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14. ABSTRACT

Force Design 2030 (FD2030) ordered significant institutional changes intended to modernize the Marine Corps and prepare it for future maritime conflicts against peer adversaries. Can current Marine Corps logistics doctrine support future force design challenges? This study argues that to support the future force, the Marine Corps logistics doctrine must evolve tactical logistics functions to posture its forces for distributed logistics operations in a contested environment through naval integrated resources within the littoral region. Doctrine must facilitate naval logistics integration to bridge tactical logistics functions between services with capabilities to sustain the operational campaign, including control of sea and ground transportation within the littoral environment, access to inter-agency supply sources, and tactical contracting.

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MASTER OF MILITARY STUDIES

MARINE CORPS LOGISTICS DOCTRINE 2030: NAVAL LOGISTICS FOR THE FUTURE WARFIGHT

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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Executive Summary

Title: Marine Corps Logistics Doctrine 2030: Naval Logistics for The Future Warfight

Author: Major Steven A. Valenti, United States Marine Corps

Thesis: To support the future force, the Marine Corps logistics doctrine must evolve tactical logistics functions to posture its forces for distributed logistics operations in a contested environment through naval integrated resources within the littoral region. Doctrine must facilitate naval logistics integration to bridge tactical logistics functions between services with capabilities to sustain the operational campaign, including control of sea and ground transportation within the littoral environment, access to inter-agency supply sources, and tactical contracting.

Discussion: In March 2020, General David H. Berger, 38th Commandant of the United States Marine Corps (USMC), released *Force Design 2030* (FD2030), which ordered significant institutional changes intended to modernize the Marine Corps and prepare it for future maritime conflicts against peer adversaries. Can current Marine Corps logistics doctrine support future force design challenges? This study argues that logistics doctrine must evolve to meet the demands of the future fight identified in the FD2030 strategic guidance. This paper examines several logistics-related topics through the lens provided by FD2030, and recommends doctrinal changes to the conceptual framework in Marine Corps Doctrinal Publication (MCDP) 4, *Logistics.* First, this paper will explain the changes mandated in FD2030, to include the necessity of redirecting the service's focus from violent extremist threats in the Middle East to peer-level threats in the Indo-Pacific region. Second, it will argue that Marine Corps doctrine needs to enable integrated naval logistics aligned with FD2030 guidance. Next, it will review Marine Corps logistics doctrine and identify vulnerabilities in functional areas of logistics for sustaining the future fight. Finally, this paper will provide recommendations for resolving doctrinal gaps in logistics and the significance of naval logistics integration.

Conclusion: The *Nature of Logistics* described in MCDP 4 is enduring and relevant to the future fight described in FD2030. The character of logistics described in MCDP 4's *Logistics Theory* and *Creating Effective Logistics,* first published in 1997, requires important changes if is to remain relevant in 21st century conflicts against peer competitors. Marine Corps logistics doctrine has stagnated due to its implicit assumptions of an uncontested maritime environment and the permissive air/sea environments that the Joint Force has enjoyed since the end of the Cold War. Marine Corps doctrine requires a standardized definition of the important term *naval* that makes it clear it refers to the Navy, Marine Corps, and Coast Guard. MCDP 4's *Logistics Theory* must align the *deployment and distribution* and *operational contract support* functional areas with joint logistics doctrine. The changing character of logistics to move and sustain forces within a potential enemy weapon engagement zone in a maritime contested environment demands MCDP 4's *Logistics Theory* to identify an *expeditionary advanced base* as a distinct type of base integral to the logistics distribution process. MCDP 4 must evolve to enable *integrated naval logistics* capabilities and *logistics command and control* within a *composite warfare* concept.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Acknowledgments

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Introduction

In March 2020, General David H. Berger, 38th Commandant of the United States Marine Corps (USMC), released *Force Design 2030* (FD2030), which ordered significant institutional changes intended to modernize the Marine Corps and prepare it for future maritime conflicts against peer adversaries.[1] FD2030 provides a capstone concept that articulates the USMC's future operating environment and drives change in doctrine and organizations.[i] This thesis applies the conceptual framework in Marine Corps Doctrinal Publication (MCDP) 4, *Logistics*, to FD2030 to examine the impact of these institutional changes on the critical field of USMC logistics. The specific research question driving this study is: can current logistics doctrine support future force design challenges?

This study argues that logistics doctrine must evolve to meet the demands of the future fight identified in the proposed Force Design 2030 strategic guidance of the USMC. To support the future force, the Marine Corps logistics doctrine must evolve tactical logistics functions to posture its forces for distributed logistics operations in a contested environment through naval integrated resources within the littoral region. Doctrine must facilitate naval logistics integration to bridge tactical logistics functions between services with capabilities to sustain the operational campaign, including control of sea and ground transportation within the littoral environment, access to inter-agency supply sources, and tactical contracting.

Without shared understanding provided by doctrine, the USMC will not be logistically postured to meet the future challenges as a naval expeditionary force-in-readiness. MCDP 4

[i] USMC Concepts and Programs is an annual strategic communications publication to inform Congress, the Office of the Secretary of Defense, Chairman of the Joint Chiefs of Staff, and general public about Marine Corps warfighting concepts and combat development lines of effort. USMC Concepts and Programs defines a concept as "an expression of how something might be done; a visualization of future operations that describes how warfighters, using military art and science, might employ capabilities to meet future challenges and exploit future opportunities." https://www.candp.marines.mil/Concepts/Introduction-to-Concepts/.

describes logistics as the science of planning and carrying out movement and maintenance of forces by providing the means and resources of combat power, positioning those resources on the battlefield, and sustaining them throughout operations.[2] FD2030 guidance recognizes that logistical sustainment of future military operations is both a critical vulnerability and critical requirement.[3] MCDP4 requires modernization to ensure that any gaps are mitigated and that Marine Corp logistics can capably support the Fleet Marine Force (FMF) across the range of future military operations.

This paper examines several logistics-related topics through the lens provided by FD2030, and recommends doctrinal changes to MCDP 4. First, this paper will explain the changes that the Commandant of the Marine Corps mandated in FD2030, to include the necessity of redirecting the service's focus from violent extremist threats in the Middle East to peer-level threats in the Indo-Pacific region. Second, it will argue that Marine Corps doctrine must enable integrated naval logistics aligned with FD2030 guidance. Next, it will review Marine Corps logistics doctrine and identify vulnerabilities in functional areas of logistics and approaches to logistics for sustaining the future fight. Finally, this paper will provide recommendations for resolving doctrinal gaps in logistics and the significance of naval logistics integration.

