NAVY TACTICAL REFERENCE PUBLICATION

NAVAL BEACH GROUP SUPPORT ELEMENT OPERATIONS
NTRP 3-02.1.2

SIGNATURE DRAFT JUN 2004

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS

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1. NTRP 3-02.1.2, Naval Beach Group Support Element Operations, is UNCLASSIFIED. Safeguard in accordance with the Department of the Navy Information Security Program Regulation (SECNAVINST 5510.36).

2. NTRP 3-02.1.2 is effective upon receipt.

3. NTRP 3-02.1.2, is a comprehensive, one-stop reference for joint task force commanders, operational commanders and staffs, and individual units and planners. It outlines the organization, employment, missions, and capabilities of the naval beach group and its support elements, and highlights displacement (LCUs and LCM-8s), nondisplacement (LCAC) landing craft, and other equipment used in support of amphibious and maritime prepositioning force operations.

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Approved

J. J. NATALE

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1. NTRP 3-02.1.2 was reviewed for format and approved Joint and Navy Service Terminology. The contents of NTRP 3-02.1.2 support Navy Strategic and Operational Level doctrine.

JOHN M. KELLY

Commander

Navy Warfare Development Command

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ROUTING

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2. NTRP 3-02.1.2, is a comprehensive, one-stop reference for joint task force commanders, operational commanders and staffs, and individual units and planners. It outlines the organization, employment, missions, and capabilities of the naval beach group and its support elements, and highlights displacement (LCUs and LCM-8s), nondisplacement (LCAC) landing craft, and other equipment used in support of amphibious and maritime prepositioning force operations.

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PREFACE

NTRP 3-02.1.2, Naval Beach Group Support Element Operations, is a comprehensive, one-stop reference for joint task force commanders, operational commanders and staffs, and individual units and planners. It outlines the organization, employment, missions, and capabilities of the naval beach group and its support elements, and highlights displacement (LCUs and LCM-8s), nondisplacement (LCAC) landing craft, and other equipment used in support of amphibious and maritime prepositioning force operations.

Throughout this publication, references to other publications imply the effective edition. A list of publications related to this NTRP follows the list of acronyms and abbreviations. Unless otherwise stated, masculine nouns and pronouns do not refer exclusively to men.

Report administrative discrepancies by letter, message, or e-mail to:

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When items for changes are considered urgent (as defined in NTTP 1-01, and including matters of safety), send this information by message to the Primary Review Authority, with information copies to NWDC, and all other commands concerned. Clearly identify and justify both the proposed change and its urgency. Information addressees should comment as appropriate. See accompanying sample for urgent change recommendation format.

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CHANGE SYMBOLS

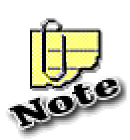
A black vertical line in the outside margin of the page indicates revised text in draft copies of publications, like the one printed next to this paragraph. The change symbol indicates added or restated information. A change symbol in the margin adjacent to the chapter number and title indicates a new or completely revised chapter.

WARNINGS, CAUTIONS, AND NOTES

The following definitions apply to warnings, cautions, and notes found throughout this publication:

An operating procedure, practice, or condition that may result in injury or death if not carefully observed or followed.

An operating procedure, practice, or condition that may result in damage to equipment if not carefully observed or followed.



An operating procedure, practice, or condition that is essential to emphasize.

WORDING

Word usage and intended meaning adhered to throughout this publication is as follows:

"Shall" indicates the application of a procedure is mandatory.

"Should" indicates the application of a procedure is recommended.

"May" and "need not" indicate the application of a procedure is optional.

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Urgent Change Recommendation Message Format

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From: *(Name, Grade or Title, Activity, Location)*
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Subject: ROUTINE CHANGE RECOMMENDATION TO NTRP 3-02.1.2 *(Edition, Change Number), NAVAL BEACH GROUP SUPPORT ELEMENT OPERATIONS*

Encl: *(List Attached Tables, Figures, etc.)*

1. The following changes are recommended for NTRP 3-02.1.2, *(Edition, Change Number)*:

a. CHANGE: (Page 1-1, Paragraph 1.1.1, Line 1)
Replace "...the ~~National Command Authority~~ President and Secretary of Defense establishes procedures for the..."
REASON: SECNAVINST ####, dated ####, instructing the term "National Command Authority" be replaced with "President and Secretary of Defense."

b. ADD: (Page 2-1, Paragraph 2.2, Line 4)
Add sentence at end of paragraph "See Figure 2-1."
REASON: Sentence will refer to enclosed illustration.
Add Figure 2-1 (see enclosure) where appropriate.
REASON: Enclosed figure helps clarify text in Paragraph 2.2.

c. DELETE: (Page 4-2, Paragraph 4.2.2, Line 3)
Remove "Navy Tactical Support Activity."
"...the Naval War College, ~~Navy Tactical Support Activity,~~ and the Navy Warfare Development Command are responsible for..."
REASON: Activity has been deactivated.

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Executive Summary

EX.1 INTRODUCTION

This Navy tactical reference publication (NTRP) is a comprehensive, one-stop reference for joint task force (JTF) commanders, operational commanders and staffs, and individual units and planners. Furthermore, this NTRP:

1. Outlines the organization, employment, missions, and capabilities of the naval beach group (NBG) and its support elements
2. Highlights displacement (landing craft, utility (LCU) and landing craft, mechanized, Mark 8 (LCM-8)) and nondisplacement (landing craft air cushion (LCAC)) landing craft and other equipment used in support of amphibious and maritime prepositioning force (MPF) operations
3. Discusses the responsibilities and command relationships of the:
    a. NBG and its support elements
    b. Landing force support party (LFSP) and its components
    c. Expeditionary strike force (ESF)
    d. MPF
    e. Expeditionary strike group (ESG)
    f. Amphibious task force (ATF)
    g. Landing force (LF).

This NTRP should not be construed as doctrine overriding technical publications or instructions for specific equipment, nor does it supersede established Service or local procedures or doctrine approved by an appropriate commander. In particular, should any data or information on LCAC operations in this publication conflict with the guidance or procedures in S9LCA-AA-SSM-010, Safe Engineering and Operations (SEAOPS) Manual for Landing Craft, Air Cushion (hereafter referred to as the SEAOPS Manual for LCAC), the applicable volume of that publication will always take precedence.

EX.2 PUBLICATION ORGANIZATION

This NTRP covers NBG participation and responsibilities in amphibious and MPF operations. However, because there are other effective publications dealing with MPF operations, the emphasis of this publication is on amphibious operations. The NBG's role in MPF (and logistics over-the-shore (LOTS)) operations are covered primarily in Appendix B. Chapter 1 covers the NBG, and Chapters 2 through 5 discuss the NBG's four support elements: the beachmaster unit (BMU), assault craft unit (ACU) (displacement), ACU (nondisplacement), and the amphibious construction battalions (PHIBCBs), respectively. Chapter 6 covers the planning considerations and processes involved in NBG operations, and Chapter 7 outlines the communications nets and systems used when conducting such operations. Chapter 8 discusses the command relationships between the NBG and its support elements as well as the relationships between the NBG and higher commands.

Several appendices are also included. Specific chapter and appendix overviews are provided in Figure EX-1.

Chapter/ Appendix	Title	Description
1	Naval Beach Group	Provides an overview of NBG organization, staff, four support elements, and roles they play in amphibious, and to a lesser degree, MPF operations Discusses NBG's Naval Reserve components and their role in NBG operations
2	Beachmaster Unit	Provides an overview of BMU capabilities, tasks, and responsibilities in support of amphibious operations Contains a comprehensive discussion on the BMU's responsibilities and capabilities in regard to beach salvage operations Covers BMU responsibilities in MPF operations
3	Assault Craft Unit (Displacement)	Provides an overview of ACU (displacement) capabilities, tasks, and responsibilities in support of amphibious and MPF operations Provides information on operating parameters and capabilities that must be considered when operating displacement landing craft (i.e., LCUs and LCM-8s) in STS movement and other operations
4	Assault Craft Unit (Nondisplacement)	Provides an overview of ACU (nondisplacement) capabilities, tasks, and responsibilities in support of amphibious operations Emphasizes importance of the SEAOPS Manual in LCAC operations Provides planners with LCAC operating parameters and capabilities that must be considered when using nondisplacement landing craft (e.g., LCAC) in STS movement
5	Amphibious Construction Battalion	Provides a general overview of PHIBCB equipment, tasks, responsibilities, and capabilities as they pertain to amphibious and MPF operations
6	Planning Considerations	Outlines the steps in the amphibious planning process Delineates roles played in planning efforts for amphibious operations by the NBG and its support elements
7	Communications	Provides an overview of the communications capabilities and requirements of the NBG and its support elements during their participation in amphibious operations
8	Command Relationships	Provides an overview and reference for command relationships required in amphibious and MPF operations Briefly covers the command relationships established in joint and multinational operations
A	Amphibious Warfare Operations	Provides commanders and staff planners with general background information on basic characteristics ands types of amphibious operations Discusses the organization and composition of an ATF, ESG, and ESF
B	Other Maritime Operations	Provides commanders and staff planners with an overview of MPF, JLOTS, and LOTS operations Specifically details mission areas, systems, and platforms that the NBG and its support elements are responsible for assembling and operating
C	Naval Beach Group Assets	Contains photographs and brief summaries of landing craft characteristics and NBG equipment and operating platforms discussed in this NTRP
D	Emerging Technologies, Equipment, and Capabilities	Provides a description and discussion regarding emerging technologies, equipment, and capabilities that will affect the NBG and its support element operations; some are available now, some will be introduced soon, while others will not be available until the future

Figure EX-1. Publication Organization

EX.3 TARGET AUDIENCE

This NTRP is intended as a reference for JTF/operational commanders and staff planners who have a limited knowledge of amphibious and MPF operations and the roles played in those operations by the NBG and its support elements. These include ESF, MPF, carrier strike group (CSG), ESG, and ATF commanders as well as individual units and planners executing NBG and/or support element tasks in support of MPF or amphibious operations.

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CHAPTER 1

The Naval Beach Group

1.1 OVERVIEW

The NBG is a permanently organized command that provides elements of the BMU, PHIBCB, and ACU personnel and equipment to the ATF, ESG, or expeditionary strike force (ESF) in support of the LF. The Navy elements assigned to the commander, amphibious task force (CATF) and commander, landing force (CLF) support waterborne ship-to-shore (STS) movement, Marine Corps LFSP operations, and Army engineer amphibious brigade operations. In their tactical configuration, the NBG elements comprise the beach party team (BPT). In Marine expeditionary unit (MEU)-sized operations, the NBG detachment officer-in-charge (OIC) is the BPT commander. For larger scale amphibious operations, the BPT commander is generally a more senior and experienced officer, and the NBG commander becomes the BPT commander for Marine expeditionary force (MEF)-sized operations. During MPF operations, the NBG is task organized to form the Navy support element (NSE). Commander NBG becomes the NSE commander and may also direct the Navy cargo handling battalion (NCHB) elements if assigned.

This chapter provides the tactical planner with a broad overview of the NBG organization, staff, and various support elements. This entire organization is covered in greater detail in subsequent chapters. NBG involvement in MPF operations and joint logistics over-the-shore (JLOTS) operations is covered in Appendix B, and more detailed information on these operations is found in NTTP 3-02.3M/MCWP 3-32, Maritime Prepositioning Force Operations and JP 4-01.6, Joint Tactics, Techniques, and Procedures for Joint Logistics Over-the-Shore (JLOTS).

1.2 MISSION

In addition to furnishing the Navy elements that form the BPT within the LFSP, the NBG provides services to CATF and CLF as delineated below and described throughout this publication. These two commanders use the services to maintain proper command and control of the BPT and LFSP as they move troops, equipment, and supplies across beaches during amphibious operations and to evacuate casualties, refugees, and enemy prisoners of war (EPWs) as required.

1. Beachmaster traffic control

2. Elements to install and operate bulk liquid systems

3. Landing craft

4. Beach salvage capability

5. Communications.

Additionally, as described in Chapter 5 and Appendix B, the NBG provides similar services and the following additional services during an assault follow-on echelon (AFOE) and/or MPF operations:

1. Causeway lighterage

2. Floating causeways

3. STS bulk fuel/water systems

4. Limited construction capabilities.

The strength levels and equipment provided are based on the requirements of the operational commanders, as designated in appropriate operation orders (OPORDs) and operation plans (OPLANs).

1.3 ORGANIZATION

The basic NBG organization is designed to effectively execute assigned missions and facilitate the administrative functions that support NBG mission accomplishment. The NBG's administrative organization is shown in Figure 1-1.

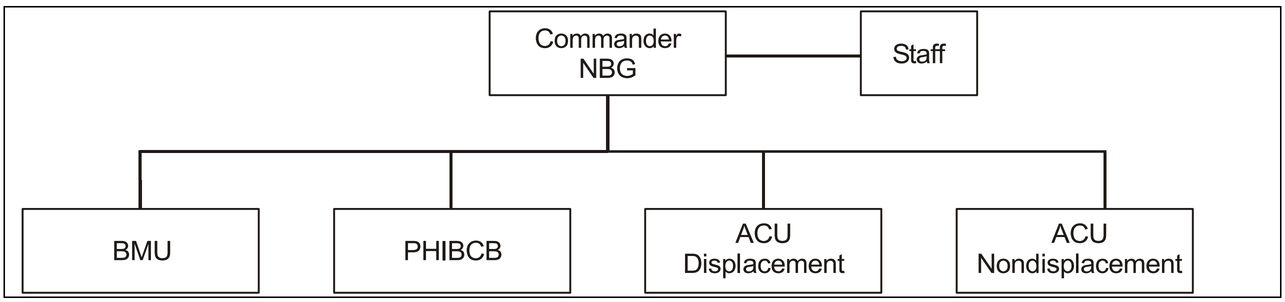

Figure 1-1. Naval Beach Group Administrative Organization

The NBG's MPF organization and responsibilities are discussed in Appendix B, and the tactical organization and responsibilities are covered in Chapter 2.

1.3.1 Naval Beach Group Staff

The NBG commander's staff is organized under the chief staff officer (CSO) into the following departments:

1. Administrative (N1)

2. Operations and Plans (N3)

3. Logistics and Supply (N4)

4. MPF Operations and Materials (N5)

5. Communications (N6)

6. Readiness and Training (N7).

1.3.2 Beach Group Detachment Officer in Charge

The amphibious squadron (PHIBRON) or ESG staff is normally augmented with a second-tour Navy division officer, a lieutenant (LT) or lieutenant (junior grade) (LTjg) temporarily assigned from the NBG staff to the

PHIBRON or ESG staff. This officer is responsible for liaison between the commander's staff and units assigned from the ACU, BMU, and PHIBCB detachments. The OIC of the NBG elements directs and coordinates the training and administration of these assigned units and the execution of NBG assigned missions and activities. The OIC ensures the waterborne craft and other equipment are properly maintained and effectively employed, and is responsible for the operational and material readiness of all NBG-assigned physical assets and personnel. The NBG OIC assigns BMU, ACU, and PHIBCB tactical components and personnel as elements of the BPT during amphibious landings. This officer is considered a subject matter expert (SME) who assists the PHIBRON or ESG operations and plans department with the preparation of the STS section of the OPTASK AMPHIB message, and actively participates in Navy-Marine Corps planning involving NBG assets.

1.3.3 Naval Beach Group Support Elements

As shown in Figure 1-1 the NBG is responsible for four primary support elements. The primary support elements are discussed in greater detail in subsequent chapters of this publication; however, a brief description of each is provided in Paragraphs 1.3.3.1 through 1.3.3.3.

1.3.3.1 Beachmaster Unit

The BMU is a commissioned naval unit of the NBG designed to provide the LFSP with a Navy component known as the BPT. Expanding on the definition provided in JP 1-02, Department of Defense Dictionary of Military and Associated Terms, the BMU facilitates the landing and movement of troops, equipment, and supplies across the beach and the evacuation of casualties and EPWs. BMU and BPT operations are discussed in Chapter 2.

1.3.3.2 Amphibious Construction Battalion

The PHIBCB is a permanently commissioned naval unit that is subordinate to the NBG commander. The unit is organized in a manner that allows the formation of personnel and equipment into tactical elements assigned to appropriate commanders. The PHIBCBs:

1. Operate pontoon causeways, transfer barges, warping tugs, and assault bulk fuel and water systems

2. Perform BPT salvage tasks

3. Provide camp support and security.

PHIBCB personnel can also provide limited construction efforts, such as making beach improvements and constructing beach egress routes. Within the ATF or ESG, PHIBCB embarkation is limited to bulldozer operators and maintenance personnel who are assigned in a temporary additional duty (TAD) status to the BPT commander. The full range of PHIBCB capabilities are realized in MPF operations as discussed in Appendix B and Chapter 5.

1.3.3.3 Assault Craft Unit

The ACU is a permanently commissioned naval organization, subordinate to the NBG commander, with the landing craft and crews necessary to provide lighterage for an amphibious operation. The ACU provides displacement landing craft (e.g., LCUs and LCMs) and nondisplacement landing craft (e.g., LCAC) to support the ATF or ESG during STS movement, general offload, or MPF operations. ACU operations are discussed in Chapters 3 and 4.

1.4 TASKS AND RESPONSIBILITIES

The broad tasks and responsibilities of the NBG include:

1. Directing and coordinating NBG-related administrative activities for the ATF or ESG staff and subordinate elements

2. Directing and coordinating appropriate NBG-related training activities for the ATF or ESG staff, subordinate elements, and amphibious ships

3. Assigning operationally ready BMU, PHIBCB, and ACU tactical units as elements of the BPT, ATF, or ESG

4. Providing training to Reserve NBG units to enhance mobilization readiness and meet NBG wartime requirements

5. Providing personnel and equipment for peacetime deployment as directed by the appropriate fleet commander.

1.5 RESERVE COMPONENTS

1.5.1 Composition

The NBG Reserve units consist of personnel and equipment, to include landing craft and crews, PHIBCB equipment, and Reserve operational staffs. Upon mobilization, various Reserve detachments augment the BMUs, ACUs, PHIBCBs, and for larger scale operations, the NBG staff.

1.5.2 Mission

The primary mission of NBG Reserve components is to deliver complete, qualified, operational, and organized units for active duty to operating NBG forces in time of war, emergency, or when otherwise authorized or required. These units enhance the capability of the NBG and other forces to sustain operations at the highest level of combat readiness.

1.5.3 Training

The NBG commander and commanding officers of the NBG support elements are responsible for establishing training readiness programs for each individual, crew, and unit. The deployment of trained Reserve personnel capable of accomplishing NBG missions is essential to overall command preparedness.

The key to successful reserve training is the attainment of a high level of Selected Reserve (SELRES) unit readiness. The available time onboard for SELRES personnel is limited and must be used to the best advantage of the active command and assigned SELRES units. Therefore, the NBG must be directly involved in the planning, development, and evaluation of the mobilization training of assigned Reserve units. This is accomplished by establishing and maintaining communication with assigned SELRES units so that meaningful training and/or contributory support is scheduled and achieved. The NBG is responsible for informing the Reserve unit of watch station assignments and any other appropriate requirements; there must be a clear understanding of mobilization functions assigned to reservists.

1.5.3.1 Selected Training Opportunities

Several different SELRES training opportunities are available, and all are used by the NBG and assigned units:

1. Annual Training. All Reservists are required to perform annual training. SELRES should perform annual training at their mobilization site or an equivalent location. Annual training shall consist of a maximum of 12 days per fiscal year (FY). When additional days are required, inactive duty training (IDT) drill periods can be combined with annual training days.

2. Active Duty for Training (ADT). Reservists can perform ADT when the training period exceeds 12 days, funding permitted. Reservists may request ADT in addition to annual training to support exercise requirements, for augmenting active forces, or for mobilization enhancing schools or training.

3. IDT. IDT drills are usually performed at the reservist's parent Reserve center during one weekend each month. IDT can also be performed during the week if it is more available and beneficial. However, drills may be performed elsewhere to take advantage of other training opportunities. Drills performed away from the parent Reserve Center are called inactive duty training travel (IDTT). Reverse IDTTs provide an opportunity for active duty personnel from the active command to provide readiness training for assigned SELRES units at the parent Reserve center.

1.5.3.2 Annual Training

The 2-week annual training period is central to the NBG's Reserve training program. It provides the opportunity not afforded elsewhere for Reservists to develop and demonstrate skills, gain experience, and attain qualifications required for mobilization. At the same time, it affords the NBG and the Reserve unit commanding officers the opportunity to assess readiness, individually by reservist, and collectively as a command.

An annual SELRES exercise provides NBG Reserve and active duty components with experience in an over-the-beach environment and joint unit training and coordination during amphibious operations. During the 2-week exercise period, Reserve and active components plan and execute extensive craft operations to support qualifications and proficiency exercises thereby ensuring NBG Reserve detachments meet core competency requirements.

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CHAPTER 2

Beachmaster Unit

2.1 OVERVIEW

The BMU is a commissioned naval unit of the NBG that provides the LFSP with a Navy component – the BPT, to support amphibious operations. It is organized administratively and tactically to augment the LFSP headquarters (HQ) and provide appropriate BMU tactical components as elements of the NBG. In conjunction with PHIBCB personnel, the BMU also conducts salvage operations.

The purpose of this chapter is to provide staff tactical planners with an overview of BMU capabilities, tasks, and responsibilities. BMU responsibilities during MPF and JLOTS operations are discussed in Appendix B.

2.2 LANDING FORCE SUPPORT PARTY

2.2.1 Introduction

To better understand the role of the NBG and the BMU in amphibious operations, a brief discussion of the LFSP is required. Additional information on the LFSP is found in JP 3-02, Joint Doctrine for Amphibious Operations, NWP 3-02.1/FMFM 1-8, Ship-to-Shore Movement, and Marine Corps Warfighting Publication (MCWP) 4-11.3, Transportation Operations.

2.2.2 Mission

The LFSP is a temporary special category task organization of the ATF, ESG, or ESF that may contain a USMC surface assault support element (shore party group/team), a USMC helicopter assault support element (helicopter support team), and an NBG element. The LFSP is established by a formal activation order by the CLF. The mission of the LFSP is to:

1. Facilitate:

    a. Landing and movement of troops, equipment, and supplies across beaches and into landing zones (LZs), ports, and airfields

    b. Establishing the NBG, LF's combat service support element (CSSE), air combat element (ACE), and ground combat element (GCE) ashore.

2. Assist in:

    a. Evacuating casualties and EPWs from beaches and LZs

    b. Beaching, retraction, and salvaging of landing craft of amphibious vehicles.

2.2.3 Composition

The LFSP buildup ashore parallels the tactical buildup, beginning with the landing of advance parties and reconnaissance units. Per direction from CLF, it is formed primarily from the CSSE, ACE, and GCE, and from the NBG, BMU, and other Navy organizations as directed by CATF. The concept of LFSP operations is to centralize the responsibility for combat support and combat service support (CSS) functions under a single organization during the initial stages of the assault. LFSP composition is determined during the initial planning phase. Specific LFSP task organizations vary, but the basic LFSP organization is listed below and depicted in Figure 2-1.

1. LFSP HQ
2. Shore party
3. Beach party
4. Special attachments
5. Ships' platoons.

2.2.4 Structure and Function

The LFSP structure and its functions are discussed in greater detail in NWP 3-02.1/FMFM 1-8.

2.3 THE BEACH PARTY

2.3.1 Composition and Functions

The beach party, comprised primarily of BMU personnel, is the Navy component of the LFSP and is under the operational control (OPCON) of the LFSP commander. Figure 2-1 depicts the organizational relationship between the beach party and the LFSP. In support of the beach party, the BMU conducts operations to facilitate the landing and movement of troops, equipment, and supplies across the beach, and the evacuation of casualties and EPWs. The beach party functions and BMU support functions are described in Figure 2-2.

2.3.2 Components

The beach party consists of the following components:

1. <u>Beach Party HQ</u>. The beach party HQ consists of personnel from the NBG and provides command and control (C2) for beach party operations.

2. <u>Beach Party Group (BPG)</u>. Within the LFSP, the BPG is the Navy counterpart to the USMC shore party group. The BPG supervises and coordinates all Navy activities on a colored beach.

3. <u>Special Attachments</u>. Special attachments are assigned to the beach party to perform tasks or provide capabilities not normally included in the beach party organization. These special attachments may provide support to the LF, but generally perform Navy tasks that are more effective when carried out from the beach. For example, clearing mines and/or

obstacles in the surf zone or very shallow water zone by sea-air-land team (SEALs) or explosive ordnance disposal (EOD) personnel is more efficiently accomplished from the beach. As the amphibious operation progresses, additional units not directly associated with the LFSP, such as the ACU or NCHB, may phase ashore and be attached to the beach party.

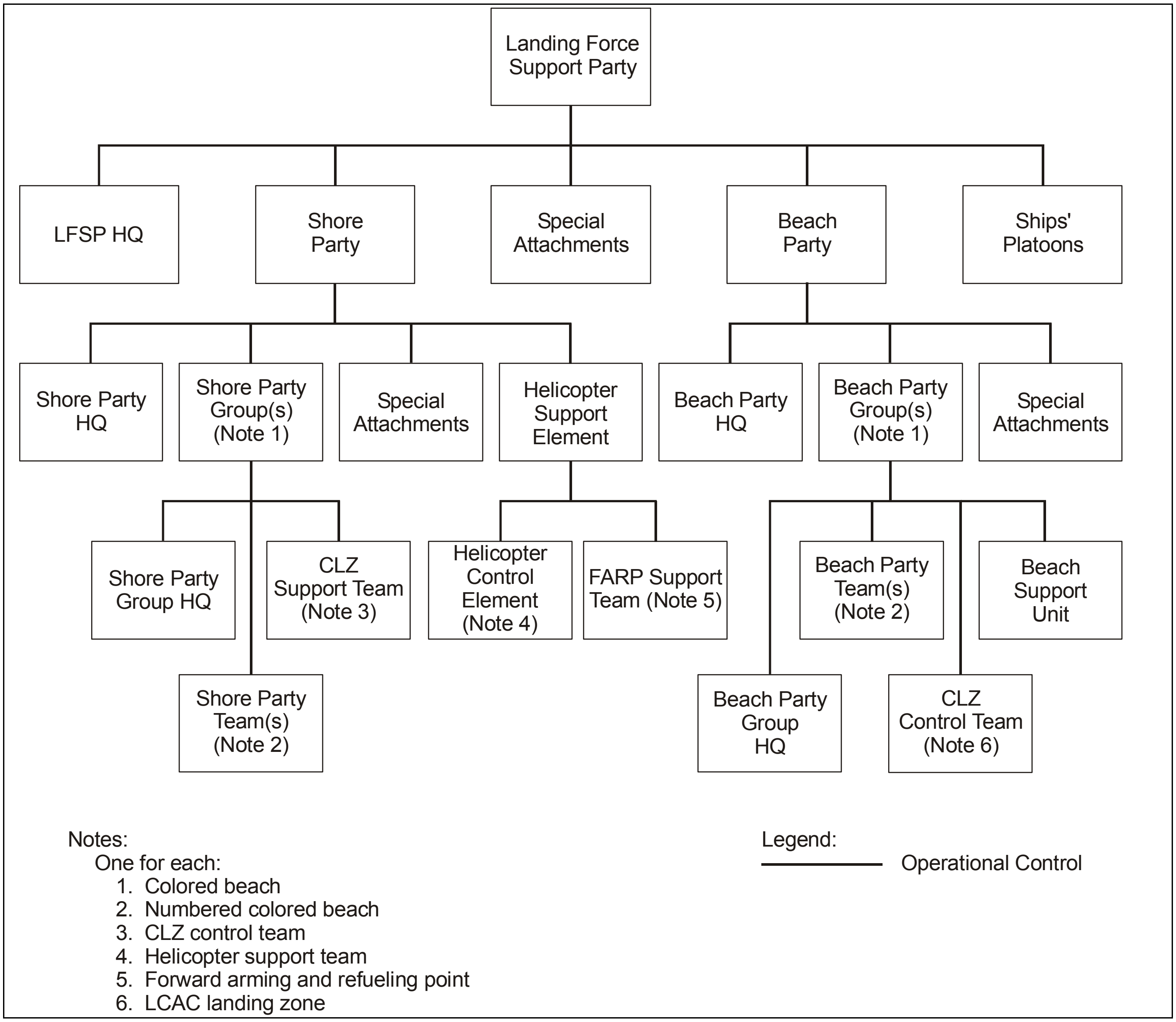

Figure 2-1. Basic LFSP Organization

Beach Party	
Functions	1. Install navigational aids/markers and remove obstacles in beach approaches. 2. Advise shore party commanders of suitable sites for beaching amphibious vehicles, landing craft, and causeways. 3. Direct beaching and retraction of landing craft, causeways, and amphibious vehicles. 4. Observe and report surf conditions to primary control officer (PCO). 5. Conduct salvage operations and make emergency repairs to landing craft and amphibious vehicles. 6. Assist in maintaining local security of beach support area (BSA). 7. Maintain communications with PCOs and beach parties on adjacent beaches. 8. Assist with evacuating casualties and EPWs. 9. Mark beach landing sites. 10. Direct LCUs and lighter, amphibious resupply, cargo, Mark V (LARC Vs) to and from beach landing sites. 11. Direct LCAC to and from craft landing zones (CLZs). 12. Install amphibious assault bulk fuel system/amphibious assault bulk water system (AABFS/AABWS) and/or amphibious bulk liquid transfer system (ABLTS). 13. Advise LFSP commander regarding Navy activities in BSA. 14. Provide support, to include attached Navy EOD personnel, to countermine operations conducted in very shallow water and surf zones.
Beachmaster Unit	
Support Functions	1. Communicate with designated naval commanders, naval control units, and BPT. 2. Control, with STS control officer assigned by CATF, landing craft and amphibious vehicles in vicinity of beach from surf line to high water mark (HWM). If an LCAC CLZ is located inland from HWM, area of responsibility (AOR) assigned to BMU is extended to include LCAC transit lane from landing craft air cushion penetration point (CPP) to inland side of CLZ. 3. Coordinate reembarkation of equipment, troops, and supplies with shore party commander and CATF. 4. Determine and advise suitability for landing amphibious vehicles, landing craft, and causeways through coordination with the SEAL teams. 5. Control surf zone salvage with assistance from the salvage officer (assigned by CATF) and accomplish emergency repairs to landing craft. 6. Advise the LFSP commander of significant naval activities in progress in vicinity of and on beaches. 7. Maintain continuous liaison with naval forces afloat and rendering seaward assistance, as practical. 8. Provide assistance, as directed by the LFSP commander, in local security and defense of BSA. 9. Provide assistance in evacuating casualties and EPWs. 10. Install, after consultation with LFSP commander, beaching range markers and lights. 11. Appraise appropriate Navy commanders regarding wind and surf conditions and any impact weather might have on current or pending operations. 12. Deploy personnel and limited equipment by air in support of an MPF operation.

