Seabasing Logistics Enabling Concept

December 2006

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

December 2006

SEABASING LOGISTICS ENABLING CONCEPT

This Seabasing Logistics Enabling Concept fully supports the visions outlined in "Sea Power 21", the Naval Operating Concept, and the Seabasing Joint Integrating Concept. It provides the foundation for the Joint team's operational conduct of logistics sustainment in support of future seabased operations and joint forces ashore.

Seabasing will provide a key 21st Century asymmetric military advantage to the nation, as well as provide operational independence in an uncertain and restricted access environment. In that regard, Seabasing Logistics provides the critical capabilities and means which maximize the combat readiness of seabased supported warfighters and provides the means to overcome the challenges presented by future seabased operations. Seabasing Logistics is the unification of core competencies, maritime philosophy, and expeditionary nature with new capabilities and processes that enable and enhance joint operational effectiveness.

The elements of this Seabasing Logistics Enabling Concept will help guide further development and evaluation of future logistics concepts and concepts of operations. This concept is viewed as a "living document" whereby new concepts and capabilities will be assessed and incorporated into future visions of the Seabasing Logistics Concept and eventually doctrine.

J. D. McCarthy
Vice Admiral, United States Navy
Director, Material Readiness, and Logistics

TABLE OF CONTENTS

1. Purpose……..…………………………………………………………………....3

2. Executive Summary ……....………………………………………………..…...3

3. Introduction ……………………………………………….……………..7
   3.1 Background ………………………………….……...…….………7
   3.2 Problem Definition...….....9
   3.3 Strategic Overview……………………………………………..…....10
   3.4 Challenges and Risks………………………………….………….….…11
   3.5 Operating Environments…………………………………..……...….…13

4. Description of Seabasing Logistics Capabilities..…………….……….…...… …14
   4.1 Mission/Tasks……………………………….…..…….……..…….…14
   4.2 Required Logistics Capabilities ……………………………...………..….14

5. An Implementation of Joint Logistics Capabilities….………………..……......…26

6. Modeling and Simulation Summary….………………….………..……...……32

7. Conclusions…………………………………………………………………35

8. Terms of Reference………………………...………………..………...………38

9. Glossary……..…..…………………………………………….…………..…41

1.0 PURPOSE

The purpose of the Seabasing Logistics Enabling Concept is to define logistics capabilities (transportation, supply, and sustainment of food, fuel, ordnance, spare parts, and other critical items plus maintenance, logistics command and control and other select services) for supporting Joint seabased forces in the 2015-2025 time frame. The objective is to maximize the combat readiness of these forces by maintaining the right classes of supply in sufficient quantities to allow sustained combat operations. The concept targets an audience of decision makers, logistics planners and those responsible for managing and delivering Seabasing and Seabasing logistics capabilities to the Fleet. This Seabasing Logistics Enabling Concept does not address the level of medical capability provided by the sea base as it continues evaluation.

2.0 EXECUTIVE SUMMARY

Seabasing, along with Sea Strike, Sea Shield, and FORCEnet, is a core element of "Sea Power 21". Seabasing is defined as the rapid deployment, assembly, command, projection, reconstitution, and re-employment of Joint combat power from the sea, while providing continuous support, sustainment, and force projection to select expeditionary Joint forces without reliance on land bases within the Joint Operating Area (JOA)[1]. Seabasing is a national capability for global force projection that exploits the sea as a maneuver space and enables the capabilities of Coalition and Joint Forces. It maximizes the effects of forward presence, reduces our dependence on vulnerable land bases, "steps lightly" on allies and partners political concerns, and increases options. One of the key capabilities provided by the sea base is Seabasing Logistics which includes the ability to persistently sustain select Joint forces afloat and ashore. Seabasing provides sustainable logistics functions at-sea while reducing the footprint ashore and maximizing use of international waters.

This document is the first Logistics Concept developed to support the sea base as described in the Navy Capabilities Process (NCP) and the Seabasing Joint Integrating Concept (JIC) and fills a critical gap in the overall family of concepts being developed for Seabasing. The concept draws on other Seabasing concept initiatives and supporting doctrine including the 2006 Naval Operating Concept (NOC), the Naval Warfare/Marine Corps Warfighting Publication 3-62 on Seabasing, the Draft Seabasing Concept of Operations, CNO Guidance 2006, Doctrine for Logistic Support of Joint Operations (Joint Publication 4-0), Operational Maneuver from the Sea (OMFTS), Ship-to-Objective Maneuver (STOM) and the Maritime Prepositioned Force (Future) (MPF(F)) Capabilities Development Document.

Many of these Seabasing concept documents describe how expeditionary ground combat forces will be employed and sustained directly from the sea base to objectives inland. The objective of this approach is to minimize the amount of equipment, supplies and infrastructure ashore by retaining these functions at sea. As operations continue over time, cargo stocks such as fuel, ordnance, and food for both the forces ashore and the platforms of the sea base are depleted and must be replenished before critical reserve levels are reached, potentially causing a withdrawal or operational pause in the mission. The purpose of the Seabasing Logistics

[1] Seabasing Joint Integrating Concept (JIC), Version 1.0 dated 01 August 2005, Pp. 5.

Enabling Concept is to primarily define the key logistics capabilities required to replenish the depleted stocks of the sea base for both forces ashore and naval platforms.

The Seabasing Logistics Enabling Concept describes the logistics architecture and capabilities required to manage the significant challenges presented by future seabased operations while emphasizing key facets that directly affect the timely and persistent resupply to the sea base in the 2015 – 2025 timeframe. It primarily examines and addresses the operational level of logistics, specifically the resupply and transportation of those supplies from the Advanced Base.[2] to the sea base via shuttles (such as the Combat Logistics Force) and air connectors (such as the tilt-rotor aircraft or helicopters). It also includes the requirement to resupply the Advanced Base from the continental United States (CONUS) utilizing sealift and airlift assets.

Figure 1 provides an overview of the Seabasing Logistics architecture. CONUS and the Advanced Base represent the primary logistics nodes. The majority of all sustainment for initial resupply for ground units originates in CONUS. The Advanced Base is central to the support of the sea base because it is the primary warehouse and transshipment point through which the majority of all supplies needed by the sea base will pass. The sea base is the primary demand node since it supports and sustains expeditionary ground forces projected ashore. A network of logistics shuttle ships and aircraft connect the sea base with the Advanced Base and serve as the critical transport capability in support of the warfighter's requirements. The sea base may be comprised of Carrier Strike Groups, Expeditionary Strike Groups, an Amphibious Force (AF), the Maritime Prepositioning Group (MPG)[3], and other Combined/Joint naval platforms. The Combat Logistics Force (CLF) provides the primary logistics shuttle platforms that move supplies from an Advanced Base to the sea base. Joint High Speed Vessels (JHSVs), MPF(F) dry cargo and ammunition ships (MPF(F) T-AKEs) and tankers augment the CLF in support of sustainment requirements and in particular those for ground forces projected from the sea base. Time critical requirements for personnel, equipment and cargo will be delivered by air connectors such as tilt-rotor aircraft (MV-22) or by high speed surface connectors such as the JHSV.

---

[2]In Seabasing, an Advanced Base is a secure facility located outside the Joint Operating Area up to 2000 nautical miles from the sea base (Seabasing JIC Version 1.0 dated 01 August 2005, Pp. 8) For ease of use, this document utilizes the term Advanced Base to include a Forward Logistics Site (FLS) or Advanced Logistics Support Site (ALSS) since an ALSS or FLS may already be established at the Advanced Base in a Seabasing operation.
[3] The Maritime Prepositioning Group (MPG) describes the MPF(F) ships, landing force (MEB), and supporting forces that operate on the sea base and forward base to support the MAGTF in the operational mode (MCCDC).

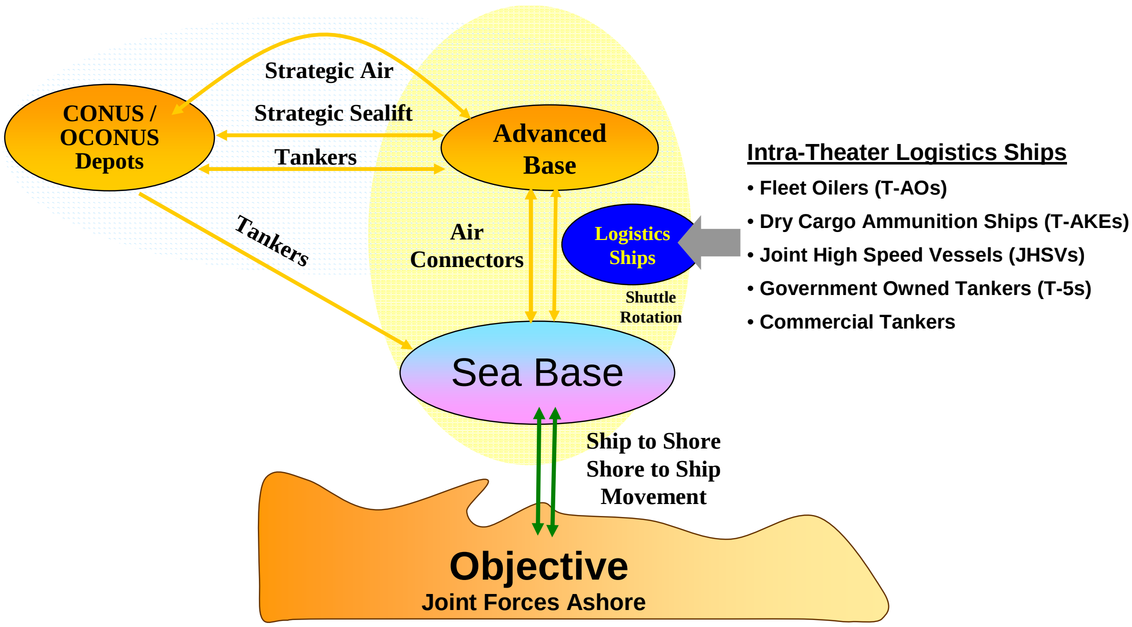

Figure: 1: Seabasing Logistics Architecture Overview

The success of future Seabasing operations will be based in large part on the ability of the logistics network to replenish and sustain the sea base and maintain combat readiness and effectiveness. This future Joint Seabasing Logistics Architecture must provide an effective, comprehensive in-theater distribution system for deployment and sustainment that seamlessly integrates strategic, operational and tactical logistics systems.[4] Without this capability, the sea base will not be able to remain at-sea and continue operations.

Resident in this logistics network and the platforms and systems that support it are a set of logistics capabilities which in the aggregate forms a robust synergistic Seabasing Logistics capability. A Seabasing Logistics capability must be responsive, timely, flexible, scalable, non-complex and survivable to ensure future sea bases can be sustained indefinitely across the full range of military operations even in the absence of secure logistics facilities in the Joint Operating Area. The logistics capabilities required to provide timely and persistent resupply to the sea base include (1) Underway Replenishment, (2) Improved Internal Cargo Handling, (3) Enhanced Prepositioning Afloat with Selective Offload, (4) Joint In-transit Visibility/Total Asset Visibility, (5) Logistics Command and Control, (6) Seabased Maintenance, (7), Joint Intermodal Packaging, (8) Time Critical Resupply and (9) Open Ocean Interface and Transfer.

The Seabasing Logistics Concept not only describes these key logistics capabilities but also provides an implementation of each capability within a Joint Seabasing context. This demonstrates the types of platforms and/or systems associated with a sea base or its support network that will potentially provide these capabilities. The concept implementation, various alternative architectures, and the capabilities described in the Seabasing Logistics Concept were evaluated to determine the combination(s) that best supported the demands of the sea base over time.

---

[4] Joint Deployment and Redeployment Operations, Joint Publication 3-35; January 2006; Pp. V-9

A full description and background of the modeling, simulation and analysis conducted in support of the concept and evaluation of the network and platforms can be found in the Seabasing Logistics Concept Annex. A short summary of the conclusions drawn from this effort are presented below. These conclusions can be drawn upon to guide future decision makers and logistics planners.

- Traditional processes and procedures for support of the sea base by the Combat Logistics Force remain viable to support "blue-water" operations for the foreseeable future.

- The MPF(F) dry cargo and ammunition logistics ships (T-AKEs) provide a highly capable, selectively offloadable and scalable platform in support of ground force prepositioning and logistics replenishment requirements.

- MPF(F) T-AKEs have the ability to sustain all 2015 Baseline MEB dry cargo requirements and, under certain conditions, contribute to the sustainment of additional joint forces such as an Airborne or Infantry BCT.

- During major combat operations, the MPG requires two fleet oilers or a combination of a fleet oiler and a tanker to sustain MPG petroleum, oil and lubricants (POL) demands.

- The employment of the MPG requires a fuel tanker to be prepositioned at an Advanced Base to support early MPG fuel requirements.

- JHSV can be utilized to augment the air connector network in support of the rapid delivery of time sensitive high priority cargo from the Advanced Base to the sea base. However, the analysis also shows that the Joint High Speed Vessel (JHSV) is <u>not required</u> to augment the dry cargo and ammunition logistics shuttle ships, with high volumes of dry cargo, except when the sea base is sustaining two or more heavy sized brigades.

3.0 INTRODUCTION

3.1 Background

Since the end of the Cold War, U.S. military forces have been involved in numerous contingencies, ranging from humanitarian assistance operations to major regional combat. At the same time, access to local land bases has declined, with many bases being off limits to U.S. forces or being available only with stringent restrictions on their use.

The National Security Strategy, National Defense Strategy, and National Military Strategy all emphasize the need for military access to retain global freedom of action. This requires a diverse and flexible set of capabilities, including the ability to rapidly deploy, project, and sustain combat power without host nation support in the Joint Operating Area (JOA). Seabasing capabilities will be vital in solving the difficulties imposed by a lack of access to overseas bases, while enhancing the ability of U.S. forces to project power from the sea and conduct ship to objective logistics.

