

On Naval Integration

Exploring the opportunities and risks associated with implementing the *Commandant's Planning Guidance*

by Capt Jacob Campbell, Manny Adams & Maj Jose Gonzalez

The Commandant is succinct in his 2019 guidance where he outlines a strategic shift in how the Marine Corps will meet the *National Defense Strategy*. He shifts the Service's focus from a land-based expeditionary counter-terrorism role to that of an amphibious role as part of the Naval Fleet. The Commandant and Chief of Naval Operations (CNO) seek to better align the Services and provide "Integrated American Naval Power" capable of high tempo, mobile sea-based, amphibious operations in the littorals; expeditionary advanced based operations (EABO); and rapid maneuvers to promote supremacy of the sea.¹ While not all-encompassing, this article is intended to provide a sound

>Capt Campbell is the Team Lead, Afloat C4 Systems Integration, Marine Corps Systems Command.

>>Mr. Adams is the Lead Systems Engineer, Afloat C4 Systems Integration, Marine Corps Systems Command.

>>>Maj Gonzalez is the Communication Officer, 24th MEU.

backdrop to level our collective understanding of where we are, where we are headed, the risks, and the opportunities associated with the integration of the Naval Services as we implement the 2019 *38th Commandant's Planning Guidance* (CPG).

Where Are We?

On average annually, no more than

13,200 of the combined 224,600² Marines in the Active and Reserve Components deploy on ships as either a MEU or task force. This represents only six percent of the total force, resulting in a relatively small number of Marines gaining amphibious experience. For those Marines, dwell time usually does not exceed six to eight months; the Marines who do go afloat may only cycle through an amphibious evolution once in their career. In contrast, Sailors are permanently assigned to a ship's force and are a continued operational asset as the ship executes assigned missions.

Policy supports flexibility for embarking Marines and their equipment. U.S. Fleet Forces policy empowers Marines to embark and integrate Marine Corps fielded systems into Navy afloat infrastructure.³ With a valid Marine Corps authorization, systems may be embarked and connected to Navy afloat networks without additional accreditation. Annually, Marine Corps Systems Command (MCSC) publishes the MAGTF Afloat Baseline identifying systems and applications approved for shipboard use. The Marine Corps is also exempt from the application integration process; a complex Navy validation process that certifies applications and services for acceptable performance on shipboard networks.

Marine Corps requirements and priorities for amphibious warships are developed annually by HQMC Com-



USS MAKIN ISLAND, 22 November 2016 Marines and Sailors with Makin Island ARG/11thMEU stand in formation on the flight deck of the USS Makin Island (LHD 8) while the ship's commanding officer, CAPT Mark Melson, introduces the Secretary of the Navy, The Honorable Mr. Ray Mabus, while moored at Changi Naval Base, Singapore, 22 November 2016. Mabus visited with the Marines and Sailors of the ARG/MEU and gave them insight on the future of the Navy and Marine Corps matters such as fleet size, physical fitness standards, and family readiness. (Photo by LCpl Brandon Maldonado.)



USS Iwo Jima (LHD 7)—U.S. 5th Fleet Area of Operations (1 April 2018) U.S. Marines assigned to the 26th MEU scan the horizon while transiting the Bab al-Mandeb Strait aboard the Wasp-class amphibious assault ship USS Iwo Jima, 1 April 2018. The 26th MEU and Iwo Jima ARG are deployed to the U.S. 5th Fleet area of operations in support of maritime security operations to reassure allies and partners and preserve the freedom of navigation and the free flow of commerce in the region. (Photo by Cpl Jon Sosner.)

bat Development and Integration and published within the Afloat MAGTF Command, Control, Communications, and Computers (C4) Required Capabilities (AMC4RC) letter. This includes requirements associated with transmission systems, networking systems, and separate functional systems that facilitate integrated afloat and ship-to-tactical-shore C2, fires, intelligence, aviation, and logistics. MCSC supports Combat Development and Integration in the analysis of required capabilities, associated technologies, and in the alignment of both Navy and Marine Corps acquisition.

