



# MARINE CORPS Gazette

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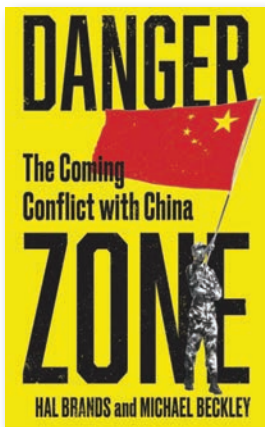




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APRIL 2023

## Editorial: Information in Marine Corps Operations

On 23 January of this year, the Deputy Commandant, Information LtGen Matthew G. Glavy and the Deputy Commandant, Combat Development and Integration, LtGen Karsten S. Heckl released a joint memorandum establishing the definitions of information-related terms and cancelling the use of “operations in the information environment” as a formal doctrinal term in the Marine Corps. Some might view this change as mere semantics; however, it illustrates the reasoned approach the Marine Corps is taking both to the Information Warfighting Function and the relationship of the Marine Corps to the Joint Force. The Marine Corps’ doctrine regarding Information is founded on a broader “MAGTF” approach:

Comparing the Joint and Marine Corps OIE definitions reveals significant differences. Joint OIE is defined primarily by who conducts them, and by a narrow orientation on affecting drivers of behavior. Marine Corps OIE was defined much more broadly, applicable to any type of unit or organization, and oriented on a much broader set of objectives across all domains of the operational environment.

Articles in our focus area begin on page 8 with a message from LtGen Glavy setting the tone of the Marine Corps approach to “fighting for information” and the inter-related systems and human talent required to preserve, deny, project, and protect information to “increase and protect competitive advantage or combat power potential within all domains of the operational environment.” Standout articles follow including a look at machine learning and human-machine teaming in “Teamwork Makes the (AI) Dream Work” by Maj Andy Barton on page 12 and a cautionary explanation of the growing use of commercial lasers as weapons titled “Giving ‘Laser Focus’ New Meaning” by Capt Joe Deavenport on page 30. On page 46, in “Radio Communications at Duffer’s Island,” LtCol Kelly P. Haycock borrows the style first used by Ernest Swinton in his 1904 classic *The Defense of Duffer’s Drift* to examine the challenges of command and control for distributed Stand-in Forces.

Outside this month’s focus on Information and C4, we have included articles on a variety of today’s “trending topics” including “Marines Need to Think Like Marines” questioning the degree to which “jointness” degrades the Marine Corps’ modernization efforts by Dr. Michael E. Doyle on page 66. In our ongoing studies of Strategy & Policy, “The Kra Peninsula” on page 57 by LtCol Paul B. Bock provides analysis of another potential scenario for conflict with an expansionist People’s Republic of China beyond the South China Sea and Taiwan. Finally, as highlighted on our cover, frequent contributor LtCol Brian Kerg provides another work of “useful fiction” on page 78 with “Don’t Give Up the Ship,” a story of small craft operations and Stand-in Forces in the first island chain.

Considering both the memorandum on Information doctrine and Dr. Doyle’s critique of “jointness” in this month’s edition, it is clear that the tensions between the Services and the Joint Force remain at play in our defense establishment. While collaboration, interoperability and even inter-dependence have grown in positive ways since the Goldwater-Nichols Defense Reorganization Act of October 1986, degrees of knowledge, understanding, and “comfort” with the Joint approach to warfighting vary greatly. This is fertile ground for constructive criticism and professional discourse and the *Gazette* invites all to share their observations, thoughts and comments as articles, and letters to the editor.

Christopher Woodbridge

### Culture Corps

■ Regarding Maj Jones' article calling for the divestment of Marine Corps Aviation, although his proposal merits discussion, he has it wrong on three essential points.

First, Maj Jones assumes the divestiture of aviation assets will free up substantial dollars for investment in the remaining portions of the force. This is simply not so. To start, much of the current Marine Corps Aviation structure is paid for with "Blue" dollars. Upon the reversion of these aviation assets to the Navy, so too will the dollars associated with them. The Navy will also recoup all the "Green" dollars associated with the personnel and aviation operations it absorbs. I am sure the Navy's "bean counters" will also identify any other aviation-related costs covered in Marine Corps accounts and take those as well.

Second, Maj Jones does not address the non-flying elements of the Marine Air Wing that are so essential to the successful application of Marine combat power—namely the Marine Aviation Command and Control System and the Marine Wing Support Squadrons/Groups. These organizations are vital components for operations ashore, but I doubt the Navy has any interest in absorbing these functions. Are these moved into some new organization where they still use the dollars Maj Jones wants to transfer to the division or does the Marine Corps no longer deploy critical combat enabling entities such as the direct air support center or forward area refueling points?

Third, and most importantly, those of us who have, are currently, or will spend the bulk our careers in the wing will not accept Maj Jones premise that we are not "real" Marines. Maj Jones states, "our unique culture is intimately tied to our core identity as a maritime ground element," and strongly implies that those in the aviation element therefore are not real members of the tribe. I disagree. Our unique culture is tied to our core identity as the force to (quoting Maj Jones) "conduct land operations as may be essential to the prosecution of a naval campaign." The Marine Corps does

build our culture upon an intense focus on those GCE Marines at the very tip of the spear, but that does not mean you have to be at the tip of the spear to be a Marine. The Marine Corps ethos in all of us. We absorb it in our initial training at Quantico and the recruit depots. The Marine Corps then keeps that ethos alive in all of us through a variety of other means.

Our aviation Marines have proudly and effectively fought for our Nation and done much to ensure the success of the Corps both in naval campaigns and when we've had to assume the role of a second army. We have also done our part to maintain our unique Marine culture. I do not foresee this ever changing. We raised our hands to become Marines not to become pilots or mechanics. Eliminating the aviation elements of our Corps will create more problems than it will solve for our ground and logistics Marine brethren without saving any money or making any improvements to our culture. Let us consider other ideas to ensure future success to our Corps.

**Col Benson M. Stein, USMCR (Ret)**

### Marine Corps Reserves

■ Kudos to LtCol Bryan Anderson, USMCR (Ret), for his letter to the *Gazette* recommending the disbandment of the Marine Forces Reserve and its major subordinate commands—but he does not go far enough. There is no reason we have ANY Marine Corps Reserve units or Individual Mobilization Augmentee programs. Per *MCDP 1-0*, "The Marine Corps is optimized to be expeditionary—a strategically mobile middleweight force that can fill the gaps created by the size/speed tradeoff ... that can either accomplish the mission or provide a stopgap pending the arrival of additional forces." Does anyone think the 4th MarDiv or a reserve battalion will be the arrival of additional forces? Does anyone with experience mobilizing a SMCR unit really believe it is expeditionary? How does naval integration work with Marine reservists? How can we justify cutting infantry

battalions in the FMF but still having them in the Marine Corps Reserve?

In articles and discussions about Force Design, the often-repeated statement of "the Marine Corps becoming a second land army" was the reasoning behind the divestment of equipment and units. Marine reservists make the Marine Corps a second land army more than any tank or artillery cannon. The deadwood LtCol Andersen mentioned are not just "the bloated general staffs" in the Marine Corps Reserve Headquarters and its major subordinate commands but the entire force itself. I have served with outstanding reservists (that should be given the opportunity to come and be active duty), but the changing character of war, our role in the next likely conflicts, and the threat we are facing belies the idea that any unit that trains a handful of weekends a year (most drill weekends are administrative/home station drills) and two weeks in the summer doing basic skills would seamlessly fall under an active-duty higher headquarters. What worked in Iraq and Afghanistan (what resembles what Clausewitz referred to as wars of decision) should not be the justification for pretending reserve units could fill any void should the Marine Corps fight in "absolute wars." I understand that per United States Code, Title 10 the Marine Corps is to maintain the Marine Corps Reserve. The Commandant requesting this change would be a cost-effective measure; as LtCol Anderson stated, the savings will be in the millions of dollars and the quality (and potential capabilities) of the FMF would increase. After the Reserves, the next priority target the Commandant should take aim on is trimming the fat in the supporting establishment.

**Maj John E. Campbell**

### Don't Stop at 360-Degree Feedback

■ In January, Sgt Farrell made a compelling argument for the use of the 360-Degree Feedback to stem poor leadership in the article titled "Accountability Against Poor Leadership." In *Talent Management 2030*, the Commandant

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also cites the 360 as a “proven means for identifying traits of toxic leadership and can help reduce the incidence of toxic leaders advancing.” Why stop there? We have proof that some toxic leaders advance and are entrusted with our most valuable assets—our Marines. If there was a tool that could augment the 360-Degree feedback by evaluating how a leader uses their values to make decisions and provides insight into their likely behaviors in certain scenarios, should we invest in it as well? Reviewing performance evaluations and feedback from anonymous raters may not be enough. The Judgment Index™ provides qualitative insight into a person’s judgment and decision-making capabilities, takes only fifteen minutes to complete, and cannot be gamed because it is based on the beliefs that define who we are—our values. Those values manifest in the way we handle situations, deal with people, and make decisions and this tool assesses our values to measure problem solving ability, dependability, resiliency, insight, intuition, and much more. The Judgment Index™ results highlight strengths, provide cautions regarding potential negative impacts caused by strengths, and offer recommendations to improve weaknesses, all which can be used to increase self-awareness and guide personal and professional development efforts. The detailed scoresheet and narrative could be provided to reporting seniors and board members to assist in mentorship, selection for assignment/command, and promotion. The ease of the Judgment Index™ also makes it feasible to use throughout a Marine’s career to measure the impacts of one’s evolving values because unlike our personality that remains constant, each new experience or person encountered has the potential to change who we are and how we lead.

**Col Wendy J. Goyette**

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### Pentomic Division

I am impressed with the discussions on Force Design in the December 2022 edition. The diverse viewpoints about the future force design and moderniza-

tion are inspiring. LtCol Thaddeus Drake’s piece is indeed a cautionary tale on the Army’s Pentomic division.

The Pentomic division optimized a capacity to disperse units and mass fires, its success depended on technology that did not exist and exceeded the technology of the time, given all this the division had a rather brief existence. Many Army leaders believed that another divisional reorganization was required, and the groundwork had already been done. The result was not another modification of the existing force structure but a major Army-wide reorganization under an entirely new concept called Reorganization Objective Army Divisions (ROAD). Seriously concerned about limited conflicts, and the ability to handle situations short of nuclear war; the Kennedy administration found the Pentomic division, did not fit into the strategy of flexible response, which was official national policy. On the other hand, ROAD, was specifically designed to carry out this policy.

With almost unseemly haste the Army abandoned its battle groups, Pentomic divisions, the emphasis on dispersion and non-linearity, the quest for light formations, the commitment to fighting with tactical nuclear weapons: all quietly were shelved or unceremoniously dumped. ROAD was primarily a divisional reorganization. The first ROAD units were organized in February 1962 under draft TOE’s. The final tables were published on 15 July and 15 August 1963, and by the end of June 1964, the reorganization was completed in the Regular Army and in the reserve components.

Most Army leaders, probably shared the sentiments of GEN Paul L. Freeman who told an interviewer that the only thing he could say about the Pentomic division was: “Thank God we never had to go to war with it.”

**Col Mark A. Olinger, USA (Ret)**

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### “Slapping the King”

Maj Dylan M. Swift’s article “Slapping the King” (*MCG*, Oct 22) was spot on. It is no surprise and a tribute

to the *Gazette* that it won First Place in the 2021 General Robert E. Hogaboom Leadership Writing Contest. In my 25 years in the Marine Corps (three enlisted and 22 commissioned), I have had occasion to work with and observe many leaders, both in peacetime and in combat. We have all met the “large and in-charge,” egocentric leaders who were “legends in their own minds,” whose primary concern was their next promotion and their careers. Their orders were obeyed because, as professional Marines, following orders is one of our hallmarks. But in my 25-year career, the best leaders I worked for were secure and confident. They earned your respect and trust because they cared more about the people under their charge than they cared about themselves. They led by example and mutual respect and were cognizant that loyalty works two ways.

The perfect example was my battalion commander in Vietnam who was a man large in stature but quiet and humble in demeanor. He was always calm and in control, and I would have followed him anywhere. He was killed in action shortly after I left in-country, leading from the front. Granted, leadership is not running a popularity contest, but Marines are very intuitive and readily recognize if you have their health, welfare and well-being in mind as opposed to your own agenda. Being a humble leader does not mean that decisiveness and courage are not important. The buck stops at the leader’s desk and he must accept that responsibility.

As I progressed through several command and staff positions, I learned that all decisions do not have to be made immediately. Taking your time to make a decision is not indecisive or weak. The only time instantaneous decisions have to be made are in combat and life and death situations. Often there is time to explore options (courses of action) and for consultation and dialogue with your staff (and your Marines) and other respected leaders. This participatory management and reflective analysis result in a well thought out decision. In the end then once a decision is made, in the interests of transparency, communicate with

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your Marines. You will earn their respect and trust because of it.

Yes, credibility in leadership requires one to be technically and tactically knowledgeable and to pay attention to detail, have a sense of urgency and follow-up. These traits are important. Mission and Marines are the paramount concern. Leading Marines is a sacred trust and responsibility and one that requires selflessness, dedication, and humility.

**LtCol Michael Kerrigan (Ret)**

### AI's Place in Military Decision Making

In Dr. Flynn's "Providing Your Own AI," (*MCG*, Nov 2022) he correctly surmises the shortcomings of Artificial Intelligence (AI) in replacing the human element of military decision making: programming or machine learning struggles with creativity, AI cannot account for the reasons why one is fighting in the first place, and ultimately AI makes a poor general (commander). Beyond the historical and wargaming examples given in the article, it is also unlikely that a computer would have acted as boldly as MacArthur's game-changing decision to conduct an amphibious landing at Inchon against the more risk adverse and logical options. With that said, Dr. Flynn's thesis in the article focused on the wholesale replacement of humans in the decision-making loop, like the Deep Blue IBM AI computer successfully winning a game of chess against a human world champion, or Hollywood adaptations of robots taking over the world. The article misses the more appropriate application of AI, "letting computers do what they do best, and letting humans do what they do best." A pure contest of humans versus AI in military decision making would be a misused effort, however, harnessing AI to create an asymmetric advantage within the decision-making cycle could be more fruitful. Using Boyd's OODA loop as an example, human and non-air breathing sensors used in the observe step create an enormous amount of data, which AI and machine learning algorithms

can more efficiently fuse, correlate, and orient a human (from the fire team leader up to Joint Task Force commander) to decide and act in a higher tempo and more effective manner. Throughout history, innovations such as indirect fires, aviation, precision weapons, or low cost improvised explosive devices have given asymmetric advantages on the battlefield. AI could be the next innovation to help us get inside our adversary's OODA loop, or worse if we do not keep pace, it will allow an adversary to create higher tempo for themselves in their decision-making cycle.

**Col Doug Schueler (Ret)**

## Reunion

**Org:** Hotel Company, 2nd Battalion, 7th Marines Vietnam Veterans Reunion (1965-1970)  
**Dates:** 8-11 June 2023  
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### September Edition

Themes: MCISRE and OIE  
 Author drafts due: NLT 20 June 2023

### October Edition

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Themes: History, Leadership, and Esprit de Corps  
 Author drafts due: NLT 18 August 2023

### December Edition

Author drafts due: NLT 18 September 2023

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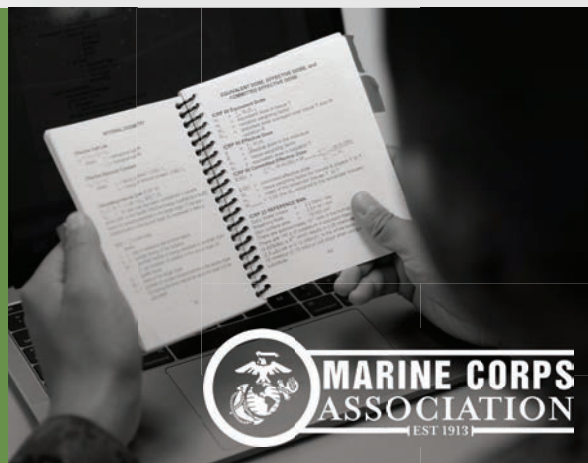
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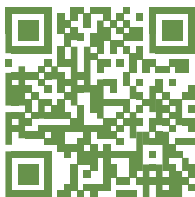
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**A MESSAGE FROM THE DEPUTY COMMANDANT FOR INFORMATION**

The Marine Corps is in a constant “fight for information.” Winning this fight today and every day gives us a lethal advantage in the next battle, the next war. Information and combat power are inextricably linked. Whether it is to ensure trust in the firing solution data for the next fire mission, achieve decision advantage through all domain reconnaissance, or gain access to key maritime terrain through a partner that trusts our reputational narrative, the fight for information is real, consequential, and never ends. Winning this fight requires talented Marines with a bias for action and a willingness to execute their duties to the highest professional standard. This is exactly what I have seen since serving as the Deputy Commandant for Information.

I am extremely proud of the insight, imagination, and innovation of our Marines as they take full advantage of Force Design concepts. For example, Marines from the Gulf of Finland to the first island chain are engaging in the fight for information by conducting all domain reconnaissance. This concept of Force Design directly supports the combatant commander and realizes a key aspect of Joint All Domain Command and Control. I have personally seen these Marines in action. They are not waiting for “textbook” instruction or solutions. They are smart, empowered, and focused on solving problems and mitigating challenges through an innovative spirit. We can all learn from their unconstrained view of opportunity, their technical savvy, and deep understanding of the digital environment in which they grew up. These Marines understand how fast technology changes and how a good idea today may not be so next year. Unleashed, they can help us solve numerous information challenges ranging from battlefield command and control, to targeting, to laying out phase maintenance schedules for complex aircraft. Marines today understand the power of information and how to fuse and correlate it to generate outcomes.

The office of the Deputy Commandant for Information is focused on providing the capabilities and authorities needed to make Marines successful. The essence of our approach is readiness. Using the Commandant’s guidance, we need to be “ready for what, with what, when?” Should a theater security cooperation event unexpectedly turn into a crisis, the “kit” our Marines require must move seamlessly from one to the other. We must not rely on a “digital iron mountain” of server stack farms and equipment. Instead, we must engage with the minimum information required to accomplish the mission, while minimizing logistics requirements and signatures. In such an environment, Marines require the right information capabilities based on the conditions of placement and access. This includes capabilities and methods from edge computation and storage to a lean “apps” approach through a ubiquitous transport-enabled cloud environment.

I have had the distinct privilege to work across many different parts of our MAGTF—from aviation to C4 to intelligence to cyber. It has kept me humble trying to maintain pace with our aggressive and innovative Marines. What I have learned is they have a disdain for the status quo. They always want to move forward. Force Design provides the opportunity to be innovative and to fully support our National Defense Strategy through our warfighting ethos. Semper Fidelis!

Matthew G. Glavy  
Lieutenant General, U.S. Marine Corps  
Deputy Commandant for Information





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# Task Force NETMOD

Delivering a network for competition and conflict

by Maj Mike "Eeyore" Kennedy

**M**arine Corps information technology (IT) must support Marine Corps operations throughout the competition continuum for both warfighting and business applications. A homogenous ecosystem enabling the creation, transport, and analysis of data is critical for closing kill webs, making critical decisions, and managing talent across the Marine Corps. Thus, network modernization writ large is not only essential for the continued success of Force Design and Talent Management but also lays the architectural runway for continuous modernization.

Figure 1 depicts how *MCDP 8, Information*, describes the compression of the levels of warfare. Within this com-

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pression, our observe, orient, decide, and act loops must turn fast enough to outpace our adversary, and the impacts of those actions can be live-streamed from the front lines of conflict to the front page in realtime. To thrive in such an environment, Marine Corps networks must facilitate this flow of data and information to inform decision making and close kill webs across

permissive, denied, degraded, intermittent, and latent environments.

We cannot fully realize the capabilities available in modern IT without the willingness to adapt how we operate and leverage data. For years, we kept and analyzed data in spreadsheets, and a few savvy individuals would post those spreadsheets on SharePoint so individuals can update and share that data. Part of network modernization included the migration from on-premise SharePoint to cloud-based SharePoint Online. Now, instead of simply posting a spreadsheet, one can build a robust data system in SharePoint Online and unlock the ability to make myriad connections, generate applications in-house, and automate processes.

## Key Efforts of Network Modernization

The Network Modernization Plan Iteration 2, released in 2021 and updated in 2022, delineated four lines of effort for the technical approach to network modernization: transport and infrastructure, hybrid cloud and data centers, applications and services, and cybersecurity. To date, significant advances have been made in each of these efforts, and yet there is much still to do. Updates to the Marine Corps Enterprise Non-secure Internet Routed Protocol Network (MCEN-N) were vital to alleviating technical debt and improving the experience of all users. These efforts also served as pathfinders to identify

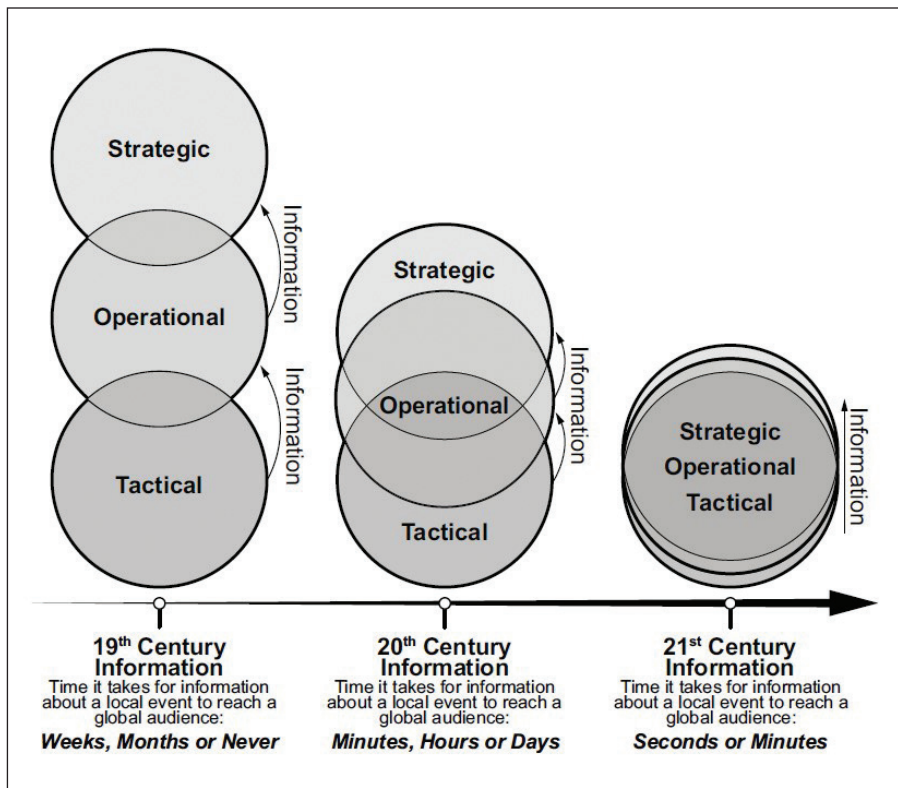


Figure 1. Information compresses the levels of warfare. (Source: Headquarters Marine Corps.)

potential friction points when modernizing Marine Corps Enterprise Secure Internet Protocol Routed Networks (MCEN-S).

