MARINE CORPS
Gazette
Professional Journal of U.S. Marines

MARCH 2024 Vol. 108 No. 3 www.mca-marines.org/gazette

A publication of the Marine Corps Association

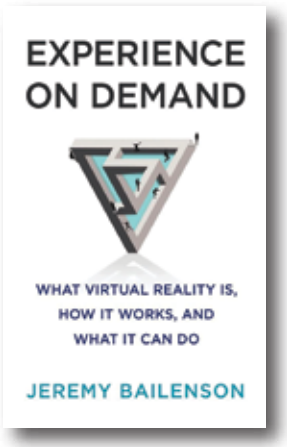

MARINE RAIDERS
MARSOC.COM
THE UNCONQUERABLE SPIRIT OF MARINE RAIDERS.
SPIRITUS INVICTUS

March 2024
Volume 108 Number 3

MARINE CORPS Gazette
Professional Journal of U.S. Marines

73 Cover Article
Sgt Reggie Tado, a heavy equipment operator with General Support Co, 3d LLB, loads a 463L pallet onto a MC-130J. (Photo provided by CWO3 Jeffrey M. Hubbard and CWO3 W. Tyler Horton.)

DEPARTMENTS



108 Book Review

IDEAS AND ISSUES

Installations & Logistics

Future Force Design & Modernization/Logistics

Military Justice

Future Force Design & Modernization/Shipbuilding

Logistics/Modernization

Leadership

Wargaming/Advertiser Content

The *Marine Corps Gazette* (ISSN 0025–3170) is published monthly by the Marine Corps Association to provide a forum for the exchange of ideas that will advance knowledge, interest, and esprit in the Marine Corps. Periodicals postage paid at Quantico, VA, USPS #329-340, and at additional mailing offices. • OPINIONS expressed herein are those of the authors and do not necessarily reflect the attitude of the Department of Defense, Navy Department, or Headquarters Marine Corps. "Marine Corps" and the Eagle, Globe, and Anchor are trademarks of the U.S. Marine Corps, used with permission. • MEMBERSHIP RATE: Annual $42.00 • ADVERTISING QUERIES: Contact Valerie Preletz at advertising@mca-marines.org/703–640–0107 or LeeAnn Mitchell, VP Sales at 703–640–0169. • EDITORIAL/BUSINESS OFFICES: All mail and other queries to Box 1775, Quantico, VA 22134. Phone 703–640–6161. Fax 703–640-0140. Location: Bldg #715, Broadway St., Quantico, VA 22134. • E-MAIL ADDRESS: gazette@mca-marines.org. • WEB ADDRESS: www.mca-marines.org/gazette. • CHANGE OF ADDRESS: POSTMASTER: Send address changes to *Marine Corps Gazette*, Box 1775, Quantico, VA 22134 or e-mail: mca@mca-marines.org. • For credit card orders, call 866–622–1775. PUBLISHER'S STATEMENT: Publication of advertisements does not constitute endorsements by MCA except for such products or services clearly offered under the MCA's name. The publisher reserves the right to accept or reject any advertising order at his absolute discretion.

MARINE CORPS WRITERS

WANTED

TO CHALLENGE THE STATUS QUO AND PROVIDE THEIR INSIGHTS ON RADICAL CHANGE.

THE MAJGEN HAROLD W. CHASE PRIZE ESSAY CONTEST

Submit entries anytime from 1 January to 30 April.

See p. 110 for instructions.

The writing contest is open to active duty Marines and members of the Marine Corps Reserve.

MARINE CORPS ASSOCIATION EST 1913

This content is sponsored by: Observer Media Group Inc.

MARINE CORPS ASSOCIATION
EST 1913

MARINE CORPS Gazette
Professional Journal of U.S. Marines

MARCH 2024

Editorial: Focus on the Pacing Function

This month, we focus on the central importance of logistics, sustainment, and installations to the implementation of the Corps' campaign of modernization. We open with a message from LtGen Edward D. Banta, Deputy Commandant for Installations and Logistics on page 6 to set the stage for a wide range of articles from both Headquarters Marine Corps and authors across the Corps. Of note, the condition of barracks throughout the armed forces has recently drawn the attention of Congress, the DOD, and the media. On page 8, "Barracks 2030," by the Commander of Marine Corps Installations Command, MajGen David W. Maxwell and Maj Nick Bolvin, provides an honest assessment of the ground truth regarding the Corps' barrack issues and clearly sets the direction for the future. Other stand-out articles cover logistics-related subjects from the tactical perspective such as "Self-Sustainment in an EAB" by 1stLt Nathan J. Gervaise on page 54 and "Tactical-Level Logistics Considerations within NATO for the USMC" by Col Joseph M. Garaux and Capt Kelley B. Johnson on page 56 up to the strategic level such as "The Role of Logistics in Deterrence" by LtCol Marcus Gillett on page 16, "A Marine Corps Supply Chain in the Indo-Pacific" by Maj Gabe E. Mata on page 28, and "Multinational Resource Sharing" by Maj Kathleen E. Hill on page 41.

In addition to this month's focus area, we feature articles on several other important subjects including what may be the greatest challenge to the United States' national security and global influence: shipbuilding. For the Corps, this issue centers on the availability of amphibious ships, and we have two articles addressing the challenge with two alternate recommendations. On page 84, "Don't Make It Complicated" by Maj M. Hunter Davidhizar looks at purpose-built Stern Landing Vessels as alternatives to the Landing Ship Medium, and on page 88, "A Temporary Means" by Mr. Jason F. Rutledge recommends short term production of the proven LHA design as a potential solution to today's problem.

Other highlights include an examination of the importance of Marine defense counsels to the fair application of the military justice system in "Marines Defending Marines" by Maj Sean K. Price on page 79 and a truly outstanding study of the lessons of stoicism in the practice of leadership on page 99 titled "Building an Inner Citadel of Character" by retired Marine and current Commandant of Cadets at The Citadel, Col Tom Gordon.

Finally, please take note of the two "calls to action" in our letters department. The *Gazette* is looking for Marines to write reviews and articles about the wargames the Corps is using in PME and training, and the former President and CEO of the MCA, LtGen Mark Faulkner, challenges today's leaders to respond to the ideas and recommendations shared by our *Gazette* authors—especially the junior officers and Marines. This feedback is essential to the intellectual health of the Corps.

Christopher Woodbridge

"Is Anybody Listening?"

I just finished reading the January 2024 edition of the *Marine Corps Gazette*. I am continually impressed by the quality of the articles in the *Gazette*, especially those written by our young officers and enlisted Marines offering fresh ideas and new and innovative ways of doing business. This displayed leadership through a commitment to making continuous improvements in warfighting TTPs or Marine Corps policies and procedures deserves timely and personalized feedback.

Articles such as the one by 1stLt Houser regarding the MOS Assignment System at The Basic School or SSgt Duke with his recommendation and supporting rationale for the creation of a MOS for unit transition coordinators or Capt Callison's commentary on shortfalls in Marine Corps Recruiting Command marketing and ways to make improvements are good examples of Marines looking to make things better. These Marines are not merely complaining; rather, they are demonstrating a sincere desire to be part of the solution set.

In his White Letter 1-23, Guidance to the Force of August 2023, Gen Smith discusses the importance of leaders engaging and hearing from their Marines. He says that the Marine Corps is a learning organization and Marines need to increase their knowledge to get better every day. The Commandant is solidly in the 10 ring here, and this is what the *Marine Corps Gazette* serves to do. Whether senior Marine leaders complete the feedback loop to Marines via email, phone, or a return *Gazette* letter response from the appropriate individual or office at Headquarters Marine Corps or in the operating forces, the means are not as important as timely validation that in fact someone is listening, they value and trust their Marines, and have a sincere desire to make improvements.

Finally, even if senior leaders are listening, and not responding for whatever reason, what our Marines hear is the equivalent of silence on the net. We can and must do better.

LtGen W. Mark Faulkner (Ret)

Letter Regarding Maj Burchfield's Comments on "The Case for Revising Warfighting"

I was glad to read Maj Josh Burchfield's commentary on "The Case for Revising Warfighting," as it was meant to spark debate. That said, I think that he has read a few things into the article that are not there.

To begin with, the criticism of the moral characterization of maneuver versus attrition does not imply that Marine leaders should ever accept unnecessary casualties. The aim of an attrition approach to warfare is to destroy the enemy's capability to wage war until it is non-existent, while the aim of a maneuver approach is to get the enemy to quit before you have to destroy his capability to wage war. Whether the attrition approach incurs higher friendly casualties or not depends on the feasibility of attriting the enemy to death with the means available. The fact that dropping the atomic bomb minimized friendly casualties does not make it an example of maneuver warfare.

Second, he misconstrues the point about "when and at what level." The point is not that maneuver warfare occurs only at a certain echelon; the opposite is true. The point was in reference to LtCol Thaddeus Drake's piece, "The Fantasy of MCDP 1," in which he argues that shattering the enemy's cohesion in one location/echelon may actually hinder the achievement of higher's objectives (as it did in DESERT STORM).

Finally, the article does not argue for a change in the philosophy of *MCDP 1;* rather, it is simply arguing that a revised version should acknowledge the introduction of new domains and an expanded understanding of combined arms. Toward the end of the book, there is a vignette illustrating combined arms that is somewhat dated. The addition of overhead ISR or EW into that vignette would not take anything away from the philosophy of seeking gaps and avoiding surfaces.

Maj Robert Malcolm

Wargamers Wanted

A call to action to cement the institution of wargaming in the Marine Corps.

In recent years, the Marine Corps has made great strides to incorporate wargaming into its training and education continuum to enhance Marines' problem-solving abilities and further strengthen their "thousand-year mind."

Thus far, the Corps has aggressively pursued the implementation of wargaming with initiatives taken through the Marine Corps Warfighting Lab, the building of the Gen Robert B. Neller Center for Wargaming and Analysis, and the creation of Marine Corps University's Wargaming cloud.

As we begin 2024, the *Marine Corps Gazette* calls upon all Marines and writers to join the wargaming crusade by using the journal to promote wargaming throughout the Corps. Writers should seek to address either of the following questions: How *will* this wargame improve Marine Corps training and education? How *has* this wargame improved Marine Corps training and education? How can we evolve wargaming to improve Marine Corps training and education? How can wargaming be used in conjunction with formal applications of military history? These questions can be answered in the form of traditional reviews, after-action reviews of games, personal anecdotes, or whatever literary means necessary.

In publishing these reviews and wargaming-related articles, we hope to ensure our readers are best informed on the means to get their wargaming *reps and sets* by accumulating hours of decision making against a thinking enemy.

Staff, *Marine Corps Gazette*

Letters of professional interest on any topic are welcomed by the *Gazette*. They should not exceed 300 words and should be DOUBLE SPACED. Letters may be e-mailed to gazette@mca-marines.org. Written letters are generally published three months after the article appeared.

The entire *Gazette* is now online at www.mca-marines.org/gazette.

Liberty Global Logistics LLC

A Leading Ocean Shipping & Logistics Company

Supporting Marines and Deployed U.S. Forces Globally

March 2024

A MESSAGE FROM THE DEPUTY COMMANDANT FOR INSTALLATIONS AND LOGISTICS

News headlines over the past year have consistently reminded us of the security challenges facing our nation, characterized by increased global competition with rising powers, by crisis and conflict in Europe and the Middle East, and punctuated by the frequency and severity of destructive weather events at home and abroad. A common thread emerges from these challenges—the indispensable role of logisticians. Our logistics professionals are the critical enablers who facilitate our nation's response capabilities and equip our leaders with the necessary tools to reassure allies, deter adversaries, and navigate the complexities of our world.

Looking ahead, the challenges don't get any easier. Navigating this terrain demands innovative thinking and approaches from our Marine and Navy logisticians across the Installations and Logistics Enterprise. Initiatives such as ongoing Force Design and guiding documents like Installations & Logistics 2030 and the Marine Corps Installations Plan guide our efforts toward building a future force while maintaining readiness for today's fights. While our pursuit of new ideas and capabilities is vital, the bedrock remains our Marines, Sailors, and Civilians embedded within the Marine Corps Installations and Logistics Enterprise.

The *Marine Corps Gazette* remains the premier platform for exchanging ideas and fostering professional dialogue within and beyond the I&L community. This year's I&L edition highlights a range of thought-provoking and forward-looking ideas, to include Logistics as Deterrence, the critical importance of Data Literacy to enable global logistics awareness, Machine Learning for Medical Logistics, and the Barracks 2030 plan to name a few. I'll offer a hearty "thanks" to the many authors featured here and in the online supplement and extend a challenge to each reader—contribute your comments and broaden the dialogue. Your voice matters and helps us advance the foundational logistics efforts in the ongoing Campaign of Learning.

In closing, logistics isn't just for logisticians–it's for all Marines. If you have not read the recently updated MCDP 4, Logistics—do so. The same applies for I&L 2030 and the many supporting concepts that shape our thinking and are inextricably connected to all warfighting functions. I encourage each one of you to engage with your I&L team, sharing your ideas, suggestions, and concerns. Working together we can mature the resilient I&L enterprise necessary to ensure success on today's and tomorrow's battlefields. Thanks for your continued support and Semper Fidelis.

Edward D. Banta
Lieutenant General, U.S. Marine Corps
Deputy Commandant for Installations and Logistics

REVISITING THE BASICS OF FINANCES

No matter your stage of life, from those just starting out to those nearing retirement, everyone's financial future is more stable when the foundation is strong. It's what holds up the rest of your financial dreams like saving for a home, paying for college education or even retiring one day. So take some time to see how you are doing in each of these four financial foundations.

BUDGETING

Budget doesn't have to be a financial "dirty" word. Think of it more as a way to create a plan to spend your money on things that matter to you. You can even get started in three easy steps: paycheck, prioritize and plan

Follow this QR code or click the title to reach USAA's How to budget page that's full of resources designed to help you budget better with those three simple steps.

PAYING DOWN DEBT

You're not alone. Debt management is a top concern for many people. Gain control by following these three steps: assess, avoid and attack.

Follow this QR code or click the title to reach USAA's How to pay off debt page that serves as your go-to guide on debt management and learn more about the three steps to pay down debt.

BUILDING AND MANAGING CREDIT

Is a poor credit score keeping you from achieving your goals? Think good credit is out of reach? Think again. Getting and keeping good credit may be easier than you think.

Follow this QR code or click the title to reach USAA's How to build credit page where you will discover the three C's of building and keeping good credit.

SAVING

We all have goals we want to achieve, and mastering the art of saving is key to achieve them. Believe it or not, saving money can be accomplished in three easy steps.

Follow this QR code or click each title to reach USAA's How to save page where you can learn about the three easy steps to help you reach your savings goals.

Barracks 2030

Improving quality of life through management, modernization, and material

by MajGen David W. Maxwell & Maj Nicholas Bolvin

LCpl Puller is excited. After graduating from Marine Corps Recruit Depot Parris Island as platoon guide and earning a meritorious promotion, he graduated at the top of his class at Marine Combat Training aboard Camp Geiger, NC. Now that he is on his way to Camp Lejeune from Fort Leonard Wood, a smile comes over his face—he is going to the fleet! Finally, no more squad bays, foot lockers, and listening to 30 other Marines snoring at night.

He looks forward to meeting his new roommate and settling into his role as a motor transport operator at 1/2 Mar. He arrives on base just before 1900; the battalion is secured for the day, but the duty NCO is prepared for new check-ins and directs LCpl Puller to a transient room until the barracks manager can provide him his permanent residence in the morning. After waking up and getting himself put together, LCpl Puller's squad leader takes him through the time-honored tradition of the check-in sheet. After completing the bulk of his sheet, he finally meets the barracks manager, Cpl Krulak.

While an excellent infantryman, Cpl Krulak is still trying to figure out his new role as the unit's barracks manager, a position he assumed two weeks ago. Unfortunately, he is still waiting on access to the barracks database because his email account was not set up, but he reviews his spreadsheet and sees an unoccupied rack in Room 201. After assuming that the room is in good order, he scans a key card and hands it to LCpl Puller. After exiting the office, Puller grabs his sea bags and starts walking down the catwalk to his room. He pauses in front of 201, takes a deep breath, and opens the door to his new home.

>MajGen Maxwell is the CG of Marine Corps Installations Command.

>>Maj Boivin is the Legislative Aide for Deputy Commandant, Installations and Logistics. At the time of submission, he was serving in the same role for CG, Marine Corps Installations Command.

Here. Right here is a critical juncture in the relationship between a Marine and the Marine Corps. This is where the institution shows how it values the fundamental and physiological needs of Marines like LCpl Puller and invests in retaining them for the long term. The Commandant of the Marine Corps said as much in his August 2023 Guidance to the Force:

> To recruit and retain the best we will focus on improving our barracks, base housing, gyms, chow halls, child development centers, and personnel policies. I view QoL improvements as direct contributors to a more capable and lethal force. Marines can always do more with less, but it is my job to make sure you do not have to do so with your living conditions or those of your families.[1]

The Marine Corps prioritized FMF readiness and modernization over its installation infrastructure, including barracks, which has contributed to unacceptable barracks conditions.

The Marine Corps will improve its readiness by improving the conditions of barracks and demonstrating our commitment to Marines.

The Marine Corps will improve its readiness by improving the conditions of barracks and demonstrating our commitment to Marines. As the Service that lauds itself as the *most ready*, it must set the conditions necessary to prepare Marines mentally and physically. A foundational element of this readiness is the physiological need to provide a space for warfighters to rest and recharge, which begins at the barracks. As leaders, we are obligated to provide Marines with safe, clean, and comfortable housing. Marines and our Nation that sends them to us should expect nothing less.

To accomplish this, the Marine Corps is implementing a multi-pronged approach to improve its barracks characterized as Barracks 2030.

Barracks Management

Today, when LCpl Puller is checking into his new unit, he will report to the barracks manager. This position is typically held by an NCO, a position Marines are not formally trained for and hold for one year. Cpl Krulak did not ask for the barracks manager billet, nor was he trained at the School of Infantry to execute his newly assigned role. Unfortunately, this often leads to inconsistent management and poor service to residents. Due to the needs of commands and the lack of alterna-

tives, units identify NCOs to perform the duties of a property manager with limited, to no, training and routinely hold for less than one year.

To improve the management of its barracks, the Marine Corps will hire civilian personnel to provide oversight and management of its barracks portfolio that mirrors private sector property management industry standards. Beginning in the Summer of 2024, the Marine Corps will begin hiring civilian personnel into these new positions to alleviate the pressures on operational units. Professionalizing the management workforce with civilians can improve the oversight of room conditions and address systemic backlog issues such as tracking inventory and maintenance. A part of this change was upgrading the work request management systems. At Marine Corps Air Station Beaufort, the Marine Housing Office experimented with a barracks maintenance app, which allows Marines to scan a QR code and submit a work request for maintenance issues. This trial period informed improvements in the app before a broader fielding to the other installations.

This new management process will not absolve senior leaders from their role in the oversight of their barracks. Professionalizing the management of barracks with civilians will ... ensure barracks standards are improved over time.

This new management process will not absolve senior leaders from their role in the oversight of their barracks. Professionalizing the management of barracks with civilians will provide the continuity and requisite knowledge needed to ensure barracks standards are improved over time. This allows improved awareness of barracks quality for commanders and where to focus efforts for structural and quality of life improvements.

In addition to assisting commanders in the day-to-day barracks management responsibilities, the Marine Corps will implement a new resident advisor program. This voluntary program will allow one or two SNCOs to reside in a barracks with "resident advisor" like duties similar to colleges and universities. Ultimately, each barracks will have two SNCOs that live in the building and provide mentorship like a resident advisor program in a college dormitory. This also assists SNCOs who are living geographically separated from their families to receive quarters while assisting commands in good order and discipline at the barracks. The program can enhance living standards, ensure resident safety, and increase the leadership presence during off-duty hours. Today, the initial tranche of resident advisors are living in barracks aboard Marine Corps Air Station Miramar with the respective commands lauding the new program and the additional oversight and mentorship it provides Marines living in the barracks.

Currently, entire barracks buildings are assigned to commands, regardless of whether they can fill all rooms. Conversely, centralized billeting, which is employed by other Services, will assign rooms with no regard for a Marines' unit. This means that LCpl Puller could be placed on the opposite end of the base from where he works with Marines from several different commands. To balance these two approaches, the Marine Corps will move to centralized unit allocation management, which assists in helping units maintain unit integrity while maximizing the available barracks rooms on base. Changing how the Marine Corps assigns rooms by rank will also assist in using more buildings.

The room configurations differ across all bases and installations. Depending on duty location and rank, a Marine can expect to have one or two roommates while potentially sharing a head with another room. As the Marine Corps matures its force, it must provide billeting commensurate with a Marine's rank and responsibility. Current configurations of barracks will remain, with future designs moving toward NCOs having their own private space with a shared bathroom and common area.

There are over 150,000 bed spaces available in the 658 barracks the Marine Corps maintains. Of these, about 88,000 are currently filled. It is unproductive to pay for rooms not in use. A vehicle not driven in a year will have components breakdown due to non-use. Similarly, rooms that do not receive regular cleanings and upkeep will fall into disrepair. By assigning NCOs their own rooms, the Marine Corps can increase occupancy while acknowledging seniority within its ranks. Ultimately, this can improve the morale and quality of life for Marines to rest, reset, and recharge. All these initiatives will substantially transform how we manage our barracks But in order to ensure the long-term health of our infrastructure we must invest in the buildings as well.

Barracks Modernization

Through the end of the 18th century, troops were customarily housed in private houses, inns, and other existing facilities, despite being a grievance listed in the U.S. Declaration of Independence (and banned by the Third Amendment). It was also considered bad for the soldiers' morale to continuously relocate, and consequently, a movement began for constructing permanent barracks wherever troops were regularly stationed. In the 19th century such buildings, mostly of brick, appeared all over Europe.[2] In modern times, iterations of the barracks spanned various shapes and sizes, and as recently as the 1990s, Marines were still residing in squad bays.

In the early 2000s, the Marine Corps increased the size of its force by tens of thousands to meet the demands of wars in Afghanistan and Iraq. While

the short-term impacts were positive, the long-term sustainment of the increased barracks inventory became insurmountable. The Marine Corps currently operates 658 barracks buildings worldwide with 112 (17 percent) of these buildings in poor or failing condition.

To mitigate these impacts, the Marine Corps will review its inventory and right-size the number of barracks it owns and operates to ensure adequate space for the current force and an adequate sustainment inventory. This will improve our financial position and allow us to maintain the remaining barracks at a higher standard. There are numerous financial levers the Marine Corps can pull to right-size the number of barracks; these funding levers include new construction, demolition, renovation, and modernization. The Marine Corps cannot build its way out of this problem; it must focus its efforts on demolition, restoration, and modernization, which it will begin in 2024 and aim to be complete by 2031.

Maintenance processes will also need to change with a smaller inventory. The Marine Corps will mirror private hotel industry practices during its barracks renovations. While private hotel companies will renovate sections or rooms as they become available, the Marine Corps waits until a certain period (e.g., 25 years) before shutting down the entire barracks, relocating Marines, and then completely renovating the building. The Marine Corps' methodology in updating its facilities inconveniences Marines, particularly when they must move multiple times during the same enlistment because of poor construction practices. During these renovations, the Marine Corps needs to account for the readiness impacts on the current generation of Marines.

Similarly, maintenance contact teams will be contracted to work for the installation housing offices. These contact teams will be available to respond to emergent maintenance requirements, much like private hotel companies have maintenance workers who can provide immediate assistance to maintenance requests by hotel guests. This is currently being successfully modeled at MCAS Miramar.

Another area where the Marine Corps will address unsatisfactory barracks conditions is specifically at Camp Pendleton, CA. Hearing the complaints from Marines living in barracks about the lack of air conditioning, particularly at Camp Horno (which literally means Oven in Spanish), the Marine Corps is developing a comprehensive plan to install new air conditioning units in the area. While this is expensive and difficult due to the original design of the buildings, it is a necessary improvement following the increasing heat waves occurring in Southern California. Notably, the Marine Corps reallocated funds to begin the renovations in the summer of 2023.

A well-intentioned billiards room will become a wasted space if the real desire is a recreational room with multiple gaming stations.

Fixing Fixtures, Furniture and Amenities

Our current accommodations, including furniture and amenities, are inadequate to recruit and retain the best talent. Rooms do not need to mirror the $3,000 apartment out in town but are more closely aligned with dormitories of colleges and universities. When LCpl Puller makes it back to his barracks room after a long day at the motor pool, he needs a space to reset and recharge and an area to foster comradery with friends.

Some of these expectations are assured in the Marine Corps' *Unaccompanied Housing Guarantees and Resident Responsibilities*, which requires Marines receive safe, secure housing that meets health, environmental, and safety standards; has functional fixtures, furnishings, appliances, and utilities; have access to common areas and amenities; and fast maintenance and repair when something breaks. Published in June 2023, this document establishes the standard every Marine can expect from their command for their rooms. New oversight from civilian managers will assist in this oversight and enforce standards during check-in and check-out procedures. Until this structure is established, it is critical that leadership advocate on behalf of their Marines to ensure barracks receive the attention necessary to resolve room issues quickly, including room fixtures.

Fixtures and furniture in Marines' barracks are old, worn down, or broken. Currently, the Marine Corps' 32-year lifecycle timeline has been insufficient to provide Marines with quality and reliable furniture and fixtures and impacts only 2,600 (or 3 percent) of Marines living in the barracks seeing new furniture each year. Updating the refresh cycle to a 10-year investment will outfit the barracks with more current fixtures and furniture and impact 8,700 (or 10 percent) Marines annually. The furniture ordering process will also be overhauled, centralizing the funding and standardizing furniture packages—to include washers and dryers—for different barracks types to leverage more buying power.

Ultimately, the Marine Corps must understand what its current force looks for in a barracks room. This may include kitchenettes, improved connectivity for gaming, or better recreation rooms to gather with friends. Thoughtful investments in amenities and recreation rooms can mirror amenities provided by private apartments out in town but should reflect what the current generation of Marines want. A well-intentioned billiards room will become a wasted space if the real desire is a recreational room with multiple gaming stations.

Barracks for the 21st Century

What was LCpl Puller's reaction after he opened his door? Was it disappointment about the condition of the room or pride in a clean and well-

furnished home as a Marine joining his unit? His response hinges on the actions the Marine Corps does or does not take to improve its buildings. The glaring shortfalls in the current barracks inventory are evident and changes must be made. The undercurrent of these changes is mindfulness for Marines' mental health, well-being, and readiness.

During a period of budget uncertainty, these solutions will be done at a tempo that allows for the prudent use of taxpayer dollars. Although immediate solutions are preferable, a recent Government Accountability Office report published in September 2023 "found that oversight and funding has been lacking for years" [and] "It will take years to address the chronic neglect and underfunding."[3] The Marine Corps cannot overcompensate with significant sums of money that cannot be spent smartly and risk investing in the wrong initiatives because it must spend money now.

The Marine Corps already shows a willingness to reallocate fiscal resources to tackle immediate challenges like barracks air conditioning in Camp Pendleton or updating 75-year-old barracks in Quantico. During his confirmation hearing, then Assistant Commandant of the Marine Corps, Gen Eric Smith told Congress: "Taking care of Marines is a warfighting function. Otherwise, they cannot focus on the mission at hand. Barracks, chow halls and gyms are a key to retaining Marines, and investments in quality-of-life initiatives are truly warfighting needs."

By improving the barracks through professionalizing management, modernizing infrastructure, and providing better amenities, the Marine Corps will provide its warfighters with a home appropriate to the professionalism and readiness we demand.

The individual Marine is the foundation of the Marine Corps being the most ready when the Nation is least ready. The Marine Corps must provide the necessary conditions to be ready—a ready home creates a ready Marine, which enables a ready force.

Notes

1. Gen Eric Smith, *ACMC Guidance to the Force*, (Washington, DC: 2023).

2. *Britannica*, c.v., "barracks," https://www.britannica.com/topic/barracks.

3. Karen Jowers, "'Move Decisively' to Fix Troops' Barracks, Lawmakers Tell Austin," *Military Times*, September 29, 2023, https://www.militarytimes.com/news/pentagon-congress/2023/09/29/move-decisively-to-fix-troops-barracks-lawmakers-tell-austin.

Leveraging Logistics above the MAGTF

The Joint Logistics Enterprise

by Col Aaron Angell & Mr. Mark Schouten

Marines traditionally focus on the tactical level of warfare. The FMF is a tactical fighting force—always ready to fight and win. Yet, the reach of our FMF depends on the naval and joint logistics enterprise (JLEnt) to get us *to the fight* and enable the *force to persist in a contested environment*. The rise of precision and long-range strike capabilities within the arsenals of our Nation's adversaries changes the logistics calculus at all levels of warfare. The ability to effectively strike U.S. installations, ships, and aircraft almost anywhere in the world using all-domain capabilities means enemies can actively attack the military logistics system in depth. The Marine Corps must account for these attacks in ways not truly considered since World War II.

>Col Angell is a Logistics Officer currently assigned as the Director, Logistics Combat Element Division within Headquarters Marine Corps, Combat Development and Integration.

***>>Mr. Schouten is a retired Marine Corps Lieutenant Colonel who has helped update and refine doctrine, publications, and strategic guidance for logistics within the Marine Corps, to include the update to* MCDP 4.**

The JLEnt, and particularly the Navy in the maritime environment, provides the mission-critical operational and strategic-enabling capabilities for the Marine Corps to operate in any clime and place. In an increasingly contested environment, Marines must closely manage logistics posture and maximize resources to gain an operational advantage. Understanding how logistics above the tactical-level impacts operations is key to ensuring forces have feasible plans with resilient forces to ensure tactical success. Marines must be deliberate in taking steps to understand and leverage operational and strategic logistics capabilities to ensure the force can persist in the contested environments that we are already operating in today.

The Military Sealift Command Bob Hope-class large, medium speed roll-on/roll-off ship USNS* Benavidez *(T-AKR 306) supporting a joint logistics over-the-shore exercise. ***(Photo by Hendrick Dickson.)***

Operational Logistics for Marines

Operational logistics (OpLog) enables campaigns by linking the strategic means of war to its tactical employment in a specified geographic area. OpLog is inherently a Joint Force effort because of the direct relationship to theater posture and campaign plans managed by the respective theater geographic combatant commander. Logistics at this level includes setting the theater with forces, footprints, and agreements to ensure the supplies and associated distribution systems are appropriately postured to support campaigning as well as the rapid transition to crisis or

conflict. Among many organizations conducting OpLog, some of the most significant are the Army Theater Sustainment Command, the Navy Fleet Logistics Centers, and the forward footprint of the Defense Logistics Agency. Logistics professionals are those who can effectively plan, collaborate, and orchestrate these OpLog capabilities across the competition continuum.[1]

Today, forces will have to fight to get to the fight through a contested environment. Historically, the Marine Corps has had the task of seizing and defending advanced naval bases. These advanced naval bases and expeditionary advanced bases are necessary to sustain the force in the fight. Just as in World War II, Marines will not be given the luxury of permissive port offloads, unfettered aviation operations, and *iron mountains* of supplies. These realities drastically impact the sustainment options available to commanders. Feasible battle plans in contested environments require intimate knowledge of how forces can be positioned, resourced, and sustained over time. Understanding the challenges and opportunities of OpLog helps commanders make viable plans and maximizes options for the force. This applies to the logistics capabilities within the FMF as well as the theater and local resources that can be made available.

Marine forces may also be assigned a role in executing limited OpLog tasks, particularly in contested environments. Forces and other resources must be dedicated to managing and preserving advanced bases and transportation assets that create theater distribution systems. Of note, advanced bases are key nodes in theater distribution systems, which may include permanent main operating bases or temporary advanced naval bases and expeditionary advanced bases. These locations are each critical nodes in the theater sustainment web that must be staffed and resourced to both meet the needs of the forward force and create resiliency of the base to take a hit and keep on operating. Marine forces will be expected to contribute to operating and defending advanced bases across vast operating areas, at remote locations, or in immature theaters that other forces cannot access. For example, the size and maritime nature of the Pacific Ocean may exceed the capabilities of the Theater Sustainment Command and require Marine Corps investment and reinforcement in specified locations to support joint forces. Conversely, a naval expeditionary force (Navy and Marine team) may be the first available force capable of reaching objective areas where there are no joint capabilities and sparse infrastructure to provide OpLog support to special forces or joint aviation platforms.

Strategic Logistics for Marines

Strategic logistics (StratLog) provides the Joint Force with the means of war by providing the resources needed to conduct campaigns. This includes getting to the fight and feeding the theater network from global sources. Logistics at this level focuses on installations, acquisition and procurement, enterprise inventory management, global health services management, strategic lift, and large-scale mobilization. Many StratLog functions are conducted by designated agencies and organizations to support the entire Defense Department, such as U.S. Transportation Command's role as in providing strategic lift or inter-theater transportation. Additionally, each Service headquarters manages StratLog functions associated with manning, training, and equipping the force to fight. Marines that participate in StratLog efforts harness global resources, increase JLEnt interoperability, and facilitate naval expeditionary operations over broad time horizons.[2]

OpLog and StratLog are critically important to tactical success ...

Most StratLog is performed by organizations outside of the Marine Corps, yet Marines influence these global resources. Marines develop requirements and inform solutions to ensure Marine Corps warfighting equities are accounted for in operational planning as well as long-term institutional planning. This coordination involves identifying capability and capacity requirements that drive investment in strategic lift capabilities (ships and aircraft) as well as the necessary infrastructure to sustain the force globally. It also involves providing input to policies that impact Marines globally, such as force health protection policies established by the Defense Health Agency. StratLog capabilities from outside of the Marine Corps are critical for ensuring Marine Corps forces have global reach and sustaining power.

The Marine Corps has StratLog capabilities and uses staffs balanced with FMF-experienced Marines and business-experienced civilians to drive programs across the Service every day. While most of these capabilities are not directly tied to the Marine Corps Task List, these are all mission-critical pillars required to build and sustain Marine Corps expeditionary lethality. These capabilities include installations management across 25 bases and stations, the acquisition and lifecycle sustainment of all weapons systems, and the global inventory positioning to maintain a balance between enterprise force readiness and prepositioning programs for global responsiveness and integrated deterrence. Each of these Marine Corps StratLog capabilities aligns with discreet regulations, and they are all mutually supporting to provide Marine forces ready to fight.

How to Improve Marine Corps OpLog and StratLog Awareness and Execution

OpLog and StratLog are critically important to tactical success and the long-term health of Marine Corps forces. Marines must learn to effectively leverage the Marine Corps StratLog capabilities and the JLEnt to ensure the FMF is maintained at a high state of readiness and globally responsive. Changes in organization, doctrine, and talent management will provide necessary enhancements to transform enterprise resources to FMF lethality and adaptability. The following are four specific recommendations.

First, include OpLog and StratLog issues in Service-level exercises and wargames. Marines have been reluctant to explore force closure and protracted sustainment issues because these operational challenges often come at the cost of tactical readiness objectives. This tendency is out of balance because tactical prowess is irrelevant for a force that cannot get to the fight or lacks the material to endure over time. OpLog and StratLog issues are also often disregarded because they are the responsibilities of agencies outside of the Marine Corps. However, not incorporating realistic theater and global logistics challenges to sustaining Marine Corps employment concepts dismisses fundamental problems that should be addressed prior to conflict. These types of rehearsals can form the foundation for Service requirements and capability gaps.

Second, analyze, assess, and inform the organization and resourcing of Headquarters Marine Corps, Marine component commands, and the supporting establishment that relate to the execution of OpLog and StratLog. Understanding how these organizations relate to force generation, force deployment, force closure, and force sustainment is crucial to informing the level of investment and risk the Marine Corps should take. Current and emergent discussions regarding integrated deterrence, operating across the competition continuum, and contested logistics are relevant for the FMF today and tomorrow. These discussions inform Service-level decision making regarding roles, relationships, and resources across the Marine Corps and the JLEnt. Changes in how other agencies and Services intend to overcome the challenges of great-power competition require coordination for adjusted relationships between organizations.[3] Reviewing how the Marine Corps Installations and Logistics Enterprise conducts OpLog and StratLog functions may result in better equipment, resource efficiencies, and improved alignment and interoperability throughout the Joint Force.

Third, capture OpLog and StratLog definitions, relationships, and activities in Marine Corps doctrine to ensure this understanding endures. A consolidated reference for OpLog and StratLog can make issues more accessible to Marines much like *MCWP 3-40.8*, *Componency,* describes Marine Corps integration into Joint Force operations. Currently, logistics at the tactical, operational, and strategic levels are addressed differently across various publications and require updates to capture what has been observed through the Force Design Campaign of Learning. Taking inventory of applicable publications and then prioritizing sequenced efforts to update these publications is necessary. These are the publications that tie to Marine Corps training and education programs, and these publications are what Marines leverage as guides to effectively sustain forces in the most challenging operating environments. While updating publications does not seem like an impactful activity, these changes are necessary to ensure lessons from the past and present are carried into the future.

Lastly, invest in long-term talent management efforts to develop and assign the right individuals for critical enterprise logistics positions. In comparison to the vast manpower requirements across the FMF, billets within Marine Corps and JLEnt organizations that conduct OpLog and StratLog activities are limited. Further, few Marines directly engage with OpLog and StratLog activities, and those that do, typically gain this experience near the end of their respective careers. Notably, these few Marines have a disproportionate impact on setting the force and setting the theater for warfighting readiness and battlefield success. Many of these billets also require highly specialized training and education in acquisitions, contracting, environmental management, or land management, all of which may pull Marines away from the traditional career paths related to their primary military occupational specialties. Navigating career paths that balance FMF experience and these OpLog and StratLog skills requires attention at the individual level to align education, fellowships, and assignments. To ensure the Marine Corps remains competent and current, identifying and investing in manpower to take on these OpLog and StratLog billets is critical.

Summary

The Marine Corps is a tactical fighting force that thrusts forward from a foundation of operational and strategic logistics capabilities. Marines must master their understanding of these capabilities to ensure the Marine Corps has the operational reach to be a global expeditionary force. The more that Marines learn early how the entire JLEnt gets them to the fight and sustains them in the fight, the more they will understand what is possible in combat. Additionally, some Marines will be assigned the responsibility to conduct and provide oversight of OpLog and StratLog. This is particularly relevant for Marines involved in force generation and force deployment from homestation and then force closure and force reconstitution in the theater of operations. It is necessary to enrich our best Marines today with this understanding before they are assigned to positions where they will influence and be in charge of setting the theater to achieve campaign success. Every Marine must remain tactically competent, yet the more Marines understand the operational and strategic-level sinews of war, the more ready Marines will be to fight and win.

Notes

1. Headquarters Marine Corps, *MCDP 4, Logistics,* (Washington, DC: 2023).

2. Ibid.

3. Examples include the transition of responsibilities between Defense Logistics Agency and Transportation Command, Army cross-functional teams, the Navy's *Transforming Logistics for Great Power Competition*, and *Air Force Doctrine Note 1-21 "Agile Combat Employment."*

MODERN DAY MARINE®

WALTER E. WASHINGTON CONVENTION CENTER, WASHINGTON D.C.

APRIL 30 - MAY 2, 2024

REGISTRATION IS OPEN

350+ Exhibiting Companies, OBJ 1 Wargaming Convention, Briefings from Senior Leaders and DoD Personnel, the Latest Warfighting Innovations, and More.

Scan the QR Code for More Information

MARINE CORPS LEAGUE — SEMPER FIDELIS

MARINE CORPS ASSOCIATION — EST 1913

Modern Day Marine is not open to the public. All registrants must provide proof of identity with a Government issued photographic ID and must demonstrate that they have an "identifiable relationship" with the Marine Corps.

The Department of Defense, the Department of the Navy, or U.S. Marine Corps does not endorse any company, sponsor or their products or services

The Role of Logistics in Deterrence

Facing a peer competitor

by LtCol Marcus Gillett

The most pronounced strategic military impact of the 1991 fall of the Soviet Union on the United States was the shift from maritime, air, and space superiority to one of supremacy. Multidomain supremacy ushered in a period where the United States sat at the apex of a unipolar global system defined by an absence of existential security threats and a lack of comparable nation-state competitors, which led to a focus on crisis response and irregular warfare. In the last decade, the rise of regional challengers in Europe and the Pacific ended America's "unipolar moment" of unilateral military supremacy.[1] Strategically, this shift caused a reassessment of military strategy, organization, and doctrine and reoriented strategic policy from an exclusive focus on expeditionary deterrence to a more traditional balance between expeditionary response and nation-state deterrence. In the case of the Pacific, the United States faces an adversary with the capability to disrupt, deter, and limit the United States' military effectiveness while offsetting other elements of national power that have been foundational to America's grand strategy since the fall of the Soviet Union.[2]

The United States military is in an inter-war period that, like the 1930s pre-World War II era and 1945 to 1949 pre-Cold War era, is focused on developing capabilities necessary to meet global and regional challenges. Modernization has rightly focused on command and control, intelligence, fires, and maneuver in developing a force capable of deterring challenges to the status quo, providing flexible options for crisis response, and, if necessary, defeating an adversary in conflict.[3] Though there has been substantive progress in the development of these capabilities, recent calls from Marine Corps and Joint Force senior leadership for modernizing the joint logistics enterprise reflects an acknowledgment that a relative combat power gap exists between strategic ways and means due to an inability to deliver and sustain capability in uncertain or hostile environments.[4]

>LtCol Gillett is Combat Engineer Officer who is currently assigned to the Massachusetts Institute of Technology as a CMC Fellow. He was previously assigned to 3d MLG, III MEF as the Commanding Officer of 9th Engineer Support Battalion.

Logistics modernization through investments in contested logistics and a global positioning network offers a measurable means to influence and deter peer adversary activities in the region by reinforcing strategic perceptions of credible military capability while demonstrating commitment to the defense of regional allies and partners.[5] Logistics forces have the organic means to be a decisive capability in maintaining operational access and generating flexible response options in a competitive campaign against a capable nation-state actor. The artful application of the functions of logistics, fused with other joint capabilities, offers opportunities to conduct operations that can persist, shape, and deter without the escalatory signaling associated with the deployment of kinetic capabilities. The non-escalatory, dual purpose, and soft power nature of logistics in competition offers latent deterrence options that have been undervalued in the era of expeditionary deterrence but are critical to future strategic and operational success because the presumption of uncontested operational access to a crisis area has been directly challenged creating substantive strategic risk.

This article advocates that logistics forces bring credibility to general and immediate deterrence by ensuring that military forces deployed in response to a crisis have the speed, endurance, and capability to influence an adversary's risk calculations, reinforcing strategic signaling. Additionally, logistics forces provide unique dual-purpose capabilities that reinforce the application of other strategic tools and build relationships with allies and partners in a manner that makes the United States the partner of choice with domestic audiences.

Logistics in Immediate Deterrence

United States' strategic deterrence failed in March 1950 with Joseph Stalin's communication to North Korean Kim Il Sung, "The Soviet Union has decided also to satisfy fully this request (invasion of South Korea) of yours."[6] This approval ultimately resulted in the North Korean invasion of South Korea on 25 June 1950 and was based on the perception that in the unlikely event that the United States responded to the invasion, there would be insufficient time, based on United States military capability, to stop the North Korean offensive and was thus the invasion was a perceived *fait accompli*.[7]

Conversely, the United States achieved strategic success during Operation Vigilant Warrior in 1994 because of a three-year investment in regional forward operating sites and cooperative security locations facilitated by low visibility and persistent deployments of support forces. These investments resulted in the development of mature infrastructure and robust regional stocks that were supported by the appropriate experts to operationalize those capabilities in crisis.[8] These factors directly enabled the deployment and in-theater equipping of 4,000 combat troops in two days, with a further 36,000 moving to the region within three days, in response to the movement of two Iraqi Republican Guard Divisions to the Kuwaiti border. The speed of the response, compared to the 30 days for deployment required during the Gulf War, surprised Saddam Hussein and was the "primary source of U.S. deterrent power" in coercing, through signals, Iraqi withdrawal and de-escalation.[9]

Since 1945, the United States has been strategically involved in 368 international crisis events that met three criteria in the International Crisis Behavior database:

1. A threat to one or more basic values;
2. An awareness of finite time for response to a value threat, and
3. A heightened probability of involvement in military hostilities.[10]

In 52 cases, the United States overtly deployed conventional military forces with the result of de-escalation or termination of the crisis in 73 percent of cases, escalation of the crisis in 15 percent of cases, and no definitive impact on the crisis in 11 percent of cases.

While speed is relative to the perceived threat and the rate at which a crisis unfolds, time is a finite and decisive resource in crisis response. On average, the speed at which forces were deployed from the initiation of the crisis to the first arrival of forces into the crisis area, using the International Crisis Behavior database, was 35.15 days for crises that resulted in de-escalation. In contrast, the speed of the crisis deployment was 57 days for cases that resulted in escalation.[11] These findings, combined with historical case studies, indicate that speed is an unambiguous tool to signal capability and credibility. Furthermore, a critical enabler to facilitate speed is investment in strategic transportation, regional infrastructure, and regional pre-positioning as was demonstrated in the dataset by a mean speed of 48.71 days for deployments to immature theaters as compared with a mean of 14.88 days to a mature theater where personnel, infrastructure, and pre-positioned stocks were available in the crisis region.[12] Thus, in all 52 cases, previous investments in transportation, pre-positioning, and forward positioning provided the foundation that enabled or inhibited the composition, speed, and influenced the credibility of crisis deployments.[13]

A robust sustainment network signals credible capability to an adversary and credible commitment to allies and partners. A crisis scenario in the Western Pacific would likely require forward forces to disperse regionally to act as the stand-in force until reinforced through global deployments.[14] Based on current forces in the area, forward-positioned ground forces will require initial transportation of between 27,000 and 36,000 tons of personnel, equipment, and supplies regionally.[15] Following dispersal, these forces would require between 300 and 600 tons of fuel, water, food, and ammunition daily for ground forces, with an additional 2,500 to 3,500 tons, mainly fuel and ammunition, required daily for aviation formations.[16] The additional strain placed on strategic and operational transportation assets, moving forces, equipment, and supplies to reinforce the region magnifies the significance of logistical requirements. A significant crisis deployment from the continental United States, using five divisions and ten air wings as a baseline, would require the movement of roughly one million tons and would require, given optimal conditions, one month or more to complete.[17]

Logistics investments in general deterrence proportionally reduce, but do not eliminate, the strain on strategic and operational transportation systems in crisis through pre-positioning and forward positioning. Infrastructure, supply, equipment, and sustainment investments in volatile regions allow for the rapid deployment of credible forces that arrive with the necessary support to endure and deter immediately, increasing strategic credibility in crisis. Additionally, the proportional reduction of strategic transportation requirements transitions deployments in mature regions from expeditionary response to conventional strategic response where the threat and an adversary's access to maritime, air, and space domains is at risk, improving the deterrence credibility and capability and reducing the probability of escalation.

A lack of investment in sustainment creates a strategic and operational capability and credibility gap in the Western Pacific, undermining deterrence.

Perceptions of Military Credibility and Capability

A lack of investment in sustainment creates a strategic and operational capability and credibility gap in the Western Pacific, undermining deterrence. A 2023 study from the Center for Strategic and International Studies reveals a series of salient tensions in response to a Taiwan scenario that presents significant risks in escalation and conflict. The two most significant findings related to logistics were the United States must respond rapidly and with its full capabilities to prevent Taiwan from falling, and movement of the intratheater lift of forces, equipment, and supplies became untenable based on China's anti-access capabilities early in the conflict, resulting in an abrupt reduction in the capability of combat forces.[18] Thus, speed and endurance

are two significant factors in the credibility of deterrence and effectiveness in combat against a peer adversary and are qualities that are directly shaped by logistics posture.

Investment in logistics modernization and capabilities in strategically contested regions offers a means to provide latent deterrence through the placement of multipurpose capabilities, which can be overt or concealed, and enhance capability across the spectrum of conflict without the impediment of being explicitly threatening or escalatory.[19] The Joint Force has already begun this process through investments such as the Pacific Deterrence Initiative allotment of three and a half billion dollars into the development of main operating bases and the one-hundred-million-dollar investment in Enhanced Defense Cooperation Agreement sites in the Philippines.[20] However, these investments provide a linear capability that does not align with the envisioned network and require operational and tactical investments to create a multitiered strategic and operational mosaic.[21]

Forward positioning of logistics forces and investments in a distributed network offers a means to reduce the initial burden on transportation networks during crisis deployments, increasing the speed of the deployment and thus bringing credibility to strategic signals. While agreements with partners and allies will not afford unfettered access, investments reduce transportation requirements, generate flexibility, and provide endurance that is not solely dependent on strategic and operational transportation capabilities.

Support to Allies and Partners

The Marine Corps stand-in-force concept emphasizes the necessity for a persistent presence in a contested area to disrupt an adversary in competition and form the "leading edge of a maritime defense in depth" in crisis and conflict.[22] Access to contested areas is the core of the concept, with the most significant assumption being that political elites and populations of allied and partner nations will permit access to sovereign territories. Historically, the success or failure of basing agreements with allies depends on available resources, shared threat perceptions, and the cost to political leaders by the domestic audiences.[23] Tactical formations offer a means to provide access by leveraging capabilities that do not present a similar threat perception, compared to traditional combat formations, to domestic and international audiences, enabling persistent access to locations inaccessible to other conventional formations.