Figure: 2: Aspects of Seabasing

The Joint and Navy Seabasing concept requires the ability to indefinitely sustain both forces afloat and those select Joint forces ashore operating from and/or supported by the sea base (see Figure 2). These concepts define the sea base as an inherently maneuverable, scalable aggregation of distributed, networked platforms that enable the global power projection of offensive and defensive forces from the sea, and includes the ability to assemble, equip, project, support, and sustain those forces without reliance on land bases within the JOA.[5]

The sea base may include Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs) with a Marine Expeditionary Unit (MEU), Littoral Combat Ships (LCS), Surface Strike Groups (SSGs), Amphibious Forces (AF), Combat Logistic Forces (CLF), Army afloat program ships, Coalition Forces, and a new group of ships called the Maritime Prepositioning Group (MPG) comprised of the Maritime Prepositioning Force (Future) (MPF(F)) squadron and its embarked troops and sailors (see Figure 3). The MPG's mission is to sustain both MPF(F) forces afloat and forces it has projected ashore such as the Marine Expeditionary Brigade (MEB) and other select Joint/Combined forces. The Navy's challenge is to develop a system whereby ships, aircraft, connector vessels, and related capabilities will provide sufficient timely and persistent logistical sustainment capacity to enable and bring to bear the full set of Seabasing capabilities resident in these systems.

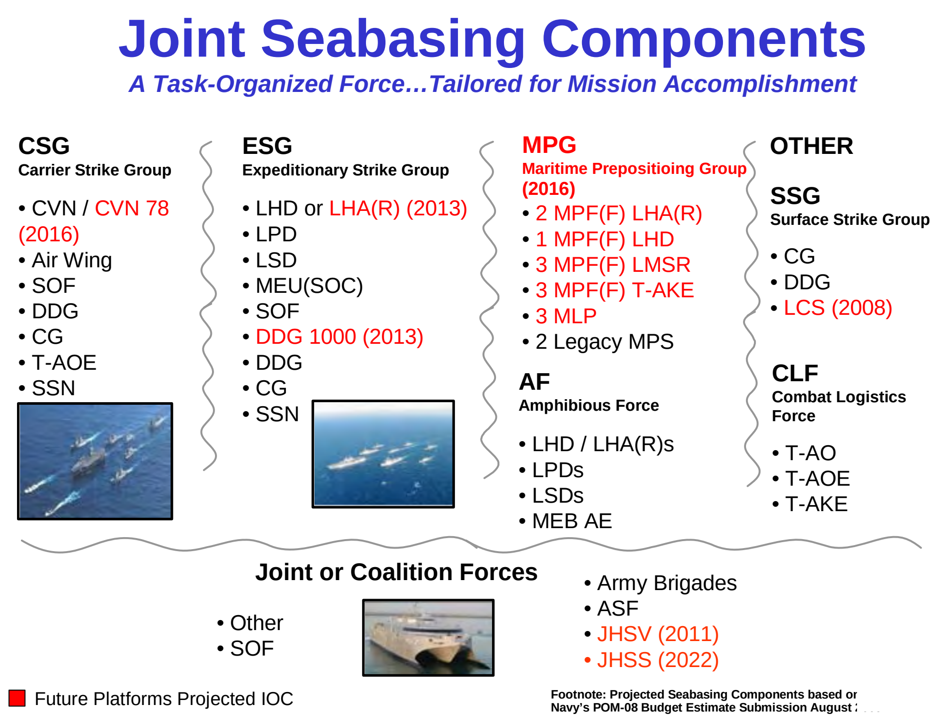

Figure: 3: Potential Elements of the Sea Base

The ability to sustain these forces will prove crucial to the successful prosecution of future Joint combat or humanitarian operations. By providing a secure facility at-sea, the sea base will ensure the effective reception, staging, onward movement, integration and theater distribution of forces and of sustainment. This in turn, will provide the JFC with a responsive and seamless distribution system that provides for a more rapid build-up of fully mission capable force packages.[6]

---

[5] Seabasing JIC Version 1.0 dated 01 August 2005, Pp. 52.
[6] Joint Deployment and Redeployment Operations; Joint Publication 3-35; Pp. V-2

3.2 Problem Definition

The requirement to develop a Seabasing Logistics Enabling Concept grew out of a CNO tasker following the POM-06 Seabasing NCP which first identified Seabasing Logistics as a gap in the overall Seabasing Concept. This gap can be directly tied back to two key traditional replenishment processes and procedures that transport sustainment for "blue-water Navy forces" and "green ground Army and Marine Corps forces". The "blue-water" replenishment process utilizes the Combat Logistics Force to transport sustainment directly to naval platforms at-sea. The "green ground force" replenishment process utilizes Strategic lift to transport sustainment requirements from CONUS to theater seaports and airports. In the future, expeditionary ground forces employed from the sea base (prior to access to Sea Ports and Aerial Ports of Debarkation (SPODs and APODs)) will need to be sustained by the sea base which requires the sustainment needs of those forces ashore to also be transported directly to the sea base.

Today's programmed CLF fleet is sized to support the seabased consumption of CSGs, ESGs, SSGs and LCS but not the full consumption of a brigade sized or larger force ashore.[7] CLF ships carry ordnance and other supplies consumed by these vessels afloat but today carry little ground force ordnance or supplies in their regular deployed load outs. In addition, the Sealift fleet, with few exceptions, is unable to interface and deliver its sustainment cargo directly to the sea base and/or CLF assets. Although today's MPF carries sustainment in support of the ground force, it is only capable of performing point-to-point equipment/cargo movement, discharging cargo in a SPOD or slowly off-loading in-stream in a secure area. MPF(F) will do all of this and selectively offload the equipment and sustainment while at-sea, over-the-horizon, without the need for an APOD or SPOD within the JOA.

The sea base – particularly the MPG and/or an Amphibious Force (AF) – must be able to sustain select Joint ground force operations, with minimum supplies held ashore, until the objectives are achieved or until the situation provides for secure movement of selected support functions ashore (e.g. the transition of operational capability from Seabasing to shore basing). Operations supporting daily presence of deterrence and crisis response forces in a forward theater, or for Joint operations short of defeating the military efforts of an adversary state, often lack sufficient regional support to permit establishment of a U.S. in-theater footprint. For these cases, the sea base must be able to sustain and support a Joint forcible entry capable force from the sea for an extended or indefinite period of time.

Developing concepts such as Global Fleet Station (GFS) and the potential support of new units and mission areas such as riverine operations are important and may impact the Seabasing Logistics architectures described in this document. Although the Seabasing Logistics Enabling Concept references many new concepts, others such GFS are so new that there is little detail that describes these forces in detail, the methods to employ them or the mission duration. As a result, some concepts and mission areas like GFS were not analyzed or incorporated into this concept. However, the Seabasing Logistics Enabling Concept is envisioned to be a "living" document; to be updated and revised over time. As these new concepts and concepts of operations develop, there will be greater levels of detail to allow analysis and assessment and eventual incorporation into the Seabasing Logistics architecture. It is envisioned that follow-on versions will take into

[7] Fleet Forces Command, CLF Requirements Study, Approved May 2005; Navy POM-08 CLF Transition Plan

account these new mission areas and describe how Seabasing Logistics assets will be utilized to support these units in a range of military operations and scenarios. This will also allow for a better or more detailed linkage of the interdependencies between these new units, capabilities and missions being supported and the types of assets used to sustain them.

3.3 Strategic Overview

The following assumptions were used in developing this Enabling Concept:

- The Seabasing Logistic Enabling Concept is focused on the 2015-2025 timeframe.
- U.S. forces will have reduced access to overseas forward operations bases, with no friendly or secure Advanced Base, Advanced Logistics Support Site (ALSS), Forward Logistics Site (FLS), seaport, or airfield within 2,000 nautical miles (nm) from the sea base[8].
- Seabasing will enhance existing Operational Plans, Contingency Plans and Functional Plans by reducing the footprint at land bases, minimizing enroute stops, and minimizing transloads.
- Key Seabasing elements such as the MPG, CSGs and ESGs will continue to be forward deployed or prepositioned in accordance with current and future defense strategies.
- Sea base platforms should enable rapid reinforcement with one or more MEBs and sustainment (accompanying supplies) of at least two brigades.[9]
- The MPF(F) is comprised of two Amphibious Assault ships (MPF(F) LHA(R)s), one Multi-purpose Amphibious Assault ship (MPF(F) LHD), three dry cargo and ammunition ships (MPF(F) T-AKEs), three Mobile Landing Platforms (MLPs), three Large Medium Speed Roll-On/Roll-Off ships (MPF(F) LMSRs), and two existing T-AK ships. Figure 4 provides an illustration and a description of some of their resident logistics capabilities.
- For brigade-sized operations, the sea base will be prepared to regularly receive packaged dry cargo, bulk POL cargo and other classes of supply. Forces ashore will predominantly require Classes I (subsistence and water); III (petroleum, oil, and lubricants - both packaged and in bulk); V (aviation and ground ammunition); VII (vehicles and equipment); VIII (medical) and IX (repair parts).
- The 2015 MEB's Fixed wing aircraft will not operate from MPF(F) ships. The MPG will retain the capability to establish a Forward Operating Base (FOB) Expeditionary Air Field (EAF) that will support the Forward Based Echelon (FBE) of the 2015 MEB. The MPF(F) T-AK ships will provide initial sustainment to the FOB, with follow-on support provided by CLF and/or Sealift.

[8] Seabasing JIC Version 1.0 dated 01 August 2005, Pp. 8.
[9] Seabasing JIC, Pp. 8

Figure: 4: Maritime Prepositioning Force (Future)

3.4 Challenges and Risks

The employment of ship to objective logistics coupled with the reduction and potential elimination of logistics lodgments ashore will present significant challenges to ships of the sea base and the surface and aerial capabilities needed to deliver the daily logistics requirements ashore and between ships at-sea. Furthermore, the sea base will face significant challenges and risks in its operating environment. While the natural or technological challenges can be mitigated through technological advances or doctrinal changes, other challenges and risks from hostile forces must be dealt with using different solution sets.

3.4.1 Challenges

- Adverse weather conditions and sea state directly impact the ability of logistics platforms to provide timely sustainment and throughput (i.e. transfer cargo, fuel, passengers, and other supplies) to seabased assets. Selected sea base platforms will require the capability to perform these operations in the open ocean in all weather, 24/7, through sea state 4 and potentially 5.[10]
- Selected sea base platforms (e.g., the MLP, LMSR) will require the capability to interface with other sealift ships to conduct equipment and cargo transfer in the open ocean.
- The number of shuttle ships required to support a sea base is directly related to the distance those ships must travel to obtain supplies from an Advanced Base, the

[10] Seabasing JIC, Version 1.0 dated August 2005; Pp. 37

sustainment capacity of the shuttle ships, the total daily sustainment requirements of the sea base, and the sea base sustainment reserves at the sea base set by the Joint Force Commander.

- A secure Advanced Base with adequate infrastructure, to include sufficient Maximum on the Ground (MOG) capability, is critical to the success of a seabased operation. An Advanced Base must be capable of breaking down TEUs delivered by commercial or strategic sealift, must have the capacity to store ordnance, fuel, and repair parts and have the ability to generate sufficient throughput at the piers, off-loading container ships and/or loading break-bulk shuttle ships.
- A robust Joint logistics command and control system must be established to ensure sustainment reaches the right units in a timely, efficient manner.
- The need for a high-speed surface shuttle or aircraft to move time critical, high priority repair parts, personnel, and other supplies to the sea base from an Advanced Base located 2000nm distant presents a significant challenge. This distance must be traversed quickly and the type and number of time critical shuttles or aircraft will depend on the frequency of demand, the priority of demand, and the total volume.
- The ability of the sea base and MPF(F) ships to sustain all of the demands of two Joint brigades operating ashore is limited by the vertical and surface connector capabilities that move the sustainment ashore (e.g. CH-53K, MV-22, Joint Maritime Assault Connector (JMAC), Landing Craft Assault Craft (LCAC), Landing Craft Utility (LCU)). These resupply operations are dependent on the concurrent operational demands of the two brigades, the distance between the forces ashore and the sea base, the availability of air and surface lift connectors to transport sustainment ashore, the capabilities of the air and surface platforms, and environmental conditions which may limit either the use of the connector or its ability to carry heavy loads.
- Adverse weather, legacy ship designs and limited cargo movement automation directly impact the ability of sea base platforms to conduct efficient and time effective Strike-Up and Strike Down cargo operations and potentially achieve the desired throughput in support of Seabased operations and forces ashore.

3.4.2 Risks

In addition to the challenges delineated above, the following factors pose a risk to the execution of this Seabasing Logistics concept. By accounting for and addressing these factors in advance of any operation, a Joint Force Commander can mitigate the risks these factors pose.

- Forces may be required to conduct operations in anti-access environments, with hostile mines, missiles, aircraft, submarines, ships and surveillance assets threatening to delay the movement of sustainment to the sea base along the lines of communication.
- Force protection assets supporting the sea base and the logistics assets that are transiting along the lines of communication between the Advanced Base and sea base may be limited in their ability to provide full spectrum protection. The movement of sustainment may require convoys due to the risk of enemy attack, which could impact the timeliness of delivery.

3.5 Operating Environments

The future operating environment has significant implications for the conduct of Seabasing Logistics in the 2015-2025 timeframe. Future sea based operations will be characterized by more rapid decisive operations, capitalizing on OMFTS, STOM and Distributed Operations. Forces ashore supported by the sea base may be highly dispersed and operate in a non-contiguous terrain in an anti-access environment. This may result in multiple Joint Force entry points and longer lines of communication caused by lack of ports or other bases and infrastructure in the JOA.

3.5.1 At-Sea

To function effectively, the sea base must be able to operate at-sea in a JOA located up to 2,000 nautical miles from an Advanced Base.[11] This reduces the dependence on direct logistical support from shore facilities within reach of an adversary. However, it also places a much greater emphasis on an effective Seabasing logistics capability over longer lines of communication, the ability to deliver forces and sustainment directly to the point of need, bypassing traditional strategic ports and airfields.

3.5.2 Advanced Base.

An Advanced Base is the primary transshipment point through which the majority of all supplies required by the sea base must pass. It serves as the stockpile for supplies required to meet the demands of forces operating in a theater including the sea base. A fully capable Advanced Base should have a deep-water harbor with sufficient berths, a military or commercial airfield with a sufficient MOG capability, petroleum storage tanks, container marshaling yards, ordnance magazines, cranes, trucks and barges. The Advanced Base will also require a marshalling area for personnel. However, a berthing and messing area would be preferred. The base provides the required space for efficient container sorting, storage, and consolidation that might not be possible in the constrained shipboard environment. It also allows Joint forces to repackage sustainment supplies to the proper size and quantity for distribution to Joint Forces both at the sea base and operating ashore. The Advanced Base also may require medical and maintenance capabilities, as possibly the only location to evacuate personnel requiring medical evacuation (MEDEVAC) or equipment requiring additional repair beyond those capabilities resident at the sea base. Finally, the Advanced Base must be equipped, staffed, and have allotted space to perform reverse logistics, hazmat disposal, and salvage operations.