MCEN infrastructure improved through implementing software-defined networking and streamlined network architecture. These efforts helped optimize the environment for the cloud by improving throughput and facilitating the scalability of the network. Additionally, next-generation firewalls in component enterprise data centers not only improved security but also increased data throughput and even provided a significant cost avoidance through the consolidation of components.

These infrastructure efforts helped optimize the environment for cloud computing thus providing users with a positive experience when using cloud capabilities such as Microsoft Office 365. Additionally, a significant effort is underway to migrate applications to the cloud. As we construct the architectural runway for cloud migration, the acquisition community is assisting application owners to determine the best path forward for their cloud migration experience. This deliberate effort is not only significant in managing workloads for those conducting the migrations but also in determining which applications are postured and funded to move to the cloud. The migration of applications and data to the cloud increases the availability and use of data to unlock the insights provided by machine learning and artificial intelligence.

Underpinning many of these efforts are preparations to implement concepts of Zero Trust security. These tenets are critical for securing Marine Corps data from adversaries by denying the ability to move throughout Marine Corps networks and accessing data. The enterprise cannot institute the principles of Zero Trust in a vacuum because they are interconnected with cloud efforts, data security, and identity management. In short, we must weave modern security practices with all modernization efforts.

### A Team-of-Teams Approach

While implementing the Network Modernization Plan, it became abun-

dantly clear that no one organization could deliver capabilities on its own. Instead, it required a team-of-teams approach to be able to deliver IT capabilities to the Marine Corps at the speed of relevance. This required a fundamental change in the way we acquire and manage IT. Operating in this manner required a commitment to cross-organizational and cross-functional collaboration that represented a significant change in relationships between elements of Headquarters Marine Corps, Marine Corps Forces Cyberspace Command, Marine Corps Cyberspace Operations Group, Marine Corps Systems Command, and the Program Executive Offices. To drive this change, the Assistant Commandant of the Marine Corps directed the establishment of Task Force Network Modernization (TF NETMOD) to be led by the Deputy Commandant for Information.

In many respects, TF NETMOD is a virtual organization in that there is no operational or administrative control over personnel. Instead, it is a coalition built around key components of network modernization. Much like the MAGTF links and centrally manages the capabilities brought by the Command, Ground, Air, and Logistics Combat Elements, so too does TF NETMOD. By bringing otherwise disparate organizations together, including the MEF and component commands, TF NETMOD can improve communication, remove impediments, and accelerate the delivery of key efforts.

Task Group Data and Artificial Intelligence focus on developing data governance and establishing an integrated environment for the rapid delivery of data and analytic services to warfighters and decision makers. Establishing the data standards and the Integrated Mission Data Fabric is vital to enable access to data across systems thereby enabling the use of data by decision makers.

Task Group Cloud Services focuses on the continued migration to the cloud and the required infrastructure to enable such a transition. This is a vital transition as it better enables the use of data and ensures its access. Subsequently, it provides a seamless and reli-

able enterprise to enable rapid kill-web closure.

Task Group Networks and Services' primary objective is to establish a unified warfighting network enabling the transport and use of data to close kill webs and facilitate decision making. Not only can MFCC defend such a network, but it also ensures that data generated and procured is not lost when tactical networks are broken down.

Task Group Talent Management focuses on providing the necessary support to the Deputy Commandant for Manpower and Reserve Affairs' efforts to modernize manpower IT systems. Linking Talent Management efforts with other modernization efforts is essential so the enterprise can remove blockers and facilitate transitions to the maximum extent possible.

These efforts are not without challenges, but we have willing partners in industry and the Navy to coordinate many of these efforts. Leveraging the successes of our Naval partners can facilitate aspects of naval integration while simultaneously accelerating Marine Corps efforts. In many respects, this involves utilizing solutions that share engineering commonality but merely differ in the configuration details necessary to operate on our networks.

Network modernization is a continuous process that *never ends*. As much as these efforts focus on technology, this is as much an exercise in cross-organizational cooperation and communication. The detailed planning between elements of the MAGTF provides the lethality, effectiveness, and responsiveness that makes the Marine Corps an effective force-in-readiness. Applied to IT acquisition and development, these same concepts can accelerate and streamline the delivery of capabilities to our fellow Marines in competition and conflict whether they are in garrison, deployed as part of a MEU, or part of the Stand-in Force.





# Teamwork Makes the (AI) Dream Work

Marines and machine learning

by Maj Andy Barton

In a recent experiment, the Defense Advanced Research Projects Agency pitted Marines against an artificial intelligence system.<sup>1</sup> Interestingly, the Marines handily defeated the artificial intelligence (AI) system. Despite working closely alongside them for six days, it failed to detect a single Marine during their infiltration test.<sup>2</sup> Any human with marginal combat-hunter skills would have been able to see that the pair of legs sticking out of the cardboard box or fir tree walking on the sidewalk clearly broke the baseline. Yet, the machine was oblivious. Why is this? From “smart” nuclear detection systems tracking the moon or mistaking reflected sunlight for nuclear missile launches, we are still reliant on human operators to place events into context and avoid catastrophe.<sup>3</sup> Unfortunately, these cases are exemplars of the current state of AI—highlighting that humans and AI simply function differently. These tales caution us to be deliberate when we deploy autonomous systems in our operational units.

## The Rise of the Machine?

AI has been in use for decades. It is already deployed in tactical formations and will be increasingly fielded over the next several years. We have been reliant on variants of automation for decades, yet we still have not figured out how to make them infallible. Most are intimately familiar with the unintended effects that plague technologies. Amazon’s Alexa babbles at random, the Nest thermostat turns homes into an oven, and the Roomba seemingly makes more of a mess. Yet, we are not worried. Often, the failures of machines simply

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*Marine Corps senior leaders visited the Johns Hopkins Applied Physics Laboratory to learn how artificial intelligence and machine learning can support the Corps’ modernization and recruiting efforts. (Photo by Sgt Kenny Gomez.)*

perplex us, leaving us to ask, “How can it fail this badly?”

Unfortunately, Marines and their AIs will not be compatible out of the box. This makes sense—even the Siri application on your iPhone spends at least some time learning your preferences. Admittedly, there is a big difference between a robot that cleans your house and a system that fights alongside humans. After interacting with an Alexa, realization quickly dawns

that throwing it in a rucksack and taking it on patrol is a recipe for disaster. These systems do not account for the behaviors of successful teams, which has significant consequences for the Marines that rely on them.

## Punch Drunk on AI

The DOD is using AI to help warfighters. Need AI to process terabytes of mission partner sensor outputs, translate them into targeting data, and feed

recommendations to shooters?<sup>4</sup> We can do that. Want swarms of autonomous vehicles to complicate adversary targeting and enable distributed operations?<sup>5</sup> Done! Perhaps you need to leverage the power of AI to make data-driven decisions.<sup>6</sup> We can do that too. The implications of these programs are that AI will be deployed throughout our enterprise. Pairing machines with humans has even been identified as a means to outcompete great-power competitors.<sup>7</sup> While the DOD envisions AI supporting humans as partners, a key element is missing. Deciding, communicating, and acting at machine speeds is not possible when teams of humans and machines are merely cobbled together. We must deliberately design systems to support their unique use cases and teams.

### **Don't Just "Sprinkle Some AI on it"**

Users must understand the limitations of the systems they interact with, especially given the consequences of misuse. This is demonstrated by the U.S. Department of Transportation's investigation into a series of high-profile vehicle crashes. The problem: Tesla autopilot and traffic-aware cruise-control modes have struck emergency vehicles or first-responder scenes at least eleven times.<sup>8</sup> It appears that operators disengaged themselves from driving their vehicles and instead trusted the AI to drive.<sup>9</sup> AI is not a magic black box that can outperform humans at any task. In fact, AI systems are designed to excel only in specific use cases. Failing to deliberately use systems within their boundaries and in ways that complement humans could result in loss of life and materiel.

The DOD learned this lesson the hard way during the 2003 Second Gulf War.<sup>10</sup> Using Patriot missile batteries to track objects and its algorithms to identify them, systems provided their outputs to operators via visual display screens. Batteries operated by human crews were thus forced to rely on a limited, screen-based subset of their environment. As any situation unfolds, the slice of information presented to a person helps them to refine observations, orient on the problem at hand, decide, and act.<sup>11</sup> Successful teams work

similarly—they must acquire, process, and act upon information, such as environmental factors, the task at hand, the limitations of their team, and the status of their goal.<sup>12</sup> Bad things can happen when the AI misinterprets this information.

After a string of friendly-fire incidents—one of which included Coalition attack aircraft preemptively engaging a Patriot radar to save itself, and two others resulted in aircrew casualties—the DOD opened an inves-

of machines and people that have partnered in chess and are an example that Marines could learn from. Initially, the machine begins by sensing the positions of pieces on the board. Comparing this data to patterns it was taught during deep or supervised learning sessions, the machine has been trained to recognize deployments on the board, infer conclusions based on these positions, and then provide tailored recommendations.<sup>18</sup> The human evaluates these recommendations based on context, orients the

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## ***Deciding, communicating, and acting at machine speeds is not possible when teams of humans and machines are merely cobbled together.***

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tigation.<sup>13</sup> Investigators found a classification problem with the system's AI. Because the training data fed into the system lacked specificity to prevent false identifications, the system fell back on what it knew—everything in the sky was some kind of a missile, and missiles are a threat.<sup>14</sup>

In many systems, learning occurs based on a set of training data, and interpretation of the world happens solely according to that data. When a data point lies outside of the training data, the system is prone to fail because it cannot match what it knows with what it sees.<sup>15</sup> A similar problem exists with biased data, like that previously used in Patriots. If everything the system learns is biased toward missiles, we should not be surprised when the system behaves in biased ways.<sup>16</sup> Ideally, this is where the human comes in and helps the machine to understand the exceptions. However, if the human is in a time-critical situation, and their information is limited to that which is displayed on a screen, it is hardly surprising that they orient incorrectly on the situation.

### **Centaurs as a Model**

As users, we need to understand what machines and Marines are inherently good at. This is especially true in teams, where members have unique roles and a range of skills.<sup>17</sup> Centaurs are teams

team on the new information, refines strategy, and then acts by deciding on the winning move. These centaur teams pair the machine learning, pattern recognition, and recommendation engines of an AI with the human's strengths.<sup>19</sup> The human provides context, strategy, and adaptation to the unexpected, infers the opponent's state of mind, and directs the action. Centaurs are so effective that even top-ranked opponents are handily defeated.<sup>20</sup>

Although chess games are not military operations, the principles that help centaurs win are still applicable. The player and the AI have unique roles on the team. Both teammates have a shared understanding and a common goal. Players understand the system's boundaries. The teammates can rely on each and know who to ask for backup.<sup>21</sup> Even the communications between the player and their machine are optimized! The player updates the machine in realtime, and the machine explains its recommendations in ways that avoid information overload. This is ideal behavior—winning teams communicate, coordinate, interact, and maintain an accurate mental model as they go.<sup>22</sup> Marines assume these behaviors as preconditions to our model of decentralized command and control; imagine how this novel combination could be used to close the observe, orient, decide, and

act loop faster than the adversary.

Our predecessors have observed this lesson before. Poor teaming behaviors, complicated user interfaces, and the fog of war led to a tragic engagement.<sup>23</sup> When the USS *Vincennes* accidentally engaged an airliner, Iran Air Flight 655, in 1988, the one constant in the situation was that its AEGIS correctly tracked the airliner’s kinematics throughout the seven minutes from liftoff to shootdown.<sup>24</sup> Undoubtedly, many factors contributed to the USS *Vincennes* incident; however, critical crew positions had to simultaneously work around the limitations of AEGIS, an ineffective team structure, and fight the ship. Ultimately, the correct information about what the USS *Vincennes* saw on its screens was disregarded because of the AEGIS limitations, the way that the human crew interacted with the system, and with each other.

### Different Flavors of Artificial Intelligence

Not all AI systems are the same, they have different capabilities—optimizing depends on finding the best fit for each use case. AI agents in use today are akin to Amazon’s Alexa or iRobot’s Roomba. Named “narrow-artificial intelligence,” these systems have specific use cases. Generalizability is absent—performing tasks beyond the limited confines of its programming ends poorly. For example, Google’s AlphaZero easily defeats experts in games of StarCraft II, but that does not mean it can be dropped into a Service-level wargame and wow participants with exceptional performance.<sup>25</sup> Generally speaking, AI systems are given a goal, they work towards the completion of that goal, and they learn the users’ preferences over time.<sup>26</sup> The all-in-one machine that can beat you at chess and then optimize your taxes is called “general artificial intelligence.”<sup>27</sup> General AI does many things equally well, including the exercise of creative, human-like thought; however, it does not exist just yet.<sup>28</sup> The distinction matters when we consider how AI will support Marines in the field.

One of the most important attributes of AI is also one of its biggest challenges.

Learning and adaptation may happen without constant human intervention. Because the system learns and is constantly growing in capabilities, we tend to think of AI as an advanced future system. The autocorrelation of tracks inside the AEGIS system in the USS *Vincennes* was AI. Tesla’s autopilot is also a form of AI. When it is constantly learning and growing, understanding how it arrives at its recommendations will be a challenge. Error boundaries could become opaque, and human partners could lose awareness of when the system is operating outside its ca-

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### Learning and adaptation may happen without constant human intervention.

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capabilities.<sup>29</sup> People come to implicitly trust systems, believing them to be more capable than they actually are. The Army observed these lessons. As a result, Patriot deployments and training data were revised. Outside of the DOD, the misuse of smart systems, such as the aforementioned Tesla crashes, continue to demonstrate that people must not overestimate their systems.<sup>30</sup>

### We Need Models Grounded in Team Performance

Marines expect any teammate to understand their role, how their tasks contribute to the whole, and where they may back us up when needed. Centaur teams demonstrate that this is possible with AI—if teams are designed correctly. The design of human-machine teams cannot take the performance of either agent for granted. Team designs should account for the inherent strengths of the machine partner. This machine teammate could then help humans in areas where they are weakest, enabling both humans and machines to perform at a higher level. The first step in doing this is to develop a conceptual model that captures the desired behaviors of team members. Supplying models of behavior

to designers, they may design machine partners that will help manned teams accomplish their mission without self-induced friction or fatalities.

Marines have recognized many of the technical challenges with human-machine teaming and are in the attack. The Service Data Office, nested under the Deputy Commandant for Information, is already addressing problems related to maintaining relevant training data within reach of those who need it.<sup>31</sup> The Marine Corps’ use of the Zero Trust cybersecurity principles, modern data management strategies, and the intended use of hybrid cloud as a warfighting means all align to organize and tag our data in meaningful ways.<sup>32</sup> Highly available, organized, and pre-positioned data gives Marines and machines alike the most up-to-date information to fight with. This information advantage enables Marines and machines alike to better understand their environments, accurately assess a situation, make informed decisions, and synchronize actions with partners.

Unsurprisingly, the Russian Federation and the People’s Republic of China are pursuing a competitive advantage over the U.S. military through the development and weaponization of AI.<sup>33</sup> This is more incentive to get our teaming concepts right the first time. After all, combat is hard enough without Siri getting in the way.

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# Cybersecurity in the Department of Defense

Advancing the approach

by Maj Jason Carter

## **N**eed for Change

During the 21st century, warfare enabled by the information environment evolved and continues to develop at a rapid rate for the foreseeable future. Advanced technology enables systems of integrated sensors and shooters to detect, identify, and prosecute targets across all domains. Technology advances are not limited to friendly forces and the nation's adversaries exploit advanced technology to their benefit. While technology advanced rapidly, the approach to cybersecurity has not. The common security approach throughout the early 21st century was based on a defense-in-depth strategy. Build a castle (data), moats (firewalls), and protect access to the castle. However, once a smart adversary gets past the moat, they can wreak havoc within the castle.

The current defense-in-depth approach will not meet the demands of persistent threats to the information environment nor provide sufficient protection as adversaries evolve tactics in the cyber domain. The DOD must evolve the way it protects the environment away from focusing on the security of physical network perimeters and establish a holistic approach that revolves around the protection of data within the environment, based on the concept of Zero Trust. Designing security around data and secure access to data elevates defense in depth to holistically secure the information kill chain.

Zero Trust is key to enabling data-centricity across the DOD. Data-centricity is critical to realize the vision of Joint All-Domain Command and Control, and Zero Trust is the cybersecurity

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fabric that sets the foundation. Zero Trust and data-centricity are crucial to rapidly integrating mission partners in a combined joint/coalition fight that does not require the construction of a temporary physical network infrastructure and the investment of finite personnel, equipment, and money.

## **Background/Summary of Zero Trust**

The concept of Zero Trust is not a new framework and can be traced back to late the 20th century. Google implemented the framework with the rollout of BeyondCorp in 2009, and their journey is chronicled in a series of blog articles on their website. In 2010, Forrester Research published a report on the Zero Trust Network Architecture that laid the foundation for how the IT industry can move away from the concept of trusted versus untrusted networks (i.e., the internet vs an intranet), but not until the last five years has industry started designing security based on a Zero Trust framework. The recent commercial adoption of Zero Trust intensified due to the evolving nature of cyber threats and the impact these attacks have on customers'/consumers' private data and the corporate bottom line.

So, what is Zero Trust? Zero Trust is a cybersecurity framework, not a

holistic solution we can buy out of a box and apply across the entirety of the Marine Corps, much less the DOD's information environment. In the DOD Zero Trust Reference Architecture, five tenets are articulated that create a lens to view this cybersecurity approach. These frame the problem set that Zero Trust is focused upon and guide the detailed planning to achieve the objective of a more secure information environment.

1. Assume a Hostile Environment: A level of hostility in the cyber domain is forever present, from competition to combat, with varying levels of escalation and complexities of threats posed. Threats take the form of nation-states, hacker groups, hacktivists, insider threats, or the accidental user; the threat is persistent; and DOD and industry should treat the information environment as hostile.

2. Presume Breach: The evolution of technology, at the rate of Moore's law, infers that threats and offensive capabilities will progress at a continuous rate. Offensive cyber operators typically have the upper hand because they only need to find an exploit to gain access to the environment, whereas defensive operations are focused on the entirety of the environment with particular attention to critical systems. This means that it must be assumed

that a breach will occur. This tenet highlights the need to limit the damage if and when an attacker gains access and prevent movement within the environment to more critical systems.

3. Never Trust, Always Verify: This tenet is within the framework name itself, never trust. This does not mean that nothing is ever trusted, just that we must explicitly verify that a known user is coming for a given device, on a specific network path to a specific application, to access authorized data, and are granted or denied the appropriate level of access based on those attributes.

4. Scrutinize Explicitly: All these attributes must be scrutinized in near-realtime to conditionally grant access, continually evaluate, and revoke access if necessary. Data must be collected by sensors, centrally logged, and made available to appropriate decision points to make policy-based decisions.

5. Apply Unified Analytics: All the above cannot be accomplished by a human. Analytics and automation must be leveraged to make access decisions, as they are today. Unified analytics leverages all resources and attributes from across the information environment and applies that against established baseline heuristics.

These tenets are the foundation that Zero Trust is built upon, but tenets are not a solution. To achieve the desired objectives of this framework, there are fundamental pieces to the puzzle. Secure access to data is central to the focus of Zero Trust. Data must be protected at rest and in transit through encryption. Data must be labeled and tagged to a common standard to ensure accessibility across the information environment. A single authoritative identity source is critical to ensure the correct user, device, or non-person entity (server or services) has the authority to access data. The single authoritative source centralizes a persona's access, and in the case of compromise, all access across the information environment can be revoked at the source—instantly. Segmentation at the macro (local area) and micro (specific service) limits the blast radius of an attack. Segmentation partnered with

protected data and authoritative identity enables detailed-level access policies across the environment to ensure the right person has the necessary access, to the right data at the right time.

Access decisions are enabled by comprehensive visibility of who and what is accessing the environment, where they are coming from and going to, if they are authorized access to specific data, and the behavior that they exhibit. To make these decisions, data points must be continuously collected throughout the environment from network devices, systems, services, software, etc. The data points must collect relevant information that requires application programming interfaces for all devices and systems in the ecosystem. The data points (user, device, software, location)

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### ***Secure access to data is central to the focus of Zero Trust.***

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must be collected in a central location to collate all heuristics and allow the system to make instantaneous decisions. The system must be able to compare the data points to a historical baseline that identifies whether the intended actions are within the scope of normal behavior or determine if an admin clerk is now trying to download the entire contents of a targeting database. If the actions fall within the scope of the roles and attributes, access will be allowed; if not, they will be denied and elevated to defenders for appropriate action. Additionally, a security orchestration and automated-response system can dynamically modify access policies to increase the level of scrutiny based on threats to the environment. Most collection and decision making is automated, informed by machine learning and artificial intelligence, but it does not remove the human from the loop. Processes that have a low impact on the environment can be automated to reduce the administrative burden, but Marines decide which processes to automate and dictate the parameters.

Overall, applying a Zero Trust framework implements security through all aspects of the information environment, centered around a Marine's access to required data. This holistic approach to cybersecurity requires the coordination and integration of people, processes, systems, and policy to a level that we have not seen before. However, the level of security is needed to compete against current and future threats to DOD and Marine Corps data.

### **Executive, Congressional, and DOD Guidance**

On 12 May 2021, the President issued the "Executive Order on Improving the Nation's Cybersecurity." This document officially started the U.S. Government on the path to implementing Zero Trust. Congress then passed the Fiscal Year 2022 National Defense Authorization Act that further refined the requirements for the DOD to develop a department-level strategy and for each Service to develop a Service-level implementation plan.

As a result, the DOD Zero Trust Portfolio Management Office was formally established in early 2022. The DOD Zero Trust Portfolio Management Office developed and published its Zero Trust Strategy, signed by the DOD Chief Information Officer, in October 2022. The strategy provides high-level goals, strategic intent, and overall direction for the Services to implement Zero Trust by the end of Fiscal Year 2027. The strategy and the DOD Zero Trust Reference Architecture offer a level of detail for the Services to apply the framework within each organization while providing latitude to approach an implementation that meets the unique mission requirements of each Service.