Domestic audiences will fundamentally view infrastructure construction and repair, medical and dental services, water production and distribution, transportation, and other capabilities differently than combat formations and thus offer alternative and multifunctional solutions in developing agreements. For example, the April 2023 United States-Philippine bilateral announcement of four additional Enhanced Cooperation Agreement sites drew domestic condemnation, leading to statements by senior Philippine officials that the bases would be used primarily for logistics support.[24] While a review of 1,430 media reports from February 2023 to August 2023 related to United States-Philippine agreements and regional geopolitical conditions reveals a balanced domestic debate, statements and reporting by leaders indicate that capabilities that are directly applicable to such military operations as humanitarian assistance and natural disaster response stimulates an alternative narrative and represent an opportunity to align operational and strategic ways, means, and ends.

Implications to the Logistics Enterprise

Campaigning. Nested with stand-in force and Joint Force requirements, logistics forces link campaign phases by providing a persistent presence that builds, maintains, and supports strategic and operational investments. Construction of infrastructure by engineers, embedding medical personnel in host nation hospitals, and maintaining stocks and equipment intended to provide responsiveness to natural and man-made disasters all represent activities that facilitate speed and capability in crisis response, bring credibly to strategic signals, and reinforce relationships with allies and partners across a range of time horizons.

General Support in Competition. Establishing a global and regional network to support operations in competition, crisis, and conflict is beyond the organic capabilities of combat formations. In order to build a regional capability that is adaptive, nested, and credible, logistics must evolve from a traditional focus of providing direct support for operations, investments, and activities to one of general support focused on persistent forward presence and increasing regional capacity. The logistics enterprise has a responsibility for the maintenance, development, and operation of main operating bases as key nodes; however, the development and operation of forward operating sites and cooperative security locations will play a critical role in evolving the logistics network from a linear and inflexible network to one that is multi-dimensional, resilient, and diverse. This requires an evolution in logistics formation's doctrinal employment in competition.

Prioritization of Effectiveness over Efficiency. Effective deterrence requires a degree of risk in the allocation of finite resources. Developing a logistics network requires investment in nodes that may never be employed, where partner policies and strategic priorities change, resulting in expansion or reduction in access, or where elements of the network are out of position in the transition from general to immediate deterrence. However, the most significant risk to the credibility and capability of the joint force is a lack of investment, leading to strategic insolvency. Tactical and operational logistics formations are crucial in limiting risk by shaping through sustained investment while providing strategic flexibility in a crisis.

Conclusion

The employment of logistics forces directly imparts credibility and capability to strategic deterrence through both latent and active capabilities. Logistics and sustainment are essential to deterrence, crisis response, and the effectiveness of operational command and con-

trol, fires, intelligence, and maneuver capabilities. Fundamentally, logistics formations bring credibility to strategic signaling in general deterrence and enable tactical and operational effectiveness in crisis and conflict only through investment in competition.

Joint logistics formations' primary task in the Pacific must be establishing, developing, and sustaining a multinodal, distributed network that is ruthlessly opportunistic in the application of engineering, maintenance, supply, transportation, medical, and other logistics functions. Even in competition, opportunities will be fleeting, and a force with the dexterity, creativity, and resources to exploit opportunities will be the force with the initiative and credibility in competition.

Logistics forces offer an optimal and uniquely postured capacity to facilitate access through organic capabilities, enhance perceptions of America's commitment to allies and partners, challenge the adversary's core deterrence calculus, and build credible capability into contingencies by enabling crisis deployment speed and endurance. Strategic transportation is finite, and every cubic foot of food, water, building materials, maintenance parts, and other supplies, forward-positioned or pre-positioned, reduces competition in the movement and sustainment of decisive capabilities in crisis and combat.

Notes

1. Barry R. Posen, "From Unipolarity to Multipolarity: Transition in Sight?" in *International Relations Theory and the Consequences of Unipolarity*, (Cambridge: Cambridge University Press, 2011).

2. The White House, *National Security Strategy*, (Washington, DC: 2022).

3. Headquarters Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations*, (Washington, DC: 2022).

4. Staff, "A Conversation with General David Berger, Washington, DC," *Brookings Institute*, May 23, 2023, https://www.brookings.edu/wp-content/uploads/2023/06/fp_20230523_usmc_berger_transcript.pdf; Richard R. Burgess, "USMC Calls for GPN," *Seapower*, February 23, 2023, https://seapowermagazine.org/usmc-calls-for-gpn; and Jen Judson, "U.S. Army Has a 'Gigantic Problem' with Logistics in the Indo-Pacific," *Defense News*, March 29, 2023, https://www.defensenews.com/land/2023/03/29/us-army-has-a-gigantic-problem-with-logistics-in-the-indo-pacific.

5. Kristen Gunness, Bryan Frederick, Timothy R. Heath, Emily Ellinger, Christian Curriden, Nathan Chandler, Bonny Lin, James Benkowski, Bryan Rooney, Cortez A. Cooper III, Cristina L. Garafola, Paul Orner, Karl P. Mueller, Jeffrey W. Hornung, and Erik E. Mueller, *Anticipating Chinese Reactions to U.S. Posture Enhancements*, (Santa Monica: RAND Corporation, 2022), https://www.rand.org/pubs/research_reports/RRA1581-1.html.

6. Allan Reed Millet, *The War for Korea, 1950–1951: They Came from the North* (Lawrence: University Press of Kansas, 2010).

7. Jonathan Mercer, "Emotion and Strategy in the Korean War," *International Organization* 67, No. 2 (2013).

8. Seth G. Jones and Seamus P. Daniels, "U.S. Defense Posture in the Middle East," *CSIS*, 2022, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/220519_Jones_USDefensePosture_MiddleEast_0.pdf?VersionId=60gG7N1_4FxFA6CNgJKAbr24zmsKXhwx.

9. W. Eric Herr, "Operational Vigilant Warrior: Conventional Deterrence Theory, Doctrine, and Practice," (thesis, School of Advanced Air Studies, 1996).

10. Michael Brecher, Jonathan Wilkenfeld, Kyle Beardsley, Patrick James, and David Quinn, "International Crisis Behavior Data Codebook, Version 15," *ICB Project*, 2023, http://sites.duke.edu/icbdata/data-collections.

11. Ibid.

12. Ibid.

13. Ibid.

14. Mark F. Cancian, Matthew Cancian, and Eric Heginbotham, "The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan," *CSIS International Security Program*, 2023, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/230109_Cancian_FirstBattle_NextWar.pdf?VersionId=WdEUwJYWIySMPIr3ivhFolxC_gZQuSOQ.

15. Gordon I. Button, J. Riposo, I. Blickstein, and P.A. Wilson, *Warfighting and Logistic Support of Joint Forces from the Joint Sea Base* (Santa Monica: RAND, 2007).

16. Ibid.

17. Michael O'Hanlon, *The Science of War: Defense Budgeting, Military Technology, Logistics, and Combat Outcomes* (New Jersey: Princeton University Press, 2009).

18. "The First Battle of the Next War."

19. Kristen Gunness, Bryan Frederick, Timothy R. Heath, Emily Ellinger, Christian Curriden, Nathan Chandler, Bonny Lin, James Benkowski, Bryan Rooney, Cortez A. Cooper III, Cristina L. Garafola, Paul Orner, Karl P. Mueller, Jeffrey W. Hornung, and Erik E. Mueller, *Anticipating Chinese Reactions to U.S. Posture Enhancements* (Santa Monica, CA: RAND Corporation, 2022), https://www.rand.org/pubs/research_reports/RRA1581-1.html. Also available in print form.

20. Department of Defense, "Pacific Deterrence Initiative," *OUSD*, March 3, 2023, https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_Pacific_Deterrence_Initiative.pdf; and Staff, "Fact Sheet: U.S.- Philippines 2+2 Ministerial Dialogue," *Department of Defense*, April 11, 2023, https://www.defense.gov/News/Releases/Release/Article/3359459/fact-sheet-us-philippines-22-ministerial-dialogue.

21. Headquarters Marine Corps, *Installations and Logistics 2030,* (Washington, DC: 2023).

22. Headquarters Marine Corps, *A Concept for Stand-in Forces,* (Washington, DC: 2021).

23. Bryan Frederick, Stephen Watts, Matthew Lane, Abby Doll, Ashley L. Rhoades, and Meagan L. Smith, *Understanding the Deterrent Impact of U.S. Overseas Forces*, (Santa Monica: RAND Corporation, 2020).

24. Staff, "Marcos: PH Won't Allow Use of EDCA Sites for Offensive Operations," *CNN*, April 10, 2023, https://www.cnnphilippines.com/news/2023/4/10/marcos-edca-sites-not-for-offensive-operations.html.

Blended Logistics Training

Meeting the demands of the Corps' modernization efforts

by Capt Jade MacLeish

Logistics Officers Course (LOC) is the schoolhouse where logistics officers obtain their MOS. *Force Design 2030*, the *2030 Training Guidance*, along with the updated *MCDP 4* suggest that logistics will be the nucleus of the Marine Corps' next conflict. Logistics officers will be required to operate in a "globally contested environment, within multiple domains, across the competition continuum."[1] As a result, LOC must evolve to meet these demands and revolutionize the way logistics officers grasp doctrinal concepts to find innovative ways to move and sustain the force. To do this, LOC is transforming the course and making the transition from primarily classroom-based instruction to a blended program that incorporates Marine on-the-job (OJT) training followed by an intellectually challenging resident course designed to further develop students' critical thinking and problem-solving skills.

Logistics Officer Course has long served as the center of gravity in the development of the Marine Corps' company-grade logistics officers. While it effectively teaches doctrine and reference material, it does not challenge the student to think critically or test their ability under stress. Currently, it reflects the Marine Corps' traditional formal school paradigm that utilizes classroom-based instruction combined with practical applications and discussions. The changing operational environment demonstrates the imperative that LOC evolves to develop Marines who are "cognitively agile, intuitive problem solvers, capable of rapidly making bold and consequential decisions."[2]

>Capt MacLeish is a Logistics Officer and currently serves as the Logistics Officer Course 6.0 Course Manager.

A Case for Change

Following The Basic School (TBS), logistics officers report to the Logistics Operations School at Camp Johnson, NC, to complete LOC and receive the logistics officer MOS. LOC is a 56-training day resident entry-level course that provides a general overview of the 6 functions of logistics covered within the 16 approved training and readiness standards (see Figure 1). LOC trains approximately 240 officers across 4 iterations annually.

The LOC student population consists of a wide variety of individuals with vastly different backgrounds. The standard pipeline for lieutenants typically consists of attending MOS school shortly after TBS graduation; however, over the last 5 years, nearly 50 percent of the lieutenants waited for an average of 75 days before beginning training.[3] When factoring in non-training days, this calculates to approximately 147 days from the time they graduate from TBS to gaining their MOS. Dur-

5.2 1000 Level Events	
0402-C2-1001	Plan Tactical Logistics Operations
0402-C2-1002	Supervise Tactical Logistics Operations
0402-C2-1003	Manage Unit Logistics
0402-C2-1004	Coordinate Health Services Support
0402-C2-1005	Coordinate Transportation Support
0402-C2-1006	Coordinate Maintenance Support
0402-C2-1007	Coordinate Supply Support
0402-C2-1008	Coordinate Services Support
0402-C2-1009	Coordinate General Engineering Support
0402-C2-1010	Supervise the Establishment of a CSSI
0402-C2-1011	Supervise Landing Support Operations
0402-C2-1012	Supervise Motor Transport Operations
0402-C2-1013	Command a Convoy
0402-C2-1014	Supervise Maintenance Management
0402-C2-1015	Supervise Organic Arms Ammunition and Explosives (AA&E) Program
0402-C2-1016	Supervise Armory Operations

Figure 1.

ing this time, the majority reported to their units for non-standardized OJT while others remained at TBS for non-MOS-specific taskings. Most lieutenants who conduct OJT argue that it was beneficial and allowed them to apply experiential context to the information presented at LOC.

Training is learning by doing, but 75 percent of the current LOC is spent building a baseline of knowledge within a classroom setting that restricts the learning process to reading assignments and visuals from a non-engaging lecture platform.[4] Even as instructors implement various teaching methodologies, the reality is that students do not get significant access to hands-on learning. The preponderance of experiential learning occurs at a 5-day field exercise that gives 60 students limited opportunities to hold various billets to plan and execute tactical logistics. This evolution occurs at the end of LOC and comes at a significant personnel and equipment cost to II MEF.

"A warfighting capability is only as effective as the Marines employing it,"[5] and the FMF needs leaders who possess the knowledge and ability to operate independently in a contested environment. Although LOC is considered entry-level training, the students who attend the course are not novice learners; they have earned a college degree and graduated from both OCS and TBS. LOC students need to be challenged with a rigorous intellectual learning experience. The current LOC addresses the curriculum by using informal lectures that introduce doctrinal publications and test the students' understanding by taking an open-note written exam. This method, while demonstrating the student's ability to find the material and regurgitate information, does not test their critical thinking or problem-solving skills: "The Marine Corps must change the way it educates and trains its personnel in order to support future operational requirements."[6] The new LOC presents its curriculum in a way that engages students and allows them to experience Marine Corps processes and procedures firsthand—a task that is difficult to accomplish in a traditional classroom setting. The audience for LOC includes varying age groups and experience levels. A recent LOC class had an average age of 26. Out of 58 students, 8 were prior enlisted, and 4 were lateral movers between the ranks of first lieutenant and major. The youngest student in the class was 21 while the oldest was 49 years old. These differences require a curriculum that adapts to emerging concepts and societal changes while allowing individuals to build their own foundation using a combination of prior knowledge, Marine Corps doctrine, mentorship, and innovative teaching methods.[7]

The Change We Need

Formal learning center programs of instruction update on a three-year cycle, and the current iteration, LOC 5.2, was last updated in 2020.[8] This means the logistics community can develop a course that better prepares logistics officers for the FMF by leveraging available technologies and proven adult learning methodologies that create contextual, student-centered learning experiences and produce a better-trained officer.[9] Over the last two decades, the operational environment and easy access to technology have drastically changed, but LOC delivery methods have remained largely the same. Technology enables the application of distance and blended learning, and it can help us better prepare future logistics officers. Informal FMF feedback indicates many commands welcome the opportunity to influence the LOC student's learning experience while trends in end-of-course critiques illustrate that the average student would benefit from the context provided by OJT.

The new course, LOC 6.0, is a cultural shift in the way Marines will earn the logistics officer MOS based on the 10 Training and Readiness standards approved in September of 2023 (see Figure 2). This blended course will consist of approximately 90 days of non-resident/distance learning curriculum followed by a 30-day resident curriculum, totaling approximately 120 days from TBS graduation to achieving their MOS. With six iterations per year better aligning to TBS graduations, LOC will reduce the amount of time students spend awaiting training, continue to train approximately 240 students a year, and reduce class sizes from 60 to 40 personnel.

Non-Resident Phase

The new LOC offers a myriad of advantages, but the most impactful will be the students' opportunity to interact and learn vicariously through others within their formations.[10] Marines will report to their units after TBS graduation to complete a distance learning curriculum administered by the LOC faculty on Moodle, an online learning platform that they can access on their personal devices. Additionally, they will complete a list of personnel qualification standards (PQS) while executing managed OJT with their units. The PQS, a common training requirement in the Navy, is a checklist of experiences the students will execute with their commands. The Air Force has a similar requirement, the Logistics

6.0 1000 Level Events	
0402-C2-1001	Manage Tactical Logistics Operations
0402-C2-1002	Manage Unit Logistics
0402-C2-1003	Coordinate Health Services Support
0402-C2-1004	Coordinate Transportation Support
0402-C2-1005	Coordinate Maintenance Support
0402-C2-1006	Coordinate Supply Support
0402-C2-1007	Coordinate Services Support
0402-C2-1008	Coordinate General Engineering Support
0402-C2-1009	Supervise Distribution Operations
0402-C2-1010	Supervise Maintenance Management

Figure 2.

Readiness Officer Proficiency Record, for their new logistics officers. This method of learning gives the student the opportunity to learn doctrinal logistics while also observing and learning unit standard operating procedures, something that currently occurs after Marines complete LOC and report to their first duty station. This method also gives unit leadership the opportunity to influence the training of their logistics officers by both supervising their PQS and tasking them within the unit as they see fit.

The PQS assignments are observations of unit procedures and operations that already occur on a regular basis. For example, during the maintenance management module, Marines will attend a Materiel Readiness Brief, analyze how the unit is capturing equipment readiness, and articulate their analysis via a Moodle assignment. The Marine's supervisor will sign their PQS verifying that the student attended the brief. While this method of instruction puts more onus on the individual Marine, the LOC faculty will remain involved and available to provide guidance and mentorship throughout the process. In special cases, LOC faculty advisors can provide students will supplementary material for specific tasks they cannot complete due to operational tempo or lack of unit resources. The LOC faculty will provide unit leadership with a LOC 6.0 execution handbook to explain the details of the non-resident phase along with completion guidelines. Students will be able to pace themselves and complete tasks ahead of schedule as required to meet the demands of their unit TEEP.

Completion of the distance learning material and verified PQS will provide the student with a foundation in the six functions of logistics and how to apply them. Both are prerequisites to attend the 30-day resident phase aboard Camp Johnson. The desired outcome for the distance learning is to arm the students with the right tools and contextual experiences that enable their success in the resident phase of the course.

Resident Phase

The resident phase of LOC 6.0 will be an intellectually demanding learning experience because it will require students to demonstrate mastery through a series of problem-solving exercises. It will test the officer's ability to develop and articulate resilient, flexible, and supportable plans in a logistically contested environment. A day in the life of a LOC student will consist of wargaming techniques, occupational decision games, case studies, and debates aimed at shaping the individual's logistical mindset to solve problems realistically and appropriately. The officers will find themselves submerged in a realistic scenario and execute actions required to deploy a force requiring them to recall lessons learned during the non-resident phase. To be successful in this phase, students will demonstrate an understanding of how to appropriately determine mission requirements, articulate and mitigate shortfalls, incorporate data analytics, apply the six functions of logistics, and develop an executable plan. They will do this through a series of individual and group projects, essays, and briefs. They will be evaluated on their ability to make decisions, produce required planning documents, and communicate their plan under stress. The culminating event will require the officers to develop their own concept of logistics support plan illustrating their ability to apply doctrinal basics to a unique and realistic problem set in order to meet sustainment requirements.

The Outcome

The *Installations and Logistics 2030* initiative states, "We will revitalize and integrate logistics training, education, and doctrine to develop adaptable, critically thinking logisticians who are prepared for the future operating environment."[11] This initiative, along with FMF's desire to receive logisticians with the ability to think critically and problem solve, creates the requirement for a blended LOC. The non-resident phase allows the student to learn and apply Marine Corps doctrine while experiencing the operational environment at their parent command. The resident phase will raise the standard of logistics training and provide the FMF with an officer who can critically think and effectively communicate. By leveraging technology, students develop greater self-sufficiency and experience the operational impacts of logistical concepts. Logistics Operation School will produce an officer who is better prepared to immediately make decisions and execute based on vicarious and personal experiences. While the current LOC develops a Marine armed with basic knowledge and references, the new LOC will verify the officers' ability to effectively function under stress to sustain forces in a more creative and distributed manner.[12] The new LOC will arm the Marine with the right tools to do their job efficiently while also delivering an innovative and problem-solving logistics officer capable of supporting and sustaining the lethality of the FMF.

Notes

1. Headquarters Marine Corps, *MCDP 4, Logistics*, (Washington, DC: 2017).

2. Headquarters Marine Corps, *Training and Education 2030,* (Washington, DC: 2023).

3. Headquarters Marine Corps, *MCO. 1533.10, Marine Corps Training Information Management System*, (Washington, DC: 2014).

4. Headquarters Marine Corps, *MCDP 7, Logistics*, (Washington, DC: 2020).

5. *Training and Education 2030.*

6. Headquarters Marine Corps, *Marine Corps Strategic Logistics Plan 2030: Enabling the Force in the 21st Century Functional Concept*, (Washington, DC: 2021).

7. *Training and Education 2030.*

8. Headquarters Marine Corps, *Marine Corps Formal School Management Policy Guidance*, NAVMC 1553.2, (Washington, DC: 2015).

9. *Training and Education 2030.*

10. *MCDP 7.*

11. Headquarters Marine Corps, *Installations and Logistics 2030*, (Washington, DC: 2023).

12. *MCDP 4.*

YOUR #1 SOURCE FOR MILITARY REFERENCE

SMARTbooks

SMARTbooks: Reference Essentials for the Instruments of National Power (D-I-M-E: Diplomatic, Informational, Military, Economic).

SMARTbooks can be used as quick reference guides during operations, as study guides at education and professional development courses, and as lesson plans and checklists in support of training.

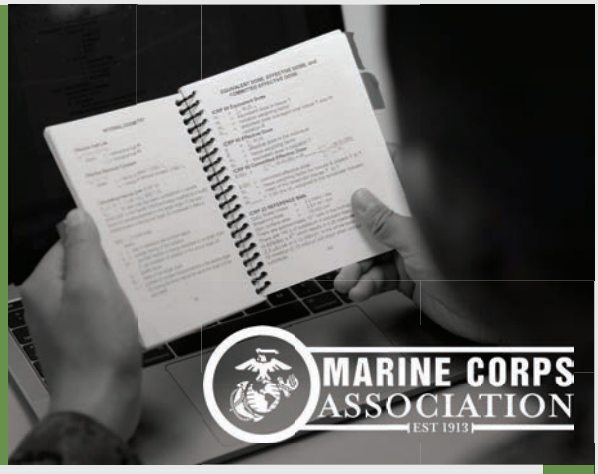
Recognized as the doctrinal reference standard by military professionals around the world.

WHAT IS A SMARTbook?

MCA IS HERE TO HELP

MCA members will receive **10% off their purchases** from The Lightning Press SMARTbooks website. Use code **SMART-MCA-10** for your order.

The MCA will also work with any unit or school on funding discounted bulk order of 50 or more copies. Call the MCA Foundation at **(866) 622-1775** or email **mca@mca-marines.org** for more information.



GET YOUR EDGE. ORDER TODAY.

Web: www.TheLightningPress.com
Email: SMARTbooks@TheLightningPress.com
24-hour Order & Customer Service: 1-800-997-8827
Mobile: 863-409-8084

SMARTbooks

The Lightning Press
INTELLECTUAL FUEL FOR THE MILITARY

Closing the Gap

Data literacy training is critical to the future of the logistics enterprise

by LtCol Amber Coleman

The recently updated *MCDP 4, Logistics*, provides several scenarios depicting what the future of logistics could look like. In "The Great Pacific War" scenario, Maj Rodriguez depends on advanced algorithms to provide logistics support to her team located in the far reaches of the Pacific archipelago, and it sounds like the technology she is using is magic. However, a lot goes into building that capability from data collection and consolidation to building and testing the algorithm that provides the prediction. The future of Marine Corps logistics is contingent on data literacy and organic data competencies. We cannot continue to discuss and plan for predictive capabilities without sending the same demand signals for data training and education in our Marine Corps schoolhouses. If we do, we are setting ourselves up for disappointment.

This capability stems from a combination of proper data governance, applied data science, and computing power all underpinned by Marines with a solid foundation in data literacy. The capability and capacity to build these algorithms do not formally exist within the logistics enterprise because there is a training and education gap across the logistics community that is effectively prohibiting the desired outcome described in *MCDP 4*. Neither the Marine Corps Logistics Operations Group nor Logistics Operations School have approved curriculums that provide the foundational knowledge and data literacy skillsets required to provide commanders with analytic capabilities where they are most critical—at the tactical edge.

Many Marine Corps logistics documents describe machine learning and artificial intelligence (ML/AI) as a

>LtCol Coleman is a Logistics Officer and an Operations Research Analyst. She is currently serving as the Commanding Officer, Logistics Operations School, Marine Corps Combat Service Support Schools.

"In the background, pre-planned logistics packages began making their way to units located on different islands via manned and autonomous air, sea, and sub-sea modes of conveyance. These packages were developed based on predictive algorithms, thus maximizing lift and distribution. State-of-the-art naval and joint integrated logistics command and control systems provided accurate real-time visibility on the location of logistics units, supply stockage and consumption levels, and supported unit requirements. The fusion of training, education, and technology provided Maj Rodriquez and her team needed capabilities and capacity to operate in a high threat environment." [1]

—(The Great Pacific War scenario)

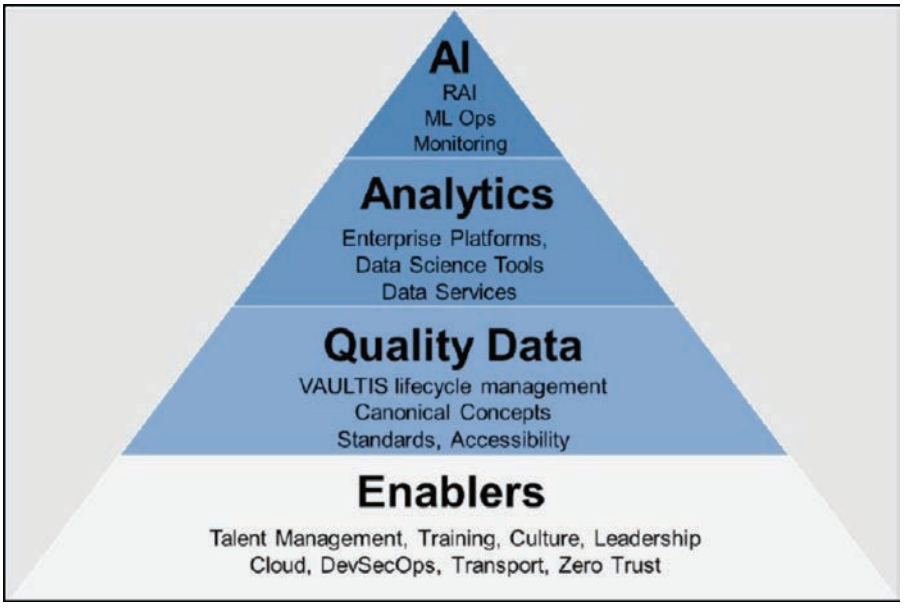


Figure 1. *(Source: Chief Digital and Artificial Intelligence Officer HASC Testimony, 9 March 2023.)*

transformational capability, yet none provide details on how the Marine Corps intends to build that capability or the foundation of data literacy it requires. Data literacy is the ability to read, understand, and communicate Marine Corps data in the context of the situation.[2] It involves the ability to ask the right questions, understand what data is relevant to the situation, interpret data, and then communicate a meaningful data-informed story to leadership to influence a decision.[3] These basic skills all underpin an organization's ability to leverage more advanced analytic capabilities, and, without the basics, "strategic visions of solving complex problems at the touch of a button will remain elusive."[4]

Machine learning/artificial intelligence sits atop a pyramid of progressive analytic skills, and these advanced techniques require technology, good data, and, most importantly, talent to realize the full benefits they have to offer.[5] Data feeds ML/AI just like ammunition feeds our weapons systems. Marines learn the basics of ammunition handling in boot camp and continue learning and practicing throughout their careers so they can effectively employ their weapons systems. They need to learn to do the same with data so that we can one day employ advanced algorithms in the same way. We can contract the algorithm development; we cannot outsource the things that will make them impactful—quality data and Marines with skills to weaponize it.

Furthermore, these advanced tools run on historical data in the same way vehicles run on fuel. Running bad data through an algorithm can yield the same unsuccessful results as running bad fuel through an engine. Marines transact in logistics systems every day, yet few of them understand the consequences of inputting incorrect or incomplete data into our logistics information technology (IT) systems. Even worse, bad data can continue to impact predictions for many years. Understanding data quality, a significant piece of data literacy, must be a formal learning requirement for all Marines reinforced throughout the training pipeline. Otherwise, Maj Rodriguez will receive supplies in the future, but it will be the wrong supplies based on incomplete and inaccurate historical data input years before.

The logistics enterprise maintains over 70 logistics IT systems that come at a considerable cost and produce a significant amount of data just waiting to be exploited.[6] However, the logistics community does not have an approved and resourced data analytics curriculum that can teach Marines how to weaponize this data at the point of need for decision makers. Furthermore, most logistics military occupational specialties do not have data analytics training and readiness standards, so these skills are not formally taught at our logistics schools. Continued investment in technology without investing in data literacy training for our Marines will widen the skills gap that is preventing us from realizing many of the future scenarios described in *MCDP 4*.

They need to learn to do the same with data so that we can one day employ advanced algorithms in the same way.

This training must be a long-term, organized, and sustained effort to transform how we sense, make sense, and act.[7] We must integrate data literacy across all existing approved logistics curriculums at our schoolhouses, develop a standalone advanced analytics curriculum, and begin building a data analytics training continuum that will cultivate data acumen across the force. As the pace of data engineering and analytics technologies rapidly evolves, the solution may also leverage civilian curriculums and other distributed learning resources but cannot depend entirely on these programs. While the skills are largely the same, Marines need to know how to apply these skills within the Marine Corps logistics enterprise.[8] We would never supply Marines with a weapons system without developing a training package to support it. This should be no different.

We close this training and education gap by building a foundation of data literacy in 2ndLt Rodriguez and her team today so that they can make the *MCDP 4* scenario a reality in the future. Taking the first steps now will make a difference. Data literacy and analytics skills must be taught at our entry-level schools and sustained throughout our logistics training pipelines.[9]

Logistics Operations School developed a data analytics course built for Marines by Marines. This course covers data literacy concepts and some basic data analysis capabilities but supports only a small percentage of what the community will need to achieve the *MCDP 4* scenario. This effort, and others like it, must be fully resourced to train Marines to successfully utilize our data.

Service-level return on investment will be slow. However, unit-level return on investment could be dramatic. A Marine with some basic skills, access to data, and, most importantly, support from leadership could change the way a unit allocates its limited resources by providing data-driven insights into ground maintenance trends, manpower allocation, and other resources that drive readiness. By investing in Marines the way we invest in logistics IT systems, we could "unleash the incredible talent of the individual Marine" and realize significant benefits from the data we already collect and store.[10] When Marines are properly trained, empowered, and supported to train other Marines in data literacy, we could begin to see exponential returns on our initial investments.

If 60 Marines attend the Logistics Operations School data analytics course this year and return empowered to cross-train just five more, then this could impact up to 300 Marines this year at virtually no cost to the Service. A fully funded, resourced, and permanent schoolhouse analytics training continuum could have game-changing impacts on the future of logistics. Marines, armed with data skills, could begin developing solutions to some of our most challenging logistics problems. For example, supply webs—the foundation

of the future resilient sustainment system—will require Marines who can aggregate and make sense of data covering numerous supply routes and nodes to help commanders make data-informed sustainment decisions.[11] We do not have a standardized and organized means of developing the skillsets to solve these problems within the logistics enterprise.

A fully resourced program will leverage a combination of the existing Naval Postgraduate School graduate community, civilian curriculum developers and program managers, and contracted instructor support to develop and deliver analytics curricula. This effort can begin in the logistics community, but there are far-reaching applications of these skills across the combat service support communities and beyond. The investment required to build an analytics training program pales in comparison to what we invest in IT systems but serves as the missing piece that makes the IT systems relevant—Marines who can understand and use data to influence decisions.

The future of Marine Corps logistics is contingent on data literacy and organic data competencies. It will be led by Marines and supported by technology.[12] We cannot continue to discuss and plan for predictive analytics, ML/AI, and other advanced capabilities without sending the same demand signals for data training and education in our Marine Corps schoolhouses. If we do, we are setting ourselves up for failure.

Notes

1. Headquarters Marine Corps, *MCDP 4 Logistics*, (Washington, DC: 2023).

2. Kasey Panetta, "A Data and Analytics Leader's Guide to Data Literacy," *Gartner*, August 26, 2021, https://www.gartner.com/smarterwithgartner/a-data-and-analytics-leaders-guide-to-data-literacy.

3. Josh Bersin and Marc Zao-Sanders, "Boost Your Team's Data Literacy," *Harvard Business Review*, February 12, 2020, https://hbr.org/2020/02/boost-your-teams-data-literacy.

4. Nick Harrison and Deborah O'Neill, "If Your Company Isn't Good at Analytics, It's Not Ready for AI," *Harvard Business Review*, June 7, 2017, https://hbr.org/2017/06/if-your-company-isnt-good-at-analytics-its-not-ready-for-ai.

5. Senate Armed Services Committee Subcommittee on Cyber, Information Technology, and Innovation, *Defense In A Digital Era: Artificial Intelligence, Information Technology, And Securing The Department Of Defense*, 118th Congress, March 9, 2023.

6. Maj Ben Oydna, "Integrated Logistics IT Systems OPT," (PowerPoint presentation, December 12, 2022, Marine Corps Systems Command).

7. Headquarters Marine Corps, *38th Commandant's Planning Guidance*, (Washington, DC: 2019).

8. Gerald C. Kane, Anh Nguyen Phillips, Jonathan R. Copulsky, and Garth R. Andrus, *The Technology Fallacy How People Are Really the Key to Digital Transformation* (Cambridge: MIT Press, 2019).

9. Matthew T. Barnes and Robert D. Wolfe, "Artificial Intelligence in the Marine Corps Logistics Enterprise Part 3: Logistics Operators in a Data-Driven World," *Marine Corps Gazette 107*, No. 5 (2023).

10. Headquarters Marine Corps, *38th Commandant's Planning Guidance,* (Washington, DC: 2019).

11. Headquarters Marine Corps, *Installations and Logistics 2030,* (Washington, DC: 2023).

12. Becky Frankiewicz and Tomas Chamorro-Premuzic, "Digital Transformation Is About Talent, Not Technology," *Harvard Business Review*, May 6, 2020, https://hbr.org/2020/05/digital-transformation-is-about-talent-not-technology.

USMC CHALLENGE COINS

REPRESENT WITH BASE CHALLENGE COINS AND MORE

MCB Quantico Coin

$11.95

Camp Lejeune Coin

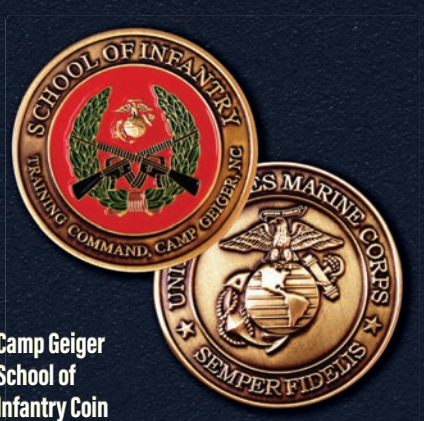
$11.95

Highway to Hell Coin

$11.95

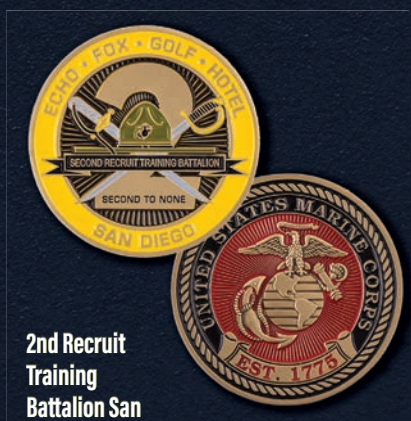
Camp Pendleton Coin

$11.95



Camp Geiger School of Infantry Coin

$13.95



2nd Recruit Training Battalion San Diego Coin

$11.95

Shop today at Marineshop.net or call us at (703) 640-7195

Follow us on social media! @themarineshoponline @TheMarineShop1

The MARINE Shop
SERVING MARINES AROUND THE WORLD

A Marine Corps Supply Chain in the Indo-Pacific

Revisiting the past to forge resilience and agility

by Maj Gabe E. Mata

In the constantly evolving military domain, a resilient and agile supply chain is crucial for operational success, especially for Marine Corps formations operating in the strategically significant Indo-Pacific region. Current reliance on support from Defense Logistics Agency (DLA) depots and CONUS bases highlights the need for strategic reform. This article proposes a transformative approach, inspired by World War II logistics, to establish a resilient and flexible I MEF Pacific supply chain, aptly named the sustainment web. By leveraging historical logistics strategies and adapting them to modern needs, this article outlines the rationale, design, and strategic advantages of an innovative supply chain network tailored for the Indo-Pacific.

The Challenge

The Indo-Pacific, with its vast area and diverse environments, presents significant logistical challenges for the Marine Corps. The current dependency on distant DLA depots exposes supply-chain vulnerabilities, impacting responsiveness and agility in fast-evolving operational contexts. This limits the Marine Corps' ability to project combat power and respond effectively. Adapting to adversary actions and evolving threats requires an agile supply chain that can rapidly adjust to operational changes, something the current centralized depot model lacks.

>Maj Mata is a Ground Supply Officer assigned to 1st Supply Battalion. He was previously the Supply Management Unit Officer-in-Charge and is currently serving as the Operations Officer.

Lessons from World War II

Logistics during World War II provides valuable lessons in managing supply chains under challenging conditions. Adapting to the conflict, the Marine Corps developed a network of forward bases and logistics units, ensuring a reliable materiel flow. This decentralized approach, focusing on advanced naval bases (ANB) near operational areas, improved flexibility, and reduced dependency on distant depots. Applying these strategies today, the Marine Corps can and should design a modern supply chain that meets contemporary warfare demands.

Designing a Resilient and Agile Supply Chain: The Sustainment Web

In the quest to forge a resilient and agile supply chain network, particularly for I MEF in the Pacific, the concept of the sustainment web emerges as a pivotal strategy. Drawing inspiration from the logistical framework of World War II, key aspects include establishing forward ANBs in the Indo-Pacific for logistics hubs, maintaining forward-stocked caches near potential conflict zones, collaborating with regional allies for shared logistics resources, leveraging advanced technologies for optimal supply chain operations, and developing contingency plans for supply chain disruptions.

Establishment of Forward Bases

Emulating the World War II model, the establishment of strategically located forward bases within the Indo-Pacific is crucial. These ANBs will act as logistical hubs, storing critical supplies and equipment. This strategy significantly reduces the dependency on long-distance materiel movements by basing near potential conflict zones, ensuring rapid power projection and responsiveness to emerging threats.

Forward Postured Stocks and Cache Sites

Maintaining forward postured stocks or cache sites of essential items closer to potential conflict zones, such as in the first island chain and the weapon engagement zone, is vital. This approach ensures that supplies and materiel are readily available during contingency or crisis. The strategic positioning of these caches enhances the operational flexibility and readiness of the Marine Corps.

Collaboration with Regional Allies and Partners

A key component of the sustainment web is forming partnerships with regional allies and partners to share logistics facilities and resources. In addition to providing supply chain redundancy,

this collaboration strengthens the forces' ability to access required supplies. These partnerships also foster regional stability and enhance the collective defense posture.

Leveraging Advanced Technologies

Integrating advanced technologies like data analytics, artificial intelligence, and predictive modeling is essential for optimizing supply-chain operations. These technologies enable realtime availability, tracking, and monitoring of resources, ensuring efficient allocation and distribution. This enhances global logistics awareness, which is crucial for maintaining a clear picture of the supply chain to make data-driven informed decisions.

Contingency Supply Chain Planning

Developing contingency plans that account for a variety of scenarios (e.g., disruptions, delays, or volatility in the supply chain) is imperative. This practical approach allows the Marine Corps to proactively adapt to unforeseen challenges and prevent uninterrupted supply support. Contingency planning involves regular assessments and updates to the supply chain strategy, ensuring its relevance and effectiveness in the dynamic Indo-Pacific.

The sustainment web concept (Figure 1), with its multifaceted approach, represents a significant advancement in military logistics. By incorporating lessons from the past and adapting them to the modern context, this strategy promises to enhance the operational effectiveness of the Marine Corps in the Indo-Pacific. The resilience and agility of the sustainment web extends beyond physical assets strategically positioned and technology development, but also in its ability to foster partnerships and adapt to changing circumstances. This ensures the Marine Corps remains a formidable force in the region through an agile and responsive sustainment web.

The strategic shift toward establishing a dedicated Marine Corps supply chain in the Western Pacific, as part of the sustainment web, offers numerous benefits compared to traditional supply chain strategies. The following section delves into the comparative advantages of this innovative approach.

Benefits of Implementation

The suggested I MEF networked supply-chain model prioritizes strategically located supply caches and ANBs, enabling rapid access to supplies and enhancing operational readiness. Integrating realtime data analytics and predictive logistics into the sustainment web provides unprecedented agility and responsiveness. The Western Pacific-focused supply chain aims to reduce transportation distances and costs, promoting efficient resource utilization and contributing to a more effective and sustainable logistics operation. Establishing a Marine Corps supply chain in the Western Pacific enhances operational readiness, strengthens supply-chain resilience, and brings about warfighting effectiveness.

A self-sufficient supply chain enhances the strategic autonomy of the Marine Corps. Fostering local partnerships and contributing to the regional economy through collaboration further solidifies the Marine Corps' presence and influence. Establishing a Marine Corps supply chain in the Western Pacific provides an opportunity to enhance operational efficiency, resilience, and autonomy. By addressing the current gaps in DLA support and leveraging local resources and capabilities, the Marine Corps can significantly strengthen its ability to maintain combat power and respond effectively to various regional challenges.

Implementation Strategies, Role of Global Combat Support System–Marine Corps (GCSS-MC), and the Strategic Importance of DLA Guam-Marianas

To optimize the stocking of materiel and caching of supplies within the I MEF supply chain in the Western Pacific, it is crucial to establish a networked or interlinked system among various supply nodes. This approach ensures efficient fulfillment of orders across the region. Additionally, maintaining relations with DLA is beneficial for broader logistical support and resource sharing. Here is how this can be effectively implemented:

Implementation Strategies for the Sustainment Web Concept

Networked Supply Nodes

Each supply node (as conceptually depicted in Figure 2 on following page), functioning independently and as part of a more extensive and interconnected network, establishes redundancy and resilience. Advanced inventory management systems, enabled by GCSS-MC, facilitate realtime supply availability, tracking, and effective resource distribution.

- Central Hub (The Supply Management Unit Forward): Acts as the main distribution and coordination center.
- Nodes A, B, C, and D: Represent regional supply nodes (cache sites), each storing and managing the different classes of supply.

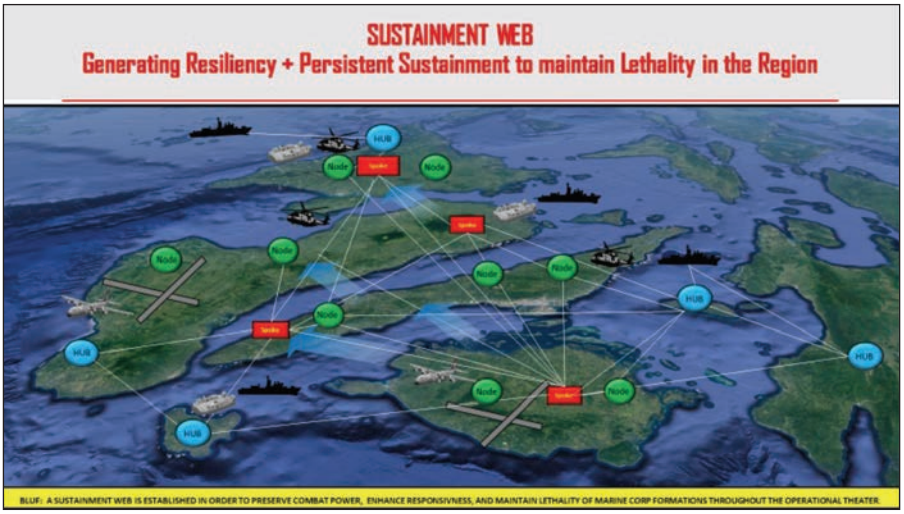


Figure 1. The Sustainment Web. *(Figure provided by author.)*

- Mutual Support Lines: Indicate the support and resource-sharing between the central hub and each node (intra-theater), as well as inter-node support.
- DLA Support: Shows the external support provided by DLA to the central hub.
- This network ensures efficient distribution and availability of supplies across the region, with each node capable of supporting one another in case of increased demand or reduced supply.

Centralized Logistics Management

A centralized system oversees the entire network, analyzing data from all nodes to predict supply needs and coordinate resource movement. Predictive analytics anticipate future demands, enhancing supply-chain responsiveness.

Rapid Redistribution Capabilities

Equipping each node with rapid transportation capabilities, like cargo aircraft or fast transport vehicles, allows for rapid movement between nodes. Priority redistribution procedures ensure quick resupply in response to sudden demand fluctuations.

Integration with DLA Systems

While maintaining operational independence, the Marine Corps supply network should integrate with DLA systems for broader logistical support. This includes shared logistics platforms/infrastructure, data exchange protocols, and coordinated supply-chain strategies.

Local Supplier Engagement

Partnering with local suppliers enhances the supply chain's responsiveness and reduces reliance on long-distance supply movements. Local suppliers can rapidly replenish stocks at nearby nodes, ensuring the continuous supply of critical materiel.

Training and Readiness

Consistent training in networked supply-chain operations and joint exercises with DLA and other external agencies test and improve system interoperability and readiness. Logisticians operating within the sustainment web need training to leverage the sourcing options available to sustain the effects desired from the warfighting concept.

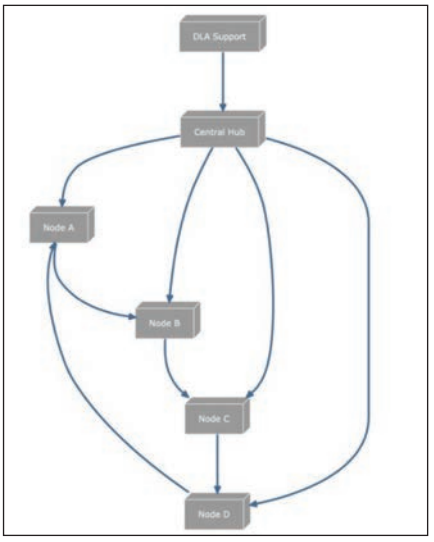


Figure 2. Networked supply nodes. *(Figure provided by author.)*

Local suppliers can rapidly replenish stocks at nearby nodes, ensuring the continuous supply of critical materiel.

Security and Redundancy

Robust security measures protect supplies and equipment at each node. Network redundancy ensures that the failure of one node does not critically impact the holistic supply-chain support.

Role of GCSS-MC in the Sustainment Web and Dynamic Sourcing

While GCSS-MC can be a promising system within the sustainment web, it requires enhancements such as joint interfacing for inventory visibility, order fulfillment to specific sources, and tailorable automated sourcing logic for improved fulfillment sequence logic. Crucial in the Indo-Pacific, GCSS-MC does offer the ability to establish a digital supply-chain network with intermediate-level supply caches, offering realtime tracking and automation for data-driven decision making (Figure 3).

It can identify strategic nodes, manage inventory, and ensure the availability of essential repair parts across the network. With its transactional tracking and data integration, GCSS-MC refines decision making by integrating various data sources and demand-planning forecasts. This leads to more effective inventory adjustments and a flexible support network for Marine Corps formations.

The digital supply-chain network developed within GCSS-MC introduces

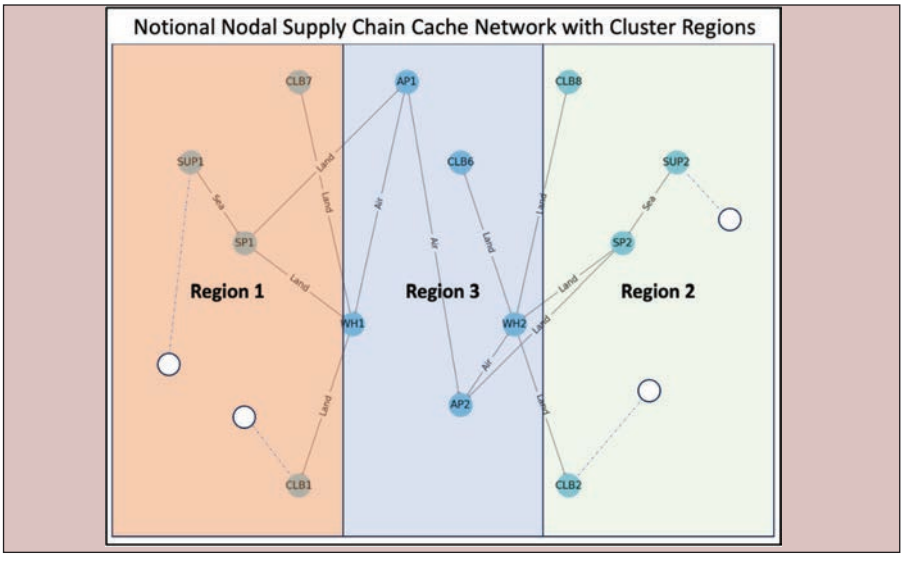


Figure 3. *(Figure provided by author.)*

numerous benefits for the sustainment web concept, including rapid response for requisitions, reduced dependency on distant depots, cost efficiency, increased regional awareness, and enhanced readiness. Moreover, the system is designed to provide a flexible, systematic transactional flow framework. It allows us to move away from the traditional silos of over-reliance on a single source of supply support, instead embracing a more open and globally accessible supply network. That is, its dynamic and open-sourcing feature facilitates the quick fulfillment of specific parts from multiple sites, thereby streamlining and strengthening the supply chain's efficiency and effectiveness. In sum, GCSS-MC is a pivotal logistics information system that significantly bolsters supply-chain management processes within the sustainment web, marking a shift from traditional single-source reliance to a more open and globally accessible supply model, crucial for meeting the dynamic needs within the theater.