The Navy provides several C4 systems in an effort to meet the Marine Corps capability requirements identified in the AMC4RC letter. Navy afloat networks provide the embarked MAGTF the ability to populate a virtual network and leverage resources within a shared/standalone data center for enterprise services. The Consolidated Afloat Networks and Enterprise Services (CANES) is the “newest” local area network; consolidating the Navy’s legacy systems into an integrated software-based platform.⁴ The first CANES installation occurred in 2013⁵ and con-

tinues to be modernized but has yet to be installed on all 32 amphibious ships. Additionally, a significant legacy afloat network presence still exists creating a high degree of variance in network type and version even between amphibious ships of the same class. As a result, it is highly unlikely that a deploying MEU would get the same baseline network

The Navy provides several C4 systems in an effort to meet the Marine Corps capability requirements ...

architecture across an ARG or in support of successive deployments. It is more likely that baseline compatibility issues will occur. As an example, current MEU server architecture is based on Windows Server 2019; however, there are four amphibious ships that cannot host beyond Windows Server 2008.⁶ To address shortfalls in required capability, the Marine Corps embarks equipment

procured and fielded by MCSC. The equipment is integrated into the Navy’s infrastructure to allow for employment.

The HF Shipboard Automatic Link Establishment Radio (HF-SAR), Enhanced Multiband Ultra High Frequency Terminal, and the AN/SRC-54 Single Channel Ground and Airborne Radio System (SINCGARS) are examples of Blue-in-Support-of-Green systems. These shipboard communications links are critical to extending voice and data networks to littoral Fleet Marine Force elements conducting EABO or other landbased operations. However, these systems are or will be obsolete by 2024. In the Marine Corps, Mobile User Objective System (MUOS) is near full operational capability, a modern wide-band data HF radio is scheduled to be fielded, SINCGARS modernization is synchronized with the DOD executive agent, and multi-channel family of systems are going through the throes of acquisition. In comparison, the Navy is expected to reach 65 percent capacity for MUOS on amphibious ships starting in fiscal year 2023;⁷ HF Shipboard Automatic Link Establishment Radio and SINCGARS modernization are currently unfunded.

The lack of amphibious experience and variation between platforms makes integration across an ARG or in support of an independent deployment challenging. Numerous events assist embarking Marines: System of Systems Operability Tests (SOT) conducted by Program Executive Office (PEO) C4I, Network Assessments and C4I SOTs conducted by MCSC and Marine Corps Tactical Systems Support Activity, and Deploying Group Systems Integration Testing Events. The challenge is overcome through flexibility in policy, processes, and system design; in leadership and communications at the deck-plates; and in a robust pre-deployment cycle. The result is a fully integrated Naval force capable of globally supporting contingency and crisis response missions.

Where Are We Going?

An organization exists with a defined purpose, priorities, priority unto itself, resources, and processes as a means to achieve and manage programs. “Na-

val” is a unifying term that strips away organizational enterprise constructs to a tactical, operational, and strategic meaning. According to the CNO, we are more powerful as an integrated Naval fleet working closely at all levels to deliver more lethal capabilities.⁸ To be Naval is to be a combined land, sea, air, and cyber entity working in unison to meet warfighting challenges. To meet the Commandant and CNO guidance, we must understand the term “Naval” and believe in its cohesive qualities. Naval is how the fleet will fight; it is important that acquisition also has this mindset.

In the absence of Naval requirements and Naval funding priorities, both Services continue to perform in support of individual Service priorities. Navy acquisition is tasked with the enormous responsibility of maintaining and modernizing with the amphibious fleet historically taking second stock to carriers, submarines, cruisers, and destroyers. Marine Corps requirements published as priorities in the AMC4RC are levied to Navy Acquisition through the Office of the CNO. Despite best efforts by Navy Acquisition, specifically PEO-C4I, Blue-in-Support-of-Green transmission systems are an example of atrophy. Likewise, Marine Corps fielded systems are based on requirements for landbased operations or at best ship-to-shore objective maneuver. A valid concept of operations or concept of employment supporting capability requirements is difficult to ascertain, a chief complaint amongst acquisition professionals.

