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14. ABSTRACT

Sea basing provides the joint force with a feasible, supportable, and redundant means of executing ship-to-shore sustainment and distribution operations (S3DO) in support of EABO. The argument can be made that until recently the United States has not dedicated adequate attention to developing the sea basing capability required to sustain EABO. Gone are the days of permissive operating environments where large aerial and seaports of debarkation (APOD/SPOD) are relied on to facilitate enough throughput to generate effective combat power. Sea basing is not just sustainment, it provides a means to deliver rapid logistics and combat support anywhere in the world without the need for land-based port facilities and airports. Time and distance for replenishment of S3DO is a key consideration when supporting EABO. While the US possesses some sea basing capabilities, it lacks multi-functional logistics enablers and the right sea basing platform to meet the requirements for supporting EABO in an A2AD environment. Additionally, proliferation of autonomous logistics delivery platforms has saturated the conceptual employment of support to expeditionary advanced bases (EAB). While all components of the envisioned support package are important despite the potential benefits of autonomous logistics, the most important part remains the individual Marine and Sailor and the eventual development of a sea-based platform that provides the same responsiveness as a land-based supply chain and distribution network.

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MASTER OF MILITARY STUDIES

SEA BASING TO SUPPORT EXPEDITIONARY ADVANCED BASE OPERATIONS

SUBMITTED IN PARTIAL FULFILLMENT
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Executive Summary

Title: Sea Basing to Support Expeditionary Advanced Base Operations (EABO)

Author: Major Gregg Petrisevac, United States Marine Corps

Thesis: Sea basing provides the joint force with a feasible, supportable, and redundant means of executing ship-to-shore sustainment and distribution operations (S3DO) in support of EABO.

Discussion: The argument can be made that until recently the United States has not dedicated adequate attention to developing the sea basing capability required to sustain EABO. Gone are the days of permissive operating environments where large aerial and seaports of debarkation (APOD/SPOD) are relied on to facilitate enough throughput to generate effective combat power. Sea basing is not just sustainment, it provides a means to deliver rapid logistics and combat support anywhere in the world without the need for land-based port facilities and airports. Rear Admiral Jim Kilby, director of warfare integration (N9I) emphasizes the need to shift the battle lines away from shore and that sustainment and expeditionary advanced basing operations (EABO) are central to sustaining maritime superiority. That sentiment is reflected herein, and sea basing does just that.¹ Time and distance for replenishment of S3DO is a key consideration when supporting EABO. While the US possesses some sea basing capabilities, it lacks multi-functional logistics enablers and the right sea basing platform to meet the requirements for supporting EABO in an A2AD environment. Additionally, proliferation of autonomous logistics delivery

¹ Kinsey, Brittney. 2019. SECNAV Stresses Urgency to Dominate Future Conflicts during Final Day of SAS 2019. Washington: Federal Information & News Dispatch, Inc. <https://search-proquest-com.lomc.idm.oclc.org/docview/2221459340?accountid=14746>.

platforms has saturated the conceptual employment of support to expeditionary advanced bases (EAB). While these systems are required, how they change the enemy A2AD threat and decision-making process remains unanswered. While all components of the envisioned support package are important despite the potential benefits of autonomous logistics, the most important part remains the individual Marine and Sailor and the eventual development of a sea-based platform that provides the same responsiveness as a land-based supply chain and distribution network. Herein, the historical significance of sea basing will be discussed, what exactly EABO is, and how the joint force can better support it with both present and emerging capabilities.

INTRODUCTION

As the United States (US) develops platforms and systems to counter the pacing threat presented by peer and near peer adversaries, it becomes crucial that alternate methods and delivery platforms for sustainment are incorporated into future operational and theater sustainment planning. Having enjoyed the luxury of operating from large stocks of prepositioned equipment and from within unconstrained supply systems where the massing of personnel, equipment, and sustainment became common place, US sustainment methodology has gone unchallenged for over two decades. The large aerial and sea ports of debarkation (APOD/SPOD) that previously facilitated free flowing lines of communication and resupply systems will be more stressed than ever in a future conflict. As a result, the conduct of Expeditionary Advanced Base Operations (EABO) in a maritime environment will be integral to the joint force's ability to generate effective combat power and overcome the anti-access area denial (A2AD) threat. Both the National Defense Strategy (NDS) and the Commandant's Planning Guidance (CPG) provide direction for designing a joint maritime force that operates over a distributed area in an A2AD environment well within the enemy's weapons engagement zone (WEZ). Sea basing provides the joint force with a feasible, supportable, and redundant means of executing ship-to-shore sustainment and distribution operations (S3DO) in support of EABO.