Strategic Importance of DLA Guam-Marianas

DLA Guam-Marianas is a critical nexus for logistics operations in the Indo-Pacific, serving as an ideal hub from which the Marine Corps supply chain can support forces in the first and second island chains. Analysis reveals that approximately 30 percent of the support provided by DLA Distribution originated from depots in Japan and South Korea, while the remaining 70 percent was sourced from CONUS DLA locations. In response to this finding, the 1st Supply Battalion realigned our sourcing logic and sequences in GCSS-MC to prioritize DLA Guam-Marianas as a primary regional sourcing solution to generate the demand for DLA to reposition Marine Corps inventory in the region. This strategic move aligns with our mission priorities and ensures the availability of critical supplies close to Marine Corps formations. This realignment can improve our supply-chain network effectiveness, efficiency, and responsiveness to better meet dynamic needs. The focus is increasingly on supporting intra-theater requirements, which takes precedence over the competing inter-theater demands from various services and nodes for replenishment.

By establishing these caches (Figure 3) throughout the Western Pacific, the Marine Corps can increase its operational flexibility and reduce dependence on distant depots. Yet, DLA Guam-Marianas plays a crucial role in replenishing these cache sites, making this strategic positioning vital for maintaining a high state of readiness. This is essential for sea-denial operations and responding to emerging threats. The strategic incorporation of DLA Guam-Marianas and the network of supply caches in the Western Pacific is an important move toward regional deterrence and sustaining a credible force.

Conclusion

The approaches outlined herein highlight the necessity of precision and readiness in a region where every component—from major aircraft parts to minor cotter pins—is critical. Leveraging advanced technology, strategic locations, and strong partnerships not only boosts the logistical capabilities of the Marine Corps but also elevates their overall operational effectiveness and efficiency in the Western Pacific. The sustainment web concept, fortified by technology, strategic positioning, and strong partnerships, hedges success for enhanced logistical capabilities and operational efficacy for the Marine Corps. If fully implemented, the sustainment web concept will significantly enhance the Marine Corps' ability to respond to emerging events and deter adversarial actions during competition and in support of the potential lead into crisis and conflict.

USMC

Engineering Logistics Success

Insights from Marine Corps Engineer Detachment-Palau

by LtCol Sarah R. Culbertson & 1stLt Alyssa J. Lawton

>LtCol Culberston is the Battalion Commander of 7th Engineer Support Battalion, where she has certified and overseen four rotations of MCED-P. Previously, she was the I MEF Engineer, where she assisted in the planning of this new rotational deployment.

>>1stLt Lawton served as the Logistics Officer for the second rotation of MCED-P. She is currently the Motor Transportation Platoon Commander at 7th Engineer Support Battalion.

Marine officers progress through a structured curriculum of schools and training to attain the rank of captain, preparing them for leadership positions such as company commander or detachment commander. Despite their thorough preparations, these officers often find themselves intensely immersed in their immediate responsibilities and roles, lacking a broader perspective on the overall situation. While it is acknowledged within *MCDP 4* that "a commander is ultimately responsible for logistics,"[1] the reality is that Marine captains are frequently deployed globally with insufficient training in one of the critical aspects of warfare.

Peleliu, Republic of Palau, is a small island, a mile wide and six miles long in the Western Pacific. It is an hour's boat ride between Palau's main island of Koror to Peleliu, and the island has not been home to Marine Corps forces since World War II. In August 2022, the first rotation of Marine Corps Engineer Detachment–Palau (MCED-P) debarked off boats contracted from a local scuba dive tour company in Koror onto the dock in Peleliu and offloaded luggage from a long commercial flight purchased on their government travel charge cards. Marines and sailors checked into their hotels and settled into their bungalows, ready to attack their mission of repairing the runway built by the Imperial Japanese Army in 1944.

MCED-P was created January 2022 in response to a shortfall in naval construction capacity in the first and second island chains in the Western Pacific.

Equipment arrival in February 2023 in Peleliu, Palau. *(Photo by Cpl Casandra Lamas.)*

Seven months later, a company-sized element, designed around a reinforced engineer line company from 7th Engineer Support Battalion, departed for Peleliu under the operational control of the 30th Naval Construction Regiment.

With the 30th Naval Construction Regiment headquartered over 800 miles away in Guam, the success of MCED-P on the ground hinged on the ability of a Marine combat engineer captain and his staff of lieutenants and staff noncommissioned officers to think like multi-functional logisticians, adapt to their new operating environment, and to interface with joint, coalition, and civilian agencies to solve complex logistical problems. The second rotation of MCED-P reduced its logistically

trained staff from three Marines to one, leaving only a single logistics lieutenant to offer guidance to the engineer captain leading the detachment. Within a one year timeframe, the detachments faced many logistical challenges which included procuring contracts, creating supply chains, and shipping equipment. With Marine Corps guidance repeatedly referencing the need to operate at smaller unit levels within dispersed and non-contiguous locations, we propose that there are lessons learned from MCED-P for company-grade officers and small-unit leaders operating in dispersed environments to meet the demands of future operations.[2]

Funding and Contracting

Funding for MCED-P came from both Operations and Maintenance Marine Corps funds for travel and sustainment, and exercise-related construction funds for the runway repair mission. The team used a combination of government-wide commercial purchase cards, contracts, and government travel charge cards to cover expenses, requiring the detachment leadership to have a nuanced understanding of the capabilities and limitations of authorities and associated funding. Further, realities on the ground required non-doctrinal solutions to address local funding issues. For example, Marine Corps and DOD policies assume businesses can provide documentation for transactions that include required reporting information, such as date, time, costs, and line-item descriptions. Not all countries where Marines and sailors operate will have the ability to meet certain fiscal requirements, such as areas where local bartering is preferred and official documentation for transactions is nonexistent due to insufficient infrastructure. The Republic of Palau falls somewhere in between. Marine Corps contracting entities are not as effective in Palau coordinating contracts unless they are physically present for solicitation and reconciliation. MCED-P dealt with several scenarios where it was unclear how to appropriately pay for goods in the case of non-contracted fees, such as minor vehicle accident repairs and miscellaneous charges. Although the DOD has policies in place for these situations, those policies assume that all businesses used by government personnel are registered with the U.S. System for Award Management or that the units have access to rental car companies participating in the U.S. Government Rental Car Program.[3] Palau has few businesses with access to System for Award Management and no rental car companies that meet rental program requirements. Using contracting is the preferred option when conducting business with organizations that fall short of policy requirements or the essential background investigation. However, contracting, particularly when provided using reach-back support, can only access large businesses previously registered in DOD accounting systems. Company-grade officers empowered with the knowledge, skills, and resources required to engage with businesses in a nation unused to contracting with the United States or DOD would provide greater opportunities to leverage these creative solutions.

Transportation

Acquiring and transporting equipment poses significant challenges in the second island chain. Numerous planning factors and coordination efforts are essential with the Surface Deployment and Distribution Command and U.S. Transportation Command.[4] The options for shipping equipment via boat on black bottom shipping include door-to-door (D2D) shipping and various port-to-door variations, each entailing distinct planning considerations. In the initial rotation of the MCED-P, the detachment airlifted some of their equipment to Palau, which cost nearly three times the transport by sea. Upon retrograde, they successfully demonstrated the feasibility of D2D shipping via black bottom shipping. Subsequently, the second rotation chose D2D black bottom shipping on their initial embarkation, reinforcing the previous proof of concept. However, during their retrograde, D2D was denied, necessitating a shift to port-to-door, introducing an additional layer of contracting complexity within a time-sensitive environment. These maneuver-related challenges heighten the detachment's vulnerability in procuring equipment and supplies, compelling the commander to grasp the intricacies of logistics and devise alternative pathways for logistical support quickly. If small unit leaders are to operate in dispersed and disparate locations, they must be versed in the complexities of inter- and intra-theater transportation to maintain momentum of operations when or if the primary plan fails.

Assistance from MAG 24 in Hawaii; they helped demonstrate a proof of concept on ariel logistics to save money for transferring equipment from Peleliu to Koror. *(Photo by Cpl Casandra Lamas.)*

Supply Lines in the Pacific

In Peleliu, residents depend on a weekly small barge for essential supplies, including bulk food and postal items, while a fuel barge also arrives weekly. These deliveries operate on a schedule, but inclement weather can disrupt the routine, leading to delays in obtaining goods and leaving the island to manage on its own. Predictably, supply routes are significantly compromised. Dealing with the challenges of weather, coupled with a need for detailed knowledge on item procurement, particularly from the Defense Logistics Agency and Marine Corps supply management units posed numerous issues for the MCEDP.[5] For instance, acquiring diesel fuel on the island required procurement from the Defense Logistics Agency, followed by transportation via contracted services to Peleliu. The transport of secondary reparable items, depending on their size, could be facilitated through a water taxi boat that shuttles Marines and sailors between the main and small islands. However, larger items necessitated contracted transport, leading to substantial delays, especially when operational urgency is a factor. Recognizing the vulnerabilities in the supply chain, commanders must ensure a comprehensive understanding of the classes of supply and establish backups or contingency plans. When it comes to procuring repair parts, the process involves sourcing through the Global Combat Support System–Marine Corps and then obtaining them from the nearest locations, typically Marine Corps supply management units in Okinawa or Hawaii. The significant transport and administrative burdens placed on the detachment underscore the importance of commanders being well-versed in maintenance, contracting, supply logistics, and the various transportation pathways available for receiving items.

Throughout these challenges, we identified mission-critical shortcomings that commanders must proactively address. Fortunately, there are abundant training opportunities to equip commanders with the necessary tools and resources in advance. BIZINT, one such tool, enables commanders to assess the available classes of supply in remote locations by consolidating prior contracts, establishing military affiliations, and categorizing the types of supply accessible. By aligning with other branches already utilizing this program, Marine Corps planners and detachment commanders can collaborate seamlessly, sharing crucial information and resources. Additionally, Defense Acquisition University offers training and classes that provide commanders with a comprehensive understanding of contracting. This ensures they are equipped with a contracting officer representative or the ability to accurately communicate their need for a contracting officer to the higher headquarters supporting them. This training also imparts insight into the legal implications involved in working with host-nation vendors. For a broader perspective on logistical planning in international settings, the course "Joint Logistics Over the Shore Planning," offered by Expeditionary Warfare Training Group, provides commanders with a foundational overview. While numerous logistical classes cater

1stLt Lawton taking accountability of the serial numbers of equipment we were receiving in Peleliu, Palau. *(Photo by Cpl Casandra Lamas.)*

Recognizing the vulnerabilities in the supply chain, commanders must ensure a comprehensive understanding of the classes of supply and establish backups or contingency plans.

to higher-ranking individuals within the career field of logistics, we advocate for exceptions to be made for commanders of additional military occupational specialties deploying to mission-critical areas of operation. Likewise, we see an opportunity to include more company-level logistics training tailored to the realities of operating in remote island nations in the Expeditionary Warfare School period of instruction, similar to the recently developed Captain-Level Planning Course. This approach aims to better prepare commanders for the unique challenges they may encounter in their operational environments.

The realm of military logistics is often likened to a mile-wide expanse with an inch-deep pool of knowledge, highlighting the vast scope and intricacies encapsulated within this critical domain. While the breadth of logistics encompasses supply chain management, transportation, communication, and strategic planning, the depth of understanding required for each facet is profound. A superficial grasp of logistics can lead to oversights, bottlenecks, and strategic missteps that may reverberate across military operations. Just as a mile-wide river requires a nuanced understanding of currents and tributaries, military logisticians must delve into the intricate details of their field to navigate challenges effectively. A comprehensive and deep understanding of logistics is essential for anticipating and mitigating the diverse challenges that arise in the dynamic and ever-changing landscape of military operations, especially when operating in the distributed manner required to execute expeditionary advanced base operations.[6] As stated in *Installation and Logistics 2030*, "While logisticians are our subject matter experts, ultimately commanders are responsible for logistics."

Notes

1. Headquarters Marine Corps, *MCDP 4, Logistics,* (Washington, DC: 1997).

2. Headquarters Marine Corps, *MCDP 1-0, Marine Corps Operations,* (Washington, DC: 2011).

3. The Per Diem, Travel, and Transportation Allowance Committee, *The Joint Travel Regulations for Uniformed Service Members*, (Alexandria: 2023).

4. The Department of Defense, *Joint Publication 4-01, The Defense Transportation System*, (Washington, DC: 2017).

5. Defense Logistics Management System–Defense Logistics Agency; and Headquarters Marine Corps, *Marine Corps Order P4400.151B Ch2 Intermediate-Level Supply Management Policy Manual*, (Washington, DC: 2012).

6. Headquarters Marine Corps, *Installations and Logistics 2030,* (Washington, DC: 2023).

Machine Learning for Medical Logistics

Implementation in 1st Supply Battalion

by CDR Jonathan Fowler & Mr. Rory Polera

>CDR Fowler is a U.S. Navy Medical Service Corps Officer currently serving as the Company Commander for 1st Medical Logistics Company.

>>Mr. Polera is a Process Improvement Engineer that specializes in the development and operationalization of AI-enabled software applications. He leads all product and project delivery efforts at Tagup Inc., an industry partner that provides AI-enabled software applications for optimizing defense logistics, HVAC/energy efficiency, and industrial equipment maintenance planning.

The U.S. military has implemented transformational changes to medical logistics operations in the last 30 years. In the 80's and 90's a "just-in-case management philosophy" resulted in large depots stockpiled with medical materiel. Notably, one facility routinely carried a six-month supply that resulted in dispositioning up to $50,000 in expired pharmaceuticals each month.[1] In April 1990, a joint service working group conducted a holistic assessment of military medical logistics, including a comparison with their civilian counterparts. Their findings concluded that civilian providers had a three to four times fill rate despite carrying lower on-hand inventory and accounting for 96 percent of medical supply usage nationwide.

The Gulf War laid bare the challenges of inefficient supply chain operations. Inventory and information were siloed, and existing automated information systems (AIS) were immature. Army AIS was the only tool ready for battleground inventory management. Regardless, other Services AIS' could not interface with one another, effectively preventing cross-leveling of inventory in the field.[2] This resulted in iron mountains of stockpiled materiel accompanied by increased cost and inefficient use of critical supply lines. These events led Pentagon leadership to direct the development of a tri-Service medical logistics AIS.[3] This directive culminated in the development of two extremely successful initiatives: the Defense Medical Logistics Supply Support system (DMLSS) and the prime vendor program for ordering medical supplies.

The prime vendor program sought to gain efficiencies by centralizing the DOD purchasing power. The program returned immediate cost savings: from fiscal years 1992 to 1996, the DOD observed a $154 million reduction in drug costs and $493 million reduction in surplus inventory on-hand.[4] DMLSS followed soon after in 1996. DMLSS supported all facets of electronic inventory management and integrated with existing DOD information systems, such as the Defense Finance and Accounting System. DMLSS was a resounding success, allowing the DOD to retire numerous Service-unique legacy information systems. DMLSS has revolutionized how we operate both in garrison and in conflict. DOD has already realized measurable increases in readiness and budget efficiencies; however, we have not exhausted all that these systems can offer.

An AIS produces enormous volumes of data (e.g., logging key purchasing decisions, warehousing operations, mobilization decisions, etc.). Over the next decade, the DOD will need to harness the power of artificial intelligence and machine learning given the wealth of existing information in our AIS to deliver efficiencies that translate to effective logistics. For example, DMLSS contains limited reporting and data aggregation modules and lacks predictive or prescriptive capabilities for decision support. Machine learning can bridge this gap.

Machine learning can provide decision support that enables users to improve force readiness within the constraints of available materiel, space, manpower, and funding. This is accomplished by modeling the underlying systems, for example, the process by which materiel is requisitioned, positioned, and consumed. The model(s) can be used to identify and mitigate data quality issues, predict future readiness, or supply issues, and assess the impact of changes to operational decision making via simulation. Machine-learning models improve over time as more data is incorporated and will "learn" to account for the complex interactions between decisions made at different bases and units, allowing for officers to take advantage of additional context in decision making. This has many practical applications, including optimized ordering, intelligent prepositioning of materiel, and simulation for wargaming. Operationalized machine-learning models are a best-in-class approach in the private sector—why can this not be for the Marines and sailors too? Ama-

zon mastered the integration of robotics and advanced automation technologies including machine learning for effective logistics operations, so why not us?

Under the guidance of 1st Supply Battalion, Medical Logistics (MedLog) Company collaborated with a Tagup to implement expeditionary data science tools (currently in production). These tools demonstrate the power of machine learning by enabling unit commanders, logistics and supply officers, and combat planners to optimize decision making thus shortening the observe-orient-decide-act loop.

Methods

Marine Corps MedLog companies are custodians of Class VIII medical equipment and supplies for the FMF. MedLog companies manage 25 standard medical supply blocks containing up to 250 national stock numbers (NSN). Each MedLog company has hundreds of supply blocks under their management. These blocks are built by the MedLog companies and issued to using units for exercises or deployments, and returned to the MedLog companies for reconstitution and replenishment through a buffer stock (i.e., inventory carried on-hand to support the anticipated operating tempo). As the system of record, DMLSS supports all daily warehousing operations and thus records data on procurement, reception, usage, and destruction. This rich transaction history is the perfect test bed for machine-learning applications in the Marine Corps.

1st Supply Battalion's MedLog Company extracted over four years of historical transaction data from DMLSS to baseline MedLog processes, performance, and decision making. This data included hundreds of thousands of supply transactions (e.g., orders, receipts, consumption rates, and inventory adjustments). These transactions represented hundreds of deployments and exercises. We coupled this information with Tagup's core microservices: distributed data warehouse, machine-learning library, data pipeline, model specification and orchestration tooling, and application components. Then, we trained and validated hundreds of supervised machine-learning models to optimize a series of supply decisions, as shown in Figure 1 (i.e., what replenishment supplies do we order, how much do we order, when do we reorder, where do we store it, how much do we store in each location, and so on).

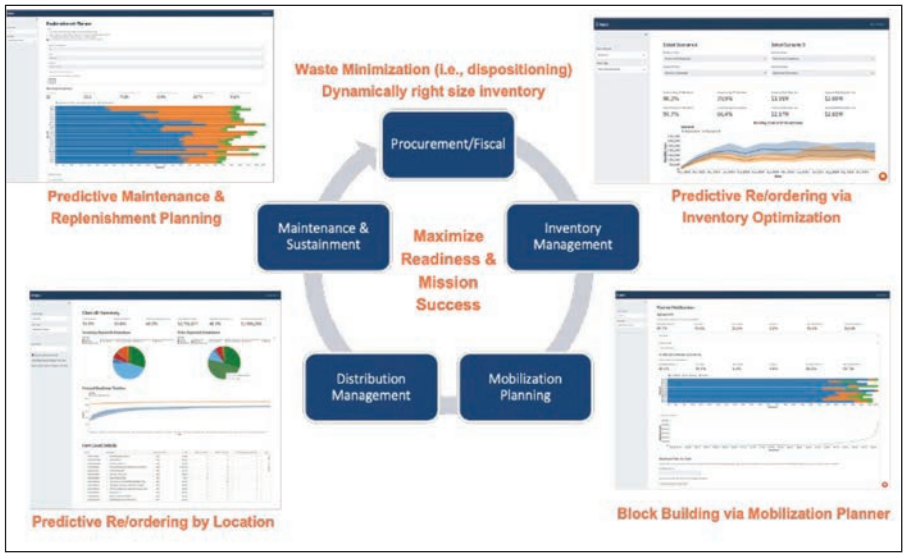


Figure 1. An infographic that represents how we worked with an industry partner to implement machine-learning capabilities on medical logistics data and decision making. *(Figure provided by author.)*

This deployment expanded on a mission-driven logistics optimization system which was originally developed for the Light Armored Vehicle and the Medium Tactical Vehicle Replacement as part of a Naval Air Systems Command-funded Small Business Innovative Research Phase II effort and evaluated how existing data sources (e.g., Global Combat Support System–Marine Corps, Transportation Capacity Planning Tool) could be used to provide predictive modeling and simulation tools for strategic, mission-critical MAGTF planning efforts. Tagup leveraged large-scale convex optimization techniques to model the duration of events based on historical data. For this work, 1st Supply Battalion's MedLog Company used their algorithms to predict the time elapsed between when an order was placed and when it will be received (i.e., for materiel that was ordered and not yet received, or "due-in"). We rolled up the lead-time predictions by NSN to an aggregated estimate of readiness across multiple blocks, which could be used to infer readiness levels at varying times in the future, especially when blocks are mobilized or prepositioned (an analogous user story to Class IX).

Under the guidance of 1st Supply Battalion, Medical Logistics (MedLog) Company collaborated with a Tagup to implement expeditionary data science tools (currently in production).

A key component to trusting these models and ensuring their outputs are useful is quantifying model performance and in particular uncertainty. Model performance, as validated on held-out data, will continue to improve over time as data volumes increase. Quantifying uncertainty enables us to evaluate how much these models

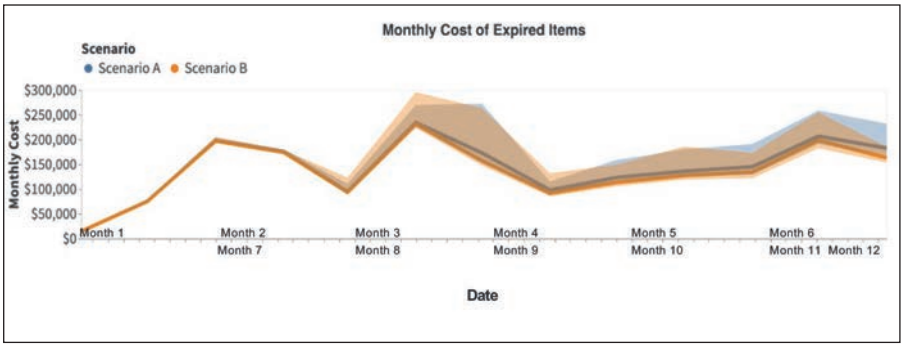


Figure 2. The expected cost of expiration for a subset of materiel comparing two different stocking policies. The shaded orange and blue are the bounds of uncertainty tied to the expected values. In Month 1, the uncertainty is negligible as we have the data recorded in DMLSS; however using machine learning, we can compute the bounds of uncertainty for orders in Month 6 (as we have not placed those orders yet). We expect the bounds of uncertainty to decrease over time as we learn more from the data (and increase the training dataset).
(Figure provided by author.)

improve over time, particularly as they are encoded to learn the complex relationships represented by the data. Consider the problem of prepositioning materiel in a forward-deployed environment. Given the nature of medical equipment and supplies, a subset of the forward-deployed materiel is perishable and will eventually expire. For materiel on-hand, the expiration date is generally known. However, for replenishment materiel that has yet to be ordered, we do not know when it will arrive and subsequently expire. Therefore, we use machine learning to infer expiration dates of the future materiel. We can roll this up and track the aggregated cost of expiration with levels of uncertainty into the future (as shown in Figure 2).

The lead-time model, among others (e.g., expiration, demand, consumption, etc.) were integrated into a series of decision support tools that enable users to make more informed decisions, and in some cases evaluate the tradeoff between readiness and cost efficiency via simulations. This allows users to evaluate the relationship between readiness and cost. *If I want to achieve 100 percent readiness, is money my only obstacle?* Most likely it is a large contributor, but there are other factors that must be considered in this equation. Readiness does not mean stockless inventory systems nor is it building iron mountains of materiel. To balance this tradeoff, we can use the following capabilities, predicated on individual machine-learning models of MedLog company processes to determine the optimal balance between readiness and cost (and in the future, space, or manpower).

Results

Together with Tagup, 1st Supply Battalion's MedLog Company configured and deployed several decision support tools that dynamically forecast medical materiel demand by NSN, aggregated as block readiness across the company. The secure data pipeline dynamically serves these capabilities daily (as DMLSS reports are uploaded to the Data Upload Page). The capabilities can be used to make both tactical and strategic decisions in support of MEF-level missions/initiatives. The following tools are available to commanders, logisticians, and corpsmen from months of user workshops:

- *Assemblage Summary* for business intelligence (as streamlined readiness reporting). Users can assess current readiness levels based on realtime block composition as well as readiness as a function of inventories on-hand.
- *New Block Planner* for forecasting readiness at various times in the future of new blocks plus the sustainment of prepositioned materiel. Users can assess future readiness levels as a function of current inventory on-hand and predictions of readiness based on outstanding order lead times and expiration.
- *Mobilization Planner* for selecting the best blocks that maximize readiness for a deployment (based on composition and deployment date). The same machine learning-driven lead-time model from the New Block Planner is used to forecast lead times by NSN for the missing materiel (i.e., making up the deficit when readiness is less than 100 percent) that was already ordered (i.e., due-ins) and is expected to arrive before the target deployment date.
- *Replenishment Planner* for prioritizing which blocks should be replenished to maximize on the shelf readiness, based on the inventory on-hand and expected due-ins. The same machine-learning lead-time model from the New Block Planner and Mobilization Planner is used to forecast lead times associated with the due-ins expected to arrive in the warehouse before the target replenishment date.

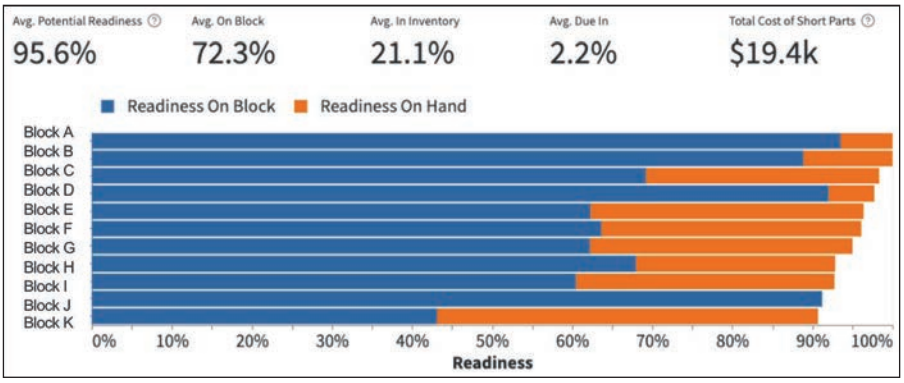


Figure 3. The Mobilization Planner shows the medical supply blocks recommended by the machine-learning models. The graph illustrates these blocks could be issued at 95.6 percent readiness when transferring on-hand and due-in materiel to the blocks. Fulfilling short parts (not on order) would cost $19.4 thousand. *(Figure provided by author.)*

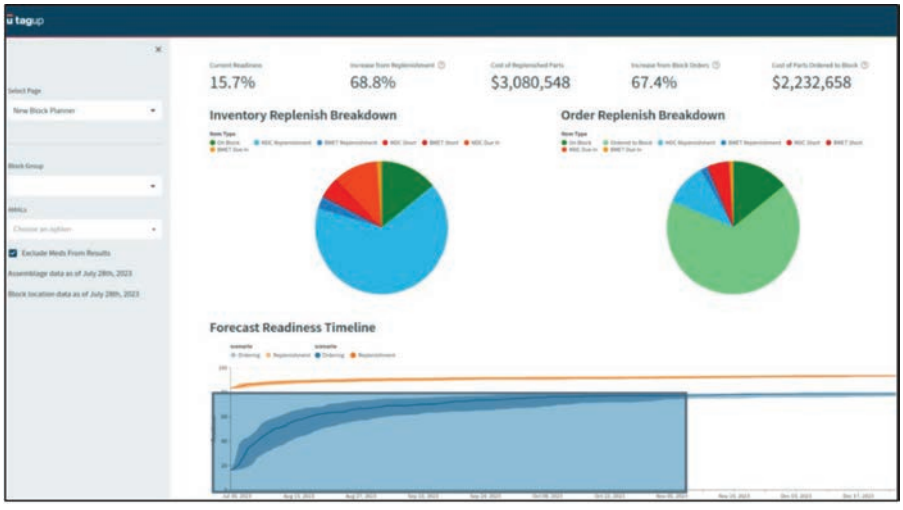


Figure 4. In July, we used the New Block Planner lead-time model to estimate aggregated readiness levels for all new forward deployed blocks at approximately 80 percent. As of mid-November, the average aggregated readiness level across all blocks is at ~84 percent. Ultimately, the lead-time model accurately forecasted when materiel would arrive at the MedLog company (within five percent error) but the sailors and Marines did a lot of work to achieve these readiness targets to ship these blocks as soon as possible. *(Figure provided by author.)*

Additionally, a MedLog Simulation Tool is under development to evaluate the cost-benefit relationships of various scenarios (e.g., optimizing the replenishment planning process). Cost-benefit analysis is based on the known tradeoffs between budget, manpower, and readiness. This tool is based on multiple models that forecast lead time, demand, and consumption of the Class VIII materiel managed by 1st Supply Battalion's MedLog Company.

Discussion

These decision support tools dramatically improved insight into holistic readiness posture. DMLSS does not map available buffer stock to block deficiencies resulting in underestimation of potential readiness. With the Assemblage Summary, we can evaluate the health of the warehouse down to the individual block for reporting purposes and strategic planning. Machine learning further enabled predictions of future readiness to be for items that were due-in based on a customer wait time model. This conditional model considers time lapsed day-over-day and provides the expected arrival date: a useful output for supply chain visibility and vendor accountability. This model is also core to the Mobilization Planner to recommend which blocks should be selected for deployment given a specified deployment date. Importantly, recommendations are based upon maximum expected readiness given inventory on-hand and expected receipt of due-in items prior to the specified deployment date. Models also enabled decision making on prepositioned materiel. Using machine learning embedded in the New Block Planner, 1st Supply Battalion's MedLog Company was able to successfully predict receipt of the critical mass of materiel and a predicted completion date. This capability directly supported timely block building for a high priority impending deployment.

These tools also answer the questions surrounding workload planning. One key task of a MedLog company is to replenish the medical supply blocks with materiel so that they can be ready to deploy again. Previously, MedLog companies would pick the blocks with the lowest readiness to replenish but could not predict what percentage level it could be replenished to nor consider the time it would take to accomplish. Using the Replenishment Planner, the software showed us the blocks that could achieve the highest replenishment percentage, based on on-hand inventory and lead times to receiving materiel, thereby guiding decision making in where to focus the warehouse labor. It could also calculate which blocks should be replenished given certain constraints such as limited manpower or time. These tools removed the uncertainty in planning what work needed to be completed in a certain period.

Initial simulations have demonstrated that MedLog companies could decrease on-hand inventory while achieving the same out the door readiness (or fill rate)—all while unlocking 30 percent of current capital for next best use. Some of the ways we see machine learning shaping the future is dynamically optimizing the inventory level stock points that MedLog companies hold for replenishment (valued at approximately eight to ten million dollars). Machine-learning models can provide unique stocking levels by NSN based on criticality, cost, space required, demand, and predicted supplier lead time. Additionally, machine learning

can enable the development of "push packs," which are smaller blocks of medical materiel assembled in direct response to demand signals. Currently, MedLog companies resupply units as the units' request items ("pull system"), but a future state could entail preemptively pushing materiel using on-the-ground information (injury reports, threat level, operating environment intelligence, etc.). Machine-learning models use this data to direct supply units to build custom resupply packages that respond to conditions on the ground. We intend to simulate these capabilities, followed by deployment in a training environment to demonstrate feasibility before operationalizing in the field.

Conclusion

Medical logistics has undergone tremendous evolution in the last 30 years. Innovation should not stop now. Machine learning has the capacity to move mountains in the same ways that DMLSS and prime vendor contracts did in the early 1990s. Just like we initially demonstrated the feasibility of using machine learning to improve logistics planning for Light Armored Vehicles and Medium Tactical Vehicle Replacements, we can expand these decision support tools to other user stories, classes of supply (e.g., Class V, VII, IX) and/or warfighting functions like intelligence, maneuver, and fires.

Imagine a scenario where satellite imagery is used by an image recognition algorithm to detect a threatening formation by an adversary. This analysis then informs a mobilization and maneuver planning algorithm that recommends the best equipment set (or equipment density list) from the equipment closest to the threat to counter/defend against a possible attack. Then, based on the recommended equipment set and counterinsurgency measures, another algorithm informs logisticians the required sustainment/support plan to ensure the best equipment set and supply lines are available. A synchronization of all these efforts is driven by a series of machine-learning models that ensures national defense, combat superiority, and overall mission success.

Tool	Description	Insights & Key Results
Assemblage Summary	Business intelligence tool for regular reporting that links standard assemblages of blocks to inventory on-hand, creating a more holistic view into the readiness of the entire operation.	Users can visualize the materiel in a block and identify the corresponding deficits in realtime. Users can evaluate the maximum readiness levels for regular reporting of critical blocks on-hand in < one minute.
Mobilization Planner	Automated block selection tool with lead-time model. Enables rapid decision making for deploying the best blocks on-hand within the requested time frame.	Users can select the best blocks for planned or short notice requests within < one minute vs the status quo.
Replenishment Planner	Automated block prioritization and manpower planning tool with lead-time model. Allows for efficient planning in preparing blocks for future use, targeting blocks that will have the largest impact on overall readiness.	Prioritize block replenishments that increase overall readiness posture to acceptable/desired levels using inventories on-hand. Work plans are generated in < one minute.
New Block Planner	Automated block building method with lead-time model (for due-ins). Allows for efficient planning (and staffing) when building new blocks for prepositioning (in the warehouse and/or abroad).	Users can evaluate target ship dates of new blocks based on readiness predictions and availability of key materiel in realtime. Predicted readiness with high accuracy (within 5% error) for new blocks built for an upcoming deployment.
Simulation Tool	Scenario-based planning tool, with multiple underlying machine-learning models that allow decision makers to simulate outcomes based on key inputs and weigh priorities accordingly.	Users can minimize waste by dynamically right-sizing inventory by location, therefore reducing excess materiel management by over 30 percent.

Table 1. Summary of deployed decision support tools and key results.

Applications, like these of machine learning to medical logistics are only the beginning. In just a few short months, 1st Supply Battalion has implemented these tools to improve readiness, budget efficiency and productivity. We should not wait for a war to make these capabilities generally available across the enterprise.

Notes

1. D.H. Galuszka, "Defense Medical Logistics Standard Support (DMLSS) System: A Case Study of the Deployment of DMLSS Release 3.0 at Moncrief Army Community Hospital," (graduate project, U.S. Army-Baylor University, 2003).

2. S.M. Wolfe et al., *Defense Medical Logistics Standard Support (DMLSS) Program: A DOD Medical Logistics Success Story* (Chicago: American Academy of Medical Administrators, 2002).

3. "Defense Medical Logistics Standard Support (DMLSS) System."

4. *Defense Medical Logistics Standard Support (DMLSS) Program*.

Multinational Resource Sharing

Enabling the future fight

by Maj Kathleen E. Hill

>Maj Hill is a Logistics Officer currently serving with MAG 14 in Cherry Point. She previously worked at U.S. Africa Command's logistics office where she liaised with foreign militaries to share logistical resources in Africa.

As the U.S. military shifts its focus towards the near-peer fight, leaders have begun to emphasize the need for leveraging allies and partners. Examples like the war in Ukraine show the overwhelming power that collective efforts have in deterring malicious actors. Yet, this idea is somewhat counter to our culture as Marines: our institution prides itself on its ability to self-support. Seldom do we outsource our requirements to sister Services, allied militaries, or host nations. With the advent of expeditionary advanced base operations (EABO), this paradigm must change. The template for future combat operations, particularly in the Pacific, is distributed capabilities arrayed across large areas. The logistical strain these operations incur is significant. The *Tentative Manual for EABO* addresses logistics needs with the statement:

> Persistence, a key characteristic of EABO, is facilitated by incorporating a framework of naval integration, joint logistics enterprise (JLEnt), and Allied and partnered logistics (e.g., coalition; American, British, Canadian, Australian, and New Zealand; H[ost] N[ation]; etc. ...) supporting the movement and sustainment of decentralized forces throughout the littorals.[1]

The Marine Corps must expand its use of multinational partners to facilitate EABO. However, the issue is that most Marines are not aware of these capabilities and not empowered to leverage them. To go about solving these problems, the Marine Corps should provide education, employ resources, and institute policies that will result in partner-nation exchanges at the lowest tactical level.

Some examples of multinational resource-sharing include contracts like Acquisition and Cross-Servicing Agreements (ACSAs), airlift constructs like the Heavy Airlift Wing (HAW), and organizations like the Movement Coordination Center-Europe (MCCE). The ASCAs are a critical mechanism to source a wide range of operational shortfalls. The overarching agreements are negotiated at the national level and provide specific parameters for providing services or products. However, at the lower level, the ASCA Orders (i.e. the localized exchanges) can be written at the tactical and operational levels. Reimbursement mechanisms for ASCAs are flexible and include simple reimbursable billings, equal value exchanges, or replacements in kind.[2] Using ACSAs for logistical or life support requirements creates efficiency and maximizes resources across the globe. There is no certification requirement for logisticians and supply personnel to draft ACSA Orders, they only need to ensure the appropriate authorities at the higher levels fund and approve them. Another type of program is consortiums like the HAW. The HAW is a grouping of twelve nations who maintain and operate a fleet of military C-17s in Hungary.[3] Using the collective fleet of aircraft, HAW members can generate missions to support operations throughout the globe. Because the maintenance and operational capability is shared, the construct effectively saves resources and empowers nations with finite aircraft volume. The Marine Corps does not own any C-17 aircraft and is constantly strained to support internal movements via its C-130 fleet. Leveraging the HAW can enable Marine Corps operations on a grand scale. HAW missions can be requested by Marines at the tactical level through their mobility chains. From there, the missions are coordinated by the Marine component command after approval from U.S. HAW liaison personnel. The MCCE is the last of the aforementioned resource-sharing examples. The MCCE is a 29-member association that synchronizes movement and refueling opportunities internationally. It provides support in two ways: members will either solicit for direct-support missions or advertise open transportation space.[4] In the first scenario, a country such as Italy would solicit transportation for cargo to go from Italy to Poland. Italy would specify details of the desired mission, to include desired reimbursement mechanisms. Any nation from the MCCE could then agree to support by generating a mission from scratch. In the second scenario, countries advertise empty legs on pre-existing missions. For example, the United States could advertise space available on a C-17 channel or special assignment airlift mission. From there, any MCCE member nation could take advantage of that open

space to transport personnel, cargo, or both. This maximizes space on aircraft and likewise generates revenue for the nation providing the support. Even though Europe is in the MCCE's title, nations from across the globe participate, including a key partner in the Indo-Pacific: Australia. Exercise TALISMAN SABRE and deployments like Marine Rotational Forces-Darwin can provide opportunities to exchange multinational airlift support, in effect causing both nations to become more interoperable and saving each respective military money. Once again, no formal training needs to be in place to arrange for these exchanges at the tactical level. Staffs and planners need only coordinate with the Marine component command to solidify and approve such trades. (*Note: this list is just a snapshot of what is available across the global logistics enterprise; a multitude of other mechanisms/organizations exist*.)

The primary barrier to multinational sharing is the lack of knowledge amongst the Marines who are in the best position to plan them. The mechanisms themselves are not difficult and would not require extensive time to teach. The Marine Corps should incorporate periods of instruction about multinational logistics sharing capabilities in its educational curriculum. Expeditionary Warfare School and Command and Staff are strong platforms upon which to introduce these topics. Moreover, Expeditionary Warfare School and Command and Staff have international officers amongst their student body. These students could further outline other multinational sharing opportunities and capabilities during the period of instruction. In courses such as the Marine Corps' Advanced Expeditionary Logistics Operations Course, logistics-related military occupational specialties are exposed to such concepts as ACSA but are not fully taken through the ACSA process or taught about organizations like MCCE or the HAW. Greater instruction on these topics at Advanced Expeditionary Logistics Operations Course is recommended. At a more targeted level, mobility officers at the major subordinate commands are in a perfect position to find airlift opportunities to outsource or share when not fully utilized. The Marine Corps should send its mobility officers and G3 exercise planners to learn about partner sharing mechanisms. Good settings for these learning opportunities include their respective component Marine force (MARFOR) G4s, the pertinent commandant command J4s, and the MCCE itself. The MCCE is based in Eindhoven, Netherlands and continuously opens its doors for informational visits from both member nations and external entities. Overall, education is the critical first step in enabling multinational sharing.

But education alone is not enough. While formal and informal education fosters understanding, the Marine Corps must codify pertinent processes. Each component MARFOR and major subordinate commands should have multinational sharing opportunities detailed in their mobility and logistics orders. These orders should likewise include up-to-date points of contact for critical personnel involved in the process. Additionally, MARFORs ought to assign a multinational support billet in each G4 section. This individual should not be a mobility officer or ACSA manager. This ensures a clear division of labor and allows singular focus on this line of effort. This individual would be responsible for championing multinational sharing at the tactical and operational level as well as confirming appropriate funds, authorities, and support from the combatant commands. The multinational support billet would also track quantitative data related to multinational support. From there, commanders must be involved: Marine component commanders should set forth metrics and targets for multinational resource-sharing. This holds the institution accountable to its own objectives: nothing quite proves goal achievement like quantitative-based assessments. Lastly, Marine Corps strategic communications should focus a portion of its efforts on stories that detail successful logistics sharing. Frequently stories at partner exercises feature military interoperability with regard to operations. That aperture must be expanded to include logistics interoperability. Greater exposure to the successes of ACSAs, the HAW, and MCCE will generate more support and momentum for the multinational sharing effort as a whole.

The *TM EABO* closes its chapter on logistics with the statement, "Logistical planners must know and understand all levels of logistics (tactical, operational, strategic), including those capabilities resident in the JLEnt and H[ost] N[ation]s. They must be skilled with integrating these capabilities and functions with the broader operational plan."[5] The United States military and the Marine Corps have come a long way since World War II. Both have managed to better integrate partners and create effective coalitions, but more work needs to be done. The irony is that many constructs for resource sharing already exist. The Marine Corps needs simply to close the information gaps and place a small number of resources against the problem. With that, the organization can enable itself and its partners to achieve collective security goals.

Notes

1. Headquarters Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations 2nd Edition,* (Washington, DC: 2023).

2. Headquarters Department of the Army, *Army Regulation 550–52 Acquisition and Cross-Servicing Agreement,* (Washington, DC: 2020).

3. North Atlantic Treaty Organization, "Strategic Airlift Capability," *NATO*, July 17, 2023, https://www.nato.int/cps/en/natohq/topics_50107.htm.

4. Movement Coordination Centre Europe, M*CCE at a Glance*, (Eindhoven: 2022).

5. *Tentative Manual for Expeditionary Advanced Base Operations 2nd Edition.*

Setting Conditions for Force Projection

Modernize installations to support sustained operations

by LtCol Stanley C. Wisniewski III

This article highlights considerations that must be addressed to meet the emerging requirement of improving the resilience of installations and tenant units in case of conflict with peer adversaries. It proposes three areas of action to be taken primarily by Marine Corps Installations Command, service components, and subordinate echelons to reform, improve, and maintain the Service's ability to generate and project forces forward in the face of adversary actions affecting installations. These are: planning to defend key installations and critical infrastructure, increasing the level of detail and information in continuity of operations (COOP) planning, and developing measures to assist dependent families threatened or impacted by adversary actions. These areas of action are important, interrelated, and co-dependent for success. If undertaken, they will collectively reduce risk in force projections, keeping Marines and units capable of quickly deploying forward while installations are threatened at home and abroad.

This article explores some very uncomfortable circumstances including threats to our families and installations at home and abroad. Many peer adversary threats that installations are likely to encounter are provided as examples in the May 2023 *Gazette* article, "Installations in Contested Environments," by MajGen David Maxwell, portrayed in a fictional storyline that showcases specific threats and potential effects. These threats exist in both digital and physical domains and will be accomplished through both overt and covert actions with timing intended to disrupt our ability to quickly deploy. Without proper preparation, there is significant risk to our installations' ability to generate and deploy combat-ready forces.

>LtCol Wisniewski is a Logistics Officer. He is currently stationed at Naval Support Activity Hampton Roads serving as the G-4 Plans and Naval Integration Section Head, Marine Corps Forces Command, Fleet Marine Force Atlantic, Marine Forces Northern Command.

The first of the three action areas is having the right plans in place to protect our installations. To counter threats such as those described in MajGen Maxwell's article, each installation needs to be assessed for critical vulnerabilities. A key assumption is that the amount of infrastructure, capabilities and other things requiring protection will be beyond an installation's organic means to secure. Correctly identifying these protection gaps is important because the Service cannot use Marines to protect installations as these Marines will be called forward to deploy. A repository needs to be established to document protection capability gaps for each installation to align optimal resources. The repository will become a resourcing tool for understanding and communicating where external augmentation is needed from either the reserve component, national guard, other Services, or civil solutions such as local law enforcement, state or federal agencies, or contracted providers. There will be many challenges associated with finding organizations able to augment our installations, so it is important to do this in advance of crises. This issue is larger than just the Service, in the face of peer adversary threats designed to disrupt our ability to project forces, all national resources will be weighed against national-level risks associated with many other important protection requirements competing for those same resources.

Beyond protecting installations, planning efforts also need to address how to protect internal lines of communication. Similar to how ships and strategic aircraft are equipped with systems to counter threats while in transit to faraway lands, the Service will need to think with a new mindset of how we protect local ground movements between installations and ports of embarkation and debarkation for deployment and protect delivery of our most critical commodities (fuel, water, etc.) via pipeline, air, or surface. This applies to areas normally considered permissive and protected by civil law enforcement where Title 10 authorities are limited. This proposal is an undertaking to work with civil authorities, private industry, the broader DOD, and national agencies to align capabilities to the most key vulnerabilities that require augmentation to protect.

When a full understanding of threats and gaps in protective capability is achieved, a follow-on reform is needed in developing a revised method of how installations posture in response to protection conditions. These conditions include force protection conditions, cyber protection conditions, and defense conditions. The current set of

force protection condition levels used to communicate and direct changes in protective posture is limited in scope to threats from terrorist actions; peer adversary threats are not included. A revised set of force protection conditions with renewed focus on peer adversary threats will result in largely different posturing actions at installations. Defense conditions are very widely focused on nuclear, biological, and chemical threats, whereas cyber protection conditions are focused on protecting the digital domain. Installations are not accustomed to protecting against all three types of protective conditions simultaneously when contested by a peer adversary and its proxies. For installations to be considered resilient, they need to be able to translate these three conditions sets into unique actions that result in maintaining the Service's ability to project forces forward.

The second interrelated action area required to remain capable of generating forces during crises is that families of service members and civilian personnel have vulnerabilities they will need assistance with when affected by adversary actions. Protecting and assisting families is the cornerstone of setting conditions to keep Marines ready to fight tonight. Having plans to protect and assist families keeps Marines deployable and focused on the mission. Emerging threats have rendered our family care planning methodology outdated. The current method includes a plan which a Marine develops with their family for how to deal with a situation resulting in the Marine being unable to take care of their family. The plan is tailored toward a mindset of routine deployments and isolated incidents—such as medical emergencies; it includes contact information for supporting friends and family that will help the Marine's family should they need assistance. What is missing from these plans is an assessment of a family's ability to move off an installation or away from a home affected by adversary actions with minimal assistance from their Marine who is concurrently conducting unanticipated deployment actions. The plan is also missing a checklist of action items that enable a family to rapidly transition to care for themselves without their Marine present including wills, powers of attorney, access to finances, etc. Unless accounted for in advance of crises these circumstances will place Marines in a dilemma of trying to deploy forward while their family is experiencing severe hardship.

Should these assumptions turn to reality, families will fall into one of two categories: Some families will be able to quickly move themselves to an area of lower threat within their own means and be able to persevere despite other challenges. Other families will not be capable of moving themselves and/or will not be able to care for themselves for a myriad of potential reasons including lack of transportation, financial restraints, lack of a permissive location, and disruption to essential supplies and services. A key assumption is that an overwhelmingly massive number of families both overseas and within the homeland will quickly need some form(s) of assistance. Adapting family care plans to consider these circumstances will enable the Service, installations, and units with understanding in rough orders of magnitude how many people will need what types of assistance. This data can be used in planning resources to assist families when the Marine is unable to tend to both mission and family.

Having codified plans to take care of families will be very different from how we evacuate base housing during wildfires and other natural disasters. Those disasters yield predictable effects such as needing a hotel voucher or reimbursement for food that perished during a follow-on power outage. Families will require assistance for prolonged periods in the event of protracted conflict, and resources will be limited if not planned for in advance. The decision to evacuate will be difficult. Families living off-installation will have to make this decision themselves or comply with directions given by civilian officials which still may result in needing assistance. For families living on-installation, commanders will need decision support tools to aid them in determining when to order an evacuation with calculus that includes predicted impacts to installations from anticipated threats. Having prescribed methods to assist families and having redundant supporting methods to communicate with them will enable installation and unit commanders the ability to quickly apply resources that help them. The benchmark for success is having a support system in place to take care of families when Marines need to fight tonight; the Service needs to own this.