Figure 2-2. Beach Party Functions and Beachmaster Unit Support Functions

2.4 BEACH PARTY GROUP

A basic BPG organization is depicted in Figure 2-3. The BPG organization consists of the following components:

1. BPG HQ

2. BPTs. When directed by commander, naval beach group (CNBG), the BMU, augmented by PHIBCB detachments and EOD teams, is tactically organized into a BPG with a headquarters, as well as BPTs that are part of the LFSP.

   The BPT is the Navy counterpart of the USMC shore party team and is the basic unit of the beach party. It supervises and coordinates all Navy activities on a numbered colored beach. The BPT commander is a Navy officer who lands with the USMC shore party team commander and remains under the OPCON of that commander until the USMC shore party group and BPG commanders are established ashore. Figure 2-4 describes the BPT components.

3. Beach Support Unit (BSU). The BSU is formed from the NBG's PHIBCB element and is discussed in greater detail in Chapter 5. It consists of a causeway platoon, fuels platoon, and a camp support platoon. The BSU provides:

   a. Cargo offload and transfer system (COTS) (discussed in detail in Appendix B)

   b. Roll-on/roll-off (RO/RO) discharge facility (RRDF) (discussed in detail in Appendix B)

   c. AABFS/AABWS, ABLTS, and the offshore petroleum discharge system (OPDS) (discussed in detail in Appendix B)

   d. Landing craft and amphibious vehicle salvage (discussed in Paragraph 2.5)

   e. Camp support and limited construction.

4. CLZ control team(s). See Figure 2-4.

2.5 BEACH SALVAGE OPERATIONS

Landing craft, boat, and vehicle casualties are inevitable during waterborne STS assault. The mission of the salvage organization is to conduct operations to keep boat lanes and beaches clear of disabled boats and assault craft so that waterborne STS is not impeded or delayed.

2.5.1 Organization

Beach salvage operations in an amphibious operation are the responsibility of CATF. The PCO is delegated the responsibility for conducting landing craft salvage operations at a colored beach. The beachmaster or the BPT commander is designated as the senior salvage officer ashore and reports to the PCO for salvage operations conducted in the surf zone. The assistant boat group commander (ABGC) is designated as the senior salvage officer afloat. He reports to the PCO for salvage operations conducted outside the surf zone and to the beachmaster for operations in the surf zone.

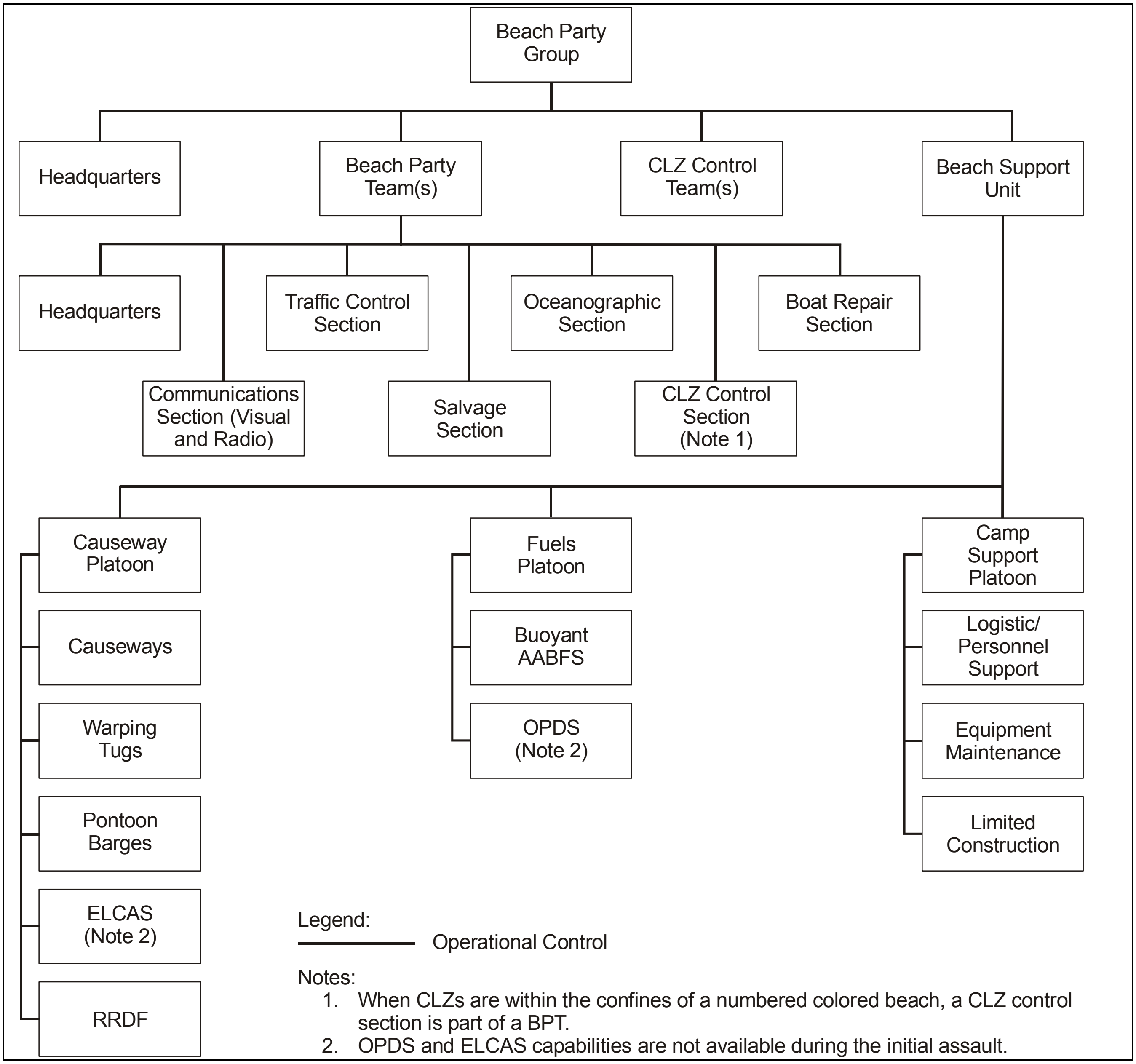

Figure 2-3. Basic Beach Party Group Organization

Component	Description
Beach Party Team HQ	The BPT commander, communications, and various administrative assistants make up the this section.
Communications	The communications section is responsible for electronic connectivity with the PCO, other designated naval commanders, naval control units, adjacent beaches, and within the beach party. Communications equipment and capabilities are discussed further in Chapter 7; however, the two primary means of communications are discussed below. Radio. BPT members land with portable radio equipment in the early stages of an amphibious operation. This provides the BPT commander with initial communications on boat control circuits. Vehicle-mounted radio equipment is subsequently landed as necessary. The radio section provides the BPT commander with lateral communications within the beach party as well as connectivity with forces afloat. Visual. BPT members maintain visual communications with forces afloat, landing craft, and lateral beaches using semaphore flags, and portable signal lights. To prevent overloading radio circuits, visual communications are used as much as possible.
Traffic Control	The traffic control section controls traffic from the surf zone to the HWM. This section also directs the beaching and retraction of landing craft. To control landing craft by visual means, BPT members are positioned at intervals along the beach, high enough to be seen by craftmasters and coxswains. These personnel are equipped with signal flags and wands for directing landing craft movement. This section's primary functions are: 1. Ensuring the expeditious beaching of craft at safe landing sites 2. Informing the BPT commander of any unusual or unsafe conditions or circumstances that arise 3. Supervise the debarkation and reembarkation of troops and equipment 4. Ensure safety of operations from the surf line to the beach HWM.
Salvage	The salvage section is made up of personnel and equipment from the PHIBCBs and the BMU, and is assigned to the BPT commander. Salvage section equipment includes bulldozers and amphibious vehicles. Beach salvage operations and associated equipment are covered in greater detail in Paragraph 2.5.
Oceanography	The oceanographic section contains SEALs who report to the BPT commander after completing advance force operations. SEALs mark and remove obstacles in beach approaches up to the HWM, conduct hydrographic surveys, prepare beach survey intelligence reports (BSIRs), perform lifeguard duties, and mark channels and navigation hazards. The BPT also reports surf observations (SUROBS) and the modified surf index (MSI) to the PCO. The team may require augmentation from the underwater construction (UC) units in determining surf zone hydrographic conditions.
Craft Landing Zone Control Team	The landing craft air cushion landing zone (CLZ) control team (CCT) lands with the first wave after the initial LCAC assault. It controls LCAC from seaward of the CPP to a CLZ for unloading and then for their return through the surf zone. CCTs are comprised of personnel from the BMU, and are analogous to a BPT. As shown in Figure 2-2, CCTs are coequal with BPTs. CLZs are normally located away from landing beaches. However, when a CLZ falls within the confines of a numbered colored beach, a CLZ control section is placed under the OPCON of the BPT responsible for that numbered colored beach. The CLZ control team and its responsibilities are also discussed in Chapter 4. The CCT's primary mission is to provide command, control, and communications (C3) to facilitate the landing of troops equipment, vehicles, and supplies in CLZs. The CCT: 1. Establishes the command post 2. Enters radio nets with the LCAC detachment OIC 3. Organizes the CLZ 4. Provides traffic control for LCAC between seaward of the CPP and the CLZ 5. Assists in the evacuation of LF casualties and EPWs 6. Reports surf conditions and the general beach situation to the LCAC detachment OIC
Conventional Landing Zone Team	The conventional LZ team's primary function is to provide LCU traffic control. The team also provides support to the beach salvage team with the LARC V and the D7G bulldozer. The team also assists the LFSP in moving wheeled vehicles and accomplishing beach improvement.

Figure 2-4. Beach Party Team Components (Sheet 1 of 2)

Component	Description
Boat Repair	The boat repair section includes specialists from the ACU who perform emergency repairs to landing craft on the beach. Landing craft requiring extensive repairs are towed to amphibious ships designated as boat havens.
Camp Support Element	The camp support element is established to provide logistics, personnel, and limited construction and beach improvement. This support includes the construction/erection of: 1. Berthing tents 2. Galley, messing, and food service 3. Utilities operations, electric power, water, showers, toilets, and sanitation 4. Construction of sand ramps or slots for landing craft 5. Improvement of beach exits (in cooperation with the USMC shore party) The USMC shore party can also provide construction materials for limited construction tasks. Climate, sanitation conditions, and the existence or absence of local improvements influence the work to be done to make the base/camp habitable.

Figure 2-4. Beach Party Team Components (Sheet 2 of 2)

2.5.2 Responsibilities

The primary mission of the beach salvage team is to salvage broached or stranded landing craft and amphibious vehicles in the surf zone. Once a landing craft has beached itself, the craftmaster or pilot will usually try to retract from the beach using own-craft power and onboard assets. Should the craft suffer a casualty or be otherwise unable to retract itself from the beach, the beach salvage team provides assistance. The salvage section, using its heavy equipment, and aided by a salvage boat (if assigned and available), is responsible for:

1. Freeing broached or swamped boats
2. Hauling damaged craft to the HWM
3. Raising inoperative ramps
4. Assisting the LFSP in:
    a. Moving bogged-down wheeled vehicles
    b. Making limited beach improvements
5. Conducting firefighting/dewatering operations for craft and vehicles.

2.5.3 Equipment Assets

The LARC V and the D7G bulldozer are the primary organic salvage assets used by the BPT. See Figure 2-5 for descriptions of various beach salvage equipment assets.

Asset	Purpose	Characteristics
LARC V	Used by the beach party in surf zone salvage, recovery, dewatering, STS movement, medical evacuation (MEDEVAC), C2 roles, ramp checks, and occasionally for the transportation of personnel and equipment. LARC Vs are currently the only BMU assets available for hole checks, a method used to determine the best/safest offload point for displacement craft. In general, each ESG or ATF deploys with at least one LARC V, sometimes two. LARC Vs are also embarked in MPF ships.	A single-screw, four-wheeled, self-propelled, diesel-powered amphibian. It has a crew of three, a cargo capacity of 10,000 pounds, and a troop capacity of 20. The LARC V's range on land is in excess of 200 nm, and in water it is 40 nm. It can attain speeds up to 30 mph on land and 8 to 9 knots at sea. Constructed of aluminum, the LARC V is 35 feet long, 10 feet wide, just over 10 feet high, and has a freeboard of approximately 10 inches. It weighs approximately 20,000 pounds (without cargo) and is powered by an 8-cylinder diesel engine. The engine is located in the stern over the propeller and transmits power to all four driving wheels and/or the propeller. The craft is capable of operations in temperate, tropical, and arctic climates, traversing sand and coral beaches, unimproved roads and off-road terrain, and can maneuver through surf with an MSI of 9. It is equipped with a reinforced pusher bow and a dewatering and firefighting pump. The LARC V ramp raising capability includes all landing craft up to and including LCMs and LCUs, if LARC V's are operated in tandem. A photograph of the LARC V is found in Appendix C. A program has been established to upgrade the LARC V. The LARC service life extension program (SLEP) is discussed in Appendix D.
D76 Bulldozer	Each BMU deploys with at least one D7G bulldozer to push LCMs and LCUs off the beach into the water. It operates effectively in up to 6 feet of water. The bulldozer, equipment operator, and construction mechanic are usually assigned initially to the BMU for amphibious operations. Their subsequent movement and taskings are directed by the BPT. The bulldozer can accomplish the following tasks: 1. Raising landing craft ramps rendered inoperable due to a parted cable or failed winch 2. Assisting in the retraction of broached landing craft or providing craft anti-broaching assistance 3. Removing beached or grounded landing craft from the landing area 4. Beaching disabled landing craft for repair 5. Constructing temporary beach access roads 6. Towing disabled vehicles out of landing craft or out of the surf zone 7. Serving as a causeway dead man.	The primary D7G employment constraint is transportation. It is usually transported by LCUs and can also be transported by a suitable tractor-trailer. If the trailer ramp cannot support the weight of the bulldozer, a 75-ton crane loads and unloads the D7G. The bulldozer can be transported on LCAC; however, planners and operators must consider the possibility it could inadvertently rupture the skirt. LCAC carry dunnage specifically provided for the purpose embarking bulldozers.
MTVR	The medium tactical vehicle replacement's (MTVR's) role in beach salvage operations is discussed further in Appendix E.	USMC replacement for its fleet of 5-ton trucks.
PWC	The personal watercraft (PWC), or waverunner, is being tested as an alternative to the LARC V.	The PWC's characteristics and utility as a salvage asset are covered in Appendix D.

Figure 2-5. Beach Salvage Equipment Assets

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CHAPTER 3

Assault Craft Unit (Displacement)

3.1 OVERVIEW

The purpose of this chapter is to provide operational commanders and staff tactical planners with an overview of the ACU (displacement) organization, tasks, capabilities, and responsibilities. The chapter also provides the planner with operating capabilities to be considered when employing displacement landing craft in amphibious or MPF operations.

The ACU (displacement) is a permanently commissioned naval organization, subordinate to the NBG commander. The ACU (displacement) provides the ATF, ESG, ESF, or commander, maritime prepositioning force (CMPF) with the displacement landing craft and crews required when conducting amphibious and/or MPF operations. These operations include STS movement, equipment transport and general offload, and withdrawal and backload operations. ACU craft can also serve as offshore support bases for special missions and provide a limited open ocean transit capability. Characteristics and photographs of these landing craft are found in Appendix C.

3.2 ORGANIZATION

The ACU is administratively organized to effectively manage unit assets and to accomplish all assigned tasks and missions. During normal deployments the ACU (displacement) element is assigned OPCON to the ATF, ESG, or ESF commander. The size and composition of the ACU (displacement) element depends on the size of the mission.

The ACU (displacement) detachment is normally headed by an LCU detachment OIC who provides planning and operational advice and expertise to the NBG commander or OIC, and the ATF, ESG, or ESF commander.

3.3 TASKS AND RESPONSIBILITIES

Each ACU (displacement) shall be responsible for providing:

1. Sufficient ACU craft and trained personnel to the ATF, ESG, or ESF to support the Marine air-ground task force's (MAGTF’s) landing, and a portion of the LCM crews and maintenance personnel in the MPF offload unit simultaneously supporting the CMPF

2. LCUs for assault/raid operations within short distances of the assault beaches

3. Landing craft to transport and install the AABFS/AABWS/ABLTS.

3.4 CAPABILITIES

Each ACU (displacement) can:

1. Embark in amphibious ships for transit to and from the amphibious area of operations (AO)

2. Perform all assigned functions simultaneously during the assault echelon (AE) phase of an amphibious operation

3. Equip and man one Marine expeditionary brigade (MEB)-sized AE and MPF operation simultaneously

4. Using selected Reserve personnel, support one MEB-sized AFOE sequential to AE operations

5. Support LOTS and JLOTS operations that are sequential to the AFOE of MPF operations

6. Deploy trained personnel and operationally ready equipment in support of MPF operations.

When augmented by other active duty forces or Reserve elements and additional landing craft, an ACU (displacement) can conduct major operations in a single theater and provide:

1. Sufficient LCUs for STS movement of a MEF over two colored beaches.

2. Maintenance and support elements for intermediate-level craft repair aboard ships designated as landing craft support/boat havens. The ACU (displacement) will not be tasked, nor have the capabilities, to provide for advance base functions ashore.

3. Personnel to support the offload control staff/LCM-8 crews and maintenance personnel to support around-the-clock offload operations of MPF ships in support of a MEB-sized operation.

3.5 OPERATIONS

The ACU (displacement) landing craft element can conduct sustained operations; however, unit crew organization does not provide for LCU craftmaster relief or LCM relief crews. During normal operations, the number of hours displacement landing craft crews may conduct continuous operations is dependent on such factors as crew fatigue and sea state, as well as night and low visibility operations. When around-the-clock MPF operations are required, two crews are assigned to each LCM to allow for crew rotation every 12 hours.

Under primary control ship (PCS) control, boat pool operations provide landing craft for the nonscheduled waves, vital supplies prior to the general unloading phase, and unloading of follow-on shipping. An LSD class ship is generally designated as the boat haven providing boat pool support.

3.6 DISPLACEMENT LANDING CRAFT EMPLOYMENT AND OPERATING CONSIDERATIONS

Displacement landing craft, with LCAC, comprise the principal heavy lift offload capability for LF equipment and supplies. The principal considerations for employing displacement craft are:

1. Role of waterborne operations in the LF concept of operations (CONOPS) and scheme of maneuver ashore

2. Location, size, hydrographic features, and trafficability of beaches

3. Availability of hydrographic surveys of beach approaches

4. Suitability of sea state and surf conditions for landing craft operations (covered in greater detail in Paragraph 3.6.3)

5. Enemy capabilities and disposition, especially location, type, and density of antisurface weapons

6. Requirement for supporting arms and CSS.

The ATF, LF, ESG, or ESF commanders and staff planners must also consider such factors as safe loading capacities and support requirements for displacement craft in an amphibious operation.

3.6.1 Landing Craft Utility Personnel Considerations

The following LCU crew day limits must be considered when conducting amphibious operations:

Sea State	Day Limit (hours)
1	16
2 to 3	14
4 to 5	10
Increased sea state, night time, and low visibility operations combination	8 or less

Regardless of sea state, the maximum crew day limit is 16 hours. This limit can be waivered only by the officer in tactical command (OTC). All waivers must be documented appropriately in writing.

3.6.2 Landing Craft Mechanized Personnel Considerations

LCM-8 crews are affected by the same external factors as LCU crews. However, there are no onboard provisions for meals or head facilities aboard LCM-8s. Therefore, even under the best conditions, LCM-8 crews generally require relief after 12 hours of steady operations. When around-the-clock MPF operations are required, two crews must be assigned to each LCM-8 to allow for a crew change out of 12-hours.

3.6.3 Weather and Hydrographic Considerations

Conditions such as sea state, wind, surf conditions, and beach gradient all impact displacement craft operations. Landing craft and amphibious vehicles operate in the most treacherous regions of the ocean where reefs, sandbars, and surf make craft handling hazardous even in the absence of man-made obstacles, enemy mines, and/or gunfire. The surf on a given beach depends not only on beach exposure, but also on underwater topography. Wind, current, and wave action constantly alter the profile and conditions on beaches.

COMNAVSURFPACINST/COMNAVSURFLANTINST 3840.1B, Joint Surf Manual, provides background and information on the formation and characteristics of waves and swell as they break on the beach as surf. This manual also contains an extensive description of surf, the surf zone, and the effects of surf on landing craft. The following sections provide a brief overview of some of the planning considerations and background information when employing displacement landing craft in amphibious operations.

3.6.3.1 Surf Forecasts

The safety and success of amphibious landings is largely dependent on knowing the surf conditions. When an amphibious operation includes a landing, planners should make optimum utilization of Navy meteorological support. The ATF, ESG, or ESF oceanographer provides organic support; however, the cognizant theater naval oceanography command should be tasked to provide surf forecast support every 12 hours. Procedures for requesting surf forecasts are found in the Joint Surf Manual.

3.6.3.2 Surf Observations

Depending on the operation, SEALs, beachmasters, or Marine Recon personnel usually report surf conditions. As part of tactical planning, SEALs are generally sent ashore prior to the landing to conduct initial SUROBS until conditions allow the BPT to assume the responsibility. Underwater construction team (UCT) and Marine Recon divers can also accomplish this mission if/as necessary. The beachmasters provide CATF, CLF, the PCO, and the offload control officer (OCO) for MPF STS operations with SUROBS at intervals designated by the CATF or CMPF, and promptly report any conditions that may adversely affect landing operations. It is essential that SUROBS be accurate and timely. The periodicity for taking and transmitting SUROBS is usually defined in the OPORDs for the amphibious landing.

Planners must be aware that nighttime SUROBS are not nearly as reliable as daylight observations. Darkness inhibits the observer's ability to determine such critical parameters as breaker height, breaker type, and breaker angle. When possible, nighttime observations should be validated by reviewing the daytime MSI trends to determine if the MSI is increasing, decreasing, or remaining fairly constant. Planners should consider this information in conjunction with the current and forecast meteorological conditions to predict whether any significant variations can be expected.

3.6.3.2.1 Surf Observation Report Elements

To develop a SUROBS report, 100 successive breakers are observed. The following elements are included in a SUROBS report:

1. ALFA – significant breaker height. This figure is computed by finding the average height of the highest 33 out of 100 observed breaker heights to the nearest half-foot.

2. BRAVO – maximum breaker height. This is the highest breaker observed/forecast during the period measured to the nearest half-foot.

3. CHARLIE – period. This is the time interval between breakers measured to the nearest half-second. It is determined by dividing the elapsed time (in seconds) by the number of breakers observed (100).

4. DELTA – breaker types. Breakers are classified as spilling, plunging, or surging and each is defined in the Joint Surf Manual. The observer determines DELTA by counting the number of each breaker type and indicating the percentage (out of 100) of each in the SUROBS report.

5. ECHO – breaker angle. This is the angle a breaker makes with the beach. It is always determined as moving toward the "RIGHT FLANK" or "LEFT FLANK," which refers to the direction breakers are moving from seaward, or as seen by the craftmaster as the landing craft approaches the beach.

6. FOXTROT – littoral current. Littoral current moves parallel and adjacent to the shoreline. It is determined by throwing an object that will float into the water immediately in front of the innermost breaker and pacing off the distance in feet that it moves in one minute. Several measurements are made and an average is taken to ensure the most representative current is reported. Littoral current is measured to the nearest tenth of a knot, and when reported, the direction toward which the breaker is moving (RIGHT FLANK or LEFT FLANK) is also indicated. Littoral current is the single most important element of the MSI. Its force is directly proportional to its effect on the landing craft and the likelihood of the craft broaching.

7. GOLF – surf zone. This is the area (in feet) extending from the outermost breaker line to the limit of the uprush on the beach. It is determined by merely counting the number of breaker lines and estimating the width of the surf zone.

8. HOTEL – additional remarks. This section is used to report significant factors that might impact successful boat operations. Examples include: wind direction and velocity, visibility, debris in the surf zone, a secondary wave system if present, and any observed dangerous conditions.

3.6.3.2.2 Sample Surf Observation Report

This is a sample SUROBS report:

SUROBS JONES BEACH VALID 180600U TO 181800U

ALFA 3 PT 5

BRAVO 4 PT 5

CHARLIE 8 TO 10

DELTA 90 SPILLING 10 PLUNGING

ECHO 5 DEG RIGHT FLANK

FOXTROT 1 PT 5 RIGHT FLANK

GOLF 3 TO 4 LINES 150 FT

HOTEL DELTA BECOMING 50 PLUNGING 50 SPILLING BY 181200U
DRIFTING FISHING NETS AND PLASTIC BOUYS IN SURF ZONE

3.6.4 Modified Surf Index

The MSI is a required environmental factor when conducting amphibious landing operations with displacement landing craft. It is a single numerical index that provides a relative measure of the conditions likely to be encountered in the surf zone. Calculated from the SUROBS report, the MSI determines the maximum safe limits for beach operations. For reported or forecast conditions, the MSI provides a guide for making decisions on the feasibility of landing operations for each type of displacement landing craft. It provides CATF with an objective method of arriving at a safe and operationally reasonable decision on committing landing craft and amphibious vehicles in an operation.

CAUTION

The MSI does not take into consideration the state of training of personnel or the maintenance level of equipment. The standard maximum MSI for LCU and LCM-8 operations is:

- Four – normal peacetime operations without seaward salvage available
- Six – normal peacetime operations with seaward salvage available
- Eight – LCM in wartime
- Twelve – LCU in wartime.

Conducting displacement craft operations in MSI conditions exceeding maximum limits risks capsizing, broaching, or sinking landing craft with possible injury or death to personnel and loss of equipment.

3.6.5 Displacement Landing Craft Support Requirements

All amphibious ships have the capacity to refuel landing craft and accomplish general maintenance. Well deck ships, designated as boat havens, can provide dry-docking facilities for structural repairs and serve as a safe haven during inclement weather, consistent with offload requirements as the operation progresses.

3.7 LANDING CRAFT UTILITY

The LCU is a highly versatile craft that has been adapted for many uses including salvage operations and ferry boats for vehicles and passengers (including noncombatant evacuation operations (NEOs)). It is a self-sustaining craft with the habitability features typically found aboard ships. Its welded steel hull provides high durability, and the arrangement of organic machinery and equipment provides operational redundancy in the event of battle damage. The craft has two engine rooms separated by a watertight bulkhead, thereby allowing limited operations in the event one engine room is disabled. An anchor system aft on the starboard side assists in craft retraction from the shore after beaching.

3.7.1 Mission

The LCU is designed to beach, unload/load, and retract, while performing its mission to land heavy vehicles, equipment, personnel, and cargo in an amphibious operation. LCUs also transport wheeled and tracked vehicles, general cargo, and personnel from ship to shore, shore to ship, shore to shore, and in resupply, backload, or recovery operations. RO/RO-type missions are accomplished using the vessel's bow and stern ramps. It is also valuable in LOTS operations and intratheater transport using harbor and inland waterway routes. It is capable of limited open ocean self-deployment. These craft may be carried aboard LHAs, LHDs, LPDs, or LSDs. The LCUs in use today are 1970s-vintage craft, although efforts are underway to design and construct a replacement for the current craft inventory. The landing craft utility (replacement) (LCU (R)) program is discussed in Appendix E.

3.7.2 Capabilities

The LCU has a crew of 11, and can carry up to180 tons of equipment or approximately 400 combat-equipped troops. The LCU is manned with an all enlisted crew, commanded by a chief craftmaster who is wholly responsible for the craft and crew. Ratings represented on the craft are boatswain's mate (BM), engineman (EN), quartermaster (QM), information systems technician (IT), culinary specialist (CS), and non-rated seamen and firemen.

The LCU is slower and less versatile in some ways than the LCAC. It is home for its crew and can operate independently of the amphibious ships in which embarked. Sleeping quarters, a washroom and shower, clothes washer and dryer, a lounge with a television, and a complete galley are built into the craft. The LCU has the capability of sustained independent at-sea operations for approximately 10 days.

A photograph of the LCU is found in Appendix C.

3.7.3 Operating Criteria

The MSI, as described in Paragraph 3.6.4, defines the "Go No-Go" criteria for conducting LCU beaching operations. LCUs are also required to perform several other functions during amphibious operations, and all have various restrictions and/or conditions that must be met before those operations can be safely accomplished. Those functions and relevant criteria are discussed below.

3.7.3.1 Well Deck Operations

Before LCUs can maneuver in or out of amphibious ship well decks there must be a sufficient depth of water at the sill, or the point where the hinge of the ship's stern gate meets the sea. To preclude risk of damage to the landing craft or personnel, well deck operations are a "No-Go" with less than seven feet of water at the sill. Swells must also be taken into account when maneuvering displacement landing craft in or out of well decks.

3.7.3.2 Alongside Cargo Handling

To decrease the risk of parting lines, damaging equipment, injuring personnel, or creating undue difficulties for the craftmaster in controlling the LCU, the "No-Go" criteria for alongside cargo handling evolutions is seas of three feet or higher (actual or predicted).

3.7.3.3 Load Capacities

Specific load capacities and configurations, to include types of equipment, positioning, weight distribution, and the ability to properly secure the load must be evaluated when planning LCU operations. Proposed loads must be researched and coordinated between the craftmaster and the ship's combat cargo officer (CCO). The following are examples of loads that fall within LCU load capacities:

1. Twelve high mobility multipurpose wheeled vehicles (HMMWVs)
2. Six 5-ton trucks
3. Four howitzers and four 5-ton trucks
4. Four hundred combat-ready troops
5. Two M1A1 combat-loaded Abrams tanks
6. Twenty-four CRRCs with crews and gear
7. Nine light armored vehicles (LAVs)
8. Twenty-two Zodiacs.

As a general rule, for safety purposes, personnel other than vehicle drivers are not loaded in LCUs simultaneously with equipment/vehicles.

3.7.3.4 Combat Rubber Raiding Craft Operations

During normal operations the combat rubber raiding craft (CRRC) can operate safely from an LCU in conditions up to sea state three. CRRC operations in higher sea states carry the risk of a bow ramp casualty, loss of CRRCs, or personnel injury. Such operations may also result in decreased CRRC maneuverability, slower speeds, and longer transit times. If small craft warnings are in effect or the seas are greater than six feet, CRRC operations are a "No-Go."

