
- Total number of landing craft required supporting Navy requirements.
- Total number of landing craft available for LF use.

Amphibious Vehicle Availability Table

Prepared by the LF, this table lists the type and number of amphibious vehicles able for assault landings and the ship in which they are embarked.

Serial Assignment Table

Prepared by the LF, this table provides a sequential numerical list of the serial numbers. Within each serial number it identifies the specific personnel, supplies, and equipment linked to that serial and the anticipated landing craft requirements to move that serial. The serial assignment table is not to be interpreted as the offload sequence. The assault schedule and landing sequence table provide this information.

Landing Sequence Table

Prepared by the LF, this table provides the anticipated landing sequence of nonscheduled units (those not listed in the assault schedule).

Assault Schedule

Prepared by the LF, the assault schedule prescribes the formation, composition, and timing of waves landing over beaches. Both assault and on-call serials are reflected.

Landing Craft Employment Plan

This plan is prepared by the ATF and assigns movement of landing craft from ships to satisfy naval and LF requirements. It indicates the number, type, and parent ship of landing craft assets and the ships to which they report, time to report, and period or duration of the attachment. It also allocates boats to boat waves in accordance with the landing diagram.

Amphibious Vehicle Employment Plan

Prepared by the LF, this plan reflects the planned employment of AAVs in landing operations to include their employment after the initial movement to the beach.

Approach Schedule

Prepared by the ATF, this schedule indicates, for each scheduled wave, the time of arrival at and/or departure from the parent ship, the LOD, and the beach.

Assault Wave Diagram

Prepared by the ATF, this diagram reflects the assault waves, as they will appear at H-Hour through the completion of all scheduled waves.

Beach Approach Diagram

This diagram is actually a large-scale chart overlay prepared by the ATF that covers from the beach to 300 to 500 yards seaward of the LOD. The diagram includes the designation and dimensions of landing beaches, LOD, distances to beach, position of primary control ship (PCS), secondary control ship, boat group commander, assistant boat group commander, etc., after the last scheduled wave has landed, the position of personnel and cargo, transfer lanes and boats, and the boat return lanes.

Consolidated Landing and Approach Plan

This plan is nothing more than a consolidation of the landing craft employment plan and the approach plan. It is used in lieu of two separate documents and is prepared by the LF.

Debarkation Schedule

The ship's CO and the COT prepare this schedule jointly. It assigns debarkation stations to all personnel, establishes boat and helicopter teams, and includes units loaded via the well deck.

Landing Plan Documents (Helicopter Assault)

Helicopter Availability Table

This table is prepared early in the planning phase to provide LF and helicopterborne unit commanding officers with basic information with which to determine the employment of available helicopters. It identifies the helicopter units, number of helicopters available for first and subsequent lifts, tentative load capacity, and ships on which the helicopters are to be transported.

Available figures pertain only to D-Day operations and include estimates of expected losses to helicopter availability due to maintenance factors and enemy action.

Originally prepared by the senior helicopter unit commander and submitted to CLF for inclusion in the landing plan.

Heliteam Wave and Serial Assignment Table

This table is prepared by the commander of the helicopterborne unit, assisted by the helicopter unit commander, in coordination with the ship's commanding officer. It identifies each heliteam

with its assigned serial number and specific serial numbers within the flight and wave. All movement/landing categories are included with scheduled waves organized into helicopter waves and listed in numerical sequence and on-call and nonscheduled serials listed in the planned sequence of landing following the scheduled waves. If necessary, prepackaged supplies may also be serialized and included. This document shows what personnel, supplies, and equipment will be loaded on a specific aircraft. Loads for each helicopter are defined by—

- Tactical units (troop units).
- Supplies and equipment. The average combat load is 240 pounds for each Marine. Any particularly heavy equipment or supplies are listed separately in this column. The weight column ensures that troop units do not exceed maximum helicopter payloads.

Preparations are necessary to determine effective use of helicopters, detail lift requirements, and develop a planned sequence of debarkation and serialization of the units involved.

Helicopter Landing Diagram

This diagram is a graphic depiction of the approach and retirement lanes from the helicopter transport area to the LZs. It includes the measures established to control the helicopter movement. Such details and remarks, as are necessary, will also be shown (such as flight altitude and width of lanes).