If threats necessitate relocating families, it is also likely that units and their headquarters will need to move as well ... refinement needed in COOP planning.

If actions in the preceding paragraphs are taken, some but not all risks will be mitigated. If threats necessitate relocating families, it is also likely that units and their headquarters will need to move as well. The third interrelated action area is refinement needed in COOP planning. Today's COOP plans typically deal with alternate locations for units in event of a natural disaster or terrorist action in order to preserve operational capability. For instance, a unit might have a COOP plan to move down the street to a vacant building or even to another installation to establish a new position if they suffer a catastrophic event impacting their facilities. These plans typically do not include details that will help the unit deal with peer threats; the plans are administrative versus tactical in nature and may not even consider other warfighting functions beyond logistics. COOP planning for adversary actions is different because the threat will endure and evolve over a minimum of days to weeks whereas in contrast, even the massive attacks of 7 December 1941 and 11 September 2001 were concluded within a matter

of hours followed by immediate transition to recovery actions while the enemy was unable to sustain follow-on decisive actions. Revised COOP plans require decision support tools to assist commanders in identifying triggers to execute a COOP relative to peer adversary actions. The plans need to specify what actions will be taken to transition units from administrative to tactical postures, how threats will be countered at their current location, as well as their COOP location(s) and lines of communication in transit.

COOP plans also need to be deconflicted among units to avoid reliance on the same limited resources and avoid massing at the same locations as one another which would create new enemy targets. To accomplish this, a centralized repository of COOP plans is needed. The repository will develop a shared operational picture of what actions are being taken by higher, adjacent, and subordinate units, what their resource shortfalls and risks are, and provide a shared assessment of their ability to communicate and continue executing their mission in the face of anticipated threats. Integrating this type of information into COOP plans and making them accessible across all echelons will ensure a last known operational assessment and intended actions of impacted units when communication and situational awareness are compromised. Revising unit COOP plans will further depressurize the challenges already placed on installations and tenant units dealing with a dilemma of simultaneously deploying Marines forward, caring and feeding of impacted family members, increasing protective postures in an uncertain environment, and protecting critical infrastructure.

In conclusion, this article addressed three interrelated action areas the Service must refine to achieve being most ready when our Nation is least ready. These three action areas are the most basic actions required to maintain the ability to project forces forward during periods of chaos inflicted by peer adversaries. The Service is already visibly taking many of these actions and needs to continue tailoring how to accomplish these objectives. While the Service continues to modernize installations to support sustained operations it must also modernize how it protects installations, tenant units, Marines and their dependents. These interrelated planning actions will posture installation and unit commanders with the tools and resources needed to persevere in the emerging peer threat environment.

Littoral Sustainment Teams

A tested concept for the last tactical mile of logistics

by Maj Sean T. Conderman & Maj William J. Culp IV

>Maj Conderman is the Future Operations Officer, 3d Littoral Logistics Battalion.

>>Maj Culp is the Operations Officer, 3d Littoral Logistics Battalion.

Both authors are former Company Commanders in 3d Littoral Logistics Battalion, directly involved with developing the concept of employment for 3d Marine Littoral Regiment logistics.

Understanding the Littoral Sustainment Team

Force Design 2030 has been the focus of the 3d Littoral Logistics Battalion (3d LLB) since the plan was published. Companies and staff have been discussing, planning, and experimenting with different task organizations and various equipment to find a workable solution to the challenging logistics problems in the littoral operating environments. Through hard work, failures, and success, the littoral sustainment teams (LST) have proven to be the most effective method of employment to attack the challenging problems exposed by littoral operations in contested environments.

In December 2021, the 38th Commandant of the Marine Corps published *A Concept for Stand-in Forces*. This document outlined options for the Joint Warfighting Concept, focusing on how the Marine Corps can support the naval campaign under *Force Design 2030* initiatives. The concept also began framing a specific problem for the Marine littoral regiment (MLR) and how it will conduct logistics as the stand-in force (SIF). The SIF sustainment concept relies upon avoidance and redundancy. Logistics units and activities must avoid posturing concentrated logistics networks within contested areas while creating several redundant options for sustainment actions without hindering the operation as the pacing function. Eight questions are presented in *A Concept for Stand-in Forces* to help thinkers and planners solve the problem of logistics. While these topics primarily view potential solutions to the logistics problem as operating outside the contested area, the MLR, and therefore its logistics, is envisioned to operate within it.

Understanding the SIF concept is vital for logisticians as it presents several challenges within our community. How do we sustain units in contested, multi-domain environments? What becomes the priority for logistics? How can we build and maintain resilient supply and

Marines from 3d LLB emplace a hidden cache during JPMRC 01-23 aboard Oahu. Caches supported special operations elements operating as opposing forces for the exercise. *(Photo provided by author.)*

distribution chains or webs across the vast distances of the Pacific? Several authors across a myriad of publications have been providing conversation and plausible solutions to these problems and we need the conversation to continue. Unfortunately, the answers to these problems will not be fully solved until years after the next major conflict when historians and war college students scrutinize every action and decision from the publishing of the *38th Commandant's Planning Guidance* to the final retrograde of forces. Then, the Service may have an answer that will help the next generation of warfighters succeed. Until then, those of us at the lowest tactical level are devoted to pursuing and testing some good ideas, and likely some bad ones. This article aims to provide an understanding of the LST as developed within 3d LLB. This effort is meant to invoke further conversation and experimentation across the Service, ultimately contributing to the flexibility and adaptability Marine Corps logistics is known for. Since successful logistics requires options and redundancy, it is important to note LSTs are a way—not the way.

An LST recovers air-delivered supplies in support of RIMPAC 2022. *(Photo provided by author.)*

Origins of the LST

To develop a plan, we must understand the problem. As company staffs, we have studied the problem, which led us to the question of how to employ our capabilities in support of 3d MLR and its subordinate units, including Combat Logistics Battalion 3, now known as 3d LLB. While big, far-fetched ideas were formed, we all agreed the littoral logistics companies (LLCs) needed to create a baseline formation that could be scaled up and down to meet the wide range of anticipated combat service support tasks. A unit to serve as the conduit of physical and informational logistics from the end user to the provider and back. A small unit that enables distributed sustainment operations.

Expected mission sets and the joint operating environment as described in joint doctrine, the *Tentative Manual for Expeditionary Advanced Base Operations*, *A Concept for Stand-In Forces*, 3d LLB proposed mission essential task list, in combination with several articles, briefs, podcasts, late-night conversations, pontifications at the officer club, wargames, and after-action reports led us to the development of the LST. The LST is not a new idea; it was derived from the Army doctrine regarding brigade logistics support teams, defined as a concept of centralizing logistics tasks and coordination for combat units. Naturally, to grasp the desired tailoring of the Marine Corps adaptation for LSTs, we claim the LST title and scaled down the capacity to match our resources and requirements.

Testing quickly began through platoon, company, battalion, and regimental exercises. This process included the LLC acting like a traditional transportation services company, which proved effective but severely limited in scope. The primary method for testing a task-organized group of logisticians and enablers was an LLC supporting en masse by dividing itself into two middle-weight LSTs or by generating four specialized LSTs capable of conduct a narrow band of tasks. Venues included small platoon-to-company scenario-based evolutions, platoon-to-regimental force-on-force exercises, Rim of the Pacific 2022, virtual environments like Spartan Trident, Bougainville II, a Logistics Staff Training Exercise with the Marine Corps Logistics Operations Group, and the first Marine Littoral Regiment Training Exercise where LSTs were proven effective in expeditionary advanced bases (EABs) across Southern California. Recently, the LST concept was used during exercise Balikatan 23 in northern Luzon, Philippines, where four LSTs successfully supported four distributed MLR sites in the same environment where 3d MLR may deploy.

LSTs have supported and exercised with every 3d MLR unit, special operations forces, the U.S. Army, Air Force, and Naval forces, and even a few allies and partners. Small tweaks, steady course corrections, and major resets have occurred since the summer of 2021 and will continue as 3d MLR matures in its existence. The lessons learned were quickly applied and have driven the establishment of a refined LST concept to become the baseline logistics unit for 3d LLB and 3d MLR.

A baseline LST is led by a logistics officer with a motor transport chief, engineer chief, or logistics chief as the LST chief. A team of motor transport Marines combined with a landing support team enables distribution. An engineer section of combat engineers, bulk fuels, electricians, and heavy equipment operators enable limited general engineering. Finally, enablers from the battalion's communications, food service, and supply sections round out the

multi-functional logistics team. While this may seem like a lot of logistics, it is important to highlight the LST is limited in capacity but robust in capability, typically less than 30 personnel. The adage of *a mile wide, inch deep* fits into the LST narrative quite well.

Currently, the rough definition of an LST is a task-organized logistics *unit of action* composited from the LLC under the LLB. LSTs perform activities across all six functions of logistics and are scalable to meet the anticipated mission demands of supported units by compositing Marines, sailors, and equipment from across the LLB. At the point of need, the LST plans for and integrates capabilities from the supported unit, external logistics units and activities, and the LLB to ensure unity of effort. The following paragraphs describe the capabilities of the LST through the functions of tactical logistics.

Creating Effective Logistics

Effective logistics planning requires four common themes. First, logistics must enhance, not inhibit, operational designs. Logistics is commonly seen as the pacing function of warfare; therefore, logisticians must strive to extend the limits as far as possible to enable tempo and pace. Second, the logistics system must anticipate requirements, positioning support to enable the current fight, the next fight, and the one after that. Third, the system must be flexible, adaptable, and responsive. Able to shift support to exploit opportunities at the right place and right time. Finally, logistics must be effective yet efficient. Not sacrificing combat effectiveness for the sake of efficiency is the great challenge that underlines logistics as an art.

The above themes lead to three primary characteristics of logistics plans: integration [with operational plans], flexibility, and simplicity. Understand the operation in order to support the operation. Be flexible to adapt to the uncertainty of war. To quote *MCDP 4* on simplicity, "While this process is complex and methods are sophisticated, we need to make logistics as actionable, simple, and straightforward as possible." The LST enables the four themes by adhering to these three characteristics. The habitual relationships with supported units have enabled integration; the flexible nature of a multi-functional logistics team allows responsiveness; and simple plans allow logistics to continue amid chaos. LSTs are one of the last-mile doers in effective logistics. While the operational and higher tactical-level logistics problems still exist, the LST provides planners with a proven tool for the last tactical mile of an effective logistics plan that can be propelled into reality.

An engineer reconnaissance team describes a physical network analysis to an LST. These assessments provide valuable information to LSTs prior to operating in specific areas. *(Photo provided by author.)*

At the tactical level of logistics, LSTs provide capabilities across all six logistics functions: supply, maintenance, transportation, general engineering, health services, and services. At each EAB, the EAB commander is forced to balance flexibility and responsiveness with force protection and the ability to displace rapidly. As such, a happy medium must be struck to provide what the EAB requires *now* for sustainment and what support can be built up over time. Several exercises conducted by the MLR to experiment with EAB units of employment structure have provided data points for what is possible, practical, and standard for an EAB. It is vital that supported units understand what an LST can provide to prevent logistics from becoming the reason for culmination.

Transportation

Transportation is more than motor transport. Transportation operations include helicopter support team operations, air delivery operations, distribution from unmanned logistics systems, and marshaling for military or contracted ground, surface, or air transportation. The LST enables this key function at the last tactical mile or even to support force closure efforts in combination with more robust logistics units such as the combat logistics regiment. While each LST provides motor transport assets for mobility and distribution, landing support Marines enable much more capability to move people or things around the battlespace. Depending on the supported unit's organic logistics capability, the LST takes on the role of caching, combat, or field trains (typically, a combination of each method). Imagine a small convoy of trucks and Marines recovering supplies moved by autonomous amphibious transport at the beach. Then the convoy moves the supplies to a small landing zone where the LST conducts external lift with MV-22s or unmanned drones to move the items to the next EAB where another LST receives the

supplies and conducts a foot movement to a cache location, effectively posturing the supplies for future use by an infantry company. Transportation is a common topic among planners concerned with littoral operations. At the last tactical mile, the LST can serve as the connecting file to the end user by enabling a myriad of transport modes in and out of contested areas.

Also, 3d LLB is actively employing logistics specialist Marines who have attended entry-level training courses for both landing support and embarkation, which has proved effective when planning and executing the deployment and redeployment of units in addition to tactical-level logistics operations. These combined MOSs have reduced the footprint of MOSs required to conduct landing support and embarkation operations and their habitual relationship and feedback with the LLB mobility officer expedites the process.

Supply

A reliable supply chain is essential to a continued ability to fight, regardless of style. LSTs enable the reliability of supply chains by tapping into a range of sources. The basic loads carried by units of action and employment are supplemented by appropriate days of supply and the LST can maintain onsite supply stores via various transport assets or cache networks. Beyond days of supply or days of allowance, the LST enhances sustainment through pre-arranged contracted classes of supply or services, resources from peripheral supply chains, and joint or multinational support. LST's familiarity and integration with the LLB's Material Sustainment and Integration Cell (MSIC) is critical to responsive sourcing, delivery, and distribution beyond what the few Marines on the ground can accomplish. The MSIC is a team developed by 3d LLB and dedicated to material and distribution support by synchronizing tactical and operational sustainment for 3d MLR. In other words, the LST's direct connection to the MSIC allows responsive support for the EAB and efficient logistics within the assigned area of operations.

Engineers from an LST conduct earthmoving operations while preparing a forward resupply point. *(Photo provided by author.)*

The LST's ability to receive and distribute supplies is vital to EAB sustainment in contested areas. Force protection levels inform the commander's willingness to resupply units directly with traditional service station or tailgate resupply under permissive conditions or to conduct unmanned drops when the physical link-up incurs too much risk, as seen in MAGTF Warfighting Exercises. While in Twentynine Palms' Range 220, the LST dropped small amounts of critical supplies to seemingly no one. Then, in a few minutes or hours, a team of Marines from the intended customer would emerge and recover the supplies. Both the LST and supported unit hid their actual locations and remained difficult to locate, even with enemy reconnaissance elements in the area—including unmanned aerial systems. This allows us to control our own tempo at the lowest levels. In addition to conducting the resupply, the supported unit communicates current supply inventories which drives LST staff planning with predictive logistics, enabling future resupply or cache network development without reliable communications. This achieves the balance between effective and efficient logistics.

Predictive planning drives cache planning. Caches may range from a single jerry can of fuel to entire battalion supply stores. LSTs have tested several ways to establish, track, and maintain these cache networks over an entire EAB battlespace. Anticipating the need is critical in achieving a healthy balance of efficiency and effectiveness in caching. A large cache becomes an indicator for the adversary or may be too burdensome to move during a rapid displacement. A small cache may not provide enough for the supported unit to sustain their mission, but it becomes expendable when considering effectiveness versus efficiency. Caches by their nature are less efficient but more effective; proper predictive planning can balance the former and the latter. Therefore, developing detailed predictions is critical to ensure redundancy exists across various caches. This planning is done by the LST, relieving the logistics planning burden of the supported unit which allows them to focus on the overall mission.

Maintenance

The LST's capacity to perform maintenance tasks is limited, but the LLB can bolster the capability with maintenance contact teams from its general support company. LSTs with attached maintenance contact teams can enable forward maintenance actions across all tables of authorized material control numbers and can conduct recovery operations, battle damage assessments, and limited repairs. This

does add a larger physical footprint, but the benefit may outweigh the risk in contested environments where movement in and out is less predictable or reliable. Evacuation of equipment is expedited through a concerted effort of the LST and MSIC where equipment will either be evacuated to a forward general support company intermediate maintenance activity within the MLR area of operations or another capable in-theater site coordinated through the MSIC.

General Engineering

General engineering is currently limited but capable, with small contingents of engineers spread about the MLR's subordinate O5 commands. Bulk fuel, utilities, engineer reconnaissance, heavy equipment operations, and explosive ordnance disposal are the most prolific tasks expected to be fulfilled by an LST. During experimentation, 3d LLB engineers played a critical role in caching classes I and III using excavation equipment, materiel handling equipment, and the Mk36 wrecker. For example, to reduce loads on tactical vehicles, LSTs have begun using the pump from the expedient refueling system instead of the Pump Module, Fuel SIXCON, which allows for an additional 850 gallons of fuel to be transported around the battlespace where the SIXCON pump module would otherwise be. The teams have also experimented with various uses of the Ground Expedient Refueling Systems for caching to decrease the habitual massing of personnel and equipment. Combat engineers organic to the LST are capable of limited vertical and horizontal construction, engineer reconnaissance, counter-mobility, and survivability for supported units. The combat engineers have integrated with the littoral combat team (LCT) hunter-killer teams and engineer platoon for obstacle emplacement and breaching in addition to the Naval construction battalion's SeaBees for vertical and horizontal construction. Combat engineers performed engineer reconnaissance of potential EAB locations, throughput nodes, and routes. This data is either a confirmation of previous reconnaissance efforts or tailored to meet the EAB commander's priorities. The engineering capability resident in an LST further demonstrates the organic multifunctional capability of the LST and is critical in enabling missions within contested environments.

A forward element of the LST guides an air insertion into a contested location. *(Photo provided by author.)*

The reader may notice a stark shortfall in water production or purification. Currently, the LLB is not manned or equipped to produce or purify water but has tested atmospheric water generators in addition to commercial off-the-shelf desalinization units to fill this critical gap in the short term. Some claim contracting fills the void of water production but relying on contracting is questionable when competition turns to crisis/conflict; therefore, another solution is needed to create redundancy in one of the most critical areas of supply.

Health Support Services

As part of the new LLB structure, the damage control resuscitation team (DCRT) employs emergency room doctors and nurses to provide damage control and resuscitative care with search and rescue technicians to enable enroute care for trauma patients that require evacuation to a higher level of care. Experimentation with the LCT's battalion aid station provided an opportunity for the DCRT to exercise tactics, techniques, and procedures at the upper limit of their patient capacity. The DCRT is a distinct capability from what is provided by a supported unit. The typical battalion aid station should remain a Role I resuscitative care to prevent premature exhaustion of supplies or personnel when paired with a DCRT. A DCRT and logistics team resident within an EAB provides the EAB commander with a dedicated unit for casualty care and evacuation. This is similar to civilian damage

control resuscitation operations seen in advanced lifesaving ambulances or emergency rooms. The concept was also tested with augments from B Surgical Company, 3d Medical Battalion during Balikatan 23 when a DCRT was deployed to the Batanes islands, serving as the sole medical capability for the island-hopping portion of the exercise. While still limited, this is a major step forward for the Service's casualty care ability close to the point of injury. It is imperative this concept is tested more to develop support requirements such as generators and medical supplies in addition to the right personnel. The Service must realize the true limit of what the DCRT can provide for casualties in a forward area—far from traditional role II or role III care.

An LST conducts a joint helicopter support operation with Army aircraft and Marine artillery. ***(Photo provided by author.)***

Services

As with most Marine Corps logistics units, services are more facilitated than provided by the LST in all but a few areas. The LST can act as the on-site integrator for mortuary affairs, contracting support services, actions from field ordering officers and pay agents, and civil affairs support. The LST has a small footprint and will not possess the specialty MOSs to achieve most of the previously mentioned services, but the LLB and LCE, writ large, can enable these activities through the LST. Experimentation is still ongoing with how to best employ and position rated contracting officers, pay agents, and field ordering officers to accomplish 21st-century expeditionary foraging. As exercises continue to expand in scope, more opportunities to stress the extent of services will occur. More to follow during Kamandag 7 and Balikatan 24.

Employment of the LST

The LST is an enabler, and while it may not directly resolve all resource shortfalls, the team is attuned to various networks that can provide solutions from within the Service, across the Joint Force, or even through multinational support or contracting. Like the untrained observer who must communicate close air support five-lines by first stating, *I am not a JTAC*, the EAB commander is provided the expertise so they can get resourced without declaring, *I am not a Log O*. EAB commanders, responsible for operating remotely from their HHQ under potentially austere conditions, are required to integrate all seven warfighting functions with their company or battery staffs; the logistics community wants to make it so there is one less rock in their pack through the LST.

An LST is attached or assigned in direct support of an EAB commander. Task organized to meet anticipated requirements and deploying as part of the EAB, the LST can be scaled up and down—like combat logistics detachments. As mentioned in earlier paragraphs, the engineers work directly with landing support and motor transport Marines to identify areas for connection to external tactical and operational logistics chains as well as internal movement corridors. These areas include main and alternate supply routes, hasty landing zones, ports and piers, beaches, airfields, and even rail. If able, the LST can coordinate local contracts and conduct micro-purchasing from the local economy. The combination of caches, throughput areas, and contracting creates a spider-web logistics network within the EAB across all classes of supply and functions of logistics. Like a spider weaving her web to catch food, the LST creates a web of logistics to respond anywhere in the EAB. Units of action and employment can move and still be tied into the sustainment provided by the LST. Without the LST, units must devote ample effort and time to conducting their own sustainment, detracting from their vital roles in the bigger fight. The LST is vital to ensuring an EAB can perform its mission.

Command and support relationships are a constant point of contention regarding LSTs and will likely require additional trials to find the best solution. The main competing views center on whether the LST should be in a command relationship, attached, or in a support relationship, direct support, to the EAB commander. Doctrine and after-action reports explain the pros and cons of each relationship and 3d MLR has tested these relationships throughout several exercises.

In an attached relationship, the EAB commander has full control over the LST, which increases the EAB commander's ability to direct prioritization, survivability actions, and displacement. This relationship offers a streamlined approach to directing the LST, but it also brings additional logistics and administrative support. When the LST OIC is attached within the EAB command, it constrains the liaison officer to communicate through the LCT and MLR commands before reaching the primary source of additional logistics

A small LST patrols to a cache location to recover supplies for units of employment. *(Photo provided by author.)*

capability—the LLB. A direct liaison authorized is required for the LST OIC to coordinate with the LLB.

The support relationship of direct support has also been tested. This relationship removes the EAB commander's full control of the LST while retaining the authority of the battlespace owner to position the unit, similar to the joint definition of tactical control. Direct support in combination with a liaison officer at the supported unit allows the LST to coordinate directly with the LLB and relieves the EAB commander's higher headquarters of additional logistics coordination efforts, but it removes some control from the EAB commander over the LST. Both attached and direct support relationships require a certain level of "handshake-con" or sturdy professionals until a more defined relationship is established.

Vignette

Sometimes telling a story is a better representation of defining something. The following example briefly describes actions during Rim of the Pacific 22 where an LLC conducted training aboard Kahuku Training Area, Oahu. While not actually supporting a physical EAB, the planning and training directly influenced the successful employment of LSTs in future exercises.

The MLR designated an area as an EAB in key maritime terrain. Jungle, hills, and a coastline defined the area. Planning efforts began immediately but only required minor changes as the EAB package is preset with organized task-organized forces. Staffs have been studying the terrain and enemy situation for months. The LLB, per the planned organization, quickly assigns an LST in direct support of the EAB. The LST commander conducts integrated planning, serving the EAB commander as a liaison officer. The LST task organizes itself to enable the basic functions of logistics as discussed and prepares to occupy the EAB with the rest of the units of action and employment.

The LST combat engineers are the first to arrive at the EAB. They have been tasked to confirm what the littoral engineering and reconnaissance team has already surveyed in previous months and years. This includes hot and cold positions for EAB assets as well as routes and logistics throughput areas. The engineer reconnaissance team from the LST operates in small teams, wearing civilian clothing, and observes several locations in an effort to not tip off the adversary to specific locations. The data collected is passed to the EAB commander and LST commander upon arrival with recommendations for the actual placement of forces.

After link-up with the engineers, the LST begins to enable landing zone and beach landing site management with their two landing support teams. The engineers and motor transport Marines immediately begin confirming preplanned cache locations and storing essential supplies. Locations of the caches directly support the EAB's planned positions and actions. A team of supply and contracting Marines turn on contracts and purchase critical supplies from the local economy, adding another redundant layer to the concept of support.

After EAB force closure, the LST distributes itself to respond to rapid logistics requests throughout the area by task organizing into small, specialized teams. These teams also continue to establish cache sites, both manned and unmanned. Their small size enhances their ability to successfully operate under the adversary's reconnaissance thresholds. Within 48 hours, the EAB has become a spider web of logistics.

As the days and weeks progress, the LST continues to receive and distribute supplies to end users and cache sites. Critical items are rapidly dropped to the LST via aerial delivery enabled by the general support company and the MSIC. The LST even helped resupply a passing destroyer via HST with supplies prepositioned by the Navy weeks prior. Engineers create obstacles along shorelines, enhance cover and concealment for friendly positions, and conduct engineer reconnaissance of potential future sites. When the units within the EAB do move, the LST supports with a few trucks for stages requiring rapid movement. The logistics spider web is rewoven to adapt to the new force laydown. This process continues for a few days, weeks, or months. When it is time to redeploy, the LST assists the EAB commander in coordinating all movements and recovery of personnel and equipment from the EAB.

The above example has been tried but only for a few weeks. During Marine Littoral Regiment Training Exercise 1-23, LSTs experienced versions of this as well as contrasting versions. Phase II operations demonstrated the effectiveness of the above example. Tran-

sitioning to the MAGTF Warfighting Exercise was a different experience. Littoral Logistics Company B was attached to the LCT and assigned battlespace, conducting more provisional infantry tasks and only minimal logistics. Littoral Logistics Company A conducted a plethora of ground movements, similar to a traditional motor transport company. Engineers were consolidated and established a series of obstacles for the MLR. The LSTs were scaled up to company elements and employed in a traditional logistics manner. While contrary to experimentation efforts, this only further demonstrates the ability of the LST formation to rapidly adapt to dynamic situations in contested areas.

Way Forward

Through a series of continuous tests in a variety of environments, the LST task organization has proven its effectiveness as the MLR's tactical logistics formation. While limited, the formation enables logistics at the point of need, over the last tactical mile while providing a link-up point for larger tactical and operational logistics and supply chains. These chains were not discussed in this article but are vital to the success of the larger logistics concept in an EAB environment.

While the LST concept has been tested and proven, it can always be improved. 3d LLB plans to continue testing through several exercises in the next two years. Testing will focus on three key areas: equipment, manning, and relationships. New experimental equipment is always being advertised and LSTs are a perfect venue to test any item designed to improve the sustainability of Marine Corps units. It is also important to continue the analysis of equipment and manning for 3d LLB. Mixed results regarding how the battalion is manned and equipped require a more in-depth testing phase to form actionable conclusions and eventually lead to refined tables of organization and equipment. Command and support relationships also change; a standard, doctrinal relationship may not be the answer for the LST. Personalities must be ignored in developing the right relationship structure and therefore must be tested through a few personnel sets or seasons. We will continue to try things out, knowing there is no optimal goal but an effective one. We will continue to mix it up in varied environments and situations. Your recommendations and contributions to this effort are welcomed with open arms and eager ears.

>Author's note: This article was written as the new MCDP 4 *was published. Several of the concepts outlined in the publication drove the decision-making process supporting the formation of littoral sustainment teams.*

Self-Sustainment in an EAB

The use of field ordering officers and pay agents

by 1stLt Nathan J. Gervaise

In the modern maritime operating environment, the United States no longer enjoys presumptive sea control, peer/near-peer competitors are openly challenging previously unmatched capabilities, and potential adversaries are striving to contest the United States' ability to gain access in key littoral regions.[1] This continual change within the contested environment requires modern logisticians to reshape potential ways at providing sustainment and logistical support to the modern amphibious force. It is unlikely that United States forces will be able to project power into foreign countries using large-scale commercial shipping (such as maritime prepositioning ships) in permissive littorals as they did in Operations DESERT SHIELD and DESERT STORM.[2] Instead, the modern amphibious force will require a smaller and more disbursed insertion of troops into the weapon engagement zone with a requirement of self-sustainment for weeks or potentially months. Therefore, due to the challenges of the modern maritime environment, the Marine Corps must test, refine, and implement 21st-century foraging techniques, such as field ordering officers and pay agents, to procure various classes of supply to support the sustainment of a modern amphibious force.

An isolated landing force is not a new concept. Nearly 80 years ago the men of 1st MarDiv were "marooned" on Guadalcanal by the amphibious force designed to support them. Multiple factors led to this situation including lack of a single battle concept, lack of aerial or naval supremacy, and fear of losing additional Allied ships.[3] This required MajGen Vandergrift's landing force to self-sustain until aerial and naval supremacy could be restored. In the future littoral conflict, a similar requirement for self-sustainment will likely occur. Peer/near-peer competitors will look to conduct naval defensive strategies utilizing surface ships, submarines, aircraft, naval mines, landbased anti-ship cruise missiles, and landbased anti-ship ballistic missiles to conduct anti-access area denial to deny amphibious forces access to key operational areas. Furthermore, the increase in technological capabilities will further threaten the naval assets a part of the amphibious force, further reducing the likelihood of naval support once landing forces are established. Ultimately, the ability of an amphibious landing force to self-sustain continues to be a requirement in the modern maritime environment and is a necessity to provide logistical flexibility for the ground combat commanders.

>1stLt Gervaise is a graduate student at the Naval Postgraduate School studying Defense Contract Management. He was the former Supply Officer for the 3d Littoral Combat Team.

... the Marine Corps must test, refine, and implement 21st-century foraging techniques ...

A 21st-century foraging technique that could fulfill the requirement for self-sustainment is the use of field ordering officers and pay agents embedded within each element of the amphibious landing force to procure various classes of supply. Unlike standard procurement methods, field ordering officers and pay agents utilize cash rather than credit cards or online purchasing systems. This provides greater flexibility within an austere environment and reduces the signature being produced across the information spectrum. These two billets work in tandem to procure supplies and services under the micro-purchase threshold. The micro-purchase threshold is limited to $10,000 for single purchases, with the ability to increase in a named contingency operation. A field ordering officer is any Marine or sailor within the unit with a rank of E6 or above. They are required to complete Defense Acquisition University ACQ 0030 Overview of Acquisition Ethics, MarineNet-Combating Trafficking in Persons, and receive training from a contracting officer as part of their region's expeditionary contracting platoon to receive their appointment. A pay agent is an MOS-trained Marine who is appointed and accounted for by the disbursing officer within their respective region. They do not have any rank restrictions and have flexibility with quantities of cash held and expensed. Put into practice, a field ordering officer would arrange a deal with a vendor for supplies and services while the pay agent would expense cash once the supplies have been delivered

or upon completion of services. This avoids conflicts of interest with using government funds and avoids fraudulent transactions occurring. Overall, this capability could be integrated at the platoon level across multiple units to add redundancy.

The use of field ordering officers and pay agents has been subject to experimentation within two units across the Marine Corps. In January 2020, the 31st MEU had small-unit leaders buy necessary supplies from local vendors within Tinian and the Northern Mariana Islands.[4] Additionally, in March 2022, 1/12 Mar conducted concepts of 21st-century foraging during Spartan Fury 22.1 at Pohakuloa Training Area, HI. During the exercise, individual Marines procured dry goods and fresh produce from local suppliers and then utilized that food to experiment with various field cooking methods. This food was able to feed the battery for three days with two cooked meals a day.[5] Ultimately, both units demonstrated incorporating organic field disbursing and supply capabilities into a concept of support. This proved a unit could sustain itself without outside support for a duration of time, making the unit more adaptable, mobile, and lethal. Although the concept of employment has been demonstrated by two units, the Marine Corps must continue to refine and implement these methods into future testing to ensure this becomes an organic capability.

Overall, the challenges of the modern maritime environment require 21st-century foraging techniques, such as field ordering officers and pay agents, to be implemented across the amphibious landing force to provide sustainment through the procurement of various classes of supply. This ability to self-sustain will continue to increase as peer/near-peer competitors look to implement new technologies and anti-access area denial naval defensive strategies. Although two units have tested using field ordering officers and pay agents, gaps in implementation and maintaining this capability organically still exist which will require further refinements in experimentation. Ultimately, the use of field ordering officers and pay agents is just one type of 21st-century foraging techniques that will be required for a successful modern amphibious force. Combined with other sustainment techniques, such as using atmospheric water generators, supply drops, and autonomous resupply runs, the modern amphibious force will be staged to support the future fight.

Notes

1. Staff, "The Maritime Operating Environment," derived from Joint Publication 3-02, Amphibious Operations (Washington, DC: 2019); Gen David H. Berger, *38th Commandant's Planning Guidance,* (Washington, DC: 2019); and A Cooperative Strategy for 21st Century Seapower (March 2015), *Expeditionary Warfare School 8673, Amphibious Foundations, Lesson 5.*

2. Mark Schouten, "MCDP 4, Logistics 2.0," *Marine Corps Gazette*, February 15, 2023, https://mca-marines.org/blog/gazette/mcdp-4-logistics-2-0.

3. Richard B. Frank, *Guadalcanal: The Definitive Account of the Landmark Battle,* (New York: Penguin Books, 1992).

4. Philip Athey, "31st MEU put Corps' littoral tactics, '21st century foraging' to the test," *Marine Corps Times,* January 21, 2020, https://www.marinecorpstimes.com/news/2020/01/22/31st-meu-put-corps-littoral-tactics-21st-century-foraging-to-the test/#:~:text=As%20part%20of%20the%20exercise%2C%20the%20unit%20used,reducing%20the%20unit%E2%80%99s%20footprint%20as%20much%20as%20possible.

5. Olivia Knapp, "1/12 Conducts Twenty-First Century Foraging," *Marines.Mil,* March 31, 2022, https://www.marines.mil/News/News-Display/Article/2984730/112-conducts-twenty-first-century-foraging.

Tactical-Level Logistics Considerations within NATO for the USMC

How both organizations could benefit from increased cooperation

by Col Joseph M. Garaux & Capt Kelley B. Johnson

> ***"Logistics is both an enabling and limiting factor in operations and sets the parameters for what is strategically achievable, operationally feasible, and tactically possible."***
>
> **—MCDP 4, Logistics**

>Col Garaux is a career Ground Logistics Officer currently serving as the AC/S G-3 for 2d MLG and is slated to command Combat Logistics Regiment 2 in the summer of 2024. He is a graduate of the NATO Defense College in Rome, Italy, and served as the Director of Training for NATO's Joint Force Training Centre in Bydgoszcz, Poland.

>>Capt Johnson is a Ground Logistics Officer currently attending U.S. Army Logistics Captain's Career Course. He is a graduate of Expeditionary Warfare School and served as the Branch Head of Logistics Plans for Multinational Division South-East in Bucharest, Romania.

The Marine Corps is undergoing an extraordinary table of organization and equipment change as part of *Force Design 2030* with a deliberate focus on the U.S. Indo-Pacific Command theater. As a global force in readiness, the Marine Corps must also be prepared for conflict or crisis in the European theater with Russia as it is highly likely that U.S. European Command will want Marines in-theater should an Article V declaration occur against a NATO member. Due to the structure and capabilities of the MAGTF, the Marine Corps is an organic joint force that drives at the core of NATO's desired warfighting concept. Nevertheless, should Marine Corps units deploy to Europe and be placed under NATO command and control (C2), there will be critical interoperability shortfalls within tactical-level logistics that require examination.

To begin, there is not a great depth for the Marine Corps within NATO. Currently, there are 57 NATO billets for Marines of which only 5 are related to logistics. Secondly, NATO operates off the assumption that tactical-level logistics is a national responsibility and logistics sustainment is only ever exercised at the Corps level or above. These two facts are problematic for Marine Corps logisticians and commanders required to operate within this environment. The Marine Corps will have a difficult time with NATO integration due to the fact that we are not optimized to fight at the Corps level and would prefer to contribute scalable MAGTF type forces below the MEB level based on our history and compounded by *Force Design 2030* changes.

If receiving the correct level of commitment and attention, the Marine Corps and NATO are organizations that could benefit greatly from one another. These could manifest through NATO relying on the Marine Corps to be a stand-in Very High Readiness Joint Task Force (VJTF) or the Marine Corps relying on NATO to provide increased training venues across different climes and places in a multinational environment. To make these points relevant to today's challenges, an understanding of NATO and how far the organization has come since its creation in 1949 is helpful.

By design, NATO exists as a defensive organization that is focused on deterrence with the capability of conducting limited offensive actions to restore the territorial integrity of its members. Of the fourteen articles within the Washington Treaty, Article V is most commonly quoted when discussing NATO exercises and/or operations. It states, "an armed attack on one or more of them in Europe or North America shall be considered an attack against

them all," which is the right of individual or collective defense as deemed necessary to protect sovereign nations. From a historical perspective, Article V has only been invoked one time, which was in the aftermath of the 11 September 2001 attacks on the United States, focusing on terror groups in the Middle East.[1] Although geographically isolated from NATO, many member nations sent troops to the Middle East in an effort to show NATO solidarity just after the 9/11 attacks upon the United States. While the true success of those operations is debatable, one fact remains: NATO operated outside of its originally intended scope and purpose. This was a large step forward because it shows how NATO policies, procedures, and doctrine evolved in line with national political wills. More than 70 years since NATO's creation, there is room for current, reasonable interpretations of the text as countries do with their own Constitutions. If we wish for perhaps the most successful alliance in the history of the world to remain ahead of its peer/near-peer adversaries, it is critically important to look into the future through enabling concepts in the present.

NATO doctrine states, "NATO and nations have a collective responsibility for logistic support of Alliance operations and missions (AOM). Nevertheless, NATO recognizes that the ultimate responsibility for support of national forces lies with the respective nations."[2] For decades, NATO's operations and exercise scenarios have deemed logistics as a "national responsibility" quite simply because we have been surrounded by enabling factors. These factors include having freedom of movement via air, sea, and ground lines of communication, operating in a NATO country, and/or operating in a friendly, non-NATO country with access to plentiful resources through contractor support to operations and host-nation support. However, more recent command-post exercises have begun notionally tasking NATO forces to operate outside NATO countries or in contested territory to simulate attacks into hostile environments to achieve their objectives. This sort of mission on hostile territory is unrealistic in the sense that NATO doctrine does not support these types of exercises and operations, most notably from a logistical perspective. The restoration of territorial integrity-type missions on friendly territory is much more realistic based on the ongoing Russia-Ukraine conflict that many NATO countries on the eastern flank are hoping to avoid a spillover into their territory. The Russia-Ukraine conflict has highlighted the criticality and difficulties surrounding logistics, which NATO must focus on at a lower tactical level in order to set common conditions for exercises and/or operations. From this perspective, the Marine Corps is the ideal organization to partner with NATO members since this exact problem set has been the focus of the Marine Corps since the introduction of *Force Design 2030* but in a different theater.

After taking part in many exercises and attending a plethora of planning conferences, it is apparent that division-level commands and below are left to national training only in NATO when it comes to exercises because the normal focus is on corps-level and above. However, when looking from the operational level, a division-level command is responsible for bridging the gap between the tactical and operational levels, which is arguably the most important link within the chain of command. By putting less emphasis on tactical-level command and control, we risk our ability to decisively exploit success and gain tempo during offensive, kinetic engagements. Luckily for NATO, the Marine Corps almost exclusively trains at the tactical level in an expeditionary manner within the MEU, MEB, and sometimes in MEF constructs which are comparable to the NATO Response Force construct.

The biggest issue NATO faces within the logistics realm is that doctrine is largely focused on the operational level. Although the same ideas can be used at the tactical level, there are no specific Allied Tactical Publications for logistics to assist in making the appropriate transition. Additionally, since logistics is notably referred to as a "national responsibility," the existing doctrine essentially tells the reader what logistics is and the options available instead of how to actually conduct it. That being said, NATO does, in fact, have a large amount of terminology and concepts that discuss how to bridge any gaps in fluctuating contribution levels (national support element, logistics lead nation, logistic role specialist nation, multinational integrated logistic unit, etc.), which sometimes helps but often causes more confusion on responsibilities if these options are utilized but not clearly defined. The problem is that the evolution from logistics as a national responsibility to a NATO responsibility is a lengthy process due to its strategic-level oversight if not already previously agreed. One of the ways this shortfall could be mitigated is through the VJTF conducting logistics planning and training as a truly joint unit, similar to the MAGTF, on an annual basis instead of as separate entities (air, land, maritime). Each component has specific strengths and weaknesses that must be identified and assessed early on if mutual support is to be achieved. NATO/VJTF members could, in theory, use existing tactical-level doctrine from the Marine Corps to develop concepts that can be agreed upon by the nations regarding *how* to conduct logistics. This is not to say the VJTF needs to conduct ship-to-shore amphibious assaults; rather, it is a suggestion to highlight the requirement for a more progressive approach toward integrated training amongst the component commands.

One of NATO's goals is to standardize all that is possible in order to generate a common understanding amongst contributing nations. However, if this is only done at the conceptual level and left up to interpretation by each individual nation, NATO members will experience an unnecessary amount of friction when the time comes for collaboration. This is not to say all countries are similarly organized or capable; rather, it is a way to create synergy through expectation management. Some examples of more detailed standardization include: defining a standard day of supply for a NATO soldier; clarifying the national support element structure and locations in-theater; agreeing on the distances be-

tween logistical nodes; using the same unit of measurement to determine quantities; operating when we cannot rely on contractor support to operations/host nation support; streamlining C2 and reports and returns, especially if a nation does not possess a NATO functional area service (FAS); and determining if host nations will provide logistics in contested spaces. Without a baseline agreement or understanding of the aforementioned topics, NATO commanders could be accepting unnecessary risks that their staff could otherwise mitigate. An example of a NATO attempt to standardize logistics is likely through the use of the logistics FAS (LOGFAS). When utilized properly, this network of programs can help track all logistics functions, classes of supply, and requirements from the strategic down to the tactical level. Should LOGFAS be used properly, expanded to incorporate other FASs, and introduced more widely across NATO members/Services, much of the ambiguity to the questions above from a logistics perspective can be removed.

Furthermore, if NATO deems logistics as a national responsibility, then NATO commands are left in a reactionary position which is not advantageous when time is limited. Most solutions to this dilemma are legal documents such as technical arrangements or bi/multi-lateral agreements, but they require long lead times. This also gets far more complicated when discussing multinational units and how an national support element structure works to support the troop-contributing nations under operational control. Many will mention this is a Joint Logistic Support Group issue at the operational level to coordinate logistics via logistics control at the theater logistics base. However, this is heavily conceptual, implies an *ask* instead of task relationship, and is rarely exercised with the units they would be supporting since logistics control "does not confer authority over nationally-owned resources held by a national support element, except as agreed in the transfer of authority or in accordance with NATO principles and policies for logistics."[3] Based on these realities, the self-sustaining MAGTF—which is the cornerstone of Marine Corps operations—will become highly desirable by Supreme Allied Commander Europe and U.S. European Command should Article V be invoked. The lack of bureaucracy and multinational coordination of the Marine Corps tactical logistics system within a MAGTF will make it the most effective and timely force for initial conventional operations. The Marine Corps needs to be prepared for this request and building its resident understanding of NATO would be a great start.

NATO exercises should shift from command post-exercises at the operational level, to more tactically focused ones that deal with real movements and sustainment in the countries assigned to certain headquarters. They should also focus on using units that would actually be attached in order to familiarize themselves with standing operating procedures, tactics, techniques, and procedures, and other important knowledge for operating together. This must be approached through a crawl-walk-run method by forming baseline concepts, conducting table-top exercises/rehearsal of concept walks, and ultimately using real-world units to conduct field exercises across a realistic area of operation. These exercises can be tailored to simulate the intention of NATO in defensive, territorial restoration with limited counterattacks, or offensive, highly kinetic operations into hostile, non-NATO territory. This is not to say we need to conduct full-scale exercises of this nature; rather, it is to highlight that if we do not attempt small-scale exercises with a reasonable expectation of failure then we will never progress. The Marine Corps has been heavily experimenting with the expeditionary advanced base operations concept which places a premium on tactical-level logistics due to its austere, disaggregated nature. Although the focus of this concept is rooted in the U.S. Indo-Pacific Command theater, there is no reason the same fundamentals cannot be used across the U.S. European Command/NATO area of operations, which still makes the Marine Corps a force of choice for NATO. To achieve long-term sustainment under this concept, NATO interoperability will eventually need to be achieved at the tactical level. The desired NATO unit to experiment with a pseudo-expeditionary advanced base operations concept would be the VJTF due to their composition and tactically focused purpose, which could draw on logistics shortfalls from the bottom-up.

In conclusion, NATO needs to focus on tactical-level exercises and operations with an emphasis on logistics solutions to emerging challenges because leaving logistics to individual nations is fraught with error and gaps. This fact has been recognized by the leadership of both NATO training centers in Poland and Norway. If NATO does not begin shifting efforts now then an engagement against a peer/near-peer adversary could prove devastating. From the realm of logistics specifically, this means putting less emphasis on strategic- and operational-level reception, staging, and onward movement exercises in order to allow our Corps' divisions and brigades to focus on sustainment from the warfighting perspective. It is also critical to stop insisting that units will "play" logistics during exercises and instead make funding and training venues available at the tactical level so we can *do* logistics. Although the Marine Corps is heavily investing in the U.S. Indo-Pacific Command theater, it may be time to re-invest in Europe given current events and historical anecdotes that large-scale conflicts are not fought on a single front. A reinvigorated relationship between the Marine Corps and NATO with an emphasis on tactical-level logistics is both needed and would prove symbiotic to ensuring our warfighting capability that may be called upon at a moment's notice.

Notes

1. NATO, *The North Atlantic Treaty,* 1949.

2. NATO Standardization Office, *Allied Joint Doctrine for Logistics* (Brussels: 2018).

3. Ibid.

Admiral Eccles' Logistics Framework

An answer to expeditionary advanced base operations sustainment

by LtCol Andrew P. Kettner

>LtCol Kettner is a Logistics Officer assigned to OPNAV N953 as the Global Positioning Network Lead. He deployed in support of Operation ENDURING FREEDOM with Marine Wing Support Squadron 272, was assigned to Combat Logistics Regiment 37, 3d MLG, and served with 11th MEU during their WESTERN PACIFIC 19.2 deployment. He wrote this article while assigned to Marine Corps Logistics Operations Group.

With the release of *MCDP 4, Logistics*, leadership correctly responded to realities of logistics in the Pacific and responded by updating doctrine. In Chapter 1, the publication reads: "Logistics applications (art) and calculations (science) occur in a contested environment. Logistics ensures the right support is in the right place at the right time."[1] However, even with this excellent and needed update, *MCDP 4's* doctrinal visualizations of a logistics chain, web, or written word do not provide a useful mental template for commanders or logistics experts to use when developing concepts of logistics support on the modern battlefield; it does not provide a tool for the science or art described. Overall, the Marine Corps continues to lack an applicable logistics-oriented logistics framework. It is only through reasonable and prudent ideas, offered by experienced Marines and sailors, that commanders can create all-inclusive views of tactical through strategic logistics considerations. There is a better answer. Following the conclusion of World War II and during the Korean conflict, the preeminent naval logistics mind of the time, ADM Henry Eccles, developed a process for leaders to systematically review logistics challenges and develop solutions. With minor updates, using the Admiral's process, it is ready for Marine Corps use.

In some unique circumstances, such as an assignment to Marine Corps forces components and MEUs, the Special Purpose MAGTF may consider the undeniable interconnectedness of tactical through operational logistics—the cognitive level of logistics—but only by coincidence along the way. The Joint Force expectations of the Marine Corps, through competition, crisis, or conflict, demand a conceptual structure to rapidly develop creative solutions and adapt to logistics challenges. Specifically, expeditionary advance base operations require a holistic view of the interdependencies of authorities and capabilities within a combatant command or joint operating area. Our logisticians must think joint, viewing tactical successes (or failures) in connection to operational and strategic logistics implications. In support of those tactical forces, expeditionary forces must expend each gallon of fuel, vial of morphine, or anti-ship missile as if irreplaceable, understanding the impact on the supply chain through the Joint Logistics Enterprise and the greater industrial base.

Current worldwide realities require commanders and logistics experts to conceptualize logistics actions within their assigned area of operations and to do so in an easy-to-understand process. Today, logisticians recognize it is not a single Marine Corps process required to increase lethality but a holistic Naval Service view of logistics leveraged to increase flexibility and lethality. Adapting this idea to the 21st-century battlefield, a joint-combined planning outline that considers the entire Joint Force, along with our allies and partners around the globe, will increase the speed of decision and efficiency within the naval logistics enterprise at the tactical, operational, and strategic levels. Starting with ideas put forth by ADM Eccles in 1950, an updated theater logistics planning ring is the answer to unifying the joint-combined and civilian logistics enterprise for tomorrow's evolving battlefield and executing the theorems described within *MCDP 4*. The theater logistics planning ring is the mental model for deconstructing requirements and impacts. This will increase implicate coordination between logistics planners and commanders throughout the Joint Logistics Enterprise.