In this paper, the term "naval" requires clarification to identify the logistical resources required to support naval operations, forces, or concepts. FD2030 describes naval integration as a combination of service components, particularly between the Navy and Marine Corps, into an interoperable employment system.[4] In December 2020, the Secretary of the Navy released a Tri-Service strategy, *Advantage at Sea*, for a unified Naval Service defined as "the Navy, the Marine

Corps, and the Coast Guard."[5] Throughout this paper, the term "naval integration" refers to the combination of Navy and Marine Corps components.[ii]

Commandant's Planning Guidance and Force Design 2030

In 2019, General David H. Berger, 38th Commandant of the USMC, released his *Commandant's Planning Guidance* (CPG) that provided strategic direction for the service's future, with an emphasis on force design, warfighting, education and training, core values, command, and leadership.[6] General Berger described a future expeditionary force that is closely aligned, trained, and equipped as a *naval* force with the ability to operate in contested maritime environments as an FMF.[7] Military conflicts in the Middle East since September 11, 2001, have shaped the current force's capabilities and the mindset of Marines Corps operations that is comfortable conducting land-based operations with little opposition to friendly technologies and build-up of mass logistical sustainment. The future fight described by FD2030 focuses on highly capable threats, such as China and Russia that possess advanced long-range precision fires capabilities, which limit the ability for forces to maneuver and position from strategic distances unopposed.[8] Establishing logistics capabilities ashore during force deployment to sustain initial operations, in the mold of Operation Iraqi Freedom and Operation Enduring Freedom, will no longer be the situation.

General Berger's strategic outlook focuses on returning Marine Corps service culture back to its roots as a *naval* force that concentrates on operations in the maritime domain as opposed to a second land-army focused on sustained operations ashore. Since the Marine Corps

[ii] *Advantage at Sea* Tri-Service strategy further defines "naval power" as "the influence of naval forces across all domains—from the sea floor to space; across the world's oceans, seas, bays, estuaries, islands, littorals, and from coastal areas ashore; as well as in cyberspace, the information domain, and across the electromagnetic spectrum. Naval power underwrites use of global waterways to achieve national security objectives through diplomacy, law enforcement, economic statecraft, and, when required, force." Secretary of the Navy, *Advantage at Sea: Prevailing with Integrated All-Domain Naval Power*, Washington, DC, December 2020, 26.

has focused on land-based Middle East conflicts since 2001, the Navy and Marine Corps, as separate joint force components, have viewed their operational responsibilities as isolated and distinct as opposed to integrated.[9] Returning to an integrated naval FMF requires a mindset shift in Marine Corps training and education activities that supports integrated naval operations. Future success against peer adversaries requires the Marine Corps to re-imagine amphibious capabilities, expeditionary logistics, and prepositioned forces to ensure agility and survivability.[10] The Marine Corps does not currently have the doctrine, training, and experience to conduct expeditionary logistics in contested environments against a peer adversary in the Indo-Pacific region in the manner General Berger prescribes in his 2019 planning guidance.

Technological advancements have altered the context within which naval forces will operate. The development of long-range precision weapons by China and Russia extends threat distances and accuracy, which exposes naval forces to significantly more risk than recent Middle East conflicts.[11] To operate in this new environment, the Marine Corps requires an integrated, tactical-level naval approach to mitigate future challenges. The CPG identifies the Navy's composite warfare command and control (C2) method as a Marine Corps' prerequisite for executing successful amphibious operations. The CPG directs that all doctrinal and warfighting publications require a comprehensive review to ensure doctrine and concepts integrate and support composite warfare.[12] Composite warfare is not a recognized C2 method in current Marine Corps doctrine.[iii] A shift in the C2 concept as an integrated force requires a doctrinal foundation and organizational training that drives efficiency and military effectiveness.

[iii] The composite warfare construct allows the officer in tactical command (OTC) to assign some or all of the command functions associated with mission areas to warfare commanders, functional group commanders, and coordinators, thus supporting decentralized execution. The composite warfare organization enables offensive and defensive combat operations against multiple targets and threats simultaneously. US Department of Defense, *Joint Maritime Operations*, JP 3-32, Washington, DC: US Department of Defense (June 8, 2018, validated on December 16, 2020), II-14.

The March 2020 release of *Force Design 2030* provided strategic guidance that shifted the Marine Corps' focus from inland to littoral missions against peer competitors. This shift requires substantial modifications to how the Marine Corps is manned, trained, and equipped.[13] FD2030 changes the emphasis from winning a desert, urban, counterinsurgency fight to a force able to operate in the littoral region against modern peer competitors in conflict. This significant change in service focus necessitates changes to warfighting functional support concepts that require Navy collaboration. General Berger recognizes that the FD2030 report does not give logistics sufficient attention.[14] Sustaining forces against a peer adversary that can easily target key logistical capabilities requires survivability procedures and flexible approaches to providing capabilities. The logistics community must transform itself to meet future force sustainment demands to avoid becoming a deadly liability to combat forces.

Force Design 2030 Logistical Impacts

As the current Marine Corps force is optimized for large-scale amphibious forcible entry and sustained operations ashore with uncontested dominance in air, land, and sea domains, it is not prepared and organized for operations against a peer adversary that can employ modern, long range, precise, and lethal weapons. FD2030 recognizes that logistics and sustaining the future force comprise both a critical requirement and a critical vulnerability when operating against peer adversaries in littoral maritime environments within enemy weapon engagement zones (WEZ).[15] The future Marine Corps requires forces to operate as a stand-in force capable of conducting naval operations and controlling critical maritime terrain within the enemy WEZ.[16] An integrated future Marine Corps force must support a naval campaign with the ability to contribute to sea control and sea denial operations.

FD2030 requires logistics organizations to be flexible across multiple domains, a mindset shift from the deliberate land-based operations the Corps has been conducting since 2001.[iv] During conflicts in Iraq and Afghanistan, ground forces assumed and took for granted the availability of logistical support and that assured sustainment stocks were always accessible within the operating area. The historical reliance on excess supplies, such as the "Iron Mountain," creates unrealistic logistics expectations and leads to Marine Corps forces embarking or deploying with as much equipment as possible to meet unplanned maintenance or sustainment requirements.[17] This continued assumption of assured and unthreatened logistical support is no longer tenable. The distributed forces described in FD2030 cannot assume that advantage against a peer adversary, as the current mindset dependent on uncontested logistics increases the risk to Marine forces in future conflicts. Chinese threats in the Indo-Pacific will target logistics capabilities and threaten the Joint Force's ability to sustainment of its forces within a contested littoral region.