In some instances, Naval forces might be able to rely on a Forward Logistics Sites (FLS) or Advanced Logistics Support Site (ALSS) at an already established Advanced Base that might be expanded to support MPG or Assault Follow-On Echelon (AFOE) operations. The ALSS would be the primary in-theater logistic support transshipment point for both forces afloat and ashore. Such a facility can serve as a transshipment point for logistical support providing port and airfield facilities; capabilities for storage, consolidation, and transfer of supplies; and support of forward deployed units.

[11] Seabasing JIC, Pp. 8

4.0 DESCRIPTION OF SEABASING LOGISTICS CAPABILITIES

4.1 Mission/Tasks

The mission of Seabasing Logistics is to ensure the sea base – even with an absence of secure shore facilities in the JOA – can be sustained in a timely and persistent manner so that the sea base is capable of supporting a broad range of military operations, including major combat operations (MCO), preemptive MCO with limited forward access, humanitarian assistance (HA) operations, and counterinsurgency operations (COIN).[12] This allows the sea base to be stationed anywhere in the world and maintain the capability to strike rapidly while supported by a responsive logistics system. In addition, a Seabasing Logistics capability must be capable of supporting a much broader and diverse sea base customer base in terms of sea base size and make-up. For example, a sea base could be composed of several LCS or other surface combatants supporting a SOF mission off the coast of Africa or comprised of several CSGs, ESGs, an AF, LCS squadrons, and MPG in support of an MCO. The ability to support the full range of military operations will be the cornerstone of the sea base's capability.

4.2 Required Logistics Capabilities

The Seabasing Logistics network that supports the sea base will require an aggregation of many different capabilities, systems, and processes. For example, sustaining Joint operations from the sea base will require joint total asset visibility and responsive delivery systems. The sea base must also be a flexible and integrated transshipment point that sustains Joint Force momentum. The aggregation of these logistics capabilities provides a robust capability for the sea base and its operations. The logistics capabilities include:

- Underway Replenishment,
- Improved Internal Cargo Handling
- Enhanced Prepositioning Afloat with Selective Offload
- Joint In-transit Visibility/Total Asset Visibility
- Logistics Command and Control (C2)
- Seabased Maintenance
- Joint Intermodal Packaging
- Time Critical Resupply
- Open Ocean Interface and Transfer

4.2.1 Underway Replenishment

The Underway Replenishment (UNREP) system forms the foundation of a Seabasing Logistics capability by providing the means for logistics shuttle ships to transfer fuel, ammunition, spare parts and other heavy bulk sustainment supplies required by forces and ships at-sea. Without this capability, the sea base and naval ships would not be able to maintain a continuous forward presence at-sea.

[12] Seabasing JIC; Pp. 4 - 5

Alongside Connected Replenishment (CONREP) and Vertical Replenishment (VERTREP) are the critical capabilities that support the transfer of high volumes of cargo between logistics shuttle ships and Seabased assets. During CONREP, two or more ships steam side-by-side and the hoses and lines used to transfer fuel, ammunition, supplies, and personnel connect the ships. CONREP involves rigging wire ropes from the replenishment ship (the supplier) to the receiving ship (combatant or support ship). Supplies are sent via a tensioned wire rope while the two ships maintain a steady course and speed at a distance of 80 - 200 ft. When transferring fuel, fuel is pumped to the receiving ship via connected hoses. Palletized dry cargo is transferred via a trolley that traverses the tensioned wire ropes that connect the receiving ship with the logistics shuttle ship. This capability allows large volumes of fuel, ammunition and dry stores to be passed between ships at-sea.

The sea base's logistics ships may have a Heavy UNREP system to provide more rapid replenishment of heavy loads through CONREP. Heavy UNREP is basically a more powerful and more rapid version of the current system utilized today. It is expected to double – potentially quadruple – the current UNREP transfer rate, with a capacity for 12,000-lb loads at a 300-ft maximum ship separation rather than the current 5,700-lb load capacity at a maximum 200-ft separation.

VERTREP utilizes helicopters or potentially tilt-rotor aircraft to transfer supplies from the flight deck of the replenishment ship to that of the receiving ship. The primary advantage of VERTREP over CONREP is that the ships do not need to be close to each other, so there is little risk of collision. However, it is impractical to transfer large volumes of fuel or other liquids in this way.

T-AOEs, CLF T-AKEs, and MPF(F) T-AKEs have embarked MH-60s (or commercial equivalents) when deployed to support VERTREP operations between ships at-sea. T-AOs do not have an organic MH-60 detachment to support VERTREP operations but can utilize the MH-60s provided by another Navy ship. VERTREP assets could include the CH-53K, MH-53E, and MH-60 helicopters and the MV-22A tilt-rotor aircraft. The MH-60 will be used primarily for replenishing ships within the sea base, while the CH-53 series and MV-22A will be used primarily for ship-to-shore replenishment.

4.2.2 Improved Internal Cargo Handling

Future Strike-Up/Strike-Down techniques and systems should automate the movement of cargo and weapons from the shipboard onload point to stowage spaces (strike-down), and from stowage to the offload point for transfer to another ship or to shore (strike-up). The future sea base will be able to receive, store, track, retrieve, and transport more dense loads and potential advanced packaged loads and reconfigure those loads for deployment within the sea base or to the shore in manageable configurations.

Today, receiving ships are too often left with weapons containers, pallets or cargo nets of stores dumped on its decks. Moving the materiel below into magazines or storerooms where it can be properly identified and located may take several hours or longer on larger platforms. Many combatant vessels perform Strike-Up/Strike-Down (SUSD) operations using large working parties. Much of the materiel must be broken out of pallets and containers into packages that can be manhandled aboard the ship. Materiel, generally, is not available for use until this takes place. The SUSD process on board the ship remains a labor intensive evolution, which impacts mission readiness and presents significant challenges.

Methods for selective retrieval of materiel today present equally significant challenges. Typically, materiel is densely stowed to maximize stowage capacity. Methods for securing loads while in transit or in the stow condition are labor intensive, result in inefficient utilization of stowage space, and waste material for dunnage. Selectively acquiring materiel therefore becomes an arduous and highly inefficient task of shuffling materiel to get to the desired commodity or unit. To minimize the impact to offload cycle time, materiel is typically pre-staged in large quantities to reduce alongside time and improve throughput. In general terms, SUSD and stowage operations are relatively inefficient and have the potential to cause significant delays in the logistics flow.

The primary targets for future (SUSD) and automated stowage and retrieval (ASRS) technology insertion are Carriers, Combat Logistics Force, Amphibious Ships and Future Maritime Prepositioning Force (MPF(F)) ships. These ships typically receive, handle and/or transfer large quantities of material between ships. Additionally, Amphibious Ship and the MPF(F) platforms will need to prepare material for further transport ashore.

Future sea base operations will require the capability to receive dense loads in advanced modular packing and reconfigure it for deployment within the sea base or to the shore in manageable configurations within the design limits of the respective carriers (i.e. Standard Tensioned Replenishment Alongside Method (STREAM), Heavy UNREP, VERTREP and movement ashore via air and surface connectors). Automation within the SUSD system must be compatible and integrated with the methodology for load reconfiguration (i.e. advanced modular packaging, selective warehousing and delivery) and must be able to distinguish between two types of loads; loads prepared for movement between ships (via UNREP and VERTREP) and those prepared for movement ashore (via air and surface connectors). The latter may be significantly larger and more difficult to move via air connectors (in particular bulk liquids) than loads between ships.

Four key areas that will help to improve and potentially automate aspects of internal cargo handling of seabased assets include: (1) improved shipboard elevators and transport systems that can transition from vertical movement to horizontal movement utilizing removable platforms or other automated transition technologies, (2) automated loading / load securing of the elevator platform, (3) Human Amplification Technology such as the human strength amplified transporter, and (4) an automated storage and retrieval (AS/RS) capability that facilitates and enables the selective retrieval of items required for offload or transfer from any storage location and increases throughput speed and overall capacity.

4.2.3 Enhanced Prepositioning Afloat with Selective Offload

An enhanced afloat prepositioning and selective offload capability allows operations afloat and ashore independent of APODs and SPODs within the JOA. In these anti-access situations, the sea base must be able to provide support for up to two Joint brigades ashore for an extended or indefinite period of time.[13] A critical sub-capability of enhanced prepositioning afloat is selective offload. In addition to the selective offload of rolling stock, the sea base must be capable of selectively accessing, retrieving, and offloading cargo sustainment to Joint forces, as they require it. This ability to provide on-time delivery – getting the right supplies to the right unit at the right time – will be critical to the success of Joint operations, by avoiding the buildup

[13] Seabasing Joint Integrating Concept (JIC), Version 1.0 dated 01 August 2005, Pp. 8.

of sustainment on the beachhead and a buildup of retrograde material on the sea base. Most sea base ships will have some level of selective offload capability.

In contrast to today's legacy afloat prepositioned assets (e.g. MPS), which require a secure APOD with a SPOD or a secure environment to conduct relatively slow logistics over the shore (LOTS) operations, the sea base and MPG will offer an enhanced afloat prepositioning capability that allow operations afloat and ashore independent of APODs and SPODs within the JOA. The three MPF(F) T-AKEs will be critical to the enhanced prepositioning and selective offload capabilities. Although the primary mission of the MPF(F) T-AKE is to preposition a substantial amount of all classes of supply for a Marine Expeditionary Brigade (MEB), it can also contribute to the support of the dry cargo and ammunition requirements of select Combined/Joint Forces. The supplies can be selectively offloaded and transferred to other MPF(F) ships or moved directly via tilt-rotor and/or heavy lift aircraft to forces operating ashore.

The prepositioning capability allows ground force operations to continue until the first sea base resupply takes place. Since the majority of all ground force replenishment is executed via sealift, the first replenishment may not occur for several weeks, depending on the scenario. Although CLF ships are capable of loading, carrying, and transporting the ground force cargo if required, it was not sized to load dry cargo or ammunition for a ground force. Future CLF may pre-load some cargo in support of a Marine Expeditionary Unit (MEU), but is unlikely to carry supplies in support of a ground force the size of a brigade (e.g. MEB). As a result, the MPF(F) ship's prepositioning capability is a critical gap filler that serves to sustain Joint sea base operations.

The Marine Corps Combat Development Command conducted an analysis of the 2015 MEB lift requirement and determined the MPF(F) squadron could support the prepositioning of a combat load with 45 days of dry cargo supply for the Sea Base Echelon (SBE) and Forward Base Echelon (FBE) of the 2015 MEB, including JSF ordnance. The MPF(F) squadron, also, prepositioned upwards of 20 days of POL supply for the SBE and the FBE of the 2015 MEB, including fuel requirements for all aircraft of the MEB ACE, in the analysis. This is an important finding that supports the enhanced prepositioning with selective offload capability. Given the greater potential for reduced access to APODs/SPODS ashore and the capability to employ combat power much earlier, the MPF(F) must maintain as much material afloat as possible, offshore, and ready to execute. All major combat operations experience a number of lift constraints as all of the services will be competing for lift assets. These potential conflicts must be taken into consideration before planners reduce the days of supply prepositioned afloat due to fiscal and/or sourcing constraints and place full reliance on a specific transportation and sourcing plan to sustain operations.

4.2.4 Joint Logistics In-transit Visibility/Total Asset Visibility

Sea base logistics data systems must be able to provide users – both afloat and ashore – with timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, materiel, and supplies throughout the transit of such sustainment. The ability to locate, move, track, and transship a variety of cargo from CONUS through an Advanced Base, to a sea base, between ships at-sea, and on to forces ashore will mitigate risk and prevent operational pauses in theater.

Total asset visibility (TAV) and In-transit visibility (ITV) will be critically needed capabilities for the JFC to exercise effective logistics command and control. The establishment of a system with timely and accurate asset visibility must be closely coordinated between the

Geographic Combatant Commander and Service Component logistics organizations involved in exercising logistics command and control.

The centralized distribution of asset visibility information (supply, maintenance, weapons & operations), the standardization of Automated Information Technology (AIT), and the implementation of material handling and business process improvements, as illustrated in Figure 5, will serve as a transformational piece of Seabasing Logistics.

AIT is a suite of technologies that enable and facilitate the accurate capture and rapid transmission of machine-readable data to automated information systems (AIS), thereby enhancing the readiness of deploying forces, with improved knowledge of their equipment, personnel and capabilities in support of their respective mission. Automatic Identification Technology (AIT) utilizes Radio Frequency Identification (RFID), Radio Frequency Data Collection (RFDC), Wireless LANs, and Smart Shelves to capture asset data with minimal human "touches". RFID uses low-powered radio transmitters to read data stored in a transponder (tag) at distances ranging from one-inch to one-hundred feet. RFID tags will be used to track assets, manage inventory and authorize payments. These technologies feed Automated Information Systems (AISs) that support supply, maintenance, weapons and operations. AIS examples include Relational-Supply (R-Supply), Navy Aviation Logistics Command Management Information System (NALCOMIS), Logistics Automated Information Systems(LogAIS), Global Transportation Network (GTN), and Enterprise Resource Planning (ERP).

Material Handling improvements include Smart Sensors for capturing logistics data as material moves through the supply system. Business Process Improvements include automated receipt, issue, inventory, underway replenishment, food service management, and vehicle tracking. These improvements enable Distance Support, the movement of workload from units afloat to organizations ashore outside the theater with commensurate cost savings.

Moving logistics data and information to end users (e.g. Joint sea base) is a significant step in achieving Total Asset Visibility, In Transit Visibility, Joint inter-operability and a Common Operating Picture. Additional benefits include reduced total ownership cost and cross platform integration.