ADM Henry Eccles authored many useful publications on logistics. A review of, "Fundamentals of Strategy: The Legacy of Henry Eccles," "Basic Elements of Naval Logistics," "Theatre Logistic Planning," and his defining publication, *Operational Naval Logistics*, provide the historical basis and a starting point for a modern understanding of operational logistics in a maritime environment. Many of the ideas described in *Operational Naval Logistics* remain applicable to our Joint Force. The following modifications serve as an update to the publication's ideas in

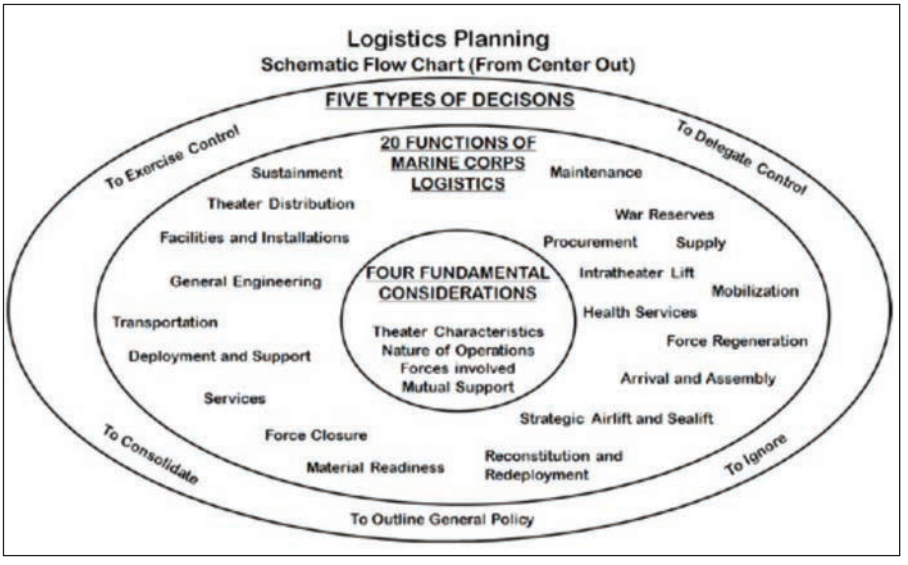
today's terms, provide an easily understood basis for a concise and practical logistics decision process, grounded in science, and immediately applicable for the Naval Service. Utilizing this logistics framework for an area of operation increases commanders' understanding of the logistics problem, survivability of the established system, and increases integration in a battle space.

ADM Eccles wrote in "Theater Logistic Planning," "How do we coordinate [an] expansion and at the same time provide for the efficient support of our day-to-day operations?"[2] The Marine Corps' answer to this must be informed by *MCDP 1-4, Competition*, and *MCDP 4*. These Service-level documents are informed and conceptualized using language and ideas outlined by the greater Joint Force documents, such as the *Joint Warfighting Concept* (to include the *Joint Concept for Contested Logistics*) and the recently released *Joint Concept for Competing*. However, today's doctrine is awash with similar but conflicting definitions of the obvious answer: "Concept of Logistics Support" to include *MCTP 3-40B, Tactical Logistics, Annex D*. Noting "supporting concept of logistics" as well as "[t]he concept of logistics and [Combat Service Support] CSS is a broad statement of the essential logistics and CSS tasks involved in supporting the concept of operations."[3] The *MAGTF Staff Training Program Logistics Planner's Guide* adds another term which states; "The LCE CONOPS and operations overlay provides the LCE and MAGTF commanders' staffs and subordinate commanders a visualization of how the LCE will support MAGTF operations."[4] Finally, *Joint Publication 4-0, Joint Logistics*, which is an authority on which all DOD logistics occurs, coins another definitive term for Marines and sailors to consider, Theater Logistics Overview, which is "a segment of the iterative planning process which addresses identification, understanding, and framing the theater's mission at the campaign level, [not for a specific operation]."[5] With so many definitions, expectations for staffs and commanders are vastly different and unpredictable from one command to the next; thus, a singular understood method of planning in an area of operations is required.

Logistically setting conditions in the world described by *MCDP 1-4, Competition*, requires a constant iterative review of campaign priorities—which forms the basis for paragraph four of the *Logistics Annex D* in an operations order. The mental image of both friendly and enemy logistics capability is the heart and soul of the day-to-day operations in competition, crisis, or conflict. It provides the material build-up for the initiation of offensive kinetic operations or maintenance of required material for the conduct of operations in competition. However, this creates biases, false assumptions, and acceptance of risk by commanders as our logisticians start planning by attempting to fill in the sub-elements of paragraph four instead of viewing the entirety of the battlespace. ADM Eccles provides a more effective means to frame an area of operations logistically in his version from 1950, with updates for Marine Corps use, when he writes, "Let interested logisticians start in the center of this."[6]

ADM Eccles highlights in this cogitative framework chart a means for logistics-minded Marines to frame and effectively develop a concept of logistics support. A logistician utilizes the diagram from the inside out starting with realities within the battlespace from tactical through strategic. In the modern lexicon, a logistics-minded Marine starts their mental framework in the first ring. The Marine must understand the conditions of the area of operation, area of influence, and area of interest through effective problem framing and intelligence preparation of the battlespace, to include a physical network analysis. This is followed, but equally important, by the MAGTF's scheme of maneuver, what time, force, and space considerations, and what other elements of the Joint Logistics Enterprise are available for mutual support—with special consideration to prioritization of a command's combat service support requirements. The leader sees the scheme of maneuver through support hierarchy, dependents, and dependencies. These questions are basic, fundamental, required, and foundational for consideration of a supportable concept of operations. They each should be instructed at Marine Corps Combat Service Support Schools and reinforced through a career of intellectual growth and experience. This is the easy answer. These questions should be provided as introductory training at Marine Corps formal schools and reinforced through training and education throughout professional military education.

The second ring is an updated from ADM Eccles's original depiction and



ADM Eccles highlights in this cogitative framework chart a means for logistics minded. *(Figure provided by author.)*

now includes the twenty functions of Marine Corps logistics. Tactical, operational, or strategic logistics functions are considered during each exercise and if required applied to the development of a concept of logistics support. An adept logistician will find some functions from operational and strategic levels are as important as the tactical requirements and should be presented to the commander for decision in the context of the *fundamental considerations* of the modified figure. Finally, in line with the original framework of ADM Eccles, the commander, invested with appropriate authorities and understanding of the logistics battlespace, selects a decision. ADM Eccles provides the following options: "The commander will decide to exercise direct control of certain' functions. In other cases, the commander will delegate control to subordinate commanders or staff officers. In some instances, commanders will consolidate all certain activities, and other will merely outline general policies. It is wise in certain matters, particularly problems, which may work themselves out if left alone."[7] In today's context, those selected by the commanding officer become the subfunctions of the concept of logistics support. Depending on echelon command and associated area of operations, the logistically minded commander will adjust their form of control based on risk to mission, risk to force, and authorities.

Planning for a logistics operation must be conducted with strategic implications in mind. In operational logistics planning, most logistic tasks are delegated to adjacent DOD Services and echelon commanders acting in support. The need to keep the enemy off balance requires offensive operations to be launched as rapidly as logistic considerations permit. Since task force planning staffs cannot be rapidly assembled and start to plan effectively, it is necessary for the geographic combatant commander to prepare many of the plans that in theory should be made by a Joint task force commander. There simply is no single staff who can do this work in time to meet target dates. By adopting this framework for logistics decision-making implicit communication is increased enhancing top-down planning, integrated planning, and a single-battle construct.

While the enemy, weather, and friendly actions continually reshape the mental picture within a commander's and staff's mind, logistics realities may not.

The former Commandant defined logistics as *the* pacing threat for Marine consideration and experimentation. It is not through technology, new commands, or a louder repeat of most recent logistics tactics, techniques, and procedures that will answer the challenge of a peer versus peer engagement but an increased understanding of logistics problem framing considerations within the context of littoral areas of operations in illy defined or developed logistics areas of responsibilities. Consider the following vignette of the use of this framework:

In an area of operation established within an area of responsibility, a logistics chief provides a concept of logistics support update brief to the commanding officer in a small shake at a foreign country's port. He notes for the next month he recommends "hold tight" and "exercise control" on use of anti-ship missiles as the joint task forces prioritization of common user logistics has changed to another joint task force during this phase of competition; this combined with the current labor strike at the Australian Army armory will reduce production and shipment by 75 percent with only three DOD identification codes arriving to the command's expeditionary advanced base operation supporting position this summer through inter-theater lift. The commanding officer, armed with a more developed understanding of the logistics enterprise in and around the area of operation makes the correct decision.

While the enemy, weather, and friendly actions continually reshape the mental picture within a commander's and staff's mind, logistics realities may not. The Marine Corps must adopt a feasible, and proven, mental framework to account for these realities and make informed and intertwined recommendations. However, once the staff work has provided recommendations and the commanding officer has decided, ADM Eccles offers the following in his writing: "[Marines] must understand a reasonably good plan understood and is feasible of accomplishment is far superior to the 'perfect plan' which is difficult to understand and issued too late. So there always comes a time when a commander must say This is it-Let well enough alone-No more changes!"[8] Utilizing this framework, the Marine Corps can most effectively implement *MCDP 4,* support the Commandant's intent, and prepare for actions throughout the competition spectrum and provide a Service-understood means to provide a concept of logistics support for expeditionary advanced base operations.

Notes

1. Headquarters Marine Corps, *MCDP 4*, *Logistics*, (Washington, DC: 2023).

2. Henry Eccles, "Theatre Logistic Planning," *Naval War College Review*, No. 8 (1950).

3. Department of the Navy, *MCTP 3-40B, Tactical-Level Logistics*, (Washington, DC: 2018).

4. Marine Corps, *MAGTF Staff Training Program Logistics Planner's Guide*, (Quantico: 2011).

5. Department of Defense, *Joint Publication 4-0, Joint Logistics*, (Washington, DC: 2018).

6. "Theatre Logistics Planning."

7. Ibid.

8. Ibid.

Big Fight, Small Logistics Apparatus

The ATLA concept in a contested littoral

by Capt Ross Ochs

The question of sustainment during a future conflict with China challenges decades of amphibious planning and demands new and creative answers. Logistics infiltration is necessary within a contested littoral where U.S. forces do not possess sea control and must operate inside an ever-growing weapons engagement zone (WEZ). The former Commandant of the Marine Corps outlined in *Force Design 2030* that a shift to expeditionary advanced base operations (EABO) is the key to winning the next big war in the Pacific.[1] The luxury and excesses of traditional logistics will not be feasible in a future fight in the Pacific. To achieve success in a desperate future conflict in the Pacific, the Marine Corps should pursue the development of man-portable, autonomous, semi-submersible drones to deliver critical sustainment and complement existing connectors and sustainment methods.

The Problem

In the next fight, freedom to maneuver through the air and sea domains is guaranteed to no one. Legacy methods of logistical resupply are easily targeted and quickly attrited within the first island chain and beyond.[2] Fortunately, there are technologies, platforms, and tactics currently in development that will aid greatly in the logistics challenge against a modern, peer threat by providing an extremely robust and redundant system of logistics delivery. Many of these systems, though, are not ready to be fielded for years, and a conflict with China could plausibly occur well before many platforms are in use.

>Capt Ochs is an Amphibious Combat Vehicle Officer currently serving as a Company Commander with 3d Assault Amphibian Battalion aboard Camp Pendleton.

The Marine Corps is pursuing new approaches to sustainment in a contested environment that challenges the relevance of legacy logistics methods. The Light Amphibious Warship, now known as the Landing Ship Medium, is well suited for troop transport and could serve as a logistics connector but remains a signature-producing ship in a sensor-flooded environment.[3] 21st-century foraging is one growing concept that has gained traction recently but still struggles to prove effective even in permissive environments.[4] Both the Landing Ship Medium and 21st-century foraging hold the capacity to prove critical in providing a portion of sustainment in a contested littoral but require either fielding or extensive further development to become effective. In a massive conflict with a peer competitor, the Marine Corps must challenge the status quo and build as much creative redundancy as possible.

Force Design 2030 adamantly pursues nonregular shipping methods such as employing large semi-submersible craft, that operate with the preponderance of the hull underwater, for logistics infiltration.[5] This could be a very effective means of logistics resupply but presents its own set of issues, primarily in cost and operation. For instance, many large submersibles, like the Orca unmanned submersible, cost over 100 million dollars and require exquisitely trained personnel to operate the platform.[6] Large semi-submersible craft have been effective in drug smuggling and the concept is certainly applicable to the Pacific theater.[7] However, large semi-submersibles produce a signature, present transportability requirements to arrive in theater, require extensive training to operate, and may have significant issues traversing coral that surrounds many islands within the first and second island chains. Ultimately, the Marine Corps requires a sustainment platform that produces extremely low signature, can be employed by all Marines, can navigate the key terrain throughout the island chains, and is cost-effective enough to sustain losses with little impact on operations.

The Solution

The Autonomous Tethered Logistics Apparatus (ATLA) concept, which was developed by this author, is part of the solution to a complex problem. The ATLA drone is a small, man-portable, semi-submersible drone that tows a dry bag on the water's surface. Roughly the size of the Expendable Mobile Anti-Submarine Warfare Training Target, this proposed drone is small enough for one Marine to easily handle and capable of towing up to 100 pounds of sustainment.[8] Unlike larger semi-submersible craft that have been considered for logistics infiltration, the ATLA drone tows its load rather than containing its delivered sustainment internally. Production of an ATLA drone would not be overly difficult given the right resources. A 3D printer, long-endurance battery, propulsion mechanism, and either a

GPS receiver with an antenna above the surface of the water or a small radio receiver and programmable compass would complete the drone. The ATLA concept would not resupply large items but would serve exceptionally well as a delivery platform for food, medical supplies, small parts, batteries, and in some cases, ammo and fuel.

ATLA Load Planning

The ATLA concept can be employed at the lowest levels and does not require highly trained operators or expensive platforms. ATLA drones are stackable and easily stored in QUADCONs along with required dry bags, line, and carabiners to complete the system. QUADCONs outfitted with up to 72 ATLA systems are easily pre-staged within the island chains and aboard amphibious shipping (Figure 1). The drone can be deployed from shipping, aircraft, shore-to-shore, and submarines. The ATLA drone is essentially an autonomous amphibious Speedball method of logistics within a maritime littoral.[9] Unlike other larger platforms, ATLA drones could be issued to a combat logistics battalion as an organic battalion-level asset that provides flexibility and options in a contested littoral.

ATLA Concept of Employment

The ATLA drone would operate in swarms or pods, pinging with a GPS receiver to navigate to its final destination. It could also receive a short-range signal from shore to navigate to the unit requiring resupply or operate from programmed waypoints. As it would not transmit a signal, the ATLA drone would be extremely difficult to sense in the electromagnetic spectrum. Due to its small, semi-submersible surface skimming silhouette, the ATLA drone is challenging to observe either by air, land, or sea. Low cost, practicality, and ease of use are strengths the ATLA concept brings to the fight.

The ATLA concept provides reliable, infiltrated logistics to a dispersed force. Expeditionary advanced bases (EABs) are dispersed but work together in an area denial role.[10] The ATLA concept provides a network of sustainment between EABs, originating from a logistics EAB or contracted civilian shipping (Figure 2). Marines conducting operations from these EABs would simply walk to the beach, unclip the dry bag full of sustainment, then either bury the ATLA drone or send it back to a rally point for pick up and future use. This concept greatly extends the ability of Marines conducting EABO to operate without foraging for sustainment, interacting with local populations, or creating signatures with aircraft and shipping to deliver sustainment that could be delivered via ATLA drone.

EABO will be central to a future conflict in the Pacific, but the Marine Corps must plan for the eventuality of a conventional, contested amphibious landing on a large scale. Due to the Marine Corps' maneuver warfare philosophy, one would like to think "contested" would not be defined in the same vein as Tarawa. That being said, in a contested amphibious assault, it is highly likely naval connectors will be targeted and destroyed. Landing Craft Air Cushions can move at a high rate of speed, but they must stop to unload eventually and the Marine Corps and Navy will struggle to protect critical naval connectors that are key to sustaining a forcible entry from the sea. The ATLA concept is both applicable in EABO and other, larger scale, amphibious operations like an amphibious assault when employed as a swarm.

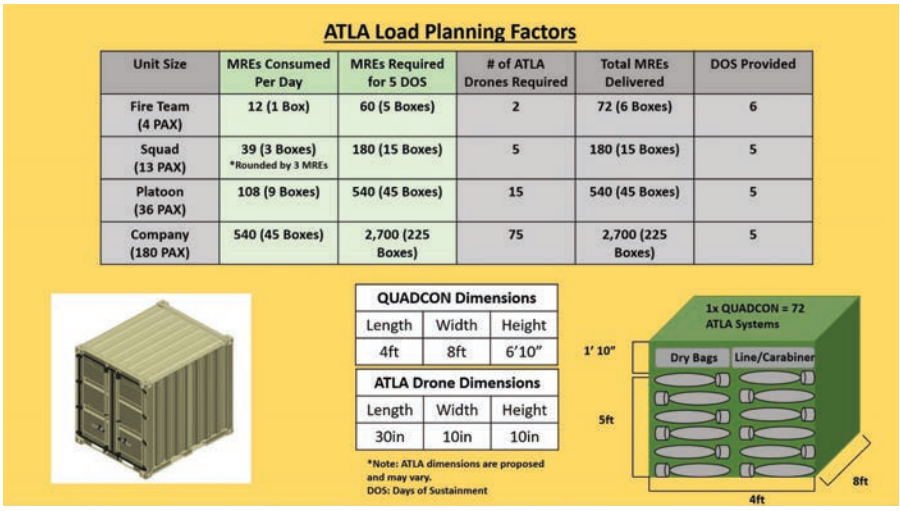


Figure 1. *(Figure provided by author.)*

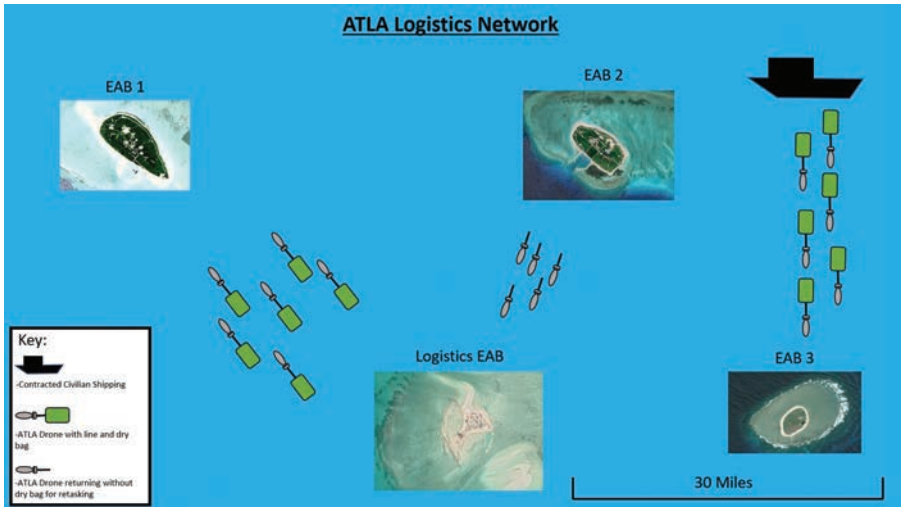


Figure 2. *(Figure provided by author.)*

In this highly contested environment, the ATLA drone can deploy as a swarm from L-Class shipping exiting the WEZ after launching the assault force (Figure 3). For instance, in a planned battle drill conducted by combat cargo Marines during an amphibious assault, pre-staged ATLA drones loaded with dry bags of ammo, medical supplies, and even jugs of fuel launch from the well deck and/or off the sides of L-Class shipping as they debalist and egress over the horizon.

Traveling on a pre-programmed azimuth, swarms of ATLA drones hit the beach soon after the first assault waves. Dry bags with ammo are retrieved from the shoreline and cached at hasty rapid replenishment points. ATLA drones towing jugs of fuel provide a limited amount of fuel on the beach as fuel trucks burn in the surf still griped to their connectors.

This could enable, for instance, LAR to conduct a critical screen, a mobile reserve at a crucial point, or hunter-killer teams aboard Ultra-Light Tactical Vehicles ranging far out to interdict an armored counterattack. Essentially, the ATLA logistics swarm following an amphibious surface assault provides critical supply while the assault force gains a foothold.

Counterargument

The obvious counter to the ATLA concept would be the conduct of 21st-century foraging to sustain a force inside the WEZ. The Basic School has conducted training in foraging with new lieutenants prior to them reporting to the fleet to facilitate a baseline of foraging knowledge amongst the officer corps.[11] Twentyfirst-century foraging may work conceptually but poses many drawbacks to a force attempting to avoid targeting and destruction. 1st Bn 12th Marines conducted an exercise in foraging that generated mixed results. During operations on the big island of Hawaii, the battalion discovered significant red tape, specifically in lengthy required request times and funding that presented major barriers to efficient foraging from local stores like Walmart.[12] A slow administrative process and language barriers would significantly detract from the ability of dispersed units to forage food and sustainment from the local population within the island chains.

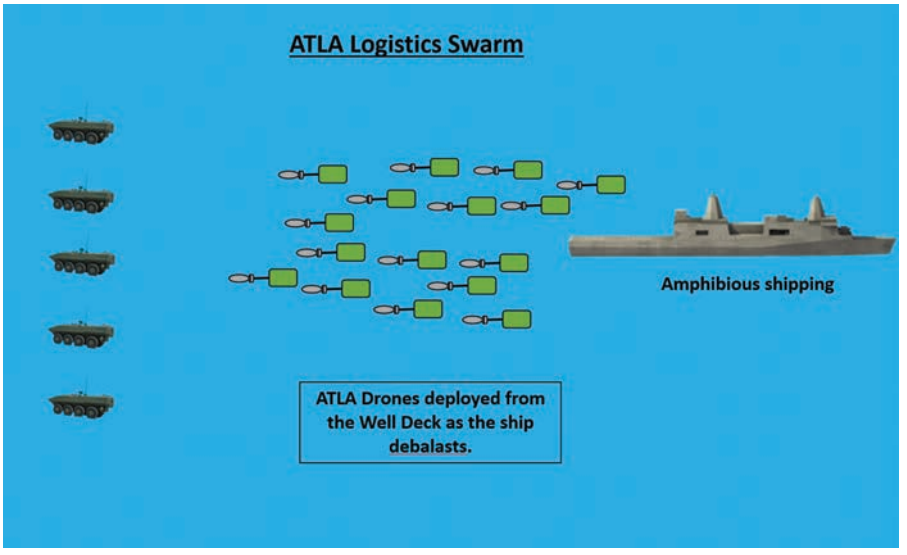


Figure 3. *(Figure provided by author.)*

Furthermore, many islands that could be occupied are sparsely populated and do not have the means to sustain a platoon or squad on local commercial and private resources. An alternative would be living off the land, which is extremely difficult in reality and essentially becomes a full-time task. Maintaining the ability to self-sustain via the ATLA concept would greatly reduce the burden on small units forward deployed in the WEZ by extending culminating points tied to food and batteries.

Conclusion

The ATLA concept is a novel solution to sustainment within a contested littoral that is not meant to replace other

AI depiction of a Marine in the first island chain unclipping sustainment delivered by an ATLA drone. *(Photo provided by author.)*

methods of sustainment. The ATLA concept is one of many solutions to ensure the Marine Corps retains its lethality in the coming fight. Signature-producing assets like the Landing Ship Medium will prove critical to sustainment and transportation but should only be used when necessary and not for resupply that could be delivered by other, less obvious means. Twenty-first-century foraging will likely pass the burden of sustainment to Marines whose mission requirements outpace the Marine Corps' administrative process to procure forage. To gain the advantage in a challenging future conflict in the Pacific, the Marine Corps should pursue the development of the ATLA concept to deliver critical sustainment and complement existing connectors and sustainment methods.

Notes

1. Headquarters Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations*, (Washington, DC: February 2021).

2. Headquarters Marine Corps, *Expeditionary Advanced Base Operations Handbook*, (Washington, DC: June 2018).

3. *Tentative Manual for Expeditionary Advanced Base Operations*.

4. Peter Thermos and Angel Maldonado, "21st Century Foraging," *Marine Corps Gazette* 105, No. 3 (2021).

5. *Expeditionary Advanced Base Operations Handbook*.

6. John Keller, "Boeing Moves Forward on Navy Long-endurance Unmanned Underwater Vehicle Project for Special Warfare Missions," *Militaryaerospace.com*, November 9, 2022, https://www.militaryaerospace.com/unmanned/article/14285455/unmanned-underwater-longendurance.

7. Steve Weintz, "UUVs as Stealthy Logistics Platforms," *Center for International Maritime Security*, June 4, 2015, https://cimsec.org/uuvs-stealthy-logistics-platforms.

8. "MK 39 Expendable Mobile Anti-Submarine Warfare Training Target (EMATT)," *Navy.mil*, August 31, 2021, https://www.navy.mil/Resources/Fact-Files/Display-FactFiles/Article/2159280/mk-39-expendable-mobile-anti-submarine-warfare-training-target-ematt.

9. Headquarters Marine Corps, *MCTP 12-10A, Mountain Warfare Operations*, (Washington, DC: 2018).

10. *Expeditionary Advanced Base Operations Handbook*.

11. Philip Athey, "Butchering Pigs, Foraging Water and Fuel–The Future of Marine Logistics" *Marine Corps Times*, January 27, 2022, https://www.marinecorpstimes.com/news/your-marine-corps/2022/01/27/butchering-pigs-foraging-water-and-fuel-the-future-of-marine-logistics.

12. *First Battalion, Twelfth Marine Regiment, Spartan Fury 22.1 After Action Report*.

USMC

Integration at Echelon

Maximizing functional component relationships to enable the Marine Corps scheme of maneuver

by Col Daniel B. Taylor

Part 1: Issue

How does the Marine Corps maximize cross-functional component relationships within a joint task force (JTF) operational concept that addresses formal command authorities while leveraging capability and capacity from the Service components to enable the Marine Corps scheme of maneuver?

Part 2: Background

The *38th Commandant's Planning Guidance* (*CPG*), authored by Gen David H. Berger, outlines five priority focus areas: force design, warfighting, education and training, core values, and command and leadership.[1] With the primary focus area being force design, Gen Berger highlights the importance of establishing Service and functional component relationships. Specifically, the former Commandant states that "the Fleet Marine Force (FMF) will support the Joint Force Maritime Component Command (JFMCC) and fleet commander concept of operations ... and by assigning more Marine Corps forces to the Fleet, putting Marine Corps experts in the fleet Maritime Operations Centers."[2] While Gen Berger emphasizes the importance of Naval integration and reinvigorating the Navy-Marine Corps Component Command Relationship, he also highlights the causal impact of the 1986 Goldwater-Nichols Act, which "removed the preponderance of the FMF from fleet operational control and disrupted the long-standing Navy-Marine Corps relationship by creating separate Navy and Marine Corps components within joint forces."[3] The effort and means required to rebuild and reinvigorate the Service relationships across the Navy-Marine Corps team has been defined as "complicated," predicated on implied guidance for mutual alignment in operational execution and administrative action across both Services.

Executing the *CPG* will require overcoming operational and cultural biases that were tacitly created and operationalized over decades during combat operations in Iraq and Afghanistan. The current operational lateral limits of force structure and power projection coupled with the expanding threat in the INDOPACOM theatre of operations necessitates the Joint Force to leverage *time now* capacity and capability across the Services to enable respective Service schemes of maneuver. Marine Corps commanders are being required to constantly evaluate the trade space between operational commitments and rehearsal training relative to the impacts of force design and the capabilities and effects they aim to create. This complexity or the multiplicity of key decision factors presents a cause-and-effect relationship made more difficult due to the uncertainty of the time and linkages of second and third-order effects that may impede the execution of policy.[4] The operational interdependencies stated within the *CPG*, namely those that are in partnership with the Navy, are present at every major operational level of command.

Meeting present-day operational requirements while addressing the force structure of the future is becoming increasingly difficult at a time when the United States' global hegemony is being contested. In the *CPG*, the former Commandant states, "Institutional changes that follow this CPG will be based on a long-term view and singular focus on where we want the Marine Corps to be in the next 5–15 years."[5] The *CPG* is almost four years old; the Marine Corps has already divested to invest per the *CPG* in manpower and material. However, the means and methods the Marine Corps and the Navy approach to naval integration is still a conjecture-based discussion and can be argued as myopic in approach when considering joint operations in the INDOPACOM theatre. Specific to the JFMCC, the supporting maritime operations centers (MOC) do not have the current capacity and capability to integrate, synchronize, and enable the Marine Corps scheme of maneuver in competition and conflict. While both Marine and Navy leadership agree that more integration between staffs will help "rebuild and reinvigorate the service relationships across the Navy-Marine Corps team," as the *CPG* suggests, the current operational limitations in both structural capacity and operational joint capability of the MOC prove insufficient to accomplish the directives outlined in the *CPG*. To set conditions to integrate, synchronize, and enable the MAGTF scheme of maneuver, a broader awareness of how to leverage current joint capacity and capability

>Col Taylor is a Marine Aviator and is currently the I MEF Liaison to the Commander of 3d Fleet. He has deployed in support of WESTPAC, Operation Southern Watch, Operation Enduring Freedom, Operation Iraqi Freedom, Operation Inherent Resolve, and Freedom's Sentinel supporting the Resolute Support mission. He is a Weapons and Tactics Instructor and TOPGUN graduate with over 2500 hours in the F/A-18.

across the functional components is essential for Marine formations to operate within a joint construct. The ability to *integrate at echelon*, not just within the JFMCC, will be required to effectively deploy and operate within a joint force construct.

Part 3: Analysis

The *2022 National Defense Strategy* states the People's Republic of China is the pacing challenge for the DOD.[6] Destabilizing military and political actions from acute state actors such as Russia and Iran will increase pressure on "how the U.S. military will meet growing threats to vital U.S. national security interests and a stable and open international system."[7] Specific to the *CPG*, INDOPACOM represents a unique blend of political, military, and socio-economic challenges across an unmatched area of operational expanse requiring joint, integrated force projection and associated response options using all instruments of national power. North Korean nuclear advancements and provocative testing will require U.S. Forces Korea to maintain a deterrence posture capable of offensive action if required. The People's Republic of China is escalating its political rhetoric concerning Taiwan with increased military activities in and around the East China Sea and the Straits of Taiwan. In the South China Sea, the People's Republic of China is destabilizing regional security through advancements in forward basing, economic influence, and humanitarian manipulation.

The U.S. military is not equipped or task-organized to address a peer-peer conflict in the INDOPACOM theater as a cohesive Joint Force. Inconsistencies between Service doctrines—particularly regarding command authorities and the approval, apportionment, adjudication, and synchronization of fires and maneuver with integrated non-kinetic layered effects—pose critical problems to the military force. Annual Tier 1 and 2 joint exercises designed to assess how to integrate and synchronize the Joint Force all too often quickly devolve into Service parochialisms and white-cell cards that obfuscate the scrutiny needed to provide Service reflections relative to the joint integration process and required competency. Specific to joint targeting and fires, joint targeting processes and approvals are held at the Echelon 1 (combatant command) or Echelon 2 (component command) level of command, whereas joint fires execution is an Echelon 3 (numbered fleet/MEF) or below function. The ability of the MAGTF to prosecute targets at risk in a joint environment is predicated on the assumption that Marines across the echelon of command are properly integrated and trained to bridge the operational and tactical level of war continuum. Additional operational friction stems from the advancements in aviation platforms and long-range weapons systems that require further joint integration based on operational ranges and the synergistic effects they can achieve. Service-specific organic command and control organizations have matured to support these systems and will be employed at the tactical edges of friction to enable the ability to communicate, sense, and shoot targets that are being held at risk. To fully leverage the capability of the U.S. military, a solid understanding of these doctrinal differences and Service approaches must be understood and exercised in competition/steady-state operations and rehearsal events at the joint level to enable success in conflict. A misunderstanding of these Service parallels and inconsistencies will further perpetuate operational biases and lead to planning deficiencies, mission gaps, operational cavitation, and potential fratricides. While we must continue to train and task organize to fight as Service entities, the insight and proficiency required for seamless integration and execution is a requirement to operate within the JTF framework.

The U.S. military is not equipped or task-organized to address a peer-peer conflict in the INDOPACOM theater as a cohesive Joint Force.

The fragmented nature of our current approach to joint operations necessitates that we develop and train doctrinal integration procedures between Service and functional components. Current doctrine enables the Service components to remain autonomous, leveraging their operational experience formed from sustained operations in the Korean peninsula, Iraq, and Afghanistan that maximize organic lethality while lacking integrated systems, joint training, and interoperability to mass fires and effects across the joint warfighting domain. The ability of the Marine Corps to execute in competition and conflict is predicated on the ability to *integrate at echelon* across the functional components to increase operational awareness of joint processes, establish habitual relationships, and build intrinsic trust. Foremost, demonstrating operational competency will be required to enable the execution of mission-type orders in a joint operational construct. The *CPG* states that the "Marine Corps must maximize our inherent relationship with the Navy, along with our expertise coordinating elements of the MAGTF, to effectively coordinate across all warfighting domains to support the Joint Force." To do this, we cannot rely solely on functional component command authority wire diagrams that denote administrative control, tactical control, and operational control. To support the Joint Force, the Marine Corps needs to seek out tactical and operational centers of gravity that will provide the ability to monitor, coordinate, advise, train, and assist in MAGTF employment, synchronize embedded operations, and Service integration. In essence, the Marine Corps cannot blindly subjugate itself to the JFMCC and the MOC when balancing the operational requirements that span across multiple contingencies and operational plans. The future fight may have the MAW as the main effort for

Effective joint operations require integration of forces and staffs across the echelons of command. This integration requires Marines trained to bridge the tactical and operational levels of war. *(Photo by Cpl Eric Ramirez.)*

the MEF, placing a natural emphasis on air component operational centers of gravity to maximize the respective capacity and capability to enable Marine formations to integrate and operate effectively. The objective is to establish the operational unit framework, organization structure, and command relationships with authorities to enable the deployment and integration of Marine personnel across the JTF and the subordinate commands. As force design evolves, reprioritization of physical, monetary, and human capital should be aligned to those commands where cross-Service coordination and access to communicate or influence joint functional component stakeholders exist. The priority should be using existing operational command structure with available capacity that enables access and awareness of JFMCC, Joint Force land component, and Joint Force air component command relationships and requisite authorities, enabling force integration and synchronization, force flow, and if required, maneuver, targeting fires, and effects.

The current Marine Corps approach to joint operations necessitates that we develop and train doctrinal integration procedures between Service components at the operational level of war. The MEF operates at the tactical level and the staff, operational planning, and execution biases are aligned respectively to MAGTF-centric organic fire and maneuver. Marine manpower is at a premium and in a zero-sum game competition for force structure. For force structure to be built somewhere outside established Marine formations, the structure will have to be pulled from elsewhere causing a constant balance of assessing where to place Marines with the right experience to optimize a desired operational effect. Changes in operational design, specifically resident within INDOPACOM, necessitated the role of Marines to be integrated into joint operational centers and functional component staffs with a singular purpose of integration into joint planning and operations. Permanent placement of Marines at echelon will enable the integration and execution of Marine formations during training and execution while mitigating rotational amnesia and providing permanent and persistent access to joint and Service equities.

Part 4: Implementation

To operate effectively in a joint environment, Marines will need to be integrated at echelon across joint operational centers of gravity to provide awareness and perform the required functions at the operational level of war—addressing gaps, holes, and seams that occur between the operational and tactical level. The recommended actions below are suggested to provide immediate awareness and to promote discussion regarding the required capability to enable Marine formations to execute within joint operational constructs. They may be executed singularly or in series, with the preferred method of simultaneous execution.

Action 1: Permanent Marine Liaison Element at the Air Operations Center(s)

The Marine Force commander lacks a permanent and direct representation of functional component commands specific to operational matters pertaining to MAGTF integration during competition and crisis. Per *Joint Publication 3-30 Appendix* F, the Marine liaison element (MARLE) is doctrinally embedded within the air operations center (AOC) for each geographic combatant commander. By definition, "The MARLE is the Marine Corps forces commander's representative within the AOC and is responsive to the Joint Force air component on matters pertaining to Marine Corps operations. The MARLE provides feedback to organizations within the AOC on current and future joint air operations concerning integration of force requirements."[8] The AOC is the singular purpose-built weapon and command and control system for use at the operational level of war that, by design, has the capacity and capability to integrate Marines to enable full spectrum-all domain effects. The AOC's embedded Service liaison elements advocate and enable functional component integration. The current Marine Corps approach to joint operations as defined by the *CPG* necessitates that we develop and train doctrinal integration procedures between Service components. The *CPG* orientation focuses on the JFMCC, and as such the MOC is inferred as the operations center of choice for Marine augmentation. The current capability of the MOC is not equipped or staffed to enable and integrate the Marine Corps' multi-domain

scheme of maneuver. A MARLE (along with the Naval Amphibious Liaison Element) located at the AOC leverages available capacity and capability to connect the operational and tactical levels of war. Resident within the AOC, where doctrinally joint air and surface fires that generate kinetic and non-kinetic effects are centrally adjudicated, the MARLE provides a singular focus of ensuring Marine Corps equities are integrated and serviced by joint effects regardless of domain or Service. Changes in operational design, specifically within INDOPACOM, necessitate the role of the MARLE at the AOC. Permanent MARLE placement at the AOC, augmented by rotational personnel from the MEFs, will enable the integration and execution of Marine equities during training and execution while providing permanent and persistent access to joint process and Service equities.

Action 2: Integration at Echelon

Lack of dedicated and enduring Marine representation across the Joint Force during competition and steady-state operations leads to a lack of coordination and communication across the JTF and the functional components during execution. The Marine Corps historically trains and employs a MAGTF, which has conditioned a general lack of experience in integrating into the joint operational construct—primarily due to operational biases where the MAGTF was responsible for the area of operations the Marines operated within. Conversely, the Service and functional components also have a limited understanding of the Marine scheme of maneuver, capability, and operational dependencies when integrating into a JTF construct. Providing dedicated MEF representation on a shared, rotational basis will provide the required coordination, feedback, and advocacy for both joint and MAGTF equities while ensuring the Joint Force understands (and can support) the MAGTF scheme of maneuver.

Marine representation via liaison officers (LNO) embedded across key billets within the functional components should be task organized to integrate, coordinate, and brief approved scheme of maneuver and associated coordination measures. These Marines would attend joint battle rhythm events and operational planning groups to position MAGTF equities into the joint operational framework to enable MEF execution in theatre. The LNOs would represent the MAGTF/Marine Force commander to the functional components and would be resident within the established MAGTF/Marine Force command relationships to facilitate command authorities for operational execution. Properly placed LNOs can be the primary mechanism to enhance feedback loops that will shorten decision cycles, and conversely assist the

JTF commanders in understanding MAGTF intent, operational capability, and scheme of maneuver. The necessity of joint integration has created joint functional elements and operational planning teams across the Service components designed to integrate and synchronize joint maneuvers and effects. Functionally, the respective LNOs shall be versed in joint doctrine, including joint targeting, command, and control, fires, airspace, cyber, and intelligence. Providing a strong representation of operational competency across these joint functional elements and planning teams will ensure successful coordination and integration among the different Marine Corps echelons within the Joint Force. Embedded Marine LNOs will have access to improve MAGTF awareness of competition requirements and rehearsal events during steady state operations that will further enable the desired end state of the tactical commanders in both competition and conflict. Conversely, the LNO creates a conduit of feedback and information back to the staff, effectively improving the unit's understanding of the joint integration process and intent. Utilizing theatre-wide operational command centers to facilitate joint exposure events for senior leaders will improve MAGTF execution. As an example, sending slated fixed-wing MAG and MEU commanders to a respective theatre AOC before command will provide incoming MAG/MEU commanders with the operational lens of theatre competition rehearsal events, embedded joint processes, and associated battle rhythms to further enable and align the training and execution of Marine equities in theatre.

Action 3: Marine Liaison Force Structure

MCWP 3-31 provides the doctrine for fire and effects in MAGTF operations. This document does not include any reference to a Marine liaison element and as such does not articulate the requirement and function enabled by the MARLE for Joint Force integration. With no current requirement defined by a Marine Corps authoritative document, the requirement for Marines to support joint integrated operations and exercises via the joint manning document for existing Tier 1 and 2 Joint Force commander and JTF exercises will be gapped. As MEF participation and JTF certification via Tier 1/2 exercises increase, the ability to provide a force structure capable of supporting the Marine formations within the operational plan will be degraded based on a lack of awareness of the JTF process and integration protocols. Based on current operational requirements for JTF integration, force structure such as a MARLE should be embedded within the MAGTF command element, to at least account for aviation, targeting, fires, airspace, expeditionary basing, and communications requirements. The current capability gap results in unsupported/disintegrated/unsynchronized air and surface fires, airspace development, power projection, and deployment requirements coupled with the diminished understanding of MAGTF organic capability. JTF-centric force structure requirements should have a singular focus on creating trust through competency and preserving enduring relationships resident within the functional component staffs and operations centers. Each geographic combatant command is different requiring a measured and balanced approach to the skillsets required to execute the operational design through the functional components. At a minimum, the force structure should complement that of our joint liaison element counterparts from other Service components. Notably, these include the joint air component coordination elements provided by the Joint Force Air Component Commander, the Naval Amphibious Liaison Element provided by the JFMCC, the Battlefield Coordination Detachment provided by the Joint Force Land Component Commander, and the Special Operations Liaison Officer provided by U.S. Special Operations Command. Additionally, utilizing the reserve component structure to augment the active-duty structure would enable the ability to retain exquisite capability within the reserve component while providing enduring habitual relationships with the Joint Force and MAGTF to further develop seamless awareness, access for joint integration for exercises, rehearsal events and real-world operations across all spectrums of warfare.

Part 5: Summary

Force design, advances in weapons capability, and great-power competition necessitate the Marine Corps to rehearse for the future fight with both traditional naval alignment and asymmetric execution pathways. The former focused on maturing and implementing the concepts of naval integration the *CPG* directs. The latter would leverage synergistic Service and functional capacity and capability to enable the Marine scheme of maneuver. The MAGTF is the premier combined-arms warfighting organization, doctrinally designed to task organize for mission execution that spans across the range of military operations. The requirement to integrate across functional component echelons will be essential for MAGTF operations in a joint construct Simultaneously supporting *CPG* directives and rehearsing against the emerging threat requires Marine Corps leadership to set conditions to integrate, synchronize, and enable MAGTF scheme of maneuver. The requirement to integrate at echelon, not just within the JFMCC, will mitigate operational cavitation when the MAGTF is called to execute.

Notes

1. Gen David H. Berger, *38th Commandant's Planning Guidance,* (Washington, DC: 2019).

2. Ibid.

3. Ibid.

4. Ibid.

5. *38th Commandant's Planning Guidance.*

6. Department of Defense, *2022 National Defense Strategy*, (Washington, DC: 2022).

7. Ibid.

8. Office of the Joint Chiefs of Staff, *Joint Publication 3-30, Joint Air Operations,* (Washington, DC: 2019).

Artillery

Move or die

by 1stLt James F. Thompson

>1stLt Thompson is an Fire Direction Officer with Romeo Battery, Battalion Landing Team 1/8, 24th MEU.

Since Napoleon first massed his cannons in *Grande Batteries*, timely, accurate, and massed fires have been critical to battlefield success. Cannon artillery maintains a vital role in providing the most fire support at the most crucial time for the infantry—a part close air support, loitering munitions, and rocket artillery cannot fill. The current towed-artillery system fielded by the Marine Corps is not able to meet the challenges posed by our peer competitors, the support required by the infantry, or the demands from *Force Design 2030*—but there are tested and proven self-propelled systems, such as the French CAESER, available for purchase today. The Marine Corps must invest in making cannon artillery highly mobile using existing systems to bridge a current gap in the medium fight that towed artillery cannot survive in.

The critical task of the infantry is suppression, and the mission of artillery is to suppress, neutralize, or destroy the enemy. Rocket artillery dramatically expands the capabilities of the artillery and supported units, but it does not facilitate the critical infantry task of suppression.[1] Rocket artillery, specifically the HIMARS, provides long-range precision fires that can shape the battlefield operationally and strategically. However, when Marine infantry faces a peer adversary, HIMARS cannot suppress the enemy, and close air support and loitering munitions are severely limited by adverse weather. Infantry organic 60mm and 81mm mortars provide immediately responsive and flexible suppressive fires, but cannon artillery offers a more significant effects radius and damage that organic mortars cannot match. A robust, all-weather, and mobile cannon artillery force is needed to support the infantry adequately. Currently, the Marine Corps inventory of cannon artillery consists solely of M777A2 towed 155mm howitzers; they are seeing heavy usage in the Ukrainian-Russian War alongside self-propelled howitzers worldwide. The analysis from the employment of cannon artillery in the conflict is precise—the towed M777A2 is inherently limited. Ukrainian officers "frequently describe wheeled [self-propelled] howitzers as capable of accomplishing more than towed guns with less personnel and fewer tubes" and that "tube-for-tube, wheeled SP is significantly more destructive than its towed counterpart."[2] A self-propelled howitzer can do everything the M777A2 can and many tasks it cannot. For example, the M777A2 takes crucial minutes to emplace and displace even with skilled crews and cannot effectively use hide points and concealment outside of camouflage nets. In addition, it has a relatively short tube limiting its range, takes longer to gain fire capability, and is less maneuverable and responsive than modern wheeled systems. As a result, the M777A2 is no longer the weapon system needed to meet the mobility, survivability, and responsiveness required by *Force Design 2030*.

A robust, all-weather, and mobile cannon artillery force is needed to support the infantry adequately.

Marines do not need to look far to find a lightweight, mobile, and compatible self-propelled howitzer. The French CAESER 155mm self-propelled howitzer is what the Marine Corps needs to modernize its arsenal. Fielded in 2007, it has seen combat in Afghanistan, Iraq, Mali, and Ukraine and has proven to be a capable modern artillery system. In addition, the 6x6 CAESER is only slightly wider and taller than an M142 HIMARS. There is a proven capability to support the rapid insertion of HIMARS via fixed-wing aircraft and load them aboard ships for an MEU. The United States already has the logistics to support CAESERs: they fit aboard Marine planes and ships and can fire Marine ammunition.

The CAESER's logistical footprint is similar to that of the M777A2, yet the CAESER outclasses the M777A2 in shooting and moving. Per Marine Corps Training and Readiness standards, an M777A2 battery will take at least 14.5 minutes to emplace, fire 6 rounds, and displace. The CAESER accomplishes the same mission in under five. The difference is due to the inherent structural limitations of towed howitzers and the extra work required to move and manipulate M777A2s. A significant amount of time in emplacements and displacements is spent manuevering the howitzer to and from the prime mover. Self-propelled howitzers eliminate these steps. One of the crucial lessons coming from Ukraine is the importance of rapidly gaining fire

	M777A2	CEASAR[3]
Max Effective Range	30km (Rocket Assisted)	42km (Rocket Assisted)
Weight	38,400 lbs. (with MTVR)	39,021 lbs.
Length	39 caliber	52 caliber
Caliber	155mm	155mm
Crew	7	5

Table 1.

capability after a movement and swiftly displacing to avoid counter-battery; self-propelled howitzers streamline that process immensely. The ability to swiftly displace, move, and emplace directly contributes to the survivability and lethality of cannon artillery and, ultimately, the success of the supported infantry units. The Russian military has fielded a new counter-battery system capable of locating the firing point within five seconds and directing counter battery autonomously, and the Chinese have similar systems on hand. The counter-battery systems fielded by peer adversaries are already capable of counter-battery within two minutes of detecting a firing point, and they are only going to become more sophisticated and more prevalent, posing an ever-greater existential threat. The mobility, speed, and survivability provided by self-propelled tubed artillery is one solution that enhances the survivability of Marine artillery and continues to provide all-weather fire support to the infantry.

Marine artillery must perform in all environments, including expeditionary advanced base operations. The replacement for the M777A2 must be able to move over terrain with minimal support and be relatively simple to transport from ship to shore. The Philippine Army is engaged in dynamic counter-terrorism operations throughout the island chain using the ATMOS 2000 (an Israeli self-propelled howitzer highly similar to the CAESER). The commanding general of the infantry division spearheading the fight has said that "an advantage of ATMOS is that it offers high accuracy and 'shoot and scoot' operation yet can operate on the existing road network and bridges found in the country. As a result, they can deploy even in rugged terrain while responding to mission demands more quickly than towed howitzers."[4] Wheeled self-propelled howitzers are extremely mobile over all terrain and can be transported from ship to shore with existing capabilities. There is little logistical difference between supporting a towed howitzer with a prime mover and a wheeled self-propelled howitzer; both require the same ammunition, fuel, and fluids to stay operational. Wherever a towed howitzer and prime mover can go, so can a wheeled self-propelled howitzer.

The war in Ukraine confronts us with a pivotal choice: either we can purchase more M777A2s as replacements and perpetuate the structural limitations of towed artillery, or we can modernize by acquiring tested wheeled systems. We can either stay rooted in the past or embrace the maneuverability and responsiveness of wheeled self-propelled howitzers. If we choose to design and procure a weapon system, we will likely spend ten years and vast sums on a system that will inevitably be like the CAESER. Our M777A2s have already been bought from the British company BAE Systems; the opportunity and possibility are there to purchase CAESERs from the French company Nexter Systems. By procuring currently fielded wheeled self-propelled systems, of which the CAESER is one of several capable options, Marine artillery can modernize and continue to support the infantry as it closes with and destroys the enemy.