Counter to the "Iron Mountain" approach, the future fight described in FD2030 requires precise, specific, and accurate logistics support that minimizes the naval service's logistical demand. Marine forces described in FD2030 will operate distributed as part of a larger naval force within the littorals. Current Marine Corps logistics is not postured to sustain the future fight and, as a pacing function for the service, the logistics community is obligated to increase its readiness, agility, and lethality of the Marine Air-Ground Task Force (MAGTF).[18] The future threat environment will influence distribution capabilities near the coastline, impacting distribution methods and limiting options for sustainment from the sea to shore. Logistical

[iv] All-domain includes air, surface, subsurface, space, and cyberspace perspective. Commandant of the Marine Corps, *Force Design 2030*, 12.

supply chains that originate from installations, forward bases, or naval shipping will be exposed to cyber and physical attacks on infrastructure.[19]

In 2019, Marine Corps Combat Development and Integration (CD&I) released a functional concept for future logistics development, *Sustaining the Force in the 21st Century*. This operational concept entails four lines of effort: enable global logistics awareness; diversify distribution; improve sustainment, and; optimize installations to support sustained operations.[20] CD&I recognizes that tactical level distribution methods for the future fight necessitate dramatic shifts from large convoys and stockpiled supplies to more flexible distribution and delivery options that support operations in austere and dispersed littoral environments. These distribution methods require the Marine Corps to leverage joint maritime resources at the tactical level and updated doctrine that can integrate strategic level logistics capabilities.[21] CD&I recognizes the importance of collaboration within the joint service and integrating resources across logistics and warfare levels while also recognizing the requirement for doctrinal updates to support a range of operations not explicitly focused on maneuver warfare.

The Marine Corps' CPG and FD2030 influenced the Chief of Naval Operations (CNO) strategic guidance *Transforming Naval Logistics for Great Power Competition (GPC)*. Released in January 2021, the central idea for effective naval logistics in GPC is delivering operationally relevant logistics through integrated control of capabilities across distributed operations.[22] The CNO recognizes the importance of aligning as a Navy and Marine Corps team committed with General Berger's CPG. The CNO identifies integrated logistics C2 between the Marine Corps and Navy under the Navy's composite warfare construct as the foundation of his guidance, establishing the conditions for naval logistics transformation.[23] An integrated naval team enables the joint forces to operate and fight against enemy long-range precision fires by enabling

decision making through a common operational picture and predict accurate logistical requirements that can be forecasted and pushed to distributed forces.

The current naval logistics structure has efficiently supported 21st century conflicts due to the permissive maritime environment and a "hub-and-spoke" model.[24] This model depends on sustainment from land-based logistics hubs with Navy ship platforms, the Combat Logistics Force (CLF)[v], serving as the spokes that deliver services and provide seaborne replenishment at the critical moment support is required. This model will struggle in conflicts against peer competitors due to its vulnerability to modern long-range precision weapons and is poorly structured to support operations in a contested maritime environment.[25] Support to naval forces from the sea requires survivability and force protection measures between theater-level logistical movements or else logistics will not support forces in the last tactical mile. Currently optimized for a permissive environment, the naval logistics distribution structure is not prepared to sustain naval forces described in the CPG and FD2030 operating within the WEZ.

The future fight described by the CPG and FD2030 spearheads operational concepts that guide, prepare, and train the force against a potential peer-capable adversary. The operational concept, *Expeditionary Advanced Base Operations (EABO)*, presents significant logistical challenges that need incorporation in updated doctrine to ensure for its proper execution. An expeditionary warfare design, EABO is the employment of mobile, low-signature expeditionary forces to austere locations within contested littoral regions to conduct sea denial, support sea control, or enable fleet sustainment.[26] Logistical considerations for EABO include movement and littoral maneuver, available host-nation (HN) support, local transportation systems, and

[v] Combat Logistics Force (CLF): Collective group of Military Sealift Command ships that provide underway replenishment, commercial helicopter services and other direct fleet support to Navy ships worldwide. These ships include fleet replenishment oilers, fleet ordnance and dry cargo ships and fast combat support ships. Source: US Navy Chief of Naval Operations, *Transforming Naval Logistics for Great Power Competition v1.0*, Washington, DC, January 2021, xxxvi.

expected enemy interference to logistics systems.[27] The EABO concept requires a naval logistics C2 construct integrated within the larger naval task organization operating within the littoral operating area.[28] Overall, EABO logistics requires critical multimodal transportation solutions and sustainment of forces afloat and ashore under a naval C2 construct within the WEZ.

Marine Corps Logistics Doctrine

MCDP 4, the foundation for Marine Corps logistics, is divided into three chapters which provide the "authoritative basis for follow on logistic doctrine, education, training, equipment, procedures, and organization."[29] Chapter one describes the nature of logistics which develops an understanding of logistics characteristics and relationship to operations.[30] Chapter two discusses the theoretical aspects of logistics which identifies the logistics process, functional areas of logistics, and levels of logistics.[31] Chapter three describes a fundamental approach for Marine Corps planners to create effective logistics and maneuver warfare logistical considerations and challenges.[32] MCDP 4 establishes a theoretical and conceptual framework for understanding and applying Marine Corps strategic, operational, and tactical logistics requirements in war.

MCDP 4's first chapter, *The Nature of Logistics*, states "logistics provides the resources of combat power, positions those resources on the battlefield, and sustains them throughout the execution."[33] Logistical factors shape and limit what naval operations are possible. While effective logistics are not the only deciding factor in battlefield victory, it can unequivocally be the deciding factor in a battlefield loss.[34] The results of logistical services supporting military operations is what matters, not in the particular procedure or delivery method of logistics services. The purpose of logistics is not to move particular resources but to ensure the right resources arrive at the right location at the right time.[35] A mechanical and inflexible logistics approach to operations can lead to paralyzed operations and mission failure. The art of logistics

requires creativity, intuition, and improvisation to provide successful logistics.[36] MCDP 4 recognizes that logistics concepts and capabilities to move and sustain forces shape any war's character and limit what the force can accomplish.[37] By setting the outer limit on what is operationally possible, logistics, as defined in MCDP 4's first chapter, is enduring and relevant to FD2030. Logistics has significant influence over the design and execution of future Marine Corps strategy.