Given that the future operating environment will require an integrated and comprehensive multi-domain approach for sea basing to be effective, this paper addresses the required logistics considerations associated with executing S3DO in support of EABO. Sea basing provides forward positioned assets like that of the Maritime Prepositioning Force (MPF). However, when executed by skilled and trained multi-functional logistics enablers that are linked to a network of

multiple sea basing hubs and logistics delivery platforms that span all warfighting domains, the sea basing methodology delivers a much more flexible capability than present structure. The combination of personnel and platforms operating within a web of complementary capabilities aimed at providing the most effective S3DO available means that the speed and redundancy generated by this design can sustain the pace of envisioned EABO. Although not a new concept, the US military sporadically practices S3DO, which only builds limited capability to support EABO as envisioned. Having been engaged in over two decades of land locked warfare, the number of service members skilled in the art and science of conducting S3DO has diminished. Consequently, skepticism of this capability hinders progress in the art of sea basing for S3DO to support EABO. To overcome this operational lag, viewpoints about the validity of sea basing to gain operational flexibility must shift toward embracing the concept of sea basing. That is to say, leaders must take advantage of the full range of available logistics capabilities to most effectively operate in the future operational environment.

SEA BASING HISTORICAL GENESIS & CONCEPT

Although the platform(s) differ from those in the past, the original overarching need for forward positioned maritime supply and logistics capabilities remains. Before examining the concept of sea basing as a viable option to sustain EABO, one must first define the term to create shared understanding. Sea basing is the practice of utilizing maritime vessels at sea to establish a supply system afloat with the capability of receipting for, storing, and distributing vital sustainment items and services to the warfighting organization at the forward edge battle. To best understand the concept, one must begin with a traditional supply chain's infrastructure of storage facilities and distribution platforms and then visualize this network of platforms and logistics

delivery systems at sea, spanning subsurface, surface, and aerial means of receipt, storage, and distribution. Admiral W. L. Rogers captured the importance of sea basing best, when on 3 December 1923 during a Naval General Board Hearing stated:

If we are making war on the Atlantic, we have all our docking facilities available. ...Whereas, in the Pacific we want to push across the ocean. We can seize plenty of places where we can imagine ourselves laying down a dock. Therefore, in any case the only place for floating dock[s] is in the Pacific because there we have to make war a long way from home and possibly without an ally.²

Historically, ships and all manner of vessels have been used as forward or intermediate bases in numerous riverine operations, amphibious operations, and operations in the littoral areas. The Marine Corps' purposeful design centered on the adaptable structure of a Marine Air Ground Task Forces (MAGTFs), enables it to operate from sea-based supply chains aboard organic naval vessels. Although the US Navy and Marine Corps team merges capabilities to conduct S3DO, the organization of units and the equipping of adequate L-Class shipping sets the outward limit of what was and still is operationally possible.³ Strategic planners during the interwar period identified this problem and worked to develop a solution within the limitations levied by Article XIX (the fortification clause) of the Five Power Naval Treaty, which allowed the US only one overseas base in the Far East.⁴ Their solution was the creation of the mobile base project (MBP), essentially a large floating dry dock that could loiter at sea and take on

² John Trost Kuehn, *"The Influence of Naval Arms Limitation on US Naval Innovation During the Interwar Period, 1921-1937"* (PhD diss., Kansas State University, 2007), 231.

³ Headquarters United States Marine Corps. *Logistics*. Marine Corps Doctrinal Publication 4. Washington DC: Department of the Navy, February 21, 1997. 57. US Navy classification of vessels is broken into several large categories: Amphibious, Expeditionary, and Attack. L-Class shipping is commonly referred to as amphibious shipping that includes amphibious platforms that provide transport, supply, landing, and distribution capabilities in support of Marine Corps expeditionary operations.

⁴ John T. Kuehn, *Agents of Innovation: The General Board and the Design of the Fleet That Defeated the Japanese Navy* (Annapolis, MD: Naval Institute Press, 2008), 142.

Naval vessels to conduct maintenance and repairs, preventing the need to return to home port. Having received authorization to proceed, the strategic innovation of the MBP would quickly and secretly be added to US War Plans.