The war in Ukraine proves the efficacy of self-propelled howitzers and the limitations of towed howitzers in a peer conflict. We ignore the lessons at our peril. A notable portion of the initial successes of the German Army in World War II was due to advancements in technology and tactics spurred by observations of the Spanish Civil War. The Germans sent their "obsolete fighters in a ground-attack role, with considerable effect"[5] and from these observations came the "impetus for Germany to create five ground-attack aviation groups." There is a unique opportunity for the Marine Corps to drastically and immediately increase the capabilities of its cannon artillery with battle-proven designs. The Marine Corps will pay the price of continued employment of towed artillery in the face of pervasive surveillance and accompanying counterfires from all belligerents. Marine infantry will lose responsive access to close, accurate, and timely fires, and Marine artillery will be exposed to counter-battery and destruction due to their lack of mobility. There are self-propelled howitzers available for production and purchase today by the Marine Corps that will significantly enhance and protect the ability of Marine artillery to fight and win.

Notes

1. Brendan McBreen, "Suppression Is the Critical Infantry Task," *Marine Corps Gazette* 84, No. 10 (2001).

2. 41st Field Artillery Brigade, *UKR Observations,* (Grafenwoehr: n.d.).

3. Staff, "Caesar 155mm Artillery System," *Army Technology Projects*, February 16, 2021, https://www.army-technology.com/projects/caesar.

4. Staff, "Game-changer ATMOS Self-Propelled Howitzers Arrive in Mindanao," *Philippine Army*, n.d., https://army.mil.ph/home/index.php/press-releases-archive-2/1688-game-changer-atmos-self-propelled-howitzers-arrive-in-mindanao.

5. Jonathan House, *Combined Arms Warfare in the Twentieth Century* (Lawrence: University of Kansas, 2001).

The Formation of Littoral Logistics Concepts

One thousand WAG bags

by CWO3s Jeffrey M. Hubbard & W. Tyler Horton

>CWO3 Hubbard is a Mobility Officer assigned to 3d Marine Littoral Regiment.

>>CWO3 Horton is a Supply Chain Management Operations Officer assigned to the 3d Littoral Logistics Battalion.

In April 2023, the 3d Marine Littoral Regiment (3d MLR) was in the Philippines to conduct BALIKATAN 2023: a bilateral exercise with the armed forces of the Philippines. After portions of the MLR arrived at remote locations located throughout Northern Luzon, a logistical planning shortfall was identified. In this case, the units failed to anticipate human waste disposal. A solution was quickly identified, but the sourcing of 1,000 human waste bag kits, also known as waste alleviating gel (WAG) or colloquially known as WAG bags, proved to be a challenge. The WAG bags were not locally procurable and, therefore, would need to be globally sourced, transported, and delivered to the unit in need.

The sustainment section within the materiel sustainment and integration cell (MSIC) of the Marine Littoral Regiment (MLR) searched multiple supply systems and contacted unit supply offices in an attempt to locate the requisite number of bags. The bags were ultimately found on hand in the warehouse of the 3d Littoral Combat Team on Marine Corps Base Hawaii. The MSIC's distribution section then leveraged the regimental air officer to locate and secure an opportune lift. Two Mississippi Air National Guard KC-135 Stratotankers were coincidently transiting through Hickam Air Base and possessed adequate space to transport the WAG bags. The MSIC made contact with the flight's mission commander and coordinated delivery from the 3d Littoral Combat Team supply to the awaiting aircraft. The KC-135s departed Hickam, transited through Guam, and two days later the WAG bags and other mission-essential equipment arrived in the Philippines. The items were then loaded onto an Air Force MC-130J, which the MSIC requested through a lateral aerial support request through the exercise Marine Forces headquarters to the exercise special forces command. Upon arrival at an intermediate airfield located in Northern Philippines, the bags were loaded into contracted vans and arrived 24 hours before the start of a significant portion of the bilateral exercise. In the course of 5 days, the critical supplies were identified, sourced, transported, and delivered across an astounding 5,600 miles.

While laudable and successful, this instance highlights the coincidences,

CWO3 Hubbard (Left) CWO3 Horton (Right) discuss future littoral logistics concepts based on their experiences from BALIKATAN 23 at Subic Bay International Airport. *(Photo provided by authors.)*

Assisted by a U.S. Army Reserve unit, critical cargo is offloaded from the KC-135 at Subic Bay International Airport. *(Photo provided by authors.)*

resource limitations, and the human hustle that underpins much of the current logistics enterprise. This example also demonstrates how vulnerable units operating in dispersed environments would be if solely reliant on a single thread of logistical support. To amplify this statement, the available bags could not be located in the Marine Corps supply system; instead, they were identified by the unit's supply officer through word of mouth, text messages, and phone conversations. In an additional turn of luck, the KC-135s were at Hickam Air Base by happenstance after being diverted from landing in Alaska on account of volcanic ash fallout.

The MLR is intended to operate autonomously within the first island chain, with or without the convenience of a higher headquarters and adjacent units in the vicinity. This charter implies several skillsets the MLR must possess to sustain itself and other Marine Forces while contributing to the Joint Force throughout the competition continuum. The alignment of a new and unique formation that holds niche capabilities might remind previous generations of concepts in which units were provided with bolt-on attachments to fill gaps in organic sustainment capabilities. Due to operational necessities witnessed through the wars in Afghanistan and Iraq, these concepts of attachments were rejected in favor of building depth and compacity—also known as an *iron mountain*.

After two decades of ground wars, the direction of the Marine Corps has begun to shift into more relevant concepts of distributed warfare, which demands operating forces to do more with less. Equipment divestments and total force structure changes aside, one requirement has remained constant; the requirement to sustain the force. The WAG bag requirement demonstrates emerging challenges of sustaining littoral logistics and highlights the need for a more redundant and reliant logistics and distribution network to sustain forces within contested areas.

In March 2022, shortly after the first MLR was activated, the Littoral Logistics Battalion charted the concept of the MSIC to streamline sustainment support. The concept came to fruition after the standalone nature of the MLR was realized and assumptions were made based on the various MOSs being assigned, which were traditionally not organic to a combat logistics battalion by table of organization. The goal of this cell was to seamlessly satisfy all logistics requirements from tactical through operational utilizing logistics integration methods. The MSIC consists of a core of subject-matter experts and commodity managers within supply, maintenance, mobility, and distribution. This cell serves as the fusion center to rapidly respond to emergent requirements by effectively tying selected requirement sourcing solutions with inter and intra-theater distribution means. In summation, the MSIC centralizes logistics support for the MLR but does not detract from the autonomy of its commanders occupying an expeditionary advanced base (EAB) site or employing unit of employment effects.

MLR forces operate within the boundaries of the EAB's joint area of operations and its unit of employment is developed and provided per the nor-

Critical supplies, equipment, and fuel is loaded onto a 463L pallet after conducting a joint inspection with the Air Force crew chief. *(Photo provided by authors.)*

Sgt Reggie Tadeo, a heavy equipment operator with General Support Co, 3d LLB, loads a 463L pallet onto a MC-130J. ***(Photo provided by authors.)***

mal Marine Corps Planning Process. The MSIC monitors the consumption rates of classes of supply, particularly I, III, V, VIII, and XI, and coordinates forecasted replenishments in phased deliveries without the subordinate MLR commanders having to do anything except receive them. This *push* logistics method was implemented to ensure the unit commanders remain focused on the mission without having to request statuses of requested replenishments. Maintenance subject-matter experts monitor mission essential equipment readiness across the MLR. By utilizing analytic tools and conditions-based maintenance plus processes, maintainers can identify potential equipment failures based on risk assessment algorithms and realtime diagnostic updates. This drives decision points for commanders, preemptive maintenance actions, or early indications of parts requirements. While some class IX will be on hand for critical items, the MLR possesses the limited capacity to carry excess repair parts. Predictive maintenance analysis, also known as demand forecasting, helps to facilitate a *just in time* inventory model to support disaggregated forces before critical equipment failure. Advance planning is essential to ensure that intra-theater lift will be available to bridge the gap between emergent requirements and rapid distribution.

In the recent release of the Marine Corps' *Installations and Logistics 2030*, sustainment is addressed as an "increasingly difficult problem" that the logistics community should aggressively pursue solutions. The document specifically states practitioners should seek solutions for how best to organize at echelon from installation to support operational commands while ensuring a rapid response. While testing the MSIC concept, sourcing solutions for repair parts, similar to the emergent WAG bag requirement, was primarily focused on Marine Corps inventory control points located within each MEF. However, during exercise Balikatan 2023, the MSIC deliberately sourced from local class IX blocks resident within regional support activities, supply management units (SMU), and two reparable issue points, each are key nodes at echelon in the Marine Corps Installations and Logistics Enterprise (MCILE).

Further, as a case study, five requisitions were sourced to at least one of the SMUs, and five were sourced to DLA. All requisitions were submitted with the same priority and required delivery date. The requisitions routed to the SMU were filled in about six days, whereas the requisitions sent to DLA's took more than ten days, despite multiple requests to expedite the shipments via the customer interactive center.

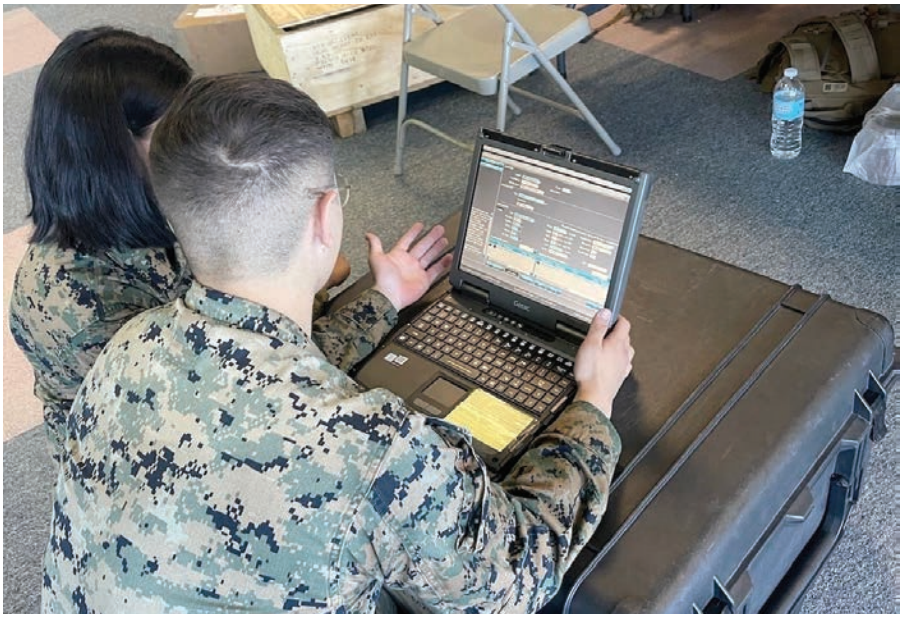
The variances in delivery times are largely due to DLA not requiring any additional interaction to receive requisitioned items. Therefore, DLA's order ship time does not typically account for nuances of specific foreign country customs clearance requirements, such as declarations of cargo or advance notice of inbound cargo. As such, DLA shipments become ensnared at the port of delivery, resulting in extended delivery times. On the other hand, the SMU manually supports many of its requisition distribution actions. The SMU's deployed support unit becomes the intermediary by physically taking the items to the commercial shipping section of the distribution management office or personnel terminal for military aircraft flights and processing the shipment on the requestor's behalf. This creates an opportunity to get ahead of the customs clearance requirements for each respective country and avoids lengthy delays. Suffice it to say the MCILE inventory could be absorbed in the Joint Logistics Enterprise inventory to be more effective, but the need exists for Marine Corps distribution subject-matter experts to be included within this concept.

Once shipments arrive in theater, the "last tactical mile" begins. The distribution management specialists provide in-transit visibility while coordinating

By utilizing analytic tools and conditions-based maintenance plus processes, maintainers can identify potential equipment failures based on risk assessment algorithms and realtime diagnostic updates.

with mobility specialists to determine the most advantageous means of distribution to support follow-on ground movements in tactical vehicles or contracted methods. The mobility officer within the MSIC provides constant awareness of available modes of conveyance. Throughout Balakatan '23, small operational support aircraft were leveraged for cargo that needed to travel further north. These aircraft saved the MSIC and the MLR the equivalent of 18–24 hours per shipment in ground transportation, equating to 12 days for 15 cargo shipments for an exercise that lasted only 17 days. The MLR's ability to source from any inventory point across the MCILE and Joint Logistics Enterprise proved to be a force multiplier and set conditions for follow-on forces. Receiving requested items within six days is a testament to the robust support available from within the Marine Corps; further leveraging joint sources would only enhance the sustainment network available to MLR elements. To further inculcate interoperability with our joint partners, the MSIC will need to make integration with joint enablers a more common practice. This could lead one to believe that an element such as the MLR would not need an iron mountain to sustain maintenance actions if they utilize conditions-based maintenance plus processes, joint automated logistics systems, and artificial intelligence tools to navigate the joint supply chain. It is easily recognized that this will not always be the standard during conflict or crisis, but it is plausible that these methods, if thoroughly exercised, will be successful throughout the competition continuum and seamlessly into crisis.

Another critical capability within the MLR is the ability to exploit contracting solutions for locally procurable items. The contracting officer (KO) within the MSIC is not currently warranted due to the requirements and nuances of the command relationship, warranting authority, and how that is granted. To validate the need for the KO and contract demands, all contracting-related requirements were run through the MSIC. This allowed the KO to determine/define the scope of a warranted KO for the MLR. The KO surmised that all requirements were very manageable at that level, however also missing from the MLR was a field ordering officer program and pay agent. Together the field ordering officer/pay agent capability adds depth to the sustainability and survivability of the MLR for greater than 90 days. Referring again to the MLR being a standalone element without augments from an LCE, the KO would need to be warranted in order to run a successful field ordering officer program and execute contracts for other requirements such as busses, vans, or hotels as well as making cash payments with the pay agent. The government commercial purchase card and unit travel cards are also within the scope of need for the MLR, but depending on the country, they may not be accepted everywhere. The inclusion of the KO structure and necessitated authority further confirms the anticipated autonomous nature of the MLR. Of note, the addition of a comptroller type to the MLR/MSIC would complete what is known as the "Fiscal Triade." Together the procurement, disbursing, and financial management capabilities facilitate independent actions and further reduce reliance on external parties.



Two distribuiton management specialists provide ITV for inbound cargo throughout the last tactical mile of distribution via Automated Manifest System Tactical. *(Photo provided by authors.)*

Once materiel is obtained from the MCILE, Joint Logistics Enterprise, contracting, or another source, it must be delivered to the end user. The normal methods employed for theater-level sustainment primarily involve what the U.S. Transportation Command classifies as channel missions. These are missions flown at regular intervals that originate from a CONUS station and transit through multiple nodes, typically completing a circuit in and out of a theater. At the initial start location and each node along the path, cargo is loaded and unloaded based on priority and requirement. For example, Air Mobility Command conducts a chan-

... an element such as the MLR would not need an iron mountain to sustain maintenance actions if they utilize conditions-based maintenance plus processes ...

nel flight mission supporting forces in Hawaii, Guam, and Okinawa. In this example, an aircraft would load cargo at Travis AFB then proceed to Hawaii, offload its Hawaii cargo, load additional Okinawa cargo, and proceed to Guam to do the same before arriving at its final destination. Once at the destination, the aircraft reverses its path back to its point of origin. Space aboard vessels is conducted in a similar fashion. In all, these channel missions form the backbone of distribution for all Services overseas.

There are two major drawbacks to these distribution missions: they are established only if there is a sufficient volume of material that requires a dedicated aircraft or vessels to maintain the throughput of supplies and the conveyance operates in permissive environments or operational forces are committed to guard and convoy them into contested theaters. As such, the large flow of sustainment requirements formed in competition would likely be constrained as tensions ebb toward conflict. This narrowing of supplies is compounded by the contact layer's desire to remain mobile by reducing the footprint of the iron mountains or stockpile of equipment. It is this shift from the comfort of iron mountains, which were formed during uncontested logistics, and now seamlessly developing contested logistics methods that can provide just-in-time logistics deliveries by non-standard or low-signature means.

Given the confines placed on strategic and theater-level logistics in conflict, the contact layer must be creative and adaptive to sustain, maintain, and survive within the weapons engagement zone until follow-on echelons arrive and begin force opening for strategic logistics to flow back into theater. A rising concept, the Global Prepositioned Network (GPN), will provide tangible inventory to the stand-in force that can be rapidly sourced and distributed to the force as well as augment the Maritime Prepositioning Force. The GPN will prove essential for the sustainment of the stand-in force and provide an MLR with equipment to exercise and persist, within the first island chain. The littoral logistics battalion could initially become the managers of a GPN site in a coordinated effort with Marine Corps Logistics Command, facilitating assets distribution and sustainment to the stand-in force. At the heart of this will be a MSIC. As this multilayer sustainment network is built and refined, the MLR will provide valuable data to Marine Corps Logistics Command as it is established. After all, if materiel already exists in the weapons engagement zone, the stand-in force does not need to transport these items; instead, the MLR forces can survive for extended periods. However, GPN sites will have limitations. Prepositioned stocks can turn into iron mountains if not planned accordingly. There will be a threshold where the sites do not become risk worthy and instead become targets for an adversary. Geographic separation enhances survivability, while too far dilutes their ability to sustain forces separated from them. The MSIC concept drives the conversation to employ alternate modes and resource alternate means of distribution. Albeit prepositioned stockpiles are beneficial, they are also dependent on continued diplomatic agreements with our host nation, and as such are vulnerable to disruptions if the host decides to stop maintaining them or eject U.S. forces from the area. Smaller stockages or mobile inventories prove to be a more palatable and risk-averse solution for contested logistics models.

The present-day iron mountain presents a substantial risk-worthy target for adversaries with precision-guided weapons or large-scale attack capabilities.

The future operating concepts will require a highly dynamic sustainment system to support a wide array of units employing exquisite capabilities. The present-day iron mountain presents a substantial risk-worthy target for adversaries with precision-guided weapons or large-scale attack capabilities. To adapt to the changing environment, future concepts can no longer depend on an iron mountain, and instead must replace its conventional large, static logistic support areas, with distributed networks of mobile logistics support nodes and caches, to create a multilayered sustainment network or "iron network." This network would be comprised of smaller, more unpredictable nodes, which are harder to locate while still providing logistics support to combat units.

The concept of an iron network structure is possible, but it requires specific enablers and a strong digital backbone to thrive. Specifically, asset- and supply-level visibility across the network is critical to providing responsive global logistical support. A critical enabling feature for this system is the visibility of assets around the operating area. In a distributed network, it is essential to have full asset visibility because inventory levels and the location of a logistics node will determine which source provides the desired supplies. This cannot be effectively accomplished without total awareness of the location of resources, a logistics common operating picture, and overlaying with the MLR's organic and theater distribution map.

The loss of aerial distribution of inter-theater sustainment in the event of isolation during conflict does not necessitate the complete absence of aviation for supplying stand-in forces. In exercises, small liaison aircraft such as the UC-12W and UC-35 flown by the headquarters and headquarters squadrons were vital links for small parcels of maintenance repair parts and small clusters of Marines within the theater and across operational areas. Small aircraft such as these draw less attention than their larger counterparts but are fewer in number, become task-saturated, and cannot carry the sustenance required for even the smallest expeditionary advanced bases. The KC-130 Hercules is the largest avia-

tion asset available to the MAGTF, and while venerable and versatile, it has its limitations for logistical abilities. Large enough to carry sufficient food, water, fuels, oils, small-arms ammunition, and parts to sustain Marines, its capabilities are taxed by large or exquisite ordinance and cargo which requires specialized ground support equipment to offload at austere and remote areas. Tactical distribution via rotary wing assets, when available to the stand-in force, can maintain their current cargo and personnel carrying abilities when the threat picture allows.

The availability of organic seafaring craft and vessels is a significant shortfall for littoral logistics. Aside from the planned modern medium landing ship and the emerging contracted stern landing vessel, the only vessels discussed in the MLR are the Navy's expeditionary fast transport and the Army's logistics support vessels. The expeditionary fast transport are fast and can carry roughly 20,000 square feet of cargo, but they are restricted to offload at established piers and ports and are vulnerable in heavy sea states. They are also considered fleet assets to move cargo and personnel for fleet and theater logistics. As such, they could act as operational-level logistics assets pushing inter- and intra-level cargo to MLR in competition or crisis, they would likely be relegated to operations outside the weapons engagement zone in conflict given their fleet support role, size, and offload requirements. The logistics support vessels carry less but can offload over a beach and therefore are not reliant on established ports. However, just like the expeditionary fast transports, logistics support vessels are theater assets and as of this writing, there are only four currently assigned to the entire Pacific area of responsibility under the Army's 8th Theater Sustainment Command. At present, there are simply not enough vessels for the Joint Force to dedicate to the MLR, which further enforces how important vessels like the modern medium landing ship are to littoral logistics and maneuver operations. Perhaps another viable solution, which is currently planned for divestment, is the improved navy lighterage systems.

The next steps and enhancements regarding littoral logistics focus on the emerging technologies of unmanned and autonomous logistics systems and expanding the contracting of transportation methods to lessen the tyranny of distance between terminals of debarkation and operating sites. In future exercises, the MSIC will begin to engage with vessels from the Navy's logistics fleet to test interoperable methods of requisitioning common and Marine Corps supplies carried on the fleet's dry cargo and replenishment vessels. Such an ability will allow the MLR to influence CLF inventory and pull critical supplies from a wider variety of sources. While the inclusion of these vessels as an alternate source of supply will largely depend on the sailing schedules and routes, at times CLF vessels could be geographically closer to MLR activities than the SMUs or DLA warehouses.

The initial experimentation with aerial unmanned logistics systems has produced mixed results; however, the ability to transport supplies across a distance without transiting unimproved roads has great promise. At present, the range is only sufficient to support intra-EAB deliveries and the payloads are comparatively small given the size of some EAB's requirements. However, improvements and iterations of these systems which boost range, payload, and ease of use will continue to add versatility to the littoral logistics battalion and MLR. Balikatan 23 highlighted several avenues going forward to bring contracting into patching some holes in the operational to the tactical distribution of supplies. Aviation assets are often over-tasked and aircraft fleets can quickly degrade, and the road networks in many Pacific nations are over-extended and intermittently maintained. A proposed method to mitigate these issues and provide more regular deliveries of supplies accumulated at offload points is through the use of contracted air freight companies. Similar to Alaskan bush pilots, a local aviation company would be contracted to fly regular runs of cargo from one airfield to a remote site with Marine escorts as required. Such a scheme provides resupply to the stand-in force should air constrained by conflict or unavailable due to higher priority air assault support tasks.

The scope of logistics in the littorals promulgated by *Force Design 2030* is contentious. The ability to sustain three battalion-sized formations is a troublesome task, especially given that each of these formations is fragmented into ad hoc expeditionary bases geographically separated across archipelagic terrain. Each site will require a multitude of means to transport and sustain forces, but you will not have access to the most efficient methods at the most critical points and several key means of distribution are currently emergent technologies.

In the preceding paragraphs, many of the difficulties of operating in a contested environment were discussed in detail. If sourcing WAG bags from a warehouse in Hawaii and getting them onto aircraft from Mississippi en route to the Philippines occurs as a consequence of luck, then it is the MSIC that generates the luck. The fundamentals of a proactive MSIC discussed in this document must be continuously tested and updated as 3d MLR matures, or other MLRs are established. The processes and procedures of the MSIC must continue to mature; more importantly, it must quickly evolve so the littoral logistics battalion can keep sustaining the force wherever it may go.

>Authors' Note: Our sincerest appreciation to the following individuals for their guidance, insight, and feedback throughout the composition of this article, LtCol Brogan Issitt, LtCol Osman Sesay, Maj Matthew Distefano, Capt Campbell German, Ms. Karen Neal (for deciphering Marine Corps acronyms while editing), and Mrs. Jessica Horton (for just listening to me rant in meaningless jargon).

Marines Defending Marines

Why Marine defense counsel are essential to the Marine Corps justice system

by Maj Sean K. Price

>Maj Price is a Judge Advocate currently assigned as a Commandant of the Marine Corps Fellow to the National Geospatial-Intelligence Agency. He has served in prosecution, defense, and command legal advice billets. He most recently had the privilege of defending Marines on Camp Lejeune.

On 3 August 2023, the Court of Appeals for the Armed Forces—the highest court in the military justice system—confirmed the dismissal with prejudice of a Marine Corps general court-martial for *homicide*.[1] The court did this because a Marine colonel violated the accused's right to defense counsel. "Dismissal," in this context, means the court-martial never proceeded to trial, a panel of members (a jury) never heard witnesses testify about what happened, and there was no verdict. Furthermore, because the dismissal was "with prejudice," *there will never be a verdict* because the government cannot revive the court-martial. The prosecution is dead. Forever. This is the military justice equivalent of a Class A mishap or a ship running aground. The dismissal of a high-visibility homicide case before trial due to government misconduct is evidence that something may be deeply wrong with the Marine Corps' justice system.

After all, a justice system that cannot resolve allegations of unlawful killing (homicide) through a trial—whether with a conviction or an acquittal—cannot truly be called a justice system. The unlawful taking of human life is universally regarded as the most serious kind of crime a person can commit. It is the sort of crime that justice systems were first established to adjudicate. Given that the Marine Corps is in the business, so to speak, of *lawful* killing, a military justice system that cannot resolve whether a death resulting from a service member's conduct was lawful or unlawful is failing to fulfill the very purpose for which it exists: that is, according to the *Manual for Courts-Martial*, "to promote justice, to deter misconduct, to facilitate appropriate accountability, to assist in maintaining good order and discipline in the armed forces, to promote efficiency and effectiveness in the military establishment, and thereby to strengthen the national security of the United States."[2] Yet here we are. A Marine Corps court-martial convened to adjudicate an extraordinarily serious offense was dismissed before a panel of members could even be seated to hear evidence in the case, and all because a Marine officer failed to respect the accused's right to counsel.

In this particular case, *United States v. Gilmet*, a colonel and judge advocate told the accused's defense counsel, a captain of Marines, that defense counsel in the Marine Corps "may think they are shielded, but they are not protected."[3] The colonel also said, "You think you are protected but that is a legal fiction."[4] The colonel then told the accused's defense counsel, "I know who you are and what cases you are on, and you are not protected."[5] The colonel capped off the conversation by asserting that because there are so few Marine judge advocates, promotion boards will know what defense counsel "did" and officers who serve as defense counsel for extended periods of time are not promoted.[6] This interaction took place in November 2021, before the trial was scheduled to take place. The clear implication of the colonel's comments was that judge advocates who perform well as defense counsel are jeopardizing their own careers—better, instead, to do the job halfheartedly and get out of it as soon as possible.

A Marine defense counsel, just like any defense counsel in the United States, is duty-bound "to exercise unfettered loyalty and professional independence during the representation ... and remains ultimately responsible for acting in the best interest of the individual client."[7] This duty to advance the best interests of the client, irrespective of the interests of the United States Government, the Marine Corps, or any particular command, is what makes service as a Marine defense counsel unique within the Service. Both Congress and the Services have instituted protections for military defense counsel to guarantee they can, in fact, advocate for their clients' best interests (more on that later). But in this case, a Marine colonel and judge advocate had explicitly said those protections are a "legal fiction"—defense counsel are protected on paper, but not in practice. Thus, the accused was understandably concerned his captain defense attorney could no longer act in his best interests.

The prosecution, for their part, failed to persuade the military judge presiding over the court-martial that the accused's defense would not be im-

paired ("prejudiced" is the legal term) by the colonel's conduct.[8] Thus, pursuant to military law, the military judge dismissed the charges with prejudice in February 2022.[9] In August 2023, nearly 18 months later, the Court of Appeals for the Armed Forces upheld that decision. Consequently, a homicide allegation will never go to trial. No court-martial will ever reach a final decision on the facts of this case.

What does this outcome say about the Marine Corps' justice system? For the accused, it is a victory of a sort (the allegations had been pending against this man for several years, but there will be no final verdict on them for him either).[10] On the other hand, for the Marine Corps and the judge advocate community in particular, it is an indictment. The Marine Corps justice system failed to resolve a high-visibility, extremely serious case because a *Marine officer*, who necessarily had sworn an oath to support and defend the Constitution and perhaps even administered that same oath many times, violated the constitutional right of an American service member to an effective defense. This article is not concerned with relitigating the dismissal of *United States v. Gilmet*—the Court of Appeals for the Armed Forces has already issued its decision which the government did not appeal to the Supreme Court. What the Court did *not* decide is whether the Marine colonel's comments reflected more than his own personal views about service as a defense counsel in the Marine Corps. The Court's decision was instead grounded in the damage the colonel's comments did to the accused's relationship with his Marine defense counsel.[11]

Whether it is true that Marine defense counsel, in general, suffer adverse career consequences for effective advocacy is an empirical question this article does not intend to answer. It is an important question, of course. But an even more important question is whether it *should* be true. *Should* it be true that the counsel assigned to represent Marines will suffer adverse career consequences for doing their jobs well? No. The Marine Corps needs—and Marines *deserve*—effective defense counsel.

Fundamentally, there are two reasons Marines should value and respect good defense work. First, the American justice system, including the military justice system, depends on effective defense counsel to function. Accordingly, the Marine Corps cannot have a military justice system without effective military defense counsel. Second, Marine defense counsel are officers with a constitutional duty to pursue their clients' best interests. Expecting a Marine officer to do anything other than perform his duties in the most effective and exemplary manner is inconsistent with the Marine Corps' own principles.

The Role of Defense Counsel in the American Justice System

The American criminal justice system is built on the idea that the accused can defend himself, with the assistance of an attorney, against the government's accusations. This right is explicitly written into the Constitution. The Sixth Amendment provides, "In all criminal prosecutions, the accused shall enjoy the right ... to have the Assistance of Counsel for his defence." In addition to being a fundamental individual right that is intrinsically valuable, the right to counsel also serves a functional purpose by helping to ensure the government takes the right actions and courts reach the right results in particular cases. For our justice system is an *adversarial* system, originating in England, as distinguished from the *inquisitorial* systems of the European continent.

An adversarial system depends on effective competition between the parties to function. Thus, in the weeks and months preceding the trial, both the prosecution and defense thoroughly investigate the case because if they do not, they risk the other side having a tactical advantage in the trial. (Indeed, the best prosecutors and criminal investigators will routinely wargame how the defense will respond to particular arguments or pieces of evidence and shore up their investigations accordingly.) Witnesses are subpoenaed, evidence is gathered, and pretrial motions are argued concerning what the court can properly consider in determining guilt. Opening statements and closing arguments are rehearsed and refined. It is a fantastically time-consuming and intense process for the attorneys on both sides, but they are driven by the adversarial process to find and exploit all the evidence relevant to the ultimate decision of whether the accused is guilty or not guilty. It is this competition that ensures the court has available to it all the evidence it should have in making this decision.

It may be the case that the evidence is so overwhelming or the government's offer of a pretrial resolution so generous, or some combination of both, that the accused decides to enter into an agreement to resolve the case. In such cases, the voluntariness and therefore also the legitimacy of the agreement depends on the accused receiving the best advice based on his counsel's own investigation of the case and assessment of the risks of going to trial. It may also be the case that the prosecution is dropped altogether because of evidence or issues discovered by the defense in advance of trial that convince the government a prosecution is not viable. Thus, the defense counsel, acting independently and in the best interests of the accused, will not only have served the accused but also helped the government spare itself the time and expense of a pointless trial. But, failing some kind of resolution before trial, the case proceeds to be heard by a court-martial, consisting of a military judge or a panel of members.

At trial, the prosecution, which bears the burden of proving the accused is guilty, puts on its evidence, consisting of witness testimony and exhibits, to persuade the court that the charges are true beyond a reasonable doubt. The defense counsel can ask follow-up questions (cross-examination) of every government witness to reveal biases, test the accuracy of the witness's memory and capacity to perceive events, and confirm facts harmful to the government's case. Then the defense attorney *may*, but is not required to, put on a case. (This is why defense counsel can independently obtain evidence. In fact, the Sixth Amendment guarantees the accused's right "to have compulsory process for obtaining witnesses in his favor.") Once the prosecution and defense have submitted their evidence to the judge or

jury, they each have an opportunity to argue what the evidence means—which pieces of evidence are reliable, which witnesses should be believed, and what the court should decide. Then, and *only then*, does the court decide whether the accused is guilty or not guilty, bearing in mind that the accused is presumed innocent under the Constitution unless the prosecution proves otherwise beyond a reasonable doubt.

Some features of this system should stand out. First, notice that it is not the court's job to investigate the case—which is how a European-style inquisitorial system works—but only to decide the case based on the evidence and arguments provided by the parties.[12] Indeed, the American judicial system could not investigate cases as a structural matter. American judicial institutions, including the military judiciary, simply are not staffed and resourced to have an investigatory capability. It is the prosecution and the defense who obtain evidence and submit it to the court (though, again, the defense may decide to submit no evidence at all and comment only on the evidence supplied by the government). It is the prosecution and the defense who question witnesses under oath. It is the prosecution and the defense who have investigated the case for months—years sometimes—preceding the trial.

Not only does this competition ensure the court makes its decision on the basis of the best evidence available, it is also essential to the outcome's legitimacy, which flows from public confidence that each side competed to win. Every piece of evidence and every argument about that evidence that *should* have been considered *was* considered, so the thinking goes, because the adversaries in the trial each had the incentive and opportunity to gather all the evidence and make all the arguments favorable to their respective positions. This system necessarily fails to produce legitimate outcomes if the accused lacks an effective defense counsel because that would mean one side of the contest did not really compete. It would be as if a boxer threw a match for money or if the opposing force in a wargame let itself be beaten. There can be no confidence that the outcome of a contest is the right one if one side does not compete. Indeed, appellate courts overturn convictions if the accused's defense counsel was ineffective at trial.[13]

Marine judge advocates serving as defense counsels are a vital element of the military justice system. ***(Photo by Sgt Santiago G. Colon Jr.)***

The military justice system, just like the rest of the American justice system, is adversarial. Congress has provided for the accused's "right to be represented in his defense."[14] Commissioned officers represent the government as trial counsel and the accused as defense counsel.[15] The Uniform Code of Military Justice (UCMJ) further requires the counsel for both the government and the defense to be "competent to perform such duties."[16] Thus has Congress both enforced the constitutional rights of the accused to be represented by counsel and upheld the integrity of the adversarial system by requiring both sides of the court-martial to be competently represented.

So far so good. But the military is (necessarily) a hierarchical organization. So how can a junior enlisted member really have confidence that his military lawyer, usually a lieutenant or captain, will fight for him against higher-ranking officers, including the accused's commander, who initiated the prosecution? (This is exactly how many military defense clients feel at the outset of the attorney-client relationship.) Well, Congress thought of that too: the UCMJ prohibits the use of "unauthorized means ... to influence the action of a court-martial."[17] The court-martial is supposed to reach a result based on the law and evidence through the adversarial process, not because external actors (perhaps very high-ranking ones) have unlawfully influenced the process to achieve a particular outcome.

To that end, Congress also specifically prohibited holding a defense counsel's zeal against that officer with respect to promotion or assignments.[18] Congress understood that military defense counsel, being officers in their respective Services, would not properly perform their function of defending their clients' rights and fully competing in our adversarial system—and would not be trusted by their clients to do so—if defense counsel could be punished for doing their jobs well. This was precisely the problem with the comments made by the colonel in *Gilmet*.

Recall that in *Gilmet*, the colonel told the defense counsel the law was just a formality. One of his comments was: "You think you are protected but that is a legal fiction."[19] Translation: "If you defend your client zealously, you will suffer, no matter what Congress or the Constitution says about it." The Court of Appeals for the Armed Forces

properly recognized this as a violation of the accused's right to counsel "by creating the perception in the minds of [the accused's] defense counsel that their future in the Marine Corps would be jeopardized if they continued to zealously advocate for [the accused]."[20] Because the government did not correct this perception, the adversarial process had been compromised, so the case was not allowed to proceed to trial at all.[21]

It was an embarrassing conclusion to a high-visibility homicide case. But *Gilmet* is over. The question now is what to do moving forward. If the colonel's comments do, in fact, reflect the sentiments of Marine leaders, that must change. In any case, Marines *should* value and respect defense work. Marines deserve effective defense counsel. Effective defense work is essential to the proper functioning of the Marine Corps' military justice system, and it is a system the Marine Corps evidently wants considering how often Marine commanders use it. Consider that in fiscal year 2022 there were 206 Marine general and special courts-martial, as well as 113 summary courts-martial.[22] The Navy, which is approximately two times bigger than the Marine Corps in terms of personnel, actually tried *fewer* courts-martial over the same time period: 181 general and special courts-martial and a mere nine summary courts-martial.[23] These numbers are clear evidence that Marine commanders value the military justice system. But as the *Gilmet* decision illustrates, it is a system the Marine Corps cannot have without defense counsel who are able to defend their clients—to truly compete in the adversarial system.

Marines Defending Marines

To comply with Congress and the President's mandate for competent defense counsel in the military justice system, each Service has established an organization responsible for supplying military defense counsel to accused service members. The Marine Corps Defense Services Organization (DSO) performs this function for Marines, as well as for sailors assigned to Marine commands.[24] At any given time, the Marine Corps Defense Services Organization comprises approximately 60 Marine judge advocates. And because they are Marines, they are the best defense counsel in the world—*when they are allowed to do their work*.

The modern DSO is relatively new, having been established in September 2011 by a modification of the Marine Corps Manual for Legal Administration.[25] This reform "provide[d] the DSO with greater supervisory control over DSO personnel, and change[d] the authority for detailing defense counsel to cases."[26] These changes were intended to "better insulate the DSO and the defense function."[27] To that end, supervisory counsel within the DSO have the authority to detail defense counsel to represent particular clients,[28] Marine defense counsel's fitness reports are written by supervisory defense counsel,[29] and collateral duties may not "conflict with [defense counsel's] statutory and ethical obligations to their clients."[30] The DSO's structure and protections are essential to ensuring it has the functional independence it requires to provide Marines the representation to which they are statutorily and constitutionally entitled.

The DSO exists for one purpose: to defend Marines. The DSO's motto is *Marines Defending Marines*. Outside of combat, nobody fights as hard for Marines as a Marine defense counsel. This is because the Marine defense counsel's mission—and only mission—is the Marines. For a Marine defense counsel, there is no tension within the concept of *Mission First, Marines Always* because the Marines *are* the mission.

Consequently, the relationship between a Marine defense counsel and his client is a truly unique one in the Corps. It is a privileged relationship. Within the confidentiality of the attorney-client relationship, the Marine defense counsel and his client, who is usually junior enlisted, can achieve an unmatched level of honesty and transparency. This sort of relationship between a Marine officer and an enlisted Marine exists nowhere else in the Corps. What is more, because the defense counsel is required *by law* to fight for his client's best interests, the zeal with which he fights for his client is not tempered by concern for the interests of the institution or the government, as it would be for an officer in any other relationship with a Marine. There is a purity to the work; a Marine defense counsel serves one purpose and one purpose only—to defend Marines.

It is precisely in those cases where the defense counsel most frustrates the government's designs ... that the defense counsel is best serving the military justice system.

This can give rise to some level of frustration, if not suspicion, by Marine leaders. The duties of a Marine defense counsel often place them in opposition to commanders and prosecutors within the military justice system. But that is a feature of the defense function, not a bug. The Marine Corps' justice system depends on defense counsel to zealously oppose the commanders and prosecutors seeking to take adverse action against an accused Marine. While this might be irritating in a given case, it is necessary to the system's proper functioning. It is precisely in those cases where the defense counsel most frustrates the government's designs, such as by winning an acquittal at trial, that the defense counsel is best serving the military justice system. For the greatest sin any justice system can commit is to convict an innocent person.

Make no mistake, every Marine defense counsel has had the awesome and terrifying responsibility of defending an innocent Marine. This is not to say that Marine commanders and trial counsel intentionally prosecute innocent people. Like Marine defense counsel, they too are honorable offi-

cers performing necessary duties in good faith. But it is also true that any government system has an error rate. Even when all government actors are acting diligently and in good faith, an innocent person may find himself in the crosshairs of a prosecution. In those truly terrifying circumstances, a Marine defense counsel is the accused's best friend and the prosecution's worst enemy.

Marine defense counsel cannot effectively defend Marines without leaders' respect for the defense function, as well as the structure and protections afforded by the DSO and the UCMJ. As *Gilmet* demonstrates, all the structure and protections in the world are meaningless if Marine leaders treat them like they are a "legal fiction." (However, ironically, seeking to undermine the military justice system like the colonel in *Gilmet* may result in the charges being dismissed, which ultimately benefits the accused.)

Marine defense counsel are officers performing Constitutionally mandated duties. That does not mean leaders have a duty to agree with defense counsel on particular cases. But leaders ought to listen, with an open mind, to what Marine defense counsel have to say about their Marines and respect that Marine defense counsel are performing their *duties*. Marine defense counsel do not have a choice: they are *ethically obligated* to fight for their clients. Moreover, the Marine Corps cannot have the justice system its leaders want without Marine defense counsel defending Marines .

Marines are justly reputed around the world for excellence. It would be perverse to expect a Marine officer to be anything less than excellent when defending a fellow Marine. A Marine defense counsel who fights to the very end for his clients, his Marines, is upholding the core values of the Marine Corps. No leader should expect any less.

Notes

1. *United States v. Gilmet*, 83 M.J. 398, 401 (C.A.A.F. 2023). Specifically, the accused was charged with "violating a lawful order, involuntary manslaughter, negligent homicide, and obstructing justice in violation of Articles 92, 119, 134, and 131b, UCMJ." The author was not involved in this case either as counsel or in a supervisory capacity.

2. United States Department of Defense, *Manual for Courts-Martial, United States (2024 Edition)* (Washington, DC: 2023).

3. *Gilmet*, 83 M.J.

4. Ibid.

5. Ibid.

6. Ibid.

7. United States Department of the Navy, *JAG Instruction 5803.1E, Professional Conduct of Attorneys Practicing Under the Cognizance and Supervision of the Judge Advocate* General (Washington, DC: 2015).

8. *Gilmet*, 83 M.J.

9. Ibid.

10. Notably, the companion cases, for two Marines being prosecuted for their alleged role in the same course of events, did proceed to trial and resulted in acquittal on the charges of homicide and assault, which tends to suggest the accused in this case would have received a favorable result at trial. However, this article is not concerned with litigating the facts underlying the charges; because the accused's right to counsel was not respected, those facts will not be litigated at all.

11. *Gilmet*, 83 M.J.

12. The UCMJ does afford judges and court members limited authority to ask questions of witnesses or even to obtain evidence. UCMJ art. 46(a) (2016); MCM, R.C.M. 913(c)(1). This authority is rarely used, however. Nearly all testimony elicited and evidence offered at a court-martial is done so by either the prosecution or defense.

13. *Strickland v. Washington*, 466 U.S. 668 (1984); United States v. Green, 68 M.J. 360 (C.A.A.F. 2010).

14. UCMJ art. 38(b)(1) (2019).

15. UCMJ art. 27(a)(1) (2019).

16. UCMJ art. 27(b)(2), (c) (2019).

17. UCMJ art. 37(a)(1) (2019).

18. UCMJ art. 37(b) (2019).

19. Gilmet, 83 M.J. at 401.

20. Ibid.

21. Ibid.

22. Headquarters Marine Corps, *U.S. Marine Corps Report on Military Justice for Fiscal Year 2022*, (Washington, DC: 2022). This is the number of courts-martial "tried," which means these courts reached a finding of guilty or not guilty, as opposed to still pending or being dismissed by the end of the fiscal year.

23. U.S. Navy, *U.S. Navy Report on Military Justice for Fiscal Year 2022*, (Washington, DC: 2022). The Marine Corps' active component strength for FY22 was 176,556. *USMC FY22 Military Justice Rep*., 15. The Navy's active component strength was 348,521 for the same time period. *Navy FY22 Military Justice Rep*.

24. Headquarters Marine Corps, *MCO 5800.16–V3, Legal Support and Administration Manual* (Washington, DC: 2018).

25. Headquarters Marine Corps, *MCO P5800.16A Ch 6, Marine Corps Manual for Legal Administration* (Washington, DC: 2011).

26. Ibid.

27. Ibid.

28. *MCO 5800.16–V3,* The LSAM superseded the LEGADMINMAN.

29. Chief Defense Counsel of the Marine Corps, *Policy Memorandum 3.2, Submission of Fitness Reports for DSO Marines* (Arlington, VA: 2014).

30. *MCO 5800.16-V3.*

Don't Make it Complicated

A commonsense solution to the Landing Ship Medium

by Maj M. Hunter Davidhizar

Force Design 2030 was announced four years ago, yet Marines are still four years away from receiving our *first* Landing Ship Medium (LSM). Although 35 LSMs are needed for expeditionary advanced base operations (EABO), under current plans the Marine Corps will have only 6 by 2031. Meanwhile, the People's Liberation Army (PLA) acts more provocatively each month, harassing Taiwan as China continues to militarize the South China Sea. Xi Jinping has directed the PLA to be ready to invade Formosa by 2027.[1] The Marine Corps is running out of time.

The Marine Corps should pause procurement of the LSM to instead focus on acquiring purpose-built Stern Landing Vessels (SLVs). SLVs utilize a proven design, can be built to the same characteristics as the LSM, procured much sooner than the LSM and are much cheaper.

>Maj Davidhizar is a Logistics Officer assigned to Marine Forces Europe and Africa.

The SLV Meets EABO Intratheater Surface Lift Requirements

EABO requires the Marine Corps to utilize small amphibious ships to maneuver and sustain Marine littoral regiment (MLR) stand-in forces within the littorals.[2] To address this operational logistics quandary, the Navy and Marine Corps announced in 2020 they would procure the design and fielding of a new type of ship: the LSM.[3] Although Navy/Marine Corps disagreement persists regarding the necessary number of LSMs and their protective requirements,[4] there is agreement on the following principal features: length between 200–400 feet; maximum 12-foot draft; weight not to exceed 4,000 tons; space for 75 Marines; 4,000–8,000 square feet of cargo space; stern or bow landing ramp; minimum speed of 14 knots; and minimum range of 3,500 nautical miles.[5] As the Navy conducts interminable ship-building analyses in a quest for the exquisite, the affordable and plentiful solution is hiding in plain sight.[6]

LSM computer rendering from a 22 May 23 Navy briefing to Congress. *(Source: Congressional Research Service.)*

An SLV is a stern-ramp craft that can be manufactured to meet LSM Requirements. For example, Australian ship designer Sea Transport advertises a design for a 230-foot "military" SLV that cruises at 15 knots, has 5,500 square feet of cargo space, and "can travel from Los Angeles to Brisbane on a single tank of fuel" (approx. 7,000 miles).[7] Although the SLV's employment as a military vessel is a novel idea, the craft's design is not. Some of the first SLVs were built in the 1980s by Sea Transport, and these ships have been used extensively ever since.[8] In fact, Marine Corps Combat Development Command (MCCDC) has such high confidence in the SLV that it is the cornerstone of the Marine Corps' "LSM gap-bridging plan."

Within MCCDC, the Marine Corps War Fighting Lab (MCWL) developed a contracted solution to test EABO surface logistics concepts long before the first LSM is projected to be delivered in July 2028.[9] Specifically, MCWL has contracted three different SLVs: an oil industry offshore support vessel (OSV),[10] which has been repurposed as an SLV (Repurposed OSV); a SLV manufactured by Sea Transport (Military SLV); and a bow-loading ship with a stern ramp (Hybrid SLV).[11] While SLVs are the most appropriate substitute for the LSM, MCWL will also test an autonomous low-profile vessel, and an ancillary surface craft.[12] Other elements of the LSM gap-bridging solution in-

Computer rendering of the Repurposed OSV. *(Source: Hornbeck Offshore Services.)*

clude the expeditionary fast transport, and the landing craft utility.[13]

The SLV's Cheap Acquisition Price and Proven Design Alleviate Budget Concerns

Recent history provides an excellent example of how a novel ship design coupled with poor contracting made for a financially disastrous situation. The Navy's littoral combat ship (LCS) program has proven to be one of the costliest boondoggles in an industry infamous for costly boondoggles.[14] Begun in 2002, the LCS was based on an unproven modular design. But instead of employing the adage *buy a few and test a lot*, the LCS was built at separate shipyards by separate shipbuilders employing separate designs. This was done to curry favor with congressional constituencies and to satisfy a Chief of Naval Operations keen to rapidly increase the Navy's ship numbers. When the ships began to fail nearly as soon as they were commissioned, the cost to repair two different ship types chocked full of proprietary software caused program costs to skyrocket. Military and civilian leaders then continued to support the project because it was in their best self-interests. The economic fallout is still being tallied, but the Navy paid approximately $30B for a fleet of inoperable ships.[15]

While it would be pessimistic to claim the LSM is destined for an LCS-like fate, there are two similarities between the programs. Both were commenced using unproven designs, and both became unnecessarily expensive at the outset. Whereas the Marine Corps accepts a $100M LSM that is less protected from enemy attack,[16] the Navy insists on a more survivable LSM costing an average of $148M.[17] Of course, the U.S. taxpayer foots the bill even if neither Service is ultimately satisfied with the product. Conversely, robust experimentation with MCWL's three contracted SLVs would allow the Marine Corps to confidently choose a far more economical vessel model, potentially obviating the need for an LSM, or at the very least greatly informing its development, thereby saving millions in procurement and operating costs.[18]

> ***... it would be pessimistic to claim the LSM is destined for an LCSlike fate ...***

Model #1: Repurposed OSV

Louisiana-based Hornbeck Offshore Services is a publicly traded entity that owns and operates ships used in the oil industry. In what is believed to be a first occurrence in the United States, Hornbeck created a SLV by modifying one of its OSVs to add a stern ramp, retractable stabilization shafts, billeting spaces, and guards to protect the propellers during landing operations.[19] Recent improvements in oil exploration technology have reduced the demand for OSVs, resulting in relatively low purchase prices. Although Hornbeck's current business model does not contemplate making modifications to OSVs which it does not own, the company has extensive experience modifying OSVs, and there are multiple U.S. players in this space.[20] While a converted OSV is likely the most inexpensive SLV, and therefore ideal for surging capacity, these commercial-purpose vessels have deeper drafts and lack certain survivability features that can only be added during the vessel's construction.