Although there are many determined people within the Naval enterprise doing anything possible to deliver capability to embarked Marines, the simple fact is Navy and Marine Corps acquisition is not synchronized. There are many points to be argued regarding speed of acquisition and how to continue to push effective, relevant, interoperable, and secure capability. The Navy is and will likely always be stuck in a slow Navy modernization process (NMP); many installations and upgrades are contingent on ship availability periods. In general, it will take the Navy two to three times longer than the Marine Corps to

completely field a capability depending on production deliveries and funding.⁹ Installations are subject to NMP based on a two-year planning period with the assumption that DOD acquisition requirements are met in advance. The two-year period includes phased milestones for equipment qualification, contracting, and shipboard validation. The NMP process is a blanket process supporting a risk assessment to inform decision analysis. The result is the delivery of capability at or behind the speed of obsolescence.

Organizational alignment is critical to implementing change.

The Marine Corps continues to pioneer combat-enabling capabilities in networks, transmission systems, and functional applications/services. Marine Corps-led Programs like Common Aviation Command and Control have strong advocacy in both Services and push the limits of NMP. Meanwhile, Blue Force Tracker installations on amphibious ships transitioned from Marine Corps funded non-permanent changes to Navy programmatic installations in fiscal year 2020 after years developing advocacy—just in time to be divested by the Marine Corps. Marines in coordination with Sailors are fighting to bring MUOS to bear on L-Class ships while underway by installing *ad-hoc* alterations. The Navy is struggling to complete topside studies for an off-the-shelf replacement antenna for the same capability. Does the Marine Corps slow down? Does the Navy speed up? Does programmatic and technical risk just transition to the fleet in obsolete equipment or should we begin to evaluate risk to achieve a balance in what is acceptable operationally?

Opportunities in Decision Analysis

The CPG brings multiple opportunities to explore how we develop and sustain an integrated capability. Our combined solution must identify trade

space, align business processes, and continue to be as flexible as it is enduring. As our Service maneuvers toward change, how will we acknowledge success and leverage lessons learned from our shadow domain represented by those proud MEUs, Marines, Sailors, commanders, staffs, and supporting organizations?

Organizational alignment is critical to implementing change. Vision, mission, and scope drive organizations to succeed within their chartered responsibility. The CPG and CNO FRAGO are guiding visions on where the Naval Services must go to succeed in fulfilling its duty to the nation. Similar to this enterprise-level guidance, vision, mission, and scope must be developed at all levels. Goals and ground rules must be established and ambiguity eliminated. Communication is important; advocacy and support at all levels of leadership is imperative. Most of all, authoritative and directive action must align the Naval Services; this is an imperative to empowering the enterprise. Without alignment, we debate priorities and are inefficient and paralyzed. We will continue to be divided and not Naval at all.

Everything should start and end with Marines and Sailors; they must be included. Valid concepts of operation/employment for justifying use and distribution of requisite capabilities must be developed. Systems engineers, the fleet, and the combat developer should collaborate to discover a balance in cost, schedule, and quality. If we leverage anything from our past and from our commercial counterparts, it should be that quality is defined with the customer involved.

Marines and Sailors with relevant experience assist in understanding and prioritizing what information is required for decision making and how it moves around the battlefield. This understanding should drive the design and implementation of an architecture that can support those information exchanges. Architectures are important yet we do not have an integrated Naval architecture. How do we understand our current as-is architecture and how do we determine our to-be architecture

in the enterprise sense? How do we evaluate and communicate change? Simply increasing the density of a system, introducing a new system, or divesting as a whole through a funding lens does not provide for a balanced approach to understand secondary effects. This is a significant investment in time and treasure, but a true necessity if we are to understand the capabilities and limitations of the integrated system-of-systems we bring to the fleet. A well-defined architecture can be modeled and simulated against various environmental factors, including threats, to understand the impact of change and influence decision making.