Photo # 80-G-314220 USS West Virginia in floating drydock ABSD-1, 1944



Figure 1. ABSD-1 with West Virginia docked off Espiritu Santo in the New Hebrides Islands. This dry dock is of the open-ended design where the ship sails into the dock when it is underwater and then is raised by pumping mechanisms. (Courtesy of the Naval Historical Center)⁵

Although not originally designed for S3DO to support EABO of today's operating environment, by the end of 1945 the Navy possessed over 400 of these advance bases, serviced by 152 floating dry docks of all sizes throughout the Pacific.⁶ The MBP proved successful for the Navy's intended purposes of maintaining, projecting, and extending naval presence in the Pacific during World War II (WWII). However, the MBP did not fully integrate all functions of logistics or operate as dispersed supply and distribution platforms, preventing the full capabilities of sea basing from being reached.

⁵ John Trost Kuehn, "The Influence of Naval Arms Limitation on US Naval Innovation During the Interwar Period, 1921-1937" (PhD diss., Kansas State University, 2007), 231.

⁶ John T. Kuehn, *Agents of Innovation: The General Board and the Design of the Fleet That Defeated the Japanese Navy* (Annapolis, MD: Naval Institute Press, 2008), 142.

The ever-increasing scale of amphibious operations throughout WWII depended on new logistics connectors and defensive capabilities that greatly complimented S3DO. Many improvements in procedures and equipment paved the way for the eventual incorporation of sea basing into large scale combat operations. This operational evolution was more logistically holistic in nature to what would be required to support EABO in an A2AD environment in a future fight. By incorporating the lessons of the MBP during the invasion of Okinawa in 1945, sea basing proved instrumental in generating combat power and sustaining allied forces. To conduct this operation, the US established a 6,000-mile maritime supply line used to support an invasion force of over 400 amphibious ships and almost 200,000 troops.⁷ This feat during the invasion of Okinawa highlights more than just the ability of sea basing to provide a maintenance capability, but also the ability to integrate all functions of logistics through dispersed supply and distribution platforms.

Although an important factor to the success of the operation, not all aspects of sea basing proved efficient. During D-Day, numerous landing craft arrived at beach landing sites with their content unknown to shore personnel, only to be sorted out later. Poor system(s) design in the storage, tracking, and distribution of supplies highlighted the need for visibility and integrated planning at all levels. While antiquated employment philosophies and dependency on cooperative sea states makes sea basing a continuing topic of debate among leadership in all branches of service. When utilized to its full potential, sea basing provides a mobile and diverse network of sustainment and materiel solutions while facilitating global force projection. Additionally, it presents the enemy with a decision-making problem generated by rapid

⁷ Headquarters United States Marine Corps. *Logistics*. Marine Corps Doctrinal Publication 4. Washington DC: Department of the Navy, February 21, 1997. 57.

sustainment and flexible sea basing networks fed by layered S3DO. While the operational benefits of sea basing impact battlefield dynamics, limiting factors towards its employment exist.

Consideration must be given to the location of sea basing platforms and their relative time and distance from not only the main source of supply, but also its location within the enemy's WEZ. Balance between the network of sea basing platforms along with the mobility and range required to effectively set up distribution operations that meet unit demand need to be carefully weighed. In this case that means possessing the capability to continually sustain forces across the range of military operations (ROMO). This also includes reception, staging, onward movement and integration (RSOI) as well as retrograde, which all play a critical role in traditional force generation and sustainment throughput.

EXPEDITIONARY ADVANCED BASE OPERATIONS (EABO)

In the context of advanced base operations, Marines can deliver a capability to the joint force that facilitates the projection of U.S. forces within an A2/AD environment. Seizing and defending advanced littoral bases, the key action by the Marine Corps during the Pacific Campaign of World War II, will once again be required if war comes to the Pacific Ocean.⁸

To illustrate how large-scale sea basing in S3DO better supports envisioned EABO than traditional sustainment models, one must possess a shared understanding of EABO. The EABO handbook published by the Marine Corps Warfighting Laboratory in June 2018, defines EABO

⁸ Aiken, Scott D. 2014. "Revisiting Advanced Base Operations." *Marine Corps Gazette* 98 (3): 31-34. <https://search-proquest-com.lomc.idm.oclc.org/docview/1506927937?accountid=14746>.

as, “a future naval operational concept that meets the resiliency and forward presence requirements conducted by low-signature naval and joint forces - in particular, the ability to offensively target and strike adversary naval and air platforms, and defensively form the nucleus of an active integrated maritime defense-in-depth.”⁹ To achieve the desired effects as stated above, logistics support during EABO needs to be rapidly replenishable and scalable while conducting combat service support (CSS) operations within the enemy WEZ. This is only achieved when the logistics reach back capability is not fixed to existing continental United States (CONUS) based points of supply. A sea basing platform that provides the same capability as that of large scale APOD/SPOD, complimented by a series of module platforms can make the necessary functional replenishment cycle time a reality. Time and distance for replenishment of S3DO is key to supporting EABO. The proliferation of autonomous logistics delivery platforms has saturated the conceptual employment of support to expeditionary advanced bases (EAB); and while these systems are required, the ability to possess rapid large-scale expeditionary replenishment capabilities that operate within the enemy decision-making cycle are paramount to EABOs’ future success.