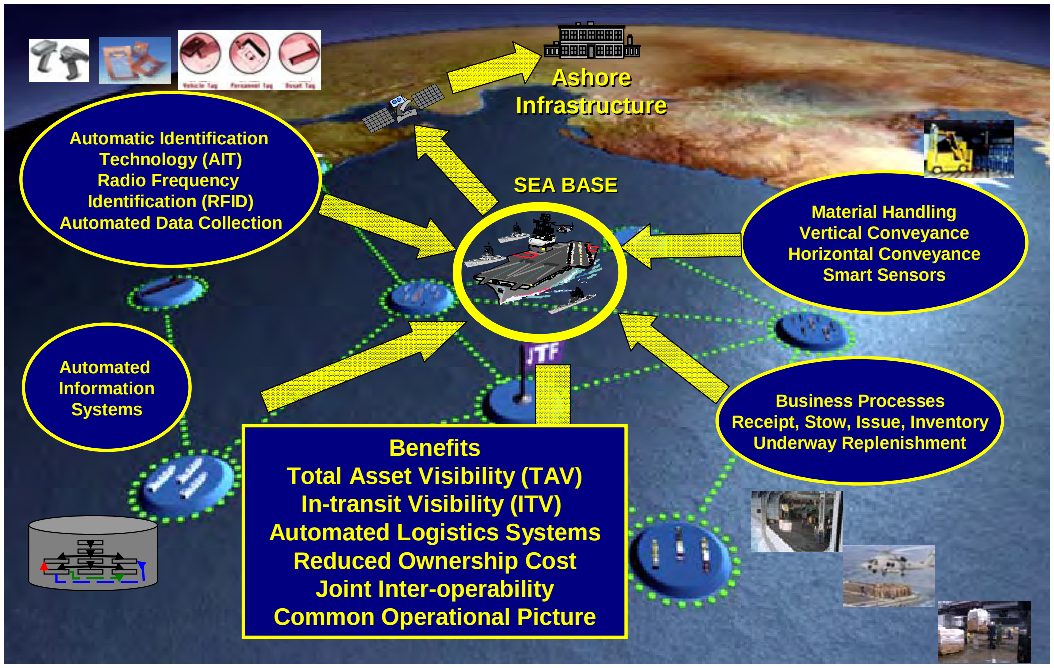

Figure 5: Joint Logistics ITV/TAV

4.2.5 Logistics Command and Control (C2)

The sea base logistics system must be capable of rapidly establishing a joint and coalition logistics C2 system that can identify, locate, communicate, and perform real-time planning and execution. It must operate in a collaborative, network environment complete with a Common Operational Picture (COP), total asset visibility, in-transit visibility, utilizing decision support tools and modeling & simulation across all elements of the Joint force. A key component of this logistics C2 system will be the capability to perform predictive analysis of sustainment needs of seabased and ground forces to forecast and respond to requirements in real time (Sense and Respond Logistics). This is potentially the most critical Seabasing Logistics capability.

The movement of Joint equipment, supplies, and personnel to and from the sea base is complex. To ensure the smooth timely flow of sustainment logistics and to deconflict any difficulties, the sea base will require robust C2. Because of the range of missions and forces supported by the sea base, the sea base will provide command and control capabilities for the Joint Force Commander (JFC), designated component and multinational staffs. This will include seamless C2 of forces throughout the battlespace.[14] Although the JFC might not be located aboard the sea base, the JFC will be responsible for and control theater Naval logistics, including those of the sea base, and exercise effective logistics command and control through the designated Joint Force Maritime Component Commander (JFMCC). The JFC may also choose to delegate authority for common support capabilities. The JFMCC or sea base commander will

[14] Seabasing JIC; Pp. 19

exercise logistics control with close coordination with the supporting Theater Commander's logistics task force (Commander, Task Force (CTF-X3)).[15]

The Joint sea base C2 structure may leverage existing Joint Force Headquarters; potentially embarking part of a core element to conduct effects based planning.[16] The JFMCC staff will include a J4 staff that is responsible for maritime logistics plans and operations that support the sea base. The J4 will closely coordinate plans and operations with the Joint Force Commander and the CTF staff and in particular the CTF-X3. The CTF-X3 is responsible for tactical level execution under the JFMCC and has tactical control of CLF and other MSC ships within the theater of operations.

Under the control of the Combatant Commander (CCDR), is the Joint Deployment and Distribution Operations Center (JDDOC) (Figure 6). The JDDOC is a Joint capability that integrates strategic and theater deployment execution and distribution operations within each CCDR's area of responsibility.[17] Joint and/or Combined seabased operations will require the Advanced Base to have a JDDOC organization with representation from the CCDR's DDOC. Portions of the JDDOC organization may need to be embarked aboard MPG or another key C2 platform at the sea base to liaison with the Marine Air Ground Task Force G4 and other key sea base logistics entities to coordinate requirements, priorities and movement of cargo through the Advanced Base out to the sea base.

The sea base's supporting JDDOC will direct deployment, redeployment, and distribution priorities; provide TAV and ITV for force flow, sustainment, and retrograde; help establish and manage theater distribution in coordination with the Service Components and Joint Staff; synchronize theater distribution with theater forces; provide oversight of common use maritime transportation systems; coordinate reach back to national partners; coordinate strategic and intra-theater sealift support; and coordinate with representatives from the other services, agencies, and coalition nations, to integrate and optimize intermodal transportation solutions as required.

[15] NWP 3-62/MCWP 3-31.7, Seabasing, dated August 2006
[16] Seabasing JIC; Pp. 25
[17] USTRANSCOM, Joint Deployment Distribution Operations Center, Template Edition 2, 11 August 2006.

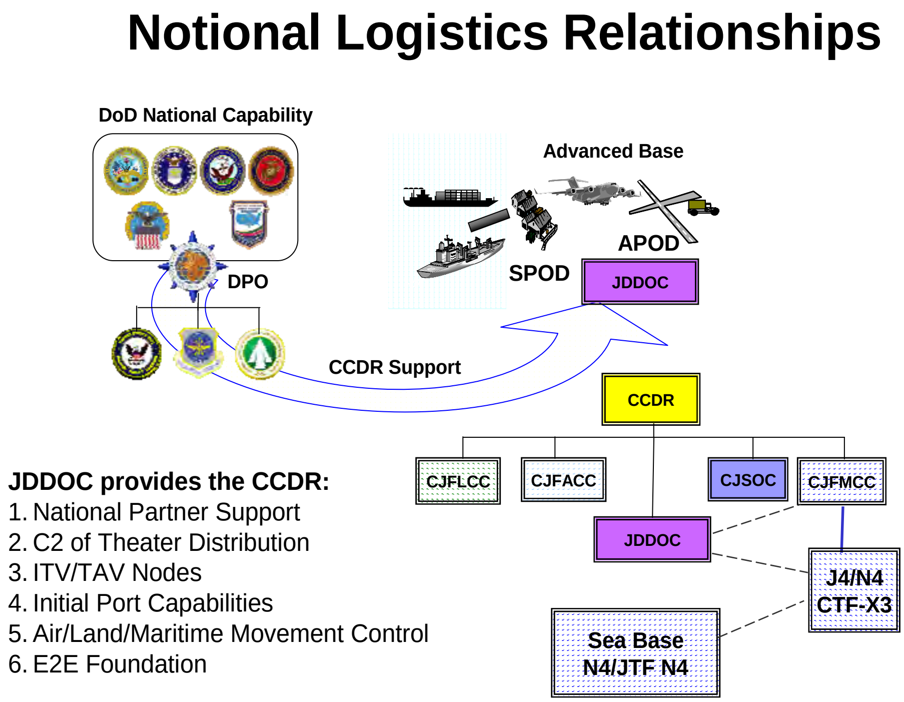

Figure 6: CCDR & JDDOC Organizational Relationship

USTRANSCOM (Distribution Process Owner) will have control of logistics from CONUS through arrival at the theater of operations. To effectively exercise logistics command and control, the JDDOC must closely synchronize and seamlessly integrate the distribution operations at the Advanced Base with the JFC's theater logistics network. The JFC J4, JFMCC J4, CTF-X3, and the assigned JDDOC must work together in close coordination with the Joint Force Land Component Commander (JFLCC) or the MAGTF G4 to ensure the ground force sustainment requirements are planned for and executed as a part of the logistics shuttle ship rotation or via time critical air and/or surface resupply connectors .

Combat Logistics Forces will be globally allocated and assigned to a theater based on operational and mission requirements of each theater. Once assigned to a JFC, the JFC will normally delegate operational control over assigned and attached forces to their component commanders (e.g. JFMCC) and tactical control of the logistics capabilities or forces available to the component commanders for tasking.

The sea base might have to accommodate multinational coalition forces. As logistical support is a national responsibility, effective liaison will be needed to ensure effective C2 of logistical support. Because coalition forces will need to standardize logistical procedures to plan and conduct effective operations, liaison officers should have a knowledge and familiarity with the capabilities, limitations, and logistics concepts of their national organizations. Agreements also must be made for appropriate logistics C2, covering principles, procedures, and report requirements.

4.2.6 Seabased Maintenance

A seabased maintenance capability for both aviation and ground combat equipment will be critical to maintain a high operational tempo while also supporting the ability to regenerate combat power for reemployment. The sea base will provide common-use facilities and equipment support for Joint force operational maintenance requirements. The sea base's naval maintenance organization will provide and support common repair items, while service specific repairs will require augmentation by the appropriate personnel and equipment. The sea base should be able to provide basic support and habitability functions for Naval and Joint maintenance teams.

Advanced diagnostic and requisitioning ("sense and respond") systems with automated tracking and monitoring of equipment, will enable shore-based forces to operate with minimal maintenance resources backed by a specifically designed and flexible maintenance capability aboard the sea base. Ground and air units will repair and replace components of damaged end items when and/or if the tactical situation permits. The spares inventory aboard the sea base will be refined by performance based logistics, use of government and commercial express delivery systems, electronic reach back to manufacturer inventories (i.e. Distance Support), improved diagnostics, and automated requisition and distribution systems that are capable of communicating end-user requirements.

Unit-level operators will perform many repair functions normally relegated to second echelon maintenance. If a repair can be effected in a "minimal" time frame, that repair will be completed ashore by either the organic operators or by small teams that either are part of a Mobile Combat Service Support Detachment (MCSSD) or have been dispatched from the sea base.

Seabased maintenance capabilities include full organizational level maintenance and scalable intermediate level maintenance, carried out by the aviation intermediate maintenance detachments and battle force intermediate maintenance activities organic to the CSG, ESG, MPG or AF. More extensive maintenance will be conducted at the sea base by teams flown in from advanced maintenance facilities. Because seabased Joint forces must seamlessly operate with other Joint and multinational forces, the sea base will still need the infrastructure to accommodate these forces and operate effectively.[18] For example, Explosive Ordnance Disposal (EOD), Mine Countermeasures (MCM), and SOF normally deploy with their required specialized maintenance capabilities and the sea base would provide the capacity to support these specialized maintenance forces.

The maintenance capabilities for aviation assets support all aircraft operating from an ESG, an Amphibious Task Force (ATF) or MPG and in support of the sea base and ground forces ashore. This scalable capability will be determined by assessing mission requirements (afloat and ashore), aviation force composition, and the geographical and/or geopolitical situation within the JOA. The ESG, ATF and MPG will provide the maintenance capability for its own rotary, tilt-rotor, and fixed wing aircraft aboard the LHA(R)s and the LHDs. The MPG will continue to provide operational level maintenance if and when any of its aircraft deploy ashore prior to sustained operations ashore (SOA). MPF(F) LHA/LHD class ships will only accommodate F-35B aircraft in emergencies. The CSG and ESG will provide maintenance for their own aviation assets. The T-AVBs, when operationally loaded, are capable of providing a full intermediate maintenance activity repair capability to both fixed-wing and rotor-wing

[18] Seabasing JIC, Pg. 35-36

Marine aviation units operating from the sea base. This capability is complementary and potentially augments the capability provided by the MPG and Amphibious Task Force ships until the T-AVBs reach the end of their service life.

Maintenance requirements beyond the capability of the sea base will be evacuated to the Advanced Base, with the possible further evacuation depending on the level of capability at the Advanced Base and the level of repair required. Methods of evacuation will vary, with small items retrograding either by airlift, CLF, JHSV or other logistics shuttles in their normal replenishment cycles. Larger vehicles and equipment will evacuate via other means (Sealift or even MPF(F) vessels following completion of the mission), depending on requirements and capability at time of retrograde.

4.2.7 Joint Intermodal Packaging

Joint Intermodal Packaging, utilizing standardized packaging concepts and containers, will ensure that goods will not have to be repackaged as they travel through either commercial or Government transportation networks by ship, rail, aircraft, or truck across the logistics continuum to the sea base and potentially to the end users ashore. This will aid in ensuring more rapid delivery and reduce the amount of handling and retrograde packaging at the Advanced Base and on the sea base. Improved and modular packaging may also allow for more rapid cargo movement inside certain ship platforms and the insertion and use of automated storage and retrieval systems that reduce the need for human input and allow more dense cargo storage configurations.

Current Joint packaging is very inefficient with packages coming in various sizes, shapes, and weights, rather than standardized form. There is no common sustainment module utilized among the services and as a result these packages are not transportable across different transportation modes without re-handling and/or repackaging, cannot be quickly reconfigured, lack traceability, and are difficult to retrograde. This results in significant human input to move material and a significant amount of double handling.

An intermodal packaging example is the Joint Modular Intermodal Container (JMIC) (Figure 7). The JMIC is a new, evolving joint container standard. It is a pallet-sized intermodal container that is compatible with International Organization for Standardization (ISO) specifications and multiple distribution platforms.[19] It is designed so that a wide variety of aircraft, ships, trucks, and rail cars can handle it, easing its use by different services and carriers. It will be collapsible when not in use, for ease of storage, and can be interconnected to form larger packages, up to Twenty-foot equivalent units (TEU)s. The JMIC can be quickly loaded onto a Modular Intermodal Platform or secured to a 463-L pallet.

Advanced logistical systems, such as the JMIC, can also play a role in support of Seabasing. Successful sea base operations may be facilitated by the development of advanced cargo handling systems to ensure that cargo is stowed at the rate of receipt during UNREP and that cargo throughput, selectivity, packing density, availability, and reliability are maximized while cost, weight and maintenance are minimized.[20] A common packaging system could potentially support the insertion of automated stowage and retrieval systems (AS/RS) to facilitate and enable selective retrieval of standardized packages from any storage location for offload or

[19] Seabasing JIC; Pg. 28
[20] Seabasing JIC; Pg. 28

transfer. This could also help reduce manning levels and increase throughput speed and overall capacity.