The diagrams are prepared by the senior helicopter unit commander in coordination with the cognizant helicopter transport group/unit commanders and are submitted through the chain of command to the CATF for approval and coordination with planned supporting fires.

Control measures included in the helicopter landing diagram follow. See figure 4-1.

Landing Zones

LZs are specified ground areas for landing assault helicopters to embark or debark troops and/or cargo. Each LZ may contain one or more landing sites. They are usually designated by a code name, traditionally a bird.

Landing Site

A landing site is a subdivision of an LZ where single flights or waves of helicopters land. Landing sites do not have to be geographically continuous. They are usually designated by a color.

Landing Point

This is the point where one helicopter may land and is designated by a two-digit number.

Approach and Retirement Routes

These routes consist of a track or series of tracks relative to the earth's surface over which helicopters move to and from a specified LZ in coordination with fire support plans. They are located so as not to interfere with the waterborne movement and are designated by the names of states.

Wave Rendezvous Points

Wave rendezvous points (RPs) are positions designated for assembling loaded helicopters when conducting operations. These points are located at a given altitude and position relative to the departure point (DP).

Departure Point

The DP is an air control point at the seaward end of the helicopter approach route system from which helicopter waves are dispatched along the selected approach route to LZ.

Penetration Control Point

The penetration control point (PCP) is a point along helicopter approach route at which helicopter waves penetrate a hostile coastline during the STS movement. Once an aircraft reaches

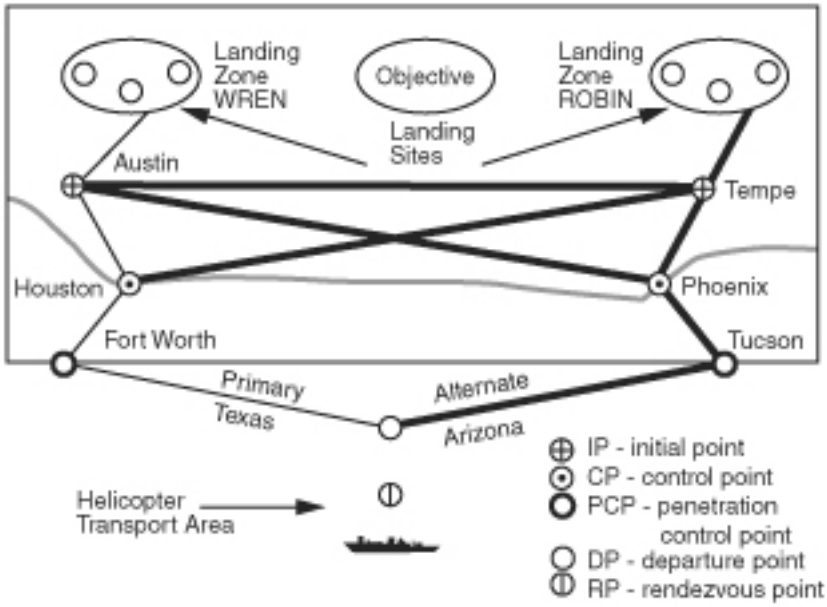

Figure 4-1. Helicopter Landing Diagram.

the PCP, it is considered "Feet Dry" and over dry land.

Control Point

Control point (CP) is a position marked by a buoy, ship or craft, electronic device or conspicuous terrain feature. It is used as an aid to navigation and to control helicopters en route to their designated LZ. Usually CPs are designated by the names of cities within the state used for the approach and retirement routes.

Initial Point

The initial point (IP) is an air control point in the vicinity of a LZ from which individual flights of helicopters are directed to the prescribed landing sites.

Break-up Point

The break-up point is an air control point at which helicopters returning from a LZ break formation and are released to return to individual ships or dispatched for other employment. It may be the same point, geographically, as the departure point.

Helicopter Employment and Assault Landing Table

This table is a detailed plan for the movement of helicopterborne troops, equipment, and supplies. It provides the landing timetable for the helicopter movement and indicates the assignment of specific troop units to specific numbered flights and their HLZ/landing sites. It is the basis for the helicopter unit's flight schedules and the control of helicopter movement by the appropriate air control agency. The commander of the helicopterborne unit and the associated helicopter unit commander prepare the HEALT.