### **What does Zero Trust mean to the Joint Force?**

DOD and Joint Staff policy is directed toward an enterprise approach, standardizing tactical networks, and the interconnection of those segments across the DOD. The integration of the specific command and control systems operating on those network segments has largely been dependent upon how the two commands (ex. Army/Marine



Corps) coordinate that integration. Using common programs of record across the DOD provides a level of interoperability for specific air and fire support coordination systems, to include the Advanced Field Artillery Tactical Data System, Theater Battle Management Core System, and Joint Automated

extends the reach of the operator. An operator with a network connection can securely access resources and mission data from other resources that are connected to a network, regardless if that is through an Army, Navy, Air Force, Marine Corps, or commercial internet connection. The framework reduces the

ing at the secret and below releasable level. Mission partners will be cleared to access the environment and access information that is releasable to that partner. Through the implementation of Zero Trust principles, the DOD can host most mission partners in a single environment vice creating a unique network to share information with specific partners, for a limited period, for a specific mission.

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**Through the implementation of Zero Trust principles, the DOD can host most mission partners in a single environment vice creating a unique network ...**

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Depp Operations Coordination System, but the overall construct and integration of the systems of systems are often unique to the use case. Joint All Domain Command and Control seeks to change that construct and create a system of systems that is integrated regardless of the uniqueness of Services, commands, or coalition partners executing an operation. The data, systems, and operators require a level of security necessary to operate across the joint and coalition information environment and enter Zero Trust at a DOD and coalition level.

To achieve this level of integration there are some fundamental requirements and common standards that need to be developed that cannot simply be a DOD Instruction or policy letter. As a Joint Force, and with appropriate coalition partners, we must develop and publish common technical standards for how we share information. The standards are baked into requirements documents that guide the production and procurement of material solutions. Common standards around data tagging, identity attributes, approaches and standards for software development, and common metrics for metadata enable access decisions, to name a few. To be interoperable, the Joint Force does not always have to buy the same product if it incorporates the same technical standards.

Implementing the framework and underlying technologies that enable Zero Trust expands the fabric of the DOD information environment and

blast radius of a denied environment because it shifts away from a hierarchical network-centric architecture, which relies on a Service or command-specific structure for access to data. Mission-critical data is being pushed and pulled from the tactical edge, Zero Trust helps ensure operators have secure access to that information at the time and place of need.

Sharing standards with our coalition partners enables the integration of a mission partner environment. Operating with mission partners is the way the United States will fight and win future conflicts, in which information sharing, and integrated operations will be key. The DOD is creating a common software-defined, Zero Trust-enabled environment for information shar-

**What does Zero Trust mean to the Marine Corps?**

The design of Zero Trust and the enabling technology enables the creation of a seamless operational environment that supports the Stand-in Force (SIF) and enables the vision of *Force Design 2030*. The type of connection is irrelevant if data cannot pass across a connection. SIF operating 30 miles apart may not have a direct satellite or line-of-sight link between the two, but if Marines can access a 5G, LTE, or Wi-Fi hot spot, then they can access mission-relevant data. The connection may impact how the information is accessed, but that is only one aspect of how Zero Trust makes conditional access decisions. If data is being accessed or requested outside of the weapons engagement zone the Marine and their device can access any connected service, they just need one way out to the data. Implementing Zero Trust and the core enabling technologies are critical to ensuring



Cybersecurity poster. (Graphics by Naomi Goward.)

SIF's ability to operate in a distributed environment.

Zero Trust capabilities will exist at the Marine Corps Enterprise Network enterprise level that may not be needed at the tactical level in a denied, degraded, intermittent, or limited bandwidth environment. Those MCEN tactical-edge capabilities need to be scaled to the appropriate level, while in a fully connected state resources will be consumed from the enterprise. One constant is that Marines need to accomplish the mission, so appropriate-level policy control should reside with the commander that owns the mission-relevant data. Information security will remain, but a commander should have an influence on their portion of the environment based on the conditions and threats that exist at the time.

To implement this cybersecurity framework, we do not flip a switch and get Zero Trust. However, the Marine Corps has and continues to make

a significant investment in technology modernization across the MCEN. The Service is investing in the capabilities mentioned above and is working with the industry to fully develop capabilities and services that have already been procured. The fiscal and personnel resources the Marine Corps has for the operation and maintenance of the MCEN is finite. There is a number of applications, devices, technologies, and cybersecurity tools on the MCEN today that have been layered over time. To build the information environment of the future, the Marine Corps must make hard decisions and divest of duplicative technology and tools where possible to afford the environment of the future.

Finally, implementing Zero Trust cannot be accomplished in silos or a vacuum. The process is a whole of Marine Corps effort. This effort will require coordination and cooperation across Headquarters Marine Corps, the fleet,

the supporting establishment, and industry. It will require training, not only at the schoolhouse but across the entire force to increase the awareness of how and why the Marine Corps is shifting its cybersecurity approach. If implemented properly, a typical Marine should not see a difference in the way they operate on the MCEN, and it should improve the overall user experience, whether a Marine is executing a kill chain or remotely working in garrison. Sharing a common vision, cooperation, education, and training across the force enables the Marine Corps to achieve a data-centric environment, secured by a Zero Trust Architecture, enabling SIF to fight and win in competition or conflict, and aligns with the *38th Commandant's Planning Guidance*.



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Our Members Are the Mission

# Revolution, Not Evolution

## Human-machine teaming and the SIF

by Maj Andy Barton

**F**or this article, the author teamed with OpenAI's GPT application, a novel natural language processing algorithm, to examine how data-centric networks support human-machine teaming and Marine Stand-in Forces.

Deciding, communicating, and acting are no longer solely within the human domain. For that matter, neither is warfighting. Intelligent autonomous agents do many of the dirty or dangerous things that humans used to do.<sup>1</sup> While we certainly classify combat operations as dirty or dangerous work, machines, which range from software "bots" and robotic process automation to an autonomous platform, will not continuously operate without feedback from their human teammates—sorry *Terminator* fans.<sup>2</sup> Teaming between Marines and machines necessitates a different technical means to support our system of command. Put simply: the communications methodologies must change to meet the needs of the team, whether the team is the next-generation fighter and its autonomous wingman or small formations of Marines and the smart systems they will use to put enemy forces at risk.<sup>3</sup> We are witnessing a revolution from human and network-centric models of warfighting to data-centric ones.

### From Human-Centric to Data-Centric

The human-centric approach to warfighting was dominant until the 20th century and focused on the use of ground forces and firepower to achieve military objectives. The human-centric approach to warfighting is focused on the actions and decisions of individual soldiers and commanders. This approach prioritizes the role of leadership, training, and the develop-

>Maj Barton's bio can be found on page 12.

ment of Marines' skills, knowledge, and abilities. It is based on the belief that the actions of individuals and commanders are the primary drivers of success in battle. Commanders make decisions based on their personal experience, intuition, understanding of the situation, followed by warriors executing these decisions.<sup>4</sup> This approach emphasizes the importance of the *human touch* in warfighting and places a great deal of emphasis on individual initiative, leadership, and decision making. However, developments in our means and circumstances necessitate changes to our command systems.<sup>5</sup>

The 1990s saw a marked shift toward a network-centric approach. Network-centricity emphasized the use of advancements in information technology—sensors, networks, and data processing systems—to increase operational effectiveness.<sup>6</sup> This approach aimed to improve the ability of military forces to collect, process, and disseminate information and then coordinate action. The goal was to create more flexible and agile formations and platforms that could share information and resources in realtime to make faster and more accurate decisions. In theory, fewer platforms were required to complete a given mission and decision making could be automated. Commanders would have a better understanding of the battlefield and make decisions based on a complete and accurate situational awareness.

This worked well for twenty years; so well in fact that it inspired adversaries to envision novel strategies and capa-

bilities, such as the People's Republic of China's assassin's mace programs.<sup>7</sup> However, command and control (C2) methodologies needed to adapt to keep our strategic advantage. A data-centric approach is the next logical step in the evolution of C2. Why? Because the network-centric approach did not realize its full potential, technological limitations and system integration was, and remains, a complex and challenging problem.<sup>8</sup> With new advancements in technology—especially in artificial intelligence (AI), unmanned systems, and data storage and processing—it is finally possible to collect, process, and disseminate large volumes of data in realtime. Now networks must accommodate data, as opposed to the data needing to accommodate the network.<sup>9</sup> Thus, data-centric warfare is a more flexible and adaptable approach than a network-centric one, calling for the fusion of imagery, signals, and targeting data across platforms, sensors, and systems. Additionally, a data-centric approach supports better decision making, situational awareness, and faster response times—critical success factors in modern warfare.

### Data Structures Matter

Because of our envisioned operating models, technical means, and pace of operations, we cannot afford to be just human-centric anymore.<sup>10</sup> At this point, cynics will roll their eyes and say that they have seen this before. Fair criticism, but the secret sauce is what matters here. Our previous operating models assume a data mesh. A data mesh is a decentralized model that promotes autonomy and treats data like a tangible product, similar to code or hardware that has its own lifecycle, owners, and consumers.<sup>11</sup> This means that teams can work independently with their own



data. We use this model to give Marines more control over their data so that they could manage their diverse data sets in a decentralized manner. This model is challenging to use in complex organizations and usually requires significant changes to processes and systems. Decentralized data management is one of the key factors that has contributed to our interoperability challenges. However, we may get around these limitations by taking a cue from commercial industry and embracing data fabrics.

Continuing the analogy, a data fabric is the key to our secret sauce and is an important part of our strategy to rid the Service of siloed information. A data fabric is a unified and centralized, yet flexible, data infrastructure. It allows Marines to integrate data from a wide array of sources and tools to help them analyze their data, discover insights,

this is the Integrated Mission and Data Fabric. The Integrated Mission and Data Fabric is the integration fabric of our warfighting capability, enabling all seven warfighting functions to disrupt and turn inside the adversary, close kill webs, and provide a battlespace picture.

### **The SIF is Not Just Marines, it is Marines and Machines**

You have probably already heard of all this, which we call data-centric warfighting. You may also know it by other names; we generally call it Project Overmatch or Joint All-Domain Operations. These concepts prioritize the collection, analysis, and dissemination of data to gain an advantage over adversaries.<sup>13</sup> These work best with a common data fabric in place—a common network infrastructure that gathers, processes, analyzes, and distributes data harvested

This quick, data-exchange burst does not just support humans as machines will rely on information generated by and exchanged with other machines to complete their assigned tasks.<sup>15</sup> Fusing this information enables our Marines to quickly identify and track enemy assets, respond to actions, anticipate their next move, and place adversaries at risk.

The concepts prominently feature highly networked intelligent autonomous systems and humans operating as teams. A common data fabric, enabled by a diverse and survivable array of tactical data links, supports human-machine teaming by providing a seamless flow of multi-domain sensor information between human partners and machine systems. Relevant information improves teaming dynamics and can enable commanders to quickly engage the enemy.<sup>16</sup> Automated extraction, transformation, and loading of targeting data by different platforms, systems, and cells become possible with this common data fabric. These data integration processes leverage ML to help both humans and machines identify patterns and trends. Additionally, a common data fabric enables mission command by providing commanders with a common operational picture. A common operational picture fed by many platforms with all-domain capabilities enables commanders and Marines to better understand their environments, quickly and accurately assess a situation, make data-driven decisions, and coordinate and synchronize actions with the larger naval force.<sup>17</sup>

### **C2 is C2**

By providing a common operational picture, commanders would be able to quickly and easily direct their human-machine teams to key objectives and adjust their plans as necessary to respond to feedback and changing conditions. Injection of fresh data points into a common data fabric would also enable forces to better coordinate and synchronize their actions. Such communication and coordination improve the overall performance of the larger team allowing them to more effectively engage the enemy and remains in harmony with commander's intent.<sup>18</sup> But

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***Decentralized data management is one of the key factors that has contributed to our interoperability challenges. However, we may get around these limitations ...***

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and visualize results. In this model, data flows from an edge node to a centralized processor. Along its journey, it is tagged, cleaned, normalized, and framed against custom data models, related to different data contexts, and evaluated by analytical tools. A data fabric is ideally used when there is a need for an integrated data structure, or when there may be requirements for data to be easily accessible and understandable across an organization.<sup>12</sup> Our operational plans to deploy large quantities of sensors and edge nodes will generate significant volumes of data that have to be ingested in a common data store to facilitate shared awareness. Marines could use such large data sets (e.g. intelligence and logistics data) and derive the composition and disposition of adversary forces, feed machine learning (ML) tools, and ultimately predict adversary intentions. Our plan to do

across multiple domains, platforms, and systems. It enables a seamless flow of information between different platforms and enables the sharing of data amongst commanders and formations. Most importantly, these concepts and the investments in data science, machine learning, and AI that are critical enablers serve to unleash the talents of our individual Marines.<sup>14</sup>

From a Project Overmatch and Marine Corps Stand-in Force construct, a common data fabric would enable data-centric warfighting methodologies by providing commanders and Marines with a comprehensive view of the battlefield. It would support the integration of joint and coalition sensor systems and platforms—from under the sea to various Earth orbits—to provide realtime situational awareness of the environment, enemy movements, capabilities, and intentions.

wait, how do C2 concepts designed for use in human teams apply to teams with AI integrated throughout?

Interestingly, the C2 doctrine that we have is still fundamentally applicable in this data-centric warfighting approach. For instance, *MCDP 6* and *MCDP 8* focus on how to conduct operations in a rapidly changing and complex battlefield environment.<sup>19</sup> Doctrine provides guidance and principles for how the human half of the team has traditionally operated; however, the fundamentals for planning, executing, and assessing operations remain relevant. Why? Because both *MCDP 6* and *MCDP 8* stress the importance of understanding and leveraging the information environment, including the use of advanced technologies, to gain a decisive advantage over the enemy. The new *mass* is applying the right information at a time and place of our choosing to enable local superiority.

In the context of this discussion, data-centricity and human-machine teams can enable commanders to more effectively sense their environment via realtime, actionable information, aggregate it to observe battlefield trends, make assessments, and spur teams to act. Relevant, multi-domain data can be filtered and retrieved at the speed of need. The filtering mitigates information overload while the rapid flow of information to the right actors at the right echelon allows teams to make faster and more informed decisions, which can ultimately help them out-cycle adversaries. Expressed in this way, the relationships to Boyd's orient, observe, decide and act (OODA) loop, mission command, and maneuver warfare are evident.

What will be different in this fast-paced future fight will be the role of some human partners. Human actors will be watching screens to take cues for actions, not make decisions. Fights that occur at machine speeds imply that human sense-making and reaction times are too slow; after all, inattentive commercial vehicle operators already demonstrated that humans struggle to quickly sense, aggregate, assess, and act before their autopilot led to a crash.<sup>20</sup> In this data-centric context, however,

human partners can coach machines and quarterback the actions that a machine takes. Human partners can also supervise machine-to-machine interactions, looking carefully for indicators that machine partners are operating outside their intended boundaries.<sup>21</sup> Humans can even help machines act within a commander's intent by framing enabling actions based on a tailorable confidence interval that characterizes the commander's risk appetite.<sup>22</sup>

In the context of human-machine teams, enabling technologies, protocols, and standards for a common data fabric would allow for seamless communication and coordination between

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**... human partners can coach machines and quarterback the actions that a machine takes.**

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the human operators and the machines. This would enable the teams to react quickly and make decisions based on the most current information available. It would allow commanders to better anticipate the enemy's next move, make more informed decisions, and coordinate and synchronize the actions of human-machine teams.

We must have a clear understanding of the roles and responsibilities of each member of the team informed by the capabilities and limitations of each agent. The types of machines being used, their communication and connectivity capabilities, and their ability to integrate with a common data fabric will influence the deployment model. Additionally, human and machine partners will need information on the status and performance of other machines. It is also important to have a clear understanding of the data and information that is being shared between the human-machine teams and how it is being protected and secured.

Finally, accurate and timely information about our teams will be essential

for Stand-in Forces. Human-machine teams will need to interact with a common data fabric by utilizing the data and information stored within it to make decisions and carry out tasks. The machines will be able to access and process the data in the common data fabric, use it to inform, and perhaps, explain their actions and decisions to human teammates.

**Time to Get Busy**

Evolution to a data-centric organization implies a cultural transformation as well as a technical one. After all, data is essential to every warfighting function. In line with *Talent Management 2030*, the Marine Corps must create, cultivate, and enhance AI literacy while establishing supportive policies.<sup>23</sup> Therefore, it is imperative the Marine Corps have both trained experts in data and AI-related fields as well as educated Marines that have an understanding of how to use data and AI-based tools to solve problems. After all, analysis is what makes data useful in combat.

Our current infrastructure and practices are human-level, siloed, and inadequate to leverage data, AI, and ML.<sup>24</sup> We need a democratized, federated enterprise architecture that supports applications regardless of hosting environment, and contains a fully connected common service data application programming interface (API) access hub. Bonus points if we can incorporate standardized data fields and a family of common standards. When complemented with federated learning algorithms, the algorithms at the edge can distribute important insights to respective systems as opposed to link-saturating data sets. This would enable our Marines to effectively communicate with the Joint Force and mission partners.

Finally, we need responsible and ethically developed algorithms. This prevents the black box of mystery problems common with complex algorithms. Incorporate periodic and repetitive test and evaluation events to ensure that the system has the same operating boundaries and performs as intended. This will be essential for human-machine teaming constructs, as humans will be

taking guidance from machines in some instances.

Now is the time for the good news. The Service Data Office, nested under the Deputy Commandant for Information, is proactively addressing these concerns and many more. This office is leading efforts to enable our Marines to achieve information advantage by placing data at the center of Marine Corps operations.

## Conclusion

The Marine Corps must prioritize specific problems to solve and identify where it will accept risk. Human-in-the-loop operations impede response time and may lead to battlefield failures because authoritarian innovators have no qualms about pulling humans out of the loop and fighting at machine speeds.<sup>25</sup> For a peer adversary, disrupting our network-centric pay, orders, and logistics processes have become trivial. The evolution to a data-centric operating model allows commanders to quickly access and analyze large amounts of data from a variety of sources, including sensors, unmanned systems, and other platforms, but more importantly, it is threat informed. Advances in edge computing and storage capabilities means realtime data can be used to identify patterns, trends, and potential threats, allowing commanders to anticipate and respond to enemy actions more effectively. Put into the context of Stand-in Forces, a data-centric network can be used to enhance the ability of Marine forces to disrupt and degrade an adversary's ability to project power and place enemy forces at risk.

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# Understanding the *Why* for a New Marine Corps MOS

Maritime space officers

by Capt Edwin M. Latrell, Capt John T. Miller & LCpl Hugo Parra

## Executive Summary

The Marine Corps' establishment of a new primary MOS for maritime space officers (MSO) demonstrates the resolve of the Corps to utilize technological development across multiple sectors to advance tactical-level operations. The creation of MSOs serves to place the Marine Corps in a position to compete against potential future adversaries by leveraging spacepower generated throughout the DOD. MSOs support commanders operating within the weapon engagement zone of a potential adversary in accordance with the Marine Corps *Concept of Stand-In Forces*. This article is the introduction to a series of articles that seeks to explain in common language what MSOs are, what they do, and how they function as force multipliers in both deliberate and dynamic mission planning. The goal of the series is to familiarize the general population of the Marine Corps with one of the Corps' least understood jobs.

**“Hey, are you the Space Guy?”**

**—Typical introduction of an ops planner during a meeting**

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## Introduction

It is hard not to notice the energy and attention generated by the recent advancement and expansion into the space domain. The collective effort by both national and commercial sectors to develop the most accessible part of space is increasingly referred to by the community of space professionals as a *new space race*, and seemingly no one wants to be left behind. The rapidity of the development and advancement into space is such that those studying the events argue that a *fourth industrial revolution* is underway, and those that hesitate to exploit the benefits of such activity will be left struggling to catch up.

In 2022, force structure changes were made within the Marine Corps

to address the need to stay abreast of increased warfighting capabilities made possible by advancements within the space domain.<sup>1</sup> The most observable of these changes was the establishment of a new primary MOS (PMOS), 1706—Maritime Space Officer. However, few outside of the information occupation field genuinely understand the role that MSOs play in current operations. This article serves to familiarize Marines with the new PMOS, the reasons for its creation, and why the Marine Corps desired to create organic space professionals who can currently provide space support and leverage joint space control assets in support of Marine forces executing Expeditionary Advanced Base Operations through the Marine Corps *Concept of Stand-In Forces*.<sup>2</sup> It also ex-

plores how Marine space officers can effect an application of spacepower at the tactical level by leveraging space support to the operational commander.

This article is the first in a four-part series aimed at providing a common understanding of what MSOs are, what their focus is, and how they advance the ability of the operational forces to achieve their missions at any point along the spectrum of conflict. The first article is intended to introduce MSOs to a general audience of Marines by exploring the formation of the 1706 MOS, identifying and defining key terms specific to MSOs, and outlining ideas that will be expounded upon in the series. The second article will examine the overall professionalization of MSOs, beginning with the required training pipeline, and then exploring additional space education courses and programs that will further develop Marine space professionals. The third article in this series focuses on the ability of MSOs to transition from general support to a direct-support role, as well as advancing beyond the limits of simple space support to planning. The final article will deep dive into what space support to operations looks like today, how it will be utilized in *the fight tonight*, and where the Marine Corps application of spacepower is trending in the next five years.

The overall intent of the series is to generate conversation among Marine warfighters regarding how space support can enhance systems overmatch, contribute to the prevailing narrative, and increase force resiliency at the operational and tactical levels.

### Key Terminology

To introduce the role of MSOs, it is necessary to establish several definitions for terms used within the spacepower community of interest. The first of these terms is *spacepower*. The Space Force's capstone publication *Spacepower: Doctrine for Space Forces* defines spacepower at the national level as "the totality of a nation's ability to exploit the space domain in pursuit of prosperity and the national interest."<sup>3</sup> Additionally, the same publication makes a distinction between *national spacepower*, and that of *military spacepower*, which is a

subset of the former. Military spacepower is characterized by its direct relation to conflict and how military space forces will "contribute to winning our nation's wars."<sup>4</sup> The publication goes on to identify the purposes of military spacepower:

1. To preserve freedom of action.
2. Enable joint lethality and effectiveness.
3. Provide leadership with independent options to generate effects.<sup>5</sup>

As mentioned above, it is noted by the authors that the working definition of spacepower is arguably contentious; however, a detailed examination of the debate regarding spacepower is beyond the scope of this article. The definitions of both national and military spacepower provided by the Space Force are instructive and serve to bind the conversation regarding the tactical application of spacepower by MSOs and other Marine space professionals. The term *spacepower* is therefore utilized throughout the series to reference space-enabled capabilities employed to achieve one or more of the identified purposes of military spacepower.

The term *space professional* is also used throughout the article as the 1706 PMOS is not the only space MOS within the Marine Corps and accordingly represents the total number of Marines serving in space-related billets. Additionally, it should be observed that the Marine Corps is not the only Service whose members serve in space-related billets. The term *space professional* is therefore used to describe any military service member or civilian whose occupation or billet is directly connected to the space domain. All space professionals comprise the spacepower community of interest.