To directly effect EABO replenishment cycle time, sustainment needs to be readily available for direct fill - originating source of supply to respective EAB - with limited approval chains and intermediary stopping points. Figure 2 illustrates the EABO concept with inclusion of the MPF within 120 nautical miles of EABs. Positioning of the MPF in relation to the rest of the Amphibious Ready Group (ARG)/ MEU and Surface Action Group (SAG) voids its ability to be an effective logistics sustainment platform once offloaded due to the need for a port facility to

⁹ Expeditionary Advanced Base Operations Handbook v1. *Considerations for Force Development and Employment*. Quantico, VA: Marine Corps Warfighting Lab, 2018. 5 <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>.

conduct subsequent onloads. The additional lag created by this capability gap in the conceptual conduct of sea basing to support EABO will be compounded by time sensitive sustainment demands.



Figure 2. Envisioned Expeditionary Advanced Base Operations (EABO) conceptual employment. Picture provided by the Marine Corps Warfighting Lab.¹⁰

CURRENT U.S. SEA BASING CAPABILITIES

Sea basing capabilities currently exist in the US inventory and knowledge of how they have been employed previously, compared to what will be asked of them in a future fight quickly highlights the current gap between what is possible and what is envisioned for the Navy and

¹⁰ Expeditionary Advanced Base Operations Handbook v1. *Considerations for Force Development and Employment*. Quantico, VA: Marine Corps Warfighting Lab, 2018. 5 <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>

Marine Corps team. Presently, there are projects underway to bridge this gap, focusing on developing logistics delivery systems capable of operating throughout the spectrum of conflict and within each warfighting domain. As a joint force, current disaggregate sea basing capabilities are a critical vulnerability that highlight the need for a new compliment of dispersed supply and distribution platforms required to support EABO in a future fight.

Presently the Navy and Marine Corps team conducts sustainment operations via a myriad of logistics support vessels designed to replenish the fleet while at sea as well as provide logistics over the shore to forces operating on land. At its core are the Expeditionary Sea Base (ESB) and Expeditionary Transfer/Ship Dock (ESD). For reference, these two ships have a displacement of 78,000t, a length of 240m, and can ballast down to allow Landing Craft Air Cushion to load and launch. Additionally, the ESB boast a 2,323 square meter (25,000 square foot) deck that accommodates vehicles and equipment, includes four helicopter landing pads, hanger, aviation faculties, berthing, as well as broader command and control communications.¹¹ Like MPF capabilities, which will be discussed hereafter, these logistics support vessels offload and conduct underway sustainment operations through vertical replenishment (VERTREP) and underway replenishment (UNREP) methods without the assistance of a port facility. While both methods of resupply achieve the desired end state eventually, they are laborious and time-consuming operations that are constrained by sea states, aerial lift capabilities, and deck space. Unlike pier side operations, underway replenishment executed via VERTREP requires cargo to be sling-loaded under CH-53s or MV-22s from one ship to another or to a helicopter landing zone a short distance away. Alternatively, the UNREP method requires each vessel to be parallel to one another and traveling at the same speed in order to establish a cable connection where fuel

¹¹ Stephen W. Miller, "Skin-to-Skin: Understanding Sea Basing." *Naval Forces* 40, no. 2 (March 2019): 38. <https://search-ebscohost-com.lomc.idm.oclc.org/login.aspx?direct=true&db=mth&AN=135805445&site=ehost-live>.

hoses and transfer systems form a causeway to transfer cargo and equipment back and forth. Historically, replenishment operations as described above can take upwards of multiple days to complete while underway. Factors such as time and sustainment methodology are key considerations for ship-to-ship or ship-to-objective VERTREP and UNREP replenishment that limit sustainment over the shore. The chart below depicts all 74 US Navy (USN) sealift platforms compiled from the US Navy Military Sealift Command (MSC) and MAGTF Planner’s Reference Manual.¹² Together these platforms provide a robust capability; however, due to US Navy Fleet alignment and global distribution, only a handful of vessels would be dedicated to support EABO at any given time.