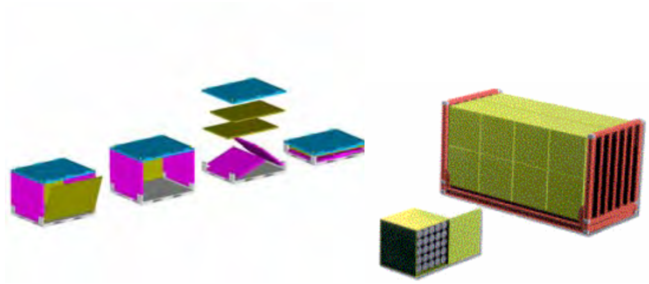

Figure 7: Notional Joint Intermodal Container

4.2.8 Time Critical Resupply

Time critical resupply and sustainment for Joint forces will be a key attribute of the sea base logistics network. To adequately support and sustain all sea base requirements, the JFC must have the ability to move high priority cargo and passengers between the Advanced Base and sea base. This requires a robust and highly effective transport capability via either surface and/or air means. This capability will ensure critical sustainment reaches the right forces at the right time and will eliminate the logistics buildups on the sea base and ashore.

Today, high priority demands are supported by the Carrier Onboard Delivery (COD) and Vertical Onboard Delivery (VOD) capabilities but are limited to support from distances significantly less than 2000nm. The COD range is limited to 1,000nm with a 10,000lb payload and VOD range is limited to 400nm with 20,000lb load. Future high speed surface craft, such as JHSV, or longer range aircraft (or air refuelable) will be required to support the high priority logistics demands of sea bases located much farther from shore support.

Central to the time critical resupply capability is the continuation of the COD mission currently performed by the C-2. A follow-on aircraft with a longer range and/or air refuelable capability would provide a good balance of speed and throughput for this mission. There are alternative systems that may also support this mission such as the JHSV. With up to twice the speed (35-40 knots, sea-state dependent) of the T-AKE, the JHSV can provide rapid delivery of critical cargo from the Advanced Base to the sea base. Similarly, the MV-22, with a greater speed (250 knots for internal loads, 140 knots for external loads) than current helicopters, will allow for rapid movement of critical cargo from the sea base to the shore or potentially serve as a time critical mover of passengers and cargo between the Advanced Base and sea base when the operation allows, and in-flight air tanker support is available. In addition, a future heavy vertical lift capability could support delivery of outsize cargo to the sea base or from the sea base to shore. For each of these alternatives, speed, range and payload trade-offs must be assessed to determine suitability and applicability for a particular high speed mission.

4.2.9 Open Ocean Interface and Transfer

An open ocean interface and transfer capability provides a Joint throughput capacity that will serve as a sea base's at-sea interface platform ("Joint pier in the ocean") for surface sealift vessels when a port is unavailable or when the establishment of a logistics over-the-shore (LOTS) operation is tactically infeasible.

One such open ocean interface and transfer capability is skin-to-skin transfer. Skin-to-skin transfer allows very heavy and oversized equipment and cargo such as vehicles to move between ships. Current skin-to-skin transfer is extremely difficult under all but the calmest conditions due to the forces of water acting between the vessels and the danger of the vessels colliding even while not making way. While skin-to-skin replenishment is not possible under all conditions and under all situations, increased capabilities for situations with higher sea states are desired. Potential technology investment areas that will support open ocean interface and transfer include (1) dynamic positioning systems, (2) advanced fendering or mooring techniques and approaches, (3) advances in ship heading control systems, (4) side-port ship-to-ship vehicle ramps and (5) small ship to large ship interface methods. In addition, technological improvements are required in methods of transfer of heavy loads, such as through stabilized cranes, ship motion control, and other ship interface systems.

The MPF(F) MLP will provide the critical open ocean interface and transfer capability for the sea base and serve as the key interface point between the sea base and other surface lift ships and vessels such as the JHSVs or LMSRs that may deliver Joint rolling stock, forces, and sustainment cargo (Figure 8). This capability is primarily a large vessel interface utilizing lift-on / lift-off (LO/LO) or roll-on / roll-off (RO/RO) technologies to enable the safe transfer of material and equipment to the sea base but may also include small to large vessel interface capabilities. The MLP is planned to allow alongside interface with a variety of sealift ships such as LMSRs, JHSVs, Army Logistics Support Vessels (LSVs), Army and Navy LCUs, Navy LCACs, and the future JMAC.

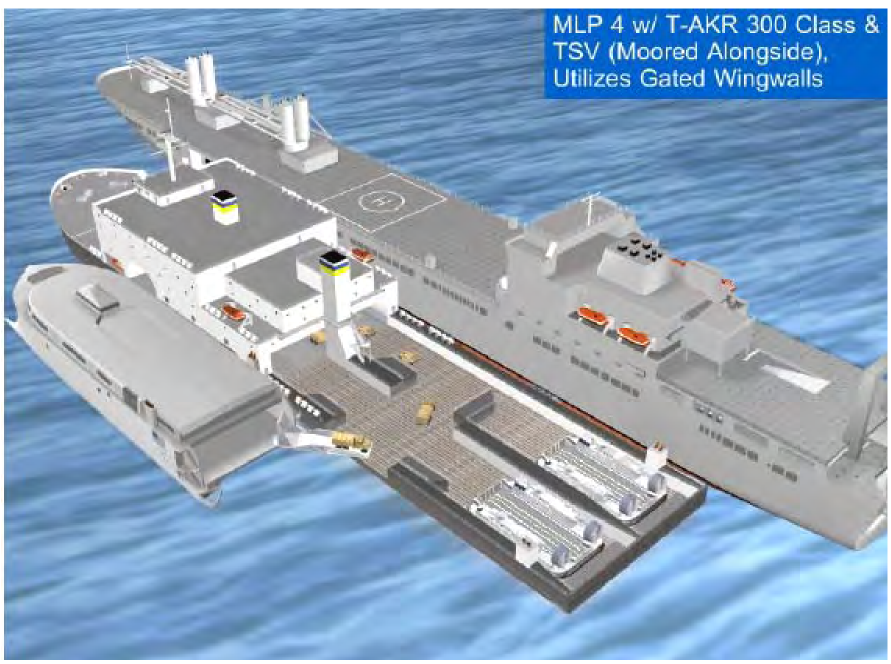

Figure 8: MPF(F) Mobile Landing Platform

5.0 AN IMPLEMENTATION OF JOINT LOGISTICS CAPABILITIES

Seabasing integrates capabilities from Joint Operating Concepts, Joint Functional Concepts, and Joint Integrating Concepts and distills them into five lines of operation – Close, Assemble, Employ, Sustain, and Reconstitute (CAESaR).[21] Seabasing logistics operations will focus on the fourth line of operation – sustainment—and the requirement to provide support for forces at the sea base and throughput for forces ashore operating from the sea base. The sustainment line of operation provides for timely and persistent support and provisioning of ship- and shore-based Joint forces as they transition to decisive combat or ongoing humanitarian operations. The sea base will be the critical hub through which sustainment supplies enter the Joint operating area. Because the base will be offshore, only the fighting "teeth" will have to be offloaded – almost all of the logistical "tail" will remain at sea. A robust Seabasing logistics capability is necessary to sustain those Joint Forces operating on or from the sea base through all phases and all types of operations. This section describes a concept of operations through the implementation and/or employment of the Seabasing logistics capabilities described in section four.

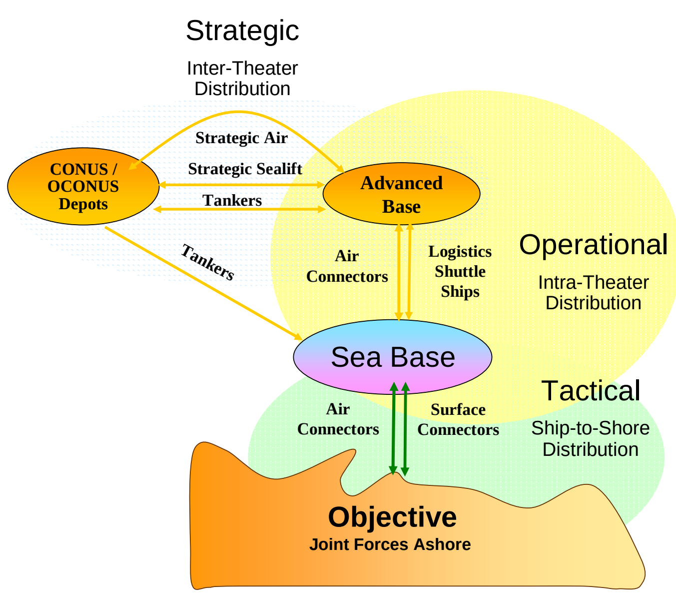

Figure 9: Seabasing Logistics Overview

Seabasing enables persistent combat operations by sustaining selected Joint forces ashore through multiple entry points. Tactical distribution directly from the sea base reduces the need for the build-up of large supply bases ashore. Once Joint ground forces have been projected ashore, they will be continually sustained by a combination of intra-theater and tactical air and surface connectors from the sea base and Advanced Base. The primary sea base assets that will support and sustain Joint ground forces include the MPG, ESG, and AF. These ships have the capacity to warehouse sustainment supplies for ground forces and the organic connectors (LCACs, LCUs, and Tilt-Rotor and Heavy lift Helicopters such as MV-22s and CH-53s) to

[21] Seabasing JIC; Pg. 7

transport that sustainment ashore. Figure 10 provides an illustration of the theater sea base surface distribution network. This distribution system must be able to support the sea base and sustain seabased operations, including up to at least two joint brigades operating ashore, for an indefinite period using secure Advanced Bases up to 2000nm away.

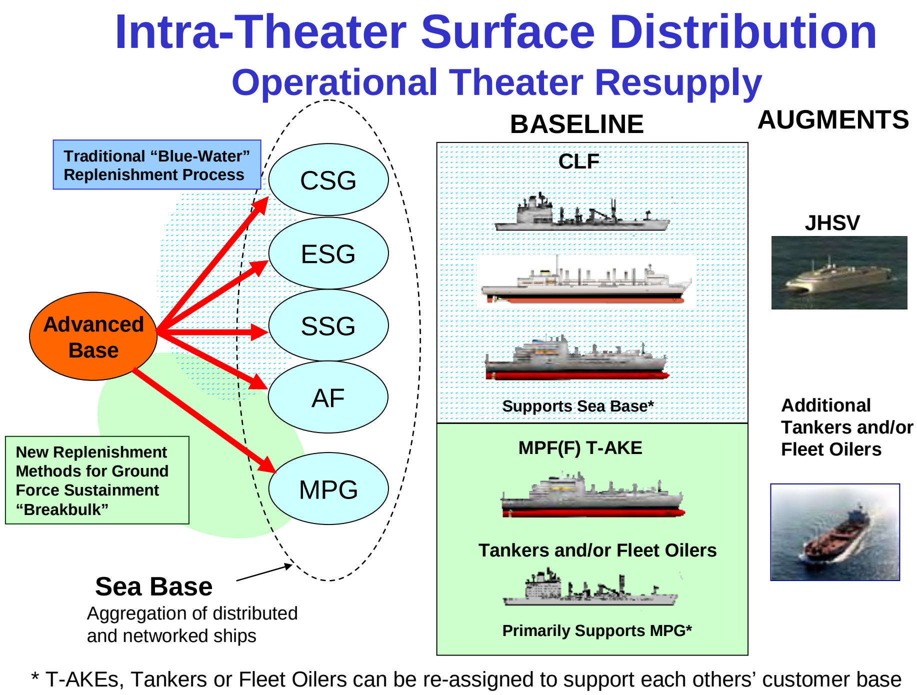

Figure 10: Seabasing Logistics Architecture - Sea Base Distribution

Today, ground forces ashore are sustained through use of critical airfields and seaports that link the theater of operations with sustainment stocks in CONUS or in other key prepositioning sites. If ground forces are seabased, the sustainment and resupply for those forces will primarily move to the sea base via the MPF(F) T-AKEs, CLF, and POL tankers. Sea base platforms and sea base surface logistics shuttles have limited ability to store, handle or transport TEUs or larger containers. As a result, the sustainment for the sea base must be broken down into break-bulk or modular packaging forms at the Advanced Base prior to movement to the sea base. The Advanced Base is critical to this process and is the primary transshipment point through which the majority of all supplies required by the sea base must pass.

The CLF forms the foundation of the sea base surface distribution network. The CLF have traditionally replenished ships at-sea with food, ordnance, and dry cargo. The CLF includes fast combat support ships (T-AOEs), dry cargo ammunition ships (T-AKEs) and fleet oilers (T-AOs) that provide the primary means of conducting underway replenishment via CONREP and VERTREP. MPF(F) T-AKEs, JHSVs, and POL tankers augment the Navy's CLF by prepositioning ground force sustainment and provide the means to shuttle additional sustainment from the Advanced Base to sustain ground force requirements at the sea base. The JHSV will also be capable of augmenting the MV-22s, C-2s, and CH-53s in support of time critical delivery of parts, personnel, and equipment to the sea base.