### Recent Developments

The Marine Corps is not the first branch of the military to formalize the establishment of a space professional PMOS. As the global competition to leverage spacepower becomes more contested, the United States reasoned that the creation of a military branch dedicated to the space domain effectively stated that America regarded space like all other domains, as a warfighting

domain—one that needed a military Service branch to provide security of U.S. national interests within space. To remain competitive in leveraging spacepower, the United States established the Space Force and re-established the U.S. Space Command in late 2019.<sup>6</sup>

The nation's newest military branch operates with an expressed mandate to assume the lead on spacepower generation within the DOD. While the Space Force undertakes many unique missions, the most important aspects of its mission set are the preservation and enhancement of its sister Services' combat capabilities.<sup>7</sup> However, enabling the Space Force to effectively integrate spacebased capabilities across the DOD requires that each Service have dedicated spacepower professionals who have formalized training. This requirement to have a cadre of professional space officers provided the impetus for the creation of dedicated MSOs within the Marine Corps.

While most military service members are aware of the above, many do not know that space officers are not new. Even fewer are aware that every branch of the military has had some form of space officer or space officer billet for the better part of the last twenty years. However, previous Marine Corps officers assigned to fill the billet of a Space Operations Staff Officer (formerly the 0540 MOS) found themselves serving in that billet more by accident than design. The knowledge gained by officers serving as an 0540 was largely useful only while those officers were serving in that billet. The temporary stewardship of space billets by transient officers only serving one tour of duty in a spacepower billet resulted in fostering an increasing gap in formal space professionalization within the Marine Corps.

In order to be able to truly integrate military spacepower generated across the DOD, the Marine Corps identified the need to develop and retain highly educated and qualified Marine officers to fill spacepower billets.<sup>8</sup> Further elaboration on what the formal professionalization process looks like is the subject of the second article in the series where the authors will examine the current 1706 training pipeline as well as

introduce additional space education and training courses available to any Marine.

**“Hey, don’t turn this into a space primer.”**

**—Common admonition to spacepower professionals**

**Making Maritime Space Officers**

The move to create a primary MOS for space officers is intended to preserve the knowledge gained through formal schoolhouse education and the professional experience attained through their time filling the role of a spacepower officer within the fleet.

The intent of the Marine Corps’ efforts to establish a career path for spacepower professionals is to produce highly effective space support and space control officers that can leverage spacepower in support of tactical-level operations. As MSOs fall within the Information Maneuver Occupational Field, the Deputy Commandant for Information retains control over the following aspects of MSO generation:

1. The development of the educational training pipeline.
2. The activation/conversion of MSO billets throughout the fleet.
3. The expansion of the total cadre of spacepower officers within the fleet.<sup>9</sup>

In September of 2022, the first nineteen MSOs were identified and slated to begin filling billets across the Marine Corps.<sup>10</sup> These nineteen officers are the first step in the process of building up the number of MSOs, which is expected to take five years, each year more officers will be identified to execute a lateral move. The full cadre of MSOs within the Marine Corps is expected to cap at a total of 60 officers by Fiscal Year 2027.<sup>11</sup>

The implementation of a new PMOS for spacepower professionals did not create a new structure within the Marine Corps. The total number of Marines remains the same, even as

the structure within the Marine Corps’ total strength shifted to accommodate a relatively small number of initial lateral moves into the new MOS over a period of five years. The reason driving the slow-growing of the MOS is bounded by the realities inherent in the process of reallocating existing personnel structures to dedicated spaces billets. Ultimately, the need to ensure that the immediate requirement for such officers throughout the fleet is met while ensuring that officers approved to execute a lateral move into space can complete the necessary training to perform the duties required of an MSO.

**““Hey, can you generate some space products or effects?”**

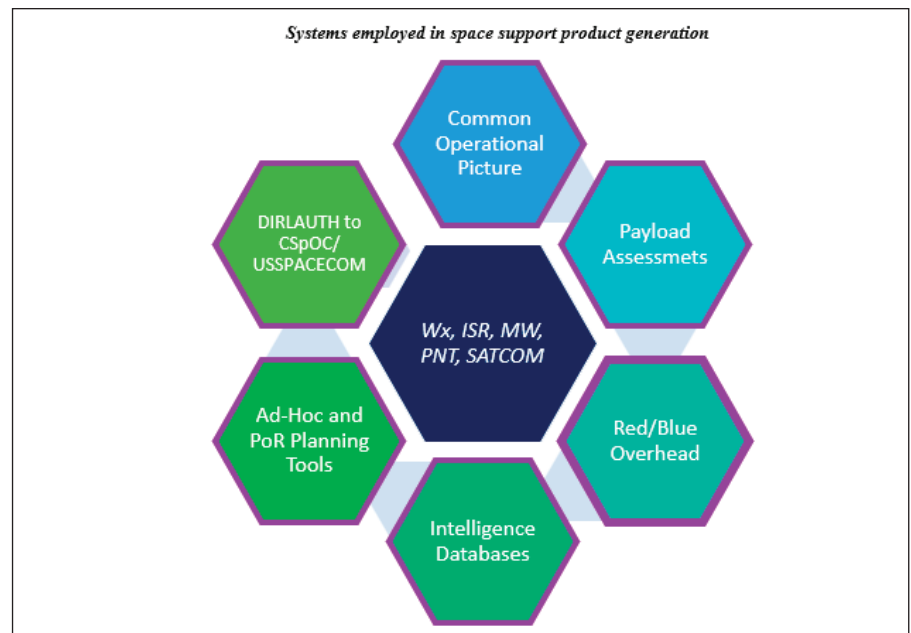
**—Common request made to MSOs**

**So How Will Marines Utilize and Apply Spacepower?**

Presently, the Marine Corps possesses the ability to provide 24-hour general space support to commanders world-

wide. While currently retained within the MEF Information Groups (MIG), each MIG can leverage space support to units operating within the MEFs. The support can be temporary or enduring, though prioritization of competing requests currently limits each MIG’s ability to support the entirety of their respective MEF. Alternately, when Marine units are attached to a combatant command, the space support provided comes from the respective combatant command’s staff or from MARFOR-SPACE, depending on the nature of the request and the ability of the specific terrestrial geographic combatant command’s ability to provide such support. As the cadre of MSOs grows, more billets will resolve within the MEUs and the other combatant commands.<sup>12</sup>

The ability for Service-retained MSOs to provide general support to units requesting such support is enabled by a federated systems-based enterprise (see Graphic 1). Space support to planning consists of an iterative process of leveraging a collection of systems across multiple levels of classification to produce planning-support products in support of the commander’s decision making. The graphic below employs generic terminology for these systems; however, a detailed elaboration of these



**Graphic 1. Conceptual visualization of the enterprise of federated systems and processes employed to generate space support. (Graphic provided by author.)**



systems is contained in the third article of this series.

Space support available to Marine warfighters today is designed to enable operations across the spectrum of competition and conflict by aiding both deliberate and dynamic planning processes. The inherent limitations of such a process are well known and currently being addressed by the community of space professionals working across the DOD; however, elaboration is beyond the scope of this article. MSOs are currently working to address how Service-retained support can move from fulfilling a general-support role to a direct-support role as described in the Marine Corps *Concept for Stand-In Forces*. The third article in this series will elaborate on the process outlined above, focus on the ability of MSOs to transition from a general-support role to a direct-support role, and illustrate how spacepower professionals in the Marine Corps are likely to advance beyond the limitations of simple space support to planning.

**“Hey, when are they going to send you into space?”**

**—Common attempt at humor when meeting an MSO**

### Alignment of Maritime Space Officers

There is a general misunderstanding of how the Marine Corps employs space operations in support of the FMF. Through iterative design and wargaming, the Marine Corps is currently going through the process of learning to employ emerging capabilities and essentially formalizing what right looks like. Though current space support operations and the Marine Corps’ *Tentative Manual on Expeditionary Advanced Base Operations (TM EABO)* offer strong indications of what the MSOs are expected to provide, the present inability of MSOs to affect both space support and space control limit the pres-

ent role of MSOs supporting EABO.<sup>13</sup> It is argued in the final article of this series that the future fight will necessitate an increased operationalization of MSOs and will further elaborate on what that entails.

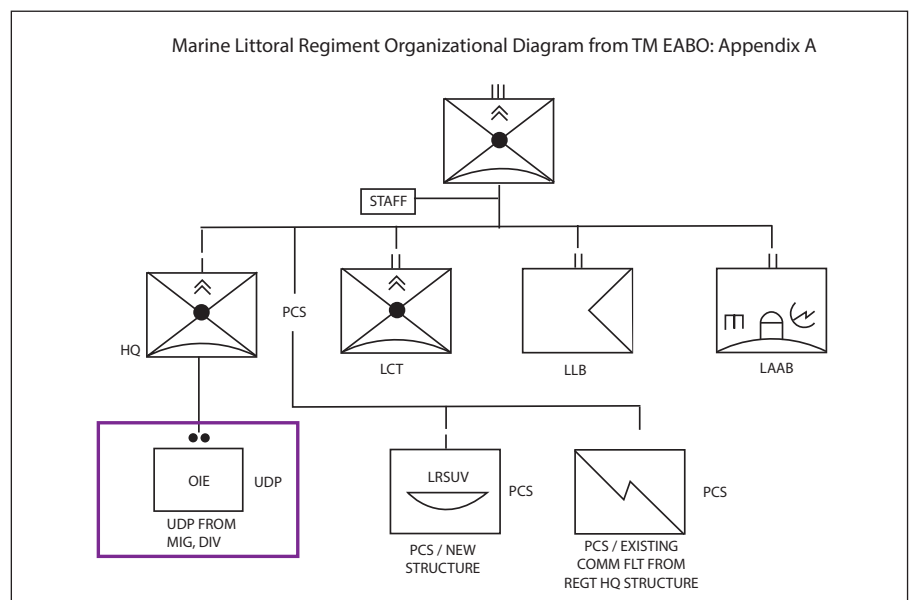
**... there is currently no guide for the employment of space support.**

The Marine Corps’ *A Concept of Stand-In Forces*, released in December 2021, explains the concept of employment for tactical-level forces within the weapon engagement zones of potential adversary nations as a means to deter potential aggression and serve as a prepositioned rapid-response force when deterrence fails.<sup>14</sup> The Stand-in Forces concept is an extension to the *TM EABO*, dated 5 February 2021, in which the Marine Corps makes clear its focus to remain forward deployed. According to the Stand-in Forces concept and the *TM EABO*, the forward position of Marine forces in concert with partners and allies enables U.S. power projection to disrupt the pacing threats and challenges represented by peer and

near-peer adversaries worldwide.<sup>15</sup> This posture by the Marine Corps serves to counter advances by competitors seeking to develop and mature their precision-strike regimes. Without a persistent forward presence, adversaries will be able to fully develop their precision-strike capability and engage with greater ferocity and lethality, space-enabled attacks, and counter-space effects against the United States’ partners and allies.<sup>16</sup>

The Marine Corps *Commandant’s Planning Guidance* of 2019 stipulates the need to conduct distributed operations in support of EABO for the Marine Corps to be effective in countering the potential avenues for aggression by peer competitors.<sup>17</sup> Appendix A to the *TM EABO* outlines the organization of a Marine littoral regiment (MLR).<sup>18</sup> Noted in the highlighted section of the line and block diagram is a MIG section attached as direct support to the MLR. (Graphic 2: Appendix A of the *TM EABO*.)

Beyond the depiction of a MIG section attached to the headquarters element outlined in the organizational chart, there is currently no guide for the employment of space support. The current II MIG concept of employment states that the MIG functions as an entity comprised of two cells—the technical cell and the influence cell. These



**Graphic 2. Call out depicts the organizational association of the MIG Detachment within the MLR. (Graphic provided by author.)**

cells work in close coordination with the II MEF fires and effects coordination center to direct deliberate and dynamic planning operations. These operations are enabled by space support from the technical cell, headed by an MSO. The technical cell is where the MLR, and the Littoral Combat Regiment, forward deployed in a Stand-in Forces concept, would gain their space-enabled capabilities. This half of the MIG section would be able to provide space support to planning and dynamic operations in the form of satellite vulnerability assessments, GPS threat monitoring, electronic warfare jammer simulation, as well as provide information support to a commander's potential conceal and reveal information plan in support of larger operations both during competition and after the flashpoint of potential conflict. The final article in the series will look at how MSOs will expand beyond simple space support to Marine forces operating within the Stand-in Forces concept. The overall intent of the fourth article will be to take what space support looks like today and apply it to the fight tonight while preparing for the conflicts of tomorrow.

### Final Thoughts

Marine Corps spacepower application, in fact, spacepower in general, is a topic that enjoys much debate within the community of interest. However, the community of space professionals often finds itself struggling to emerge from concept defilade due to three confounding barriers to understanding. The first is the most obvious: space has long been the province of science fiction. Unfortunately, many users of space-enabled capabilities only understand space through the lens of science fiction. This artificially imposes an added layer of difficulty in scoping the expectations of those who are newcomers to the conversation about spacepower. The second issue is that tactical, or maritime spacepower is a unique subset within the general concept of spacepower. Catching people up to speed on what MSOs can do, and what they are looking to do in the future often entails a lengthy discussion just to level-set the non-space folks in

the room. The third issue is that Marines are behind every other Service in developing what "right" looks like when providing Service-level space support. As MSOs work to standardize space-enabled support to the fleet, the process is often akin to moving back a step before advancing another two. The

## Marine Corps spacepower application ... enjoys much debate ...

series of articles this piece introduces is designed to address these three issues by addressing topics of what MSOs are, what they do, and how they function as force multipliers in both deliberate and dynamic mission planning and as part of the Marine Corps' doctrinal approach to fighting the next conflict. The authors encourage Marines of all backgrounds to facilitate the process of overcoming the barriers to understanding by engaging in conversation, self-education, and reaching out to space professionals to better understand what it is they are doing now, and what they can do for you in the next fight.

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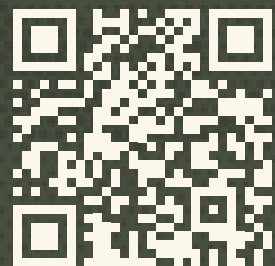
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# Giving “Laser Focus” New Meaning

The Marine Corps is unprepared for the newest tactic of civil unrest events

by Capt Joe Deavenport

When adversaries combine commercially available products with a little ingenuity, they can create new attack pathways that are difficult to counteract. Over the last decade, anti-government protestors around the world have done exactly that during large-scale civil unrest events. In Hong Kong, protestors used traffic cones and leaf blowers to counter the effects of tear-gas canisters. In Portland, OR, protestors used umbrellas to hide their collective faces from surveillance cameras. In Beirut, Lebanon, and Nantes, France, protestors used tennis rackets and hockey sticks to hit tear-gas canisters back at police. Perhaps the most concerning new tactic, however, is protestors using hundreds of laser pointers simultaneously to blind and disrupt law enforcement officers and government security personnel.

Given its effectiveness against law enforcement in places like Egypt, Chile, Hong Kong, Iraq, and the United States, the use of laser pointers as a form of non-violent resistance has been shared widely on the world’s social media platforms. A practical assessment indicates that the tactic will likely be a feature of future civil unrest events in countries around the world. As an expeditionary force-in-readiness that often operates in environments of civil unrest, the Marine Corps should be concerned about this emerging tactic for the risk it poses to our forces. As it stands, Marines are neither equipped nor trained to operate in this emerging threat environment. The Marine Corps has an obligation to address this problem at the Service level.

**>Capt Deavenport is an Intelligence Officer currently serving as an Olmsted Scholar in Bangkok, Thailand.**

## Understanding the Threat

Lasers were once considered to be little more than science-fiction, popularized by multimedia franchises like *Star Wars* and *007*. In the 1980s, the Reagan administration narrowed the delta between fiction and reality when they considered using lasers as part of a broader ballistic missile defense platform, though researchers concluded that the technology was still decades away from military use. Today, great powers around the world are studying the potential applications of laser technology in modern directed energy

weapons. Across the national security and defense community, the discourse on laser technology remains a subject of intrigue for its numerous potential applications.

For people outside of the defense establishment, however, laser technology is most commonly associated with a simple office presentation tool. The laser pointer is a seemingly innocuous device that became affordable, ubiquitous, and commercially available in the 1990s. Today, consumers can purchase a new, high-powered laser pointer online for less than \$30. Aside from the warning in the fine print to “avoid direct eye exposure,” these devices are sold to the general public with very few legal restrictions. Not surprisingly, the disruptive use of laser pointers is a growing issue.



**In Santiago, Chile, pointing lasers at the police began to become a tradition in the protests to impede the police from seeing clearly (Photo by Vasti Abarca.)**

In the United States, the most common incidents of laser disruptions are reported by the Federal Aviation Administration (FAA). In 2020 alone, the FAA reported 6,852 laser incidents targeting commercial aircraft in the United States, 20 of which resulted in unspecified injuries to pilots or aircrews.<sup>1</sup> In 2021, the number of reported incidents swelled to 8,550 incidents, 46 of which resulted in injuries. While it is a federal crime to aim a laser at an aircraft in the United States, the FAA laser incident reports suggest that the law has done little to mitigate the practice. In many cases, individuals may not realize the damage that a \$30 device can cause. The data points listed above represent cases in which laser pointers disrupted the operations of commercial airlines, but they represent only isolated incidents, absent any coordination or concentrated effects. What happens when laser pointers are used as objects of resistance on a larger scale?

Since 2013, civilian protestors around the world have embraced laser pointers as useful tools for non-violent resistance, particularly in the context of anti-government protests. In places like Egypt, Chile, Hong Kong, Iraq, and the United States, protestors used hundreds of laser pointers in a coordinated fashion to confuse police officers, scramble facial recognition cameras, and deter people from taking photos amid periods of anti-government unrest.<sup>2</sup> In one viral video from 2019, a crowd of protestors in Santiago, Chile, appeared to “shoot down” a police quadcopter by concentrating their lasers against the remote aircraft. When used against people, like police officers or government security forces, laser pointers can cause both temporary and irreversible damage to the eyes. Such is the nature of truly devastating threats: they are non-threatening enough to not be taken seriously but dangerous enough to do real harm.

There is evidence to suggest that lasers could revolutionize protesting around the world because they offer several advantages for protestors in the modern era.<sup>3</sup> First, laser pointers are affordable and widely available. When protestors gathered in Cairo, Egypt,

in 2013 to celebrate the overthrow of President Mohammed Morsi, street vendors reportedly sold laser pointers to protestors “just for fun,” apparently not yet aware of the dangerous potential that exists when many laser pointers are used together.<sup>4</sup> In Hong Kong, laser pointers were distributed *en masse* for protection against police amidst widespread anti-government protests. Second, laser pointers can disrupt (or seriously harm) law enforcement personnel with the blinding effects of concentrated light. However, protestors see lasers as a novel tool for non-violent resistance because they present a relatively low risk to physical objects, at least compared to rocks, broken glass, or firearms. Third, in the age of artificial intelligence and facial recognition cameras, lasers can also protect the identities of the protestors in the crowd. When a single laser hits a camera lens, it drastically shifts the exposure and effectively washes out the image, making identification of protestors in a crowd almost impossible. Ultimately, the mass use of laser pointers offers an accessible and effective tool for protestors around the world to resist government crackdowns in a way that is generally perceived as non-violent while also offering some protection against surveillance cameras and facial recognition technology.

The available data on the disruptive use of laser pointers highlights some useful patterns to better characterize the threat. First, among the various laser pointers that are commercially available, the 532-nanometer green laser is the most widely used device in recent protests around the world. The green laser, compared to colors like red, purple, or blue, is the most visible to the human eye and is therefore the most preferred type. Indeed, the FAA data cited earlier indicates that more than 88 percent of the reported laser incidents involved green lasers. Additionally, we know that the power output for commercially available lasers can range from a meager 5 milli-watts (mW) all the way up to 1,000 mW.<sup>5</sup> Consider this excerpt from the American Academy of Ophthalmology:

If a laser with less than five milliwatts of output power is directed at someone’s eye, that person can blink or turn away without suffering an eye injury. However, the natural protective mechanisms of the eye—such as the blink reflex—are ineffective against lasers with output power greater than five milliwatts, and severe retinal damage may occur, even after momentary exposure.<sup>6</sup>

Green laser pointers are inexpensive, prolific, and can be sold at power outputs that are empirically dangerous to the human eye.

Second, the advent of digital mobilization suggests that protestors in future civil unrest events will integrate the tactics and technologies from other protestors around the world. A 2020 article in the *New York Times* entitled, “Why Protest Tactics Spread Like Memes,” offers several examples to reinforce this point.<sup>7</sup> In Hong Kong during 2019, video showed protestors racing to place orange traffic cones over tear gas canisters to keep the smoke from spreading; in Minneapolis, MN, nine months later, protestors did the same thing. In Hong Kong during 2019, protestors used leaf-blowers to disperse tear gas; in Portland, OR, a year later, protestors did the same thing. There are several more examples, but they all lead to the same conclusion. The widespread use of social media, coupled with digital mobilization, means that successful civil unrest tactics will spread and increase in scale.

Taken together, we know three fundamental things about this emerging threat: protestors are most likely to use 520-nm green lasers, the power output of a single laser can range anywhere from 5-1,000 mW, and protestors are likely to use this technology in civil unrest zones around the world because of digital mobilization. This data alone is sufficient to mount a response to this threat. A single laser can cause blurry vision or permanent blindness, but the mobilization of hundreds, or even thousands, of lasers could effectively neutralize a ground force, particularly one without the appropriate personal protective equipment and training. Surely then, the Marine Corps is well-prepared to meet this threat—right?

Herein lies the problem: the Marine Corps' standard-issue, authorized eyewear offers no laser eye protection. None. The current standard-issue glasses feature 2.4-millimeter polycarbonate lenses for ballistic protection, 100 percent ultraviolet protection, and fog-prevention treatment for those steamy Camp Lejeune field exercises. However, they offer zero protection against laser devices in any wavelength. In fact, the Marine Corps' governing document on laser safety programs, *Marine Corps Order 5104.1C*, fails to even mention laser protective equipment or training for forward-deployed forces.<sup>8</sup> The current eyewear arguably met the minimum eye protection requirements of battlefields a decade ago, but the threat landscape has meaningfully changed.

Bear in mind that the Marine Corps, compared to its adjacent services, is perhaps the most likely to operate during civil unrest events on foreign soil. Consider, for example, the missions assigned to the MEU. Among other things, the MEU is assigned the mission essential tasks of performing non-combatant evacuation operations, airfield seizure operations, humanitarian assistance, and stability operations. All these missions virtually ensure close contact with host-nation civilians amid varying degrees of civil unrest. The evacuation of Kabul in August of 2021 is just one example. It is a matter of when, not if, Marines will operate against protestors armed with laser pointers.