Each successive echelon of command makes necessary changes and consolidates the appropriate tables. Once complete, the final approving authority prepares/publishes the final approved consolidated tables.

Upon publication, lower echelons publish extracts pertaining to their units. Close coordination between the helicopter direction center (HDC) and the embarked LF elements is required to ensure execution of the desired plan.

Navy Ship-to-Shore Control Organizations

Navy STS control organizations are responsible to CATF for the movement of ships, landing craft, amphibious vehicles, and aircraft from the transport and landing ship areas to landing beaches. These organizations keep CATF, CLF, and other designated commanders informed of the progress of the movement from ship to shore, the landing of various waves, and the visible progress of operations on shore. The exact organization is based on the number and arrangement of landing beaches used for the assault.

Central Control Officer

The central control officer is the CATF's representative for overall coordination of the surface assaults. A central control officer is assigned when STS movement to two or more colored beaches is planned. The central control officer's duties include assigning the PCO, secondary control officers, and controlling transport units in the transport area.

Assistant Central Control Officer

The assistant central control officer coordinates the movement of landing craft, vehicles, and ships in the assigned areas of responsibility and is only used for large-scale operations.

Primary Control Officer

The PCO directly controls the movement of all waterborne craft employed in transporting the LF, beach party personnel, supplies, and equipment to and from a colored beach. The PCO is embarked on the PCS, which provides the control team to affect the tracking/controlling effort. General duties of the PCO are:

- Control all boats assigned to PCS.
- Brief boat crews/officers on landing plan.
- Maintain location/status of all boats.
- Monitor surf conditions.
- Maintain status of embark/debark.
- Ensure maximum use of landing craft.
- Direct returning landing craft to ships.
- Monitor boat fuel operations/status.
- Publish the PCS Intentions Message.
- Designate PCS/boat communications.
- Brief naval and salvage operations.
- Direct waves to their assigned beach.
- Monitor long-/short-term weather.
- Monitor/control all surface traffic.
- Monitor repair of damaged boats.
- Maintain an accurate plot of ships.
- Make boating termination recommendations.

A PCO is normally designated in the following situations involving the waterborne movement of the LF:

- Landing a regimental landing team or a smaller troop organization over a colored beach.
- Back-loading of an LF across the beach when amphibious assault maneuvers have been terminated.
- Loading the LF prior to sailing for the AOA.
- Offloading all or part of the LF at or near the AOA (not using timed waves).
- Onloading or offloading all or part of the LF for training purposes.

Secondary Control Officer

The secondary control officer performs the same functions as the PCO for preparing to assume duties of the PCO in event of emergency. The secondary control officer is embarked on the secondary control ship and monitors all radio circuits and the movement of all waves being controlled by the PCO.

Boat Group Commander

Embarked in a landing craft, personnel (large) displaying the zero flag over beach color flag, the boat group commander is responsible for the discipline and organization of the boat group. The boat group commander ensures that the boat

waves maintain proper position in the rendezvous area, and when dispatched from the LOD—

- Leads the first wave to the line of breakers.
- Turns to the beach flank adjacent to the boat return lane to assist succeeding waves in their approach.
- Assumes duties of traffic control officer for the beach, reporting as such to the beachmaster.
- Directs traffic in the boat return lane after boats retract.

Assistant Boat Group Commander

The assistant boat group commander is embarked in a craft displaying the whiskey flag over the colored beach flag. Responsibilities include—

- Preparing to assume duties of the boat group commander.
- Keeping assembly areas organized and checking on stragglers.
- Expediting boats leaving designated assembly areas to go alongside assigned shipping for loading.
- Assisting in the dispatching of waves (subsequent to first wave) to the rendezvous area and from there to the LOD, following the last scheduled wave to the surf zone.
- Assuming the duties of senior salvage officer afloat after the landing of all scheduled waves; reporting to the beachmaster.

Boat Wave Commander

The boat wave commander is embarked on a landing craft and is responsible for proper wave organization and for discipline of boats in the wave to include maintaining specified interval and distance. The boat wave commander—

- Ensures readiness for movement at proper time.
- Adjusts speed to maintain proper interval from other waves and to cross the LOD and arrive at the proper beach at the designated time.
- Controls retraction of a wave from the beach while ensuring the orderly return to PCS or secondary control ship.