CRRC operations in higher sea states offer some tactical advantages that planners and commanders must consider carefully against the craft's advantages. Specifically, higher sea states offer reduced vulnerability to electronic detection, thereby enhancing tactical surprise and the clandestine nature of operations

3.8 LANDING CRAFT MECHANIZED – MARK 8

Commonly called the "Mike-8 boat," this landing craft transports cargo, troops, and vehicles from ship to shore or in retrograde movements. It is also used for lighter and utility work in harbors. Designed for use in rough or exposed waters, it can be operated through breakers and grounded on the beach. The large bow ramp allows RO/RO operations with wheeled and tracked vehicles, and its relatively small size allows for use in confined areas.

3.8.1 Mission

The LCM-8's stated mission is to land personnel, supplies, and equipment on the beach in an amphibious assault or to operate in support of MPF operations. However, because the LCM-8 is no longer routinely deployed in amphibious shipping, supporting MPF operations and conducting ammunition transfers, harbor tours, and serving as a search and rescue (SAR) platform have become the LCM-8's primary mission.

Training in LCM-8 operations and maintenance is conducted by the NBGs on each coast to ensure crew proficiency and craft readiness for MPF or harbor operations support.

3.8.2 Capabilities

A four-person crew (five in wartime) consisting of a BM petty officer, EN petty officer, and a nonrated fireman and seaman, mans the LCM –8. The craft is constructed of steel and powered by two diesel engines. It has twin screws and rudders. The LCM-8 is a highly versatile platform, capable of carrying 60 tons of cargo or approximately 150 combat-equipped troops.

A photograph of the LCM-8 is found in Appendix C.

CHAPTER 4

Assault Craft Unit (Nondisplacement)

4.1 OVERVIEW

The purpose of this chapter is to provide operational commanders and staff tactical planners with an overview of the ACU (nondisplacement) organization, tasks, capabilities, and responsibilities. The chapter also provides planners with LCAC operating parameters and capabilities that must be considered when using nondisplacement landing craft (LCAC) in amphibious operations.

The ACU (nondisplacement) element provides, operates, and maintains LCAC as outlined in the SEAOPS Manual for LCAC. It provides rapid over-the-horizon (OTH) movement from ship to shore and shore to ship of combat troops and equipment through the surf zone and across the beach. The ACU (nondisplacement) or one of its detachments also provides assault craft as required by the CATF for waterborne STS movement and support after the initial assault. An LCAC photograph and pertinent characteristics are found in Appendix C.

4.2 ORGANIZATION

The ACU (nondisplacement) is administratively organized to manage unit assets and accomplish tasks related to the assigned mission. During normal deployments, the ACU (nondisplacement) element is assigned OPCON to the ATF, ESG, or ESF commander. The size and composition of the ACU (nondisplacement) depends on the size of the mission.

The ACU (nondisplacement) detachment is normally headed by an ACU detachment OIC who provides planning and operational advice and expertise to the NBG commander or OIC, and the ATF, ESG, or ESF commander. It consists of detachments that include landing craft, crews, and maintenance personnel.

4.3 TASKS AND RESPONSIBILITIES

Each ACU (nondisplacement) shall provide:

1. Appropriate components as elements of the ATF, ESG, or ESF to support the MAGTF’s landing

2. LCAC for amphibious assault or raid operations.

4.4 CAPABILITIES

Each ACU (nondisplacement) can provide:

1. LCAC for the STS movement of a MEF over two colored beaches. This requires additional landing craft and augmentation by active duty forces or reserve elements.

2. Maintenance and support elements for immediate-level craft repair aboard ships designated as landing craft support havens. The ACU (nondisplacement) will not be tasked or have capabilities for advance base functions ashore.

4.5 OPERATIONS

Upon arrival in the amphibious AO, ACU (nondisplacement) detachments are tailored to meet the requirements of the particular operation. LCAC preloaded with high priority serials debark from the LSD/LPD/LHA/LHD and carry out assigned tasks. LCAC are employed in accordance with the promulgated assault schedule. STS movement details are delineated in the SEAOPS Manual for LCAC and NWP 3-02.1/MCWP 3-31.5.

4.6 LANDING CRAFT AIR CUSHION

The LCAC was developed to provide the Navy with a high-speed landing craft to complement the Marine Corps rotary-wing aircraft (and ultimately the MV-22 tilt-rotor aircraft) in the conduct of STS movement from OTH. The LCAC can transport equipment, personnel, cargo, and weapons systems from ships through the surf zone and across the beach to landing points beyond the HWM in a variety of environmental conditions. By combining the heavy lift capability of a surface assault craft with the high speeds of helicopter-borne assault, the LCAC exposes more of the world's littoral regions to expeditionary operations from the sea. At OTH distances of 12 to 100 nm (load and significant wave height (SWH) permitting), LCAC offer a method to attain tactical surprise.

Air cushion technology not only adds high speed and long range to surface-borne amphibious operations, but it is also less susceptible to water plume damage caused by exploding mines and underwater ordnance detonations when on cushion. LCAC also provide additional flexibility as they can operate almost independently of tides and hydrographic constraints. Weather and environmental conditions can affect LCAC operations, and the combined effect of seas, ambient temperature, humidity, and craft load must be considered in the LCAC mission planning portion of assault planning.

In addition to supporting amphibious operations, the LCAC is a viable platform for use in such other operations as personnel transfer, NEO, humanitarian assistance (HA), and support of military deception operations.

4.6.1 Characteristics and Capabilities

The LCAC, supported on a pressurized cushion of air, is much faster than displacement landing craft, traveling in excess of 40 knots (SWH permitting). With a crew of five, its range is normally 200 nm. The craft has a compartmented flotation hull made of welded aluminum alloy plates and beams forming watertight compartments. Port and starboard superstructures house craft equipment, propulsion machinery, crew stations, and passenger accommodations. The cargo deck can normally accommodate a 60-ton payload of palletized and nonpalletized items (up to 75 tons in overload condition), and RO/RO vehicular equipment up to the size of an M1A1 tank. Up to 23 passengers can be carried in designated seating in the cabin modules (16 port and seven starboard), and additional personnel may be embarked in armored vehicles or deck-installed portable structures called personnel transport modules (PTMs). PTMs can be configured to carry up to 150 combat-ready troops or 180 personnel without packs.

Two propellers mounted aft on the main deck provide approximately 80 percent of the LCAC's propulsion, and 20 percent is provided by two controllable bow thrusters. Four double-entry centrifugal lift fans provide air for the bow thruster and craft cushion. Four marine gas turbine engines drive the propellers and lift fans.

The propellers, rudders, and bow thrusters make the LCAC highly maneuverable and provide the craftmaster precise control of stationary rotation. Even so, it may require 500 yards to stop and 2,000 yards or more to turn. The craft can enter and exit amphibious ship well decks on cushion or hullborne. If the LCAC is in the hullborne mode, the wet well ship ballasts in a manner similar to that when operating with displacement landing craft.

4.6.2 Support Requirements

The LSD and LHD ship classes are specifically designed to operate and support LCAC. The LPD and LHA ship classes have been modified to conduct LCAC operations but must be fitted with military vans (container) (MILVANs) to provide logistic support. The LSD 41, and to a lesser extent, the LSD 49 ship classes have LCAC administrative and logistic support facilities and spaces included in their design. The use of MILVANs must be weighed against the corresponding reduction of LF embarkation space.

4.6.3 Operating Guidance

The SEAOPS Manual for LCAC provides comprehensive written guidance on LCAC operations and operating standards. It is the foundation for safe LCAC operations and provides the doctrine and considerations for planning and executing LCAC employment during amphibious and other operations. It serves as a guide for operational staffs, unit commanders, detachment OICs, and LCAC craftmasters and crews. The SEAOPS Manual complements the Navy and Marine Corps doctrine for STS movement during the assault phase of an amphibious operation as described in NWP 3-02.1/FMFM 1-8.

Any digression from the procedures and instructions contained in the SEAOPS Manual for LCAC must first be recommended, then reviewed, by the SEAOPS Review Committee before being incorporated into the manual.

Deviation from SEAOPS Manual for LCAC procedures, capabilities, and limitations is permitted. However, a deviation requires the promulgation of an operational waiver prior to execution. The PHIBGRU commander grants waivers until the ATF, ESG, or ESF comes under the OPCON of a theater commander or joint force commander (JFC). Waivers are granted for specific craft and specific dates (24-hour period). They do not provide blanket coverage for all LCAC involved in an operation, nor do they cover an entire operation.

The SEAOPS Manual for LCAC provides additional detailed information on LCAC operations waivers. It is not the intent or purpose of this NTRP to override or otherwise countermand the guidance and/or procedures in that manual.

4.7 LANDING CRAFT AIR CUSHION EMPLOYMENT AND OPERATING CONSIDERATIONS

The principal considerations and operational advantages realized when employing LCAC are:

1. LCAC can be employed from OTH to achieve tactical surprise.

2. LCAC are not constrained by tidal conditions and most hydrographic features.

3. LCAC complement the vertical assault in an OTH amphibious operation by providing combat support, materials, and equipment that are not deliverable by aircraft.

4. Alternate beaches can be included in the OPLAN to tactically exploit the LCAC's speed and mobility.

5. LCAC operations beyond the HWM have the potential to influence the scheme of maneuver ashore.

6. A beach separation of 500 yards from displacement landing craft is required.

7. Depending on the ATF, ESG, or ESF composition, and because of the LCAC's physical size and operational characteristics, employing LCAC can decrease the overall number of landing craft deployed and the overall ability to preload equipment.

The ATF, ESG, or ESF commander and staff planners must also consider such factors as personnel limitations (crew day), environmental conditions, safe loading capacities, and support requirements for LCAC in an amphibious operation.

4.7.1 Personnel Considerations

Protracted assault craft operations depend on the availability of rest periods for LCAC crew personnel. Fatigue is exacerbated in a high sea state, during periods of darkness, or in low visibility operations, causing boat operations to be limited to 8 hours or less. Unit organization does not provide for crew relief or relief of the craftmaster. The procedure for calculating crew day is found in the SEAOPS Manual for LCAC.

4.7.2 Environmental Considerations

Night and low visibility, temperature, wind direction and velocity, SWH, surf height, terrain conditions, and to a lesser degree, tidal status and currents, are environmental conditions that can impact the ability of LCAC to operate safely. SWH and temperature are the two weather factors that most significantly affect the capability of an LCAC to carry a standard load, which is defined as a combination of troops, vehicles, and cargo that can be carried by LCAC under normal conditions. The calculations used to determine LCAC operational limits is called the total allowable craft weight (TACW), and it varies with environmental conditions. The effect of temperature and SWH on LCAC load capability is computed using procedures discussed in the SEAOPS Manual for LCAC. LCAC TACW launch tables are similar to helicopter wind envelopes.

These computations help ensure safe and effective LCAC operations and must be confirmed to be within allowable parameters prior to launching LCAC.

4.7.2.1 Night and Low Visibility Operations

LCAC STS movements can be conducted at night to exploit the tactical advantage of landing under the cover of darkness. Similarly, low visibility conditions can be used to mask LCAC movements during the day.

Disadvantages of LCAC STS movement at night and during periods of low visibility may include:

1. Requirements for increased separation between LCAC and displacement landing craft operations

2. Stricter LCAC movement control procedures

3. Changing the timing of LCAC assault waves.

In general, night and low visibility operations take longer than daylight operations and result in a slower buildup of LF combat power ashore.

During night and low visibility operations, the SWH is of greater concern to LCAC than during daylight and clear visibility conditions. During daylight with clear visibility or in extremely bright moonlight operations, the craftmaster can vary propeller pitch and other control inputs to lessen the impact of swells on the LCAC. During night or low visibility operations, the craftmaster cannot generally anticipate swells and wave action, even when using night vision goggles (NVGs). As the sea state and SWH increase, the potential for damage to the LCAC and/or its payload increases and speed must be reduced accordingly.

4.7.2.2 Cold Weather Operations

Cold weather affects LCAC performance, personnel, and well deck operations. The LCAC cold-weather kit, discussed in the SEAOPS Manual for LCAC, was developed to reduce the effects of cold weather. The kit contains permanently installed and removable components that help combat:

1. Fuel waxing, expansion, or thickening

2. Icing in the main engine and auxiliary power unit (APU) inlet filtration systems that may result in reduced combustion airflow or clogged filters

3. Icing on cabin windshields that reduces visibility

4. Icing on propeller foreign object damage (FOD) screens that may result in reduced propulsion airflow and missile hazards

5. Craft and cargo icing that increases craft weight and personnel slip or fall hazards

6. Icing in the main engine or windshield water wash systems that reduces water wash systems availability, increases salt buildup on gas turbine blades, and reduces visibility

7. Difficulty in starting the APU or decreased craft power.

4.7.2.3 Operations in High Heat/High Air-Borne Particle Environments

A high heat environment is one in which the ambient temperature limits LCAC operations for a particular craft weight. A high airborne particle environment is one in which the levels of suspended particles of dust, sand, salt, water, ash, or other contaminants may be ingested into LCAC engines with combustion air. These conditions negatively impact LCAC performance and reduce the craft's maximum operating parameters (i.e., maximum continuous power (MCP), maximum intermittent power (MIP), and TACW).

The primary effects of high heat or high airborne particle environments on LCAC performance are increased rates of gas turbine engine wear, inlet air filtration system clogging, engine fuel consumption, and limitations on total craft weight.

The principal effect on personnel involved in LCAC operations in a high heat environment is increased heat stress.

The principal effect of high ambient temperature on LCAC well deck operations is excessive, main engine, inlet-air temperature resulting in hotter burning gases entering the engine's power turbines, thereby increasing turbine wear. Therefore, the length of time between LCAC well deck entry and engine shutdown should be minimized to limit gas turbine wear and potential engine damage.

4.7.2.4 Heavy Weather Operations

LCAC heavy weather operations are defined as operations conducted in seas with a SWH of 6 to 8 feet. In wave heights of three feet or greater, wave impact on rotating lift fans or propellers may cause severe craft damage. When operating in such conditions, standard practice is to maintain on-cushion operations as long as possible. Turn time should be minimized when turning in such seas. Whenever possible, turns should be executed into the seas and should be started to avoid the largest waves in a prevailing sea. Operating in beam or quartering seas should be limited.

MSI is not applicable in LCAC operations. Limiting conditions for LCAC in the surf zone are based on load size and SWH, the latter being the most limiting weather factor.

4.7.2.4.1 Operations in Significant Wave Heights of Six to Eight Feet

The SWH design limit for LCAC operations is 8 feet. Since speed will probably be minimal and rotating machinery can be damaged by high wave impact, operating in SWHs of 6 to 8 feet is not recommended. However, LCAC caught in such seas shall:

1. Reduce speed, but remain on full cushion.

2. Check cargo security.

3. If mission permits, seek shelter, or return to the ship, port, or shore.

4. Initiate all turns using bow thrusters instead of rudders.

5. Adjust heading and speed to avoid quartering or following seas and to prevent taking green water through the propellers.

6. Maintain craft trim.

4.7.2.4.2 Operations in Significant Wave Heights of Eight Feet or Greater

Operations in significant wave heights of 8 feet or greater should never be intentionally planned. Such conditions exceed LCAC structural limits for maneuvering and should be avoided. If forced to maneuver under such conditions, LCAC will probably suffer structural and/or rotating machinery damage. If conditions deteriorate to SWHs of eight feet or greater during operations, the LCAC craftmaster shall:

1. Maintain speed to maneuver and remain on full cushion.

2. Seek shelter from wind and seas in a location such as a lee or harbor.

3. Attempt to bring the LCAC ashore, if conditions permit.

4. Initiate all turns with the bow thruster instead of rudders.

5. Keep the bow pointed into the wind and seas, avoiding a stern quartering sea.

6. Attempt to stay ahead of or in phase with the waves when required to run before the sea.

7. When hullborne operations become necessary, attempt to run upwind and upcurrent. In this situation, fuel shortages may dictate two-engine operation.

4.7.2.4.3 Operations Over Land in Heavy Weather

Wind velocity is a primary consideration for overland heavy weather operations. The maximum wind speed considered safe for operations is 27 knots. Under such conditions, the craftmaster shall maneuver the bow into the wind, if possible, and:

1. Reduce speed, depending on visibility.
2. Be alert to counter gusting winds.
3. Seek shelter.
4. Avoid natural features that could draw lightning.
5. Partially close cushion vanes to increase drag as required.

The following terrain features may preclude LCAC from traversing over land:

1. Flat up-slope gradients of 6° or greater (if already moving).
2. Flat up-slope gradients of 5° or greater (from a standing start).
3. Vertical walls taller than 4 feet.
4. Littoral bands of boulders, rocks, or rubble wider than 4 feet.
5. Ditches greater than 15 feet wide and 4 feet deep.
6. Trees more than 4 inches in diameter and taller than 18 feet.
7. A single tree taller than 25 feet and larger than 6 inches in diameter.
8. Wooden or metal spikes taller than 2.5 feet.
9. Earth banks wider than 8 feet, and vertical “step ups” and negative relief greater than 4 feet
10. Large areas covered with tall grass and reeds. (LCAC can operate in such areas; however, forward momentum must be maintained, and when the craft clears the area, engine intakes must be inspected and cleared of any debris.)
11. Distances greater than 100 nm (combat radius).

4.7.3 Load Considerations

The SEAOPS Manual for LCAC contains specific information on LCAC loading considerations, including tables for specific craft in various conditions. The LCAC’s design weight is approximately 340,000 pounds and maximum allowable craft weight (MACW) is 368,250 pounds, including 42,000 pounds of fuel. As stated in Paragraph 4.7.2, TACW varies with ambient temperature and SWH. When planning LCAC loads, the following should be considered:

1. An LCAC rides on an air cushion. Therefore, the load center of gravity (COG) must correspond closely to the LCAC COG, and cargo spotting is critical. Load distribution required to maintain balanced loads must be considered as well as weight and area limitations. LCAC have only a limited capacity to shift fuel to compensate for load imbalance.

2. Standard loads are defined to ensure the maximum capacity of the LCAC is used in developing landing plans. However, when planning STS movements, loads smaller than standard loads may be desired for a variety of operational reasons. Planners must be aware that the total number of LCAC sorties will increase and the STS movement timing may be affected.

3. In planning LCAC preloads, routine craft loading of over 60 short tons (overloaded) should be avoided to facilitate assault operations in a variety of environmental conditions. Preloaded LCAC in an overloaded condition may not be able to achieve best speeds when environmental conditions are less than optimal. This could result in reconfiguration and/or the necessity to lighten loads and create potential delays in STS movement. Detailed preload configuration planning should be an integral part of pre-embarkation discussions between Navy and LF staffs.

4.7.4 Pre-Mission Planning/Briefing

Planning LCAC missions requires extensive communications, coordination, and liaison between the ships involved, embarked staffs, the ACU (nondisplacement) commander or OIC, and LCAC detachment. To facilitate appropriate liaison between all participants, the LCAC detachment OIC or ACU (nondisplacement) commander assigns personnel to support ship and staff personnel with LCAC mission planning. The completed mission plan is briefed to the ship's commanding officer (CO) and all principal participants prior to any LCAC operational or administrative mission, and daily during continuous LCAC operations. When feasible, the LCAC mission plan is briefed to CATF and CLF, or the ESG/ESF commander as part of the confirmation brief (discussed in Chapter 6).

Additional information and a suggested checklist for conducting the pre-mission brief are contained in the SEAOPS Manual for LCAC.

4.7.5 Crew Pre-Mission Briefing

Upon completion of the operations pre-mission brief discussed in Paragraph 4.7.4, each LCAC crewmember participating in the mission receives a crew pre-mission briefing as detailed in the SEAOPS Manual for LCAC. This briefing includes:

1. Mission goals (overall objective)

2. Operation summary

3. Briefs on weather, navigation, and communications

4. Mission details

5. Well deck and combat cargo launch and recovery concerns

6. Emergency procedures

7. Safety notes.

4.7.6 Mission Brief Back

Following the presentation of the mission brief to the LCAC detachment, a mission brief back should be conducted to verify that the assigned LCAC personnel fully comprehend the mission plan. The best method for conducting the mission brief back is to have crew personnel brief the mission back to the detachment OIC and other detachment leaders working only from their notes and available graphic aids.

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CHAPTER 5

Amphibious Construction Battalion

5.1 OVERVIEW

The purpose of this chapter is to provide tactical planners with a general overview of the PHIBCB mission, tasks, capabilities, and responsibilities, particularly as they pertain to MPF and LFSP operations.

The PHIBCB is a permanently commissioned naval unit, subordinate to CNBG, and commanded by a civil engineering corps (CEC) officer. The battalion is designed to provide an administrative unit from which personnel and equipment are formed in tactical elements and made available to appropriate commanders to operate causeways, causeway ferries (CFs), warping tugs, and bulk fuel and water systems. The PHIBCB also provides personnel and equipment to assist the beach party in salvage operations.

The primary mission of the PHIBCB is to support amphibious, LOTS, JLOTS, and MPF operations. This support includes STS transportation of vehicles, tanks, weapons systems, combat cargo, bulk fuel and water, and tactical camp operations. Secondary missions are to assist LFSP operations in a manner that does not interfere with their primary mission, and to undertake logistic construction projects within the capabilities of assigned personnel and equipment.

5.2 ORGANIZATION

The PHIBCB is charged with performing a variety of tasks in amphibious, AE, AFOE, LOTS, JLOTS and MPF operations. MPF operations may occur simultaneously with AE and AFOE operations. The many combinations of personnel and equipment that may be employed require a highly flexible organization. Organization of the tactical elements in an amphibious operation is determined by the combined requirements of CATF and CLF.

5.3 TASKS AND RESPONSIBILITIES

When directed by CNBG, the PHIBCB provides appropriate components to the NSE or beach party as required by the mission. A thorough discussion of PHIBCB equipment, responsibilities, and capabilities is found in Appendix B.

5.4 CAPABILITIES

The PHIBCB provides the capabilities listed in Figure 5-1 for the indicated operational phase.

5.5 BEACH SUPPORT UNIT

The BSU is comprised of PHIBCB personnel and is a component of the BPG. It consists of three platoons:

1. Causeway platoon - provides causeways to land equipment and supplies over the beach. Pontoon causeways are launched, assembled, and moved to the beach when directed by the PCO. Once the causeways are secured on the beach, they fall under the OPCON of the beach party commander, and BSU personnel conduct operations.
2. Fuels platoon - installs the AABFS or ABLTS when directed by the PCO. After installation, BSU personnel operate the system.
3. Camp support platoon - provides limited beach construction capabilities to establish the beach party camp and communications support.

Operational Phase	Capabilities
AE	1. Install, operate, and maintain an AABFS/AABWS or ABLTS. 2. Provide beach salvage equipment and personnel to the beachmaster or BPT commander.
AFOE	1. Install, operate, and maintain an OPDS using side-loadable warping tugs (SLWTs) or offshore petroleum discharge system utility boats (OUBs). 2. Deploy, install, and operate an elevated causeway system (ELCAS). 3. Establish and operate up to a 1,200-person support camp for the NSE. 4. Deploy, install, and operate an RRDF. 5. Deploy, assemble, install, operate, and maintain CFs. 6. Provide limited vertical construction to include heavy timber and steel watchtowers and bunkers. 7. Provide limited horizontal concrete, wood framing, and masonry construction.
MPF/LOTS/JLOTS	1. Deploy personnel and equipment using strategic airlift and sealift. 2. Install, operate, and maintain an AABWS/AABFS or ABLTS. 3. Assemble, operate, and maintain a CF system. 4. Deploy, assemble, install, operate, and maintain an RRDF. 5. Establish and operate an 850-person support camp for the NSE.
RE	1. Provide replacement training, logistic support for deployed forces, and new causeway section construction. 2. Repair and maintenance of causeway sections and landing craft.

Figure 5-1. Amphibious Construction Battalion Capabilities

The BSU elements do not always fall under the OPCON of the beach party. For example, when operating away from the beach, barge ferries and RRDFs operate under the PCO's control. Elements that install and operate the AABFS or ABLTS, although ashore, do not come under the control of the LFSP until the installation is complete. Tasks performed ashore are accomplished under the control of the beach party commander and are done without direction from the USMC shore party or LFSP commander.

5.6 EQUIPMENT

This section provides brief descriptions of the primary equipment and systems provided by the PHIBCBs in MPF operations. Information on introducing this equipment and the systems that it supports into the amphibious AO is found in JP 4-01.6. Additional detailed information is contained in Appendix B, and photographs and characteristic tables are located in Appendix C.

5.6.1 Causeway Section, Nonpowered

Designed to bridge the gap between the LCU and the shore, the causeway section, nonpowered (CSNP) enables the rapid STS movement of wheeled and tracked equipment. Each causeway section is 90 feet long, 21 feet wide, and weighs 73 tons. A causeway pier is formed when two or more CSNPs are connected end-to-end. The normal length of a causeway pier is 4 to 12 sections.

5.6.2 Side-Loadable Warping Tug

The SLWT is a barge-like craft used to move causeway sections and tend a completed causeway structure. It is 85 feet long, rectangular, low to the water, and has a small pilothouse. The SLWT has twin waterjet propulsion units that can be rotated 360°. It is extremely maneuverable and in favorable seas can move causeway sections around with relative ease.

5.6.3 Causeway Section, Powered

The general mission of a causeway section, powered (CSP) is to perform the functions of a prime mover for a CF and/or a self-propelled lighter with the added capability of being side-loadable. Twin waterjet propulsion units make the craft extremely maneuverable.

5.6.4 Causeway Ferry

The CF's general mission is to provide a means for transferring equipment ashore when sufficient sections of causeway are not available to construct a shore-fast causeway pier. Additionally, the causeway ferry provides a means of transferring equipment and cargo from a cargo ship using ship cranes for offload.

5.6.5 Reverse Osmosis Water Purification System

The reverse osmosis water purification unit (ROWPU) can provide enough potable water for a 1,200-person support camp. It can produce 600 gallons/hour from a fresh water source and 400 gallons/hour from a salt-water source.

5.6.6 Central Tool Room

The central tool room (CTR) is fully equipped with a wide variety of tools, which allows the PHIBCBs to build and maintain both the AFOE and MPF camp components.

5.7 HEAVY EQUIPMENT MAINTENANCE

PHIBCB personnel are responsible for the maintenance of their heavy equipment used in all construction, demolition, and offload operations for MPF and AFOE operations. Primary work centers and personnel involved in maintenance operations are listed below.

1. Transportation yard - provides convoy and line haul support and materials handling equipment (MHE), including warehouse and rough terrain-style forklifts and fuel and water delivery support.

2. Bulldozer section - equipped to provide limited horizontal earthwork construction, conduct beach salvage, and assist in CF retraction operations.

3. Crane section - maintains 30-, 75-, and 140-ton mobile cranes to provide weight handling equipment (WHE) support for construction operations. Additionally, the crane crew uses a 150-ton straddle lift crane to lift and launch lighterage for maintenance and repair.

4. Construction mechanic section. Performs preventative and limited depot level maintenance on all PHIBCB civil engineering support equipment (CESE).

\CHAPTER 6

Planning Considerations

6.1 OVERVIEW

This chapter provides the tactical planner with a reference on the purpose and steps in the planning process as they relate to amphibious operations and, in particular, the roles played in the planning efforts for such operations by the NBG and its support elements. In particular, the chapter provides an overview of the amphibious planning process and related planning processes used by ATF, ESG, and ESF commanders and their staffs to effectively integrate NBG assets into the overall plan for support of the LF movement ashore or other amphibious missions.

6.2 AMPHIBIOUS PLANNING PROCESS OVERVIEW

The amphibious planning process that has become the standard for all amphibious operations is adapted primarily from the Marine Corps planning process (MCPP). Various joint and Service models have also influenced it. This six-step problem-solving methodology, discussed in detail in JP 3-02 and Paragraph 6.2.3 of this publication, is a learning process to promote understanding necessary for success in the execution of all amphibious operations. The process is an essential tool for the ATF, ESG, ESF, and LF commanders and their staffs. It provides logical procedures to follow from the receipt of an order initiating the amphibious operation through the development of the OPLANs, OPORDs, formatted general operation messages (OPGENs), or operation tasks (OPTASKs) that delineate the manner in which the operation will be conducted.

Depending on the mission, planning time can vary significantly, sometimes even down to a matter of hours. A key to the success of the amphibious planning process is that it is scaleable and can be readily adjusted to fit any timeline. It is also compatible with both deliberate planning and crisis action planning (CAP). These two processes are discussed in greater detail later in this chapter.

6.2.1 Tenets of Amphibious Planning

The three tenets of amphibious planning, as listed below, are described in this section.

1. Top-down planning

2. Unity of effort within the designated amphibious AO

3. An integrated planning effort.

6.2.1.1 Top-Down Planning

Whether supported or supporting, commanders at each level must be engaged and drive the planning process. In amphibious operations, ATF, ESG, ESF, and LF commanders use the planning process to gain knowledge and situational awareness to support decisionmaking and formulate their commanders' intent and guidance. This background is required before additional steps in the process can proceed.

6.2.1.2 Unity of Effort

Operations or events in one part of the AO may have profound and often unintended effects on other areas or events. Therefore, commanders should always view the AO as an indivisible entity. Unity of effort allows commanders to effectively focus the efforts of all the elements at their disposal toward mission accomplishment.

6.2.1.3 Integrated Planning Effort

Integrated amphibious operations planning is a disciplined, systematic, and coordinated approach occurring in two parts:

1. The first part is the assembly of ATF, ESG, or ESF subordinate commanders and their staffs. When such arrangements are not practical, the exchange of liaison officers (LNOs) qualified to perform planning functions is necessary. During planning, particularly in CAP, the ATF, ESG, and ESF commanders must ensure that planning efforts are parallel and concurrent with those of higher headquarters. Also, the same degree of integration by those commanders and their staffs must be achieved with subordinate units to ensure a thorough and coordinated plan.

2. The second part of integrated planning occurs across functional areas. Planners use integrated planning to consider all relevant factors, reduce omissions, and share information across all warfighting functions. The key to this part of integrated planning is the assignment of appropriately knowledgeable personnel to represent each functional warfighting area. Integrated planning is also facilitated through dynamic operational planning teams (OPTs). These ad hoc organizations are formed around functional planners, appropriate staff representatives, subordinate and supporting command LNOs, and other SMEs.

6.2.2 Key Directives in the Planning Process

Before the amphibious planning process commences, CATF, ESG, or ESF commanders and their staffs receive guidance and direction from upper echelon commanders. The two directives considered key to starting the process are discussed below.

6.2.2.1 Establishing Directive

The establishing directive is an order to the CATF, ESG, or ESF commander to conduct an amphibious operation. It is issued by the unified commander, subunified commander, Service component commander, or the JFC delegated overall responsibility for the operation. In this directive the establishing authority specifies the desired support relationships between the CATF, ESG, or ESF commanders and other designated commanders, as appropriate.