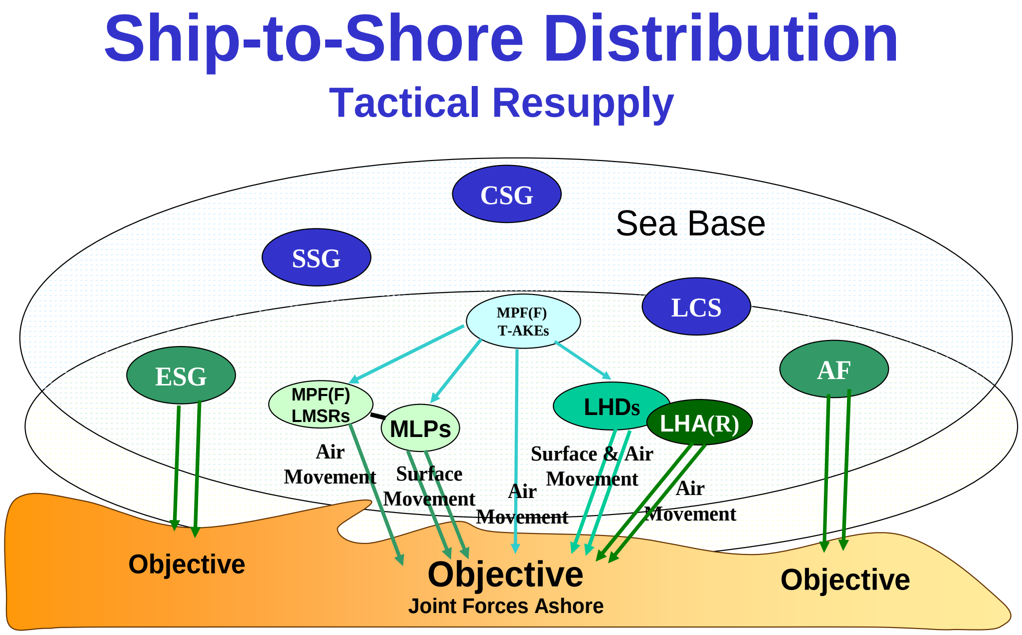

Figure 11: Seabasing Logistics Architecture: Ship-to-Shore Distribution

Figure 11 illustrates the tactical ship-to-shore distribution of sustainment to objectives inland utilizing MPG and other amphibious unit capabilities. The size of the operation being supported ashore from the sea and the integration of non-warships in direct support of the operation make this very different from a doctrinal perspective or from a historical amphibious and/or joint forcible entry operations perspective. From a logistics perspective, the MPF(F) T-AKEs support the MPG at sea and serve as a warehouse for supplies required by Joint forces ashore. MPF(F) T-AKE will serve as the key sustainer and transshipment point in support of all ground forces operating from the sea base. By minimizing supplies ashore, the MPF(F) T-AKEs must selectively retrieve and stage tailored packages and ready them for movement ashore by MV-22s and CH-53 series aircraft from the MPF(F) LHA(R)s and LHD or by other amphibious ships with air connectors. To do this, MPF(F) T-AKE must know what it has onboard, where it is located, quickly retrieve it, and prepare it for offload and onward movement. The MPF(F) T-AKE is a critical dry cargo logistics hub in the Seabasing concept.

The LHA(R)s and the LHD are critical to the movement and resupply of the liquid requirements. The LHD and LHA(R)s have the greatest water making capability in the MPG while the LHA(R)s, T-AKEs and MLPs carry the majority of the cargo fuel needs for the forces ashore. The complementary logistics capabilities of the MPF(F) family of ships provide a potent logistics support capability not found in today's MPF or ESG.

The MPF(F) LMSRs serve as the primary parking garage and afloat warehouse for MEB rolling stock and associated equipment in MPG. It will also carry the combat load and as much as two days of supply for the units embarked onboard and will also provide an organizational vehicle/equipment maintenance capability for vehicles and other ground force equipment. Once the surface battalions are employed, the LMSR is capable of providing additional water and fuel capacity in support of MEB ground forces ashore and as a secondary capability could provide three to five days of sustainment depending on if and when the initial combat load and two days of supply utilized to support initial ground force employment is replenished.

The MLP will have limited capacity to store dry cargo sustainment for forces ashore but will have ample fuel capacity and water making capabilities to augment the logistics capabilities of the MPF(F) LHD, LHA(R), and LMSR. The MLP provides some organizational vehicle/equipment maintenance capability for vehicles and other ground force equipment but will primarily be utilized to both accommodate and support the maintenance and sustainability requirements of LCACs and/or LCUs.

As illustrated in Figures 11 and 12, the sea base's ship-to shore connectors will be critical to supporting and sustaining joint forces ashore. The CH-53 series aircraft and MV-22 can pick up unitized loads from the flight decks of sea base platforms such as the MPG, ESG, or AF and deliver directly to objectives ashore . Surface ship-to-shore connectors such as the LCAC, LCU or JHSV augment the MV-22 and CH-53 series air connectors in the delivery of heavy cargo. A mix of air and surface connectors enable the delivery of joint sustainment at much greater distances than would have otherwise been possible via a single solution set. Although the Seabasing Logistics Enabling Concept did not specifically analyze and assess the sea base's ship-to-shore connector capability, several recent studies examined the connectors and their ability to sustain both the 2015 MEB and a second Army Brigade Combat Team. [22]

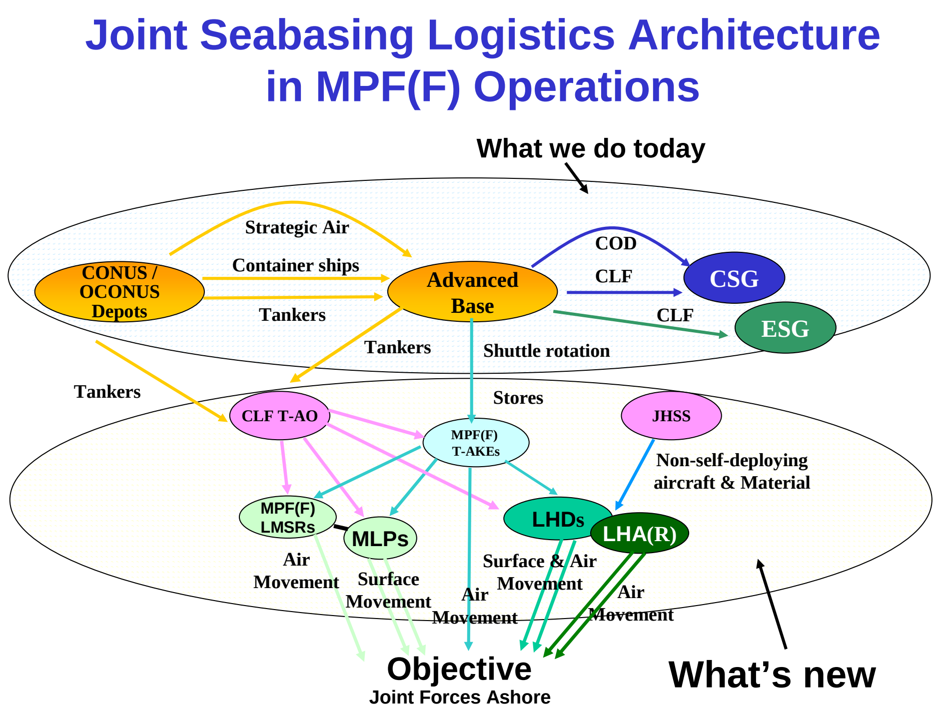

Figure 12: Seabasing Logistics Architecture Summary

Figure 12 provides an illustrative summary of the general concept of operations that employs a variety of sea base and sea base support assets at the operational level of war. The Combat Logistics Force (CLF) provide the primary logistics shuttle platforms that create a logistics hub and spoke support network that will sustain seabased forces. These ships fulfill the

[22] CNA CAB D0014746.A2/Final, "Re-supplying Forces Ashore Using Sea-based Aircraft", September 2006, RAND Joint Seabasing Study (DRAFT) Sponsored by OPNAV N81, November 2006

sustainment needs of the traditional "blue water" platforms such as the CSG, ESG, LCS, and SSGs. T-AOEs serve primarily as stations ships for a CSG but could be utilized as a shuttle ship. JHSVs will be capable of supporting high priority cargo needs of the sea base and/or transporting ground force dry cargo, vehicle/equipment, personnel, and unit requirements as the operation allows if assigned to a logistics role by the JFMCC. The sustainment requirements of the MPG will be primarily handled by the MPF(F) T-AKEs, prepositioned tankers, chartered tankers and as throughput constraints allow, T-AOs and CLF T-AKEs. Airlift of personnel and small, high priority parts for the sea base will be performed by the C-2, MV-22 and CH-53.

Although both CLF and MPF(F) T-AKE platforms have the same design and capabilities, each platform differentiates their cargo loads based on a different customer base. CLF T-AKEs will focus support on the "blue water" sea base platforms (e.g. CSG, ESG, LCS, SSG) while MPF(F) T-AKEs focus support on ground force requirements (e.g. forces employed and sustained by the MPG). The MPF(F) T-AKEs not only support and replenish the dry cargo requirements of the MPG but potentially also support ESG or ATF ground force requirements even if the entire MPG is not employed. When a CLF T-AKE deploys, its cargo load is focused on the subsistence, repair parts, ordnance, fuel and general supplies of Navy ships, while MPF(F) T-AKEs are prepositioned with a cargo load for a Marine Expeditionary Brigade (MEB) and/or Joint ground forces (Class I, III, V, VIII, and some IX). In addition to dry cargo, both CLF and MPF(F) T-AKEs can load 24,960 barrels of cargo fuel. Consideration must be given to the cargo load outs of these ships and how responsive the ship may or may not be if assigned to support a different customer. However, the T-AKEs were designed with multi-purpose cargo holds for dry stores and/or ammunition and a cargo hold for freeze, chill, and/or dry stores; so given adequate logistics command and control, these T-AKEs could transport almost any Joint sustainment requirement to the sea base.

Fleet oilers (T-AOs) provide the fuel replenishment foundation in support of all types of sea bases over a full range of military operations. Government owned or long-term chartered commercial tankers (LT CCT) are normally used to move common-user requirements for the Department of Defense. At the Joint Force Commander's (JFC) request, however, they can be dedicated to support the sea base, (including MPG, and/or conduct consolidation operations (CONSOLs) with T-AOs. These tankers serve to augment T-AOs to provide the POL support required by large sea bases during major combat operations. If the government tanker is equipped with the Modular Fuel Delivery System (MFDS), the tanker has the capability to pass fuel to ships with receiving stations. Commercial or government tankers, with minor modifications, can receive hose rigs from T-AOs, T-AOEs, CVNs, and LHA/LHDs and pump fuel to those ships without being equipped with the MFDS.

Since the MPF(F) squadron does not have its own organic POL replenishment shuttle, it must rely on a combination of CLF T-AOs, government owned prepositioned tankers, LT CCTs, and short term commercial chartered tankers for fuel products. The number of tankers or oilers utilized to replenish MPF(F) fuel will depend on the scenario and the timing of the MPG fuel requirements. Commercial tankers can be chartered to provide additional support for the sea base but will not be timely enough to support early MPG replenishment windows in a major operation. If a prepositioned tanker or a fleet oiler is available in support of MPG, it will be the primary methods of early resupply. To indefinitely sustain the MPG in a major combat operation, MPG requires assignment of two POL shuttles (T-AOs and/or Tankers) to support it's POL requirements. The Joint Force Maritime Component Commander (JFMCC) will need to assess the capacity of assigned T-AOs to support MPG and the sea base. If fleet oilers are not available and/or sufficient, a Request For Forces (RFF) for additional tanker support must be submitted to the Global Force Management Board via Fleet Forces Command and Joint Forces Command.

5.2 Joint Integration

While the sea base will be comprised of Naval platforms, it will play a critical role in supporting Joint and Combined operations. The sea base will be the key node for supplying and sustaining forces ashore, with particular attention being paid to their logistical and maintenance requirements. Supply and sustainment of shore-based forces may occur through the sea base, particularly via the MPG, which has the mission of supporting expeditionary forces but could also be accomplished by an Amphibious Force and to a lesser extent one or more ESGs. The MPF(F) T-AKE’s serve as the key capability node in support of Joint forces operating ashore in Seabasing operations. These ships have the capacity to preposition and warehouse the dry cargo requirements of a MEB and at least a portion of another selected Joint brigade. The CLF, MPF(F) T-AKEs, POL tankers and potentially JHSVs provide a robust capability to transport and replenish the supplies consumed by Joint and Combined forces operating on or employed from a sea base.

6.0 MODELING AND SIMULATION SUMMARY

To support the evaluation of the Seabasing Logistics Enabling Concept and Concept of Operations, a model was developed to help analyze the architecture, platforms and capabilities. The objectives of this modeling and simulation were to: (1) Establish a Seabasing logistics model that could be utilized to simulate and examine various wartime or contingency based scenarios, sea base compositions, and shuttle ship mixes, (2) Determine the best mix of Combat Logistics Force (CLF) ships and other shuttle ships required to re-supply the sea base in wartime scenarios, and (3) Assess variations and the sensitivity to changes in key variables such as the distance between the Advanced Base and sea base, the number and types of shuttle ships, and changes in concepts of operation.

The model provided the means to realistically evaluate the re-supply of fuel, ordnance, and stores between the Advanced Base and the sea base by logistics shuttle ships (CLF, JHSVs, MPF(F) T-AKEs, and POL tankers). Figure 13 illustrates the basic model process flow. It collects the commodity status for every sea base platform and collects underway replenishment data and shuttle ship delivery profiles for all sea base configurations. These scalable sea base configurations ranged from small scale sea bases with only MPF(F) platforms to large scale sea bases with over fifty ships. The model traces the material flow from an Advanced Base (supply node) to a each ship object (demand node). Sea Base demand is a function of the consumption by the ships comprising the sea base and consumption by expeditionary ground forces employed and sustained by the sea base. The total material consumed then is replenished by various combinations of logistics shuttle ships.

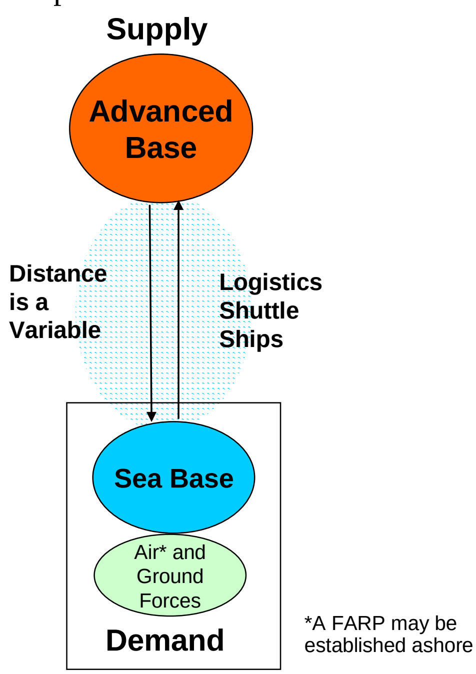

Figure: 13: Basic Model Flow

Planning factors for each sea base platform, shuttle ship and Joint brigade were utilized to represent the consumption over time in the scenarios and represent the demand signals. These factors along with the capacities of the platforms served as the key model inputs and served as the foundation for ultimately determining the number and type of shuttle ships required to sustain the sea base.