US Navy Military Sealift Capabilities

<u>Combat Logistics Force</u>	<u>Fleet Support</u>	<u>Combatant Command Support</u>
<u>T-AO</u> Petroleum Distribution 15	<u>T-AK</u> Cargo 5	<u>T-AKR</u> Large Medium Speed 10
<u>T-AKE</u> Cargo & Ammunition 14	<u>T-AKR</u> Large Medium Speed 4	<u>T-AK</u> Cargo 5
<u>T-AOE</u> Fast Combat Support 2	<u>T-AO</u> Petroleum Distribution 2	
	<u>T-ESB</u> Exp Sea Base 2	
	<u>T-ESD</u> Exp Ship Dock 2	
	<u>T-EFF</u> Exp Fast Transport 9	
	<u>HST</u> High Speed Transport 2	

¹² MSTPD Pamphlet 5-0.3. *MAGTF Planner’s Reference Manual*. (Quantico, VA: MAGTF Staff Training Program Division, 2017). II-24.

Table 1. Consolidated US Navy logistics support vessels highlights the high demand and low-density nature of this critical platform required to conduct sea basing in S3DO to support EABO. Data consolidated from US Navy Military Sealift Command (MSC) and MAGTF Planner's Reference Manual.¹³

Dedicated logistics support vessels serve as the lynch pin of S3DO, and while the USN possesses numerous logistics support vessels, a quick review of the chart illustrates that the quantities possessed do not meet the time sensitive support nature of EABO for two reasons. First, instead of being allocated on a need-based basis the allocation of a certain number of vessels to each support category hinders the ability to provide responsive sustainment from large stocks forward without the use of a dedicated APOD/SPOD in the vicinity of the theater of operations. Second, the time it takes to conduct underway replenishment operations within the current construct will not meet the requirements to effectively support EABO in an A2AD environment where time and mobility matter.

As previously mentioned, access to large APODs/SPODs is usually provided from host nations through a status of forces agreement (SOFA) or an acquisitions cross service agreement (ACSA), which in the future fight conducting EABO may not be an option. Often, investment in programs and concept development requires more than a good idea and strategic mindset, buy-in from respective service chiefs and congressional allocation of funds over multiple fiscal years remains a critical element in building this capability.

Favorable geopolitical buy-in, funding, and authorization to develop and manufacture the required platforms needed to turn concepts into reality has plagued the joint logistics enterprise (JLENT) for years. Of relevance, the USS Ponce (LPD-15) underwent a \$60 million conversion into an interim afloat forward staging base (AFSB [I]-1) in 2012 to sustain special operations [to]

¹³MSC Public Affairs Office. "Military Sealift Command." Military Sealift Command Ship Inventory. Accessed January 11, 2020. <https://www.msc.navy.mil/inventory/>.

countermine activities in the Arabian Gulf.¹⁴ The diagram below illustrates the evolution of Navy Fleet Support Logistics (NFSL) capabilities and the national competitive geopolitical catalyst behind the eb and flow of US investment in expeditionary sea basing capabilities. The desire to execute EABO mirrors NFSL development during the Cold War era, where platforms were developed to meet certain mission requirements during a period of great power competition.



Figure 3. Evolutionary development of sea-based logistics support vessels and the geopolitical circumstances surrounding the investment and divestment in their continued growth. Data and image provided from the Center for Strategic and Budgetary Assessments.¹⁵

While the current US Navy Sealift Command platforms provide one piece of the sea-based sustainment puzzle, they are further augmented by the capabilities that the MPF provides. The MPF is comprised of three Maritime Prepositioned Ship Squadrons (MPSRON) under the Military Sealift Command (MSC). Each MPSRON contains between four to seven ships. MPF ships are commercial ships with roll-on/roll-off (RO/RO) capabilities that can be offloaded either

¹⁴ Owen, Robert C. "Sea-LAnd Basing of Air Refueling Forces." *Air & Space Power Journal* 29, no. 2 (March 2015): 14. <https://search-ebscohost-com.lomc.idm.oclc.org/login.aspx?direct=true&db=mth&AN=101612233&site=ehost-live>.