MCDP 4's second chapter, *Logistics Theory,* drives Marine Corps logisticians' thinking on applying logistics on the battlefield. Logistics deals with large amounts of resources moved over immense distances with short response times and required formulas, calculations, and predictions more than other warfighting functions. Regardless of level, MCDP 4 prescribes a four step logistics process: acquisition, distribution, sustainment, and disposition (See figure 1).[38] As the framework for logistics activities, the logistics process shapes the functional design and management of logistics plans that support campaigns.

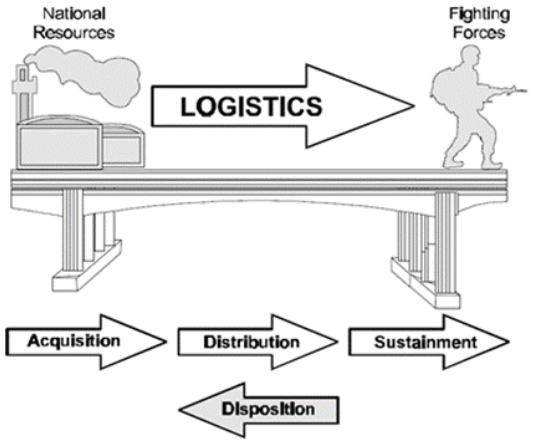

Figure 1: MCDP 4 Logistics Process.
Source: Headquarters US Marine Corps, *Logistics,* MCDP 4 (Washington, DC: Headquarters US Marine Corps, 21 February, 1997), 46.

MCDP 4's *Logistics Theory* asserts that the logistics process impacts all levels of war and that logistics activities vary across each level. *Strategic logistics* incorporates the ability to raise,

deploy, and sustain forces to execute national strategy. *Operational logistics* involves support activities required to sustain campaigns and major operations.[39] Strategic and operational level logistics requires a naval or joint approach to accomplish, as the Marine Corps cannot execute a campaign as an independent service.[vi] MCDP 4 identifies six activities as *tactical level* logistics functions: supply, maintenance, transportation, general engineering, health services, and other services (See figure 2).[40] Marine Corps logistics formations and processes apply strategic resources into measurable and sustainable combat power at the operational and tactical levels. The future fight envisioned in the CPG and in FD2030 requires operational and tactical logistics to interlock and intimately support one another for sufficient movement and sustainment of naval forces. Intra-theater transportation across vast sea regions will not be conducted across a linear battlefield but in a complex, contested environment.

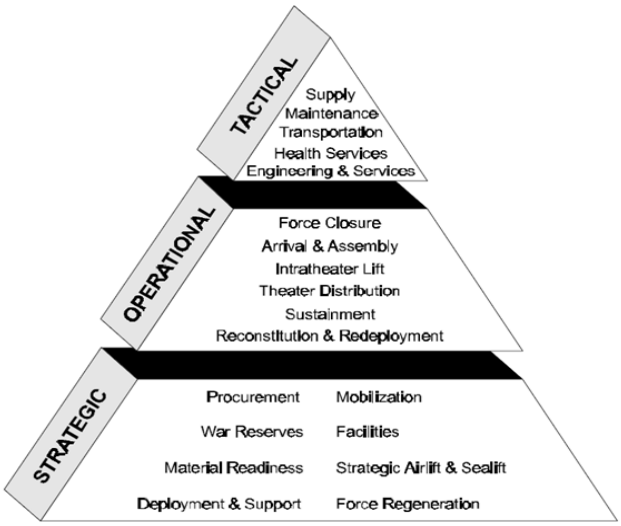

Figure 2: MCDP 4 Levels of Logistics.
Source: Headquarters US Marine Corps, *Logistics,* MCDP 4 (Washington, DC: Headquarters US Marine Corps, 21 February, 1997), 52.

MCDP 4's approaches to logistics range comprise a spectrum between dependent and self-sufficient forces. Dependent forces, such as guerilla groups and militias, rely on outside

[vi] Integration with strategic- and operational-level logistics support is coordinated through Marine Corps component commanders. US Department of Defense, *Joint Logistics*, JP 4-0 (Washington, DC: US Department of Defense, February 4, 2019, Incorporating Change 1 May 8 2019), III-11.

sources and foraging to pull all sustainment from the local environment. In contrast, self-sufficient forces, such as naval expeditionary forces, bring and maintain logistical capabilities to sustain operations autonomously (See figure 3).[41] Marine Corps operational logistics capacity will be significantly threatened by the peer adversaries identified in FD2030; without the ability to move and maintain forces employing fires within the littorals, logistics severely handicaps naval force capabilities. The FD2030 described Marine Corps forces transitioning from ship to shore for follow-on land operations necessitate creative logistics support options and will not be self-sufficient with organic equipment as described in MCDP 4. Contrary to MCDP 4's self-sufficient naval force, forces operating in contested littoral regions will require a small logistics footprint of people and equipment due to the existential threat to naval logistics capabilities. Future naval forces will align closer to the dependency spectrum, unable to bring every item to a conflict than the self-sufficient logistics design that the current doctrine describes.

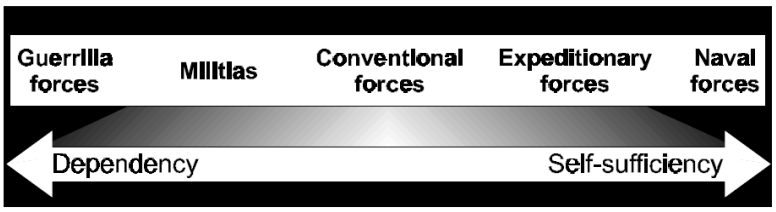

Figure 3: MCDP 4 Approaches to Logistics.
Source: Headquarters US Marine Corps, *Logistics,* MCDP 4 (Washington, DC: Headquarters US Marine Corps, 21 February, 1997), 76.