The other services acknowledged this threat years ago. In 2018, the Air Force signed a nearly \$200 million contract to provide laser eye protection for their pilots and air crews. The Army issued a pre-solicitation for next-generation eye protection and the Coast Guard subsequently initiated a joint research project for low-cost laser eye-protection glasses.

### Recommendations

To mitigate this threat, the Marine Corps must first purchase enhanced eye protection for threat laser devices in both combat and training situations. This eyewear should provide sufficient protection to prevent permanent eye damage and temporary effects (glare, flash blindness, etc.) from laser devices

while minimizing visual acuity degradation. It is worth mentioning that the Marine Corps' current eyewear supplier already produces a laser protective lens that blocks 99 percent of 532-nanometer green lasers. This piece of gear, or a similar model, should be fielded to Marine forces across the air-ground task force at the soonest opportunity.

Second, the Marine Corps must develop and integrate training modules to prepare Marines for the new tactics used by modern protestors. The San Francisco Police Department recently surveyed their patrol officers and asked how they would respond to the hypothetical use of laser pointers during protests.<sup>9</sup> Some officers said they considered laser pointers to be non-threatening distractions, while others said they viewed lasers as dangerous weapons and would respond with force. Without any standardization in terms of training and equipment, it is not at all surprising that the responses among San Francisco police officers were inconsistent.

If the same question were posed to our Marines, I expect that we would get the same results: inconsistency and subjectivity. If Marines were sent to reinforce an embassy in a given hotspot today and protestors gathered at the gates with 532-nanometer green laser pointers, would Marines simply dismiss it (not likely), react with non-lethal force, or react with lethal force? No Marine on the ground or in the air should have to make this decision absent any training or guidance, much less without the proper protective equipment. Wherever possible, the Marine Corps has an obligation to reduce uncertainty, subjectivity, and inconsistency through realistic and threat-informed training.

From my perspective, the Marine Corps' Expeditionary Operations Training Group structure is the best vector to provide this training for pre-deployment forces. The Expeditionary Operations Training Group already provides tailored, pre-deployment training packages to prepare units for the requirements of the respective geographic combatant commands. Once Marines are equipped appropriately, it would take only minor revisions to the Expeditionary Operations Training

Group training framework to provide a basic introduction to modern laser pointer tactics, protective equipment, and mitigation techniques.

In the context of the world's dynamic and ambitious threats, it is easy to dismiss the laser pointer as little more than an office presentation tool, but its emerging applications will almost certainly challenge future Marines. Now is a fitting time for the organization to make a clear-eyed assessment of its standard issue protective eyewear and associated training to meet the shifting threat landscape.

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# Looking to the Stars

The importance of integrating space weather into communications planning

by 1stLt Thomas Sun

A common joke amongst communicators is that any time any type of communications system is down or unable to be established, the most likely explanation is that the outage or degradation is being caused by solar flares. Retransmission site not working? Solar flares. Unsuccessful high-frequency radio checks, even though the radio operator is blasting over 150 watts of power with an upper-end HF frequency that punches right through the ionosphere? Solar flares. Laptops in the combat operations center not able to access the Internet because of routing misconfigurations between the router located in the systems control (SYSCON) tent and the user switch located in the combat operations center? The answer is obvious: it is still solar flares. Regardless of the type of communications system being deployed, the comm community frequently shares a laugh at the inside joke that anything and everything that goes wrong with the art of communicating can be attributed to solar flares.

A convenient answer, solar flares cannot be seen (at least not by the visible eye), touched, or confronted by investigating Marines with demands for an explanation as to why the communications link in question is not mission capable. Solar flares and other often unquantifiable or misunderstood space weather provide a convenient mechanism for communications Marines to skirt around the difficult questions of why a particular communications link or radio net is not operational. This convenience lies in the fact that the stated answer to the problem is *literally* out of this world—leaving no possibility for follow-up or other reasonable follow-on orders besides the generic tasks of *keep trying* or *wait it out*, neither of which

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are effective troubleshooting solutions. The irony of this is that space weather actually has persistent and significant effects on the single most important enabler of radio frequency-based communications—the electromagnetic (EM) spectrum. Ionization, scintillation, rain fade, solar flares, electromagnetic radiation, and other forms of interference from space can degrade military communications ranging from single-channel radio all the way up toward extremely high-frequency satellite communications (SATCOM). Yet, very little acknowledgment is given to space weather or its potential effects on operations during communications planning or the operations of a SYSCON watch floor.

Lack of knowledge about available space weather products and their subsequent potential in communications planning is problematic for three main reasons. No different than ignoring a well-prepared intelligence preparation of the battlespace from the intelligence officer, it means that we are not considering all available information in planning. Secondly, it means that we are failing to fully embody four of the six key metrics that we swear to abide by as enablers of command and control, which are flexibility, survivability, reliability, and redundancy. Finally, it means that we are not paying close enough attention to the physical or technical signature that we create in

the battlespace, a malpractice that has the potential to make or break a future conflict with a peer adversary.

The purpose of this article is threefold: to inform communications Marines about how to utilize space weather in the planning and execution of both current and future operations, to highlight the ramifications that ignoring space weather can have on friendly emissions control from both physical and technical signature management perspectives, and to provide the reader with three departing recommendations to consider.

## To Inform

The use of space weather products will look different for different units. Factors such as how many end-users are being supported over which types of links, a unit's overall reliance on SATCOM, availability of commercial or military fiber, table of equipment, overall use of the EM spectrum, and current operating location all need to be considered. Units that enable warfighting functions for the command elements of MEFs or major subordinate commands, such as the comm battalions, comm companies, or comm squadrons, are likely to have a much bigger footprint both in terms of physical presence and utilization of the electromagnetic spectrum, to include greater reliance on wideband SATCOM. Juxtapose this with recon or infantry battalions that

rely heavily on narrowband SATCOM such as Integrated Waveform or Mobile User Objective System and single channel radio. Regardless of what is exactly on the table of equipment, any unit that uses the EM spectrum as an enabler of communications might consider investing additional consideration into different space weather products.

Space weather products are only useful if they address the portions of the EM spectrum units are actively using. At this point in the article, the reader is probably asking “where do I get these space weather products he keeps referencing?” Not dissimilar to using commercial fiber as the primary link to the Internet, this is where we hit the easy button. The Space Weather Operations Center (SpWOC), staffed by the 2nd Weather Squadron of the 557th Weather Wing, is an Air Force-owned and operated watch center that maintains 24/7/365 awareness of all things relating to space weather and distributes

identification and use of different space products include situational awareness of what transmission equipment is being employed as well as a technical understanding of the different frequencies that the employed gear operates on. An infantry company employing the Mobile User Objective System while conducting multi-lateral training exercises in INDOPACOM may find the Global UHF SATCOM Analysis product more suited to their needs, while an entity such as the MAGTF Communications Control Center nested within a MEF G-6 may use the Space Environmental Global Situational Awareness Outlook to provide a broader snapshot of current space weather around the globe or an entire combatant command.

The consideration of space weather in the planning and execution phases of an operation is heavily dependent on the operation or the intent of the exercise. For many units, communications exercises are not a priority—the

weather and its potential or realtime effects on employed communications systems rests on the SYSCON watch officer or watch chief. The enduring job of the SYSCON is to ensure that there are no significant degraders (to include space weather) that would affect primary or alternate communications links, ultimately ensuring the highest levels of availability for the end-user. This includes validating that there is no terrestrial or space weather in or around any standardized tactical entry point site that employed satellite links may be terminating at. Throughout an operation, space weather should be treated no differently than terrestrial weather. SYSCONs might consider the incorporation of applicable space weather products into SYSCON briefs or developing some other type of internal battle rhythm to maintain situational awareness of the space domain. The SpWOC provides communications Marines and planners with a robust library of different products tailorable to their specific needs; however, knowledge of space weather as it relates to the gear that is being employed is only one piece of the puzzle. Knowledge of space weather, specifically when certain frequencies in the EM are being affected or degraded and in which part of the globe, is essential to minimizing both physical and technical signature management.

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***For many units, communications exercises are not a priority—the focus is on maintaining communications for maneuver elements ...***

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a variety of products relating to both terrestrial and space-based communications to DOD personnel worldwide. While the main location of the SpWOC is located on Offutt Air Force Base in Nebraska, the 2nd Weather Squadron maintains nine geographically separated operations centers operating in unison to maintain space situational awareness and environmental monitoring.<sup>1</sup>

The SpWOC maintains a robust library of products that are updated daily. Communicators can sort these products by frequency, region of the world, type of space weather, and even more granular categories. Responsibility for proper consumption and implementation of these products falls to the communications officer, tactical communications planning and engineer officer, or an experienced spectrum manager with a radio chief background. Two key components to ensure proper

focus is on maintaining communications for maneuver elements or other main efforts with little emphasis on signature management. For more communications-centric exercises, due consideration should be given to space weather as an important component of not only maintaining situational awareness of external factors that may affect communications (the job of a SYSCON watch officer) but also from an emissions control and signature management perspective (discussed in depth in the next section). The stakes increase when looking at real-world operations. When looking at different space weather products, it is not uncommon at all to see significant portions of the globe or an area of responsibility completely yellow or red for different frequencies—indicating severely degrading communications. Responsibility for maintaining continual situational awareness of space

**To Highlight**

Unfortunately for the Marine Corps, it is going to take significant training and education to change the relationship between Marines and their radios. While the Emissions Control SOP written by Marine Corps Intelligence Activity is a phenomenal document and should be heavily referenced around the Marine Corps, there still exists a significant gap between SOP and reality that cannot be fixed by writing. Not dissimilar to the presence of an *Auriga* behind a successful Roman general during a triumph whispering the timeless memento mori, “you are mortal,” so too, should there be a Marine behind every Marine on a radio in a combat operations center whispering “you are making yourself known” every time they unnecessarily key out.

Although this is an extreme and borderline humorous example, it is imperative that communicators at all levels understand that the signal they transmit into the EM spectrum does not just float off into space uncontested and disregarded by all. Both China and Russia have significant direction-finding abilities that were built with the U.S. Military in mind. *The combination of undisciplined transmissions in the forms of frequent radio checks or long transmissions, enemy direction-finding capabilities, and loitering munitions produce a nasty kill chain that no Marine should want to be on the receiving end of.* All of this is to build up to say that treating space weather no different than any other intelligence requirement might be essential in the coming fight. The use of space weather products allows any Marine Corps unit utilizing the EM spectrum to maintain better situational awareness of their own signature.

Space weather informs communicators about which frequencies on the EM spectrum are uninhibited, degraded, significantly degraded, or completely unusable. This knowledge can be directly applied to a unit's use of the EM spectrum. Without delving into the debate surrounding the overall survivability of UHF and Mobile User Objective System, consider the following example: if through consumption of the previously mentioned Global UHF SATCOM Analysis product, a transmissions chief identifies significant UHF scintillation in and around a unit's current location, they can notify the operators to transition to a more survivable or effective communications link. This does two things: it prevents the unit from unnecessarily using an already degraded or non-operational radio net or SATCOM link, decreasing their emissions and therefore their chances of detection and it increases the reliability and survivability of the critical information exchange requirements passing over that communications link by providing communicators with the necessary information to transition to a different frequency and/or waveform in response to the friction imbued by space weather. It is imperative for every communicator to look *past* the radio

net or SATCOM link and its associated frequency and *toward* the critical nature of the information passing over that link. Preservation of the flow of information that enables the warfighting functions across all levels of the MAGTF is the goal of all communicators. Decreasing technical signature and minimizing friendly emissions are not the only areas of signature management that space weather can affect. Knowledge of degraded frequency bands gives units the opportunity to

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### **... communicators across the Marine Corps must be aware of how they are using the EM spectrum.**

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turn off the emitter, decreasing their electronic and thermal signature as well.

Taking a quick segue to address a potential argument prior to concluding this article, we address the question, *why are we transmitting on frequencies that are detectable in the first place?* In response to that argument, I would put forth the following:

- The Marine Corps has not yet identified and adapted counters to known enemy direction finding and electromagnetic spectrum operations capabilities.
- Regardless of the operating environment, communicators must be aware of how they are using the EM spectrum.
- Physical and technical signature, emissions control, and disciplined use of the EM spectrum are not areas the Marine Corps can afford to give up gains in, no matter how minute.
- Depending on a variety of factors such as how quickly the Marine Corps can study and apply lessons learned from the Ukraine conflict with regard to direction finding and denied or degraded environments, equipment shortfalls, training shortfalls, the rate at which we can adapt new technologies as an institution, or the proximity of an upcoming fight, we may not have any alternatives but to use our existing program of record technologies.

Regardless of the operating environment, communicators across the Marine Corps must be aware of how they are using the EM spectrum. Physical and technical signature, emissions control, and disciplined use of the EM spectrum are not areas the Marine Corps can afford to give up the competitive edge in, no matter how minute it may seem. Hopefully, this article has shed some light on the importance of space weather as it relates to maximizing the availability of communications, main-

taining better cognizance of friendly emissions control, and decreasing different areas of signature management. Bringing this article to a close, I conclude with the following recommendations applicable to all communicators that rely on radio frequency communications:

- Take full ownership of your unit's use of the EM spectrum. Understand which frequencies and waveforms you employ with a focus on the enabled information exchange requirement. Achieving this level of insight is essential to truly understand how to maneuver within the EM spectrum.
- Delve through the space product library and see which products are applicable to your unit.
- Consider incorporating space weather products into your communications battle rhythms no differently than you would for terrestrial weather.

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#### **Notes**

1. 2d Weather Squadron, "2d Weather Squadron," *557 Weather Wing, United States Air Force*, October 18, 2022, <https://www.557weatherwing.af.mil/Units/2d-Weather-Group/2d-Weather-Squadron>.





# Operational Uses of Social Media

Navigating privacy and civil liberties

by Maj J. Derek Randall

As planning staffs are increasingly discovering, society's prolific reliance on smart devices and social networking applications can supply unprecedented quantities of raw data to support a variety of military functions—much of that data is derived from publicly available social media. While publicly available social media activity has historically been leveraged to generate open-source intelligence, in a relatively new concept that has been coined, *operational use of publicly available information (PAI)*, social media and other forms of PAI are increasingly informing a variety of traditional military functions separate from intelligence.<sup>1</sup> The surging importance of these functions was highlighted by the House Armed Services Committee in the lead-up to the Fiscal Year 2020 National Defense Authorization Act:

[Malign actors] continue to conduct influence, command and control, and other overt operations in the information environment (IE), including on social media platforms, to achieve objectives that undermine U.S. national security. As such, the demand for the operational use of Publicly Available Information (PAI) for traditional military activities such as military information support operations, battlespace awareness, and force protection continues to increase.<sup>2</sup>

In practice, the doctrinally undefined term “operational use” could potentially encompass a broad set of non-intelligence activities, to include military information support operations, battlespace awareness, force protection, identity management, signature management, own-force moni-

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toring, various forms of atmospheric measurements, and others.<sup>3</sup> The connecting principle undergirding these types of activities is the *operational vice intelligence* nature of the activity. This principle significantly impacts the legal risks that can attach to the activity.

Despite social media's emerging utility, tapping into it for operational purposes can carry significant legal risks. Some applications of operational uses of social media, like “force protection,” may call for deliberately focusing on the digital activity of service members or other individuals inside the United States—directly implicating privacy and civil liberties concerns. In contrast, other risks arise because of the unprecedented interconnectivity of many global social media platforms. Indeed, even when traditional military activities orient exclusively on foreign social media sources, incidental collection of U.S. citizens' information is difficult to avoid, particularly with the advent of automated scraping tools, data aggregators, and bulk data—all creating novel types of legal and policy risks for conventional military commanders.<sup>4</sup>

Privacy and civil liberties challenges pervade in the access and use of social media because global social connections and the diffusion of network technol-

ogy ensure that U.S. citizens' digital activity consistently intermingles with that of foreign audiences. The normal bifurcation between foreign and domestic social media data subjects often collapses in the digital realm. Indeed, in 2018, one unverified source indicated that Weibo, a highly popular Chinese social media platform, surpassed 2.5 million registered users in the United States—with the highest numbers reported in California, New York, New Jersey, Virginia, Texas, and Illinois.<sup>5</sup> The Weibo statistic is emblematic of the transnational nature of most social media platforms. Consequently, staffs must anticipate, and plan for, the law and policy risks that accompany collecting, aggregating, synthesizing, and exploiting digital activity that may contain information relating to United States citizens and other protected persons.

A common gap in understanding currently exists regarding privacy-related restraints governing conventional military forces' access and use of PAI for these operational purposes as well as how those restraints are distinguishable from intelligence activities. Because the line between operational vice intelligence purposes is often blurred, many staffs incorrectly believe that if they characterize a particular use of PAI as for operational vice intelligence purposes, they can avail themselves of a rapid detour around privacy and civil liberties restraints that typify legal restraints in intelligence activities. This article briefly surveys how current law and DOD policy impose significant restraints where staffs may believe little to none exist.

Indeed, when DOD components collect social media activity for intelligence purposes, they draw upon well-established statutory authority and a regulatory regime that, while still evolving, affords a framework for collecting information relating to U.S. persons. In contrast, the new application of PAI to operational uses falls outside this regime and instead implicates a patchwork of privacy and civil liberties-related legal and policy restrictions that are not well understood by most staffs. This article attempts to remedy this gap in understanding by identifying a few of the more prominent legal and policy restraints, providing recommendations to navigate them, and offering ideas to increase conventional military forces' lawful access and use of social media activity and similar forms of PAI.

### Privacy & Civil Liberties as a Planning Restraint

As *MCDP 8, Information*, identifies, “[m]uch like what Marines witness in adhering to the law of armed conflict throughout the battlespace, the Marine Corps must find ways to prevail over adversaries within the limits of our democracy.”<sup>6</sup> The concept of privacy and civil liberties as a planning restraint is unique to democratic societies, and the United States in particular. Restraints, as one form of operational limitation, include “what cannot be done.”<sup>7</sup> Law and policy can be restraints.<sup>8</sup> Rules of engagement, commander’s guidance, and higher headquarters’ instructions are common examples of restraints.<sup>9</sup> Historically speaking, privacy and civil liberties restraints are not novel to the planning process, but they have only primarily manifested in intelligence activities. New operational uses of PAI require increasing awareness of how privacy and civil liberties restraints can impact planning so staffs can identify creative solutions while minimizing a commander’s liability.

For any access or use of PAI, including social media, the initial planning restraint is *DODD 3115.18*.<sup>10</sup> That directive generally directs planners and operators to comply with “[l]aw, policy, and regulations, including those governing privacy, civil liberties

... and acquisition of information concerning persons and organizations not affiliated with DoD.” Following this requirement, the directive diverges in the restraints applicable to the particular use of PAI based on whether the anticipated usage supports intelligence or non-intelligence activities.

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## ***The concept of privacy and civil liberties as a planning restraint is unique to democratic societies, and the United States in particular.***

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When PAI is accessed or used for intelligence purposes, *DODD 3118.15* directs the application of *DoDM 5240.01*, which allows the government, under certain conditions, to collect, maintain, and disseminate collected U.S. Person Information while executing an authorized intelligence mission. However, outside of intelligence purposes, *DODD 3118.15* directs that “[e]xcept as otherwise specified by this policy, DoD Components not covered by DoDM 5240.01”—in other words, personnel not conducting intelligence activities—“[w]ill comply with DoDD 5200.27 when accessing and using PAI related to persons and organizations not affiliated with DoD.”<sup>11</sup>

A close look at *DODD 5200.27* is therefore critical to identifying planning restraints for operational uses of PAI. At the time of this writing, *DODD 5200.27* is the governing executive regulation in the DOD concerning the non-intelligence “[c]ollecting, processing, storing, and disseminating of information concerning persons and organizations not affiliated with the Department of Defense” located within the United States, or involving U.S. citizens abroad.<sup>12</sup> A review of that regulation reveals that acquiring information relating to non-DOD-affiliated persons for operational purposes is highly restricted. Prior to acquiring such information, *DODD 5200.27* requires maximizing reliance on domestic civilian law enforcement agencies and generally avoiding collection unless essential to one of the enumerated, time-sensitive force protection

or law enforcement purposes articulated in the directive.<sup>13</sup> Moreover, even after acquiring the information—whether intentionally or incidentally—the authority prohibits storing that collected information within a computerized database, and requires that any information collected is destroyed in 90

days or less.<sup>14</sup> In sum, *DODD 5200.27* generally limits both intentional and incidental collection of information relating to protected persons to the bare minimum necessary to report unlawful activities that jeopardize DOD persons and property.

The Privacy Act of 1974 animates many of the restrictions found within *DODD 5200.27*.<sup>15</sup> Congress passed the Privacy Act in the wake of the military and intelligence community’s rampant privacy invasions against U.S. citizens in the 1970s. The Privacy Act’s historical context exposed how government agencies abused computer technology to collect, store, and retrieve the personal data of U.S. citizens for various unauthorized purposes. Some of the examples informing the Privacy Act included Army units illicitly engaging in electronic surveillance of unwitting U.S. citizens, extending Congress’ concerns to the military, and forcing regulation of its new information-gathering and storage capabilities.<sup>16</sup> Congress intervened through the passage of the Privacy Act of 1974, which restricts when and how the government—including the military—collects, maintains, uses, and disseminates personally identifiable information (PII) about U.S. citizens and other protected individuals.<sup>17</sup> Among other restrictions, the Act generally applies when PII is collected and deposited into searchable databases (systems of records) from which that information is retrieved using a personal identifier, such as a name or other traceable identifier.

First Amendment activities enjoy elevated safeguards under the Privacy Act. Section 552a(e)(7) of the Act specifically prohibits the government from collecting or maintaining records of a U.S. citizen's First Amendment activities unless for an authorized law enforcement activity, when specifically authorized by statute, or when authorized through the expressed consent of

those of other protected persons, for operational purposes.

Notably, the Privacy Act's restraints extend to even the *mere collection* of First Amendment activity, "independent of the agency's maintenance, use, or dissemination of it thereafter."<sup>19</sup> As such, discarding protected social media activity *after collection* would not, for example, technically cure the

particularly social media. However, a few common guideposts will consistently assist staffs:

First, when undertaking non-consensual information collection, commanders will likely need to employ tools and methodologies that avoid linking identifiable protected persons to their social media activity. This may be achievable, for example, by tailoring activities to avoid triggering the definitional threshold of record or collection as defined under law or policy. For example, the information does not amount to a "record" under the Privacy Act unless it contains PII—information that can be used to distinguish or trace an individual's identity.<sup>24</sup>

Second, in acquiring large bodies of collected data, commands may need to employ pre-collection anonymization or other prospective screening or filtering of protected information that accounts for the inevitable intermixing of U.S. and foreign information. Additionally, keeping a tightly tailored focus on foreign audiences will help minimize the potential incidental collection of protected personal information. That approach may not guarantee technical compliance with the Privacy Act or DOD policy, but it could minimize risk and at least demonstrate consistency with the spirit of law and policy. Commanders and judge advocates will also have to remain sensitive to the possibility that certain search-enabled data troves may also trigger system of records protections under the Privacy Act.