¹⁵ Walton, Timothy A, Ryan Boone, Harrison Schramm. *Sustaining the Fight: Resilient Maritime Logistics for a New Era*. (Washington DC: Center for Strategic and Budgetary Assessments, 2019). 22.

pier side or instream while at loiter just offshore. MPF is a strategic asset with MPSRONS based throughout Geographic Combatant Commands to provide the fleet with a quick response capability of 15 vessels. These assets are allocated under the Combatant Commands Support category for the initial delivery of equipment and assistance in preparing for the arrival of the fly in echelon (FIE) ahead of a force build up. Similar to the USN's host of logistics support vessels, MPF serves as a high demand low density asset possessing restrictions on employment. Although MPF provides a robust capability in a permissive to semi-permissive environment, it does not provide the requisite sea basing capability or meet the expeditionary requirements of EABO. In this context, MPF is one dimensional, too laborious and time consuming, and comes with a host of personnel considerations. Combined, USN logistics support vessels and MPF provide an initial sustainment capability in a traditional conflict or humanitarian assistance and disaster relief (HADR) mission, but still present the joint force with a replenishment and speed capabilities gap.

One key consideration regarding existing US sea basing capabilities is that its compliment of MPF and logistics enabling platforms are not designed to operate within an enemy's WEZ at the scale required to support EABO in an A2AD environment. Given current US sea basing design and organic platform capability, the US lacks the ability to receive, store, and distribute large quantities of all classes of supply in a similar fashion to that of a land-based supply and distribution system once initial offload commences. Simply put, once the MPF comes close enough to shore to conduct an instream offload utilizing lighterage, it has to quickly move back outside the WEZ which may not be enough time to conduct S3DO. That simple act of having to move outside the WEZ in order to facilitate smaller level S3DO creates inefficiency and consumes valuable time. That time and distance consideration is compounded even further if

the MPF needs to receipt for additional equipment and sustainment for subsequent issue from a land-based port facility. The USN Fleet Support category of allocated vessels can operate in closer proximity to the requesting unit; however, it depends on the platform delivery system and integrated execution of S3DO to be a viable and sustainable option for sea basing in support of EABO.

Everything discussed to this point highlights the existing capabilities in the US sea basing inventory and how they have been utilized in the past. Previous experience has shown that sea basing is a viable option if able to rely on the larger supply network and possess the means to project sustainment forward. The future fight may not permit the use of international airports or large terminal operating ports for the staging and generating of combat power. While the current compliment of USN support vessels and MPF requires an ad-hoc solution for the delivery of smaller amounts of sustainment, these employment methods take time and do not fully meet the intent of EABO. There does however exist a conceptual way to execute large scale sea basing to conduct S3DO in support of EABO that requires continued investment in developing a sea basing capability that mirrors that of land-based supply.

TRAINING & PLATFORMS

Although there are multiple initiatives underway to develop systems that facilitate effective S3DO to support EABO, a large focus on development is invested in the delivery platforms required to execute this type of sustainment operation. As the NDS and the CPG place emphasis on designing a more streamlined joint force that operates over a distributed area within the WEZ under A2AD threats, the proliferation of both manned and autonomous logistics

delivery platforms across all domains is a vital element toward this end. However, this quick reaction to build more platforms overlooks the importance of the human capital and the critical skill sets needed to enable these logistics delivery platforms.

A blending of logistics combat service support skills and more ground centric lethality is required to optimize size and effective end user capabilities while conducting S3DO to support EABO. To gain efficiencies and reduce both physical footprint and electronic signature during the conduct of EABO, the Marine Corps Special Operations Command's (MARSOC) critical logistics enablers structure achieves this impact. This construct would give smaller units such as a forward arming and refueling point (FARP) team the ability to operate semi-autonomously from within the sea-based supply chain network and larger traditional supply architecture. There are two ways to accomplish this, augmentation of a logistics support team (LST) comprised of CSS personnel or the creation of a multi-functional logistics enabler. As proposed, any Marine or Sailor would be given additional training in intermediate logistics, infantry, fires, and air coordination procedures and systems – thus creating a multi-functional logistics enabler capable of operating independently as part of any EAB. Much like the platform that will be discussed next, the concept of designing multi-functional platforms that can conduct multiple mission sets should be applied to the individual Marine or Sailor. Completely aware that this seemingly simple approach would impact both the procurement and training pipelines, not all units would require this construct or additional cross training, but its effectiveness in the special operations community continues to produce impressive results.