MCDP 4's *Logistics Theory* concludes that expeditionary warfare requires Marine forces to be self-sufficient through a logistics system capable of performing and controlling the six functions of logistics.[42] MCDP 4 explains that operations that expand the battlespace across vast distances demand the dispersion of military forces and support structures to ensure survivability.[43] Dispersed operations require logisticians to extend the distance and geographic reach of naval logistics capabilities, which more accurately reflects the fight described in

FD2030 and not the Marine Corps' current logistical mindset that reflects the conflicts in Iraq and Afghanistan. Intra-theater capabilities may demand direct distribution to tactical level forces within contested littorals, requiring a C2 concept to effectively manage and prioritize transportation capabilities. MCDP 4 designates logistics C2 as an enabler for the commander to anticipate future requirements, manage resources, and deal with uncertainty.[44] To extend distribution methods across multiple domains, the future fight requires strategic, operational, and tactical level distribution, logistics C2 authorities, and systems to be more integrated than MCDP 4 recognizes. Following the strategy provided in FD2030, the Marine Corps requires alignment as a naval service to facilitate and support joint maritime campaigning and operations.[45] MCDP 4's *Logistics Theory* must evolve to describe a logistics system aligned with naval resources and perform logistics functions aligned with joint force capabilities.

MCDP 4's last chapter, *Creating Effective Logistics*, describes how to best incorporate logistics into operations. Guided by maneuver warfare philosophy, MCDP 4 focuses on the impacts that logistics actions help combat forces generate operational tempo, thereby enabling them to gain an advantage over the enemy.[46] MCDP 4 explains that naval expeditionary operations require an autonomous logistics system tailored for the littoral environment.[47] The current logistics system that enables naval expeditionary operations requires an uncontested maritime environment for naval capabilities to distribute supplies at will. Creating effective logistics for naval forces in the future fight will be challenged in a contested maritime environment threatened by enemy precision-fire capabilities and requires an approach that is not entirely reliant on self-sufficient capabilities, as illustrated in Figure 3. Relying on self-sufficient capabilities to support tactical operation in the littorals assumes naval logistics capabilities can move and distribute to any location and will without adversary considerations. A self-sufficient

force may not have the luxury to rely on military pre-positioned capabilities making local procurement and contracting critical to logistical success. To facilitate expeditionary and naval forces against the threats identified in FD2030, MCDP 4 must be updated to enable it to guide logisticians to plan for a flexible approach that maximizes local contracting to source and distribute logistics at the tactical level. MCDP 4 recognizes the importance of centralized control at the strategic and operational logistics level with decentralized execution at the tactical level in line with maneuver warfare.[48] A centralized control of logistics cannot effectively work at the service level in a fight as a naval force. An integrated naval service that manages logistical resources from both the Navy and Marine Corps for tactical level logistics requires incorporation into doctrine.

MCDP 4 Evolution

MCDP 1, *Warfighting,* emphasizes that military doctrine cannot stagnate and must evolve based on the changing face of war itself.[49] Doctrine establishes how military professionals practice their trade and serves as a basis for mutual understanding and shared perspectives.[50] As the peer threats described in FD2030 have changed the character of future war, Marine Corps logistics doctrine has stagnated during the uncontested maritime environments and land-based conflicts prevalent since 2001. The doctrinal foundation for Marine Corps logistics, MCDP 4, was published in 1997 with the only edit in 2018 to ensure gender neutrality of content. Marine Corp's Training and Education Command (TECOM) must update MCDP 4 to support the future Marine Corps force described in FD2030 and guide a naval-aligned FMF that facilities joint operations.[vii] Marine Corps logistics doctrine must establish

[vii] Policy and Standards Division, TECOM, manages and authors all Marine Corps Doctrine Publications (MCDPs) responsible for the development and sustainment process. MCDPs are formal Marine Corps doctrine. The Commandant of the Marine Corps approves MCDPs.
https://vcepub.tecom.usmc.mil/sites/directorates/mtesd/SitePages/Home.aspx.

mutual understanding and interoperability with the Navy and joint logistics functions while providing the foundation to develop integrated procedures and processes. An updated MCDP 4 requires integration for land and sea logistics capabilities to enable tactical operations for expeditionary forces. Using multi-domain capabilities requires an agile and survivable logistics system with procedures controlled under a Naval Service authority that manages both Marine Corps and Navy functions.

Marine Corps logistics doctrine needs to explicitly define *naval* and not use the term equivocally. MCDP 4 accurately describes that logistics systems demand focus on *naval* operations capable of operating effectively on land, at sea, or in the littoral regions.[51] Its description of Marine expeditionary logistics that are *naval* in character accurately reflects the FMF described in the CPG: one that is focused on operations in the maritime domain as opposed to sustained land operations ashore. This term *naval* requires an unambiguous definition in MCDP 4 as its vague and nonuniform definition used in supplemental logistics doctrine unnecessarily confuses Marine Corps logisticians. For example, Marine Corps Warfighting Publication (MCWP) 4-11, *Tactical-Level Logistics,* provides the doctrinal basis for ground and aviation logistics support at the tactical level of war.[52] It defines *naval* as specific US Navy capabilities that are not integrated with the Marine Corps but are distinct in their service capacity.[53] MCWP 4-11 must describe service integration between the Navy and Marine Corps operating within a maritime environment as *naval.* Similarly, MCWP 4-12, *Operational-Level Logistics*, defines *naval* as specific US Navy operational-level capabilities and describes integrated naval logistics as a capability between the Department of the Navy and Coast Guard.[54] This lack of a standardized definition of naval in current doctrine complicates understanding and inhibits closer Navy-Marine Corps integration. Marine Corps doctrine requires a standardized

definition of this important term that makes it clear that *naval* refers to the Navy, Marine Corps, and Coast Guard. It must define the term *naval* as consisting of one or more Naval Service forces and components operating across a range of military operations from the maritime domain.