6.2.2.2 Planning Directive

The CATF, CLF, ESG, or ESF commanders promulgate the planning directive once the order initiating the amphibious operation is issued. It ensures that the planning process and interdependent plans developed by their headquarters and assigned major forces will be coordinated, the plan completed in the time allowed, and important aspects not overlooked.

6.2.3 Six-Step Planning Process

Per JP 3-02, the amphibious planning process establishes procedures for:

1. Analyzing a mission
2. Developing and wargaming courses of action (COAs) against the threat
3. Comparing friendly COAs against the commander's criteria and each other
4. Selecting a COA
5. Preparing an execution order
6. Transitioning the OPLAN, OPORD, OPGEN, and/or OPTASK to those tasked with its execution.

The process organizes these procedures into six manageable and logically intertwined steps that are key to allowing a concurrent, coordinated effort that maintains flexibility, makes efficient use of time available, and facilitates continuous information sharing. Figure 6-1 depicts the six steps in the amphibious planning process.

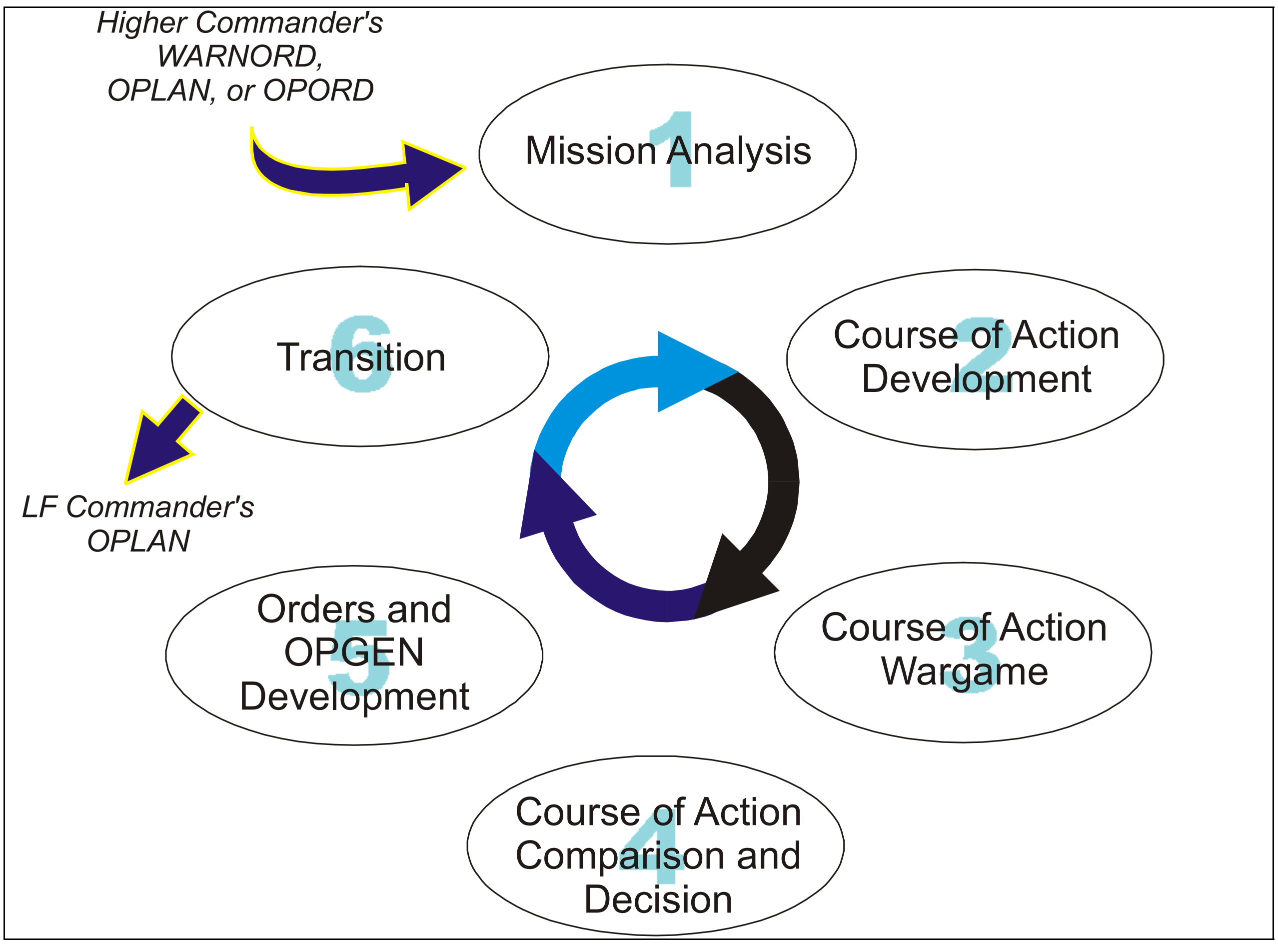

Figure 6-1. Steps in the Amphibious Planning Process

6.3 RAPID RESPONSE PLANNING PROCESS

In amphibious operations, joint CAP is more commonly called the rapid response planning process (R2P2). The procedures outlined below do not exactly mirror the planning steps outlined in JP 3-02, Paragraph 6.2.3, and Figure 6-1; however, they are based on the same fundamentals. The R2P2 process uses a compressed timeline that provides the commanders and staffs involved in the operation with an accelerated planning mechanism to facilitate mission execution within 6 hours of warning order (WARNORD) or alert order receipt. Figure 6-2 contains a brief discussion of each step in the R2P2 process including the approximate allotted time. Additional information on joint planning is contained in JP 5-00.2, Joint Task Force Planning Guidance and Procedures.

Steps	Description	Approx. Time Allotted
Mission Analysis	Mission analysis commences when the CAT and other battle staff members assemble in designated locations. The CAT consists of key members of the CATF, ESG, or ESF (supporting commander) and CLF (supported commander) staffs. The WARNORD or alert order is disseminated, and the orientation of the CAT and other battle staff and subordinate commands commences.	30 minutes
Course of Action Development	The second phase commences with CLF and CATF providing guidance to the mission commander, ATF, ESG, or ESF assets, and other members of the CAT and battle staff. It is during this phase that the mission commander and staff planners develop COAs to be presented in the next step.	40 minutes, running from the 30-minute mark to 1 hour + 10 minutes
Course of Action Presentation and Comparison	Upon completion, CATF and CLF should have a clear understanding of the COAs and the supportability of each from the perspective of their staffs, the mission commander, and the support element commanders.	30 minutes, running from 1 hour + 10 minutes to 1 hour + 35 minutes
Commander's Decision	After the COAs have been discussed and compared, CATF and CLF collaborate to select and modify a COA as necessary. This is a short step. It results in CATF and CLF issuing additional guidance, the WARNORD being disseminated to all participating assets and commands, and a CONOPS being drafted for higher command as required.	5 minutes, running from 1 hour + 35 minutes to 1 hour + 40 minutes
Detailed Planning	During this step, planners work to shape the plan, and critical interactions and coordination requirements are detailed. The important steps in detailed planning include completion of the plan per the commanders' guidance and preparation of the confirmation brief.	Greater than the previous phases
Confirmation Brief	This detailed presentation of the mission plan brings together (if logistically possible) representatives of all involved commanders and units. The brief is extremely comprehensive and is delivered to CATF, CLF, and the ESG or ESF commander by the mission commander and all subordinate commanders. Inherent in this brief are mission supporting actions and requirements presented by all applicable participants. The execution checklist is reviewed, refined, and/or revised as necessary, and a time check is conducted.	Conduct time check
Mission Execution	The plan is completed and ready for execution. If time and the overall situation permit, a rehearsal is conducted using the execution checklist as a guide.	No greater than 6 hours

Figure 6-2. Rapid Response Planning Process

6.4 THE NAVAL BEACH GROUP IN AMPHIBIOUS PLANNNING

NBG assets play integral roles in any amphibious operation. Therefore, planners from the NBG and its support units must be intimately involved from the onset of planning through mission execution. As described in previous chapters, the NBG is vital to the success of STS movement and the manner in which the amphibious AO and landing area are organized to facilitate amphibious operations and support the scheme of maneuver ashore.

Therefore, early liaison and overall planning must be instituted and effectively accomplished between the beach party commander, his subordinates, and other appropriate LF and Navy echelons.

CNBG or the NBG OIC and units providing tactical elements should participate early in the planning cycle, and they can also be valuable in providing SME advice and planning liaison between the Navy and LF planners. It is essential that NBG tactical element employment be planned concurrently with the tactical and logistical planning for the ATF, ESG, or ESF, and the LF. CATF normally assumes planning responsibility for the employment of the landing craft elements of the ACUs.

NBG planning for STS movement focuses on developing the unloading, landing control, and medical regulating (MEDREG) plans. These plans are summarized below.

1. The unloading plan establishes the sequence and designates the means for offloading the LF from assault shipping to ensure the proper formation for landing. In developing this plan, NBG planners must be intimately involved in devising the debarkation schedule.

2. The landing control plan organizes the landing area into operating and control areas to:

    a. Regulate and deconflict assault shipping movements

    b. Launch landing craft and amphibious assault vehicles (AAVs)

    c. Establish control areas, points, and stations for directing waterborne STS movements

    d. Provide operating areas for supporting forces protecting the landing area and involved in the assault operation.

3. The MEDREG plan allocates ATF, ESG, or ESF assets to transport and provide triage, medical, and surgical care for casualties.

When MPF operations occur simultaneously or soon after the amphibious operation, the CMPF is delegated the responsibility for the employment of NBG assets, in particular the causeway or CF elements of the PHIBCBs. The overall plan includes the transfer of OPCON of these tactical elements once they are phased ashore.

CLF is responsible for LFSP plans that govern beach party operations.

6.4.1 Planning Considerations

NBG representatives, including support element planners, must be involved in all phases of the amphibious planning process discussed in Paragraph 6.3. Factors that influence the organization and planned employment of the tactical elements of the NBG are described in subsequent paragraphs.

6.4.1.1 Enemy Activity and Installations in the Landing Area

A study of enemy dispositions and defensive installations may impact the size of NBG participation, equipment required, or drive mission changes. Conclusions drawn from the study may indicate a requirement for reinforcement of a particular NBG element or dictate the need for additional support from other ATF, ESG, or ESF assets.

6.4.1.2 Landing Force Scheme of Maneuver

The landing plan normally dictates the structure of the LFSP. Therefore, due to the significant role played by the BPT as a part of the LFSP and depending on the size of the operation, CNBG, the NBG staff, or the NBG OIC must be included in LF scheme of maneuver planning from the beginning.

6.4.1.3 Oceanography

A careful study of oceanographic and topographic conditions, with a weather analysis, indicates the probable employment location of the LFSP and attached NBG elements. The study also establishes requirements for special equipment. Significant oceanographic characteristics related to amphibious operations are:

1. General character of the surf and littoral currents and their effect on landing craft

2. Beach gradient and composition at various stages of the tide in relation to suitability for beaching and retracting landing craft

3. Position of the waterline at various stages of the tide with reference to natural and artificial obstacles

4. Breaker type, height, and period

5. Wind speed and direction.

6.4.1.4 Beach Capacity

Most often, the single factor limiting the ability to discharge personnel or equipment across a beach is beach capacity. NBG personnel are trained to evaluate beach capacity and then make the best and most efficient use of what is available. Therefore, their early involvement in STS and beach operations is critical. Beach capacity is variable and depends upon:

1. Physical features

2. Beach trafficability

3. Weather

4. Oceanographic features

5. Tactical situation

6. Organization and equipping of the beach

7. Tides.

To obtain optimum effectiveness from available forces during the amphibious operation, the goal must be to attain and maintain a maximum rate of discharge.

Beach capacity depends on clearance and unloading rates. Clearance rate is the rate at which cargo and personnel can be moved from beach unloading points to inland positions. Unloading rate is the rate at which cargo and personnel can be discharged from landing craft and amphibious vehicles. Estimated unloading rate, as determined by beach capacity calculations, is the measure of the requirements that must be planned for and provided by the beach party.

The beach party commander must anticipate and plan for the impact of the above variables on beach throughput and advise the ATF, LF, ESG, or ESF commander accordingly.

6.4.1.5 Low Visibility

The possibility of low visibility conditions during waterborne STS movements could require modifications to the landing plan. Particularly during low visibility operations, NBG planners must advise CATF and CLF and other commanders regarding the need for such changes as increased separation between landing craft, stricter control procedures for waterborne STS movements, or changes to the timing of the assault waves.

6.4.2 Planning for Beach Party Operations

In planning beach party employment, CLF normally provides commander's guidance to the NBG. This guidance includes analysis of the mission, the amphibious AO, and any other special considerations. The NBG commander or OIC provides an estimate of the situation and recommends task organization and support requirements to support the LFSP mission. The NBG commander integrates CLF's planning with CATF's capabilities and plans. Upon receipt of the commander's decision based on the finalized estimates, the NBG commander or OIC formulates the plan for beach party operations.

6.4.3 Beachmaster Unit Planning

BMU organization and capabilities are discussed in Chapter 2. BMU contributions to planning in amphibious and MPF operations are discussed below. The expertise of BMU planners should be utilized during R2P2 detailed planning, and they should be involved in developing and delivering the Navy plan during the confirmation brief.

6.4.3.1 Beachmaster Unit Amphibious Operations Planning

The BMU CO or OIC is tasked with assisting the beach party commander in developing plans in support of amphibious operations, the BPG, and the LFSP. Specifically, BMU planning provides for:

1. Logistics requirements for beach party elements required in the operation

2. Serialization of beach party personnel and organic equipment

3. Combat loading of the LFSP, including beach party elements, with their shore party counterparts

4. Coordination and cooperation between the LFSP and beach party elements in the planning stages.

6.4.3.2 Beachmaster Unit Maritime Prepositioning Force Operations Planning

For MPF operations, the BMU assists the NBG, MPF, and MAGTF commanders in planning the employment of the BPG. Because STS movement is not completed until the equipment and supplies to be offloaded have reached the HWM, the BMU personnel in the BPG act as the landward end of that movement. As directed by the OCO, the BPG supports the arrival and assembly operations group (AAOG) and consists of personnel assigned for beach and anchorage assistance, as well as lifeguard and swimmer security support. The BPG provides:

1. Boat salvage and repair

2. Casualty and EPW evacuation

3. Maintenance of communication with designated naval commanders and units.

6.4.4 Amphibious Construction Battalion Planning

PHIBCB planners assist the NBG and CATF in planning the employment of PHIBCB elements in an amphibious operation. PHIBCB personnel are of equal importance to Navy and LF planners during the planning process.

PHIBCB primary missions and operations are described in Chapter 5.

6.4.5 Assault Craft Unit (Displacement) Planning

ACU (displacement) personnel assist the NBG commander or OIC and CATF in planning the employment of LCUs in an amphibious operation. They also assist subordinate naval commanders in planning and preparing portions of the OPORD governing or affecting the operation of landing craft elements. The expertise of ACU (displacement) planners is vital to Navy and LF planners during the detailed planning phase of the R2P2 process discussed in Figure 6-2. These planners should also contribute significantly to and participate in the operation’s confirmation brief.

For MPF operations in support of an amphibious operation, ACU planners also support the NBG, MPF, and MAGTF commanders in planning the use of landing craft element personnel, LCUs and LCMs, and the deployment of NBG assets.

ACU (displacement) primary missions and operations are described in Chapter 3.

6.4.6 Assault Craft Unit (Nondisplacement) Planning

ACU (nondisplacement) personnel assist the CNBG or the NBG OIC and CATF in planning LCAC employment. They also assist subordinate naval commanders in planning and preparing portions of the OPORD that govern or affect the employment of assault craft elements. ACU (nondisplacement) planning personnel must participate in R2P2 detailed planning for both the Navy and the LF, particularly when OTH operations are a part of the amphibious operation. These personnel should also contribute significantly and participate in the confirmation brief.

LCAC unique mission planning requirements are covered in the SEAOPS Manual for LCAC. LCAC mission planners normally use the SEAOPS Manual for LCAC operations and casualty procedures (OCP) to provide a rapid mission planning checklist and quick verification of "Go No-Go" criteria. The LCAC mission planning and analysis system (MPAS), which deploys with all LCAC detachments, provides a more detailed mission planning and "Go No-Go" validation. The SEAOPS Manual for LCAC, Volume V, mission planning procedures (MPP) are similar to the MPAS and can also be used when planning LCAC missions.

ACU (nondisplacement) primary missions and operations are described in Chapter 4.

CHAPTER 7

Communications

7.1 OVERVIEW

The purpose of this chapter is to provide operational and staff tactical planners with an overview of the communications capabilities and requirements of the NBG and its support elements during amphibious planning and operations. The chapter also discusses some of the electronic and visual communications equipment used in STS movement and other amphibious operations.

Amphibious operations require a system of reliable, secure, rapid, flexible, and interoperable communications for planning and execution. NBG element operations that require communications support includes control of STS movement, AAV and landing craft control, logistics support coordination, coordination of support provided by other forces, and MEDREG.

7.2 CAPABILITIES

NBG organic communication equipment provides communications for beach party operations and administration. Organic assets include man-portable and vehicle-mounted communication equipment. Additional information regarding communications capabilities organic to the NBG support elements is discussed in subsequent paragraphs.

7.2.1 Beach Party Communications

The beach party is primarily responsible for establishing and maintaining effective communications with forces afloat and intercommunication between the beach party and LFSP elements.

7.2.1.1 Planning

Orders for the installation, control and operation of beach party communications are contained in the OPORD and amplified in the OPTASK AMPHIB for the amphibious operation. This communication section of the OPORD delineates frequencies, tactical call signs, and communications security (COMSEC) arrangements and requirements for the operation.

7.2.1.2 Communications Nets

Upon commencing operations, the beach party establishes and maintains radio communications on the following radio nets:

1. ATF/ESG/ESF command
2. Control ship coordination
3. Beachmaster lateral coordination.

Additional information on these communication nets is found in Figures 7-1 and 7-2.

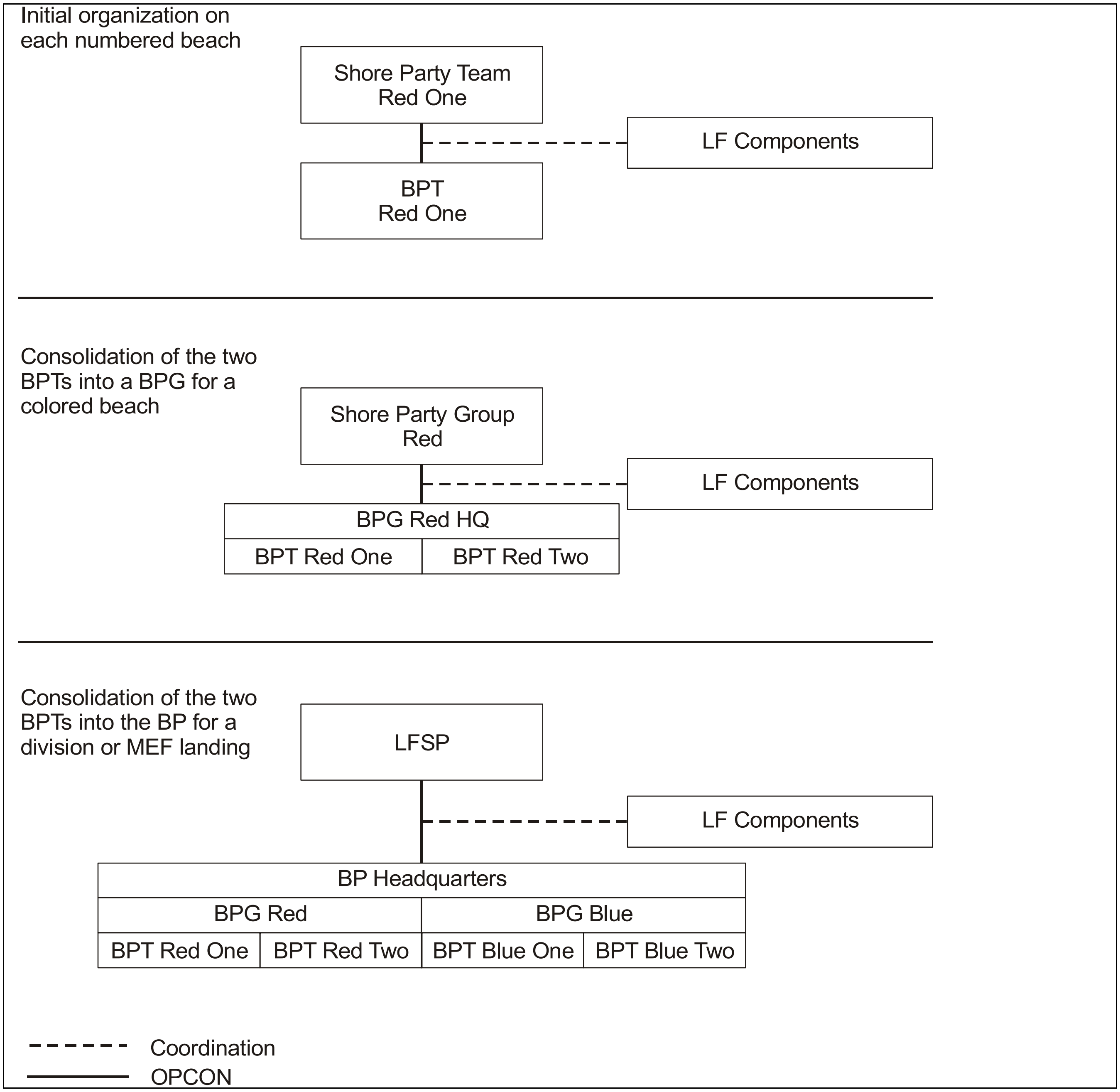

Figure 7-1. Control Ship Coordination Net

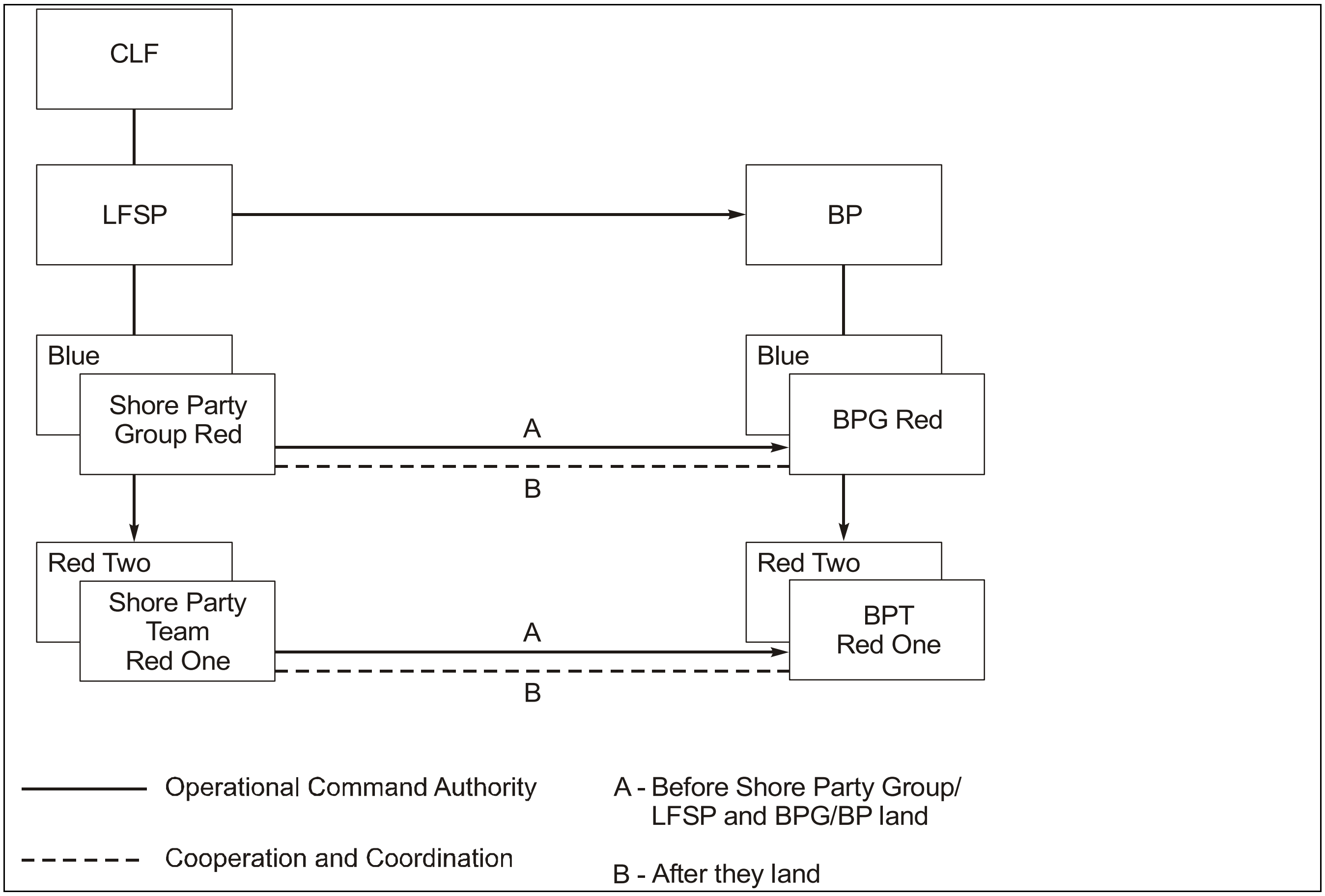

Figure 7-2. Beach Party Coordination Net

7.2.1.3 Phasing In Beach Party Communications

As the amphibious operation develops, beach party communications are phased in. When the beach party lands, along with the nets specified in Paragraph 7.2.1.2, it also establishes communications with forces afloat on (color) beach boat control and (color) beach operations circuits. When all sections of the beach party are established and operational, a guard is established on the (color) beach administrative net and the control ship coordination net circuit as soon as possible. These three nets and the beachmasters coordination net are entered as soon as the beach party headquarters is established as a command post ashore.

Upon the consolidation of beaches and BPTs, seaward communications are maintained at the BPG HQ. Initially, all radio communications at this HQ use portable personnel-carried radios until landing craft arrive bringing vehicle-mounted radios. The beach party commander is net control for the beachmasters coordination circuit.

Once the colored beaches and their BPGs are consolidated, the beach party HQ enters and assumes control of the beachmasters lateral coordination net. The beach party also enters the ATF/ESG/ESF command net and the control ship coordination net, thus completing the entire beach party communications link.

Additional information on beach party communications nets is depicted in Figures 7-3, 7-4, 7-5, and 7-6.