In addition to training, technology must also be refined to mirror real time demand and subsequent S3DO from sea-based supply chains. According to testimony from the Senate Appropriations Subcommittee, this evolution is already underway. Modernization efforts are

being taken by the USN in the refinement of its aging Landing Craft Air Cushion (LCAC) and Landing Craft Utility (LCU) platforms to compliment the forthcoming systems of surface and aerial connectors to enable the Joint Force to establish a web of sensor, strike, decoy, and sustainment locations to complicate the strategic and operational decision making of an adversary to allow for the successful conduct of EABO.¹⁶ Existing logistics systems refined through the last two decades of conflict highlight the need for service componse integration. However, the reality throughout the joint force is that ownership of this process remains at the service level. Operating systems like Global Combat Support System (GCSS) Marine Corps and Radio Frequency Identification (RFID) have helped bridge this gap and aided in dealing with the frustration of inventory accuracy. Although these two examples are traditionally land-based capabilities that already exist, when given the ability to pair with new technology like the conceptual introduction of the Joint Mobile Offshore Base (JMOB) they introduce a new dynamic to the forward sea-based supply chain. Independent of one another they are impressive systems, but linked together they can provide the needed capability that will drive the distribution of assets from sea-based supply chains to units engaged in any type of operation.

In the early 1900s, Rear Admiral Alfred T. Mahan wrote of this concept, stating emphatically that mobile forces can determine a war's outcome through position, and that the sea itself becomes a central position — like a highway — where lines of communication are assured and forces are moved.¹⁷

The proposed sea basing platform that will provide the capability needed to conduct EABO is the conceptual JMOB. The concept itself is not new, but in fact an improved

¹⁶ "Senate Appropriations Subcommittee Issues Testimony from USMC Commandant." 2018. *Targeted News Service*, Apr 24. <https://search-proquest-com.lomc.idm.oclc.org/docview/2030161248?accountid=14746>.

¹⁷ Klein, John J., and Rich Morales. "SEA BASING ISN'T JUST ABOUT THE Sea." *U.S. Naval Institute Proceedings* 130, no. 1 (January 2004): 32–35. <https://search-ebsohost-com.lomc.idm.oclc.org/login.aspx?direct=true&db=mth&AN=11911144&site=ehost-live>.

modernized version of the old mulberry floating docks utilized at Omaha Beach. According to Major Stuart Hatfield, United States Army Command and General Staff College, “the JMOB is a modular, self-propelled, semi-submersible floating platform. Conceptually, each module is 1000 feet by 500 feet with 3 million square feet of storage space and assembled would provide enough real estate to land Air Force C-17 aircraft”.¹⁸ That is to say, the JMOB is a floating island with its own port and airfield, an intermediate staging area, a logistics hub, and an assault platform in which to conduct any type of operation. While utilization of existing sea-based platforms and associated gear compliments provide adequate support for small scale S3DO, continued development past the conceptual stage regarding the JMOB is required to meet future global demands and project US combat power over the horizon. As such, the JMOB would be able to satisfy every need for sustained operations from the sea.

Joint Mobile Offshore Base



Figure 4. Four individual Joint Mobile Offshore Bases (JMOB) assembled to depict large APOD/SPOD operations and act as a strategically geographic intermediate sea-based supply chain. Image courtesy of Army General Command & Staff College¹⁹

As envisioned, the JMOB accomplishes this by providing both an APOD and SPOD that can be strategically placed anywhere in the world. Capable of receiving and offloading large

¹⁸ Major Stuart Hatfield, “*Sea Basing: A Way to Project Land Combat Power*”, United States Army Command and General Staff College, May 26, 2005. 28

¹⁹ Major Stuart Hatfield, “*Sea Basing: A Way to Project Land Combat Power*”, United States Army Command and General Staff College, May 26, 2005. 27

aircrafts, ships, and submersible logistics delivery systems, this platform eliminates the need for a land-based supply chain. Essentially serving as the theater logistics hub, while possessing offensive and defensive capabilities, the JMOB provides the flexibility needed to operate in an A2AD environment within the WEZ.

Acting as an intermediate supply and distribution hub that can conduct multiple mission sets simultaneously, the JMOB provides the needed sea basing capability to conduct large scale S3DO in support of EABO. The diagram below depicts the possible expeditionary gains that the JMOB along with a critical logistics enabler provides. The combination of these two critical elements contribute to how fast replenishment will take place or a new source of originating supply identified for subsequent creation.