We must face the reality that the NMP may never change because the driving force is a constraint based on ship availability periods. Readiness is a matter of individual ship status and a balance in total capability delivered to a theater of operations. While acquisition professionals may see interoperability with the Navy as a matter of tight integration, this increase in dependency may prove limiting. There is a finite amount of available resources on ship. Those resources will always have limitations in compatibility because of variability and obsolescence. Designing and delivering embarked systems promotes flexibility, security, and ultimately de-

veloped to support commercial markets. The tactical environment is not equivalent, not even close. The means to deliver, manage, train, and maintain commercial systems is also significantly different. Emerging or transitioning commercial technologies and concepts must be adapted, not implemented *carte blanche*. While there is great vision in efforts that discuss a single-deployable enterprise network, the bridging of cloud computing technologies, software Development, Security, and Operations, and the distribution of information to and from the tactical edge, we cannot forget the constraints of the tactical environment.

As we implement the *Commandant's Planning Guidance*, it is important that we consider the complexities involved with Naval integration. The answer is not as simple as divesting from ground-centric systems and investing in Navy systems to seek efficiencies through the consolidation of programs. To create the modern, lethal Naval expeditionary force we seek, we should not tether ourselves to Navy acquisition processes that are built around ship maintenance; doing so will undoubtedly result in obsolete equipment and increased operational risk. Instead, we should work with the Navy to build a resilient Naval C4I architecture and design common

in resolving competing requirements, priorities, and complex policy. A common understanding of what it means to truly “integrate” will help bridge the gap between our organizations’ acquisition processes. Inevitably, this will present opportunities for both Services as we progress forward as a Naval team to increase the lethality of the fleet.

Notes

1. Gen David H. Berger, *38th Commandant's Planning Guidance*, (Washington, DC: July 2019); and ADM M.M. Gilday, *FRAGO 01:2019: A Design for Maintaining Maritime Superiority*, (Washington, DC: December 2019).
2. U.S. Congress, *National Defense Authorization Act for Fiscal Year 2019. H.R. 5515*, 115th Congress, (Washington, DC: 2018).
3. Fleet Forces Command, *Policies and Procedures for Amphibious Embarked Landing Force*, (Norfolk, VA: October 2018).
4. Mark Pomerleau, “Navy Still Has Long Way Towards CANES Installation,” *Defense Systems*, (Washington, DC: February 2016), available at <https://defensesystems.com>.
5. *Ibid.*
6. The initial version of CANES (Hardware 1/ Software 1) utilizes the hypervisor ESXi 4.1, which only supports up to Windows Server 2008R2.
7. Fielding Plan for Phase III Ship Change Document 24058: EMUT MUOS Replacement Antenna, (January 2018).
8. *FRAGO 01:2019: A Design for Maintaining Maritime Superiority*.
9. Five fielding plans from Marine Corps Systems Command and six fielding plans from PEO-C4I were examined to determine the amount of time between the first and final fielding or installation for each system.



There is a finite amount of available resources on ship. Those resources will always have limitations in compatibility because of variability and obsolescence.

livers a more modern capability both Sailors and Marines can benefit from. Navy-provided capabilities should focus on common interfaces and minimal infrastructure that provides maximum flexibility.

The tactical environment should be considered before the garrison environment. This is particularly important when discussing Naval afloat systems and information exchanges. There is a lesson to be learned from industry, but we must not forget that commercial products and methodologies are

interfaces with minimal infrastructure that provides maximum flexibility for embarked Marines. Marine Corps equipment should be designed such that it is lightweight, modular, and reconfigurable to the extent possible to support embarkation on Navy platforms. Finally, we should continue to support policies and processes that empower Marines.

Understanding where the Marine Corps is currently positioned and the benefits of focusing on the technology, processes, and people pillars will assist