Model #2: Military SLV

While Sea Transport's military SLV would cost about the same as a lower-end LSM (approximately $120M), at 45 years, the craft's service life is well above the 20 years dictated by the LSM Requirements. Sea Transport also claims its optimized hull shape and freshwater ballast save on fuel and maintenance costs, respectively.[21]

Model #3: Hybrid SLV

The Marine Corps recently partnered with the U.S. subsidiary of Australian shipbuilder Birdon, to build a 260-foot experimental landing craft. Although this craft will have a stern ramp to launch small craft, and for ship-to-dock and ship-to-ship operations, this prototype is a bow-landing vessel. At a cost of approximately $54M, this vessel is considerably less expensive than even the cheapest Marine Corps-favored LSM design.[22]

Contrary to the LSM, the Hybrid SLV, or a vessel incorporating features of two or more of the three models above is much more likely to meet the Marine Corps' expectations, thereby avoiding costly modifications or overhauls.

The SLV Can be Procured Much Quicker than the LSM

As the Navy continues its methodical approach to fielding the LSM, the Repurposed OSV, which meets several LSM requirements, was delivered to the Marine Corps for experimentation at Blount Island Command (BIC) in September 2023.[23] The Military SLV will be delivered in Darwin, Australia,

this year, and the Hybrid SLV will be delivered in 2027. Each of these vessels is leased with crew to MCWL for three to five years with purchase options.[24] Should the Marine Corps decide one of these designs meets some or all of its intratheater lift needs, depending on the design(s) and the number of suppliers chosen, EABO-capable SLVs could be delivered to the Marine Corps in as little as four months following contract initiation.[25]

Arguments Against the SLV Lack Merit

While true that both the Repurposed OSV and the Military SLV models will be less survivable than the LSM as currently envisioned, the Hybrid SLV boasts signature-reducing design features which greatly decrease detectability. Moreover, our Commandant has accepted this marginal risk, and the FY23 NDAA for the first time granted him the final word on amphibious vessel characteristics.[26] Additionally, while there is value to the recommendation that the Marines acquire one of the Army's logistics support vessels for experimentation, these vessels do not meet the LSM Requirements due to the vessel's reduced speed and cargo space.[27] Finally, while companies like Birdon and Hornbeck manufacture in the U.S., Jones Act concerns surrounding any foreign manufacture of SLVs can be addressed with a Presidential waiver.[28]

Conclusion

Tweaking the proven SLV design to satisfy our surface logistics needs will allow the Marine Corps to rapidly obtain a vessel which meets the LSM Requirements. Instead of simply viewing them as a stopgap, purpose-built SLVs should be viewed as the solution to the EABO support-vessel quandary. Accordingly, the Navy and Marine Corps should reapproach Congress and request that the beleaguered LSM program be paused until the two SLVs currently in production can be tested. At worst, such experimentation will provide for better informed LSM ship-building decisions. At best, the SLVs will replace the LSM altogether, allowing MLRs to conduct EABO years before the first LSMs are scheduled to be on station. In either case, the millions in resulting cost savings could be applied to other *Force Design 2030* efforts.

Notes

1. Greg Norman, "China's Xi Has Ordered Military to Be Ready for Taiwan Invasion by 2027, CIA Director Burns Says," *Fox News*, February 3, 2023, https://www.foxnews.com/world/china-xi-ordered-military-ready-taiwan-invasion-2027-cia-director-burns-says.

2. Headquarters Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations 2nd Edition*, (Washington, DC: Department of the Navy, 2023).

3. The vessel was originally called the Light Amphibious Warship, or LAW. See, e.g., Megan Eckstein, "Navy Officials Reveal Details of New $100M Light Amphibious Warship Concept," *USNI News*, November 19, 2020, https://news.usni.org/2020/11/19/navy-officials-reveal-details-of-new-100m-light-amphibious-warship-concept.

4. See, e.g., Mallory Shelbourne, "Marine Corps Requirements Call for 9 Light Amphibious Ships per Regiment," *USNI News*, February 14, 2023, https://news.usni.org/2023/02/14/marine-corps-requirements-call-for-9-light-amphibious-ships-per-regiment. The Marine Corps insists on 35 LSMs: 9 per each of the three eventual MLRs plus 8 in reserve.

5. Ronald O'Rourke, *Navy Medium Landing Ship (LSM) (Previously Light Amphibious Warship [LAW]) Program: Background and Issues for Congress* (Washington, DC: Congressional Research Service, December 20, 2023), https://crsreports.congress.gov/product/pdf/R/R46374/62.

6. Megan Eckstein, "Amphib Ship Requirements Study Could Spell Bad News for Marines, Industry," *Defense News*, January 18, 2022, https://www.defensenews.com/naval/2022/01/18/amphib-ship-requirements-study-could-spell-bad-news-for-marines-industry. (Discussing a delay in the Navy's preparation of an amphibious ship study for Congress. This classified report was eventually delivered to Congress 12 months late, in January 2023).

7. Dr. Stuart Ballantyne (Sea Transport's founder and Executive Chairman), phone call with author, September 15, 2023 (Dr. Ballantyne Interview).

8. Ibid. Previously a shipbuilder, Sea Transport now designs and oversees ship manufacturing, usually outside Australia. (See also, https://seatransport.com.)

9. O'Rourke, *LSM Program*, Summary, 5. The second LSM will be delivered in FY2028, and two more will be delivered in each of FY2029 and FY2030, for a total of six. Given the delays experienced up to now, these timelines appear optimistic.

10. An Offshore Support/Supply Vessel is one that regularly carries goods, supplies, passengers, or equipment in support of "exploration, exploitation, or production of offshore mineral or energy resources." Staff, "Types of OSVs," *Coast Guard*, n.d., https://www.dco.uscg.mil/OCSNCOE/Support-Vessels/Types-of-OSVs.

11. LtCol Tim Smith (Logistics Combat Element Lead, Science and Technology Division, MCWL), phone call with author, September 13, 2023.

12. On 6 September 2023 at a defense industry event, MCCDC's commanding general caught some of his Marines off guard by announcing that his command was seeking to utilize uncrewed vessels. See, e.g., Richard Burgess, "Marine Corps Looking at Stealthy Autonomous Vessels for Logistics," *Seapower Magazine*, September 6, 2023, https://seapowermagazine.org/marine-corps-looking-at-stealthy-autonomous-vessels-for-logistics.

13. The EPF (a high-speed intra-theater catamaran transport and distribution vessel) is not a viable LSM gap-bridging vessel because it can't be beached or go "skin to skin" with another vessel due to its aluminum construction. Additionally, the Landing Craft Utility (a traditional bow ramp ship-to-shore and shore-to-shore transport vessel) is problematic because the Navy has only offered to provide the older 1610 model, and funds (approximately $6M) and crews (11 sailors/landing craft) are not available in adequate numbers. Mr. Aaron Hatfield (Surface & Subsurface Program Manager, MCWL), phone call with author on September 15, 2023.

14. For a recent take on the LCS fiasco, see Joaquin Sapien, "The Inside Story of How the Navy Spent Billions on the 'Little Crappy Ship,'" *ProPublica*, September 7, 2023, https://www.propublica.org/article/how-navy-spent-billions-littoral-combat-ship.

15. See Geoff Ziezulewicz, "Cannibalized Parts, Systems that Sailors Can't Fix: LCS Maintenance Woes Could Get Worse, Watchdog Warns," *Navy Times*, May 11, 2021,

https://www.navytimes.com/news/your-navy/2021/05/10/cannibalized-parts-systems-that-sailors-cant-fix-lcs-maintenance-woes-could-get-worse-watchdog-warns.

16. A common Marine Corps refrain is that the LSM is "risk worthy."

17. O'Rourke, *LSM Program*, Summary. It is this more expensive LSM that is projected to be delivered in 2028.

18. The LSM comes with all the financial and engineering headaches associated with a new "program of record." By contrast, SLVs have been around for decades.

19. Anonymous (industry insider with first-hand knowledge of the topic who asked not to be identified), phone call with author on September 14, 2023 (Anonymous Interview).

20. Ibid. Hornbeck is "very interested" in doing OSV to SLV modifications in the future.

21. Dr. Ballantyne Interview. Sea Transport has manufactured or overseen the manufacture of 22 commercial SLVs since the 1980s. It claims all these vessels are still in operation. Sea Transport is currently in sales discussions with the militaries of "five western nations." ("Everyone is waiting to see what the U.S. Marines are doing.")

22. Mr. Aaron Hatfield (Surface and Subsurface Program Manager, MCWL), phone call with author on December 27, 2023 (Mr. Hatfield Interview).

23. BIC convinced MCWL of the capabilities available at BIC's Jacksonville, FL, facility and consequently BIC has overseen operational performance assessments of the Repurposed OSV and other gap-bridging vessels. These assessments include interoperability testing with Maritime Prepositioning Force vessels and other stern ramp vessels. LtCol Jesse Johnson (BIC Operations Director), phone call with author, September 14, 2023.

24. Mr. Hatfield Interview. Referred to as Contractor Owned, Contractor Operated arrangements, construction of the Military SLV is ongoing in Indonesia. Construction of the Hybrid SLV will commence in FY24, and the Australian government will contribute to its cost.

25. A repurposed OSV can be produced in four months; Sea Transport can produce a Military SLV in three-four months; Birdon can turn out the Custom SLV at a rate of one every three months (Dr. Ballantyne Interview, Anonymous Interview, Mr. Hatfield Interview).

26. *LSM Program*.

27. Ibid.

28. See Teresa Carey, "The Jones Act Explained (and What Waiving It Means for Puerto Rico)," *PBS News Hour*, September 29, 2017, https://www.pbs.org/newshour/nation/jones-act-explained-waiving-means-puerto-rico: ("Transportation of goods between two U.S. ports must be carried out by a vessel that was built in the U.S. and operated primarily by Americans.")

A Temporary Means

Multi-domain operations and short-term LHA Production

by Mr. Jason F. Rutledge

This article argues that Landing Helicopter Assault (LHAs) ships should be produced in the short term. The main reason is that America's technologically superior, but smaller fleet is no match for the Chinese—as supported by history. The second reason is that production time is wasting away while the Navy awaits an ideal ship class to come around. Supporting reasons are found in that LHAs support the multi-domain operations (MDO) concept by producing unusual dilemmas for the enemy to contemplate.

America's naval inferiority is plain to see. The greatest threat lies in the combination of China's fleet size and American ship production. China's fleet already numbers 355 vessels while America's fleet is weak at 296 hulls.[1] Also, the adversary is expected to have 420 ships by 2025. America on the other hand will see zero increase between production and ship retirements until 2030.[2] The problem is further aggravated by the Navy's apparent insistence on waiting for the ideal "next-gen" destroyer to be produced—a class that is still in the design phase.[3] All of this indicates that the Navy has an increasingly ineffective deterrence value the longer events go unchanged and the odds of war dramatically increase.

These problems require the LHA as a common solution. As a finished design, the LHA can be produced starting immediately, rather than waiting far too long for a perfect next-gen solution. This will also close the gap in numbers. If the design is leased out for production to various shipyards, it will be possible to close the gap even more. In the future, changes in doctrine can be embodied in the aircraft assigned to LHAs. If America continues to ignore the LHA, then it must turn to technology to even the odds.

>Mr. Rutledge is a civilian friend of the Marine Corps. He has unfortunately been disabled but seeks to contribute to society through his writings. He also hopes to eventually earn an honorary rank over time. Mr. Rutledge's unusual achievements include high placements in wargames, both online and at hobby stores. Presently, he is working on more topics related to multi-domain operations.

Less obvious is the futility of turning to naval technology for solutions. As mentioned by Capt Sam Tangredi in his article, "Bigger Fleets Win," only in three wars out of 28 did a small but technologically superior navy emerge victorious over the larger.[4] History and a clear vision say America is most likely to lose the potential war against China. Factor in China's heavy investment in production and technology, and the calculus increasingly indicates war as deterrence fades.

Once again, LHAs are the solution. It goes to reason that technological upgrades would be far more easily implemented in aircraft, rather than in entire ship classes built around them. So, LHAs are the solution by virtue of the fact that their function and combat prowess are contained within their aircraft complements. Other aerial assets will be difficult or impossible to use in a war with China.

Furthermore, the problem is increased by the difficulty America will have in using aerial assets. The contested region is Southeast Asia, which gives the aerial advantage to the Chinese. They would have easy basing on land, whereas America would be dependent on aircraft carriers and partner nation bases. This part is negated by China's formidable missile arsenal.

Modern aircraft are dependent on airbases and their landing strips to launch and land safely. The first thing to be destroyed will be such bases since they are fixed assets unable to dodge attacks. Only aircraft carriers can hide, but in being found, their large size and large aircraft complement make them irreplaceable assets. Great loss to the Navy will occur with each aircraft carrier lost. These facts have convinced many that the time of aircraft carriers is at an end, as argued by Capt Jerry Hendrix.[5] He also argued for smaller carriers as a more permanent solution.

The vulnerability of traditional aircraft carriers is that they are too large. This can be mitigated by the introduction of smaller aircraft carriers, but as an interim solution, multiple LHAs can be produced for the price of a single aircraft carrier. Additionally, LHAs have significant capabilities in lethality and survivability, comparable to those of an aircraft carrier. The *Ford* carrier class costs in 2023 dollars is about 15.6 billion and carries 90 aircraft.[6] The LHA *America* class, Flight 0, costs in 2023 dollars is about 4.3 billion and carries 20 aircraft.[7] Using the approximate figures, 3.6 *America* class vessels can be produced for each *Ford* class vessel that normally would be obtained. However, the fleet does lose the capacity for twenty aircraft by choosing the LHA option.

The LHA *America* class option is best. The Navy gets three hulls instead of one and gets greater survivability. Should one or even two LHAs go down, there is still a third; however, with the *Ford-class* option, the ship's loss would almost certainly mean the loss of all ninety aircraft (assuming landbases would be inaccessible).

It is prudent to discuss the LHA recommendation in terms of the MDO theory. To paraphrase, MDO states that an enemy should be forced into decision paralysis by the sheer volume of problems he is facing.[8]

LHAs go a long way toward the aforementioned. First, the greater number of hulls would work to strain enemy reconnaissance assets. Second, unlike discovering purpose-built vessels, like submarines or aircraft carriers, finding a light carrier does not reveal its purpose. It could be ferrying troops into battle, preparing fighters to raid commerce or fight battles, or hunting submarines. Just the fact that it is carrying a mix of aircraft that makes it a lesser threat across a broader spectrum. All these possibilities would force enemy planners to *seriously* consider more potential threats than they could handle. This delay in analysis would likely give American forces a decisive edge in the observe-orient-decide-act loop.

This partially alleviates the need for large task forces; LHAs would, frankly speaking, be less valuable and, as discussed earlier, more flexible in handling the enemy than carriers and their escorts. Once again, LHAs could be tailored to needed roles on the fly by changing the aircraft onboard; therefore, there would be much-reduced concern about presenting weaknesses.

This same method could be used to keep more LHAs in the fight for longer. When one LHA has been stricken, its surviving aircraft would be distributed among surviving LHAs and airbases to bring them up to full strength, all while the damaged craft returns to port for repairs. There are also tactics that LHA would be able to use to enhance ground options, such as the "ship-hopping" tactic.

The ship-hopping tactic is where land troops are transported from a safe starting point distant from the enemy to a battlefield deep in enemy territory. The troops start on a light carrier that has been temporarily purposed as a troop transport well beyond enemy anti-access/area denial assets. They are then transported by tiltrotor aircraft to another light carrier, where the aircraft are refueled. This hopping from ship to ship continues in rapid succession until a destination on land is reached, where the troops engage in battle or depart on a mission. This would keep lives away from unnecessary risk until needed. Also, this would certainly be a novel use for a carrier, be it a light version or not. This is not the only MDO consideration for using LHAs.

A limit for where extended operations into enemy territory can take place is the need for ports and docks to support ground forces ashore with enough provisions. A problem for such actions elsewhere is the need for aircraft to travel long distances to ferry limited supplies. The LHA solves these dilemmas.

Assuming anti-access/area denial assets have been dealt with temporarily, LHAs can travel anywhere along the Chinese coast acting as mobile bases. This resolves the need for ports and docks since LHAs, in conjunction with cargo ships, can use complements of vertical-lift aircraft and tiltrotors to move supplies. Given the short distance between ground forces and the LHA, multiple trips can be made to ensure that enough has been provided so ground operations can continue. This LHA use as a mobile base would be a powerful benefit that further complicates the enemy's decision making, as per MDO requirements.

There are drawbacks to the theory of producing LHAs in number. The greater presence of LHAs would make it necessary to manufacture more VTOL fighters and tiltrotors. However, this would be advisable regardless of whether using LHAs more or not. Modern anti-access/area denial and missile development by the Chinese will contest air dominance severely. Airfields will be repeatedly destroyed, and aircraft carriers could potentially be damaged or destroyed beyond the ability to recover aircraft. Having aircraft that can land just about anywhere will be a staple need—hence the great need for more vertical-lift fighters and tiltrotors.

Naturally, concern about crew training would present itself: time would be wasted training the crews of the new LHAs, which would give the edge back to China. The answer is already evident in the use of Gold and Blue teams for American ballistic submarines.

Essentially submarines have two crews for each submarine, a "Gold" team and a "Blue" team.[9] Each team is fully versed in operating the vessel and is a complete crew unto itself. Doing this allows the submarine to operate longer while maintaining the morale of the crew.

In the case of LHAs, the multiple teams would be key to training crews until new vessels are available. First, an experienced crew is divided into two teams with new sailors added to both. This would allow the existing LHAs to operate correctly while simultaneously training the newer crew members. Teams away from their LHA would occupy themselves with drills and reinforcing education while ashore. When a new LHA is produced, one of the teams goes to it; this results in a vessel almost ready to go into immediate use. Then the process is repeated. In theory, the new use of Gold and Blue teams will allow LHAs to enter service much faster.

Should peace prevail, concerns about maintaining excess LHAs can be addressed. The Nation could sell, lease, or give the extra vessels to partner nations in the contested region. Though American expertise would be necessary for foreign nations to maintain the new assets, the cost of doing so would fall on foreign nations. Second, American industry would benefit from increased demand for its services, be it regarding LHAs, vertical-lift aircraft, the F-35B fighter, or all three. Third, foreign nations investing in an American vessel would be heavily incentivized to make their militaries more interoperable with our navy; this would simplify logistics and give everyone involved a stronger fighting edge.

It is necessary to summarize the LHA's advantages regarding MDO theory. Its ability to be produced in numbers places a strain on enemy reconnaissance. The ability to change aircraft complements forces the enemy to ponder multiple threats from discovering just one LHA; type of aircraft and personnel are on board? LHAs can also reconstitute fighting forces much faster since aircraft from lost LHAs can be used on surviving vessels and airfields. Ground forces can transit long distances rapidly using LHAs as refueling stops for tiltrotors going to battles and landing zones. Finally, they can serve as mobile bases for extended land operations where docks and ports are unavailable. LHAs would be able to produce an incredible array of problems for an enemy, a key tenet of MDO theory.

In conclusion, it can be argued that the Navy is in dire straits. Its fleet is behind in numbers, ship production, and losing its technological advantage. If the problem cannot be solved because doctrine and the related ship production plan are not forthcoming, then it is imperative to close the gap. America needs LHA ships in production at full speed until better solutions present themselves.

Notes

1. Mallory Shelbourne, "China Has World's Largest Navy With 355 Ships and Counting, Says Pentagon," *USNI News*, November 3, 2021, https://news.usni.org/2021/11/03/china-has-worlds-largest-navy-with-355-ships-and-counting-says-pentagon.

2. Ibid.

3. Loren Thompson, "Navy's Latest Shipbuilding Plan Signals Little Change In Fleet Size For The Foreseeable Future," *Forbes*, April 20, 2023, https://www.forbes.com/sites/lorenthompson/2023/04/20/navys-latest-shipbuilding-plan-signals-little-change-in-fleet-size-for-the-foreseeable-future/?sh=657a8f302121.

4. Capt Sam Tangredi, "Bigger Fleets Win," *Proceedings*, January 1, 2023, https://www.usni.org/magazines/proceedings/2023/january/bigger-fleets-win.

5. Capt Jerry Hendrix, "At What Cost a Carrier?" *Center for a New American Security*, March 11, 2013, https://www.cnas.org/publications/reports/at-what-cost-a-carrier.

6. Government Accountability Office, *DEFENSE ACQUISITIONS: Assessments of Selected Weapon Programs,* (Washington, DC: 2015).

7. Ibid.

8. Department of the Army, *FM 3-0 Operations*, (Washington, DC: 2022).

9. Aaron Amick, "The Cultural Differences Between Serving On America's Three Types Of Nuclear Submarines," *The Drive*, June 30, 2020, https://www.thedrive.com/the-warzone/34415/the-cultural-differences-between-serving-on-americas-three-types-of-nuclear-submarines.

Sustainment within the Weapons Engagement Zone

Enabling movement and maneuver through logistics

by Maj Brandon L. Erwin

>Maj Erwin is an Aircraft Maintenance Officer currently assigned to MATSG-23 and serving as the Commanding Officer of Aviation Maintenance Squadron One. His last deployment was with SPMAGTF–Crisis Response–Central Command, serving as the Aviation Logistics Department Planner. Maj Erwin is also a 2023 graduate of the Naval War College.

The *2022 National Defense Strategy* is focused primarily on great-power competition (GPC) with an increasingly aggressive China as the pacing threat, thus changing how each Service must operate in the future. No longer will the Joint Force be able to bring mass close to the fight on D-Day. Instead, a modern island-hopping campaign like the United States versus Japan in World War II is required to deter, deny, or defeat the enemy. The Marine Corps' response to GPC is the utilization of expeditionary advanced base operations (EABO) and stand-in forces (SIF) to increase operational reach inside China's weapons engagement zone (WEZ). EABO describes how SIF will complement distributed maritime operations (DMO) by dispersing Marines across a series of advanced bases amongst host nations to assist with gaining sea control and allow the advance of follow-on operations, such as carrier groups moving within the WEZ.[1] As depicted in Figure 1, expeditionary advance bases intend to be dispersed, small, mobile, and emit a low signature to remain undetected in the WEZ of the enemy while also acting as intermediate bases of operation.[2]

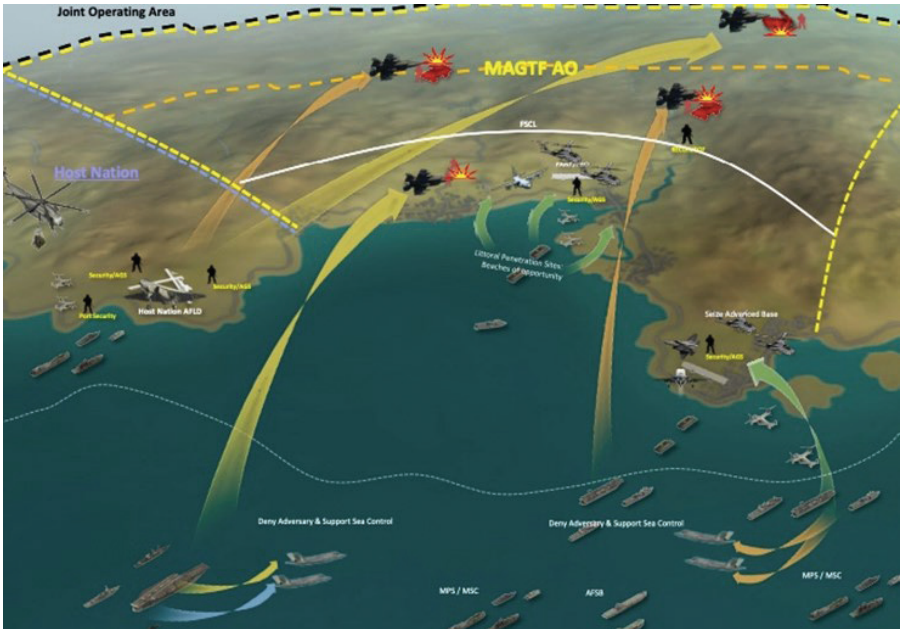
Introduction

Sustainment wins wars. Operational art theorist Dr. Milan Vego said, "When an offensive major operation or campaign is extended a great distance, it is often advantageous to establish an intermediate base of operations to facilitate logistical support and sustainment."[3] EABO cannot be sustained in a modern conflict against a peer competitor due to the tyranny of distance from intermediate bases such as Hawaii or Guam. Even though Guam is over 2,000 miles from China, it is still within China's WEZ. Therefore, logistics must be dispersed across the area of operations to limit detection and provide multiple sustainment options.

As described in the EABO manual, "logistics sustain readiness and operations by planning and executing the movement and support of forces across the competition continuum."[4] One of the critical capabilities of EABO will be the rapid movement and maneuver of troops and supplies across advanced bases to remain undetected and hard to kill: "Hard to kill refers to making it difficult for an adversary to target SIF by understanding how the adversary performs targeting and then negating those efforts through movement, dispersion, and by defeating the sensors themselves."[5] The MV-22B aircraft, with its short take off/vertical lift capability, is a critical component in the movement and maneuver function of EABO and SIF. However, the sustainment of aviation readiness in a contested environment has not been resolved.

The Marine Corps needs to lean on its historical foundation of being innovative to get the job done with the least available means. A solution to the movement and maneuver problem is the better use of the MV-22B, but the sustainment of flight operations must be resolved first. Simple solutions to the sustainment problem include adjusting the manpower model to include small, integrated teams of logistics, infantry, and aviation Marines capable of conducting movement and maneuver to remain undetected. Next, there must be agreements with host nations to displace and hide parts, fuel bladders, and equipment throughout the area of operations before a fight happens. This means the right parts and equipment must be pushed forward to remote locations and stored and maintained appropriately. Delivering classes of supply once shots are fired is unrealistic and risks the element of surprise, defeating the purpose of EABO. Senior Marine Corps officers failed to identify the logistical constraints of operating in a contested environment against a great power when forming the EABO and SIF concepts.

Fortunately, Gen Berger recognized the problem when he tweeted, "Logistics is our pacing function. The ability to sustain forces will allow us to persist and provide a more lethal capability to the joint force. Sergeant Major and I need all Marines to make logistics a priority."[6] In the future, sustainment must be conducted with tactical planning. If the Marine Corps plans to successfully implement new concepts against GPC, then sustaining rapid movement and maneuver capabilities via short take-off and vertical landing aircraft is essential. Almost every platform can use the offered solutions to resolve the aviation sustainment problem, but addressing the MV-22B first is critical because the initial contact phase of EABO requires rapid movement and maneuver of small forces across a contested area of operation.



In EABO the greatest challenge in sustainment may be aviation fuel and parts. *(Graphic provided by author.*

Mitigating The Real Problem: Anti-Access/Area Denial

China's anti-access/area denial capabilities create a dilemma in force sustainment and survivability across austere, distributed locations. This dilemma produces a single point of failure within the EABO and SIF concepts, specifically airlift in support of ground troops dispersed across contested areas of operation. China's long-range antiship weapons can range U.S. surface vessels that have operated uncontested over the past twenty years.[7] The Navy's ships can no longer mitigate the tyranny of distance to support aviation operations due to the requirement to remain outside China's WEZ until working sea control is established. "[T]he U.S. civilian maritime industry is not a viable alternative for seabased logistics, as it has atrophied and almost disappeared," Congressman John Garamendi told Newsweek. "There's a phrase called 'the tyranny of distance' which is the Pacific. And therefore, the necessity of supplying, resupplying logistics becomes a critical factor in any action that the United States military could undertake in the Pacific."[8] Vessels operating in the WEZ to sustain aviation operations in the future against a peer enemy are unrealistic.

As described by leadership columnist Douglas Satterfield, *good initiative, bad judgment* is "when a military servicemember does something for good reason, but things turn out awful."[9] The *EABO Manual* describes how Naval forces will conduct EABO across the competition continuum but lacks operational art and design for protecting and sustaining operations.[10] The *EABO Handbook: Considerations for Force Deployment and Employment* fantasizes about procuring unmanned vessels and floating airplanes to keep forces hidden inside the enemy's engagement zone.[11] These ideas provide flexibility, but the Planning, Programming, Budgeting, and Execution (PPB&E) process limits the force's ability to acquire innovative assets quickly. Due to the lengthy PPB&E process, ideas mentioned in the *EABO Handbook* are long-term solutions to an immediate problem.[12] The Marine Corps must be brilliant at using the capabilities currently in its inventory to move troops across an area of operations, and the MV-22B can be the game changer for the EABO/SIF concepts.

The MV-22B allows the MAGTF to conduct movement and maneuver rapidly within the first and second island chains. The mission of the MV-22B is to "support the MAGTF commander by providing day and night all-weather assault support by transporting combat troops and equipment during expeditionary, joint, or combined operations."[13] Most importantly, the MV-22B does not require runways or helicopter landing pads. If a commander needs something quickly, the MV-22B can deliver it. For example, a battalion commanding officer needs to rapidly transport a platoon of Marines in an austere environment 200 miles from their current location to reinforce another element. However, self-sustainment and protection of the MV-22B in a remote area of operations are required to support the battalion commander's requests.

Iron Hills, Not Mountains

Russia, Ukraine, and NATO have proven that sustaining a war between great powers will be a priority function. The EABO handbook states, "In a near-term fight tonight scenario, the greatest demand on the logistics and supply chain will likely be aviation fuel, parts, and maintenance."[14] To address the sustainability problem, the Marine Corps must consider new means to sustain shore-to-shore operations beyond the standard 30–60 initial days of supply in a contested environment against China. EABO and SIF need *iron hills*, not mountains, as the solution. Iron hills are small logistical footprints that

sustain tactical operations from small forward operating bases closer to the front lines. In contrast, iron mountains are large logistical hubs that provide strategic support to an entire area of operations far from the front lines.

The problem with iron mountains is they emit a more prominent signature, require more protection, and take more time to establish. During the Global War on Terrorism, U.S. forces were logistically uncontested and could gradually set up iron mountains and commercially ship directly to most locations. A peer adversary will take out defenseless aviation logistics support ships (T-AVB) almost immediately, and commercial aircraft and shipping will not deliver supplies in a contested environment. A web of dispersed iron hills can hide across the Indo-Pacific theatre and build resiliency into EABO and SIF. However, the hubs must remain hidden to be effective.

For example, 1,082 offshore oil and gas platforms are dispersed across the South China Sea.[15] The littoral states of the South China Sea that own oil platforms are Thailand (356), Malaysia (317), Brunei (166), Vietnam (91), China (76), Indonesia (29), and the Philippines (8).[16] Oil rigs offer multiple redundancies across all supply classes, such as communication suites, spare parts, fuel bladders, ammunition, food, and water. Submarines can approach them from the sea, and aircraft, including MV-22Bs, can land on their helicopter pads. Fortunately, another Service is already looking to implement the iron hill concept.

While operating in a silo, the Air Force also plans to use iron hills to support its solution to the GPC problem, Agile Combat Employment (ACE). ACE recognizes the need to "leverage local and regional commercial markets to alleviate distribution system stress and provide critical services and equipment to distributed forces."[17] The Joint Force, partners, and allies must work together to create a distributed network of bases and prepositioned stocks of supply and ammunition. The Deputy Commanding General for Air Mobility Command, LtGen Christopher Mohan, considers "every additional base as an additional potential dilemma for our adversary." He further justifies that materiel shall "be in small, more dispersed locations."[18] However, the prepositioned materiel is valuable only if it is the right materiel. For instance, the Deputy Commandant for Aviation should incentivize squadron commanding officers to value the importance of accurately inputting Defense Readiness Reporting System requirements and maintenance action forms to ensure the force is messaging the proper requirements to the supply chain. The Marine Corps needs to look to commercial industries for solutions to the aviation sustainment problem. Otherwise, the Defense Logistics Agency never knows what the priority is. When a significant fight kicks off, the kinks in the reporting system will show their ugly face and overwhelm the supply industry.

Investing in artificial intelligence and other algorithms to determine the right type and number of components for prepositioning can reduce the dependency on commercial shipping to deliver parts in a contested environment. Delta is an excellent example of using predictive maintenance to increase readiness and sustain operations: "In 2018, Delta partnered with Airbus to use the Skywise Core Platform and Skywise Predictive Maintenance application to improve aircraft reliability. Maintenance-related cancelations dropped from more than 5,600 in 2010 to just 55 in 2018."[19] The proof of concept of using predictive maintenance applications through machine learning and artificial intelligence has already been demonstrated. Not only will partnering with industry improve the force's current state of readiness, but it will also increase the effectiveness of the supply chain and identify critical parts that need to be dispersed across the area of operations to reduce the time and distance required to deliver a component hundreds of miles to the end user.

Integrated Tables of Organization and Equipment with a Dash of Jointness

Operating within China's WEZ will not allow aircraft to return to ship unimpeded for repair nor merely conduct aerial refueling to return to a distant base. The SIF's table of organization must include aviation support Marines standing by to sustain operations for follow-on movement. The solution to maintaining the readiness of aircraft in support of ground troops in austere forward operating bases requires a new infantry squad+ concept embedded with aviation maintainers, suppliers, and refuelers from Marine aviation logistics squadrons and Marine wing support squadrons. Joint sustainment with Air Force personnel can also mitigate the time and space problem that China's WEZ creates.

A contested environment against a peer adversary changes how Services must think and operate in the future. Distributed operations in a contested environment states that "adversary attacks will disrupt sustainment by damaging or destroying airfield operating surfaces; fuel, parts, and munitions storage; maintenance facilities; aerospace ground equipment; runway repair equipment; and other support facilities and equipment. Additionally, such attacks will likely wound or kill maintenance, engineer, security forces, and other personnel key to sustainment activities."[20] The force must be comfortable operating with no runways, ports, or nearby ships until sea control and air superiority are established, further validating the application of the MV-22B in a peer fight.

A cultural shift in how Marines operate must change to sustain aviation readiness against GPC. While the slogan *every Marine a rifleman* remains valid, it is time to consider every Marine a *maintainer*. Just because aviation requires special qualifications such as collateral duty inspectors does not mean a rifleman cannot turn a wrench to change a tire or learn to pressure wash an engine. Every Marine a maintainer does not devalue the rifleman's rigorous training cycle and learning curve required to operate new, sophisticated systems such as small UAVs. Instead, it means they can read a publication and execute basic maintenance functions during the fog of war when units face the reality of losing maintainers. The concept goes both ways, and a main-

tainer needs to be capable of conducting basic call-for-fire missions to prosecute targets.

Marines cannot be the only servicemembers authorized to touch aircraft in a major fight. For example, the *Tentative Manual for Expeditionary Advanced Base Operations* identified that "Marine Corps FARPs do not currently support all US Navy aircraft."[21] The Joint Force must collaborate and operate together. This means a Marine Corps FARP can support any other Service's aircraft, and an F-22 Air Force mechanic can work on a Marine F-35 during a crisis. Time, space, and force constraints must be mitigated by improving the Joint Force's ability to support one another. The Air Force's expeditionary version of fighting China, ACE, relies heavily on movement and maneuver to remain agile. The Air Force defines agility as "disrupting an adversary's decision cycle by creating multiple dilemmas with which they must contend."[22] Agility in the military inherently assumes more risk but can be mitigated with more "jointness." For example, the Navy Aviation Maintenance Program and Mission Essential Subsystem Matrix need joint publications. Every airline operates off FAA A&P guidelines and standards. The Joint Force can't wait for the right flavor service member to turn the wrench when every second counts and must consider changing standard policies and procedures when operating in a contested environment.

Diplomacy First

The next problem, diplomacy, requires finesse. The *National Security Strategy* assumes that host nations will support EABO and SIF. During an interview with a State Department representative in the Philippines, it was discovered that governments in the Indo-Pacific theatre are not as receptive to these plans as America thinks. The interviewee strongly stated,

> There's a fine line that these governments walk due to the proximity to China, and none want to be caught in a war between two great powers. The paradox of allowing the US to displace troops and equipment throughout their nation is a sensitive topic. On the one hand, they need and want US protection. Still, on the other hand, they don't want to be caught in a fight between two powerful nations who can create extreme destruction and unrest in their countries over the dispute of an island (Taiwan) that doesn't affect them.[23]

It is still paramount that the United States gets our partners and allies on board with dispersed sustainment throughout the Asia-Pacific. David Berteau, prior Assistant Secretary of Defense for Logistics and Materiel Readiness, mentions in an interview with *CSIS:* "that local guys on hire can build 150 plus remote airfields across the area of operations and they (China) never know which one you're going to stand up."[24] Dispersing small footprints keeps a low signature and flirts with the gray zone by keeping our actions below the threshold of conflict. Hidden supply caches may also be viewed as acceptable to host nations. Meanwhile, they are not an overt finger in the face of the People's Republic of China, even if the initiative to build them is discovered.

The basing framework is already there. The Enhanced Defense Cooperation Agreement of 2014 gave the United States access to nine bases in the Philippines. Taiwan Enhanced Resilience Act authorized the increase of regional stockpiles and the expansion of basing agreements to create logistical nodes in the region.[25] The Defense and State Departments need to build off this framework and promptly identify more hubs to develop a network of iron hills. Innovative, gray-zone diplomacy will provide options to the Joint Force. Permission to use host nation oil rigs is a prime example of using diplomacy to sustain dispersed Marines. Not only do oil rigs present another iron hill option, but they also reduce the risk of enemy fires directly hitting a host nation's population center.

Recommendation: Keep It Simple

The operational ideas that geographic combatant commanders dream about are a long-term fantasy because of the planning, programming, budgeting, and acquisition process. A recent Hudson Institute study found that "following the regular acquisition process can take between nine and 26 years for a needed capability to progress from an identified capability gap into an actual capability at the hands of the warfighter."[26] Nevertheless, alternative force structure's creative ideas are predicated on "a low-signature fleet better balanced at the low end with small, fast, durable, more numerous, and risk-worthy surface platforms, complemented by multiple widely distributed manned and unmanned aviation, surface and sub-surface assets."[27] The aim is to achieve economy and resiliency through modernization: "It is likely that many innovations will involve single-mission platforms operating in networked swarms with diverse but complementary capabilities to detect and destroy adversary ships and aircraft in and around complex littoral terrain."[28] While these capabilities are the answer, building a low-signature fleet with numerous platforms will take years, if not decades due to the programming, budgeting, and acquisition process.

The main question that remains, however, is how America's forces will react if a fight with China starts before 2025. The head of the Air Force's Air Mobility Command recently predicted a war with China by 2025 and is ordering his subordinate commanders to prepare their units for a fight.[29] He backed up his statements by adding, "AMC needs to go faster. Drive readiness, integration, and agility for ourselves and the Joint Force to deter and, if required, defeat China."[30] Until the programming, budgeting, and acquisition process is reformed, the Marine Corps and Joint Force must be comfortable fighting with what it has while also learning to operate effectively in the gray zone. For example, if drug lords can distribute illegal drugs to America via small submarines, there is no reason why U.S. forces cannot use the same concept to distribute personnel and supplies. Services such as the Air Force are submitting legislative proposals to give the Air Force and Space Force authority to start programs or speed existing efforts without formal congressional approval to decrease the acquisition timeline.[31]

Changing the legal acquisition process will not happen overnight, though. The solution to the immediate problem still lies within the framework of being innovative with what you have now and conducting the backward planning for sustainment sooner rather than later.

Conclusion

It is believed that GEN Omar Bradley famously said: "Amateurs talk strategy. Professionals talk logistics."[32] The *EABO Manual* got it right when it emphasized that "new methods of prepositioning maintenance equipment, spare parts, and technicians must be explored to distribute aviation maintenance capabilities across the WEZ to complicate adversary targeting. Temporary aviation maintenance locations must be established to conduct maintenance functions, and integrated air-ground teams must be created to sustain rapid movement and maneuver."[33] To meet the manual's guidance, the Marine Corps must collaborate its operational ideas with other services to produce a joint sustainment doctrine that can defeat GPC. Each Service has individual mission essential tasks, and they must feed off one another to be effective. Additionally, the Marine Corps must consider changing how the MAGTF is trained and equipped at the lowest tactical level to ensure redundancies are in place before a GPC conflict occurs. Finally, the State Department and Defense Department must work closely to align their efforts and ensure diplomacy meets the needs of defense priorities.

Notes

1. Headquarters Marine Corps, *Expeditionary Advanced Base Operations (EABO) Handbook*, (Washington, DC: 2018).

2. Headquarters Marine Corps, *2019 Marine Corps Aviation Plan*, (Washington, DC: 2019).

3. Milan N. Vego, *Joint Operational Warfare: Theory and Practice* (Newport: Naval War College, 2009).

4. Headquarters Marine Corps, *Tentative Manual for EABO V2*, (Washington, DC: 2023).

5. Headquarters Marine Corps, *A Concept for Stand-In Forces*, (Washington, DC: 2021).

6. @USMC, "Coming This Week ... Pic.Twitter.Com/Atiy5zdyqr." Twitter, February 23, 2023. https://twitter.com/CMC_MarineCorps/status/1617633289401167872.

7. Jon Lake, "China's Stealthy Area Denial," *Asian Military Review*, March 16, 2023, https://www.asianmilitaryreview.com/2023/03/chinas-stealthy-area-denial.

8. Alex J. Rouhandeh, "Logistics Failing Russia in Ukraine, Could Limit U.S. If China Attacks Taiwan," *Newsweek*, April 15, 2022, https://www.newsweek.com/logistics-failing-russia-ukraine-could-limit-us-if-china-attacks-taiwan-1696531.

9. Douglas R. Satterfield, "Good Initiative, Bad Judgment, Leadership in Action," *Leadership in Action*, November 12, 2019, https://www.theleadermaker.com/good-initiative-bad-judgment.

10. *Tentative Manual for EABO V2.*

11. *Expeditionary Advanced Base Operations (EABO) Handbook.*

12. Ibid.

13. *2019 Marine Corps Aviation Plan.*

14. *Expeditionary Advanced Base Operations (EABO) Handbook.*

15. Yongxue Liu, Chao Sun, Jiaqi Sun, Hongyi Li, Wenfeng Zhan, Yuhao Yang, and Siyu Zhang, "Satellite Data Lift the Veil on Offshore Platforms in the South China Sea," *Nature News*, September 19, 2016, https://www.nature.com/articles/srep33623.

16. Ibid.

17. Agile Combat Employment-AF. Accessed December 22, 2023, https://www.doctrine.af.mil/Portals/61/documents/AFDN_1-21/AFDN%201-21%20ACE.pdf.

18. Ibid.

19. Staff, "Delta Techops, Material Services and Flight Products: Delta Techops Expanding Predictive Maintenance Capabilities with New Airbus Partnership," *Delta*, September 3, 2020, https://deltatechops.com/delta-techops-expanding-predictive-maintenance-capabilities-with-new-airbus-partnership.

20. Staff, *Distributed Operations in a Contested Environment*, (Santa Monica: RAND, 2019).

21. *Tentative Manual for EABO V2.*

22. Department of the Air Force, *Agile Combat Employment*, (Washington, DC: 2022).

23. Interview between author and undisclosed U.S. State Department representative on April 26, 2023.

24. Michael J. Green, "Moving Pieces on the Chessboard: Strategy and Logistics in the Indo-Pacific," *CSIS,* November 15, 2021, https://www. csis.org/analysis/moving-pieces-chessboard-strategy-and-logistics-indo-pacific.

25. Omer Duru, "Logistical Lessons from Ukraine-and What It Means for Taiwan," *Default*, March 14, 2023, https://www.lawfaremedia.org/article/logistical-lessons-ukraine%E2%80%94and-what-it-means-taiwan.

26. Staff, "Reforming the Defense Department's Planning, Programming, Budgeting, and Execution Process," *PPBE Reform Commission*, June 30, 2023, https://ppbereform.senate.gov/in_the_news/reforming-the-defense-departments-planning-programming-budgeting-and-execution-process.

27. *Expeditionary Advanced Base Operations (EABO) Handbook.*

28. Ibid.

29. Joseph Trevithick, "Air Mobility Command Boss Predicts War with China in 2025 in Dire Memo," *The Drive*, January 27, 2023, https://www.thedrive.com/the-war-zone/usaf-general-warns-of-war-with-china-over-taiwan-in-2025.

30. Ibid.

31. Courtney Albon, "Air Force Wants to Launch Programs without Having to Wait for Congress," *Defense News*, April 19, 2023, https://www.defensenews.com/space/2023/04/19/air-force-wants-to-launch-programs-without-having-to-wait-for-congress.

32. "Moving Pieces on the Chessboard: Strategy and Logistics in the Indo-Pacific."

33. *Tentative Manual for EABO V2.*

Basic Officer Leadership

Holding Marines accountable in tactical situations

by Maj Michael A. Hanson

There is a lapse in basic officer leadership in the Marine Corps today with significant ripple effects emanating from it. It is evident in the infantry platoons where one can very plainly see a direct connection between the quality of the unit's leadership and its performance in the field. The greatest challenge for a new infantry officer is keeping their Marines disciplined and engaged while conducting operations. Many new infantry officers have false expectations of their Marines and fail to hold them accountable when they need it most—in tactical environments. This is a gap that will have disastrous results in combat if it is allowed to remain.

To be absolutely clear, the Infantry Officer Course (IOC) continues to produce a high-quality product. The vast majority of new infantry officers are very good. They are highly motivated, clever, very fit, energetic, have a bias for action, display a healthy amount of self-discipline, and do not give up. There has always existed the stereotype of the dumb second lieutenant best exemplified by the platoon commander in the cult classic film, *Heartbreak Ridge*. However, this is simply not a good representation of new infantry officers. Inevitably there exists a goofy lieutenant here and there, but the vast majority of them are very proficient and quite able to accomplish their missions. The main thing most of them lack is good judgment, and as the old saying goes, *good judgment comes with experience and a lot of experience comes from bad judgment*. Judgment is something that they will develop in time as they build their own gauge for what is and is not sound, realistic, or achievable. Furthermore, that is why they have a platoon sergeant, a seasoned veteran with a solid foundation of good judgment and experience, to balance the energy and drive of the oftentimes younger and less experienced platoon commander and to keep the Marines in line.

>Maj Hanson is a student at Command and Staff College in Quantico, VA. This article was written based on observations as a Coyote with TTECG from 2017–2020.

However, even good platoon commanders can succumb to this weakness. This lack of judgment, not of how to conduct attacks and to seize a given objective but rather, poor judgment of discipline and the lack of courage to correct it. Specifically, what standards to expect of Marines and the ability to hold them to the proper standard. This is not about Marines unblousing their boots or not shaving. This is about Marines not maintaining constant security, going to sleep with no one manning a machinegun, not wearing full gear on post and being ready to fight at all times, not keeping their gear packed and ready to move at a moment's notice, not cleaning their weapons, not continually improving defensive positions, not camouflaging positions and staying out of sight, and so many other things that will get Marines killed in combat. Put in simple terms, many infantry officers allow their Marines to perform below the standard because they either lack the courage or do not know how to correct them. They are very good at taking down the trenches at Range 410A or Range 400, but they are not very good at telling their platoon sergeant and squad leaders that something is unsatisfactory and forcing them to correct the Marines. This is a failure of basic leadership that stems from either

The PALMFEX is a two-week exercise in Twentynine Palms, CA, where officers in the Infantry Officer Course participate in a live-fire and maneuver combat-readiness evaluation. *(Photo by Cpl Eric Huynh.)*

an inability to recognize that something is unacceptable or a desire to be liked that causes them to accept substandard performance. In either event, it is unbecoming of a leader of Marines.