Marine Corps doctrine must evolve the *transportation* logistics function to a naval integrated transportation function: *deployment and distribution*. Joint Publication (JP) 4-0, *Joint Logistics*, identifies core logistics functions as deployment and distribution, supply, maintenance, logistics services, operational contract support (OCS), engineering, and joint health services.[55] Notable differences between JP 4-0, *Joint Logistics* and MCDP 4 logistics functions are deployment and distribution and operational contract support.[56] The *deployment and distribution* function is the foundation of joint logistics and expands on MCDP 4's transportation function, incorporating a joint approach to force and material movement.[57] Joint logistics is necessary for every land operation that requires a naval component dependent on sea lines of communication for supplies.[58] MCDP 4 identifies the supply point distribution method, which demands the using unit to pick up their resources from a staged location via ground transportation, as the most efficient logistics distribution method. If a staged location is untenable, the supporting unit must provide direct transportation to the using unit via the unit distribution method.[59] Not only must Marines plan and organize the transportation of personnel and equipment through organic capabilities, but doctrine must integrate sea movement options to deploy naval forces and distribute supplies at the tactical level. MCDP 4 requires the *transportation* function to parallel the one in Naval Doctrinal Publication (NDP) 4, *Naval Logistics*, and include the deployment and sustainment of forces to ports of embarkation, inter-theater strategic movement, and intra-theater movement of personnel and equipment.[60]

MCDP 4's *Nature of Logistics* remains relevant for the future fight. It reinforces the novel recognition of logistics as an applied science of military fields that prepares a force to enter the battlefield and facilitates the battle plan.[61] Although China and Russia threaten the simplicity with which naval forces can move to battle positions within the littorals, the requirement to effectively move and control materials against an enemy force remains a logistical factor to ensure success. This change in the character of war requires Marine Corps logistics doctrine writ large to evolve how the service manages logistics in a peer adversary fight. Updated doctrine that describes the significance of integrated logistics capabilities enables a force structure to execute naval logistics within a single command construct. Future Marine Corps logistics doctrine requires an integrated naval command capable of controlling all tactical movements within the littorals between sea and land. To sustain Marine Corps and naval forces in the future fight, logistics doctrine needs to drive logisticians to plan and understand *integrated naval logistics*, *logistics C2* within a composite warfare concept, and *contracting.*

Integrated Naval Logistics

Evolving Marine Corps logistics doctrine to align with FD2030 requires alignment with the US Navy's logistics doctrine to ensure a shared understanding and common language on conducting logistics as an integrated naval force. NDP 4, *Naval Logistics*, provides the US Navy with doctrine for operational naval logistics and establishes the foundation for sustaining naval expeditionary forces.[62] NDP 4 defines *naval logistics* as an expeditionary force enabler to conduct complex operations as a Navy and Marine Corps team through the employment of prepositioned stocks, logistic support ships, advanced support bases, and multimodal movement capabilities.[63] MCDP 4 must align with NDP 4 in order to support planning with Naval Service capabilities across multiple domains and not solely focused on ground-specific capacities.

The future fight described in FD2030 demands change in Marine Corps doctrine to facilitate integrated naval logistics capabilities. A future fight against a peer competitor requires amphibious task forces comprised of Navy ships with embarked Marines to provide flexible and sustainable options within the littoral region to support naval force missions. Peer competitors' anti-access/area denial (A2AD) capabilities drive the need to orient warfighting capability toward enhanced naval integration and interoperability of warfighting systems and platforms.[64] Naval logistics integration is a critical enabler for naval forces' ability to sustain operations within the littorals against an A2AD threat.[65] Sustaining forces from a remote location is a foundation of naval power projection and requires doctrinal development and integration to meet tactical level maritime requirements. For naval forces to counterbalance enemy A2AD, they require the need to lift and position logistics at multiple afloat, sub-surface, and ashore locations within the littorals or land-based operational area with the ability to rapidly relocate.[66] Marine Corps doctrine requires focus on sustaining Marine Corps forces as an integrated naval force that will control tactical level surface and ground transportation and supply sources under composite warfare and not exclusively on forces executing maneuver warfare.

The Department of the Navy's *Seabasing Logistics Enabling Concept* provides a conceptual framework for joint integrated sustainment of future sea-based operations and forces ashore. The CLF provides a sea-based surface distribution foundation for tactical resupply from an aggregation of distributed and network ships to joint forces ashore.[67] Seabasing comprises naval platforms focusing on surface movements but requires integration and focused attention to prioritizing shore-based joint forces' supply and sustainment.[68] FD2030 asserts that the future Marine Corps will be a stand-in force equipped for naval operations within the enemy WEZ and able to control critical maritime terrain.[69] Navy ships used for seabasing in 21st century Middle

East conflict have operated in uncontested maritime environments. Although seabasing remains a maneuverable logistics system that provides flexible and responsive support from forward land bases, its platforms remain vulnerable and unprotected within the WEZ as described in FD2030.[70] Threats in the Indo-Pacific will target maritime logistics capabilities that challenge the deployment and sustainment of self-sufficient naval forces described in MCDP 4.

Expeditionary advanced bases (EAB) require a definition in MCDP 4 as a distinct type of basing different from *forward bases* and *seabasing.* MCDP 4 describes bases as the most tangible component and integral part of the logistics distribution process.[71] EABs are not currently identified as a form of basing in current logistics doctrine. The technological advancements and changing character of war demand a logistics distribution system to move and sustain naval forces within a contested environment. MCDP 4 does not identify a forward basing option within an enemy engagement zone from the sea. As FD2030 envisions that naval forces will operate within contested littorals, EABO will significantly contribute to the projection of and support to naval expeditionary forces. Marine Corps logistics will be required to conduct transportation operations, conduct shore-based tactical logistics, and employ proliferated contracted authorities to support EABO.[72] Marine Corps forces executing EABO require direct control of supply chain capabilities across the naval services. The *supply* function will be required to maximize supporting requirements with the CLF and utilize their capabilities within the supply-chain distribution process.[73] The Marine Corps *transportation* function requires expansion from the focused movement of land forces and equipment to incorporate the critical leverage that embarkation, seabasing, and EABO provide to naval forces' movement.

The current MCDP 4 has to define the Marine Corps supply chain as being reliant on naval and joint capabilities. MCDP 4's *Creating Effective Logistics* explains Marine logistics as

a service responsibility designed to meet high-tempo naval expeditionary operational demands.[74] The Marine Corps cannot meet the supply demands for expeditionary forces as an independent service given the focus and direction provided by the CPG and FD2030. The future fight requires Marines to sustain decentralized forces across the littorals as part of a larger naval force. Since 2007, Marine Corps tactics, techniques, and procedures (TTPs) for developing logistical support for forces deployed with the Navy utilize a supply chain dependent on inter-service supply capabilities.[75] Supply integration requires MCDP 4 updates to align doctrine with current supply TTPs that are dependent on a defense-wide approach.[76] Integrating supply capabilities within the Naval Service enhances supply chain resilience and reduces inefficiencies from duplicated efforts.[77] From a business model approach, logistics management considers a disaggregated and spatially dispersed network as a total system managed by an integrated distribution system.[78] Relating to naval military logistics, this requires a singular command authority over both Navy and Marine Corps supply chains with access to inter-service joint supply sources.