It is important to note that the model does not explicitly model the movement of that sustainment from the ships of the sea base (such as MPF(F) ships to objectives ashore). Other studies and analysis by the Center for Naval Analyses, RAND and the Marine Corps Combat Development Command evaluated the feasibility of the MPG re-supplying forces ashore. Ground force consumption is represented in the sea base platforms that directly support and sustain them. Since the MPF(F) platforms serve as the warehouse of stocks in support of the forces ashore, daily ground force consumption depletes the inventory held by the MPF(F) platforms at the sea base. For example, the majority of the ordnance being re-supplied to forces ashore is located in the MPF(F) T-AKEs. MPF(F) T-AKE consumption rates therefore include the consumption of ordnance by ground forces ashore.

The analysis utilized a realistic scenario based on a DoD Defense Planning Scenario (DPS) and Multi-Service Force Deployment (MSFD) document for Major Combat Operation One (MCO-1) utilizing the force flow timelines used in war games by the Navy Staff (OPNAV N81) and the Center for Naval Analyses.

A critical input into the modeling effort was how the MPF(F) T-AKEs were utilized in support of the forces ashore and in support of MPG replenishment. Two MPF(F) T-AKEs remain on-station at the sea base conducting resupply operations in support of forces ashore and conducting underway replenishments of MPF(F) platforms. The third MPF(F) T-AKE was permitted to shuttle between the Advanced Base and the MPG to re-load additional stocks in support of ground forces operating ashore. The MPF(F) T-AKEs and CLF T-AKEs have the same characteristics and similar capabilities and as a result will be able to service each other’s customer base as operational priorities, resources, and throughput constraints allow or dictate. However, we only allowed MPF(F) T-AKEs to resupply MPF(F) platforms and CLF T-AKEs to resupply the naval combatants of the sea base. This was done so we could determine if it was feasible for the MPF(F) T-AKEs to sustain all of the dry cargo requirements for the MPG including the 2015 MEB and the dry cargo requirements for a 2nd brigade ashore. In other words, we wanted to answer the question “did the MPG require augmentation in support of its dry cargo requirements?”.

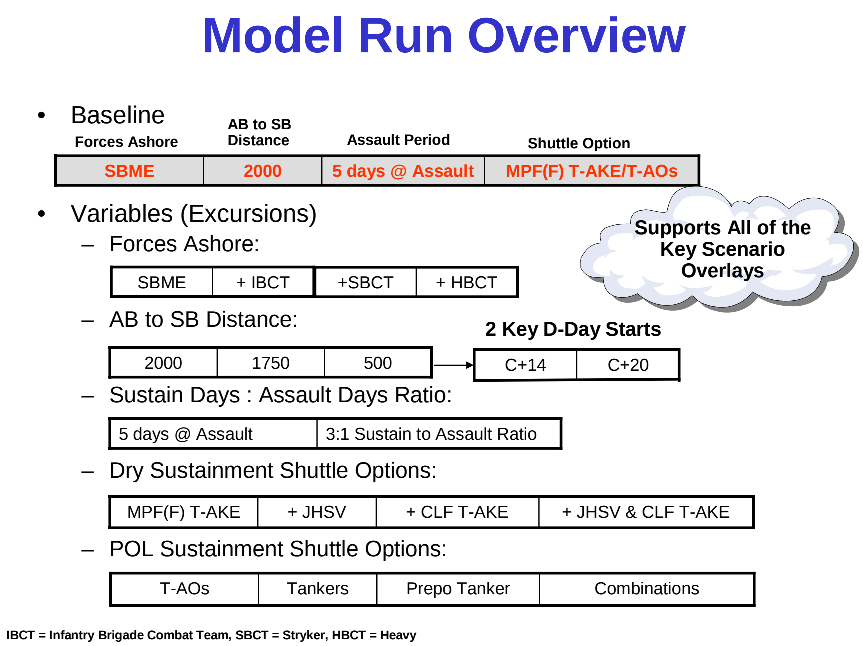

Figure: 14: Summary of Model Runs

Figure 14 provides an overview of the types of model runs that were conducted. The baseline was comprised of the MPG being serviced and replenished by MPF(F) T-AKEs and T-AOs and the remainder of the sea base supported by CLF. The baseline also included the support of a single brigade ashore (a MEB), the Advanced Base located 2000nm from the sea base, and an assault that lasts five days beginning on D-day. The model run consists of 60 total simulated days with a pre-assault period of 19 days, an assault period of 5 days, and a sustain period of 26 days. From this baseline, several excursions were run to examine changes to the distance between the sea base and Advanced Base, changes to the ground force demand (a second brigade to support), variations in the number of assault vs. sustain days, and alternative logistics shuttle ship mixes.

7.0 CONCLUSIONS

The Seabasing Logistics Enabling Concept defines a logistics capability (the transport, supply and sustainment of food, fuel, ordnance, spare parts, and other critical items plus, maintenance, logistics command and control and other select services) in support of Joint seabased forces. The objective is to maximize the combat readiness of these forces by maintaining the right classes of supply in sufficient quantities to allow sustained combat operations.

In support of this Concept paper, the logistics architectures and platforms in support of the sea base were evaluated utilizing modeling and simulation. The primary study objectives were to (1) Develop a Seabasing Logistics architecture to indefinitely sustain the sea base and supported forces ashore, (2) Determine MPG logistics capabilities, (3) Determine how many and what type of shuttles ships are required to sustain the MPG and sea base and when is the replenishment required, and (4) Determine how many Days of Supply (DOS) are required on MPF(F) platforms to sustain operations until the ground force Logistics Pipeline is established.

The analysis resulted in several conclusions; the most noteworthy and interesting are highlighted below. Each conclusion is based on the most stressful Seabasing assumption that the Advanced Base is located up to 2000nm from the sea base involved in major combat operations[23]. Should an Advanced Base be located closer than 2000nm, planners may be able to assume less risk and/or evaluate the constraints to determine if the capacity of the sustainment resupply lines can be reduced. This analysis did not take into account attrition due to enemy action or required voyage repairs, both of which could impact the logistics architecture and/or the number of logistics assets required to support the sea base. These conclusions can be drawn upon to guide future decision makers and logistics planners.

Conclusion 1: *Traditional processes and procedures for support of the sea base by the Combat Logistics Force (CLF) remain viable to support "blue-water" operations for the foreseeable future.* The CLF will provide the primary means of transporting and transferring the needed supplies to ships at-sea and current underway replenishment capabilities, CONREP and VERTREP, will continue to provide the means by which this cargo is transferred.

Conclusion 2: *The MPF(F) T-AKEs provide a highly capable, selectively offloadable and scalable logistics platform*. These ships provide the primary warehousing capability and distribution node for MPF(F) dry cargo requirements.

Conclusion 3: *MPF(F) T-AKEs have the ability to sustain all 2015 Baseline MEB dry cargo requirements and contribute to the sustainment of additional joint forces employed from the sea base such as an Airborne BCT under certain conditions.*

When the Advanced Base is located no more than 2000nm from the sea base, the MPF(F) T-AKEs can transport all of the dry cargo requirements for the Sea Based Echelon (SBE) of the Marine Expeditionary Brigade (MEB) and contribute to the support of a second Joint brigade such as an Airborne or Infantry Brigade Combat Team (ABCT/IBCT). The capacities of the MPF(F) T-AKEs allow two MPF(F) T-AKEs to remain on-station at the sea base in support of ongoing operations while another MPF(F) T-AKE rotates off-station to reload needed

[23] Seabasing Joint Integrating Concept (JIC), Version 1.0 dated 01 August 2005, Pp. 8.

sustainment at the Advance Base. Based on the analysis, the MPF(F) T-AKEs do not require CLF T-AKE augmentation unless the sea base employs two or more heavy brigades. In that case, the sustainment of two MEBs would require CLF T-AKE augmentation or use of JHSVs. This conclusion assumes that the fixed wing aircraft of the MEB ACE assigned to the Forward Based Echelon (FBE) receive initial sustainment from the legacy T-AK ships of the MPG. Follow on sustainment would then be provided by CLF and/or sealift.

Conclusion 4: *The MPF (F) squadron has the ability to preposition a Combat Load and 45 days of dry cargo for the MEB's Seabased Echelon and Forward Based Echelon (including the sustainment for MEB fixed wing aircraft). This will support sustainment of forces ashore and a viable CLF replenishment architecture. Depending on the scenario and the intensity of the operations, these cargoes can be allocated to the sustainment of additional joint forces such as an Airborne or Infantry BCT.*

With 45 days of dry cargo supply, the MPF(F) squadron provides an initial combat load and sufficient supply stocks to enable persistent sustainment of all the Baseline 2015 MEB mission requirements and contribute to the sustainment of a second select Joint brigade operating from the sea base. This level of prepositioned dry cargo stock sufficiently sustains MPG operations until the strategic logistics pipeline is established which, under certain scenarios, can take more than 30 days. The results suggest that the MPF(F) squadron, and in particular the MPF(F) T-AKEs, provide a substantial Joint prepositioning capability that may be capable of supporting both the Defense Logistics Agency afloat warehousing and Marine Corps stocking objectives.

Conclusion 5: The MPG *requires two tankers or fleet oilers or a combination of a fleet oiler and a tanker to sustain MPG POL demands during major combat operations.*

MPG POL demands are significant. The consumption of Diesel Fuel Marine (DFM) is fairly constant throughout the scenarios while Jet Fuel (JP5) spikes during the early phases of MPG employment. Total cycle times for fleet oilers shuttling between the sea base and an Advanced Base located 2000nm away are in excess of 13 days. To sustain POL levels above the safety thresholds, two oilers or tankers are required to ensure MPF(F) squadron replenishment occurs weekly. Conclusion six describes one potential source of tanker support for the MPG. If tankers are unavailable, the support required to sustain MPG POL demands would have to come from the existing fleet of oilers or the charter of commercially available and militarily useful tankers. Combatant Commanders may need to request additional fleet oiler and/or tanker support to ensure total sea base POL demands are met.

Conclusion 6: *The employment of the MPG requires a tanker to be prepositioned at an Advanced Base to support early fuel requirements prior to C+30.*

This conclusion is related to Conclusion 5. A prepositioned tanker with military defense features and DFM and JP5 cargo fulfills two key needs; (1) The tanker supports the MPF(F) squadron during the transit and early phase MPG employment to satisfy early fuel requirements prior to C+30; (2) The tanker, after initial transfer of its cargo to MPF(F) platforms, serves as one of the two shuttle ships that will continue to sustain the MPG for the duration of an operation. The tanker must be augmented by a 2nd tanker or a T-AO in order to develop a sustainable POL pipeline for the MPG.

Conclusion 7: *JHSV is best employed in the delivery of time critical high priority cargo from the Advanced Base to the sea base and can be utilized as a logistics shuttle to augment the dry cargo and ammunition logistics ships (T-AKEs). However, our analysis shows that the Joint High Speed Vessel (JHSV) is not required to augment the MPG dry cargo and ammunition logistics ships (T-AKEs) or the CLF except when the sea base is sustaining two or more heavy sized brigades during major combat operations.*

This last conclusion is a reflection of the logistics network in place to support the sea base and is not a reflection of the JHSV's capability as a logistics platform when CLF augmentation is unavailable. Instead, it is a reflection of how traditional "blue-water" replenishment processes and procedures utilizing the Combat Logistics Force can be coupled with new and alternative platforms and capabilities, such as the MPF(F) squadron, to produce a robust and flexible replenishment architecture to persistently sustain the sea base across a full range of military operations. If CLF T-AKE capacity is not made available to support the additional requirements, JHSV may be required to augment the MPF(F) T-AKEs. JHSV could be utilized to provide rapid delivery of high priority cargo from the Advanced Base to the sea base. If required, the JHSV could also be utilized to deliver ordnance. However, JHSV ordnance storage and handling capability is limited. Our analysis focused on sea base support from distant Advanced Bases during major combat operations. JHSVs may be better suited for the support of smaller scale sea bases' dry cargo requirements involved in lower intensity operations.

Terms of Reference

ABCT	Airborne Brigade Combat Team
ACE	Aviation Combat Element
AF	Amphibious Force
AIT	Automated Information Technology
AIS	Automated Information Systems
ALSS	Advanced Logistics Support Site
APOD	Aerial Port of Debarkation
AS/RS	Automated Storage and Retrieval
ATF	Amphibious Task Force
C2	Command and Control
CAESaR	Close, Assemble, Employ, Sustain and Reconstitute
CG	Guided Missile Cruiser
CH-53	Heavy Lift Cargo and Troop Transport Helicopter
CLF	Combat Logistics Force
COCOM	Combatant Commander
COD	Carrier Onboard Delivery
COIN	Counter Insurgency
CONOPS	Concept of Operations
CONPLAN	Contingency Plan
CONSOL	Consolidation
CONUS	Continental United States
COP	Common Operating Picture
CSG	Carrier Strike Group
CTF	Commander Task Force
CVN	Aircraft Carrier, Nuclear
DFM	Diesel Fuel Marine
DDG	Guided Missile Destroyer
DOS	Days of Supply
DPS	Defense Planning Scenario
EOD	Explosive Ordnance Detachment
ESG	Expeditionary Strike Group
FARP	Forward Arming and Refueling Point
FBE	Forward Base Echelon
FLS	Forward Logistics Site
FOB	Forward Operating Base
FUNCPLAN	Functional Plan
G4	Ground Logistics Director (Army or United States Marine Corps)
GCDR	Geographic Combatant Commander
IBCT	Infantry Brigade Combat Team
ISO	International Organization for Standardization
ITV	In-Transit Visibility
J4	Combatant Commander Joint Logistics Director
JDDOC	Joint Deployment and Distribution Operations Center
JFC	Joint Force Commander