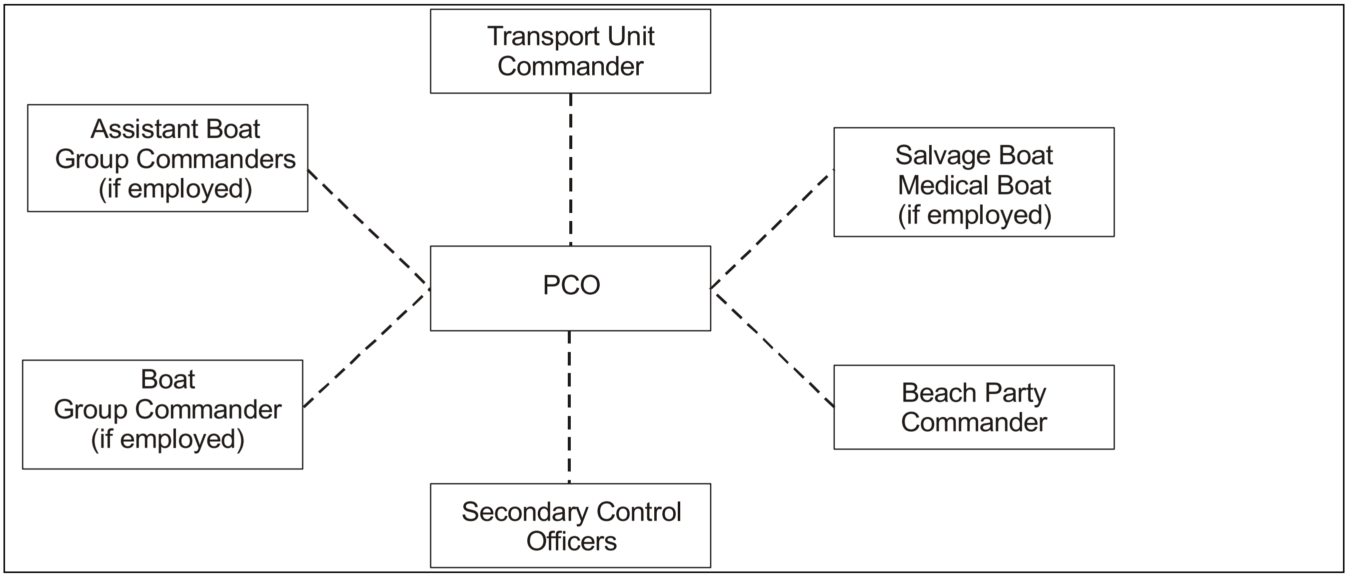

Figure 7-3. Beach Boat Control Net

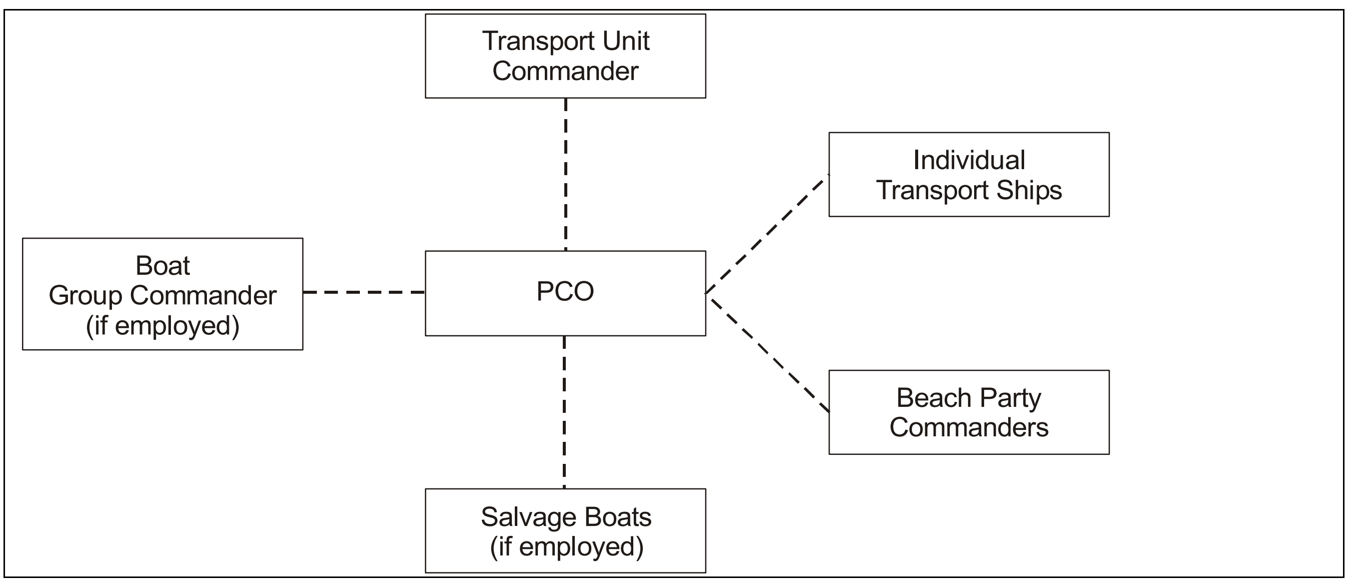

Figure 7-4. Beach Operations Net

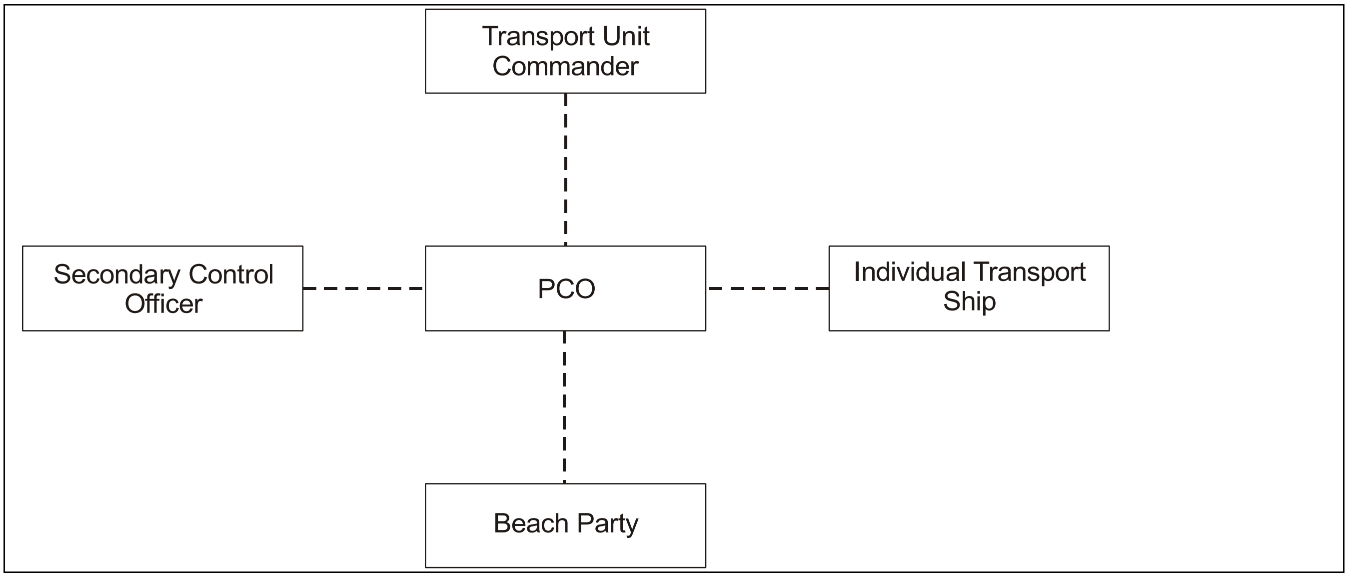

Figure 7-5. Beach Administrative Net

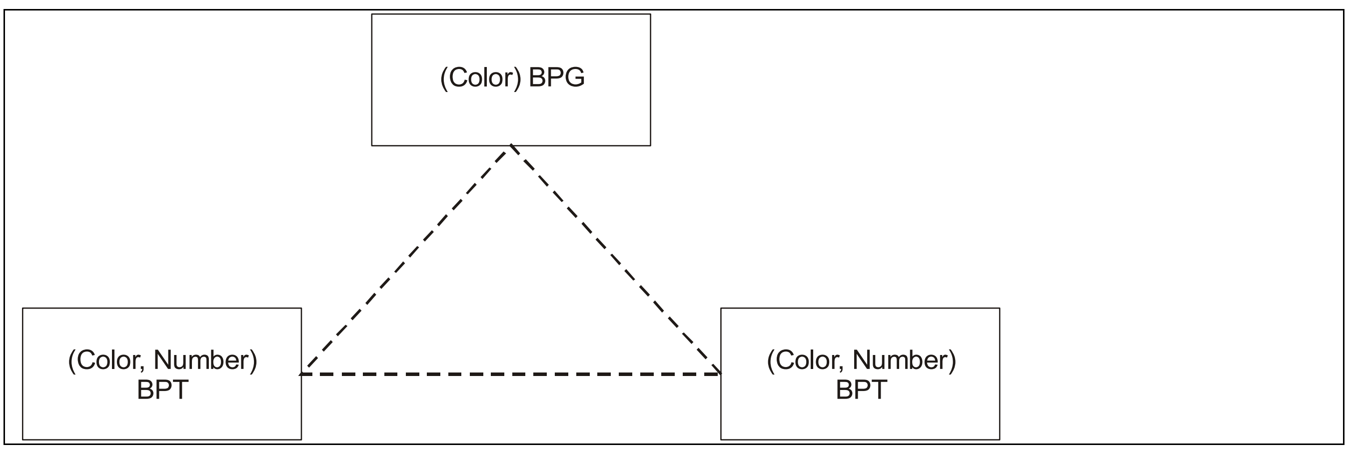

Figure 7-6. Beachmasters Coordination Net

7.2.2 Beachmaster Unit Communications

BMU personnel assigned to the beach party carry radio equipment ashore in the early stages of the operation that enable the beachmaster to establish initial communications on boat control circuits. Vehicle-mounted radio equipment is landed later. The BMU radio section provides the BPT commander with lateral communications within the beach party and connectivity with forces afloat.

BMU personnel also maintain visual communications with forces afloat, landing craft, and lateral beaches using flags, portable signal lights, and semaphore. To help prevent overloading radio circuits, BPT members use visual communications to the greatest extent possible, day and night.

When controlling landing craft by visual means, BPT members are positioned at intervals along the shore, but high enough on the beach to be readily seen by craftmasters and coxswains.

Appendix C of NWP 3-02.1/FMFM 1-8 contains information on a variety of identification flags, insignia, markers, and lights used in STS movement. The appendix also contains figures depicting landing craft beaching signals and LCAC maneuvering hand signals.

7.2.3 Amphibious Construction Battalion Communications

The PHIBCBs are equipped with radio equipment for battalion use primarily during MPF and LOTS operations with causeways, side loadable warping tugs (SLWTs), and bulk fuel/water systems. The command exercising OPCON over the PHIBCBs assigns appropriate frequencies and voice call signs.

7.2.4 Assault Craft Unit (Displacement) Communications

LCUs have installed or portable radio equipment for encrypted and unencrypted high frequency (HF), very high frequency (VHF), and ultrahigh frequency (UHF) communications. The craft's navigator monitors the radios. Because the navigator has other duties, only two circuits can generally be monitored simultaneously. LCUs also have a limited visual communications capability, including infrared. For LCM operations, crew manning does not provide for visual signaling. If required, signalmen must be provided from other sources.

7.2.5 Assault Craft Unit (Nondisplacement) Communications

LCAC are also capable of encrypted and unencrypted voice and limited visual communications. Each LCAC is equipped with HF, VHF, and UHF radios that can be channelized and shifted quickly. The SEAOPS Manual for LCAC contains additional details on LCAC communications equipment.

LCAC crewmembers are connected on a craft interior voice communication unit (IVCU) that also permits access to any of the external radios. The IVCU can also access the man-on-the-move system (MOMS) voice radio, a short range UHF walkie-talkie for communicating with the amphibious ship’s well deck, CLZ personnel, and LCAC in formation.

Visual LCAC communications are limited to the use of hand signals while maneuvering in well decks and ashore. LCAC do not display any amphibious-unique visual signals or insignia because of the FOD hazard these devices could cause.

The SEAOPS Manual for LCAC contains additional information on LCAC communications equipment. LCAC voice nets used for STS movement are described in Figure 7-7.

Net	Usage
Control Ship Coordination	For overall coordination of waterborne STS movement.
Primary Control	For coordinating STS movement at a colored beach.
LCAC Operations	Used by the launching ship to control assigned LCAC until OPCON of the LCAC is assumed by the PCO on the LCAC control net. Multiple LCAC operations nets may be employed to provide individual or groups of LCAC-capable ships with discrete frequencies.
LCAC Control	A UHF/HF net or data link used to control LCAC waves from launch to CPPs and during the return transit to amphibious ships.
Beach Control (Alfa)	For displacement landing craft and AAV control during the near-shore STS movement of scheduled waves for a numbered colored beach.
Beach Boat Operations (Bravo)	To coordinate the launch of displacement landing craft and AAVs, and the initial general offload at a numbered colored beach.
CLZ Control	To control LCAC from the CPP into and out of the CLZ at a numbered colored beach.

Figure 7-7. LCAC Voice Nets Used for STS Movement

7.3 JOINT TASK FORCE ENABLER

The JTF enabler is a forward deployed integrated communications package that provides the Marine expeditionary unit (special operations capable) (MEU (SOC)) command element (CE) with such capabilities as classified and unclassified e-mail, telephone service, satellite communications, and Internet connectivity. The JTF enabler is comprised of vehicles, generators, radios, computers, network servers, telephones, and tents. The package provides CLF and indirectly, CATF or the ESG/ESF commander, with a shore-based communications framework and support mechanism when serving as a JTF commander.

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CHAPTER 8

Command Relationships

8.1 OVERVIEW

The purpose of this chapter is to provide the tactical planner with an overview and a reference for the command relationships required in an amphibious or MPF operation, particularly when NBG elements are involved. Also, the chapter briefly discusses, in general, the command relationships established in joint and multinational operations.

The command relationships for any type of amphibious or MPF operation must be clearly defined and promulgated. The CNBG or the NBG OIC, in a supporting role to CATF, CLF, CMPF or the ESG/ESF commander, has a variety of responsibilities described previously in this publication. Depending on which task the NBG and its support elements are carrying out, the command relationships may change. If the command relationships are not specifically delineated in the establishing directive, OPORD, or other administrative orders, and understood by all participants in the operation, these relationships could cause confusion or misunderstanding that could have a negative impact on overall mission accomplishment.

8.2 SUPPORTED AND SUPPORTING RELATIONSHIPS

The supported/supporting command relationship applies to amphibious operations, including joint amphibious operations. Designating the support relationship is vital because it conveys priorities to the commanders and staff planners. The supported/supporting relationship provides the establishing authority the flexibility to establish the command relationships that best support mission accomplishment. The establishing directive should clearly delineate the purpose of the support, the desired effect, and the scope of the actions to be taken.

The support command relationship is thoroughly discussed in JP 0-2, Unified Action Armed Forces (UNAAF), Chapter 2 of JP 3-02, NTTP 3-02.3M/MCWP 3-32, and JP 3-02.2, Joint Tactics, Techniques, and Procedures for Amphibious Embarkation and Debarkation.

8.3 NAVAL BEACH GROUP COMMAND RELATIONSHIPS

The NBG commander or OIC and the NBG support elements are generally assigned a supporting role during amphibious operations. Upon receipt of direction from CATF, the CNBG alerts the required elements under his cognizance, assigns them OPCON to CATF, and may further assign others to CLF or subordinate task force commanders. The NBG commander retains administrative control (ADCON). During MPF operations, CNBG, as commander, naval support element (CNSE), also controls the cargo handlers from the NCHB.

CNBG reports to CATF for planning and normally is assigned additional duties. As discussed in Paragraph 2.3, the NBG commander may be assigned additional duty on the CLF's staff (e.g., in an amphibious assault, duties as the beach party commander when established ashore). In this capacity, the commander lands with or soon after the Marine Corps' LFSP commander. When fully established ashore during the latter stages of general unloading, CNBG normally initiates a regrouping and/or reorganization of assigned elements, and progressively assumes OPCON of the NBG elements. The beach party commander then reports to and comes under OPCON of the LFSP commander for beach operations as described in Chapter 2.

8.4 BEACHMASTER UNIT COMMAND RELATIONSHIPS

The assigned mission determines the command relationships for the BMU.

8.4.1 Amphibious Operations

CLF commands the LFSP. Therefore, when directed by CATF, those NBG elements designated to form the beach party report to CLF for planning and operations. CLF directs the LFSP commander, or other subordinate commanders when appropriate, to conduct amphibious operations planning. As CATF directs, OPCON of the beach party elements is passed to the LFSP for the assault, general offloading, and reembarkation phases. Beach party commanders retain ADCON of the Navy elements ashore at all times.

8.4.2 Maritime Prepositioning Force Operations

During MPF operations, CNBG reports to the NSE OCO and is responsible for beach operations as described in Chapter 2 and Appendix B.

8.5 AMPHIBIOUS CONSTRUCTION BATTALION COMMAND RELATIONSHIPS

8.5.1 Assignment/Reassignment

Based on CATF requirements, CNBG directs the PHIBCB CO to activate the required elements and directs them to report OPCON to CATF, or for reassignment to subordinate commands, as appropriate. The CO of the PHIBCBs normally reports with the NBG commander as NBG representatives to the CATF's staff. When required, a PHIBCB representative may be assigned to the transport group commander's staff to provide technical assistance as an SME. CATF, through CNBG, may direct the PHIBCB CO to report to the beach party commander ashore for technical assistance in the employment of PHIBCB elements established ashore. When PHIBCB elements are no longer required by the command to which assigned, they report back to the PHIBCB CO for reassignment.

8.5.2 Operational Control

The STS annex (causeway pier and CF plan) and logistic annex (STS fuel plan) in the ATF, ESG, or ESF commander's OPORD contain specific instructions for the OPCON transition of causeway piers and CPs, SLWTs, and STS bulk fuel elements. OPCON of PHIBCB elements during STS movement and subsequent operations is usually as follows:

1. Causeway pier element - passed from the transport group commander to the beach party commander on the appropriate beach

2. CF element - passed from transport group commander or cargo transfer unit commander to the beach party commander, if phased ashore

3. STS bulk fuel/bulk water transfer element - passed from the transport group commander to the beach party commander on the appropriate beach

4. ELCAS element - passed from the transport group commander to the beach party commander.

OPCON is transferred to the beach party commander when construction of that element is complete.

8.6 ASSAULT CRAFT UNIT (DISPLACEMENT AND NONDISPLACEMENT) COMMAND RELATIONSHIPS

Unit missions determine the command relationships for the ACUs (displacement and nondisplacement).

8.6.1 Amphibious Operations

Based on CATF requirements, the NBG commander directs the CO of the ACU (displacement or nondisplacement) to activate the required craft elements and report OPCON to CATF. The CO of either unit or a designated OIC may report with the NBG OIC as part of the CATF staff or to a subordinate commander.

Embarked LCAC are the responsibility of the ship’s CO for other-than-STS operations. Normally, ships carrying LCAC have an LCAC OIC embarked who provides SME advice to the ship’s CO. The LCAC OIC is responsible for advising CNBG or the NBG OIC embarked in the CATF’s flagship.

During STS movement, landing craft elements are normally assigned OPCON to the transport group commander. If circumstances require, CATF may direct that a boat pool be established ashore. In these infrequent cases, OPCON of the ACU detachment (displacement or nondisplacement) passes ashore to the beach party commander.

8.6.2 Maritime Prepositioning Force Operations

For MPF operations, the ACU (displacement) commander may be assigned duties as the OCO and exercise OPCON of all lighterage. The OCO reports to the CNSE. ACU (nondisplacement) units do not normally participate in MPF operations. Command relationships for MPF operations are delineated in NTTP 3-02.3M/MCWP 3-32.

8.7 JOINT ORGANIZATION AND COMMAND RELATIONSHIPS

Amphibious operations are normally part of a joint operation. The command relationships established within the amphibious force are in accordance with the authority and principles delineated in JP 0-2.

8.8 COMMAND RELATIONSHIPS IN MULTINATIONAL AMPHIBIOUS OPERATIONS

Command relationships during multinational operations are based on international standardization agreements or on bilateral agreements between nations. The command relationships for these operations are defined in the order initiating the amphibious operation. It allows the commander directing the amphibious operation to define the relationships in accordance with existing military and political agreements. Simplicity and clarity of expression and communications concerning command relationships are critical.

Command relationships in multinational amphibious operations are discussed further in JP 3-02, JP 3-16, Joint Doctrine for Multinational Operations, and Allied Tactical Publication (ATP) 8(B), Doctrine for Amphibious Operations, Volumes I and II.

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APPENDIX A

Amphibious Warfare Operations

A.1 OVERVIEW

The mission of amphibious warfare is to introduce ground combat forces to the land war from the sea. There are numerous examples of amphibious operations throughout history; however, amphibious warfare doctrine as practiced today by both US and coalition forces, was first developed in the 1930's by the USMC. This doctrine was originally entitled "The Tentative Manual for Landing Operations (1934)." Amphibious warfare doctrine was soon recognized as a valuable and flexible warfare tool. This view was borne out through the extensive amphibious operations of the Second World War and the Korean War. This doctrine was later adopted by the USN and issued as a Navy warfare publication (NWP). This doctrine has been extensively modified over the subsequent 70 years to reflect advancements in technology and tactics. Today, this doctrine is widely used by all US Armed Services and many allied and coalition forces, and is contained in JP 3-02.

A.2 PURPOSE

This appendix provides the tactical planner with a ready reference and overview of the basic characteristics and types of amphibious operations. It introduces the NBG and its supporting units and the manner in which they interface with other naval and/or LF units participating in amphibious operations. Other naval units and organizations include the ATF, an ESG, and the ESF.

A.3 AMPHIBIOUS OPERATIONS OVERVIEW

An amphibious operation is an operation launched from the sea by naval and landing forces embarked in ships or craft involving a landing on a hostile or potentially hostile shore.

Per JP 1-02, an amphibious force (AF) is defined as an ATF and LF, together with other forces that are trained, organized, and equipped for amphibious operations. An ATF is defined as a Navy task organization formed to conduct amphibious operations. An LF is defined as a Marine Corps or Army task organization formed to conduct amphibious operations.

All actions of the ATF and the LF must be focused on the operational objective(s) of the AF. The overall CONOPS emphasizes decisive maneuver, positional advantage, speed and surprise, and most importantly, accomplishment of the mission.

Additional information on the concepts of amphibious operations is contained in JP 3-02.

A.3.1 Characteristics

Amphibious operations encompass a wide variety of missions that support a commander's campaign or operation plan. The essential characteristics inherent in all amphibious operations are discussed in Paragraphs A.3.1.1 through A.3.1.8.

A.3.1.1 Integration Between Navy and Landing Forces

An amphibious operation requires close coordination between the ATF, LF, and other designated forces. Ordinarily, joint or combined in nature, an amphibious operation is typified by the integration of forces trained, organized, and equipped for disparate combat functions.

A.3.1.2 Rapid Buildup of Combat Power from the Sea to Shore

An essential requirement in an amphibious assault is the uninterrupted buildup of sufficient combat power ashore from an initial zero capability to full coordinated striking power. An AF should also provide continuous support for forces ashore.

A.3.1.3 Task-Organized Forces

AFs are task-organized based on the mission, and can carry out multiple missions to support joint, allied, and coalition operations. The C2 capabilities of the Navy and the MAGTF facilitate the accomplishment of multiple missions as well as joint and multinational force integration.

A.3.1.4 Unity of Effort and Operational Coherence

The complexity of amphibious operations and the vulnerability of forces so engaged require exceptional unity of effort and operational coherence. This includes the full integration of organic assets as well as those of other joint and/or multinational forces.

A.3.1.5 Readiness

Amphibious assets are immediately available to respond to contingencies. By maintaining proficiency and overall warfighting readiness, AFs can also provide a wide range of services that support peacetime operations.

A.3.1.6 Flexibility

The flexibility inherent in AFs permits political leaders and commanders to shift focus and reconfigure and realign forces to handle a variety of contingencies by providing a wide range of weapons systems, military options, and logistic or administrative skills. AFs are viable in tasks ranging from forcible entry and air interdiction operations, to NEOs, disaster relief, show of force, maritime interdiction, and foreign humanitarian assistance (FHA). Additionally, they can exercise sea control and provide diplomatic leverage in peace or time of crisis. The strategic and C3 capabilities of these forces provide a controllable force to complement diplomatic efforts.

A.3.1.7 Self-Sustainment

The nature of the operation and the types of assets committed by the participants determine the degree of self-sustainment achievable by an AF. Through sea-basing efforts, AFs can operate in forward areas without significant land-based supply infrastructure. Underway replenishment (UNREP) and on-station replacement or rotation of personnel and ships allow such operations to continue indefinitely. To enhance the sustainability of AF operations, it may be prudent and/or necessary to establish forward logistic sites.

A.3.1.8 Mobility

AFs, through strategic and tactical mobility, have the ability to monitor a situation passively, remain on station for a sustained period, respond to a crisis rapidly, and deploy in combat. Their mobility enables these forces to respond from over-the-horizon. If diplomatic, political, or economic measures succeed, AFs can be quickly withdrawn without further action ashore. They can also respond to indications of impending crises by relocating rapidly, usually independent of fixed logistics. In combat, the ability to position these forces provides commanders with a tactical and operational advantage.

A.3.2 Types

Amphibious operations encompass assaults, withdrawals, demonstrations, raids, and other operations in a permissive, uncertain, or hostile environment. In addition to projecting power, other operations conducted by AFs include military operations other than war (MOOTW), such as NEOs, FHA, or civil support operations.

A.3.2.1 Amphibious Assault

An amphibious assault involves the establishment of an LF on a hostile or potentially hostile shore. Moreover, the organic capabilities of AFs, including fire support, logistics, and mobility, can facilitate access to a crisis area by forcible entry. Refer to JP 3-02, and JP 3-18, Joint Doctrine for Forcible Entry Operations, for more information.

A.3.2.2 Amphibious Withdrawal

An amphibious withdrawal is the extraction of forces by sea in ships or craft from a hostile or potentially hostile shore.

A.3.2.3 Amphibious Demonstration

An amphibious demonstration is a show of force conducted to deceive, with the expectation of deluding the enemy into an unfavorable COA.

A.3.2.4 Amphibious Raid

An amphibious raid is a swift excursion into, or a temporary occupation of, an objective, followed by a planned withdrawal.

A.3.3 Naval Beach Group

The NBG is a permanently organized Navy command within the AF that provides personnel and equipment in support of amphibious operations, exercises, and contingencies. Chapter 1 provides more detailed information on the NBG organization, capabilities, and responsibilities.

A.3.4 Naval Support Element

The NSE, whose personnel and equipment are furnished by the NBG, forms the BPT component of the LFSP. The NSE provides CATF, CLF, and the ESG/ESF and MPF commanders with displacement landing craft, LCAC, a beach salvage capability, communications, STS bulk fuel and water systems, causeway lighterage, elevated causeways, and limited construction capability. The NSE also provides beachmaster control that is described in greater detail in Chapter 2.

The NSE's specially equipped units and personnel facilitate the flow and movement of troops, equipment, and supplies across designated landing beaches. If needed, the NBG elements are also trained to assist in evacuating casualties, refugees, and EPWs. Such services can also be made available for MPF operations.

NSE components and specific functions are discussed in greater detail in Chapters 1 through 4.

A.4 AMPHIBIOUS TASK FORCE OVERVIEW

There is no standard ATF organization applicable to all situations that may be encountered in an amphibious operation. Given the number and types of operations an ATF may be required to carry out, it is essential that the task organization remain flexible so it can readily adapt to those changing operational requirements. The key ATF tasks in any amphibious operation are:

1. Embarkation of the LF and the NSE
2. Movement to the AO
3. Protection of shipping while moving to and in the AO
4. Landing the LF
5. Employment and support of the LF ashore.

A.4.1 Mission

As a task organization formed for the purpose of conducting an amphibious operation, the mission of a traditional ATF is to provide the lift and support capability, as well as the C2 capabilities, for the LF with its equipment and supplies.

A.4.2 Composition and Size

Amphibious group (PHIBGRU) and/or PHIBRON staffs comprise the nucleus of the ATF. The size and composition of those staffs are directly related to the size and mission of the LF:

1. A PHIBRON is generally comprised of three ships: an LHA or LHD, LSD, and LPD. A commodore (captain of pay grade O-6) commands it. The commodore's counterpart is the MAGTF commander, usually the MEU commander (a colonel).

2. A PHIBGRU, composed of approximately 15 amphibious ships, is commanded by a rear admiral (lower half) (RDML) or a rear admiral (upper half) (RADM), whose counterpart is a Marine brigadier general (BGen) or major general (MGen) commanding a MEB-sized MAGTF.

3. MEF-sized operations require the movement of both East and West Coast PHIBGRUs to provide the requisite lift for the MEF's AE. MPF shipping, other Military Sealift Command (MSC) vessels, and US Transportation Command (USTRANSCOM) aircraft move the MEF's AFOE. A MEF is commanded by a Marine major general (MGen) or lieutenant general (LtGen).

A.4.3 Typical Organizations

The number and type of task groups in an ATF depend on the number of ships, the size of the naval force involved, and the overall mission of the ATF. Two or more of the groups discussed herein could be combined, or their functions accomplished by a subordinate task unit. Also, some groups may be deleted entirely, or others may be added according to the forces assigned and the operational situation.

A.4.3.1 Command/Special Operations Group

In a typical ATF, the command/special operations group is comprised of the individuals and organizations discussed below.

1. CATF and CLF are usually collocated at sea, embarked in an LHA or LHD.

2. The tactical air control squadron (TACRON) is tasked to operate shipborne control agencies for CATF. The TACRON exercises overall control of air operations from the Navy tactical air control center (TACC) in the LHA/LHD.

3. Attached special warfare forces may include sea-air-land team delivery vehicle (SDV) teams for amphibious reconnaissance/underwater demolition, or SEALs for unconventional warfare/special operations.

4. The NBG includes elements of the ACUs, BMUs, and PHIBCBs. The NBG's primary function is to conduct beach party operations to facilitate the landing and movement of troops, equipment, and supplies across the beach.

A.4.3.2 Transport/Movement Groups

For MEU and MEB-sized LFs, normally only one transport/movement group is formed. Additional groups may be organized for special situations or MEF-sized MAGTFs.

Transport/movement groups are comprised of amphibious ships that embark and land LF units, supplies, and equipment. These groups include assault landing craft such as the LCU and LCAC provided by the ACUs. JP 3-02.2 provides details on ATF task organization and LF organization for embarkation.

These groups may be subdivided into surface transport/movement units, helicopter transport/movement units, and a reserve/demonstration unit that parallels the LF task organization.

A.4.3.3 Navy Control Group

This group conducts operations from assault shipping to colored beaches, and is comprised of:

1. PCS - an ATF unit designated to provide support for the PCO and a combat information center (CIC) control team for a colored beach

2. PCO - embarked in the PCS and assigned to control the movement of landing craft, amphibious vehicles, and ships to and from a colored beach

3. Landing craft air cushion control ship (LCS) - provides support for the embarked LCAC detachment OIC and an LCAC control team to control LCAC groups from the landing craft air cushion launch area (CLA) to the beach or the CPP

4. LCAC detachment OIC - embarks in the LCS and assists the PCO by providing detailed plans for STS movement and LCAC support

5. Helicopter support team (HST) - a task organization formed in an LZ to facilitate the landing and movement of helicopter-borne troops, equipment, and supplies, and to evacuate selected casualties and EPWs

6. Helicopter direction center (HDC) - the primary direct control agency for helicopter group/unit commanders operating under the overall control of the Navy TACC.

A.4.3.4 Fire Support Group

This is a temporary grouping of ships under a single commander charged with supporting troop operations ashore by naval surface fire support (NSFS). The ships may vary with each operation, depending on the type of mission, number of ships available, and the type of supporting fires the ships can provide.

A.4.3.5 Mine Warfare Group

The mine warfare (MIW) group is a task organization of MIW units, including MCMs, mine hunter, MHCs, and MH-53 helicopters that provide support to amphibious operations in conjunction with, or independent of, allied/coalition MIW assets. This group carries out minehunting and/or mine countermeasures. The MIW staff may embark in a suitably configured amphibious ship, usually an LHA or LHD.

A.5 EXPEDITIONARY STRIKE GROUP CONCEPT

The ESG integrates the combat power of surface combatants, submarines, and other attached forces with the capabilities resident in an amphibious ready group (ARG)/MEU (SOC). Surface combatant and submarine offensive and defensive capabilities are highlighted in Paragraph A.5.4. A complete listing of ARG/MEU (SOC) capabilities and enhanced ESG capabilities is found in Commander Fleet Forces Command (CFFC) tactical memorandum (TACMEMO) 3-02.1-02, Expeditionary Strike Group (ESG) Operations.

A.5.1 Missions

The ESG provides a versatile, sea-based, operational force that can be tailored to a variety of missions. These missions include quick reaction crisis-response options in maritime, littoral, and inland environments in support of US policy.

A.5.2 Characteristics

The ESG provides the regional combatant commander or a subordinate JFC with a flexible force, certified in special operations. This force expands capabilities and operational reach, enhances offensive power projection, and also provides additional layers of defense, fire support, and self-protection capabilities in support of amphibious forces and their operations. ESG characteristics are discussed in the following paragraphs.

A.5.2.1 Operational Flexibility

The ESG can provide:

1. Continuous presence and credible sea-based combat power for rapid employment over a large area of land, sea, and airspace

2. An initial response to a crisis or become an extended presence, visibly demonstrating US resolve.

A.5.2.2 Rapid Response

The ESG can plan and execute a mission within 6 hours of receiving an alert, warning, or execute order. This is achieved through the use of the R2P2 employed by ATF/ESG/MEU (SOC) staffs.

A.5.2.3 Task Organized for Multiple Missions

The ESG can divide its naval assets over several crisis locations and exert influence over land, sea, and airspace.

A.5.2.4 Sea-Based Strategic Reach With Inherent Force Protection

The ESG's ability to operate from the sea, independent of established airfields, basing agreements, or over-flight rights, provides unimpeded and politically unencumbered access to potential trouble spots around the world. This includes remaining over the horizon without revealing operational intentions and the ability to quickly withdraw employed forces at the conclusion of an operation.

A.5.3 Capabilities

An effectively prepared, trained, and certified ESG demonstrates the warfighting capabilities delineated in Figue A-1.