MCDP 4 must recognize that a joint and integrated system offers a critical capability in supply sourcing that enables a streamlined requisition process for the Naval Service and expands delivery methods. Naval supply integration requires authority to control its components, like a functional commander under a composite warfare construct, to develop procedures and incorporate operational capabilities from other components.[79] As MCDP 4 explains reliance on service-dependent supply sources, operating as an integrated force creates additional urgency requirements for critical parts. Integrating partners within the supply chain generate an interdependent system that relies on internal and external capabilities to gain a competitive advantage.[80] A naval force with integrated supply platforms at the tactical level provides asset visibility for analyzing and allocating appropriate resources.[81] MCDP 4 requires the *supply*

function to be Naval Service dependent that can bridge inter-service supply resources to sustain an overall Indo-Pacific campaign across intra-theater naval assets to the last tactical mile of land forces.

Logistics Command and Control

MCDP 4 must be redrafted to prioritize the integration of Marine Corps logistics under the wider naval C2 organizational structure. Current forces supporting maneuver within the littorals require an organization to conduct C2 between naval forces to communicate requirements and manage priorities rapidly.[82] The current MCDP 4 states that effective C2 of logistics ensures efficient employment of resources under competing demands from operating forces.[83] The demands of future operating forces will require resource distribution across sea, land, and air. A centralized naval logistics command that delegates tasks between Navy and Marine Corps resources and decentralizes tactical distribution provides fluidity and flexibility to logistics operations. A centralized naval integrated logistics organization will manage logistical priorities among supported forces closely entwined and require prioritization such as ship allocation, material arrangement, and unloading necessities.[84] An integrated Naval Service

Future Navy and Marine Corps command relations must exploit and not restrict logistics flexibility for naval forces to sustain their striking power, quickly move, and provide mobile logistics support.[85] Sustaining land forces with large stockpiles at the beach is ineffective for distributed littoral operations in contested littoral environments. Building supplies at a fixed location restricts resources from supporting operations at other locations. Delivery of requested supplies from ship to distributed land forces in the future fight must be tailored and may require multiple supply sources or ship crews to assemble.[86] An integrated naval logistics organization can prioritize supplies across CLF ships and additional supply sources to control a purpose-built

and precise logistics delivery system in support of Marines ashore. Marine Corps logisticians in the future fight require the C2 structure for an end-to-end logistics concept between Navy and Marine Corps distribution methods.

MCDP 4 requires modification to focus not exclusively on maneuver warfare but incorporate composite warfare within a wider naval fight. The future fight anticipates that Marine Corps logisticians will be tasked to serve as an Underway Replenishment Group Commander[viii] within the composite warfare construct.[87] Although MCDP 4's *Creating Effective Logistics* is mostly relevant to this task, it fails to describe the logistician's responsibility to understand and integrate within the Navy's composite warfare concept. Logistics staffs within naval organizations require a wide range of authority to manage logistics functions across multiple commands to eliminate wasted efforts.[88] Marine Corps forces supporting tactical naval operations, such as EABO, require C2 and information system integration withing the wider naval logistics network to employ various supply, maintenance, and transportation systems within the littorals.[89] Moving naval forces within contested littorals requires the ability to C2 inter-island movements and intra-island movement between multiple nodes.[90] This requires logistics support to be managed like a maneuver element within the composite warfare construct with the ability to conduct fires and self-sustain to compliment land and sea forces in the littorals. The most critical element for Marine Corps logistics within the composite warfare construct is to establish relations and responsibilities of advanced bases, the support force, and other logistics agencies engaged in supporting combat forces.

[viii] The underway replenishment group (URG) commander is a functional commander within the Navy's composite warfare command responsible for a task group configured to provide logistic replenishment of ships underway by transfer-at-sea methods. The URG commander will typically be the senior commanding officer among the multiproduct ships and will coordinate logistics evolutions. Department of the Navy, *Composite Warfare: Maritime Operations at the Tactical Level of War*, NWP 3-56, Washington, DC, Edition December 2015, 4-5.

Contracting

Marine Corps logistics doctrine requires alignment with the *operational contract support (OCS)* logistics function within joint logistics doctrine. OCS is planning for and procuring supplies and services from commercial sources to support military operations.[91] OCS serves a separate, distinct role from the *supply* function, which manages supply chain operations and processes. JP 4-0 describes OCS as a core logistics function and critical component to force readiness.[92] MCDP 4 categorizes procurement as a strategic level of logistics.[93] It briefly states acquisitions can be accomplished below the strategic level and does not reflect OCS or contracting as a logistics function.[94] Contracting is a critical requirement in providing logistics services to military forces. The FD2030 future fight will require naval forces to confront an enemy with sophisticated weapons, with modernized equipment, and capable of maintaining a high operational tempo, all of which necessitates that stand-in forces be limited in size. This elevates the importance of operational contract support to augment military capabilities.

Marine Corps forces ashore need to identify sustainment options that do not rely on prepositioned or other Navy platforms from the sea. Future littoral conflicts with surface movements of forces from the sea will prioritize combat arms capabilities and leave almost all organic logistical support afloat.[95] This contradicts MCDP 4's current approach to logistics as a naval expeditionary force independent of external resources. Initial insertion of combat forces requires tactical ship-to-shore distribution for organic sustainment until external services can establish ashore. This concept requires land forces to determine logistics requirements and either procure or forage from local sources. Contract support provides flexible options to rapidly adjust as missions change and provide skills or tools that military forces may lack.[96] Logistics support

for US forces overseas often relies on HN or third-country nationals and is fundamental to the military's ability to operate.[97] Sustaining future naval forces in the littorals without the air, land, and sea dominance requires creative logistics solutions that incorporate local support at the tactical level.

Contracting local commercial services diminishes the logistical burden without stressing military capabilities and also limit the friendly force's footprint ashore. 21st century Middle East conflicts required local contracts for facilities management, non-tactical vehicles, construction, and infrastructure maintenance as normal processes with allies and partners support for life sustainment.[98] Not only did contracting enable operations during these conflicts, but contracting has regularly been a force enabler for expeditionary operations in austere environments. Host nation logistics sourcing expands options to meet operational demands and minimizes supply movements from ship to shore in a contested environment. Marine Corps doctrine must analyze past naval logistics operations in austere maritime environments to address the future fight supporting geographically dispersed forces not reliant on land-based logistics bases. Contracting is a key piece of future logistics doctrine, as it reduces the requirement for an "Iron Mountain" of logistics supplies to maintain operational tempo.