Finally, in consensual collection cases where DOD service members or other protected persons are monitored, commands will have to employ scrupulous purpose-limitation practices, where they avoid using the information for any novel purpose other than that for which it was originally consented to by the data subjects or individuals authorized to consent on the data subject's behalf. They will also have to also ensure legally sufficient notice is afforded to those same data subjects before undertaking any consensual collection. While these are only a small sampling of issues, planning proactively with a servicing judge advocate is critically important in navigating these issues.

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***Military planners using social media for operational purposes generally must navigate dimensions of both DOD policy restrictions ... and the Privacy Act restrictions ...***

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an individual. These arguably narrow exceptions make access and collection of First Amendment-protected activity even more restricted than other forms of PII collection, storage, and dissemination.

The heightened protections afforded to First Amendment activities extend to operational uses of PAI, and especially social media, because U.S. citizens' social media activity often constitutes protected exercises of the First Amendment's freedom of expression and/or association. As the U.S. Supreme Court observed in *Packingham v. North Carolina*,

[w]hile in the past there may have been difficulty in identifying the most important places (in a spatial sense) for the [First Amendment-protected] exchange of views, today the answer is clear. It is cyberspace—"the vast democratic forums of the Internet" in general and social media in particular . . . in short, social media users employ these websites to engage in a wide array of protected First Amendment activity on topics "as diverse as human thought."<sup>18</sup>

The compounding effects of the Privacy Act's safeguards and social media's deep roots in First Amendment protections means that conventional military forces quickly confront significant privacy and civil liberty legal restraints when intentionally or incidentally collecting U.S. citizens' social media activity, or

original legal violation. As of the time of this writing, Privacy Act jurisprudence has only acknowledged the necessity of incidental collection of First Amendment-protected information when that collection occurred pursuant to authorized law enforcement purposes, which generally do not extend to conventional military forces using PAI for non-intelligence purposes.<sup>20</sup> Indeed, insufficient sensitivity to the scope of U.S. citizens' First Amendment rights in the information environment can prove perilous to military commanders; willful violations of the Privacy Act can expose commanders to federal misdemeanor criminal charges and up to a \$5,000 fine, in addition to the obvious administrative consequences.<sup>21</sup> Moreover, Privacy Act consequences can attach when a commander is conducting activities through a contractor or other third party.<sup>22</sup>

***Navigating Current Legal Restraints***

Military planners using social media for operational purposes generally must navigate dimensions of both DOD policy restrictions under *DODD 5200.27* and the Privacy Act restrictions discussed above, among potentially other rules.<sup>23</sup> Because of the significant influence of law and policy in this space, staffs should always coordinate closely with servicing judge advocates when seeking to access and use of PAI and



## A Note on the Deep Web

The foregoing discussion is premised on the assumption that the operational uses of social media occur using the information on the “indexed” or surface web. Operational uses of social media activity on the “deep” or “dark” web (collectively referred to here as the “subsurface” web) presents a more foundational question: specifically, is social networking information on the subsurface web *publicly available* information for purposes of *DODD 3115.18*? The subsurface web includes social media sites that cannot be found by search engines.<sup>25</sup> Website names and locations are in a constant state of flux and change weekly or daily.<sup>26</sup> To access sites, users require special encryption software like the Onion Router, which masks a user’s IP address and anonymizes their location information by routing an IP address through a worldwide network of nodes that obscure the user’s identifying information, like IP addresses.<sup>27</sup>

In sum, the hallmark of subsurface web use is privacy.

Under *DODD 3115.18*, PAI is “information that ... is accessible online ... to the public.”<sup>28</sup> On the one hand, the Onion Router and similar software are increasingly easy for the public to acquire. The software can be downloaded online, and web tutorials can walk a new user through steps to engage the software and access the subsurface web. Moreover, from a policy standpoint, publicly available information only requires that the information be accessible to the public, not *readily* accessible. One difficulty in determining whether something is PAI is that many people may condition their voluntariness in posting information upon the degree of technical or anonymizing safeguards that they perceive protects their information. In other words, a person may subjectively believe that their post on the subsurface web is *not* public because accessing it requires special software ap-

plications and other measures to access it. A judge advocate can help determine whether such subjective expectations of privacy implicate legal concerns. A second difficulty involves the knowledge necessary to access sites within the subsurface web. As identified above, subsurface websites are often in a constant state of flux and change in name, format, function, and location. The degree to which accessing any particular site requires privileged information (to include various forms of authentication, certificates, or passwords) will be another critical factor in whether information on the site is publicly available. In these cases, a servicing judge advocate can assist in developing the facts necessary to answer whether social networking information on the subsurface web is under DOD policy.

## Shaping Future Governance

*MCDP 8, Information*, and similar doctrine suggest a need to increase the

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military’s access to PAI. Increasing that access while preserving democratic values and norms will be hard.<sup>29</sup> As briefly discussed above, the history of intelligence reform shows that a failure to adequately self-regulate invites reactive intervention from Congress that can stymie speed and lethality. Accordingly, constructive policy and legal changes may be worthwhile pursuits to ensure the Marine Corps gains adequate access to the PAI it needs.

Initially, the Marine Corps and DOD writ-large can look to short-term pragmatic solutions, mid-term regulatory solutions, and longer-term legislative solutions. Immediate, institutional solutions to avoid this liability may involve the expansion of open-source intelligence doctrine, practices, and capabilities, generating more connective tissue with the interagency to gain greater access to intelligence products, or requiring anonymizing technology in acquisitions.

In addition to these pragmatic options, the DOD could pursue a mid-term policy solution. A formal DOD “safe harbor” policy would observe that any operational use of social media that otherwise complies with the collection, retention, and dissemination rules applicable to intelligence activities acts as a safe harbor from otherwise applicable privacy and civil liberty restraints.<sup>30</sup> Alternatively, or perhaps concurrently, the DOD could pursue a long-term legislative change to enable more access to PAI containing protected information. Such efforts could involve certain amendments to the Privacy Act for specific national security purposes that encompasses conventional military forces’ operational use of PAI.<sup>31</sup> This long-term goal could remedy the lack of statutory authorization that otherwise exempts other types of activities from the Privacy Act, like some intelligence activities. Such an amendment would also justify the revision or rescission of *DODD 5200.27*. Indeed, a failure to pursue some type of policy or legislative relief in this space may make it more difficult in the future for the Services to invest in, and develop, the information applications, bulk data, and artificial intelligence programs necessary to out-

pace competitor states.<sup>32</sup> It also means commanders are forced into the untenable choice of accepting operational risk or potential legal liability.

That said, a number of obstacles would stand in the way of the policy or legislative relief, mentioned above. First, any expansion of authority in this space would have to off-set Congress’ concerns about Americans’ data privacy—a matter that has gained increasing attention as Congress and the courts recognize that the aggregation of publicly or third-party-accessible data can lead to

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**... the DOD may need to pursue pragmatic policy, or legislative changes ...**

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the same degree of privacy invasions as some historical forms of surveillance activities.<sup>33</sup> As such, the military would have to assure Congress that non-intelligence activities could collect Americans’ PAI for operational purposes without the kinds of abuses that led to historical Congressional interventions, like in the Church and Pike Committees and Privacy Act of 1974. This would be difficult, and most likely require the DOD to develop a comprehensive oversight structure to show how it will prevent privacy abuses—an oversight structure redundant to an *already existing* intelligence oversight structure. Whether any meaningful efficiencies could be gained out of such an operational use oversight framework would remain an open question. But, such an eventuality would, however, beg the question as to why—or the extent to which—operational uses should remain outside of intelligence authorities—bringing the question full circle back to whether the pragmatic solutions offered above are tenable. While ultimately this last question is an operational, rather than a legal one, an appreciation for the privacy and civil liberty restraints applicable to operational uses of PAI will help answer it.

## Conclusion

As the military services embrace a novel approach to PAI outside the governance of intelligence oversight, commanders must know that information relating to U.S. citizens and other protected persons may significantly restrict many operational uses. Unlike statutory intelligence and law enforcement authorities, which allow for certain collection, analysis, and dissemination of information relating to United States citizens and other protected persons, conventional forces are restricted in their operational uses of social media and PAI. Among other rule sets, *DODD 5200.27*, First Amendment, and the Privacy Act bear many of these limitations. As *MCDP 8, Information*, encourages Marines to approach information with a “maneuver mindset,” creative forms of conceptual maneuver may be necessary to navigate current legal and policy constraints in this space and remain compliant with law and policy. In looking to shape future governance, the DOD may need to pursue pragmatic, policy, or legislative changes that could allow for more liberal uses of PAI, understanding the risks and benefits that attach to any solution. Regardless of the future legal landscape, until changes are made, present law and policy may require creative approaches to maintain operational currency while ensuring compliance with law and policy.

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## Notes

1. Department of Defense, *DODD 3115.18* (DOD Access to and Use of Publicly Available Information [PAI]), (Washington, DC: June 2019). Publicly Available Information is defined as “[i]nformation that has been published or broadcast for public consumption, is available on request to the public, is accessible online or otherwise to the public, is available to the public by subscription or purchase, could be seen or heard by a casual observer, is made available at a meeting open to the public, or is obtained by visiting a place or attending an event that is open to the public.”

2. House of Representatives, *Committee on Armed Services for the Fiscal Year 2020 National Defense Authorization Act, § 210* (Washington, DC: June 2019).

3. *DODD 3115.18*; Headquarters Marine Corps, *Marine Corps Concept for Signature Management*, (Washington, DC: October 2017); and Office of the Chief of Naval Operations; Headquarters Marine Corps, *NTTP 3-13.3M/MCTP 3-32B, Operational Security*, (Washington, DC, September 2017).

4. Some operational concepts directly implicate the digital activity of U.S. citizens and organizations. For example, *DODD 3115.18* defines “identity management” as “[a] discipline that seeks to mitigate risks to force, mission, and capabilities through the discovery, examination, analysis, assessment, and management of an individual, organization, or asset’s identity elements, characteristics, or other attributes in public or non-public records and databases, and social media or other unstructured data sources.”

5. *Partnership, All You Need to Know About Weibo* (April 18, 2019), *Partnership*.

6. Headquarters Marine Corps, *“MCDP 8, Information”* (Washington, DC: August 2020).

7. E.g., Headquarters Marine Corps, *MCDP 5-10, Marine Corps Planning Process* (Washington, DC: August 2020).

8. *Ibid.*

9. *Ibid.*

10. *Ibid.* The author focuses on DOD-level, rather than Service-level policy, because those policy restraints will apply regardless of whether a particular unit or planning staff is service-retained or assigned to a combatant command.

11. Department of Defense, *DODM 5240.01, Procedures Governing The Conduct of DOD Intelligence Activities* (Washington, DC: August 2017), (August 8, 2016) only “[g]overn[s] the conduct of Defense Intelligence Components and non-intelligence components or elements, or anyone acting on behalf of those components or elements, when conducting intelligence activities under DoD’s authorities.”

12. See U.S. Department of Defense, *DODD 5200.27, ¶¶ 1; 2.2.1 Acquisition of Information Concerning Persons and Organizations not Affiliated with the Department of Defense* (Washington, DC: January 1980) [hereinafter *DODD 5200.27*]. While the DOD Components may promulgate implementing regulations, those regulations will still be subordinate to DOD policy, see, e.g. U.S. Department of the Army, *DA Regulation 380-13, Acquisition and Storage of Information Concerning Non-Affiliated Persons and Organization* (Washington, DC:

September 1974) Additionally, criminal investigations are excluded from *DODD 5200.27*; law enforcement entities are also explicitly permitted to collect personally identifiable information in the course of law enforcement functions. See, e.g. U.S. Department of Defense, *DODI 5505.17, Collection, Maintenance, Use, and Dissemination of Personally Identifiable Information and Law Enforcement Information by DOD Law Enforcement Activities* (Washington, DC: December 2012).

13. *DODD 5200.27*.

14. *Ibid.* *DODD 3115.18* delegates authority to waive this requirement to the DOD Component Heads, *DODD 3115.18*.

15. *Ibid.*

16. *Garris v. FBI*, 937 F.3d 1284, 1295 (9th Cir. 2019); William Funk, *Electronic Surveillance of Terrorism: The Intelligence/Law Enforcement Dilemma—A History*, 11 LEWIS & CLARK L. REV. 1099, 1110 (2007) (describing the various examples of unlawful surveillance and privacy intrusions undertaken by the military and other government agencies).

17. The Privacy Act’s protections also extend to “aliens lawfully admitted for permanent residence” 5 U.S.C. § 552a(a)(2).

18. *Packingham v. North Carolina*, 137 S. Ct. 1730, 1736 (2017) (internal citations omitted).

19. *Albright v. United States*, 631 F.2d 915, 918 (1980).

20. Jill I. Goldenziel and Manal Cheema, *The New Fighting Words?: How U.S. Law Hampers The Fight Against Information Warfare*, 22 U. PA. J. CONST. L. 81, 118 (November 2019) citing *Raimondo v. FBI*, No. 13-CV-02295-JSC, 2018 WL 398236, (N.D. Cal. January 12, 2018), aff’d sub nom. *Garris v. FBI*, 937 F.3d 1284 (9th Cir. 2019).

21. 5 U.S.C. §§ 552a(i)(1)-(3).

22. 5 U.S.C. §§ 552a(m)(1)-(2).

23. Along with any implementing Department or Service-level policy.

24. 5 U.S.C. § 552a(a)(4).

25. Trend Micro, “Q&A: The Deep Web, Anonymity, and Law Enforcement,” *Trend Micro*, September 10, 2015, <https://www.trendmicro.com/vinfo/it/security/news/cybercrime-and-digital-threats/qna-deep-web-anonymity-and-law-enforcement>.

26. *Ibid.*

27. *Ibid.*

28. *DODD 3115.18, at Glossary 12*.

29. And made harder by competitor’s exploitation thereof. See Jonathan G. Odom, “Understanding China’s Legal Gamesmanship in the Rules-Based Global Order,” *SSRN*, October 1, 2019, <https://ssrn.com/abstract=3462945>.

30. Such a policy position, however, would present second and third-order issues. For example, what statutory authority or exception(s) within the Privacy Act could DOD avail itself of, considering the wide range of “operational uses”? Would “operational uses” amount to an intelligence-related activity? Would Questionable Intelligence Activities (QIAs) and Sensitive/Highly Sensitive Matters (S/HSMs) reporting requirements also attach to operational uses? How would such issues arise in the operational use context? See, e.g. *DODD 5148.13*.

31. Jill I. Goldenziel and Manal Cheema, “The New Fighting Words?: How U.S. Law Hampers The Fight Against Information Warfare,” (November 2019). (Recommending the same for agencies to collect social media activity to maintain election security).

32. James E. Baker, *The Centaur’s Dilemma: National Security Law for the Coming AI Revolution* (Washington, DC: Brookings Institution Press, 2021).

33. See, e.g., *The Fourth Amendment is Not for Sale Act*, S. 1265, 117th Cong. (2021); see also USA: Senators Introduce Fourth Amendment is Not for Sale Act (April 22, 2021), <https://perma.cc/JJ6K-F8FQ>; *Data Protection Act of 2021*, S. 2134, 117th Cong., 1st sess. (2021), <https://www.congress.gov/bill/117th-congress/senate-bill/2134/text?q=%7B%22search%3A%5B%22Data+Protection+Act+of+2021%2C%22Data%2C%22Protection%2C%22Act%2C%22of%2C%22021%5D%7D&r=1&s=1>.





# Marine Corps Space Operations

Past, present, and future

by Maj Jonathan M. George

A conflict with the People's Republic of China (PRC) is coming. This battlefield will be extremely complex and span all of the warfighting domains, to include space. To meet this complex challenge, the Marine Corps is reshaping itself through *Force Design 2030*, wherein new concepts and capabilities are quickly being enacted to face this emerging threat. Just like the United States, the PRC is hugely dependent on space and space-enabled capabilities to achieve strategic objectives. This conflict will primarily be a battle over space control—those offensive and defensive capabilities that control the space domain and prevent the PRC from using it. As an integral part of Force Design, the Marine Corps is enhancing space capabilities to support national objectives, and how the Marine Corps integrates space capabilities and understands how the enemy will use space will be critical to winning the fight. The important question to ask is whether the Marine Corps is ready to operate and dominate in a denied, degraded, and disrupted space operating environment.

To answer this question, this article will walk the reader through how Marine Corps Space has evolved, envision how space will enable new concepts proposed by the CMC, and close with proposed enhancements to current Marine Corps space efforts. First, the reader must understand how space enables Marine Corps operations. Space as a warfighting domain is essentially both a conduit for communications and key terrain for capabilities that are critical to Marine Corps operations. Space provides overhead intelligence,

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surveillance, and reconnaissance (ISR) capabilities to sense and make sense of the battlespace in addition to positioning, navigation, and timing (PNT) to enable secure communications, precision-guided munitions, and of course what we typically think of as GPS. In addition, all satellite communications (SATCOM) flow through the space domain, weather information comes from space-based capabilities, and space control is utilized to secure this warfighting domain. Without space-enabled capabilities, the Marine Corps would be unable to fight on the modern battlefield.

This question of whether the Marine Corps is ready to fight on the modern battlefield is quite often lost on most Marines. The Marine Corps fought what many believe were successful campaigns in DESERT STORM, Operation IRAQI FREEDOM, and Operation ENDURING FREEDOM. What all three of these campaigns have in common is that the Marine Corps was not challenged in the space domain and operated freely in the electromagnetic spectrum. The Marine Corps had unrestricted access to copious amounts of space-based ISR, free use of SATCOM, and little-to-no issues with PNT-enabled systems and munitions.

Understanding that these linear wars that the United States dominated are

long over, the Marine Corps began to evolve and better understand the role space will play in future wars. Beginning in 2009 with the release of the Marine Corps Space Policy, the Service outlined roles and responsibilities to evolve its space capabilities. Much of the commander's intent is broad in nature: support MAGTF space operations, develop tactics, techniques, and procedures and equipment for use in space operations, participate in joint space operations, assess Marine Corps warfighting doctrine and determine where space-based systems can close gaps, integrate space-based capabilities, and most importantly, this policy established a cadre of MAGTF personnel "highly knowledgeable in space planning, programming, acquisition, and operations."<sup>1</sup>

Out of this space policy, the Marine Corps grew a cadre of 0540 Space Operations Officers as an additional MOS. The 0540s have historically served on Marine Force (MARFOR), MEF, MEU, and MEF Information Group (MIG) staffs. However, like most additional MOSs, those officers rotate back to their regular MOS will have little return on investment, and their 0540 skillset atrophies. The Marine Corps also created the 8866 Space Plans Officer additional MOS, which is a Naval Postgraduate School track focused on

space and creates a space plans officer with more capability than an 0540 to understand the space domain and does create a subject-matter expert able to analyze the problem and offer solutions; however, those skills atrophy unless they continue to apply that skillset across the FMF in future billets.<sup>2</sup>

Russian space capabilities demonstrated during operations in Syria and Ukraine, and the explosive pace that the PRC is developing space capabilities have accelerated the need to enhance Marine Corps space capabilities and force structure to counter the capabilities both these countries are expected to employ in conflict in the future. To provide the MAGTF organic planning support, the Marine Space Support Teams were created, and what was initially an ad hoc pick-up team of space officers from the MIG and MEF—enhanced with some cyber, intelligence, and information operations SMEs—has now grown to full structure under Marine Corps Forces Space Command. Marine Corps Forces Space Command, standing up in November 2020 as an additional command under Marine Corps Forces Cyberspace Command, continues to grow structure and remains in initial operating capability with approximately fifteen personnel to support Space Command, the Marine Corps, and the Joint Special Operations Command. It is important to note that Marine Corps Forces Space Command at full operational capability will still only have approximately 30–40 Marines, including four Marine Space Support Teams.

Understanding the need for a primary space MOS, the Marine Corps released *MARADMIN 239/22* in May 2022, which solicited Marines to lateral move to the newly created 1706 Maritime Space Officer (MSO) MOS. The 1706 MOS will only be a lateral move MOS and will fall under the newly created information maneuver occupational field, bringing space, cyber, psychological operations, electromagnetic spectrum operations, and civil affairs under one occupational field.<sup>3</sup> The overall MSO occupational field will grow each fiscal year, with only a handful of billets turning on each year,



**Space Force assets. What capabilities are relevant in the Marine Corps?** (Graphic by Robert Buckingham.)

and primary billets at the MEFs, MEUs, MIGs, MARFORs, Marine Space Support Teams, and other key locations. It is important to note that the 1706 billet structure will remain very small initially. The ideal lateral move candidate to 1706 is a communications, cyber, intelligence, or artillery officer, but anyone that shows aptitude for understanding the technical aspects of space operations is suitable and will be considered.

The training pipeline for the new 1706 MSOs is rather short. All officers must attend the Army’s seven-week Space Operations Officer Qualification Course where they will learn how to plan and integrate space capabilities and operations. The additional training requirement includes the new MAGTF Operations in the Information Environment Planners Course where students will learn how space fits into the rest of the information-related capabilities. MSOs will have more opportunities for training but should also consider such courses as the Naval Collections Managers Course, the Joint Targeting School, and further specialized training in information-related capabilities such as the Military Deception Planners Course.