A.5.4 Composition

A notional ESG consists of:

1. Three amphibious ships (LHA or LHD, LSD, and LPD)

2. Two Aegis class ships

3. One guided-missile cruiser (CG) or guided-missile destroyer (DDG)

4. One destroyer (DD) or guided-missile fast frigate (FFG)

5. One nuclear-powered attack submarine (SSN)

6. A MEU (SOC)

7. Appropriate staff manning (i.e., ESG, PHIBRON, and MEU (SOC) commanders and staffs)

8. Other commanders and staffs required to support mission objectives.

ESG assets are discussed briefly in Figure A-2.

Capability	Description
Power Projection	Power projection establishes conditions for the successful introduction of a force into a nonpermissive area. It is defined as the ability of a nation to apply all or some of its elements of national power – political, economic, informational, or military – to rapidly and effectively deploy and sustain forces in and from multiple dispersed locations to respond to crises, contribute to deterrence, and enhance regional stability.
Maritime Superiority	Air, surface, or subsurface maritime superiority can be conducted as an exclusive operation or as a subset of power projection as the LF prepares to transition ashore. It is defined as that degree of dominance of one force over another that permits the conduct of maritime operations by the former and its related land, sea, and air forces at a given time and place without prohibitive interference by the opposing force.
Maritime Special Operations	Maritime special operations can be conducted as an exclusive operation, or as a subset of shaping operations for the introduction of a larger force.
Amphibious Operations	Paragraph A.3 provides an overview of the amphibious operations capabilities inherent in an ESG.
MOOTW	MOOTW are defined as operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to complement any combination of the other instruments of national power and occur before, during, and after war.
Enabling Operations	The commander may direct enabling operations to support offensive, defensive, stability, and support operations. They are usually shaping or sustaining in nature and are most effective when conducted to introduce a larger joint or coalition force. Such operations may even be decisive in some MOOTW.
Supporting Operations	Supporting operations are those conducted by forces other than those assigned to a larger force. ESG supporting operations can be conducted as part of a larger joint or coalition force. They are ordered by higher authority at the request of the regional combatant commander or subordinate JFC, and are normally carried out outside the area for which the higher level commander is responsible at the time of their execution.

Figure A-1. Expeditionary Strike Group Capabilities

Asset	Description
LHA or LHD	As primary landing ships, LHAs or LHDs are fully capable command ships. Using AV-8B Harrier aircraft and AH-1W Cobra attack helicopters, these ships can also perform sea control and limited power projection missions.
LPD	The LPD embarks, transports, and lands LF elements for a variety of expeditionary warfare missions. These ships carry out their mission by means of embarked LCAC or LCUs and amphibious vehicles augmented by helicopter lift.
LSD	The LSD supports amphibious operations, including the support of landings via LCAC, LCUs, and helicopters. The cargo variant of this ship class was modified to carry more cargo and only two LCAC.
CG	The CG is a multimission combatant equipped with Tomahawk land-attack missiles (TLAM) for long-range strike capability. It is used primarily for air defense (AD).
DD or FFG	DDs and FFGs are combatants optimized for undersea warfare (USW).
SSN	The SSN is an asset used in a direct support role to seek out and destroy hostile surface ships and submarines and to provide a TLAM land-attack capability. SSNs can also be used for intelligence, surveillance, and reconnaissance (ISR) operations
MEU (SOC)	A MEU (SOC) is a MAGTF constructed around an infantry battalion reinforced, a helicopter squadron reinforced, and a task-organized CSSE. The MEU (SOC) provides an immediate reaction capability for crisis response and is capable of limited combat operations. Its 20-plus missions include FHA, civil support, and NEOs, as well as support for JTF operations.
AV-8B Harrier	The Harrier is a vertical takeoff and landing aircraft that can attack and destroy surface and land targets under day and night visual conditions.
CH-53E Sea Stallion Helicopter	The Sea Stallion is a heavy lift helicopter designed to transport personnel, supplies, and equipment in support of amphibious and shore operations.
CH-46D Sea Knight Helicopter	The Sea Knight is a medium lift assault helicopter, primarily used to move cargo and troops.
AH-1W Super Cobra Helicopter	The Super Cobra is a helicopter that provides fire support and fire support coordination to the LF during amphibious assaults and subsequent operations ashore.
UH-1 Huey Helicopter	The Huey is a light lift C2 helicopter that can carry a maximum of seven troops.

Figure A-2. Expeditionary Strike Group Assets

A.6 EXPEDITIONARY STRIKE FORCE CONCEPT

Expanding on the ESG concept described above, the ESF essentially integrates the ESG, the CSG, and the sea-basing functions of the MPF to provide a more potent warfighting capability. The ESF may additionally have surface action groups (SAGs) and other forces attached. The JFC determines the organization and command structure to which the ESF is assigned.

Depending on how the JFC organizes and establishes the JTFs and components (joint and/or Service) there are several commanders to which the ESF may be assigned. These options include the commander, JTF (CJTF), joint force maritime component commander (JFMCC), coalition force maritime component commander (CFMCC), Navy forces (NAVFOR) commander, or a numbered fleet commander.

A.7 MULTINATIONAL OPERATIONS

A.7.1 Description

“Multinational operations” is a collective term to describe military actions conducted by forces of two or more nations. Such operations are usually undertaken within the structure of a coalition or alliance, although other possible arrangements include supervision by an international organization, such as the United Nations (UN). A coalition is an ad hoc arrangement between two or more nations for common action. An alliance is the result of formal agreements (i.e., treaties) between two or more nations for broad, long-term objectives that further the common interests of the members. Coalitions are formed by different nations with different objectives than long standing alliances, usually for a single occasion or for longer cooperation in a narrow sector of common interest. Although the description of “multinational” applies to such forces and commanders, they can also be described as “allied,” “bilateral,” “combined,” “multilateral,” or “coalition,” as appropriate.

A.7.2 Multinational Maritime Operations

Amphibious operations are well suited for operating in a multinational maritime environment. Multinational maritime operations cover a range of military activities that involve exercising sea control or projecting power ashore. Comprised primarily of Navy and Marine or naval infantry units, they may also include maritime-focused air elements or other expeditionary forces. Multinational maritime operations are characterized by the same qualities that characterize all amphibious operations: readiness, flexibility, self-sustainability, and mobility. These traits have been enhanced by the ESG concept.

APPENDIX B

Other Maritime Operations

B.1 OVERVIEW

In JP 1-02 and JP 4-01.6, MPF operations are defined as the rapid deployment and assembly of a MEF in a secure area using a combination of strategic airlift and forward-deployed maritime prepositioning ships (MPSs). Although not a substitute for amphibious operations, due to an inherent lack of forcible entry capability, MPF operations provide a means to rapidly augment a forward-deployed MAGTF, ongoing amphibious deployment, or other joint/multinational force operations. NTTP 3-02.3M/MCWP 3-32 provides information on MPF augmentation operations and JP 4-01.6 details JLOTS operations.

B.2 PURPOSE

This appendix provides an overview of MPF, JLOTS, and LOTS operations and specifically details mission areas that directly involve the NBG and its support elements. NTTP 3-02.3M/MCWP 3-32 covers MPF operations in greater detail.

B.3 NAVY COMPONENT ORGANIZATION

The Navy MPF component organization supports the in-stream and/or pierside offload and backload of pre-positioned Marine Corps afloat equipment in support of amphibious operations, MPF operations, and MPF augmentation of amphibious operations. This organization is comprised of five key elements discussed in Paragraphs B.3.1 through B.3.5.

B.3.1 Command Element

The CE consists of the CMPF and an associated staff. The CMPF and staff originate from a standing Navy organization complete with C2 capabilities, such as a PHIBGRU, PHIBRON, or the NBG.

B.3.2 Maritime Prepositioning Ship Squadron

A maritime prepositioning ships squadron (MPSRON) consists of a group of civilian-crewed, MSC-chartered ships. There are three squadrons that are usually forward deployed. Each MPSRON is loaded with prepositioned equipment and 30 days of supplies to support a MEB-sized MAGTF.

B.3.3 Fleet Hospital Element

The fleet hospital (FH) is a Navy asset. If offloaded and established in the AO, the FH reports to the theater naval component commander. It provides medical support through a modular, rapidly erectable, 500-bed hospital.

B.3.4 Naval Coastal Warfare Element

Naval coastal warfare (NCW) resources are comprised of both active and Reserve Component Navy and Coast Guard units and personnel. The NCW element provides centralized C2, planning, coordination, training, and integration of coastal warfare assets for force protection (FP) of strategic shipping and naval vessels operating in the inshore/coastal area, anchorages and harbors, from bare beach to established port facilities. NCW elements can support a MAGTF, ATF, JTF, ESG, or ESF. The specific NCW organization varies with the operational situation, and may include some, or all, of the subordinate elements described in Paragraphs B.3.4.1 through B.3.4.6.

B.3.4.1 Naval Coastal Warfare Squadron

The Navy coastal warfare squadron (NCWRON) is a unit designated by the JFC or naval coastal warfare commander (NCWC) to conduct inshore surveillance, interdiction, vessel movement control, and waterside security operations in a port, harbor, anchorage, or designated defensive sea area. Squadron personnel coordinate coastal warfare asset support of amphibious warfare and MPF missions. The NCWRON commander can serve as the force protection officer, special security officer (SSO), or harbor defense commander (HDC) during amphibious warfare, JLOTS, and MPF operations with tactical control (TACON) of assigned coastal warfare units to ensure uninterrupted flow of strategic cargo and units to the combatant commander.

B.3.4.2 Mobile Inshore Undersea Warfare Unit

The mobile inshore undersea warfare unit (MIUWU) is a Navy surveillance unit that provides seaward security to JLOTS operations from an established port or harbor complex or unimproved beach sites. The MIUWU is equipped with mobile radar, sonar, and communications equipment located in a mobile van and can provide C3 and surveillance support to the FP officer and HDC.

B.3.4.3 Inshore Boat Unit

The inshore boat unit (IBU) is a deployable, armed, small craft unit that provides small craft security support for NCW operations in the NCW area. The IBU supplies waterborne interdiction through the use of six shallow draft (3 foot, 1 inch), high speed (34+ knots), armed 34-foot and 27-foot patrol craft with twin inboard/outboard engines. The larger craft are deigned to operate in conditions up to sea state 4 and have an on-station endurance of up to 13 hours. These craft have navigational radar, secure and nonsecure UHF/VHF communications, global positioning system (GPS), and are armed with a variety of crew-served weapons.

IBUs are fully ready for strategic lift via sea, rail, or air - within 96 hours of mobilization. They can provide 24-hour operations under all environmental conditions (within the limits of equipment and personnel safety) and are self-sustaining for a minimum of 30 days after arrival in theater. IBUs can provide their own field berthing and messing.

B.3.4.4 Mobile Security Squadron

Mobile security squadrons (MSRONs) provide commanders with:

1. Centralized planning, administration, direction, and integration

2. Training of highly mobile, fully capable, and equipped active detachments to perform physical security and FP of naval assets in ports or harbors and at anchorage for USN, MSC, or commercial contract vessels.

As a unit, MSRONs are not deployable; however, MSRON-qualified staff personnel may be selectively ordered to support local, regional, littoral, or wartime mobile security tasks. Each MSRON supports assigned detachments and coordinates deployment and redeployment with supported commanders.

B.3.4.5 Mobile Security Detachments

Mobile security divisions (MSDs) are staffed, organized, and equipped to operate independently, but in close coordination with the naval assets being protected and host-nation (HN) security and/or military forces. MSDs may operate as a detachment or personnel may serve as individual augmentees. The MSDs are organized for operations of short duration, normally not to exceed 10 days. Detachments, or tailored elements of detachments, can deploy within 24 hours of notification and can establish FP operations with 24 hours of arrival at their destination in close coordination with the ship or command to which they are assigned. Operating detachments, equipped with three armed 25-foot security boats, provide FP, waterborne security, surveillance, interdiction, and point defense of high value assets (HVAs).

B.3.4.6 Port Security Unit

Port security units (PSUs) are commissioned, deployable USCG operating units equipped with six 25-foot transportable patrol boats (TSPBs). They are charged with protecting HVAs by providing waterborne security, surveillance, interdiction, and point defense and limited land-based antiterrorism (AT) and FP for shipping and critical port facilities. These units are designed to rapidly deploy by aircraft on short notice. To conduct port operations and security, USCG forces typically join the NCW organization and possibly Army and/or USMC security forces.

More detailed information on NCW operations is found in NWP 3-10, Naval Coastal Warfare, and NTTP 3-10.1, Naval Coastal Warfare Operations.

B.3.5 Naval Support Element

The NSE is composed of the NBG staff and subordinate unit personnel, a detachment of the NCHB, and other Navy elements as required and/or assigned. The offload and backload of an MPSRON requires the expertise and capabilities of an NSE. The NSE is typically divided into two groups, one comprising the BPT of the LFSP, and another working aboard ship during the offload and STS movement phase of the operation.

B.3.5.1 Commander, Naval Support Element

The CNSE and associated staff originate from the NBG and have organic C2 capabilities. CNSE's responsibilities include:

1. Participating in offload planning and conducting the offload in coordination with the MAGTF commander and the commander, maritime prepositioning ships squadron (COMPSRON)

2. Coordinating activities between the BPT and LFSP

3. Exercising OPCON over USMC off-load preparation parties (OPPs) and debarkation teams provided by the MAGTF

4. Recommending Naval Reserve augmentation requirements to the regional combatant commander via the CMPF.

B.3.5.2 Naval Support Element Mission Areas

Operations within the NSE's primary mission areas are discussed in Paragraphs B.4 and B.5.

B.4 JOINT LOGISTICS OVER-THE-SHORE OPERATIONS

JLOTS operations are defined in JP 1-02 as operations in which Army and Navy LOTS forces conduct LOTS operations together under a JFC. LOTS operations are the loading and unloading of ships without the benefit of deep draft-capable, fixed port facilities in friendly or nondefended territory. In time of war, LOTS operations are conducted during the phases of theater development in which there is no opposition from the enemy, or as a means of moving forces closer to tactical assembly areas dependent on threat force capabilities.

B.4.1 Commander Responsibilities

The JLOTS commander is designated by the JFC and is usually from either the Army or Navy components that are a part of the JFC's task organization. This individual then builds a joint headquarters from personnel and equipment in theater and organizes the efforts of all participating elements toward accomplishing the JLOTS missions. The cargo handled may be either wet or dry, or both. The JLOTS commander will usually integrate members from each participating organization to provide the greatest overall headquarters expertise.

B.4.2 Naval Beach Group Capabilities

During JLOTS operations, the NBG units are task-organized to furnish the BPT and provide the JLOTS commander with the following capabilities:

1. Traffic control

2. Pontoon lighterage

3. Causeways

4. STS bulk fuel and water systems

5. Limited construction capabilities

6. Landing craft

7. Beach salvage capability

8. Communications that generate proper C2 to facilitate the smooth and rapid flow of troops, equipment, and supplies across the beaches.

The CNBG also assigns appropriate PHIBCB, BMU, NCHB, and ACU components for duty as naval forces in support of JLOTS operations.

B.4.3 Amphibious Construction Battalion Participation

The PHIBCB commander assigns operationally ready elements to the naval forces during the initial assault to:

1. Support the JLOTS commander during later LOTS operational phases
2. Assist the LFSP.

PHIBCB unit personnel and equipment are also formed into tactical elements and made available to appropriate commanders to:

1. Operate:
   a. Pontoon causeways
   b. Transfer barges
   c. Fuel and water transfer systems
   d. Warping tugs
   e. ELCASs
2. Provide camp support, camp security, and assist in salvage requirements.

The PHIBCB element is also required to provide personnel bed-down and camp support for NSE personnel.

Additional information on the overall PHIBCB mission, organization, and capabilities is found in Chapter 5 and later in this appendix.

B.4.4 Beachmaster Unit Responsibilities

The BMU conducts beach party operations during JLOTS to facilitate the landing and efficient/expeditious movement of troops, equipment, and supplies across the beach. Comprehensive information on the overall BMU mission, organization, and capabilities is found in Chapter 2.

B.4.5 Assault Craft Units' Participation

As discussed in Chapters 4 and 5, there are two ACUs within the NBG that provide, operate, and maintain landing craft for the ATF or ESG commander for STS movement of the LF. Using

LCUs, LCAC, or LCMs, the ACUs assist with the operation and maintenance of lighterage for LOTS operations.

B.4.6 Navy Cargo Handling Battalion Participation

The NCHB detachment conducts lift-in/lift-off evolutions during LOTS operations. The NCHB is discussed further in Section B.6.

B.5 CARGO OFFLOAD DISCHARGE SYSTEM

The cargo offload and discharge system (COLDS) consists of two systems: COTS and the offshore bulk fuel system (OBFS). These two systems are designed to operate simultaneously, sustaining an uninterrupted flow of supplies and bulk fuel from ship-to-shore in areas completely lacking specialized port facilities. The basic building block for most elements of these systems is the 5 x 5 x 7-foot Navy lighterage (NL) pontoon can, or box. These specially designed, internally reinforced, welded steel, rectangular boxes, are designed to fit together to form floating and nonfloating lighterage components such as causeways, elevated causeways, barges, and tugs.

COLDS components are deployed in naval amphibious shipping, strategic sealift ships, and MPS. Navy LHAs/LHDs, LPDs, and LSDs carry LCAC and LCUs in their well decks. Strategic sealift such as lighter aboard ship (LASH) vessels are used to deploy the majority of Navy (and Army) lighters. These units require a heavy lift capability to remove them from the ship. As discussed in Chapter 5, the PHIBCBs (and Army floating craft companies) assist in the deployment of the systems from strategic sealift shipping and assemble the systems in theater.

COLDS components and associated equipment are covered in significant detail in Naval Facility Publication (NAVFAC P)-401, Strategic Sealift Orientation and Planning Guide.

B.5.1 Container Offload and Transfer System

COTS is designed to provide the Navy amphibious and joint expeditionary forces with the capacity to offload and onload current and future generations of containerized cargo vessels while moored offshore, and to deliver the container cargo to the beach as required. The five primary craft and components in COTS are discussed in Paragraphs B.5.1.1 through B.5.1.5.

B.5.1.1 Side-Loadable Warping Tug

The SLWT is the primary working craft used for COTS, and is found in Navy and Army inventories. This craft is used to install, tend, maintain, and retrieve other causeway system components. The SLWT has the following characteristics:

1. Length of 85 feet

2 Width of 21 feet

3. Weight of 104 tons

4. Can carry a load of 20 tons on its own deck

5. Draft unloaded is 4 feet

6. Powered by two waterjet propulsion assemblies that provide exceptional maneuverability

7. Has a reduced draft when compared to craft with traditional hull configurations and screws

8. Equipped with a dual-drum winch, an A-frame, and appropriate rigging, and a stern anchor that facilitates the warping tug functions.

9. Used in the installation of ELCASs, OPDSs, and RRDFs

10. Perform a wide variety of other functions, such as powering CFs, setting anchors, and performing surf salvage.

A picture of the SLWT is found in Appendix C.

SLWTs must be able to meet the following operational requirements:

1. Deploying via merchant ship

2. Operating in:

    a. Sea state 2 and a surf up to 3 feet

    b. The surf zone and in debris-infested waters with a minimal degradation in thrusting power and maneuverability

3. Developing:

    a. 12,500 pounds of thrust ahead, 10,500 pounds of thrust athwartships, and 8,500 pounds of thrust astern

    b. Speeds of 8 knots in a single unloaded section and 6 knots in a 4-section causeway configuration

4. Being highly maneuverable offshore, in the surf, and in beaching/retracting operations

5. Conducting continuous operations for 10 hours without refueling, with a fuel capacity of 624 gallons.

B.5.1.2 Causeway Ferry Operations

The CF is an excellent platform for transporting containers, rolling stock, and tracked vehicles. The CF configuration can be changed, making it flexible and adaptable to operational requirements, weather conditions, beach conditions, and theater offloading capability. A picture of the CF is found in Appendix C.

B.5.1.2.1 Components

CF operations are conducted using the CSP or SLWT discussed in Paragraph B.5.1.1. The CSP weighs 97 tons and has an unloaded draft of 4 feet.

There are also three types of CSNPs used in conjunction with the CSPs to make up the CF:

1. The causeway, beach end (CBE) is equipped with a five-sectioned ramp that is used during a beach landing to transfer cargo ashore. The ramps are lowered with assistance from the BPT. This section is 90 feet long, 21 feet wide, and weighs 73 tons. If required to beach, this section's maximum load of 75 tons hinders its ability to pull far enough onto the beach to allow proper and safe offload.

2. The dimensions of the offshore section are identical to the inshore section, or CBE. It weighs 75 tons and can carry a maximum load of 75 tons. This section is not normally used in CF operations, but can be attached to a CSP if necessary.

3. The intermediate section is the main building block of CF operations. This section weighs 69 tons, can carry a maximum of 100 tons, and has the same length and width as the other sections. There may be from one to four intermediate sections.

B.5.1.2.2 Operational Constraints and Requirements

As is the case with almost all MPF operations, sea conditions and loading limitations must be carefully considered when conducting CF operations. Constraints and requirements that must considered are:

1. CF operations using NL are limited to sea state 2. Additionally, the BPT will not allow the CF to land when the MSI is above 4 during training and above 7 in wartime.

2. When the craft is loaded, it has a freeboard of approximately 1 foot. Total load on any sections must be considered, as the deck will be awash during operations in higher sea states.

3. The CF pilot makes the final decisions during all loading evolutions.

4. The operating endurance and range of an empty CF craft is approximately 10 hours or 75 nm. Speed is about 8 knots unloaded with no CSNP section attached or "flexed" on.

5. The SLWT requires a crew of eight personnel and the CSP requires a crew of six.

B.5.1.3 Roll-On/Roll-Off Discharge Facility

The RRDF allows the offload of military vehicles such as tanks, recovery vehicles, tractor/trailers, and forklifts from a RO/RO merchant ship onto lighterage, which then transfers the vehicles to the beach. The system was developed for offloading and back-loading both self-sustaining and non-self-sustaining RO/RO ships in stream. Deployable in 36 hours, it is transportable by wet well ships and commercial carriers. The RRDF can offload all conventional rolling stock, including M1-A1 tanks, onto CFs and LCUs.

B.5.1.3.1 Components

The RRDF consists of six CSNPs. The sections are assembled into a platform that is two sections long and three sections wide. The RRDF's dimensions are 65 feet wide, 180 feet long, 5 feet high, with a draft of 2 feet. When an LCU is used for lighterage, a seventh causeway offshore section (COS) CSNP fitted with a rhino horn is added. The rhino horn is required to allow the LCU to "marry" with the CSNP. The RRDF assembly also includes fendering, lighting, and a ramp for vehicle movement to and from the ship and platform.

B.5.1.3.2 Operational Constraints and Requirements

When using the RRDF, the primary factors that must be considered involve load limits and weather. The following constraints and requirements are pertinent:

1. There is a 100-ton maximum load capacity per section.

2. The RRDF is only deployable in sea state 2 or lower. SWH limitations are 3.5 feet for daytime operations and 2 feet for nighttime operations.

3. The daily offload rate is dependent on the sea state, distance from ship to shore, and the type of lighterage employed.

4. The RRDF is manned, connected, and outfitted for mooring to the ship and maneuvered into place using the SLWT and/or CSP.

5. Depending on the ship type, the RRDF is moored to either the RO/RO ship's side or stern.

6. Rolling stock is driven from the ship onto the RRDF, then loaded onto either a CF or an LCU for movement to the offload site.

7. Twenty-two personnel are required for RRDF installation and retrieval, and 15 personnel are required for maintenance and operation.

B.5.1.4 Elevated Causeway System (Modular)

The elevated causeway system (modular) (ELCAS(M)) is an elevated causeway pier that provides a means of delivering containers, vehicles, and bulk cargo ashore without the lighterage having to contend with the surf zone. ELCAS(M) provides the capability to offload containers from lighterage and quickly move the cargo ashore via wheeled vehicles on the elevated roadway. It is particularly useful where port facilities are damaged, nonexistent or unsafe and unsecure, or where surf conditions preclude direct discharge of cargo and equipment ashore.

B.5.1.4.1 Components

ELCAS(M) is a temporary pier that consists of connected 8 x 40 x 4.5-foot International Organization for Standardization (ISO) modules elevated on piles and extended seaward across the surf zone up to 3,000 feet from the beach. The pier must provide a maximum water depth at mean low water (MLW) of 20 feet.

ELCAS(M) is composed of:

1. Piling system
2. Pile extractor
3. Fender system
4. Beach ramp
5. Lighting system
6. Safety equipment
7. Roadway
8. Two container-handling cranes
9. Rough terrain cargo handlers
10. A pier head that provides an area of 240 x 72 feet to allow simultaneous offloading of lighterage on either side of the pier head by the two cranes
11. Two turntables.

The last modules assembled seaward provide a pier head for the two 175-ton mobile cranes and two turntables. The turntables are used to rotate vehicles driven to the pier head from shore or lifted by crane from lighterage brought alongside the pier head.

B.5.1.4.2 Operations

To satisfy the requirements for timely delivery of resupply and sustainment, the complete 3,000-foot ELCAS(M) facility must be installed within 168 hours (7 days). Once the operation is complete, the system is designed to be disassembled, repacked, and back-loaded aboard a crane ship (T-ACS) or commercial container ship. For satisfactory mission completion, the installation time constraint requires tight scheduling and parallel operations.

To expedite the movement of ELCAS(M) equipment and modules, the ISO modules are assembled on the ship prior to departure. Two of the configured modules are assembled alongside the ship into a barge ferry (BF) platform that transports the ELCAS equipment and modules to the beach. An SLWT is normally the prime mover for the BFs. Therefore, as ELCAS equipment on the first BFs begins arriving at the beach, parallel installation events begin. For example, offloading operations, such as STS transportation and unloading BFs, can continue while receipt and stowage of hardware, erection of the beach end and roadway, and installation of operating systems are in progress.

The 7-day installation timeline does not allow storage of all ELCAS(M) components before installation starts. After the last of the ELCAS equipment and ISO modules are brought ashore, the BFs are disassembled and the modules, except the bow of the BF platform, are used in the construction of the ELCAS pier head.

B.5.1.4.3 Operational Constraints and Requirements

The following constraints and other operational requirements must be considered when using ELCAS(M):

1. ELCAS(M) can operate continuously in sea state 3, which consists of a 5-foot surf, 30-knot winds, and a 4-knot current. The system can survive in sea state 6, which consists of a 12- to 20-foot surf, 75-knot winds, and a 4-knot current.

2. A crew in excess of 80 personnel is required to raise and lower the system, and a crew of 24 is needed to conduct throughput operations.

3. BPT support is required to insert the causeway system into the beach and retract it from the beach.

B.5.1.5 Floating Causeway Operations

The floating causeway (FC) provides a floating pier for the discharge of cargo, rolling stock, tracked vehicles, and personnel from ship to shore using various types of lighterage. FC operations can be performed in up to sea state 2. The BPT must be on the beach during the construction, operation, and retrieval of the FC.

B.5.1.5.1 Concept of Operations

The NL FC is 1,080 feet long and comprised of 12 sections. The FC is transported to the AO by LASH ships. When unloaded from the ship, the individual sections are assembled together with the support of an SLWT. After assembly, the FC is beached perpendicular to the shoreline and stabilized by several anchor mooring assemblies and antibroaching wires. The FC serves as a floating pier, allowing lighterage to maneuver between ships and the shore. The advantage of the FC is that it allows discharge of cargo, rolling stock, and tracked vehicles offshore in deeper water. This accommodates lighterage with deeper drafts and helps prevent surf zone beach discharge damage to lighterage.

B.5.1.5.2 Components

The FC consists of three major segments: 1 CBE section, 10 intermediate causeway sections, and 1 sea-end section. Depending on operational requirements, the FC may be configured to 4, 6, 9, or 12 sections. Three or four SLWTs may be required for installation, depending on the prevailing tides, current, and environmental conditions affecting installation and FC position keeping.

B.5.2 Offshore Bulk Fuel System

The OBFS elements of COLDS are designed to provide forces ashore with the ability to offload large quantities of petroleum and water products from military, MPS, and commercial tankers.

The OBFS provides an offshore fuel supply system capable of supporting the high volume fuel requirements of all MAGTFs, a joint expeditionary force, or full-scale JLOTS operations.

B.5.2.1 Amphibious Assault Bulk Fuel System and Amphibious Assault Bulk Water System

The AABFS and AABWS are the petroleum, oils, and lubricants (POL) and water discharge systems used to support amphibious operations and MPF operations. The systems are installed for STS fuel or water transfer that initially links a transporting ship with a shore-based fuel/water storage system.

B.5.2.1.1 Components

The systems consist of 5,000 or 10,000 feet of buoyant 6-inch (fuel) or 4-inch (water) reinforced rubber hose deployed from an MPF ship. The AABFS/AABWS hose reel and an associated winch are used in conjunction to deploy and retrieve the hose. The system also uses a beach interface unit (BIU), consisting of a 6-inch or 4-inch three-way valve manifold weighing approximately 123 pounds, positioned 200 feet inland of the HWM, and secured by two 200-pound anchors. The BIU is a ball valve manifold positioned on the beach for distributing the flow of fuel or water from the ship to the inshore distribution system.

B.5.2.1.2 Operational Constraints and Requirements

The following AABFS/AABWS operational constraints and requirements must be considered when operating these systems:

1. The system is designed for short duration use (i.e., 30 days or less) and at a maximum of 10,000 feet offshore. More than one system may be used simultaneously; however, booster pumps are required.

2. The AABFS/AABWS is designed to be installed, retrieved, and operated under the following maximum conditions: 4 knots of current, 10 knots of wind, sea state 3, and a surf height of 6 feet.

3. Under favorable conditions, system installation time is 4 to 6 hours. System retrieval normally requires 6 to 10 hours, depending on weather, sea conditions, and type of sea bottom (for anchor installation).

4. Ten personnel are required for system installation and operation.

5. CFs, LCUs, LCM-8s, SLWTs, or CSPs can deploy the AABFS/AABWS. In the future, it may be possible to deploy the system via LCAC.

CAUTION

Proper loading and securing of the hose reel is essential to personnel and craft safety.

6. A site survey is required prior to deploying the AABFS/AABWS. The survey will include an area 500 feet inland and seaward from the low water mark (LWM). The transition point from sea to shore is the most critical area.

To prevent damage to the buoyant hose line, a sandy beach is preferred.

7. The BIU is transported to the operational beach by LARC or other support craft, and is secured using two 200-pound dead-man anchors.