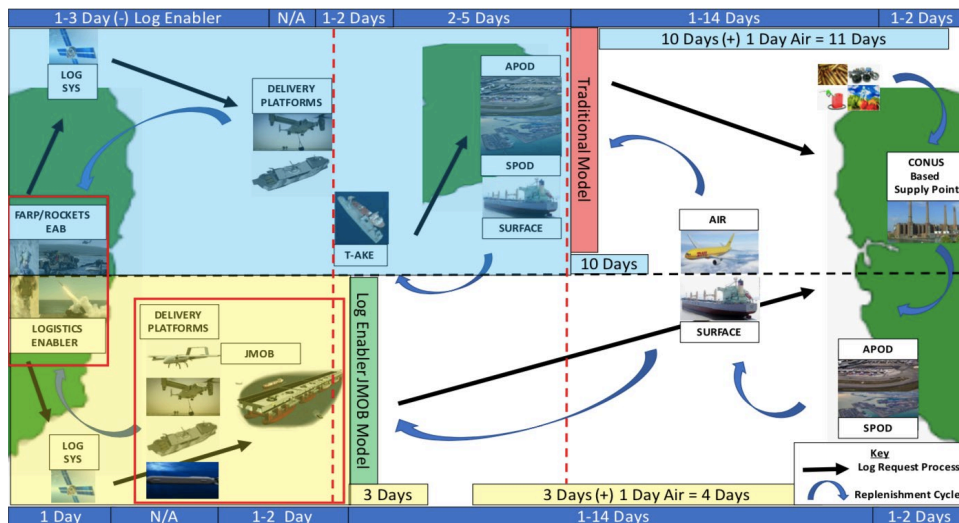


Figure 5. Replenishment cycle time of fulfillment based on traditional vs. proposed S3DO methods in support of EABO given intermediate supply point(s)/APODs/SPODs and critical logistics enabler with log system authorities.

While both traditional methods of underway replenishment achieve the desired end state eventually, they are laborious and time-consuming operations that are constrained by sea states, aerial lift capabilities, deck space, and can take multiple days to complete. For this reason, the traditional model of conducting S3DO to support EABO does not combat the enemy A2AD threat or provide maneuverability for operating forces. What is required to make the scenario

realistic is an approximated time that each S3DO evolution takes given present - not future - US capabilities. If that time range proves insufficient to out cycle the enemy decision-making process or present a targeting dilemma then alternate means need to be provided to meet the envisioned end state. Comparing the normal replenishment cycle time to the approximated reduction in replenishment cycle time generated by the introduction of an intermediate supply point, or multiple, identifies this. Essentially, the intermediate supply point(s) would take the place of the CONUS land-based system and reduce replenishment cycle time. These intermediate supply points can be land-based in geographically strategic host nations (HN) or sea-based to provide global access and operational flexibility.

It accomplishes this in two main ways. First, it effectively shortens the distance from warehouse to warfighter, speeding up the replenishment cycle that facilitates unit freedom of maneuver. Second, due to its organic ability to receive replenishment via subsurface, surface, and aerial means of conveyance, it also possesses the ability to provide scalable redundant delivery capabilities. These multiple delivery platforms saturate the area of operations and deliver sustainment across multiple warfighting domains simultaneously within the WEZ under A2AD conditions. The development of multifunctional logistics enablers employed in unison with the JMOB provides the joint force with the requisite reduction in replenishment cycle time needed to break free from traditional S3DO and meet future EABO demands.

RECOMMENDATIONS & CONCLUSION

After over two decades of land locked warfare the Marine Corps finds itself in unfamiliar territory and is in desperate need of returning to its maritime roots. This is easier said than done

due to operating from pre-deployment training blocks that provide units with staged assets upon arrival in country. Simply put, leadership does not have the confidence or experience in the level of sea-based S3DO necessary to improve the present state of sea-based logistics to support EABO. Although the Marine Corps is advertising itself as an expeditionary maritime force in readiness, this capability is dependent on other services' platforms and concepts, of which sea basing and S3DO is one large piece of the puzzle. The concepts and doctrine are not new, however the viewpoints shared and enforced regarding the importance of sea basing require the development of platforms that facilitate effective S3DO in support of EABO as envisioned.

For sea basing to break free of this limiting philosophic stereotype, leadership on both sides of the supply chain must experience this principle in action. Moreover, the continual honing of S3DO must be consistent and effective. This means that the notion that pre-positioned bulks of supplies across a battlefield are necessarily better and safer than stable and flexible logistics must vanish from the lexicon of CSS. In conjunction with integrated logistics forecasting, these practices must be shown again and again to be effective during training in order to be relative and integrated into real-world operations. As illustrated in this paper, the concept of sea basing is fundamentally a sound one, although present day personnel and platforms do not meet immediate EABO needs. To this end, the creation of multi-functional logistics enablers as well as the introduction of the JMOB will provide the joint force with the right compliment of capabilities to conduct and sustain EABO against a peer or near peer adversary. It is paramount that during this time of transition sea-based logistics be incorporated into the strategic, operational, and tactical levels of operational planning. With a fully integrated and synchronized technological suite of capabilities for sea based S3DO the ability to provide

sustained support to EABO from designated platforms and specific gear sets will pave the way for sea based S3DO well into the next century.

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