With the Marine Corps’ mission evolving, just how will this newly-minted MSO support this effort? The Marine Corps is reshaping itself for the looming conflict with China through *Force Design 2030*. While somewhat controversial, CMC Gen David Berg-

er’s vision for the Marine Corps was set forth to “achieve the strategic objectives set forth in the *2018 National Defense Strategy*—and that were later reiterated in the *2021 Interim National Security Strategic Guidance*—which focused U.S. military priorities away from terrorism and toward strategic competition with China in the Indo-Pacific.”<sup>4</sup>

This reshaping of how the Marine Corps fights centers around its ability to

contend with its adversaries in a mature precision strike regime and will respond with littoral operations in a contested environment to gain maritime advantage and control by using organic mobility. Marines will be able to operate from small bases under the concept of expeditionary advanced base operations in low signature maneuvers through stand-in forces (SIF) without being detected in an enemy’s weapons engagement zone. Marines will support the Navy’s concept of distributed maritime operations (DMO) by dispersing in small land and sea formations, operating for extended periods with limited outside support.<sup>5</sup>

To support these objectives, the Marine Corps will be best suited in a reconnaissance and counter reconnaissance (RXR) role, essentially “sensing critical information to initiate decisive action and denying the enemy’s ability to sense. In the Indo-Pacific scenario, Marines will be positioned along the First

Island Chain and deter China from accessing the high seas by imposing high economic and strategic costs.”<sup>6</sup>

MSOs must be able to support this RXR fight. As Gen Berger notes in his April 2021 *Preparing for the Future: Marine Corps Support to Joint Operations in Contested Littorals*, China’s advancing capabilities are outpacing our ability to counter: “The joint force’s historically dominant capability to sense and understand its operating environment will be vigorously contested or denied in every domain,” and Gen Berger goes on to assert that “given our pacing threat’s capabilities in the space and information domains, reliable tracking and cuing of naval targets through the use of national technical means will be challenged, and our links among command and logistical nodes may also be targeted.”<sup>7</sup>

How will MSOs support this effort? Using Gen Berger’s “Preparing for the Future” article as the commander’s intent gives us a starting point to develop a space estimate. The Marines in the RXR role would

persist inside an adversary WEZ [weapons engagement zone]” and provide “naval and joint force commanders the ability to identify and track high-value targets including key reconnaissance platforms, scouting units, and other elements of the adversary’s command, control, communications, computers, cyber, intelligence, surveillance, reconnaissance, and targeting (C5ISR-T) complex.”<sup>8</sup>

To enable this ability, the MSO would leverage space control capabilities to ensure the SIF has access to space-enabled capabilities and leverage capabilities to hold PRC space-enabled systems at risk. For example, the MSO would enable planning to ensure the SIF has access to SATCOM for communications and ISR feeds, ensures access to PNT for the myriad of systems that require it, assist the SIF in hiding from PRC air and space-based ISR systems, and leverage organic and theater space control assets to take these capabilities away from the PRC and geo-locate sources of potential jamming.

Now that we understand how Marine Corps Space has evolved and the role the new MSO will play in future

conflict, we have to ask ourselves if current Marine Corps Space efforts are enough. Breaking this problem down into the man, train, and equip model for the sake of brevity, the simple answer is no. Adequately trained MSOs (those Space Operations Officer Qualification Course graduates) remain in short supply, and the slow pace of selecting these new MSOs on a fiscal year basis, training them, and then gradually filling critical billets over the next several years means that from a manning perspective, the Marine Corps is likely three to five years from achieving full staffing of all MSO billets. The next question is whether the Marine Corps has enough MSOs and whether they are in the right locations and units. This

ensures survivability and adaptability in future conflict. In addition, space domain impacts should be included in all Service and MEF-level exercises at a minimum. For example, SATCOM should be denied and threat jamming impacts added in as part of the primary, alternate, contingency, and emergency communications plan. In addition, Marines should be taught how to recognize GPS jamming and how to encrypt their Defense Advanced GPS Receiver, operations should be planned around adversary ISR capabilities to mask movements or support tactical deception operations, and units must learn to employ space-control capabilities to ensure their use of the space domain and take it away from the enemy. Lastly,

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**... the Marine Corps needs to develop smaller, organic systems much like the Space Force’s Counter Communications System that has the ability to deny the enemy SATCOM.**

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author argues that MSOs are needed all the way down to the Marine Littoral Regiments at a minimum but also the reconnaissance battalions, divisions, wings, and logistics groups would be well-served by having organic MSOs to better enable planning and understanding the role space plays. The argument that the MSOs should remain at the MIG level is valid, but during conflict and dispersed, 24/7 operations, the MIG MSOs will easily be outpaced by the tempo of operations.

As for training, the biggest impact on the Marine Corps will be in integrating the space domain into all facets of education and training. From communications officers fully understanding the role and impact of space, as well as threat capabilities and PNT jamming, to the inclusion of intelligence support to space in our intelligence schools, to periods of instruction on PRC threats in the space domain during Expeditionary Warfare School and Command and Staff, an educated force that understands the space domain

every exercise should have an MSO on staff and be fully included in planning.

As for space equipment to support a highly expeditionary force, the Marine Corps needs to develop smaller, organic capabilities to support defensive space control—those active or passive capabilities that can help the force preserve space-based capabilities, such as systems that can detect and geo-locate sources of jamming. On the offensive space control side, the Marine Corps needs to develop smaller, organic systems much like the Space Force’s Counter Communications System that has the ability to deny the enemy SATCOM. Imagine several of these smaller terminals dispersed throughout the weapons engagement zone by small teams of Marines blinding PRC SATCOM and theater-level unmanned aerial systems. These space capabilities would be crucial in enabling littoral operations and ensuring freedom of movement for the naval or Joint Force.

Marine Corps Space is ever-evolving and just like the rest of the DOD is be-



holden to budgets and personnel limits. With a blank check, the Marine Corps would invest heavily in numerous emerging capabilities to enhance space operations; however, building space capabilities must compete with the development of technology to support the Marine Littoral Regiments concept, the Naval Strike Missile concept, and the myriad of other initiatives the Marine Corps is taking to reshape itself. Despite this competition, many of the suggested space enhancements have little-to-no budgetary considerations. Integrating space into all schools, training, and exercises is the fastest way the Marine Corps can boost space awareness. Developing *joint*, tactical, defensive, and offensive space control capabilities is another way to get technology to the force as part of a broader DOD effort. Lastly, creating more 1706s does not take away from, or add to, current force structure. The Marine Corps should staff all of these billets immediately.

Now that we have come full circle, we can ask whether the Marine Corps is ready to operate and dominate in a denied, degraded, and disrupted space-operating environment. The answer is yes—if the Marine Corps is willing to enhance space training at all levels, pursue joint technological solutions, and staff 1706 billets immediately. If not, our dispersed Marines as the Stand-in Force will be easy targets for PRC forces.

#### Notes

1. Headquarters Marine Corps, *Marine Corps Order 5400.43: Marine Corps Space Policy*, (Washington, DC: September 2009).
2. Joseph Horvath, Erika Teichert, and James Connolly, “The Marine Space Support Team Concept,” *Marine Corps Association*, August 2019, available at <https://mca-marines.org>.
3. Headquarters Marine Corps, *MARADMIN 239/22*, (Washington, DC: May 2022).

4. Grace Hwang, “Marine Corps Force Design 2030: Examining the Capabilities and Critiques,” *Center for Strategic and International Studies*, 2021, <https://www.armyupress.army.mil/journals/military-review/online-exclusive/2021-ole/berger-future>.

5. Ibid.

6. Ibid.

7. Gen David Berger, “Preparing for the Future: Marine Corps Support to Joint Operations in Contested Littorals,” *Military Review*, April 2021, <https://www.csis.org/analysis/marine-corps-force-design-2030-examining-capabilities-and-critiques>.

8. Ibid.



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# Radio Communications at Duffer's Island

Lessons from three dreams

by LtCol Kelly P. Haycock

**M**y name is Capt Alfonzo, but everyone usually just calls me “Captain A” for short. I command Alpha Company, 1/1 Mar. It is my first month in command having recently arrived on a ship deployed in the vast ocean east of Guam. I admit I have little experience in expeditionary advanced base operations, especially command and control by radio communications, but my Marines are mature, well-led, and well-trained. I am going to tell you the story of how I learned thirteen principles of radio communications during our assault on Duffer's Island.

It was a cool pre-dawn hour when the reconnaissance element radioed back to the embarked battalion that we will meet minimal resistance when we assault the airstrip the following night. The objective was to clear and occupy an austere airfield named Via Saltu on tiny Duffer's Island, located twenty miles off the coast of the allied Grey Republic. The Grey Republic, as we all know, was narrowly resisting outright domination by the treacherous Democratic Federation of Reds. The end state of our company landing team's mission was to establish a temporary fueling and rearming point for our valiant Blue Nation pilots on Duffer's Island as part of a surge of air superiority toward the landing force's final objective during this stage of the campaign. By the end of the following day, Company Landing Team A owned Via Saltu Airfield, and the landing force established a forward arming and refueling point (FARP). But first, we flew by means of two flights of four Ospreys each to a clearing three miles

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south of Via Saltu airfield. Because I had 24 hours to prepare for my first company landing team assault, I gave initial guidance to the company operations officer to continue with preparations and then slept in hopes of drawing from my subconscious an approach to radio communications that would help us be successful in the coming operation.

## First Dream

As the sun crested the jutting slopes of nearby jungle hilltops, the shadow receded in favor of jagged light, illuminating the landing zone (LZ) now certainly clear for landing. Through the night, the reconnaissance element had scoured the LZ and its surroundings. There were no threats or observers of any kind, human or otherwise. No flights of aircraft of any type were observed near the island. It appeared the landing would be entirely unopposed.

However, as the first four aircraft landed at the clearing, an enemy missile struck the first Osprey. Its destruction was sudden and catastrophic. None of the sixteen passengers and crew survived. As the other missiles struck the landing zone, a second aircraft with the remainder of 1st Platoon was also hit creating a mass casualty problem for the rest of the landing force. When 2nd

Platoon landed in the third and fourth Ospreys, they were faced with competing requirements to evacuate the kill zone, establish a defensive perimeter, and provide aid to the wounded. Missiles kept pounding the LZ, one after the other, killing or wounding 42 out of 64 members of the landing force's lead element. When the eight-missile barrage ended, Lt Secundus from 2nd Platoon took stock of the situation. With downed aircraft, mass casualties, an unseen enemy, and less than a quarter of its strength, the company landing team was, for the time being, combat ineffective.

Being short two aircraft, the remainder of the company landing team was delayed by several hours in reinforcing Lt Secundus' isolated platoon—time in which the Red force was able to position its naval forces near the island and actively deny Blue force entry into its air and sea space. Without reinforcements, 2nd Platoon would have to evade or defend against the Red force alone for an indefinite amount of time.

I was bewildered as to how the enemy could have known the exact grid location on which the Osprey was going to land. The recon element observed no enemy spotters or other intelligence collectors in the area. The grid location was only briefed to the pilot by the recon element fifteen minutes earlier when the aircraft checked in to make its approach. After talking with the surviving pilots when they returned from the day's flying, they reported that they attempted to use encrypted comms on their primary net, but it was not working like it did the previous week. They had switched to an emergency radio frequency—one

that was unencrypted for safety reasons.

Perhaps the Red force had been observing our Ospreys with electronic warfare systems and had noticed the same single frequency used for every flight. Because they could detect the strength of the signal, but not the information it carried, they likely deduced that it was our encrypted assault support intra-flight net. Listening from anywhere in the battlespace within a couple of hundred miles of the aircraft, it is easy for the enemy to hop on its own radios and transmit noise on that same frequency. Perhaps the enemy has purpose-built jammers somewhere in the region, or even a spacecraft in low orbit, that can transmit so much noise on that frequency that the Osprey's intra-flight radio net was effectively jammed, forcing the pilots to find a different net to operate on for today's mission.

Perhaps there was a signals intelligence aircraft somewhere in the airspace or signals intelligence collector on the ground of a nearby island that was able to listen to the secondary radio net; the unencrypted, single frequency radio transmissions between the recon element and the pilot, or between the pilots, when the grid location of the LZ was stated: "in the clear." With a modern networked radio relay, the grid location was given from the enemy's intelligence collectors directly to the fire control system of the Red force's missile battery, and the command was given for launch. The five or six minutes of flight time from the missile battery's location was short enough to catch the lead Osprey before its wheels had even contacted the clear LZ.

As I woke from this first dream, the following three fundamental rules about radio communications came to my mind:

- Rule number 1: Any radio net that relies on a single frequency for long periods of time is susceptible to simple jamming, also known as narrowband jamming. Use radio nets that hop between multiple frequencies whenever possible. Think SINCGARS and HAVEQUICK.
- Rule number 2: Always encrypt your voice communications. In the contested environment, only commu-

nicate in the clear those things you intend on being heard by the enemy.

- Rule number 3: If you must resort to the use of an unencrypted radio net, establish a set of brevity codes that helps you communicate without being understood by the enemy.

### Second Dream

The situation and mission of the company landing team's insertion onto the island of Via Saltu airfield by two flights of four Ospreys each remains the same. However, I was compelled to ensure the lessons of the first dream were enacted in the planning and execution of the current dream. I called to make certain that the aircraft carrying my company into the assault had been prepared with sufficient radio communications to evade such early enemy detection and interception. The assault flight lead, Capt Alex Franklyn Larson, assured me that they now had four encrypted frequency hopping nets to communicate both internally and with the recon element guiding them to the LZ. This way, they would be resilient to simple jamming by the enemy. We also agreed to a list of brevity codes to communicate in an emergency over unencrypted nets. The execution checklist for the mission also incorporated these brevity codes. With a short rehearsal, we were able to practice saying "Chevrolet" instead of "LZ is clear for landing" or "Plymouth" instead of "landing force has reached the objective" and other such codes.

As the Ospreys approached the island, the recon element provided the ten-digit grid over an encrypted frequency hopping net and both were confident the enemy Red force had not jammed or intercepted these coordinates. When the first flight of Osprey's arrived in the LZ, the Marines of 1st and 2nd Platoons landed safely and unopposed according to their planned and rehearsed actions on the objective. While awaiting the second flight of Ospreys that would carry 3d Platoon and other enablers, like engineers, aviation ground support, and stinger missile gunners, Lt Primus of 1st Platoon established a company command post at the top of the nearest hill to get the best radio com-

munications with the company landing team platoons, the battalion, and the MAGTF. They used standard foot-mobile radios such as the PRC-117G VHF and UHF radio and PRC-150 HF radio. They were also practiced in digital communications such as KILSWITCH and tactical chat over wideband radio capabilities like adaptive networking wideband waveform (ANW2). Almost every radio antenna was vertical to make sure that the radio propagation patterns could provide radio coverage to the whole area in 360 degrees (known simply as omnidirectional) and powered to the highest setting so they could reach as far away as possible. They also had access to standard UHF SATCOM to come up on the battalion command net. Finally, they also had commercial satellite telephones and friendly force trackers such as the Shout Nano.

Over the next two hours, Lt Primus did well to establish security, radio back to the company and battalion of the situation, and make other decisions vital to the continuation of the mission. Just as the second flight of Ospreys landed bringing myself and 3d Platoon to the LZ, there was a horrific explosion in the direction of the company command post. After talking continuously by radio to the local area and to higher over the last two hours, Lt Primus and his radio operator were fatally wounded by a missile strike. Recognizing the need to relocate the command post to another location, I took charge of the company and established a new company command post 800 meters away, where the radios could be placed at the top of a different piece of high terrain, according to the unit SOP. After all, we fight like we train.

After setting up communications at the new company command post in the new location and starting a routine of scouting patrols (each with routine radio checks and detailed situation reports), two large airplanes were spotted in the sky, both in the direction of the Grey Republic where we most expected to see the enemy. After calling over the radio to tell the scouting patrols what we saw and to lay low, a horrendous explosion obliterated the command post with fire and debris until there was nothing left



but a smoking hole in the hilltop. The radio operators and the mortar section were instant casualties, and I was badly wounded. As Lt Secundus of 2nd Platoon responded and attempted to organize the company, the enemy jets came. Four hours after we landed, we were being gunned down by the enemy fighter jets making pass after pass on our position until they apparently ran out of ammunition. After sustaining 30 percent casualties and 12 hours of doing our best to prepare a deliberate defense of our position, a message came over our radio that informed us that the Red naval force had reoriented itself on Duffer's Island and that lack of air and surface superiority would force us into isolation for the foreseeable future. We should prepare for an enemy ground assault based on our last position and that an Army airborne battalion might be able to drop in a few days. Until then, we were to maintain radio silence for our own safety.

As it turned out, our omnidirectional antennas were emitting radio signals in all directions, even toward the enemy. Because we wanted to ensure that each radio could talk with certainty, we made sure that radios were set to their highest power setting, regardless of the distance between them. Perhaps the first missile strike came as the result of enemy signals intelligence aircraft triangulating our position based on the large volume of encrypted radio communications coming from it. All it takes is two or three enemy direction-finding radios to pinpoint a friendly radio—or perhaps even just one aircraft flying around the island taking many measurements of the radio signals that reach it over a period of time. Those aircraft we spotted were probably some of the same ones triangulating our position after the first half of the company landed, and they probably also determined the actual coordinates of our radio emitters. Given the large number of encrypted radio signals across many parts of the spectrum coming from our location, the enemy probably deduced that we were a company command post of relatively high value, at least valuable enough to expend two medium-range GPS-guided missiles and to maneuver the naval force in pursuit.

As I woke from this second dream, the following three fundamental rules about radio communications came to my mind:

- Rule number 4: Use terrain masking to prevent radio emitters from radiating toward the enemy force. If an omnidirectional antenna must be used, do not place it atop prominent terrain features where it will radiate toward the enemy.
- Rule number 5: When able, use directionalization techniques to reduce the amount of radio signal that can go where the signal is not needed. A vertical radio antenna has a cone of silence directly above it (and below it). To avoid detection by the enemy, the enemy must be directly above the antenna. However, a horizontal radio antenna's cone of silence is to

sure the lessons of the second dream were enacted in the planning and execution of the current dream. During this dream, after landing safely in the LZ on Duffer's Island, Lt Primus established the tentative company command post on a piece of terrain that masked his radio transmissions from the direction of the enemy, essentially a stone wall in the hillside that blocked the directions of northeast, north, and northwest. I was briefed that Blue forces had general air superiority to the south. This hill was still elevated enough to provide radio coverage to the company and back to the battalion and the MAGTF. Consequently, the stone wall in the hillside had reflective qualities, so more radio power than usual was available to the company to the south coverage area. That means that the radio operators

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**All it takes is two or three enemy direction-finding radios to pinpoint a friendly radio—or perhaps even just one aircraft flying around the island ...**

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its left and right, effectively giving it a single azimuth of radiation towards its destination and incidentally from the transmitter backward away from the intended destination. This means that an enemy signal collector could be on the left or right side and not be able to detect the presence of a radio signal. *Note: Use directionalization wisely because it requires all radio operators to know their positions, azimuths to their intended targets, and often extra time to set up and tear down elaborate antennas.*

- Rule number 6: Use the minimum power setting that will allow you to talk between the two locations that matter to you. Do not let stray radio signals be strong enough to be observed by the enemy unless necessary.

**Third Dream**

The situation and mission of the company landing team's insertion onto the island of Via Saltu airfield by two flights of four Ospreys each remains the same. However, I was compelled to en-

were all able to lower the power settings of their radios and still maintain communications.

For those forward patrols to the north that could not be reached by the command post radios oriented to the south, they were provided with a directionalized radio, either a horizontal HF skywave antenna where the direction of the radio signal is obscured by the atmospheric scattering, or with a horizontal VHF or UHF antenna aimed directionally toward intended recipients. In the latter case, enemy signals collectors had to stumble onto a particular azimuth in their flight pattern to observe any of our stray signals, and their access to observe our signals would end rapidly unless they were flying directly toward us. This also meant that before departing for their patrols, squads would have to prepare a full five-paragraph order, plan a scheme of maneuver, build terrain models, and brief their plans, both internally and externally. The company radio operators had to know where the patrols would be

and when so that coverage areas could be moved over time according to the changing azimuth from the command post to the patrol.

Next, each radio operator was tasked to reduce power settings as often as able while still communicating. In summary, we were very disciplined about limiting our radios to only radiate in directions and at minimum power levels necessary for us to talk.

As the company landing team's patrols scouted ahead toward the Via Saltu airfield, communications were outstanding. Patrols were able to provide situation reports every 30 minutes after pausing to set up their directional antennas.

After twelve hours on the island, the scouting patrols had viewed the airfield, identified key terrain (as marked with ten-digit GPS grids), and brought back enough information to prepare for the company assault. However, problems started occurring as the mortar section chief inquired about potential targets in and around the airfield.

When asking for information from the reconnaissance and scouting patrols that had eyes on the objective, the scouting patrols were unable to report on grid coordinates of nearby terrain features. Their GPS receivers stopped working. When reporting this back to the company, it became apparent that our standard means of radio communications also stopped working. VHF frequency hopping nets were suddenly garbled and unreadable, all of them. It was a very strange phenomenon indeed—one never experienced by our radio operators in training. When resorting to various frequencies, configuration settings, and even radio types, it seemed that they would work for about fifteen minutes and then fall apart. With as much resilience as we had planned for in our radio communications, we seemed to be getting jammed across all of our communications systems. The only system that worked was UHF narrowband SATCOM radio. Through it, we received a report that the Red naval force has obtained air and surface superiority in our vicinity. At the same time we received this information, the shelling began.

The shelling was not accurate; beginning at first a few hundred meters south of the LZ on which we landed, but it was walking closer and closer to the company command post. We could only assume that they planned to barrage the whole island in preparation for a sweep and clear operation to find us. We couldn't communicate. We were strung out over three miles of various terrain. We were isolated and unsupported. The best we could do was send runners to the last known grids of the patrols and consolidate our company to a defensible position. While the terrain provided fair cover and concealment, the loss of local air and surface superiority meant that we were going to be in a truly dire situation. Food, water, and ammunition would deplete unless resupply and reinforcements could be arranged and delivered through enemy lines. Our casualties would not be quickly evacuated if at all. Our defensive indirect fire was limited to our company mortars and grenades. Engineers were not equipped to build the defenses necessary to stop the looming enemy assault. It was a truly dire situation indeed.

After a week-long defense of the company command post, our dug-in fighting positions were void of all vegetation, thanks to incessant accurate shelling. The company, while valiant, was reduced to 25 percent effectiveness due to casualties by enemy fire and a lack of food and water. We suspected that the enemy had no reason to assault our position and risk their own personnel rooting us out. They had us surrounded and isolated.

All they had to do was wait for us to surrender or perish due to lack of water. They had won.

In those dreadful hours awaiting death or capture, I pondered how the enemy knew that we were doing something of such strategic importance that they were willing to maneuver their naval forces to a position to gain air and surface superiority. Perhaps stray signals that made their way off the island established a suspicious pattern to signals intelligence collectors. It stands to reason that a major industrialized nation like the Democratic Federation of Reds

could produce a broad-spectrum jamming capability—essentially blasting radio noise on all our VHF frequencies at the same time. Then whenever we would stray from our standard frequencies and try something new, they would listen for it, locate it, and adjust their jamming to also stamp it out too. They seem to have combined air superiority—and perhaps space superiority—and electronic warfare to make possible complete information superiority. They are able to have unfettered access to information while effectively denying our own use of information. Looks like it is back to the Stone Age for us.

As I woke from this third dream, the following six fundamental rules about radio communications came to my mind:

- Rule number 7: Do not transmit radio signals unless absolutely necessary. *To radiate is to be detected, to be detected is to be targeted, and to be targeted is to be destroyed.* Though we have taken measures to reduce how much of our radio signal can be observed by the enemy, we cannot control various scattering and reflections from eventually reaching enemy sensors. Unnecessary situation reports and excessive radio checks serve to provide small pieces of evidence to the enemy. The less we transmit over radios, the fewer pieces of evidence the enemy has to collect, and the longer we can delay the inevitable localization of our radios.
- Rule number 8: While there should be no limit to transmitting radio signals in support of fires and CASE-VAC, other routine radio communication should be limited to pre-arranged periods of time, also known as *comm windows*. When given a small, pre-arranged window of time to transmit on radios, small units are forced to save their information to be passed in very short bursts, perhaps two or three minutes. Should the enemy find a friendly radio frequency to observe, they will not have enough time to triangulate its position. They also will not be able to deduce the size or capability. The next time the small unit uses that frequency, they are hours and perhaps miles away. Prolonging the time it takes for the enemy's in-

evitable identification of your radio traffic and subsequent deduction of your strength or intentions allows you more time to complete your mission free from harassment or interdiction.