Wave Guide Officer

The wave guide officer is assigned to each wave of amphibious vehicles. Duties include—

- Forming up amphibious vehicles and guiding them to position to seaward of LOD, acting as a safety boat.
- Reporting to the PCS and providing information relative to the readiness of the wave.
- Taking station ahead of the wave or on the left flank and leading the wave up to and across the LOD on signal from the PCS.
- Ensuring that the wave is maintaining proper position in the boat lane and reaches the assigned beach on time, assisted by direction from PCS.

Note: During an actual assault, the AAV commander will assume these duties.

LCAC Control Officer

The LCAC control officer directly controls the movement of all LCAC assault craft employed in transporting LF personnel, supplies, and equipment to and from a colored beach. The LCAC control officer is embarked on the LCAC control ship, which provides the control team required to effect LCAC tracking/controlling efforts. The LCAC control officer reports to the PCO.

LCAC Control

There are three means the LCAC can be controlled: independent, advisory, and positive. If the LCAC controls itself, this is considered independent control. Advisory control is maintained when the LCAC is vectored from the launch area to the first control point. Finally, positive control

can be used whereby continuous position updates are provided. Each of these control measures can be accomplished by the LCAC commander, LCAC control officer or by the PCO. Some common LCAC control reference features include—

- **Craft Launch Area.** The craft launch area may be located a few thousand yards to 100 miles offshore. It is of sufficient size to permit underway launch.
- **Craft Departure Point.** The craft DP is a geographical position that marks the seaward end of transit lane.
- **Craft Transit Lane.** Determined by CATF, the transit lane width is dependent upon LCAC formation, topographic considerations, and the mine threat. In some instances you may require lanes for each sortie, approach, and return.
- **Craft Control Point.** The craft CP is a geographic position determined by PCO to control STS movement.
- **Craft Penetration Point.** The craft penetration point is a geographic position where the LCAC crosses the high water mark.
- **Craft Landing Zone.** Determined by CATF, the CLZ is an area where LF material will be offloaded. A specified area within a CLZ, which provides an 80 to 100 yard diameter area for LCAC, is called an LCAC landing site.

Air Control Agencies and Airborne Ship-to-Shore Movement

The tactical air control system is divided into two major sections with a number of subordinate agencies. For the Navy, there is the tactical air control center (TACC), and working closely with them is the supporting arms coordination center.

Control of the helicopterborne movement is exercised by the CATF. Aircraft units employed in the movement are subordinate elements of the LF. These units execute the STS movement in accordance with the landing plan and controls that are established on the basis of LF requirements. Plans include provisions for reversion of control of aircraft operations to the CLF when the situation ashore permits. CATF employs tactical air control group (TACGRU) and the aircraft transport group/unit commanders to plan and conduct the helicopterborne movement. CLF employs the tactical-logistical group (TACLOG) to assist Navy control officers.

Tactical Air Control Center Afloat

The TACC afloat is organized and equipped to exercise control and/or coordination of all aircraft, including helicopters, in the AOA. During the helicopterborne movement, the TACC exercises control over all aircraft; coordinates aircraft movements with supporting arms and other air operations; and maintains the current status of aircraft and landing platforms and the progress of the helicopterborne assault(s).

The TACGRU/tactical air control squadron (TACRON) operates TACC afloat or tactical air direction center (TADC) to control all aircraft in the AOA and provides aircraft control and warning facilities afloat for offensive and defensive missions within the AOA. A USMC or Army officer may be assigned. If Air Force aircraft are involved, an Air Force liaison officer will be assigned. The officer in charge (OIC) of the TACRON detachment usually stands tactical air controller billet and tactical air officer duties.

The tactical air controller is the OIC of all operations in the TACC afloat. Aircraft movements must be closely coordinated with the other users of airspace; e.g., fixed-wing aircraft and supporting fires. The tactical air officer, located in the TACC, is responsible for this coordination. The LF TACLOG provides liaison to the tactical air officer.

Tactical Air Direction Center

The TADC is a subordinate air operations installation of the TACC afloat or ashore, from which aircraft and air warning service functions of the tactical air operations in an area of responsibility are directed.