JFACC	Joint Force Air Component Commander
JFLCC	Joint Force Land Component Commander
JFMCC	Joint Force Maritime Component Commander
JFSOC	Joint Force Special Operations Commander
JHSS	Joint High Speed Sealift
JHSV	Joint High-Speed Vessel
JIC	Joint Integrating Concept
JMIC	Joint Modular Intermodal Container
JMAC	Joint Maritime Assault Connector
JOA	Joint Operations Area
JP5	Jet Fuel
JTAV	Joint Total Asset Visibility
JTF	Joint Task Force
LCAC	Landing Craft, Air Cushion
LCS	Littoral Combat Ship
LCU	Landing Craft Utility
LF	Landing Force
LHA(R)	Amphibious Assault Ship (Replacement)
LHD	Multi-purpose Amphibious Assault Ship
LMSR	Large, Medium Speed, Roll-On/Roll-Off
LO/LO	Lift on / Lift off
LOTS	Logistics Over the Shore
LPD	Amphibious Transport Dock
LSD	Amphibious Landing Ship, Dock
LSV	Logistics Support Vessel
LT CCT	Long-term Commercially Chartered Tanker
MAGTF	Marine Air Ground Task Force
MCSSD	Mobile Combat Service Support Detachment
MCM	Mine Countermeasures
MCO	Major Combat Operation
MEB	Marine Expeditionary Brigade
MEDEVAC	Medical Evacuation
MEU	Marine Expeditionary Unit
MFDS	Modular Fuel Discharge System
MH-60	Multi-purpose Helicopter
MLP	Mobile Landing Platform
MPF	Maritime Prepositioning Force
MPF(F)	Maritime Prepositioning Force (Future)
MPG	Maritime Prepositioning Group
MPS	Maritime Prepositioning Ship
MPS(F)	Maritime Prepositioning Ship (Future)
MSFD	Multi-Service Force Deployment
MV-22	Multi-purpose Tilt Rotor Aircraft
NCP	Naval Capabilities Process
NOC	Naval Operating Concept
OMFTS	Operational Maneuver From the Sea

POL	Petroleum, Oil, Lubricants
OPLAN	Operational Plan
RFDC	Radio Frequency Data Collection
RFID	Radio Frequency Identification
RO/RO	Roll-on / Roll-off
SBE	Sea Base Echelon
SBME	Sea Base Maneuver Element
SBSE	Sea Base Support Element
SOA	Sustained Operations Ashore
SOF	Special Operations Forces
SPOD	Sea Port of Debarkation
SSG	Surface Strike Group
STOM	Ship-to-Objective Maneuver
STREAM	Standard Tensioned Replenishment Alongside Method
SUSD	Strike-up/Strike Down
T-5	Government Owned Tanker (T-AOT)
T-AK	Dry Cargo Carrier
T-AKE	Auxiliary Dry Cargo and Ammunition Ship
T-AO	Auxiliary Fleet Oiler
T-AOE	Auxiliary Fleet Oiler and Ammunition Ship
TAV	Total Asset Visibility
TEU	Twenty Foot Equivalent Unit (a container type)
UNREP	Underway Replenishment
VERTREP	Vertical Replenishment
VOD	Vertical Onboard Delivery

Glossary

Advanced Base (AB). (1) A base located in or near an operational area whose primary mission is to support military operations. (Joint Publication 1-02). (2) In Seabasing, an AB is a secure facility located outside the Joint Operating Area up to 2000nm from the sea base (Seabasing Concept of Operations (Draft), 9 July 2003, p. 16)

Aerial Port of Debarkation (APOD). An airfield that has been designated as the geographic point for the discharge of personnel and materiel. (Joint Publication 1-02)

Aviation Combat Element (ACE). The Aviation Combat Element (ACE) is composed of squadrons from the combat assault transport helicopter, utility and attack helicopters, vertical/short takeoff and landing fixed-wing attack aircraft, air refuelers/transport aircraft, and other detachments as required. (DRAFT MPF(F) Operating Concept Outline 16 Dec 03)

Amphibious Force (AF). An amphibious task force and a landing force together with other forces that are trained, organized, and equipped for amphibious operations. (Joint Publication 1-02)

Amphibious Task Force (ATF). A Navy task organization formed to conduct amphibious operations. The amphibious task force, together with the landing force and other forces, constitutes the amphibious force. (Joint Publication 3-02)

Assault Follow-on Echelon (AFOE). In amphibious operations, that echelon of the assault troops, vehicles, aircraft, equipment, and supplies that, though not needed to initiate the assault, is required to support and sustain the assault. In order to accomplish its purpose, it is normally required in the objective area no later than five days after commencement of the assault landing. (Joint Publication 1-02)

Carrier Onboard Delivery (COD). A term that refers to a type of mission – carrier onboard delivery mission. It also is a nickname for a specific aircraft type – C-2A Greyhound.

Carrier Strike Groups (CSGs). Generally consists of an aircraft carrier, a cruiser (CG), two guided-missile destroyers (DDGs), an attack submarine (SSN), and a fast combat support ship (T-AOE). (NOC)

Deployment. The relocation or forces and material to desired operational areas. Deployment encompasses all activities from origin or home station through destination, specifically including intra-continental United States, inter-theater, and intra-theater movement legs, staging, and holding areas. (Joint Publication 1-02)

Expeditionary Strike Force (ESF). Generally formed for larger-scale conflicts or higher-threat scenarios, the ESF consists of CSGs, SAGs, ESGs, and Amphibious Forces. It provides the necessary level of power projection, sea superiority, and combat capability for a wide range of military operations. The ESF can be scaled with the introduction of forcible entry-capable, amphibious Marine Expeditionary Brigades and in-theater assets. (Naval Operating Concept for Joint Operations)

Expeditionary Strike Group (ESG). Generally consist of a Marine Expeditionary Unit (SOC), a standard three-ship Amphibious Readiness Group (ARG), a cruiser (CG), two guided missile destroyers (DDGs), a guided missile frigate (FFG), and an attack submarine (SSN) (NOC)

Forward Base Echelon (FBE) - The FBE is comprised predominantly of those fixed wing assets organic to the MEB such as KC-130 and EA-6 squadrons that are not capable of being prepositioned on amphibious ships or the MPSRON, including their support. The F-35B Joint Strike Fighter in an MPF context may be based ashore or aboard other seabased Ships. Elements of the FBE will self-deploy or deploy aboard Strategic Air Lift from their home station to a predetermined location designated as the in-theater fixed wing operating base. Non prepositioned support personnel and equipment will be transported/delivered directly to the fixed wing operating base. Equipment stored aboard the MPF(F) ships will be selectively off-loadable for delivery to the fixed wing operating base as required. The fixed wing elements will marry up with their support personnel and equipment and conduct operations and missions in support of the SBE.

Forward Operating Base (FOB). An airfield used to support tactical operations without establishing full support facilities. The base may be used for an extended time period. Support by a main operating base will be required to provide backup support for a forward operating base. (Joint Publication 1-02)

Ground Combat Element. The Ground Combat Element (GCE) is built around an infantry regiment reinforced with units from artillery, tanks, reconnaissance, engineer, light armored reconnaissance units, assault amphibian units, and other attachments as required. (DRAFT MPF(F) Operating Concept Outline 16 Dec 03)

Joint High Speed Vehicle (JHSV). A future vehicle designed to serve as an intra-theater sea connector for high priority equipment/supplies from the Advanced Base (AB) to the sea base. The JHSV will be capable of self-deploying from 4,700 nm and will be capable of transporting 600 short tons of payload (includes troops, supplies, and equipment) and 312-plus passengers at speeds of 35 knots or more. (Draft JHSV CDD of July 27, 2006)

Inter-theater. Between theaters or between the continental United States and theaters. (Joint Publication 1-02)

Intra-theater. Within a theater. (Joint Publication 1-02)

Joint. Connotes activities, operations, organizations, etc., in which elements of more than one Service of the same nation participate. (Joint Publication1-02)

Landing Craft Air Cushion (LCAC). Air-cushioned landing craft currently used for the deployment of forces and heavy equipment from sea base to shore, high speed resupply of forces by surface means, and over-the-shore operations in flat terrain, estuaries, marshes and reefs. It has a maximum payload of 72 tons (one MA1 tank or four LAVs). (Connecting with the Sea Base NAVSEA Assessment Brief, 16 Dec 2003)

Large, Medium Speed Ro/Ro (LMSR). A strategic sealift ship and Military Sealift (MSC) surge vessel used for force closure of heavy assault forces, usually U.S. Army, and for movement of major ends items and large cargo to the Advanced Base (AB) or directly to the sea base. Its payload capacity is 21,000 tons and 380,000 square vehicle feet, capable of accommodating 58 U.S. Army tanks, 48 tracked vehicles, and 900 trucks. (Connecting with the Sea Base NAVSEA Assessment Brief, 16 Dec 2003)

Lines of Communications. All the routes, land, water, and air, which connect an operating military force with a base of operations and along which supplies and military forces move. (Joint Publication 1-02)

Logistics. The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: (a.) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; (b.) movement, evacuation, and hospitalization of personnel; (c.) acquisition or construction, maintenance, operation, and disposition of facilities; and (d.) acquisition or furnishing of services. (Joint Publication 1-02)

Maritime Prepositioning Group (MPG). The MPG describes the MPF(F), MEB landing force, and supporting forces that operate on the sea base and forward base to support the MAGTF in the operational mode. (MCCDC)

Maritime Prepositioning ships. Civilian-crewed, Military Sealift Command-chartered ships that are organized into three squadrons and are usually forward deployed. These ships are loaded with pre-positioned equipment and 30 days of supplies to support three Marine expeditionary brigades. Also called MPS. (Joint Publication 1-02)

Maritime Prepositioning Force (Future) (MPF(F)). The MPF(F) takes Navy and Marine Corps Prepositioning capabilities to the next level. Most significant in the transformation of MPF is the recognition that future Maritime Prepositioning Forces must possess a far greater degree of operational capability in terms of at-sea arrival and assembly, amphibious task force interoperability, sustainment of forces ashore and other seabased platforms afloat, and the reconstitution and redeployment of forces to meet follow-on missions in support of the same or another unified combatant commander.

Of all the capability improvements throughout this twenty-plus year evolution, one capability has remained the number one priority: provide prepositioned warfighting capabilities to Unified Combatant Commanders to meet mission requirements. Maritime Prepositioning Forces have repeatedly demonstrated that capability and have grown to become one of the key elements of our Nation's maritime forward presence strategy. MPF (F) will continue to provide essential prepositioned supplies and equipment. Moreover, it will be an integral part of a seabased operational environment that promotes interoperability among the amphibious task force, carrier battle group, Maritime Prepositioning Force, CLF, and emerging high-speed sealift and lighterage technologies. (Marine Corps Doctrinal Publication 3, Expeditionary Warfare)

Operational Maneuver from the Sea (OMFTS). This is an amphibious operation that seeks to use the sea as an avenue for maneuvering against some operational-level objective, pitting strength against weakness. It is a concept for projecting maritime power ashore. The concept recognizes the requirement for forcible entry – an amphibious landing in the face of organized military resistance – although not all operational maneuvers from the sea entail forcible entry. By definition, OMFTS involves the entry phase of expeditionary operation. (Marine Corps Doctrinal Publication 3, Expeditionary Warfare & Naval Operating Concept for Joint Operations)

Reconstitution. The ability of an expeditionary force to regenerate, reorganize, replenish, and reorient itself for a new mission after employment elsewhere without having to return to home base. It is the ability to project expeditionary power from an existing base or forward-deployed status. (Marine Corps Doctrinal Publication (MCDP) 3, Expeditionary Warfare)

Seabasing. Seabasing is a national capability and the overarching transformational operating concept for projecting and sustaining naval power and Joint forces, which assures Joint access by leveraging the operational maneuver of sovereign, distributed, and networked forces operating globally from the sea.

Sea Base. The Sea Base is an inherently maneuverable, scalable aggregation of distributed, networked platforms that enable the global power projection of offensive and defensive forces from the sea, and includes the ability to assemble, equip, project, support, and sustain those forces without reliance on land bases within the Joint Operations Area.

Sea Base Echelon (SBE). The SBE is flexible enough to support other expeditionary operations (e.g. humanitarian assistance, disaster relief, and noncombatant evacuation operations) that call for different mixes of combat, combat support, and combat service support capabilities. The SBE is comprised of the SBME and the SBSE. (MCCDC)

Sea Base Maneuver Element (SBME). The Sea Base Maneuver Element (SBME) is that portion of the SBE that is projected ashore for operations. The SBME is analogous to the Assault Element in amphibious operations. (MCCDC)

Sea Base Support Element (SBSE). The Sea Base Support Element (SBSE) is that portion of the SBE that remains afloat to support the SBME and includes logistics, aviation, and command and control capabilities. (MCCDC)

Sea Shield. A concept that describes the manner in which Naval Forces will protect our national interests with layered global defensive power. It is based on our sustained forward presence, and on our abilities to dominate the seas and to provide distributed and networked intelligence to enhance homeland defense, assure access to the contested littorals, and project defensive power deep inland. (Naval Operating Concept for Joint Operations)

Sea Strike. A concept for projecting precise and persistent Naval offensive power. It describes how 21st century Naval Forces will exert direct, decisive, and sustained influence in Joint campaigns through the application of persistent intelligence, surveillance, and reconnaissance (ISR), time-sensitive strike, Ship-to-Objective Maneuver (STOM), and information operations (IO) to deliver accurate and devastating combat power. (Naval Operating Concept for Joint Operations)

Ship-To-Objective Maneuver (STOM). A concept that applies the principles and tactics of maneuver warfare to the littoral battlespace. It allows for conducting combined arms penetration and exploitation operations from over the horizon directly to objectives ashore without stopping o seize, defend, and build up beachheads or landing zones. (Naval Operating Concept for Joint Operations)

Surface Strike Groups (SSGs). Generally consist of a cruiser (CG) and two guided missile destroyers (DDGs) (NOC)

Sustained Operations Ashore Echelon (SOAE) - The Sustained Operations Ashore Echelon (SOAE) is the remainder of the forces/equipment embarked in the MPF(F) shipping. The SOAE is not envisioned to be employed until the MEB is committed to sustained operations ashore (SOA). Elements of the SOAE flow into the theater as required to enable the more extensive logistics and command and control capabilities that are needed to support SOA. Personnel may or may not flow to the MPS. They may flow directly to an Aerial Port of Debarkation (APOD) secured by the SBME, and marry up with equipment offloaded from the MPS in a manner similar to MPF operations of today.

Sustainment. The provision of personnel, logistic, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective. (Joint Publication 1-02)

Total Asset Visibility (TAV). The capability to provide users with timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, materiel, and supplies. It also includes the capability to act upon this information to improve overall performance of the Department of Defense's logistic practices. (Joint Publication 4-01.8)

Requests for and information regarding this document, the *Seabasing Logistics Enabling Concept*, or the accompanying Annex can be made to:

Strategic Mobility/Combat Logistics Division
OPNAV N42
2000 Navy Pentagon
Washington, DC 20350-2000