8. Anchor spacing during deployment of the hose line is very important for hose line survival. Sea conditions dictate the spacing and number of anchors used.

9. Halt pumping operations if the following conditions are observed: weather and sea state prevent the delivery ship from holding position, nightfall occurs, maintenance work is being performed on the hose system, or there is a fuel leak.

The AABFS and AABWS are being removed from MPF ships. Delivery of bulk fuel and water is transitioning to the ABLTS. Once all MPF ships have been outfitted with ABLTS, AABFS and AABWS will be removed from the MPF inventory.

B.5.2.2 Amphibious Bulk Liquid Transfer System

ABLTS provides the initial means whereby liquid products are sent ashore from MPF ships or amphibious ships during the AE phase of an amphibious operation. It is used to supply water and fuel to ground forces until the OPDS can be installed. ABLTS is a 150 psi (at the ship) system that can transfer fuel up to 600 gallons per minute through 5,000 feet of collapsible hose line, and the same capacity of water through 10,000 feet of hose line. The system is transportable by air (limited), rail, truck, or container ship.

B.5.2.2.1 Components

ABLTS consists of three storage reels that can deploy a 4-inch collapsible water hose on one reel and 6-inch collapsible fuel hose on two reels. It comprises all hardware, support equipment, and documentation required to package, store, deploy, maintain, and recover the hose line. The hose line connects a BIU onshore at the ABLTS outlet with a delivery or supply vessel.

The collapsible hose is wound onto a dispensing reel that is housed along with the prime mover, hydraulic drive system, and controls within a protective structural frame and housing. Each hose assembly consists of two heavier hose sections for the surf zone and the ship/bitter end, and lighter, equal-length sections for the remaining hose joined by standard couplings and nonstandard swivel-couplings for the 6-inch hose line. The nonstandard couplings are specially constructed, low-torque swivels that rotate to relieve twists in the hose as it is pressurized.

The reels are powered by a mechanical-hydraulic interface that allows a continuous range of speeds when braking and during the wind and unwind modes. Since the hose lies flat, a hydraulically powered level-winding device is provided to assist in winding the hose onto the reel along its full width. The prime mover powers the hose reel, the level-winding device, and an auxiliary winch used to retrieve the mooring anchors and floats used to stabilize the hose when deployed.

B.5.2.2.2 Operational Constraints and Requirements

The following constraints and requirements must be considered when operating this system:

1. Eleven personnel are required for system deployment, operation, maintenance, and retrieval.

2. ABLTS is designed to be operated under the following maximum conditions: 4 knots of current, sea state 4, 50-knot wind gusts, 8-foot seas, a temperature range of -25 to 150 °F for fuel and 32 to 150 °F for water, and a range of sea water temperatures from 20 to 95 °F. The system can operate for up to 120 days under these conditions.

3. ABLTS is designed to be deployable and retrievable in conditions of no greater than sea state 2 and currents of 1.5 knots or less.

4. The system can be deployed using LCUs, LCM-8s, SLWTs, or CSPs.

5. A full BPT is required to support ABLTS beach operations.

6. A site survey is required prior to deploying the ABLTS. Particular attention must be paid to water depth and bottom type along the hose line route, beach gradient, tidal range and currents, surf conditions, location of the BIU, and beach obstructions/type.

7. When delivering fuel, hazardous material containment, clean up, and disposal are required considerations.

8. The timeline for operations of the ABLTS is dictated by the ship's bulk fuel capacity, distance from the ship to shore (5,000/10,000 feet), amount of fuel required by the end user, and pumping capacity of the delivery ship.

B.5.3 Offshore Petroleum Discharge System

OPDS is a rapidly installable system that ensures vehicles and equipment being offloaded from ships can be refueled, and that aircraft can operate from airfields in the AO. It provides a semipermanent, all-weather facility for the bulk transfer of POL directly from offshore Ready Reserve Force (RRF) tankers modified to support the system, to a beach termination unit (BTU) located immediately inland from the HWM. POL is then either transported further inland to forces operating ashore or stored in the beach support area. PHIBCBs and UCT personnel are trained to conduct actual deployment of the OPDS, normally led by a PHIBCB OPDS OIC. Other units required for the OPDS mission are the tanker crew, a BMU element, and an ACU element. OPDS can interface with either the Army or USMC inland petroleum distribution system (IPDS).

Fuel is provided at 1.2 million gallons per 20-hour day up to 4 nm through a 6-inch diameter float/sink conduit carried on eight large storage reels. Should two products be required, the OPDS tanker can deploy two product lines 2 nm in length.

B.5.3.1 COMPONENTS

The major BPDS components are:

1. OPDS tanker with booster pumps, spread mooring winches, and conduit-handling equipment consisting of OUBs, three tow tugs, one lay-repair barge, and one dive boat. Some tankers have the outfitting equipment to convert three SLWTs to tow tugs and one SLWT to a lay-repair barge. A craft of opportunity is then used as a dive boat.

2. A recoverable single-anchor leg mooring (SALM) to accommodate tankers up to 70,000 dead-weight tons. The SALM provides single-point mooring for the tanker, allowing 360° ship rotation without fouling the conduit.

3. Ship-to-SALM 6-inch diameter (internal) hose lines.

4. Up to 4 nm of 6-inch (internal diameter) conduit, which is provided for pumping POL to the beach. OPDS can support a two-line system for multiproduct discharge, but the ship standoff distance is reduced from 4 to 2 nm.

5. Two BTUs on the beach at the HWM to provide the interface between the OPDS and the IPDS.

6. A conduit-flooding buoy (CFB), which is a tool used to flood the conduit during installation.

7. Handling equipment on the tanker for deploying and retrieving the conduit.

8. Towing/mooring winches on the stern of the tanker to provide a four-point mooring capability using the improved mooring system (IMS).

B.5.3.2 Operational Constraints and Requirements

When installing the OPDS, weather conditions must be continuously monitored and other system requirements strictly adhered to. The following must be considered:

1. Water depth must be between 35 and 200 feet; the tanker can be moored no more than 4 miles from shore (tanker carries only 4 nm of conduit); and the near shore gradient must be as shallow as possible.

2. OPDS design allows installation in the following maximum weather conditions: 1.5-knot cross current, 5-foot wave height, 16-knot winds, sea state 2, temperature of minus 50 to 113 °F, and a sea bottom of sand, mud, or coral, but not rock (SALM limitations). When the tanker makes a single-point moor with the SALM, the following maximum weather conditions apply for OPDS pumping operations: 50 knots of wind, 4 knots of current, 12-foot wave height, and 1.5 knots of cross current.

3. Once the SALM deployment or retrieval has commenced, it cannot be stopped until the evolution is complete.

4. An extensive site survey is required prior to OPDS installation. Surveys are conducted by the UCT for the BTU site, underwater conduit route, underwater SALM site, rigid mooring site for the tanker, and any additional environmental considerations.

5. After site survey completion, and working in daylight only (unless otherwise specified), the optimal installation time from tanker arrival to pumping commencement is approximately 6 days.

6. Retrieval of the OPDS components takes approximately 5 days. It is much easier to retrieve the SALM in port; therefore, for system retrieval it is optimal to have a port facility nearby. Then, after it has been deballasted, the SALM is usually towed to port for backload onto a tanker. The SALM can be towed up to 2,000 miles at best tanker speeds.

B.6 NAVY CARGO HANDLING BATTALIONS

The NCHBs are the combined cargo handling units of the Navy. These include one active duty unit (NCHB ONE) and twelve Reserve cargo handling battalions (NCHBs THREE through FOURTEEN). These units are part of the operating forces and represent the Navy's capability for open ocean cargo handling and port operations.

NCHBs may operate independently or with other naval, joint, allied, or coalition forces in all climates and under all threat conditions. Depending on the tactical situation, NCHBs may report to the theater Navy or Marine logistics command, to CNBG as part of the NSE during MPS, LOTs, or JLOTS operations, or may serve as the NSE commander in the absence of CNBG (MPS pier side operations).

The NCHB is defined in JP 1-02 as a mobile logistic support unit capable of worldwide deployment in its entirety or in specialized detachments. It is organized, trained, and equipped to:

1. Load and offload USMC and Navy cargo carried in MPS vessels and merchant break-bulk or container ships in all environments.

2. Operate an associated temporary ocean cargo terminal.

3. Load and offload Navy and Marine Corps cargo carried in military-controlled aircraft.

4. Operate an associated expeditionary air cargo terminal.

B.6.1 Navy Cargo Handling Battalion ONE

NCHB ONE is an active duty operating unit of Commander Fleet Forces Command (CFFC). In addition to the operational missions listed above, NCHB ONE trains and evaluates the Reserve NCHBs.

B.6.2 Naval Reserve Cargo Handling Battalions

Reserve NCHBs are commissioned Naval Reserve units of the Naval Reserve Force (NRF), administered by the commander expeditionary logistics support force (ELSF). The missions and functions of the Reserve NCHBs are the same as those of NCHB ONE.

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APPENDIX C

Naval Beach Group Assets

Mission	
The LCU is designed to beach, unload/load, and retract, while landing heavy vehicles, equipment, personnel, and cargo. LCUs also transport wheeled and tracked vehicles, general cargo, and personnel from ship to shore, shore to ship, and in resupply, backload, or recovery operations. It is also valuable in LOTS operations and intra-theater transport.	
Characteristics	**Specifications**
Cargo/Personnel Capacity	180 tons of cargo; or 2 M1A1 tanks, combat-loaded with crews; or 400 combat-equipped troops
Crew	1 CPO, 10 enlisted
Range	1,200 nm or 10 days
Maximum Speed	11 knots
Draft, Light Load	forward: 2 feet, 6 inches aft: 4 feet, 8 inches
Draft, Full Load	forward: 4 feet, 4 inches aft: 6 feet, 10 inches

Figure C-1. Landing Craft Utility

Mission	
The LARC's general mission is to provide the BPT with the capabilities of surf zone salvage, recovery, and dewatering of landing craft, STS movement, MEDEVAC, and transporting personnel and cargo.	
Characteristics	**Specifications**
Cargo/Personnel Capacity	10,000 pounds 20 troops
Crew	3 enlisted
Range	200 nm full power (land) 40 nm full load (water)
Maximum Speed	8 to 9 knots
Draft, Light Load	forward: 3.3 feet aft: 3.8 feet
Draft, Full Load	forward: 4.1 feet aft: 4.3 feet

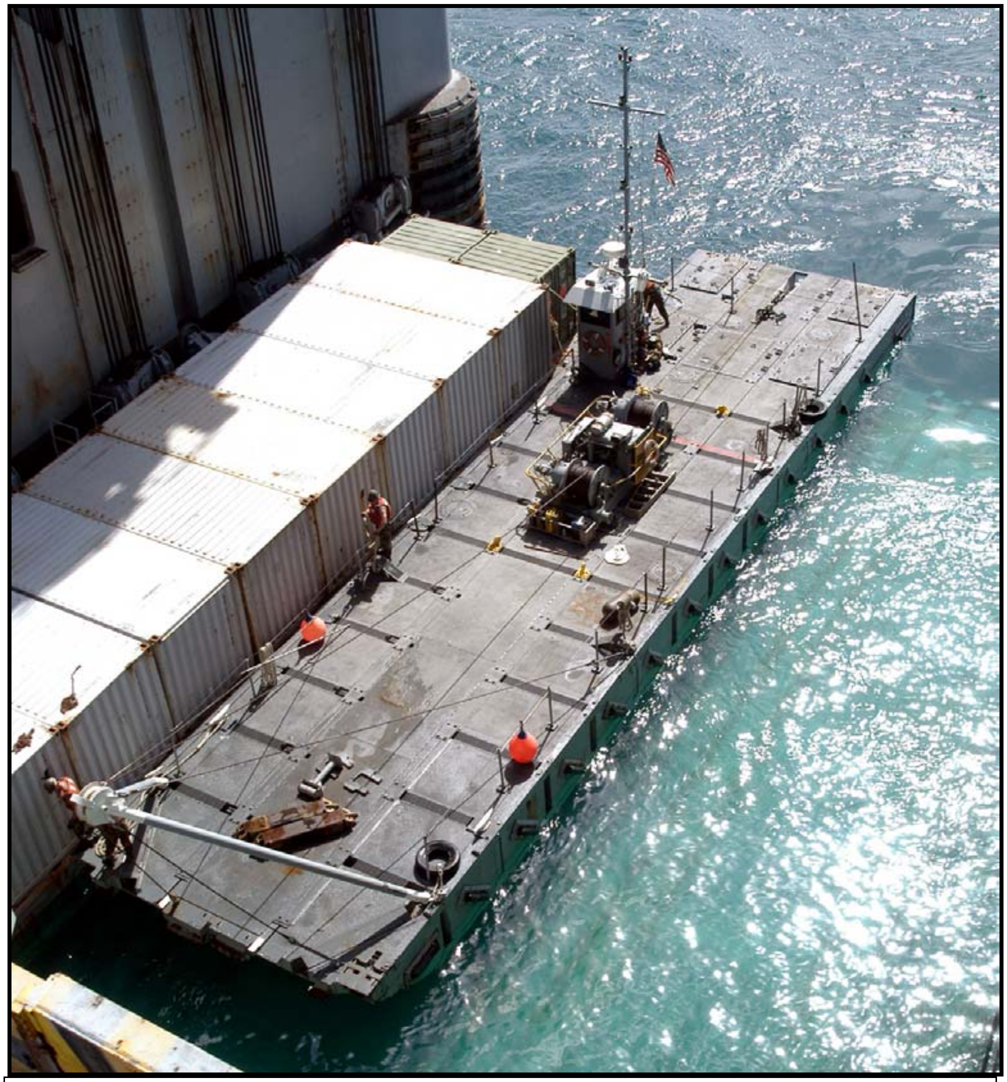
Figure C-2. Lighter, Amphibious Resupply Cargo, Mark V

Mission	
The LCAC combines the heavy lift capability of a displacement landing craft with the high speeds of helicopter-borne assault. It can transport equipment, cargo, and weapons systems from ships through the surf zone, across the beach, to landing points beyond the HWM in a variety of environmental conditions.	
Characteristics	**Specifications**
Cargo/Personnel Capacity, Design	120,000 pounds of cargo or 338,000+ pounds of TACW and 23 personnel
Cargo/Personnel Capacity, Overload	368,000+ pounds of TACW and 23 personnel
Crew	5 enlisted; no troop accommodations
Range	200 nm
Maximum Speed	40+ knots
Draft, Off Cushion	empty: 2 feet, 2 inches full: 2 feet, 7 inches

Figure C-3. Landing Craft Air Cushion

Mission	
The LCM-8 can transport cargo, troops, and vehicles from ship to shore or shore to ship. It is no longer routinely deployed aboard amphibious ships, and now is more often used for utility work in harbors and lighter work during MPF operations.	
Characteristics	**Specifications**
Cargo/Personnel Capacity	130,000 pounds or 150 combat-equipped troops
Crew	5 enlisted
Range	190 nm
Maximum Speed	12 knots
Draft, Loaded	forward: 3.8 feet aft: 5.2 feet

Figure C-4. Landing Craft, Mechanized - Mark 8



Mission	
The SLWT is a barge-like craft used to move causeway sections and tend a completed causeway structure. Twin waterjet-propulsion units, which can be rotated 360°, make the unit extremely maneuverable.	
Characteristics	**Specifications**
Maximum Speed	6 knots
"A" Frame Working Capacity	4 tons
Winch Working Capacity	4 tons

Figure C-5. Side-Loadable Warping Tug

Mission
The general mission of the CSP is to act as the prime mover for a CF and/or a self-propelled, side-loadable lighter. Twin waterjet-propulsion units make the craft extremely maneuverable.

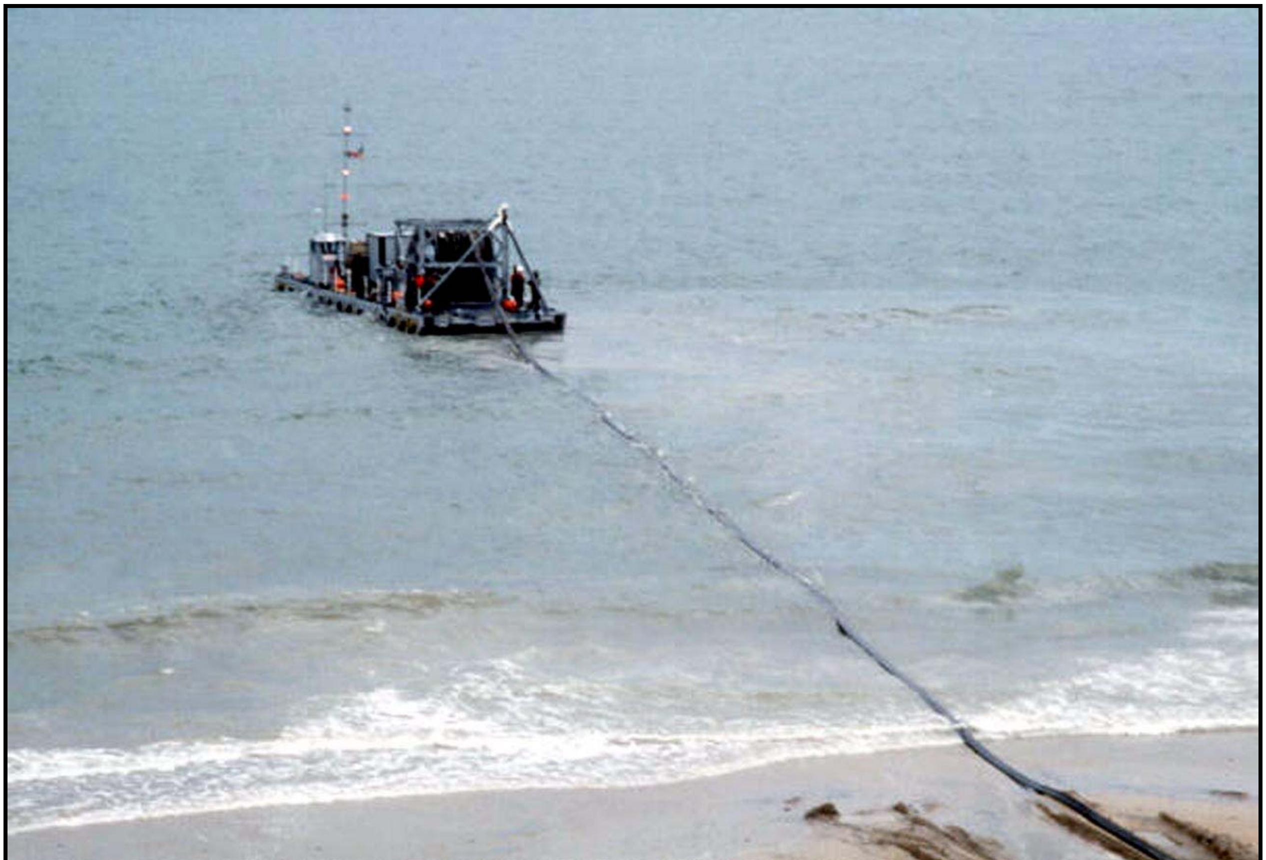
Figure C-6. Causeway Section, Powered

Mission
The general mission of the CF is to provide a means of transferring equipment ashore when sufficient sections of causeway are not available for a shore-fast CP. The CF also provides a means of transferring equipment and/or cargo from a cargo ship using ship's cranes for offload.

Figure C-7. Causeway Ferry

Mission
The ELCAS(M) is an elevated CP that provides a means of delivering containers, vehicles, and bulk cargo ashore without lighterage having to contend with the surf zone. The temporary ELCAS pier consists of connected 8 x 40 x 4.5-foot modules elevated on piles and extended seaward across the surf zone up to 3,000 feet from the beach. The roadway from the beach to the pier is wide enough for two-way traffic.

Figure C-8. Elevated Causeway (Modular)



Mission
The AABFS/AABWS are the installed for STS POL and water discharge systems used to support amphibious and MPF operations. The systems consist of 5,000 (POL) or 10,000 (water) feet of buoyant hose deployed from an MPF ship. AABFS/AABWS are being phased out and replaced by the ABLTS.

Figure C-9. Amphibious Assault Bulk Fuel System

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APPENDIX D

Emerging Technologies, Equipment, and Capabilities

D.1 OVERVIEW

Recent significant advancements in computers, information technology, and the use of off-the-shelf technologies have positively impacted the ability of the NBG and its support elements to accomplish their missions today and will continue to do so in the years ahead. Also, Navy and joint commanders have recognized that some NBG equipment is rapidly approaching the end of its intended life cycle. Therefore, several programs are ongoing or will be undertaken to upgrade, overhaul, and/or replace aging landing craft and amphibious vehicles.

Evolving Navy and Marine Corps doctrine and tactical concepts dictate that amphibious operations must be accomplished faster, in more severe environmental conditions, and farther from the beach. MPF operations require platforms that are more maneuverable, reliable, readily transportable, and able to be assembled, operated, maintained, and disassembled in higher sea states and more adverse weather conditions.

The technologies and equipment discussed in this appendix will enhance the capabilities of the NBG and its subordinate commands and allow them to fully support ATF, LF, ESG, ESF, MPF, and joint commanders in conducting amphibious, MPF and joint operations.

D.2 PURPOSE

The purpose of this appendix is to provide a description and the status of some of the emerging technologies, equipment, and capabilities in NBG operations and those of its supporting elements. Some are several years away from being fully operational, while others have already been tested and/or incorporated into amphibious and/or MPF operations.

D.3 LANDING CRAFT UTILITY (REPLACEMENT)

The LCUs currently in service are 12 to 24 years past the end of their estimated service life, and their performance and readiness are continuing to degrade. The communications suite is outdated and non-interoperable, and its current size and configuration are not conducive to efficient use of well deck space. The LCU is the workhorse in amphibious operations; however, it is slow (maximum speed 11 knots) and subject to broaching due to poor maneuverability.

To overcome these shortfalls and enhance the ability of naval amphibious forces to participate in amphibious operations, the landing craft, utility (replacement) (LCU (R)) is being designed and developed. It will provide a technologically advanced, heavy lift, utility landing craft to complement the high-speed, OTH, ship-to-shore amphibious lift required to support joint and multinational amphibious operations, operational maneuver from the sea (OMFTS), sea based logistics, and Sea Power 21.

The LCU (R) will be essential to the success of future amphibious operations by delivering a high speed (15 to 18 knots), OTH, heavy lift capability compatible with ATF, ESG, ESF, and MPF operations. The LCU (R) will allow independent heavy lift operations and will be completely functional within the joint C2 architecture. Besides amphibious landings, the LCU (R) will support MOOTW, NEOs, FHA, and civil support operations.

D.3.1 Primary Missions

The primary missions of the LCU (R) will be to:

1. Rapidly transport heavy material and personnel from amphibious ships, MPF ships, and other platforms at sea to points on the shore

2. Transport vehicles, heavy cargo, and personnel intra-theater from one shore point to another or STS

3. Provide a platform from which to deploy the ABLTS

4. Provide general utility craft services as assigned by the NBG.

D.3.2 Secondary Missions

The general secondary missions of the LCU (R) will be to:

1. Provide mobile basing for special operations forces (SOF) and riverine forces requiring support

2. Serve as an alternate launch, recovery, and salvage platform for the expeditionary fighting vehicle (EFV)

3. Provide an underway refueling capability for LCAC.

D.3.3 Operational Capabilities

The LCU (R) will provide several capability improvements over today's LCU. In particular, it will provide a 50 percent increase in speed and lift, use significantly enhanced communications technology, and dramatically improve sea-keeping capabilities. The craft will have a crew of eight, which is three less than LCUs in use today. A chief craftmaster will command it and other ratings include a BM, EN, QM, IT, electrician's mate (EM), and nonrated seamen and firemen.

The LCU (R) will be 5 feet shorter than the LCU; however, it will have a beam of 45 feet, which is 15 feet wider. As a result, the LCU (R) will not fit in the well deck of an LHA 1 Class ship. However, the new craft will fit in the well deck of the LHA class replacement (LHA (R)), but delivery of those ships is several years away. Therefore, some of the current LCUs must be retained until all ships in the LHA 1 Class are decommissioned and the LHA (R) is fully integrated into the amphibious forces.

The LCU (R)'s required operational capabilities (ROCs) are discussed in the paragraphs below.

D.3.3.1 High Speed Over-the-Horizon Heavy Lift

The LCU (R) will provide the ATF, JTF, ESG, ESF, and MPF commander with enhanced STS heavy lift capabilities. The LCU (R) lift capacity will be 193 tons or nine standard-size containers, while today's LCU can only carry 131 tons or four containers. This heavy lift capacity and the number of craft that can be accommodated in amphibious ships will support all requirements of the ATF, ESG, or ESF. The craft will provide adequate space and lift to support troop transport requirements, including in tactical scenarios and operations with EFVs, LCAC, or other amphibious platforms.

D.3.3.2 Amphibious Task Force/Expeditionary Strike Group/Force Compatibility

The LCU (R) will be deployable in, and able to operate from, amphibious ships, except the LHA 1 Class as noted in Paragraph D.3.3. It will be capable of RO/RO operations within amphibious ship well decks as well as over-the-side load and offload via lift-on/lift-off (LO/LO) operations.

D.3.3.3 Maritime Prepositioning Force Compatibility

The LCU (R) will interface with the cargo handling systems of MPF ships without sacrificing primary craft speed and lift capabilities.

D.3.3.4 Strategic Sealift Compatibility

The LCU (R) will be transportable to the theater AO via strategic sealift. Its design will take into account as many strategic sealift constraints as possible, again without sacrificing primary craft speed and lift capabilities.

D.3.3.5 Independent Operations

The LCU (R) will be able to conduct extended independent operations for periods of up to 10 days. Installed C2 support will be commensurate with the mission and projected operational environment (POE).

D.3.3.6 Joint Command and Control Capability

The LCU (R) will be command, control, communications, computers, and navigation (C4N) compatible with the ATF, JTF, ESG, ESF, MPF, and other sea-based platforms.

D.3.4 Command, Control, Communications, Computers, and Navigation Enhancements

The LCU (R) will be equipped with commercial-off-the-shelf and government-off-the-shelf C4N systems for craft operation and navigation. These systems will enable information exchange between the LCU (R) and other naval and joint platforms.

A combination of line of sight (LOS) and beyond line of sight (BLOS) communications capabilities will be provided to support the craft's range of missions. A secure C2 interface to the AN/KSQ-1 or other future amphibious C2 systems will be provided and plain and secure tactical communications will be supported. All exterior voice and data communications systems will meet applicable Department of Defense (DOD) joint technical architecture requirements and will be tested to ensure interoperability with other platforms.

Enhanced navigational capabilities will include a Navy-certified electronic chart display and information system-Navy (ECDIS-N) for paperless navigation, a dynamic positioning system (DPS) for precision maneuvering capability, and integration of craft control, navigation, and machinery monitoring systems in an integrated bridge system (IBS) to streamline operator tasks.

D.4 LANDING CRAFT AIR CUSHION SERVICE LIFE EXTENSION PROGRAM

LCAC in use today provide the ATF, ESG, ESF, and LF commanders with a heavy lift, high-speed platform for STS and shore-to-ship movement. They are essential in amphibious operations today, and will be an essential part of the future LCAC/MV-22/EFV triad. However, the oldest active craft are approaching the end of their 20-year design life, and some of the earliest manufactured craft are experiencing advanced corrosion. Also, the LCAC command, control, communications, and navigation (C3N) suite is obsolete, unreliable, and rapidly becoming unsupportable.

Naval Sea Systems Command has implemented an LCAC SLEP. The goal of this program is to extend LCAC design life to 30 to 40 years. The SLEP includes the installation of a deep skirt, buoyancy box modifications, fuel system changes, the installation of enhanced engines, new electronic engine controls, and an upgraded C4N suite.

D.4.1 Deep Skirt Design Changes

The deep skirt incorporates major design changes that are engineered to minimize skirt abrasion and wear due to less drag and less actual skirt material used in construction. These changes will allow extended skirt life and provide improved lift capability, ability to operate in greater SWHs, improved surf zone operations, and reduced fuel consumption.

D.4.1.1 Deep Skirt Operational Characteristics

The major improvements in operational characteristics and capabilities for SLEP LCAC with the deep skirt installed are increased safety in all sea conditions due to an increased cushion height and an increased maximum craft gross weight of nearly 390,000 pounds when loaded in accordance with SEAOPS Manual for LCAC procedures. Additionally, operator visibility has been improved and operational tests have shown a reduction in wear and tear to lift fan and propeller blades due to reduced sea spray and sand erosion. The added cushion height gives the craft additional sail area but also provides a smoother ride in most sea conditions, predominantly in seas with close wave periods.

D.4.1.2 Deep Skirt Limitations

While the deep skirt increases the operational performance of LCAC, its larger size dictates caution during well deck operations in LPD 4 and LSD 41 class ships. Caution statements are included in the SEAOPS Manual for LCAC, where applicable.

D.4.2 Buoyancy Box Modifications

The LCAC SLEP program reuses many of the craft's existing mechanical systems and replaces the craft's buoyancy box. The buoyancy box comprises the main deck of the LCAC, which is the cargo deck, and the second deck, which is the lower skin (wet deck) of the craft. The main and second decks enclose 45 watertight compartments and support the superstructure modules. The cargo deck directly bears the LCAC's payload.

D.4.3 Engine Replacement

The installation of the new ETF40B power plant is projected to increase engine horsepower by approximately 20 percent. It will also facilitate the high speed lift of the Marine Corps' M1A1 tank in higher temperatures. Four enhanced ETF40B gas turbine engines drive the propellers and lift fan assemblies through a system of transmissions and drive shafts to provide propulsion power. Support systems include fuel, lubrication, air filtration, and hydraulics.

The modular concept of the ETF40B allows for optimum maintenance and efficiency. This configuration provides for ease of disassembly, examination, and reassembly with a minimum of man-hours and without removal of several major engine components.

D.4.4 Full Authority Digital Engine Controller

Full authority digital engine controllers (FADECs) are also installed during the SLEP. Four FADECs provide electronic control, monitoring, and trend analysis of the ETF40B main engines. Start/stop controls are provided by the control, alarm, and monitoring system (CAMS). A FADEC controls an electronic liquid fuel metering valve (LFMV), main and redundant fuel shut off valves, an anti-ice valve, and a variable geometry compressor guide vane assembly (CGVA) to maintain desired engine parameters.

D.4.5 Command, Control, Communications, Computers, and Navigation Upgrades

Current C3N electronics are based on 1970s/1980s technology with a design service life of 15 to 20 years. Also, system architecture is tightly coupled, which does not allow for individual component replacement. Several system components are obsolete or no longer available, and overall poor system reliability has resulted in high life cycle maintenance costs.