These shortcomings can be traced back to the way new officers are trained at Officer Candidate School, The Basic School, and IOC. Simply put, they are conditioned to expect wrong things from their Marines and are not well prepared to demand the right things. Basically, they are being indoctrinated with an unrealistic expectation of the Marines they will lead in the future. The path to becoming an officer in the Marine Corps is very selective; from the Officer Candidate School selection board, Officer Candidate School, The Basic School, and IOC, only a few survive the many cuts along the way. The false impression that is drilled into their heads from day one is that all their Marines will all be as highly motivated, physically fit, and dedicated as they are. Though there are many truly outstanding enlisted Marines every officer would be privileged to serve with, there are many substandard Marines as well. New officers are not adequately prepared to deal with the substandard Marines.

Every officer remembers the first time they took their platoon on a run and how many Marines fell out. No officer can forget the shock and horror they felt that day. Many enlisted Marines think this is always the case of a new officers trying to show off their physical prowess and how well they can run. Yet, many officers would admit that until that day they did not think it was even possible to fail a PFT, and they assumed their Marines would be in similar shape as them. This is because, from day one, prospective officers are surrounded by hand-picked enlisted Marines who represent the highest standards of the Marine Corps. It makes sense that we do not want impressionable new officers and officer candidates to see anything less than high standard Marines. However, we are not doing them any favors by teaching them to expect all their enlisted Marines will be like the examples we put in front of them during entry-level training.

When these young officers reach their units and only a few of their Marines are the high performers they grew accustomed to seeing in Quantico, they do not know what to do. This is because they are not taught what to accurately expect and more importantly—how to realize expectations. Essentially, new officers are taught to expect that every Marine possesses enough self-discipline to correct themselves or not need correction in the first place. This is a totally unrealistic expectation and one that is borne out of being a member of a unit of high performers, such as an IOC platoon.

I maintain a very high regard for the platoon I was in when I was in IOC.

It was one of the greatest teams that I have ever been a member of, and this is because of the level of dedication every member of that platoon had for each other. An IOC platoon is a very unique unit in the sense that every member of the platoon wants desperately to be in and graduate the course. The Marines who did not want the MOS are not there, and the ones that change their minds do not last long. There is a constant state of attrition that forces the most drops from the course on the very first day and that continues through the length of the period of instruction. Furthermore, the steady rotation of billets creates an atmosphere where every student will try their hardest to help the current billet holder as much as they can because tomorrow the roles may be reversed. IOC Marines display an almost unbelievable amount of fidelity to their fellow students.

As cohesive of a unit as an IOC platoon is, it is not a good representation of a typical infantry platoon. The average infantry officer is shocked when he meets his platoon and finds not only that there are Marines that are woefully out of shape but also that there are Marines that do not want to be there and do not care if the unit succeeds or not. That there are Marines in the fleet who are just waiting out their contracts. He was expecting his platoon to be like his IOC platoon. These negative attributes are not at all representative of the average enlisted Marine. However, there is always a significant level of substandard performers in any unit and sometimes these Marines are NCOs and even squad leaders who are in charge of enforcing standards on the rest of the Marines. When a new lieutenant enters such a situation, he often does not know what to do about these Marines. Too often, he simply accepts it.

This is because new officers are constantly told to be humble. They are so often told stories about new lieutenants who arrive and try to change things, that this is bad for morale and weakens the unit. Thus, these new officers resolve not to be THAT lieutenant. They are also often intimidated by their Marines. Not that they are afraid of their Marines but that they do not want to tell a Marine who may be older, who in many cases has been on multiple deployments and may even have been in combat, that the Marine is wrong and needs to change. Many new officers are very uncomfortable when it comes to this aspect of leadership. So, when they find themselves before an unacceptable situation, they often accept it because they are too afraid of being the lieutenant they have been warned about. They think they are being humble by not making corrections. This is not to say that new lieutenants should not be told to be humble, but that we are not doing a satisfactory job of teaching the concept of ownership to new lieutenants. The lieutenants who are afraid of rocking the boat do not quite realize that they own the boat.

An IOC platoon is a very unique unit in the sense that every member of the platoon wants desperately to be in and graduate the course.

Too often, when you visit a defensive position and find Marines sleeping on post, on security without wearing their gear, in uncamouflaged positions, with dirty weapons, poor noise and light discipline, and many other signs of weak unit discipline and combat ineffectiveness and ask the platoon commander what is going on, they often respond meekly. You can tell by the look on their faces that they know that they are in the wrong and are embarrassed about it. Yet still, too often they do nothing about it and allow it to continue. Why is that? It is because they are afraid to exercise their own authority. It is because they do not fully realize the responsibility they have to their leaders to ensure that their unit remains combat effective and the responsibility to their Marines to keep them alive.

The greatest challenge for a new platoon commander is not storming some objective or enduring a long movement but keeping their Marines disciplined and engaged. It is harnessing the force of will when nobody else is willing. It is forcing their Marines to do the right things when they are exhausted and have gone internal. Forcing them to dig in and establish a defensible position in the dark after a tiring day. Forcing them to maintain an effective security posture where there is an established watch rotation and Marines on post are wearing full personal protective equipment. Forcing their Marines to constantly improve their positions through cover and concealment. Forcing their Marines to keep their gear packed and ready to move at a moment's notice and actually moving when it becomes necessary. These are the greatest challenges a platoon commander will face, keeping their Marines disciplined and engaged when they are hot or cold, wet, hungry, exhausted, and generally miserable.

To do this is to keep your Marines alive and your unit effective, this is why we study books like *The Last Stand of Fox Company* and *Colder Than Hell* because what carried those Marines through those ordeals were effective leaders that held their units together during the most trying of times. Anyone who has read either of those books will remember the iron will of 1stLt Kurt Chew-Een Lee and that he was not afraid to hold his Marines to the standards he expected of them. By doing so, he saved not only his own Marines' lives but the lives of many others.

These precepts are not limited solely to the infantry as Marines of other MOSs will relate to the struggles in basic officer leadership that they face. It is not infantry officer leadership; it is basic officer leadership or officership. We must remedy this affliction in the operating forces, and it begins with the education of new officers from day one.

USMC

Building an Inner Citadel of Character

How to acquire the consistency of character that will make it impossible for another to do you harm

by Col Tom Gordon (Ret)

***>Col Gordon retired in 2021 after 30 years of active service. He currently serves as the Commandant of Cadets at The Citadel in Charleston, SC. He is the author of* Marine Maxims, Turning Principles into Practice *and frequently contributes to the* Marine Corps Gazette.**

Col Gordon, Commandant of Cadets, addresses the freshmen class at the beginning of Challenge Week. *(Photo: The Citadel's Office of Communications and Marketing.)*

So how does one acquire the consistency of character that will make it impossible for another to do them harm? The ancient Greek and Roman philosophers, particularly the Stoics, believed the answer lay in a proper education. The key to character development, they advocated, was a balanced education, grounded in philosophy yet practical in application. My book, *Marine Maxims Turning Leadership Principles into Practice*, is all about turning such principles into practice. At The Citadel, my job is to educate and develop principled leaders and return young men and women of virtue and character back to society where they can be successful in all walks of life. Here we focus on four character-developing steps that enable future leaders to build a spiritual parapet and shore up their emotional resolve. These four maxims have enabled leaders to persevere regardless of their circumstances for over two millenniums. They are:

1. Discover and never forget your why.
2. Do hard things.
3. Control the controllable.
4. Make it a habit.

Each of these maxims is a choice that cannot be imposed but only embraced. Xenophon was a Greek general and a student of Socrates. In his work, *Memorabilia,* he shares the legend of Hercules at the crossroads. This ancient Greek parable finds a young Hercules confronted with a choice between following a beautiful goddess named Voluptas who offered to fulfill his every desire or a stern goddess in a white robe named Virtue who promised honor and satisfaction only achievable through hardship and sacrifice. Aristotle incorporates this judgment in his definition of character. Character, he professed, is discovered in the pursuit of virtue and the avoidance of vice.

Personally, I subscribe to this classical definition—your character is defined by your personal choices. It is built by your inner confrontations and takes form in the struggle to overcome internal weakness in the pursuit of excellence. These choices, repeated over time, become habits—an engraved set of dispositions and a desire to do the right thing.

#1: Discover and Never Forget Your Why

If you want to be the architect of your character, you first need to know what you are building. Who do you want to be? A Navy chaplain friend of mine, Madison Carter, professed: "If you don't know who you are, someone will tell you who you are. If they can tell you who you are, they can define

A Citadel cadet navigates the confidence course at MCR-PI during leadership training. *(Photo: The Citadel's Office of Communications and Marketing.)*

Command SgtMaj Yagle evaluates a drill competition. *(Photo: The Citadel's Office of Communications and Marketing.)*

who you are. If they can define who you are, then they can confine who you are." Kevin Kelly, the Editor for *Wired Magazine*, wrote, "You complete your mission in life when you figure out what your mission in life is. Your purpose is to discover your purpose."[1] This is not a paradox. This is the way.

After the Bible, the most impactful book I ever read was Viktor Frankl's *Man's Search for Meaning*. Frankl, a Holocaust survivor and psychologist, learned his answer to the preeminent question in a Nazi concentration camp when he discovered he was asking the wrong questions. "It is not what do I want from life," he discovered, "it's what does this life want from me? Where do my talents and gladness meet the world's needs?" Frankl concluded that "what man needs is not a tensionless state but rather a striving struggle for a worthwhile goal."[2]

The first maxim in my book is "Know Thyself." Why is it first? I write, because "when you know who you are, you will know what to do. Knowing yourself enables you to align your beliefs and your behavior. This alignment produces authenticity. See, the best leaders are acutely self-aware. They are capable of being honest with themselves about themselves. They know their capabilities and limitations and understand how each are perceived."[3] This degree of introspection can take decades to develop. Knowing yourself is hard! This has much to do with how we mentor junior leaders. We tell them to "be yourself." Personally, I cannot think of any more hollow rhetoric to share with an aspiring leader. At eighteen, you have no idea who you are and that is OK. You are still figuring it out. So here is my advice: desire what you admire. Who are your heroes? Make a list of the people you admire and then use their examples to map your values. British economist, Alfred Whitehead, wrote, "A moral education is impossible without the habitual visions of greatness."[4] The moral failures that surround us today are not due to personal weakness, rather it is the result of an inadequate example. Find yourself a hero worth emulating.

In his book, *Designing the Mind: The Principles of Psychitecture*, Ryan Bush describes the "great tourist trap of life."[5] Here, he explains that the things valued by our society are not necessarily good deals. Our culture is acutely goal-oriented but rarely focuses on the right things. Success, as defined by popular culture and social media, has little to do with character and, ironically, happiness. Our culture confuses fame and popularity with success. When you aspire for something that is material, reliant on external events, or based upon the opinions of others (all of which are outside of your control), you will be left anxious, empty, and wanting more even if you achieve your goal. However, if your goals are internal and can never be completely finished or achieved, you will discover the satisfaction that can only be found in pursuing a life of significance and character.

If you need help defining who you want to be, the best guide I found is in Stephen Covey's classic: *7 Habits of Highly Effective People*. Covey simply asks, what do you want people to say about you at your funeral?[6] Most find this exercise strips away unessential material and thereby discovers the attributes of the person of character you aspire to be.

#2: Do Hard Things

I began by defining character as a choice. If you want to build an inner citadel of character, then choose to do hard things—challenge yourself. Doing hard things when you are young is a life hack; it literally rewires your brain. The science of neuroplasticity is a field of psychology dedicated to exploring how life experiences modify the software in your mind. Doing hard things in your youth develops coping techniques; a form of spiritual Jiu-Jitsu that enables you to redirect a blow and control your response regardless of the circumstances. Becoming comfortable with discomfort is the first step to mental wellness.

As the country emerges from twenty years of war, the focus has been on veterans' mental health and post-traumatic stress disorder, but very little has been written about post-traumatic growth. Here the classics can be very useful. Seneca the Younger was a Roman Stoic philosopher in first-century Rome. In his letters, he professed that "true character cannot be revealed without adversity."[7] Whether you are quoting Seneca or Ecclesiasticus, "just as gold is tried by fire, man is by the furnace of adversity."[8] The truth is we in the profession of arms have shared a degree of misery the protected will never know. However, we also know that suffering is where goodness comes from. Suffering builds commitment; suffering builds character.

I tell the cadets at The Citadel before any rigorous training event that growth and comfort can never coexist. Getting out of your comfort zone and challenging yourself is how you build character. Every time a young person overcomes adversity, they build resiliency. Every time a young person successfully navigates an obstacle, they build resolve. The word resilience comes from the Latin verb *resilire*, which means "to jump back." In science, resilience is the ability of a substance to absorb energy when it is deformed, and then release the energy back. See, resilience is not invincibility, but rather adaptability.

#3: Control the Controllable

One of my personal heroes, ADM James Bond Stockdale, Medal of Honor recipient and former President of The Citadel wrote, "The invincible man is he who cannot be dismayed by any happenings outside of his control."[9] The Admiral was actually paraphrasing Epictetus. Epictetus was a Stoic sage and a slave in ancient Rome under the reign of Nero. Stockdale was given a copy of his teachings, *The Enchiridion* (or Handbook), as a graduate student at Stanford. The ability to determine what is in your power and what is not is a tenet of Stoicism. In philosophy, this is referred to as the dichotomy of control. In psychiatry, clinicians call it subjective consciousness, or the ability to distinguish what is within your agency to control. The Serenity Prayer is a religious appeal for subjective consciousness.

I tell every freshman at The Citadel that there are only four things they can control during their "Knob" (Plebe) year. They are:

- Your preparation
- Your effort
- Your attitude
- Your response

Everything else in this world is outside of their control. The truth is that these are the only four things we retain agency over in life. The reason why there is so much depression and anxiety in the world today is because people are trying to control things that are outside of their control.

Remember Victor Frankl? The Nazis stripped him of literally everything, yet he retained agency over his response. After the war, Frankl published his experience and his psychological theory: Logotherapy. Logotherapy teaches the practitioner how to reframe their circumstances to maintain personal agency. When you reframe your circumstance, you restore your perspective. It is when we forget our ability to choose, we learn to be helpless. You may not be able to control the situation, but Dr. Frankl would insist that you can always control your reaction.

Habits enable our brains to be more efficient. They free our minds for creative and critical thinking while turning rote and repetitive functions over the autonomous portion of the brain.

#4: Make it Habit

Finally, character development is not a goal, it is a system. Consistency here is a superpower. I began by defining character as a choice, repeated over time until it became a habit. Our habits, therefore, reflect our character. Aristotle wrote "We are the sum of our actions, and therefore our habits make all the difference."[10] Habits enable our brains to be more efficient. They free our minds for creative and critical thinking while turning rote and repetitive functions over the autonomous portion of the brain. Every habit has three elements: a cue, a routine, and a reward. The cue is a trigger that tells your brain to go into automatic mode. The routine is the behavior itself, which can be a physical act, a mental task, or an emotional response. Finally, the reward helps our brain figure out if its particular habit is worth remembering in the future.

Our habits are also a product of our environment. Maxim #18 in my book holds, "People do what people see."[11] In his best-selling book, *Atomic Habits*, author James Clear writes, "We imitate

the habits of the close, the many, and the powerful."[12] So, if you want to emulate the habits of those of upstanding character you must focus on the cues that make up your surroundings. The law of exposure holds that the mind absorbs and reflects what it is exposed to the most. We all learned in health class that you are what you eat. Well, what you put into your mind controls your thoughts. Cable news, smartphones, and TikTok do not create new motivation but instead latch on to the darker side of human nature. The Stoics profess that your life is moving towards your strongest thoughts: Where the head goes the body follows—perception proceeds action—right action follows right perspective.

A popular parenting refrain in my house was, "Show me your friends and I will show you your future." Epictetus wrote, "Keep company only with people who lift you, whose presence calls forth your best." The Apostle Paul was blunt: "Bad company corrupts good character."[13] When it comes to character development, the Stoics recognized that none of us are self-sufficient. We cannot do it alone. The fourth-class system at The Citadel and the Marine Corps' Basic Training focus on building collective grit. In her book *Grit: The Power of Passion and Perseverance*, Angela Duckworth discusses at length the power of conformity and the value of a "gritty culture." Duckworth concludes that there are two ways to grow resilience, or what she calls "grit." The hard way is to develop it by yourself. The easy way is to surround yourself with a culture of grit.[14]

Conclusion

It has been said that when you have character that is all that matters, and when you do not have character that is all that matters. Maxim #44 in my book declares that talent can get you to the top but only character will keep you there.[15] At some point, your character will be tested.

Combat is the ultimate arbiter of character. A leader's character and the core values they imprinted upon their unit will be revealed when exposed to continuous contact. Lord Moran, Churchill's friend and physician in World War II, argued that character must be developed before the trials of combat or its dearth will be magnified. In his book, *The Anatomy of Courage*, he wrote:

> Character is a habit, the daily choice of right instead of wrong; it is a moral quality that grows to maturity in peace and is not suddenly developed on the outbreak of war. For war, despite much that we have heard to the contrary, has no power to transform, it merely exaggerates the good and evil that are in us, till it is plain for all to read; it cannot change, it exposes. Man's fate in battle is worked out before war begins.[16]

If you want the consistency of character that will make it impossible for others to do you harm, choose your struggle. If you want to do great things in life, choose to bear discomfort. Your mind's immune system is much like your body's: both require stressors and challenges to learn, adapt, and grow. There are few callings that demand more of one's character than the profession of arms. If you aspire to serve and lead in defense of this great Nation, the Stoics can help you find your purpose and endure war's cruel deprivation. The Classics teach us that everything worthwhile in life is achieved by overcoming difficult experiences. Modern society confuses a life of comfort and ease with the good life. The truth is the avoidance of suffering leads to more suffering. The good life is found in striving for excellence, getting out of your comfort zone, and incrementally overcoming your weaknesses by developing constructive habits. Controlling the controllable and reframing your circumstances is not suppression, repression, or denial but emotional self-regulation borrowed from Ancient Greeks. Your character emerges out of your habits, and your habits are developed in response to your environment. The Stoics' notion of affiliation is key to the development of individual character and resilience. None of us are capable of doing this alone. We need heroes to emulate, leaders and mentors to push us beyond our perceived limits while keeping us on azimuth, and communities of cooperation, respect, and support to lift us up. When you know your why, have been put to the test, found a way to retain agency and repeat it to the point that it becomes a habit you will become that person of character impervious to attack.

Notes

1. Kevin Kelly, *Excellent Advice for Ling: Wisdom I Wished I'd Known Earlier* (Penguin Random House, 2023).

2. Viktor Frankl, *Man's Search for Meaning* (London: Ebury Publishing, 2013).

3. Thomas Gordon, *Marine Maxims: Turning Leadership Principles into Practice* (Annapolis: Naval Institute Press, 2021).

4. David Brooks, *The Road to Character* (New York: Random House, 2015).

5. Ryan Bush, *Designing The Mind: The Principles of Psychitecture* (Independently Published, 2021).

6. Stephen R. Covey, *The 7 Habits of Highly Effective People* (New York: Simon and Schuster, 1990).

7. Seneca, *On Providence*.

8. Ecclesiasticus 2:5 KJV.

9. James Stockdale, *Thoughts of a Philosophical Fighter Pilot* (Stanford: Hoover Institute Press, 1995).

10. Aksapada, *Aristotle, 1111 Lessons from Grand-Disciple Socrates*.

11. *Marine Maxims*.

12. James Clear, *Atomic Habits* (Penguin Publishing Group, 2018).

13. 1 Corinthians 15:33 KJV.

14. Angela Duckworth, *Grit The Power of Passion and Perseverance* (New York: Simon and Schuster, 2016).

15. *Marine Maxims*.

16. Lord Moran, *Anatomy of Courage* (London: Constable, 1945).

Thank you for all of your support in 2023.

MARINE CORPS ASSOCIATION FOUNDATION

OVER $1,200,000 SPENT ON MARINES IN 2023

>6,400 MARINE LEADERS CONDUCTED BATTLEFIELD STUDIES AROUND THE GLOBE

> 2,300 BOOKS

FROM THE COMMANDANT'S PROFESSIONAL READING LIST WERE PROVIDED TO ENSURE MARINES HAVE ACCESS TO THEIR REQUIRED READING MATERIALS

~4,200 AWARDS RECOGNIZING THE OUTSTANDING ACHIEVEMENTS MARINES WERE PRESENTED, WITH 94% GOING TO ENLISTED MARINES

47 MARINES RECEIVED AWARDS FOR THEIR SCHOLARLY WRITTEN WORK

MORE THAN 47,000 MARINES IMPACTED BY MCA PROGRAMS!

THANK YOU

FROM THE MARINE CORPS ASSOCIATION FOUNDATION

SEALION

Joint invasion operations

by Mr. Joseph Miranda

One of the great "what if" campaigns of World War II was Operation SEALION (*Unternehmen Seelowe* in German), the planned but never executed German invasion of the British Isles.

With the surrender of France in June 1940, Adolf Hitler believed that the British would negotiate an end to the war, but Winston Churchill with considerable support decided on fighting through to victory. Accordingly, Hitler ordered the planning and preparations for SEALION as a combined air-amphibious invasion of the British Isles. Historically, SEALION was canceled with the failure of the *Luftwaffe* to defeat the Royal Air Force (RAF) in the Battle of Britain (July-September 1940), but the outcome had the invasion been launched is still a hotly debated military topic.

Decision Games' *Operation Sealion Deluxe* covers this hypothetical campaign. The game was designed by Eric Harvey and Chris Webber and is published in a boxed format. The rules include an historical analysis article about SEALION by Christopher Perello.

Sealion's game map shows southeastern Britain at a scale of about 2.7 miles per hexagon (the basic map grid division, also called in wargame parlance a hex). The map includes a wide variety of terrain types, to include urban, towns, fortified lines, radar stations, several classifications of beaches, and the countryside between. There are also divisions of the map into various invasion and defensive sectors.

Game counters represent mostly divisions, brigade and regiments for ground forces, groupings of air squadrons, major naval units and flotillas of smaller sea craft. This provides for an overall operational approach to the model.

>Mr. Miranda is a prolific board wargame designer as well as being the past editor of both Strategy & Tactics and Modern War magazines. His designs include a wide range of topics from the classical era to the near future, and have covered combined arms, low intensity conflict and hybrid operations. He is a former Army Officer and has conducted numerous professional seminars on modeling and simulation. Mr. Miranda has also authored several Decision Games special interest publications to include an upcoming issue on the First Indochina War.

Both sides have a unique set of challenges. The Germans have an edge in ground forces and with the *Luftwaffe*. One assumption here is that during the Battle of Britain, the Germans gained air superiority but not supremacy (otherwise the invasion would not have been possible in the first place).

The British have their own edge with the Royal Navy that can intervene against the invasion fleet at sea. On top of this, while the German ground forces order of battle mobilizes more combat power than the opposing British, the dilemma for the *Wehrmacht* is in getting those forces across the English Channel, landing on the English coast, and then moving inland to seize critical objectives. Thus, the game provides something of an asymmetrical set of challenges for players.

Ad Hoc Invasion

As noted, the *Wehrmacht* has considerable ground strength, but these units are located on the continent in France, Belgium, and the Netherlands. The dilemma is in getting the invasion force across the English Channel in the face of an enemy who has a large and powerful navy. Added to this is the Germans' lack of specialized amphibious forces. Actually, the *Wehrmacht* had conducted a successful airborne-amphibious invasion of Norway in April 1940, but this was a one-time special operation and not part of any overall doctrine.

In the game, the Germans have one marine battalion (representing naval landing parties), four amphibious tank battalions, and the equivalent of two airborne divisions (one paratrooper-glider, a second airlanding in transport aircraft on captured airfields). Naval transport is largely via a collection of barges and civilian craft concentrated in Channel ports by *Wehrmacht* planners. There are no specialized assault landing craft or amphibious warfare ships as would be deployed by the Allies throughout the war.

For the Germans, it comes down to using a small number of airborne-amphibious formations to seize critical beachheads and landing zones, with larger numbers of conventional infantry storming ashore on beaches. The initial phase of the invasion can then be followed by large forces moving across the English Channel, assuming those forces can make it across.

At sea, the Royal Navy has a clear advantage, sailing several major capi-

tal ships plus an aircraft carrier. The *Kriegsmarine* (German Navy) had recently lost several naval units during the otherwise successful Norway campaign of spring 1940 while the British have battleships, cruisers, and destroyers to spare. The SEALION plan called for massive air cover to counter Royal Navy sorties, backed up by a screen of U-boats and E-boats (submarines and torpedo boats). The game system uses a quasi-tactical procedure to resolve naval combat. The Germans have a couple of floatplanes they can use to enhance gunfire spotting.

One other aspect of naval operations is in mine warfare. Players can lay minefields and conduct mines sweeping operations. Minefields are useful for blocking enemy at sea movement as well as protecting the flanks of invasion convoys. This is a sometimes-neglected aspect of amphibious operations. Another aspect is coastal artillery. Both sides have coastal batteries (British on the English coast, German off-map on the French-Belgian coast) which can be used to attack enemy naval units.

Let us assume the Sealion force makes it across the English Channel, the invasion convoys reach England, and they disembark their amphibious forces, linking up with airborne which has already seized advanced landing zones. There are three general categories of beaches: Most Suitable, Less Suitable and Unsuitable. Suitability ratings affect the types of units that can land on a beach and also provide varying bonuses for any defenders.

Once ashore, German and British forces will engage each other in ground combat. The numbers along the bottom of ground combat units are their attack-defense-movement factors; the number on the left side is the unit quality rating. Ground combat can be enhanced by airpower and naval gunfire, so there is a strong element of combined arms in game tactics.

Needless to say, logistics are critical, especially for the amphibious force. German units trace a line of supply back to friendly controlled beach hexes which also have naval transports on them. Since there are a limited number of transports, and these will be attritioned by British attacks in the course of a scenario, there are going to be some real command decisions about allocation of naval transport capacity. Also, German airborne units can use air supply if they fly in an air transport unit to a controlled airfield.

For the British, supply is much easier since they are essentially operating on their own lines of communications. Unless cut off from an industrial center, British units can keep on fighting.

Once ashore and adequately supplied, German forces will be moving inland, facing British counterattacks. Strategic objectives include British factories, RAF headquarters at Uxbridge and Parliament in London. Control of objectives provide the groundwork for claiming a victory.

Another objective is in the Chain Home radar stations. By taking these stations, the Germans undermine the RAF's ability to engage the *Luftwaffe*. Tactical victories on the ground will have an impact on the operational air situation. Winning certain battles will pay off in the long run.

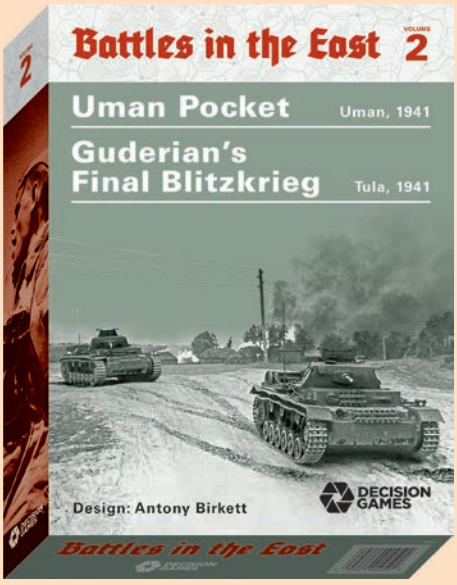
German Landing near Dover. Two German airborne regiments (1FJ, 2FJ) land at airfield west of Dover, transported by Ju-52s and gliders. German amphibious tank battalion (U-B) and mountain brigade (6) land at the beach hex just west of Folkestone. Invasion force is covered by the cruiser Emden and an E-boat flotilla. Air cover is from V Fliegerkorps bombers and 26 Group Me-110 long-range fighters. British coastal defenses include a division at Dover (45), a machinegun brigade at Folkestone (1), and a brigade at Hythe (24 Guards). An armored brigade (21) is in reserve at the airfield NW of Hythe. Royal Navy cruiser (Norfolk) plus destroyer flotilla at Sector A, preparing to sortie.

As usual, weather has a major impact on operations. Autumn rains will keep air units on the ground and reduce the combat effectiveness of naval and ground units. In the main, weather works against the Germans since they are on the offensive.

The game includes some optional rules for variable deployments, additional ground and naval forces, and such tactics as dummy German paratroopers. The optional rules allow players to take a look at the various possibilities available for alternative scenarios. *Sealion Deluxe* thereby provides the full range of operations for exploring invasion tactics using a hypothetical situation as the testbed.

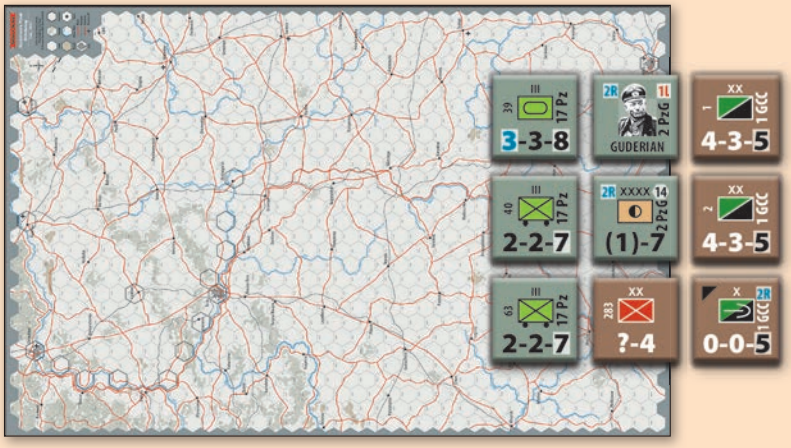
Germans Move Inland. Amphibious tanks (U-B) and mountain troops (6) attack and clear Folkestone. Airborne regiment (2 FJ) supported by I Fliegerkorps attack British 45 Division in Dover. Final objective will be Chain Home Radar station to the NE (hex 6516). German follow-on force lands at Folkestone (1 Panzer Division). British counterattack with 21 Brigade supported by RAF 4 group against German 1 FJ Regiment at the airfield (hex 6516). British 2 Armored Division deployed as a reserve at Canterbury (hex 6413).

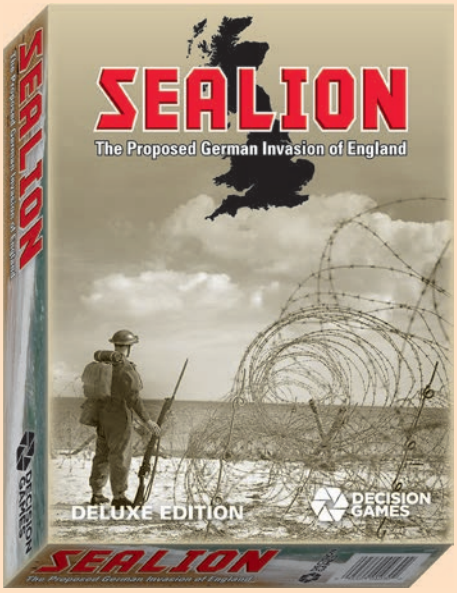
Strategy&Tactics Press



Battles in the East (BITE) is a series simulating World War II Eastern Front battles. The system rules are an evolution of the SPI classics **Panzergruppe Guderian**, **Army Group South**, and **Cobra**. Unit integrity bonuses include Soviet Corps and vary to show the increasing Soviet cohesion and decreasing German cohesion as the war progresses. HQ units provide higher level combat support and supply advantages to corresponding units in range. **BITEs** also incorporates standardized scales (unit size, distance, time) for easy comparisons.

While the series rules allow players to play many games with the same core rules, the scenario rules add unique situational elements of each battle. Each volume includes two battles from one year with two copies of the charts and tables as well as scenario rules and set-up cards for easy reference.





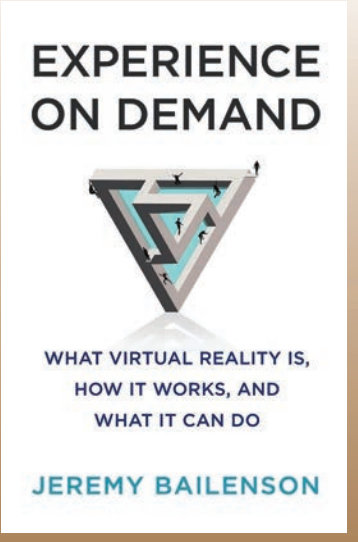
Operation Sealion (*Unternehmen Seelöwe*) was Nazi Germany's code name for the plan for an invasion of England during the Battle of Britain. Historically, the Royal Air Force successfully defended England and precluded the invasion, but it was a close call. Events and military choices might have driven the RAF from southern English skies and permitted the invasion to be carried out. **Sealion** is a two-player wargame simulating a hypothetical German invasion of England in September of 1940. The British have lost the aerial Battle over Britain. However, the RAF has not been completely vanquished, and the Royal Navy's Home Fleet can still present a credible threat to the German landings and supply lines in the English Channel.

The game incorporates an unabstracted level of detail, including air and naval operations as well as all facets of land operations (operational and strategic). On the ground, the Germans have operational superiority, but the British Army can rely on their interior lines of communication and defensible terrain, including a crude network of hastily constructed fortifications. The units of maneuver are primarily divisions and brigades/regiments. Air units are *Flieger* divisions and groups. Naval units are flotillas and named capital ships representing each named ship plus escorts. Each game turn represents one to three days depending on the tempo of battle.

ORDER ONLINE: decisiongames.com/wpsite/mcaf
Bulk orders please call 661-679-6821

Experience on Demand

reviewed by Maj Shane Robinette



EXPERIENCE ON DEMAND: What Virtual Reality Is, How It Works, and What It Can Do. By Jeremy Bailenson. New York, NY: W.W. Norton & Company, 2018.
ISBN: 978-0393253696, 290 pp.

The Marine Corps prides itself on its ability to accomplish more with less. Marine leaders' efficiency has been a critical component of the Marine Corps' survival following practically every major conflict. However, this methodology can cause Marine leaders to often rely on outdated technology because they are not used to receiving current technology. Although we are incredibly efficient with what is provided, Marine senior leaders are shifting toward future capabilities and how our forces can leverage emerging technologies in future battles. These priorities are evident in documents such as the *Commandant's Planning Guidance* and *MCDP 7, Learning,* which state the importance of improving our training and equipment.

The virtual reality headset is an example of a technology that can revolutionize our way of executing maneuver warfare. Dr. Jeremy Bailenson, a professor of communication at Stanford University, has spent the past two decades researching the psychological effects of virtual reality as well as other mass media. His latest book, *Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do*, looks at how to utilize virtual reality to improve our everyday lives.

The contents of the book primarily focus on the lessons he has learned as the founding director of the Virtual Human Interaction Lab at Stanford University. In this role, he has led numerous scientific studies aimed at unlocking the potential of virtual reality in a myriad of capacities. Additionally, he routinely provides tours to representatives from academia, the private sector, first responders, and the military on the importance of utilizing virtual reality to improve their roles.

>Maj Robinette is an Infantry Officer and currently a candidate for a Master of Science degree in Information Warfare Systems Engineering at the Naval Postgraduate School.

The primary point Dr. Bailenson makes is we should view virtual experiences as being equal to real experiences. He provides numerous examples to support this claim with one of the more pertinent involving a football quarterback. The quarterback utilizes the head-mounted display to quickly process a large amount of complex data by experiencing numerous repetitions behind a virtual line of scrimmage; all while having to read a moving defense. This rigorous analytical thinking leads to the development of recognition-primed decision making, which is made possible through virtual reality because of presence. Dr. Bailenson states,

> One second you are strapping on a head-mounted display and the next you are somewhere else. That sensation of "being there," wherever the program you are running takes you, is what researchers call *psychological presence*, and it is the fundamental characteristic of virtual reality.[1]

Dr. Bailenson's book is relevant to Marines because of the implications virtual reality can have in mission planning, training, education, and mental health to name a few. Readers will especially be interested in his chapter devoted to psychologists utilizing virtual immersive therapy, programs such as BRAVEMIND, to successfully treat patients with post-traumatic stress disorder. Another idea is building an individual's mental resiliency by desensitizing Marines and sailors to the harsh realities of warfare through the utilization of videos and scenarios in immersive environments.

This book is an excellent guide to understanding the research that has previously gone into utilizing virtual reality to realize as Dr. Bailenson states, "there are no constraints in virtual reality—the only limitation is the imagination."[2]

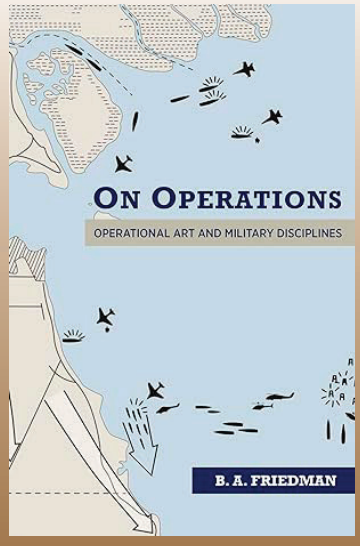
Notes

1. Jeremy Bailenson, *Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do*, (New York: W.W. Norton & Company, 2018).

2. Ibid.

On Operations

reviewed by Maj Robert Malcolm



ON OPERATIONS: Operational Art and Military Disciplines. By B.A. Friedman. Annapolis, MD: Naval Institute Press, 2021. ISBN: 978-1682477069, 256 pp.

What is the operational level of war? Can you define it? Great. Now, can you do it without referencing the strategic or tactical levels of war in the definition? If you find this difficult, then *On Operations* by B.A. Friedman is for you.

Friedman begins with the premise that the operational level of war does not exist. The reason it is difficult to define and not well understood by today's military professionals, he writes, is because it is not a sound or useful concept. If, as Clausewitz posited, the logic of strategy is political, and the logic of tactics is combat, then what is the logic of an operational level in between them? To prove the point, he shows that doctrinal definitions of the operational level all rely on reference to the other two levels. The concept has no definition independent of the other two.

If there is no level between tactics and strategy, then how is tactical success used to accomplish strategic aims? Here is the crucial point to Friedman's book: the *operational level* does not exist, but *operational art,* the "planning, preparing, conducting, and sustaining tactics aimed at accomplishing strategic effect," absolutely exists and should be separated from the concept of an operational level. As for what operational art consists of, Friedman asserts that it really just comes down to good staff work. He outlines six operational disciplines, which track very closely with but are not identical to the warfighting functions of joint and Service doctrine: administration, information, coordination (or operations), fire support, logistics, and command and control. A chapter is dedicated to each of the disciplines, consisting of a brief history of its development, a theory section combining Friedman's thoughts with those of other theorists, and conclusions for the military professional. The book concludes with five case studies of historical campaigns that illustrate the importance of these operational disciplines.

>Maj Malcolm is an Infantry Officer currently serving as Operations Officer for 2/8 Mar. He previously served as Officer in Charge of the Advanced Maneuver Warfare Course at Marine Corps Tactics and Operations Group.

Friedman does an excellent job of arguing his point about the operational level of war through a rhetorical exposition of its merits (or lack thereof) on conceptual grounds. He repeats his argument several times throughout the book, which, depending on whether the reader buys into it or not, may or may not find annoying. In case the rhetorical argument does not win over the reader, Friedman also includes chapters on the supposed sources for the operational-level concept in American doctrine. Contrary to the popular understanding, he argues, neither the Germans nor the Soviets believed in an operational level of war. Instead, mistranslations and misunderstandings of their doctrine and theory led to operational art being bastardized by Americans into an operational level of war. Those uninterested in the more academic side of military history should simply skip over these chapters and get right to the operational disciplines.

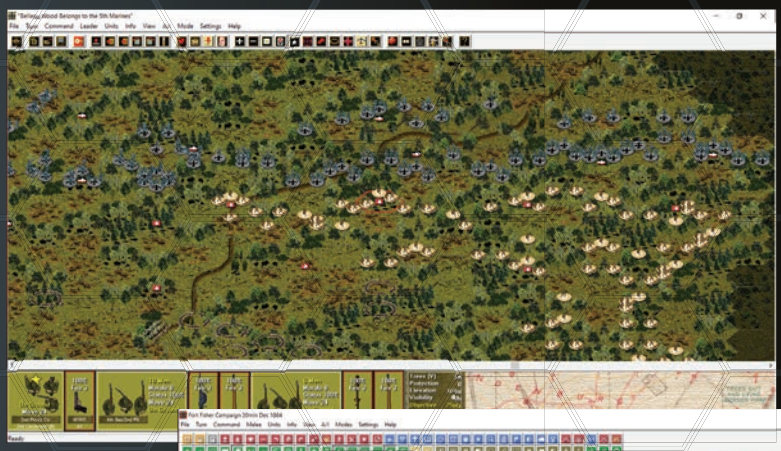
This last point gets at the weakness of *On Operations*. Friedman's ability to argue on theoretical terms and back his argument up with historical examples is his strength as an author, but there is some risk that *On Operations*, straddling the line between military history and theory, will not be enjoyable to a reader who is only interested in one or the other and not both. The academic military historian will be left wanting more than the surveys of the development of staffs (and will likely frown at Friedman's assertion

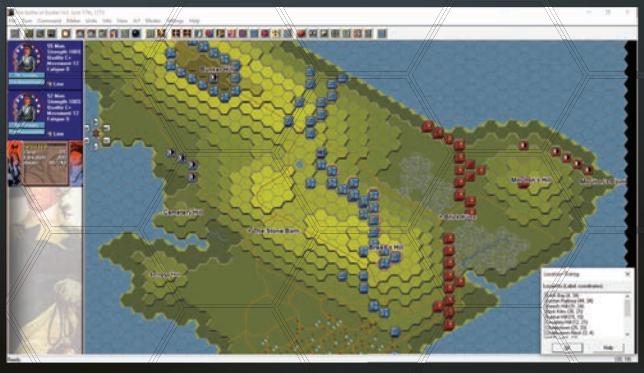
... *the* operational level *does not exist, but* operational art, *the "planning, preparing, conducting, and sustaining tactics aimed at accomplishing strategic effect," absolutely exists* ...

that the modern staff originated with Napoleon) or the case studies offer. The military practitioner uninterested in the historical development of staffs will be left wanting more of a "how to" on the operational disciplines. Finally, it is unclear who the intended audience is for the third part of the book, in which Friedman introduces his model for categorizing campaigns in terms of offensive or defensive, persisting or raiding, and cumulative or annihilating. Is this best used for categorizing historical campaigns, or as a framework for a staff to design a campaign?

These criticisms aside, *On Operations* is an enormously beneficial read for military staff members and commanders at any echelon from battalion up to combatant command. For those professionals who do not derive enjoyment from reading military history for its own sake, there is still much to learn from the case studies Friedman includes at the end of the book. For the academic, his operational disciplines and campaign categorization offer valuable lenses with which to view military history. Even if the reader remains unconvinced by Friedman's ideas about the operational level of war, the military professional should always be willing to entertain challenges to doctrine and assumptions, engaging in critical thinking to evaluate their arguments on merit before passing judgment.

Even if the reader remains unconvinced by Friedman's ideas about the operational level of war, the military professional should always be willing to entertain challenges to doctrine and assumptions ...





Wargame Design Studio Discounts Available to All MCA Members

Receive a **25% discount** on all Wargame Design Studio games available through MCA Extra Rations

Fight in an array of conflicts from the Musket and Pike Era to the present day

For additional information, check out the Wargame Design Studio Website: wargameds.com

Index to Advertisers

Editorial Policy and Writers' Guidelines

Our basic policy is to fulfill the stated purpose of the *Marine Corps Gazette* by providing a forum for open discussion and a free exchange of ideas relating to the U.S. Marine Corps and military and national defense issues, particularly as they affect the Corps.

The Board of Governors of the Marine Corps Association has given the authority to approve manuscripts for publication to the editor and the Editorial Advisory Panel. Editorial Advisory Panel members are listed on the *Gazette*'s masthead in each issue. The panel, which normally meets as required, represents a cross section of Marines by professional interest, experience, age, rank, and gender. The panel judges all writing contests. A simple majority rules in its decisions. Material submitted for publication is accepted or rejected based on the assessment of the editor. The *Gazette* welcomes material in the following categories:

- **Commentary on Published Material**: The best commentary can be made at the end of the article on the online version of the *Gazette* at https://www.mca-marines.org/gazette. Comments can also normally appear as letters (see below) 3 months after published material. BE BRIEF.
- **Letters**: Limit to 300 words or less and DOUBLE SPACE. Email submissions to gazette@mca-marines.org are preferred. As in most magazines, letters to the editor are an important clue as to how well or poorly ideas are being received. Letters are an excellent way to correct factual mistakes, reinforce ideas, outline opposing points of view, identify problems, and suggest factors or important considerations that have been overlooked in previous *Gazette* articles. The best letters are sharply focused on one or two specific points.
- **Feature Articles**: Normally 2,000 to 5,000 words, dealing with topics of major significance. Manuscripts should be DOUBLE SPACED. Ideas must be backed up by hard facts. Evidence must be presented to support logical conclusions. In the case of articles that criticize, constructive suggestions are sought. Footnotes are not required except for direct quotations, but a list of any source materials used is helpful. Use the *Chicago Manual of Style* for all citations.
- **Ideas & Issues**: Short articles, normally 750 to 1,500 words. This section can include the full gamut of professional topics so long as treatment of the subject is brief and concise. Again, DOUBLE SPACE all manuscripts.
- **Book Reviews**: Prefer 300 to 750 words and DOUBLE SPACED. Book reviews should answer the question: "This book is worth a Marine's time to read because..." Please be sure to include the book's author, publisher (including city), year of publication, number of pages, and the cost of the book.

Timeline: We aim to respond to your submission within 45 days; please do not query until that time has passed. If your submission is accepted for publication, please keep in mind that we schedule our line-up four to six months in advance, that we align our subject matter to specific monthly themes, and that we have limited space available. Therefore, it is not possible to provide a specific date of publication. However, we will do our best to publish your article as soon as possible, and the Senior Editor will contact you once your article is slated. If you prefer to have your article published online, please let us know upon its acceptance.

Writing Tips: The best advice is to write the way you speak, and then have someone else read your first draft for clarity. Write to a broad audience: *Gazette* readers are active and veteran Marines of all ranks and friends of the Corps. Start with a thesis statement, and put the main idea up front. Then organize your thoughts and introduce facts and validated assumptions that support (prove) your thesis. Cut out excess words. Short is better than long. Avoid abbreviations and acronyms as much as possible.

Submissions: Authors are encouraged to email articles to gazette@mca-marines.org. Save in Microsoft Word format, DOUBLE SPACED, Times New Roman font, 12 point, and send as an attachment. **Photographs and illustrations must be in high resolution TIFF, JPG, or EPS format (300dpi) and not embedded in the Word Document. Please attach photos and illustrations separately.** (You may indicate in the text of the article where the illustrations are to be placed.) Include the author's full name, mailing address, telephone number, and email addresses—both military and commercial if available. Submissions may also be sent via regular mail. Include your article saved on a CD along with a printed copy. Mail to: *Marine Corps Gazette*, Box 1775, Quantico, VA 22134. Please follow the same instructions for format, photographs, and contact information as above when submitting by mail. Any queries may be directed to the editorial staff by calling 800–336–0291, ext. 180.

LEATHERNECK

MAGAZINE OF THE MARINES

WRITING CONTEST

OPEN TO ALL MARINES

PRIZES:

1st Place: $1,000 + an engraved plaque

2nd Place: $750 + an engraved plaque

3rd Place: $500 + an engraved plaque

TOPIC:

Leadership – The history of the Corps is filled with legendary examples of outstanding leaders and today's Marines maintain that tradition of excellence. Drawing from our storied history, or from your own experience:

Describe the single most important thing you have learned about leading Marines, or **Describe an outstanding Marine Corps leader and what makes him or her successful**

DETAILS:

- Maximum 2,000 words
- Must include contact information: grade, name, unit, SNCOIC/OIC, author's bio, mailing address, email and phone number.
- Submit electronically to **leatherneck@mca-marines.org** in Microsoft Word Format

SUBMISSIONS ACCEPTED: 1 Jan - 31 March 2024

MARINE CORPS ASSOCIATION
EST 1913

Sponsored By Colonel Charles Michaels, USMC (Ret)

NOT HOW YOU WOULD'VE DONE IT

YOU BUNDLE THINGS RIGHT

Like when you bundle your home and auto insurance with USAA and save up to 10%.[1]

Visit usaa.com/bundleright to learn more.

USAA®

[1]Savings are off total premium. Not available in all states or in all situations. To qualify for a discount on the property policy, a USAA Auto Insurance policy must be active within 60 days of issuing the property policy. Discount subject to change. Restrictions apply.

Membership eligibility and product restrictions apply and are subject to change.

Property and casualty insurance underwritten by United Services Automobile Association (USAA), USAA Casualty Insurance Company, USAA General Indemnity Company, Garrison Property and Casualty Insurance Company, NOBLR Reciprocal Exchange, based in San Antonio, Texas; USAA Limited (UK) and USAA S.A. (Europe) and is available only to persons eligible for property and casualty group membership. Each company has sole financial responsibility for its own products. Coverages subject to the terms and conditions of the policy.