The Aircraft Transport Group Commander

This individual is responsible for matters related to flight control of the aircraft. This control is exercised through the HDC and the helicopter logistics support center (HLSC). The helicopterborne assault force TACLOG, collocated with the HDC and HLSC, provides the necessary liaison.

Helicopter Coordination Section

As an integral part of the TACC afloat, the helicopter coordination section is the specific section that coordinates all helicopter operations decentralized under the control of subordinate helicopter control agencies. The helicopter coordination section is organized into two units: helicopter coordination unit (formally helicopter control unit), concerned with the actual employment and coordination of helicopters; and a helicopter advisory unit, concerned with maintaining current data on the status, availability, locations, and progress of the helicopterborne assault(s). Additionally, the helicopter coordination section is normally augmented with personnel from the ACE of the LF.

Helicopter Direction Center

The actual control and direction of helicopterborne STS movement is decentralized to the HDC(s), which is/are subordinate to the TACC afloat. The HDC(s) is/are embarked aboard the helicopter transport capable ships-normally an LHD or LHA. Major functions of the HDC(s), under the overall supervision of the TACC afloat, are—

- Controlling the movement of all helicopters operating within its assigned control areas and in accordance with the concept of operations.
- Controlling escort aircraft when directed by the TACC.
- Maintaining and reporting to the TACC the status and location of assigned helicopters.
- Advising the TACC on all matters pertaining to the movement of the helicopters within its control area that may require coordination with supporting arms.
- Coordinating all changes to the HEALT with the HLSC.
- Controlling the movement of casualty evacuation (CASEVAC) helicopters based on the advice of the ATF medical regulating control center.

The HDC(s) is/are collocated and closely integrated with the TACLOG, HLSC, and medical regulating control center. During operations, the helicopter assault force TACLOG monitors requests from assault units or their CSS elements ashore. Requests for delivery by helicopter are forwarded through the HLSC, which coordinates the debarkation of serials in accordance with the landing plan. The requests are then forwarded to the HDC(s) for execution. The medical regulating control center recommends to HDC the particular medical facility to which CASEVAC helicopters should be directed.

When the direct air support center (DASC) is established ashore, it assumes responsibility for HDC operations as directed by the TACC. Within the DASC is the helicopter director, who is responsible for the coordination and control of helicopters operating under control of the DASC. When and to the extent that air control ashore is exercised by Air Force elements, agencies are established in accordance with Army-Air Force procedures for air-ground operations; however, air control agencies ashore must be compatible and capable of functioning with other air control agencies of the ATF.

Helicopter Logistic Support Center

The HLSC is located aboard the helicopter flagship close to the HCS detachment. It coordinates the debarkation of air serials during large-scale operations in accordance with the landing plan, under the control of the helicopter logistics coordinator, a Navy officer, comparable to the PCO of a waterborne movement.

The troop commander ashore or the LF support party (or helicopter support team) will request on-call, nonscheduled serials and emergency

resupply based on priorities. The HLSC processes all air requests through the helicopter coordination section and, once approval is given, notifies the debarkation control officer on the applicable ship to prepare for helicopter operations and the nature of the mission.

The coordination that the HLSC performs is dependent on the communications (logistics) nets available. The helicopter assault force TACLOG, located aboard the central control ship, monitors such requests and assists as required. TACLOG informs the requesting ground commander or the supporting CSS element of mission approval, the type and number of aircraft, the expected time of arrival at his position, and the helicopter route if applicable. This information is required by the ground unit's fire support coordination center for fire support coordination. Once helicopter control is passed ashore, the DASC will provide this information.

Control Ashore (Direct Air Support Center)

The DASC is normally the first LF air control agency established ashore. It is designed for control and direction of offensive air support including close air support, assault support, and other tactical direct air support operations. The DASC operates under the direction of the LF ACE commander/tactical air commander.

The DASC controls and directs tactical direct air support, and controls helicopters when control has been passed ashore.

A medical regulating control center is collocated to advise on matters dealing with casualty movement.

Assault Support Coordinator (Airborne)

The assault support coordinator (airborne) (ASC[A]) is an experienced naval aviator operating from an aircraft to direct airborne coordination and control of helicopter assaults. The ASC(A) is responsible for the airborne control of all helicopters in his assigned area and coordinates with the tactical air coordinator (airborne) or forward air controller (airborne), as appropriate, for support of close air support aircraft, as determined by the tactical situation.