The SLEP C4N program provides an open electronics suite built around an open architecture that uses off-the-shelf equipment. The program is designed to achieve a 30 to 40 year craft life and has the growth capability for new and future LCAC missions. The upgraded C4N program minimizes system and component coupling, increases overall reliability, and decreases life cycle maintenance costs. Communications system upgrades introduce a capability to upload preset communication frequencies, communications plans (COMPLANs), and call sign data. These improvements also include the ability to record data from interior voice circuits, exterior voice circuits (UHF, VHF, HF, MOMS), and audible alarms such as collision alert, fire alarm, and the AN/KSQ-1 message alert.

D.5 LANDING CRAFT MECHANIZED MARK-8 REPLACEMENT

D.5.1 Current Inventory

The LCM-8s in the current inventory are incapable of effectively meeting the Navy's future needs in support of lighterage operations. Therefore, the Navy is actively engaged in efforts to procure a fleet of MPF utility boats to replace the LCM-8s in service. Specific issues include:

1. Age of LCM-8s in service

2. Excessive overhaul and maintenance costs

3. Inability to transport personnel in a safe and timely manner from a standoff distance of 25 miles or more.

Current procurement plans call for procurement of the first craft in FY 2005. The majority of the LCM-8 replacement craft will be used to support MPF operations, while a lesser number will be assigned to the ACUs for training and occasional deployment.

D.5.2 Replacement Craft Characteristics

The replacement craft for the LCM-8 must be able to:

1. Operate in conditions in excess of sea state 2 and survive in sea state 5

2. Safely transport up to 30 personnel with 150 pounds of equipment per person from an MPF ship to shore and return with a standoff distance of 25 miles

3. Safely conduct MEDEVAC of at least two injured personnel, as well as a corpsman and medical equipment in a stable and protected environment

4. Operate with a range of 300-plus nm

5. Conduct beach landings and discharging personnel and material using a self-contained bow ramp

6. Provide FP to on station MPF vessels

7. Be transported on any MPF ship

8. Conduct bottom surveys in the surf zone and transmit findings to ship or shore using commercial-off-the-shelf depth sounding equipment.

The new craft will have the following characteristics:

1. Twin diesel engines capable of speeds in excess of 25 knots

2. A length of 40 to 44 feet and a beam of 12 to 14 feet

3. Less space and weight required than the existing LCM-8s

4. Unit cost not to exceed $1 million.

D.6 LIGHTER, AMPHIBIOUS RESUPPLY CARGO, MARK V SERVICE LIFE EXTENSION PROGRAM

The original mission for the LARC V was to provide lighter service for cargo and troops to and from the beach. However, over time the primary mission has evolved into supporting amphibious salvage operations by assisting other vehicles and/or landing craft that become stranded in the surf zone. From FY 2004 through FY 2009, the Navy plans to SLEP all LARC Vs on MPF vessels as well as those assigned to the NBGs.

D.6.1 Objectives

The primary objectives of the LARC V SLEP are to:

1. Modify and improve the engine

2. Increase the craft's towing capability

3. Improve the craft's watertight integrity.

D.6.2 Specifics

The LARC V SLEP will:

1. Replace the propulsion engine and hydrostatic drivetrain

2. Rearrange and install new stowage areas

3. Accomplish hull modifications to include new tow bitts and welded padeyes

4. Replace cargo deck hatches and install a new bulwark
5. Sandblast, clean, and recoat the craft's hull.

D.7 AMPHIBIOUS ASSAULT DIRECTION SYSTEM, AN/KSQ-1

The amphibious assault direction system (AADS), AN/KSQ-1, provides CATF and/or the ESG/ESF commander with near real-time position location information (PLI) of the ships and landing craft equipped with the system. AADS provides the PCO with a real-time capability to launch, monitor, track, control, and provide tactical situation awareness of the OTH LF from ranges up 100 nm.

D.7.1 System Overview

The AN/KSQ-1 AADS combines hardware and software in a unified build format compatible with the USMC enhanced position locating reporting system (EPLRS) data from the GPS. The AN/KSQ-1 and EPLRS interface with ship, helicopter, and landing craft equipment to provide STS C2. When helicopter relay is available, it operates without restriction or reduction in capability when unit separation does not exceed 100 nm.

Through this system, OTH operations can be conducted by using an airborne relay that provides connectivity among the ATF, ESG, or ESF units throughout the AO. The C2 organization will be governed by several factors including mission, duration of the operation, size of the force, number of landing sites, and capabilities of the individual units. The AN/KSQ-1 provides:

1. Accurate, near-real-time position and identification information for helicopters, LCAC, and other AN/KSQ-1 and EPLRS-equipped units
2. OTH operating ranges via airborne relay
3. Limited text message exchange among network members via digital data link
4. EPLRS master station interoperability
5. Cryptographic security
6. Antijam and low probability of intercept operation.

D.7.2 Current and Future Capabilities

In the PLI application, AADS and EPLRS radios installed on amphibious ships interface with the ships' navigation systems and are designated as dynamic reference points. The EPLRS radios installed on helicopters, amphibious vehicles, and landing craft compute PLI using known reference points (the ships). The shipboard AADS installation collects the PLI from all units being tracked and builds a picture that is displayed on the AADS boat control station. In addition, the AADS provides one-to-one and one-to-many digital communication capability that allows the PCO to change waypoints in real time while units being tracked are underway. Since the AADS workstation interfaces with the shipboard navigation system, the dynamic reference points continue receiving own-ship position information irrespective of GPS availability. If the landing craft experience GPS jamming, the dynamic reference position information provided by the ships ensures the PLI calculated by the craft radios continues to be accurate.

Current AADS configurations on LCAC and LCUs provide a basic digital communications capability to the crew. Future versions of AADS will include e-mail and other digital communications capabilities. Current, as well as future, AADS capabilities include connection to ships' Global Command and Control System-Maritime (GCCS-M) network allowing AADS to inject the amphibious force's PLI into the track database manager providing other ships with situational awareness of friendly forces. The AADS-GCCS connection provides the AADS EPLRS with community access, through the AN/KSQ-1 workstation, to e-mail servers and routers connected to, or integrated with, the ship's GCCS-M network.

Additional system information and guidance on the tactical employment of the AN/KSQ-1 AADS is contained in applicable TACMEMOs and class tactical publications.

D.8 IMPROVED NAVY LIGHTERAGE SYSTEM

The redesigned improved Navy lighterage system (INLS) will be a critical element of the MPF and the AFOE, which are integral to operational power projection and provide the US with a rapid, sustainable, global response capability. The potential for the deployment of the system is global in scope. Its use ranges from major regional conflicts to MOOTW. INLS will be deployed in benign to low-level threat conditions. It will be comprised of powered and nonpowered floating platforms assembled from interchangeable modular components. In support of LOTS operations, the modules, in their assembled configurations, will be used to transfer cargo between strategic sealift ships and the shore. The system can be assembled into the following platforms: SLWT, RRDF, CF, and FC.

D.8.1 Shortcomings

The INLS will replace the NL system in use today. The NL system cannot meet the geographic combatant commanders' cargo-over-the-shore throughput requirements. Specific shortcomings of the NL system are:

1. The existing NL system is maintenance intensive and is nearing the end of its useful life.

2. NL platforms (i.e., CSP, SLWT, CSNP, RRDF, and FC) cannot be assembled or operated tin sea state conditions above 2.

3. Platform assembly is manpower and equipment intensive and must occur in calm water or on the deck of a ship.

4. Large and heavy cargo, such as the M1A1 tank, cannot be transported safely ashore in NL through sea state 2 conditions.

5. The existing NL components are difficult to transport.

6. With the exception of the NL CF (powered by the CSP) with a stern adapter, existing systems have no stern drive-through capability.

7. CFs are difficult to maneuver alongside ships and piers, in currents, and in the surf zone through sea state 2. This problem is magnified with craft fully loaded.

8. The existing NL system has many obstructions and hazards on deck, making deck evolutions potentially hazardous to personnel.

9. The existing NL fender, mooring, and lighting systems are inadequate for safe and timely operations.

10. The existing NL system does not provide mooring fittings, a cargo-griping system, lifelines, or crew shelter.

11. The narrow, 21-foot width of a CF when transporting 8x8x20-foot ISO containers creates an unsafe condition for crew work/transit.

12. Navigation radar, GPS, and communications systems have been retrofitted in existing NL platforms to provide ROCs and safety.

D.8.2 Mission

The INLS will be used in support of the geographic combatant commanders' OPLANs by providing a method of discharging cargo from ships and moving cargo to shore in the event a port is denied, degraded, or unavailable. It shall be capable of being offloaded, assembled, operated, disassembled, and back loaded in environments greater than sea state 2. The INLS is required to be fully operational in sea state 3; the modules must endure sea state 4 with minimal damage and survive sea state 5 with repairable non-catastrophic damage. Additionally, the system will interface with LOTS craft and have maximum flexibility to be adapted to multiple uses in support of LOTS operations. Both RO/RO and LO/LO of rolling stock and cargo capabilities are required.

D.8.3 Operations and Support Concepts

Standard support capabilities, including the Navy ship's maintenance and material management system, will be developed for INLS within existing force structure. A training program will be established with training capabilities located on both coasts. Specialized tools and test equipment for the system will be minimized. Repair during missions will be accomplished by replacement of failed components as determined by a logistics support analysis. INLS will be compatible with standard Navy diagnostic equipment to the maximum extent practicable, and it will be compatible with emerging logistical automation support.

D.8.4 Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance Operational Concept

The INLS voice communications system will permit sharing of real-time operational information affecting operational planning and dynamic planning during LOTS execution. Navy operating forces will provide the single-channel ground and airborne radio systems (SINCGARS) as plug-in units. SINCGARS has a secure communications capability. INLS will provide the power source for communications equipment and mounting brackets for the operator-supplied radios and antennas. The INLS SLWT and CF platforms will be equipped with VHF/FM bridge-to-bridge (BTB) and STS voice communications, GPS, and commercial radar systems to assist in nighttime and reduced visibility operations, in transit from ships anchored more than 10 miles offshore, and in the SLWT's role as a utility craft.

D.8.5 Evolutionary Enhancements

Future improvements may include interfacing with other- Service watercraft that will necessitate the addition of adapters, spanning ramps, modifications of modules, or changes in platform configurations. These improvements will be evaluated as separate actions as requirements are identified and funded by the Service requesting interoperability.

D.8.6 System Performance Requirements

Broad system performance requirements apply to all INLS platforms. The requirements of the SLWT, RRDF, CF, and FC are discussed in the paragraphs below.

D.8.6.1 Side-Loadable Warping Tug Platform Requirements

The SLWT is a highly maneuverable, self-propelled platform used for assembly, disassembly, installation, relocation, stationkeeping, operation, and retrieval of INLS platforms in sea states greater than 2. The SLWT will also be used to support salvage operations and perform other activities required to support INLS and LOTS operations. It must be capable of independent operation through sea state 4 conditions, and survivability in sea state 5.

D.8.6.2 Roll On/Roll Off Discharge Facility Platform Requirements

The RRDF is a nonpowered interface platform between a RO/RO ship ramp system and lighters for loading and offloading rolling stock and cargo. It provides sufficient buoyancy, structural integrity, and deck strength to accept a RO/RO ship ramp while simultaneously having rolling stock and personnel on the platform with existing LOTS craft moored to it. The RRDF will have a drive-across capability for all rolling stock and main battle tanks.

D.8.6.3 Causeway Ferry Platform Requirements

The CF is a powered platform that will moor to an RRDF, causeway pier, ELCAS(M), INLS FC, or alongside a ship to onload/offload rolling stock and LO/LO cargo. The CF will transport the equipment to the shore from MPF and strategic sealift ships anchored in stream. The CF will have a stern drive-through capability for rolling stock and main battle tanks from INLS RRDF and pier platforms. It will also allow offloading or backloading at the beach interface for rolling stock and MHE through conditions up to an MSI of nine.

D.8.6.4 Floating Causeway Platform Requirements

The FC is an anchored, nonpowered floating pier extending from the shore. It consists of a beach ramp, roadway, and docking pier head. The roadway will allow lighted, two-way passage of wheeled vehicles, except only one-way traffic for a rough terrain container handler (RTCH) with ISO container loads. The beach ramp will allow unassisted offloading or backloading of rolling stock and MHE through MSI nine conditions. The FC will maintain structural integrity without damage to any module. Additionally, the FC will continue throughput operations and will ground, without damage to any module, based on forces generated during an MSI of nine with a tidal range up to 12 feet.

D.8.7 Other System Characteristics

INLS platforms shall:

1. Have an electronic signature fully compatible with handling ammunition.

2. Be capable of being offloaded, assembled, operated, and maintained in a chemical, biological, and radiological (CBR) environment by personnel in CBR protective gear.

3. Be decontaminated to negligible risk levels by washing or cleansing using external equipment. An integral decontamination system is not required.

4. Maintain their operational capabilities without refurbishment and with minimal required maintenance during 3 years of storage on the weather decks of MPF ship where modules will be exposed to the elements including ocean spray.

5. Be capable of continued throughput operations in the combined worst-case environmental conditions listed below.

   a. Twenty knots of wind

   b. Sea state greater than 2

   c. An MSI up to 11

   d. Air temperature between –20 and +120 °F

   e. Sea water temperature between +28 and +95 °F

   f. Relative humidity between 0 and 100 percent

   g. Day, night, and/or atmospheric visibility limited to 1 nm

   h. Precipitation of rain, sleet, hail, or snow

   i. Moderate beach gradient.

D.9 MEDIUM TACTICAL VEHICLE REPLACEMENT

The MTVR program will replace the USMC's 5-ton trucks with state-of-the-art, commercially based, medium trucks with greater mobility, lift, and reliability. This high-performance all-terrain vehicle can haul 15 tons over the highway, up to 7 tons off-road, and can simultaneously tow an 11-ton load. It is capable of sustained speeds of 30 mph cross-country and a maximum speed of 65 mph.

D.9.1 Components

The MTVR uses commercial components that include a 425 horse power, electronically controlled engine; a seven speed, continuous power, automatic transmission; 6-wheel independent suspension; antilock brakes; an engine retarder; automatic traction control; a fully electronic onboard diagnostic system; and central tire inflation.

D.9.2 Operational Characteristics

The MTVR will be just as deployable as the 5-ton trucks. With regard to length and width, it has the same embarkation footprint. Its weight of 27,000 pounds and reducible height of 98 inches make it internally transportable by KC-130 and externally by CH-53E. The central tire inflation system allows tire deflation with the push of a button. This allows for better traction in mud or sand. It also can ford up to 60 inches of water depth.

The MTVR has a front-mounted winch with controls that operate it located inside the vehicle, thereby making it safer for the operator who is not exposed to the risk of injury caused by a parting cable. The winch has a maximum towing capacity of 25,000 pounds and 200 feet of cable. The MTVR also has two rear-deployed winches, each with a 35,000-pound capacity and 200 feet of cable.

The above characteristics might make the MTVR a viable option for limited beach and surf zone salvage operations, particularly if used in combination with the PWC.

D.10 PERSONAL WATERCRAFT

The Yamaha Waverunner has been tested as a viable replacement for the LARC V. This craft weighs just 780 pounds and uses a 155-hp engine to achieve a top speed of 65 mph. Its 18.5-gallon fuel tank lasts for 2 to 3 hours in normal operations.

D.10.1 Advantages

The PWC has been found to have several advantages over the LARC V. The most significant of these advantages are listed below.

1. Can operate in a higher sea state than the LARC V.

2. Is faster and more maneuverable.

3. Its footprint is much smaller.

4. Uses commercial-off-the-shelf technology.

5. Spare parts are available worldwide.

6. Maintenance and operation costs are low and maintenance is relatively easy.

7. Easily retrieves and carries personnel.

8. Can be used for a quick survey of offshore bottom conditions.

D.10.2 Disadvantages

PWC disadvantages include:

1. Limited personnel transfer capability; only capable of carrying two to three fully loaded Marines at one time.

2. No dewatering capability.

3. Wave action has a much more pronounced effect.

4. While the PWC can conduct a bottom condition survey quickly, it cannot determine bottom hardness.

5. Inclement weather has a greater impact.

6. Operates on motor gasoline (MOGAS) that is not generally carried in significant quantities aboard ship.

7. Operating the PWC is much more physically demanding than operating a LARC V.

LIST OF ACRONYMS AND ABBREVIATIONS

AABFS	amphibious assault bulk fuel system (JP 1-02)
AABWS	amphibious assault bulk water system (JP 1-02)
AADS	amphibious assault direction system
AAOG	arrival and assembly operations group (JP 1-02)
AAV	amphibious assault vehicle (JP 1-02)
ABGC	assistant boat group commander
ABLTS	amphibious bulk liquid transfer system
ACE	air combat element (NATO) (JP 1-02)
ACU	assault craft unit (JP 1-02)
AD	air defense (JP 1-02)
ADCON	administrative control (JP 1-02)
ADT	active duty for training (JP 1-02)
AE	assault echelon (JP 1-02)
AF	amphibious force
AFOE	assault follow-on echelon (JP 1-02)
AO	area of operations (JP 1-02)
AOR	area of responsibility (JP 1-02)
APU	auxiliary power unit (JP 1-02)
ARG	amphibious ready group (JP 1-02)
AT	antiterrorism (JP 1-02)
ATF	amphibious task force (JP 1-02)
ATP	Allied tactical publication (JP 1-02)
BF	barge ferry
BGen	brigadier general (USMC)
BIU	beach interface unit (JP 1-02)

BLOS	beyond line of sight (JP 1-02)
BM	boatswains mate
BMU	beachmaster unit (JP 1-02)
BPG	beach party group (NWP 1-02)
BPT	beach party team (JP 1-02)
BSA	beach support area (JP 1-02)
BSIR	beach survey intelligence report
BSU	beach support unit (JP 1-02)
BTB	bridge-to-bridge
BTU	beach termination unit
C2	command and control (JP 1-02)
C3	command, control, and communications (JP 1-02)
C3N	command, control, communications, and navigation
C4N	command, control, communications, computers, and navigation
CAMS	control, alarm, and monitoring system
CAP	crisis action planning (JP 1-02)
CATF	commander, amphibious task force (JP 1-02)
CBE	causeway, beach end
CBR	chemical, biological, and radiological (JP 1-02)
CCO	combat cargo officer
CCT	landing craft air cushion landing zone control team
CE	command element (JP 1-02)
CEC	civil engineering corps (JP 1-02)
CESE	civil engineering support equipment (JP 1-02)
CF	causeway ferry (JP 1-02)
CFB	conduit-flooding buoy
CFFC	commander, fleet forces command

CFMCC	coalition force maritime component commander
CGVA	compressor guide vane assembly
CIC	combat information center (JP 1-02)
CJTF	commander, joint task force (JP 1-02)
CLA	landing craft air cushion launch area (JP 1-02)
CLF	commander, landing force (JP 1-02)
CLZ	landing craft air cushion landing zone (JP 1-02)
CMPF	commander, maritime prepositioning force
CNBG	commander, naval beach group
CNSE	commander, naval support element
CO	commanding officer (JP 1-02)
COA	course of action (JP 1-02)
COG	center of gravity (JP 1-02)
COLDS	cargo offload and discharge system (JP 1-02)
COMPLAN	communications plan (JP 1-02)
COMPSRON	commander, maritime prepositioning ships squadron
COMSEC	communications security (JP 1-02)
CONOPS	concept of operations (JP 1-02)
COS	causeway offshore section
COTS	cargo offload and transfer system (JP 1-02)
CPP	landing craft air cushion penetration point (NWP 1-02)
CRRC	combat rubber raiding craft (JP 1-02)
CS	culinary specialist
CSG	carrier strike group
CSNP	causeway section, nonpowered (JP 1-02)
CSO	chief staff officer
CSP	causeway section, powered (JP 1-02)

CSS	combat service support (JP 1-02)
CSSE	combat service support element (MAGTF) (JP 1-02)
CTR	central tool room
DOD	Department of Defense (JP 1-02)
DPS	dynamic positioning system
ECDIS-N	electronic chart display and information system - Navy
EFV	expeditionary fighting vehicle
ELCAS	elevated causeway system (JP 1-02)
ELCAS(M)	elevated causeway (modular) (JP 1-02)
ELSF	expeditionary logistics support force
EM	electrician's mate
EN	engineman
EOD	explosive ordnance disposal (JP 1-02)
EPLRS	enhanced position locating reporting system
EPW	enemy prisoner of war
ESG	expeditionary strike group
ESF	expeditionary strike force
FADEC	full authority digital engine controller
FC	floating causeway
FH	fleet hospital (JP 1-02)
FHA	foreign humanitarian assistance (JP 1-02)
FMFM	Fleet Marine Force Manual
FOD	foreign object damage (JP 1-02)
FP	force protection (JP 1-02)
FY	fiscal year (JP 1-02)
GCCS-M	Global Command and Control System-Maritime (JP 1-02)
GCE	ground combat element (MAGTF) (JP 1-02)

GPS	global positioning system (JP 1-02)
HA	humanitarian assistance (JP 1-02)
HDC	helicopter direction center (JP 1-02); harbor defense commander (JP 1-02)
HF	high frequency (JP 1-02)
HMMWV	high mobility multipurpose wheeled vehicle (JP 1-02)
HN	host nation (JP 1-02)
HQ	headquarters (JP 1-02)
HST	helicopter support team (JP 1-02)
HVA	high value asset
HWM	high water mark (JP 1-02)
IBS	integrated bridge system
IBU	inshore boat unit
IDT	inactive duty training (JP 1-02)
IDTT	inactive duty training travel
IMS	improved mooring system
INLS	improved Navy lighterage system
IPDS	inland petroleum distribution system (JP 1-02)
ISO	International Organization for Standardization (JP 1-02)
ISR	intelligence, surveillance, and reconnaissance
IT	information systems technician
IVCU	interior voice communication unit
JFC	joint force commander (JP 1-02)
JFMCC	joint force maritime component commander (JP 1-02)
JLOTS	joint logistics over-the-shore (JP 1-02)
JP	joint publication (JP 1-02)
JTF	joint task force (JP 1-02)
JTTP	joint tactics, techniques, and procedures (JP 1-02)

LARC	lighter, amphibious resupply cargo (JP 1-02)
LARC V	lighter, amphibious resupply cargo, Mark V
LASH	lighter aboard ship (JP 1-02)
LAV	light armored vehicle (JP 1-02)
LCAC	landing craft air cushion (JP 1-02)
LCM	landing craft, mechanized (JP 1-02)
LCM-8	landing craft mechanized, Mark 8
LCS	landing craft air cushion control ship
LCU	landing craft, utility (JP 1-02)
LCU (R)	landing craft, utility (replacement)
LF	landing force (JP 1-02)
LFMV	liquid fuel metering valve
LFSP	landing force support party (JP 1-02)
LNO	liaison officer (JP 1-02)
LO/LO	lift-on/lift-off (JP 1-02)
LOS	line of sight (JP 1-02)
LOTS	logistics over-the-shore (JP 1-02)
LT	lieutenant (USN)
LtGen	lieutenant general (USMC)
LTjg	lieutenant (junior grade) (USN)
LWM	low water mark
LZ	landing zone (JP 1-02)
MACW	maximum allowable craft weight
MAGTF	Marine air-ground task force (JP 1-02)
MCP	maximum continuous power
MCPP	Marine Corps planning process
MCWP	Marine Corps warfighting publication

MEB	Marine expeditionary brigade
MEDEVAC	medical evacuation (JP 1-02)
MEDREG	medical regulating
MEF	Marine expeditionary force (JP 1-02)
MEU	Marine expeditionary unit (JP 1-02)
MEU (SOC)	Marine expeditionary unit (special operations capable) (JP 1-02)
MGen	major general (USMC)
MHE	materials handling equipment (JP 1-02)
MILVAN	military van (container) (JP 1-02)
MIP	maximum intermittent power
MIUWU	mobile inshore undersea warfare unit (JP 1-02)
MIW	mine warfare (JP 1-02)
MLW	mean low water (JP 1-02)
MOGAS	motor gasoline (JP 1-02)
MOMS	man-on-the-move system (NWP 1-02)
MOOTW	military operations other than war (JP 1-02)
MPAS	mission planning and analysis system
MPF	maritime prepositioning force (JP 1-02)
MPP	mission planning procedure
MPS	maritime prepositioning ship (JP 1-02)
MPSRON	maritime prepositioning ships squadron (JP 1-02)
MSC	Military Sealift Command (JP 1-02)
MSD	mobile security division (JP 1-02)
MSI	modified surf index
MSRON	mobile security squadron
MTVR	medium tactical vehicle replacement
NAVFAC P	naval facility publication

NAVFOR	Navy forces (JP 1-02)
NBG	naval beach group (JP 1-02)
NCHB	Navy cargo handling battalion (JP 1-02)
NCW	naval coastal warfare (JP 1-02)
NCWC	naval coastal warfare commander (JP 1-02)
NCWRON	naval coastal warfare squadron
NEO	noncombatant evacuation operation (JP 1-02)
NL	Navy lighterage (JP 1-02)
NRF	Naval Reserve Force (NWP 1-02)
NSE	Navy support element (JP 1-02)
NSFS	naval surface fire support (JP 1-02)
NTRP	Navy tactical reference publication
NTTP	Navy tactics, techniques, and procedures
NVG	night vision goggle (JP 1-02)
NWDC	Naval Warfare Doctrine Command
NWP	Navy warfare publication (NTTP 1-01)
OBFS	offshore bulk fuel system (JP 1-02)
OCO	offload control officer (JP 1-02)
OIC	officer in charge (JP 1-02)
OMFTS	operational maneuver from the sea (NWP 1-02)
OPCON	operational control (JP 1-02)
OPDS	offshore petroleum discharge system (JP 1-02)
OPGEN	formatted general operational message (NWP 1-02)
OPLAN	operation plan (JP 1-02)
OPTASK	operation task (JP 1-02)
OPORD	operation order (JP 1-02)
OPP	off-load preparation party (JP 1-02)

OPT	operational planning team (JP 1-02)
OTC	officer in tactical command (JP 1-02)
OTH	over the horizon (JP 1-02)
OUB	offshore petroleum discharge system utility boat (JP 1-02)
PCO	primary control officer (JP 1-02)
PCS	primary control ship (JP 1-02)
PHIBCB	amphibious construction battalion (JP 1-02)
PHIBGRU	amphibious group (JP 1-02)
PHIBRON	amphibious squadron (JP 1-02)
PLI	position location information
POE	projected operational environment (NWP 1-02)
POL	petroleum, oils, and lubricants (JP 1-02)
PSU	port security unit (JP 1-02)
PTM	personnel transportation module
PWC	personal watercraft
QM	quartermaster
R2P2	rapid response planning process (JP 1-02)
RADM	rear admiral (upper half)
RDML	rear admiral (lower half)
ROC	required operational capability (JP 1-02)
RO/RO	roll-on/roll-off (JP 1-02)
ROWPU	reverse osmosis water purification unit (JP 1-02)
RRDF	roll-on/roll-off discharge facility (JP 1-02)
RRF	Ready Reserve Force (JP 1-02)
RTCH	rough terrain container handler
SAG	surface action group (JP 1-02)
SALM	single-anchor leg mooring (JP 1-02)

SAR	search and rescue (JP 1-02)
SDV	sea-air-land team delivery vehicle (JP 1-02)
SEAL	sea air and land team (JP 1-02)
SEAOPS	safe engineering and operations
SELRES	Selected Reserve (unit) (JP 1-02)
SINCGARS	single-channel ground and airborne radio system (JP 1-02)
SLEP	service life extension program (JP 1-02)
SLWT	side loadable warping tug (JP 1-02)
SME	subject matter expert
SOC	special operations capable (NWP 1-02)
SOF	special operations forces (JP 1-02)
SSO	special security officer (JP 1-02)
STS	ship to shore (NWP 1-02)
SUROBS	surf observation (JP 1-02)
SWH	significant wave height
TACC	tactical air control center (JP 1-02)
TACMEMO	tactical memorandum (NWP 1-02)
TACON	tactical control (JP 1-02)
TACRON	tactical air control squadron (JP 1-02)
T-ACS	tactical auxiliary crane ship (JP 1-02)
TACW	total allowable craft weight
TAD	temporary additional duty (JP 1-02)
TLAM	Tomahawk land attack missile
TSPB	transportable patrol boat
UC	underwater construction
UCT	underwater construction team (JP 1-02)
UHF	ultrahigh frequency (JP 1-02)

UN	United Nations (JP 1-02)
UNAAF	United Action Armed Forces (JP 1-02)
UNREP	underway replenishment (NWP 1-02)
USTRANS-COM	United States Transportation Command (JP 1-02)
USW	undersea warfare (JP 1-02)
VHF	very high frequency (JP 1-02)
WARNORD	warning order
WHE	weight handling equipment

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REFERENCE LIST

Short Title	Long Title
ATP 8(B), Volume I	Doctrine for Amphibious Operations (Ratification Draft 1, October 2003)
ATP 8(B), Volume II	Doctrine for Amphibious Operations (Study Draft 1, August 2002)
COMNAVSURFORINST 3340.3	Wet Well Operations Manual
COMNAVSURFPACINST/ COMNAVSURFLANTINST 3840.1B	Joint Surf Manual
JP 0-2	Unified Action Armed Forces (UNAAF)
JP 1-02	Department of Defense Dictionary of Military and Associated Terms
JP 3-02	Joint Doctrine for Amphibious Operations
JP 3-02.1	Joint Tactics, Techniques, and Procedures for Landing Force Operations
JP 3-02.2	Joint Tactics, Techniques, and Procedures for Amphibious Embarkation and Debarkation
JP 3-16	Joint Doctrine for Multinational Operations
JP 3-18	Joint Doctrine for Forcible Entry Operations
JP 4-01.6	Joint Tactics, Techniques, and Procedures for Joint Logistics Over-the-Shore (JLOTS)
JP 5-00.2	Joint Task Force (JTF) Planning Guidance and Procedures
MCRP 4-11C	Combat Cargo Operations Handbook
MCWP 4-11.3	Transportation Operations
NAVPAC P-401	Strategic Sealift Orientation and Planning Guide
NTTP 1-01	The Naval Warfare Library
NTTP 3-02.3M/MCWP 3-32	Maritime Prepositioning Force Operations
NTTP 3-02.14	The Naval Beach Group
NTTP 3-10.1	Naval Coastal Warfare Operations

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NTRP 3-20.6.12	LHA 1 Class Tactical Publication (U)
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Policy Papers	Department of the Navy Transformation Roadmap, Power and Access…From the Sea (SECNAV, CNO, CMC)
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	Sea Power 21 (SECNAV, CNO, CMC)
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