Historical use of contracting reinforces the argument for MCDP 4 to acknowledge that OCS is a required capability and no longer an afterthought to support future operations. During the Marine Corps campaign in the Dominican Republic from 1916-1924, locally procured goods for tactical support, such as food and transportation assets, were often the only option for Marines once ashore from naval shipping.[99] Marine logisticians rented cars in the Dominican Republic, purchased food from local sources, and improvised force protection measures against enemy fire while foraging throughout their locations.[100] In 1941, as the United States entered

World War II, contractors constructed and expanded the airfield on Wake Island, which enabled naval forces to utilize the bare island previously unsupportable to military operations.[101] During combat operations on the island, contracted trucks transported Marine Corps ammunition and casualties at the tactical level due to the shortfall of military vehicles ashore.[102] In 1958, the US response to the political crisis in Lebanon required Marine Corps forces to conduct amphibious operations from Navy ships. The concept to provide self-sufficient sustainment from the sea was restricted due to the limited beach landing sites capable of receiving supplies and equipment.[103] Unplanned contracting services for locally available logistics was the most expedient and practical method to sustain operations.[104] The ability of naval forces in Lebanon to effectively coordinate and contract fuel and ammunition storage sites with local agencies significantly attributed to the operation's success.[105]

OCS is a critical component to force readiness, as Marines in distributed littoral environments will need to rely on contractors to perform tasks when organic logistics are not available.[106] Although JP 4-0 categories OCS services at the operational and strategic level of war, tactical level contracting capability creates flexibility and provides alternate sustainment sources for a commander. Contracting's importance to future logistics operations demands that MCDP 4 categorize it as a stand-alone logistics function.

Naval integration is the critical theme repeatedly identified in this study. The first step for future study is to integrate US Navy and Marine Corps logistics officers at O5 commands assigned to Naval Service deployments through a billet exchange program. Cross-service billet exchanges provide the opportunity to develop and improve naval logistics concepts and procedures and gain understanding of each service's capabilities and support requirements. A subsequent study area requires deliberate logistics wargame experimentation at the Marine Corps

Warfighting Laboratory and Marine Corps Logistics Operations Group (MCLOG) that fights doctrinal concepts against a peer-adversary in the maritime domain. Wargames must include participants from across the Naval Service to identify trends and gaps in current logistics concepts at the tactical and operational level. MCLOG should serve as the logistics functional lead tasked to ensure relevance and development of logistics principles and concepts outlined in MCDP 4. Naval Service billet exchanges and wargames that test current logistics doctrine against peer adversaries will develop naval logistics concepts and provide further empirical data to create principal changes for the Policy and Standards Division within TECOM to evolve MCDP 4.

Conclusion

MCDP 4 provides the foundation for Marine Corps logistics and establishes a theoretical and conceptual framework for understanding and applying logistics requirements across the levels of war. The *Nature of Logistics* described in MCDP 4 is enduring and relevant to the future fight described in FD2030. The character of logistics described in MCDP 4's *Logistics Theory* and *Creating Effective Logistics,* first published in 1997, requires important changes if it is to remain relevant in 21st century conflicts against peer competitors.

Marine Corps logistics doctrine has stagnated due to its implicit assumptions of an uncontested maritime environment and the permissive air/sea environments that the Joint Force has enjoyed since the end of the Cold War. These assumptions are no longer valid in the face of the technological capabilities of peer adversaries that have significantly changed the character of war. As the Marine Corps' future force adapts to meet emerging near-peer threats, logistics formations must evolve to sustain distributed forces within enemy engagement zones requiring critical multimodal transportation solutions afloat and ashore. Doctrine, which establishes how

military professionals practice their trade and serves as a basis for mutual understanding and shared perspectives that enable force structure, training, and equipping, must evolve as well.

Marine Corps doctrine requires a standardized definition of the important term *naval* that makes it clear it refers to the Navy, Marine Corps, and Coast Guard. It must define the term *naval* as consisting of one or more Naval Service forces and components operating across a range of military operations from the maritime domain. Marine Corps logistics doctrine must establish mutual understanding and interoperability with the Navy and joint logistics functions while providing the foundation to develop integrated procedures and processes. MCDP 4's *Logistics Theory* must align the *deployment and distribution* and *operational contract support* functional areas with joint logistics doctrine. MCDP 4's *transportation* function requires changes that resemble joint doctrine's *deployment and distribution* function as the cornerstone of logistics focused on integrated naval capabilities to move and sustain naval forces across sea and land. *Contracting* is a critical component to naval force readiness and requires a distinguished logistics function from MCDP 4's *supply* or *services* tactical functions. Contracting has not only enabled operations during 21st century Middle East conflicts but has historically been a force enabler for expeditionary operations in austere environments. Limited logistics from sea to sustain land forces requires a holistic approach to maximize tactical-level contract support.

Evolving MCDP 4 to explain the importance of integrated naval logistics creates enduring support concepts mutually understood by naval forces across military operations. The changing character of logistics to move and sustain forces within a potential enemy weapon engagement zone in a maritime contested environment demands that MCDP 4's *Logistics Theory* recognize *expeditionary advanced bases* as a distinct type of base integral to the logistics distribution process. The e*xpeditionary advanced base* method significantly contributes to the

projection and support to naval expeditionary forces operating within contested littorals. Future logisticians sustaining the last tactical mile within contested littorals require an integrated naval command structure capable of controlling multimodal movements and EABO. MCDP 4 must evolve to enable *integrated naval logistics* capabilities and *logistics C2* within a *composite warfare* concept. MCDP 4's *Creating Effective Logistics* incorporates logistics as a warfighting function to complement maneuver warfare. The requirement to move a naval force across multiple domains requires the *composite warfare* organizational structure to control naval forces between service branches. Without the evolution of deliberate naval integration in MCDP 4's *Logistics Theory* and *Creating Effective Logistics* chapters, doctrine will continue to drive a land-based logistics approach which is service-focused and not inclusive of multi-domain capabilities the *Naval Service* provides to tactical level logistics.

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