When an ASC(A) has not been designated, the helicopter transport flight leader may, within the limits of his authority, discharge the duties of the ASC(A) requisite to mission accomplishment.

If employed in conjunction with the TAC(A), the relationship between the two will be established by the TAC or the TAC's designated representative.

The ASC(A) may function as an extension of the DASC, ASC (Surface) or HDC in situations in which those agencies delegate specific authority the ASC(A) for specific missions.

The ASC(A) and helicopterborne unit commander should normally be assigned to a single aircraft where feasible to facilitate timely and coordinated decisions affecting the helicopterborne assault.

Tactical Air Coordinator (Airborne)

The tactical air coordinator (airborne) (TAC[A]) is an officer who coordinates from an aircraft the action of combat aircraft engaged in close support of ground or sea forces. The TAC(A), as an on-site airborne extension of the DASC, TACC or TADC, is normally the senior air coordinating authority over all aircraft operating within the assigned area of responsibility.

The specific authority exercised by a TAC(A) will be as specified or delegated by the DASC, TACC or TADC, as appropriate.

During helicopterborne assault operations and other operations where an ASC(A) is employed, the relationship between the TAC(A) and the ASC(A) will be established during the planning phase by the tactical air commander or the designated representative.

The TAC(A)'s principal responsibilities are to deconflict aircraft and coordinate employment of supporting aircraft with other supporting arms. In

fulfilling this responsibility, the TAC(A) coordinates as necessary with the ASC(A), ground commanders' tactical air control parties, fire support coordination centers, subordinate forward air controller (airborne), and the fire direction centers of artillery and naval gunfire.

The TAC(A) may or may not be assigned depending on mission requirements and aircraft availability. When assigned, the TAC(A) is subordinate to the DASC or the TACC or TADC.

Helicopter Employment

Helicopter assault movement planning is a cooperative AF effort by CATF and CLF chains of command employing concurrent, parallel, and detailed planning. The unique qualities and capabilities associated with a vertical assault warrant a review of helicopter employment considerations; especially given the ability to employ them from over the horizon to achieve tactical surprise. The following employment considerations must be weighed:

- The quantity and types of helicopters available.
- Total number of helicopter capable amphibious ships and other ships that can operate and maintain helicopters.
- Location, nature, number, and size of HLZs, and their approach and retirement lanes.
- Enemy capabilities and dispositions, especially location, type, and density of antiaircraft weapons. A necessary ingredient for a successful helicopterborne operation is control of the airspace in which friendly forces operate (air superiority). Transport helicopters, especially in large formations, are vulnerable to surprise air attack by air-to-air missiles and antiaircraft/air defense artillery.
- Oceanographic/weather influences such as sea state during launch/recovery operations and the expected weather conditions to be encountered en route, and at the HLZ. This includes ceiling, visibility, icing, winds, and turbulence.
- Requirements for supporting arms, linkup, and CSS.
- Availability of alternate plans for landing serials scheduled for helicopterborne waves aborted during the landing.
- Helicopters require greater quantities of fuel than surface vehicles performing similar tasks. A greater maintenance effort is required for helicopters than for other types of transportation.
- In certain operations, secrecy may be compromised by engine and rotor noise or dust in the LZ.
- Helicopter operations are severely limited when icing conditions prevail. Helicopter lift capability is affected by changes in atmospheric conditions; i.e., altitude, wind, and temperature.
- Weight and balance of internal loads must be carefully computed to ensure safe and efficient flight. Questions regarding the maximum weight authorized for each aircraft type should be directed to either the ship's air operations officer or the aircraft squadron operations officer. Table 4-1 on page 4-14 provides helicopter load planning data.
- Various weather phenomena affect helicopter operations in many different ways. Low ceilings can reduce the effectiveness or preclude the use of fixed-wing aircraft providing escort, LZ preparation, and close air support of the helicopterborne force. Helicopters are vulnerable to nuclear blast effects, antiaircraft fire, small arms fire, and enemy aircraft.
- Large-scale employment of helicopters is dependent upon good visibility, adequate landing areas, and protective measures.
- All helicopter operations require precise coordination for deconfliction with other air operations and supporting arms.