- Rule number 9: GPS can and will be jammed. Use encrypted GPS for positioning (and timing) information that is more resilient to enemy jamming. Also, it goes without saying, always be proficient in navigating without GPS.

- Rule number 10: Be mindful of your radio signature and frequently change it as the situation permits. Where a mechanized infantry battalion looks much different to imagery intelligence collectors from a heavy-lift helicopter squadron, so too will they look different to signals intelligence collectors. Where one uses predominately VHF communications and the other uses predominately UHF communications, both create a radio signature useful in deducing what types of units are operating where. Do not be afraid to reverse their signatures temporarily to confuse the enemy. *Note: There will be technical limitations and operational impacts in doing so. Each limitation or impact must be evaluated carefully.*

- Rule number 11: Be deceptive in your use of radio communications. When you are large and want to appear small or non-existent, exercise as much radio silence as your situation permits. However, if you want to appear large and are small, you can make a concerted effort with your forces and radio assets available to spread out across the area of operations and create an exorbitant amount of false radio traffic. Use tall antennas on high power settings to make sure the enemy can detect the presence of every radio transmission.

- Rule number 12: Be unpredictable in how you use radio communications. Given enough time and resources, anything you transmit can be detected, jammed, and targeted by the enemy. You must exercise full use of the wide range of communications capabilities in an unpredictable way to outpace the enemy's electronic warfare efforts. On one day, use VHF and UHF if speed is required and the terrain permits. On the next day, trade

VHF assets for HF assets as the situation permits. On the next day after that, resort to satellite phones and brevity codes, or runners, or flags, or pen lasers, or field phones and cable, each as the situation may permit.

- Rule number 13: Above all else, be brilliant at the basics. All small unit leaders must prepare their five-paragraph orders with an understanding of the commander's intent two levels up. Use terrain models. Communicate the plan and get brief backs. Conduct pre-combat checks and pre-combat inspections. Have a robust and well-thought-out no-comm plan. Know the schemes of maneuver of all your adjacent units. Have a well-informed runner that can find other small units on the battlefield. Finally, train your people to act well in absence of clear direction and in accordance with the commander's intent. Then trust them without micromanagement. With all these basic elements in order, most radio communications need not be used until the decisive point in battle.

As I returned to my fully conscious state and these thirteen rules of radio communications manifested solidly in my mind, I returned to the company planning spaces and endeavored to ensure that all of these rules could be applied to the coming operation.

Small-unit leaders were instructed to limit radio traffic to those absolutely necessary for fire support coordination, casualty evacuation, or to make a change to the scheme of maneuver as briefed. Small-unit leaders on patrol were further instructed to reserve all of their routine radio traffic for a single five-minute comm window every three hours, and such comm windows would be made using random assignments so that it would be difficult for a three-hour pattern to emerge for the enemy to recognize. Additionally, no comm windows were allowed to be made from locations within 800 meters of any previous one. The company command post would similarly displace as often as the situation permitted. Details of such displacements would be communicated and updated azimuths to new locations would be made for directional radios.

Next, GPS devices were provided encryption keys so they could access more resilient GPS services reserved for Blue nation military units. This did not prevent platoon commanders from ensuring that all squads had sufficient maps and compasses to navigate absent of GPS.

Then, we came up with our radio signature management plan. We decided that we would use two VHF frequency-hopping nets for our primary and alternate comms as the first flight of Ospreys arrives at the LZ. Frequency-hopping UHF nets would be reserved as contingency and emergency comms. The second flight's spectrum signature would be reversed. When the first half of the company established a command post and started patrols, for the next eight hours, primary communication would be made by runner. No two positions were more than four miles away, and only fires, CASEVAC, and changes to the scheme of maneuver as briefed would be the only information exchange requirements so urgent that a runner would not suffice.

For the subsequent eight hours, those sparing radio communications necessary would be made by HF skywave on the pause. During the following eight hours as everyone moved into position for the upcoming airfield assault, VHF frequency hopping would be the means of radio communication. For now, ANW2 would be turned off because every radio on an ANW2 network emits a constant ping like a homing beacon searching for connections to make automatically. While this does hurt digital fires and KILSWITCH data exchange, it does prevent the enemy from locating every squad equipped with an ANW2 radio. Finally, during the assault, all units will talk primarily by UHF frequency hopping. This will be convenient because as soon as the airfield is under friendly control, the first C-130 carrying the FARP aviation ground support equipment will arrive and offload, and we will be able to report the runway clear for landing.

After communicating these procedures to the team, my only regret is that we had not practiced in training a wide range of methods of radio com-



munications so that we would be able to adapt to changes in the comm plan as quickly as we will have to during this operation. Instead, it will have to learn and do while under the stress of a no-fail mission.

In the final eight hours before crossing the line of departure, smart packs were republished with the new, more complex communications plan, but the radio operators and squad leaders all had a good handle on the dynamic changes they would make in the coming hours. We would figure out ways to make dynamic comm plan changes simple and easy to cope with after we get back. For now, it is game time.

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***... the F-35s surged into this airspace further than they had at any point in the campaign up to this point, made possible because we provided them a safe place to land ...***

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As the company landing team infiltrated Duffer's Island and for the first four hours, we were able to avoid using any radio communication at all. We requested the grid of the LZ to be provided before wheels-up so that transmission was avoided. The recon element reported the LZ clear for landing with a chem-light buzz-saw so that transmission was avoided. To indicate to the battalion that we had all arrived safely, I gave a pre-arranged thumbs-up to the pilot to relay when they get back. As for actions on the objective, the squads and platoons did according to their plan and their rehearsals. With encrypted GPS to guide them, navigating to their pre-arranged patrol bases was very simple, though some needed adjustment as the micro-terrain did not provide the preferred defensibility and concealment. Adjustments were all reported by runners in buddy pairs. The platoons and company were well enough informed on the changing situation.

Platoons eventually shifted from security patrols to scouting patrols to ensure there were no surprises awaiting us in our company assault on the

Via Saltu airfield. The scouting patrols brought back plenty of grid coordinates of relevant targets for the mortars; a single guard post, a largely unoccupied barracks, a motor pool with a few dilapidated trucks, avenues of approach, visible micro-terrain from which to adjust fires, etc. The mortar section had no information requests when it came time to coordinate the assault.

During these eight hours, HF sky-wave antennas were used to communicate, but units would only be talking during their comm windows. The brevity code for "nothing significant to report" was simply "[platoon number] then Zulu." However, there were im-

portant reports to make, and platoon commanders were as concise as possible, being certain to un-key the handset every four seconds or less.

As we proceeded into the final eight hours before the assault, everyone stowed their HF radios in favor of VHF radios to get back to frequency hopping as the operation got closer to the decisive phase. Radio discipline, brevity codes, and communications windows were still used if communication was necessary as the company massed in the vicinity of the objective rally point and support by fire positions.

In the final 30 minutes before launching smoke and illumination, we switched to the UHF frequency-hopping radios to add spectrum to the list of our many elements of surprise.

Units maneuvered. Fires supported maneuver. Units communicated implicitly, verbally, and over the radio when necessary. Marines exercised initiative in accordance with the commander's intent. While we confronted token resistance, the airfield was captured because of our overwhelming relative combat power.

While the airfield occupants probably telephoned or radioed to report the situation, the C-130 carrying the aviation ground-support equipment was in-bound according to schedule. Fuel, bombs, and other enablers landed and made this airfield a forward arming and refueling point. When it came into operation an hour later, the F-35s surged into this airspace further than they had at any point in the campaign up to this point, made possible because we provided them a safe place to land, rearm, and refuel, and get back to safety at the end of the day.

With air superiority promised, surface superiority followed soon after.

Two days later, the FARP was still intact, and the mission was a complete success. However, we knew the enemy was looking for an opening to launch some GPS-guided missiles at our aircraft, fuel, or ordinance during FARP operations. As it turned out, our fleet's cooperative engagement capability was very busy defending our FARP from missile attacks. It was only a matter of time before the enemy succeeded. The retrograde order came, and we packed up. As the MAGTF afloat passed nearby the island, we retrograded knowing that our infiltration worked this time on this island, and we were able to successfully surge striking power at the enemy. Next time, we will need a different approach as the MAGTF surges air and surface superiority toward some different aspects of the enemy's war-making capability. They will be waiting.



# If You Build It, They Will Come

The powerful potential of tactical supercomputers

by LtCol Kelly P. Haycock

**D**EVSECOPS First, let's get up to speed on state-of-the-art technological developments.

>LtCol Haycock's bio can be found on page 46.

*“DEVSECOPS—short for development, security, and operations—automates the integration of security at every phase of the software development lifecycle, from initial design through integration, testing, deployment, and software delivery.*

*DEVSECOPS represents a natural and necessary evolution in the way development organizations approach security. In the past, security was ‘tacked on’ at the end of the development cycle (almost as an afterthought) by a separate security team and was tested by a separate quality assurance (QA) team.*

*This was manageable when software updates were released just once or twice a year. But as software developers adopted agile development practices, aiming to reduce software development cycles to weeks or even days, the traditional ‘tacked-on’ approach to security created an unacceptable bottleneck.*

*DEVSECOPS integrates application and infrastructure security seamlessly into agile processes and tools. It addresses security issues as they emerge, when they're easier, faster, and less expensive to fix (and before they are put into production). Additionally, DEVSECOPS makes application and infrastructure security a shared responsibility of development, security, and IT operations teams, rather than the sole responsibility of a security silo. It enables “software, safer, sooner”—the DEVSECOPS motto—by automating the delivery of secure software without slowing the software development cycle.”*

—IBM Cloud Education, 30 July 2020  
<https://www.ibm.com/cloud/learn/devsecops>

## The C5ISR(EW) + AI/ML Enterprise

C5ISR(EW) stands for command, control, computers, communications, and cyber (C5), intelligence, surveillance, and reconnaissance (ISR), and electronic warfare (EW). To this construct, we know we will add the power of artificial intelligence (AI) and machine learning (ML) to increase the speed of obtaining situational understanding in support of military decision making. We, in the tactical C5ISR(EW) enterprise, are now finally ready to leverage DEVSECOPS and the rapid capability upgrades it promises, and I will tell you why with two words, Tesla and NVIDIA. The difference is this: unlike ever before, we can now field and communicate with supercomputers at the tactical edge.

C5ISR(EW) are all information-related capability areas that have up until this time relied on an application-specific computer and radio hardware and software. For decades, big defense corporations like Raytheon, L3/Harris and General Dynamics have used the promise of DOD contracts to develop the global state of the art in computing and communications technology.

Unfortunately, as implied by the Third Offset Strategy, commercial industry now defines what is global state of the art, and fewer and fewer companies find promising opportunities to be world-class organizations through working with the DOD (See Christian Brose's *The Kill Chain*). Since the defense industry is not incentivized to engineer more than a small handful of niche kill chains at a time, we must look toward the commercial approach to ultra-successful information superi-

ority to enable fast, self-organizing kill chains anytime and anywhere on the battlefield.

### Don't Go Chasing Waterfalls

Our current DOD acquisition life-cycle is deterministic. This means that to obtain a new capability, we must state the final capability requirement up front and request congressional funding. Research begins, prototypes are built and tested, all risk is identified and mitigated before fielding, and seven to ten years after the idea was conceived, the system is fielded. Then, every two or three years thereafter, the program gets a major upgrade or service-life extension as additional deterministic mini-projects. This is known as the waterfall method of project execution, and it is the enemy of agile systems development. In the waterfall method, stakeholders determine what the end state will look like, how much the project will cost, and how long it will take to produce it. Ironically, these decisions will be made at a time when the least is actually known about the future context in which that platform will operate. Scope creep and plan changes are the results of planners coming to grips with realities that change during the project's progress. No wonder projects are almost universally over budget and behind schedule. This is as paradigmatic of C5ISR(EW) systems as it is for trucks and weapons, and it is far too slow to technologically outpace the enemy.

In contrast, we are at the precipice of a new approach to acquisitions of C5ISR(EW) capabilities that are actually agile (with a lower-case "a"). What if, instead of waterfall acquisitions that respond to warfighter needs three to ten years after the need was identified, we were able to put the right information-related capability enhancements in the hands of operators daily, or even better, in the middle of a firefight? This is where NVIDIA, Tesla, and DEVSECOPS come in.

formation, stream media, and exchange a plethora of other driving-related information to free the human for uniquely human tasks—specifically making decisions. The key aspect that makes Tesla agile is its ability to remotely update the car's software while in use. If a security patch is necessary to mitigate a newly identified vulnerability, it develops the patch, tests it, and releases it over the air—the same with bug fixes and capability enhancements. It stands to reason that if a driver was experienc-

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## Supercomputers of yesteryear are now miniaturized, connected with sensors, and placed in the back of self-driving cars.

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NVIDIA makes many of the world's fastest computer chips (on the order of 320 trillion operations per second) and places them in computers the size of a textbook. Supercomputers of yesteryear are now miniaturized, connected with sensors, and placed in the back of self-driving cars. The result is cheap, commoditized supercomputers strong enough to serve as sensor fusion engines and AI platforms.

Tesla takes these supercomputers and not only do they process sufficient sensor data to safely drive the car, but they also communicate with cell phone networks, get traffic and navigation in-

ing extraordinarily heavy rainfall, Tesla could provide a software update mid-drive to add a new setting for the windshield wipers to swish faster to keep up with the water.

More importantly, Elon Musk does not need to approve each patch or update. DEVSECOPS organizations inside of Tesla can do all the necessary steps to identify a software change, develop a fix, mitigate cybersecurity risks, test it in a simulated environment, and release it in the deployed environment.

When these processes are decentralized, update cycles can be much faster than an annual software release; they can happen several times per day. And if they got it wrong on a particular update, they could roll it back just as quickly or improve it on the next release cycle.

So, if these NVIDIA chips are strong enough to run AI algorithms on sensor feeds, then when paired with a software-defined radio, should there not also be enough computing power to modulate radio signals in a particular waveform? Maybe an AI algorithm helps the waveform avoid jamming interference. Maybe these supercomputers also run computer operations in support of a friendly force common operational picture, chat, blue force tracking, voice telephony, electronic attack waveforms, data exchange, and so forth. The majority of our information-related capabili-

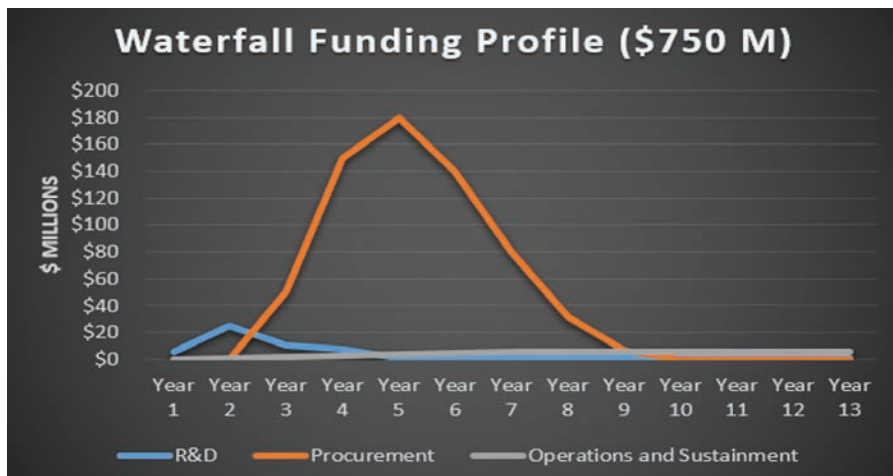
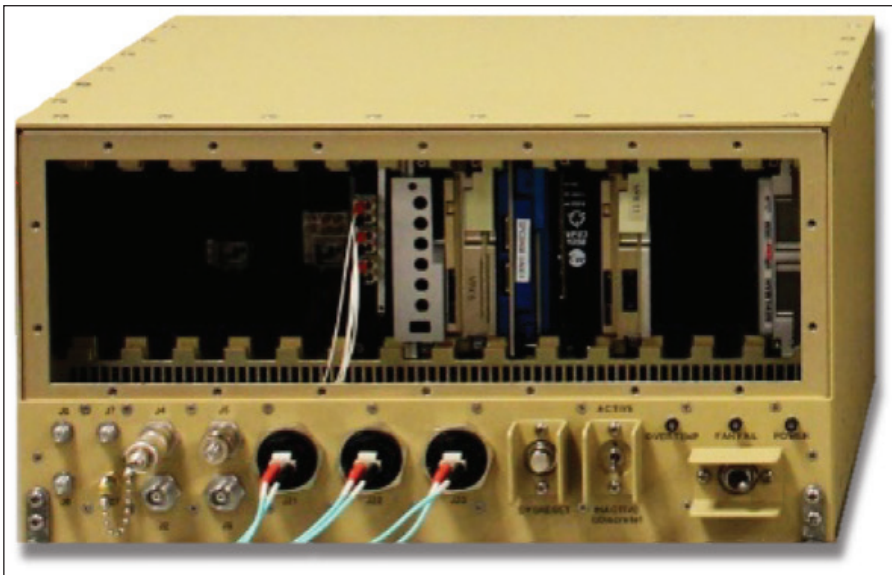


Figure 1. C5ISR(EW) System X is a hypothetical program with an early investment and long sustainment. (Figure provided by author.)





**Figure 2. NVIDIA Drive is a 320 trillion operations-per-second supercomputer designed for Level 4 and Level 5 autonomous systems, including robotaxis. (Photo provided by author.)**



**Figure 3. C5ISR/EW Open Suite of Standards defines an ecosystem of hardware, including the chassis pictured here, specifically designed to host many tactical-edge processing-intensive capabilities including software-defined radio, signals intelligence, electromagnetic warfare, sensor down-link, and battlefield command and control. (Photo Credit: Peddicord, Ben, U.S. Army.)**

ties are ultimately run by software on computers connected with radios.

Simply add “remote software updates” to this list of information capabilities, and just like that, software-reprogrammable C5ISR(EW) systems can be leveraged to technologically out-pace the enemy. The main barrier to accomplishing this today is a *lack of common platforms and interface definition standards*. When C5ISR(EW) system vendors seek to do business with the DOD, they expect the DOD to de-

velop a dependency on their products, erect barriers to competition, and force the adoption of their technology. They do this by making their hardware and software proprietary. However, it is time for this to change with respect to hardware architecture and software interface standards. With a miniature supercomputer deployed to every vehicle, air, naval, and ground platform, interoperability challenges become software challenges only rather than hardware and software challenges. Because these

various platforms will be everywhere throughout the battlefield, there will not be a significant dependence on a single frequency band or communication pathway for connectivity. There will be a host of radio relay platforms available to every node in the network in case a particular communications pathway back to the cloud is jammed. Through virtualization, a supercomputer can simultaneously be a Windows computer, Linux computer, Android device, radio waveform engine, EW platform, signals intelligence platform, sensor-fusion engine, decision-support system, C2 system, internet router, and an unknowable number of yet undiscovered combinations thereof. This is what is known as emergent behavior, and it is the opposite of deterministic or waterfall acquisitions.

**Information Superiority is Emergent, Not Deterministic**

Google did not use a deterministic waterfall approach starting in 2002 to become a household name in information, but through combining the technologies of YouTube, Waze, Double-click, Motorola, and Deep-Mind, one of the most trusted and ubiquitous providers of timely and relevant information emerged.

Bonnie Johnson, in her 2019 Naval Postgraduate School doctoral thesis, wrote about how complex adaptive systems of systems (CASoS) are engineered as solutions to complex problems:

The exponential growth in technology demands from a warfighting community to rapidly address operational challenges, and dynamic, highly complex environments overwhelm traditional engineering approaches ... Complex Adaptive Systems of Systems adjust to their environment through complex interactions among their self-organizing constituent systems, *giving rise to purposeful emergent multi-minded behavior*. This requires an adaptive architecture that enables intelligent constituent systems with the ability to discover knowledge and predict the outcomes and effects of their actions. The CASoS systems engineering approach is an adaptive process that relies on continuous and

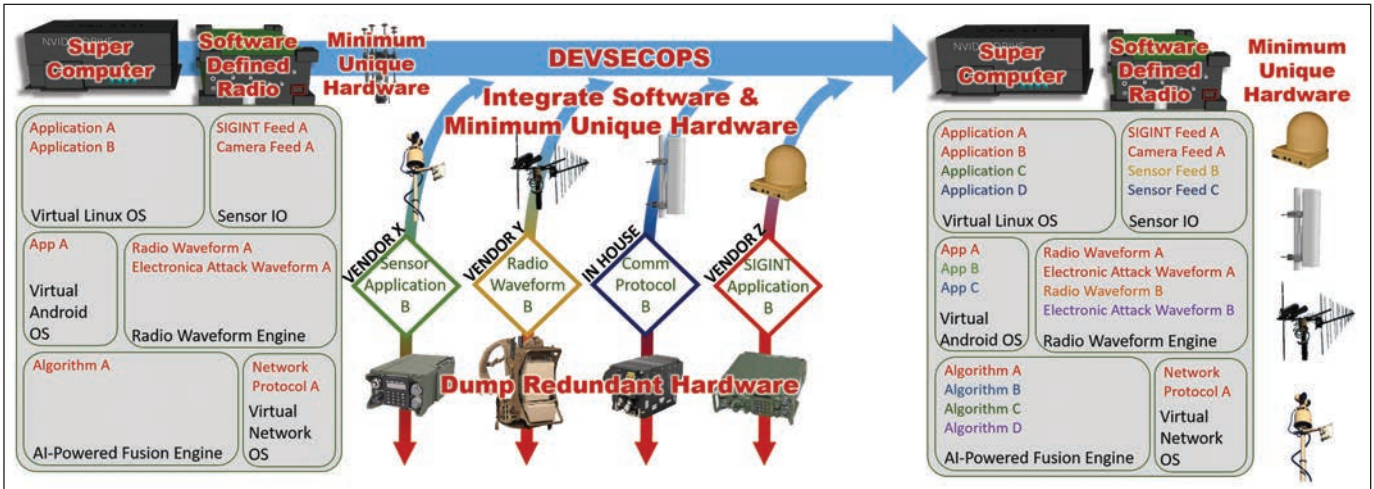


Figure 4. With a supercomputer, and the minimum mission-specific hardware, use DEVSECOPS to integrate the software-defined radio as the base system according to the mission and the appropriate fit for each ground, air, or naval platform. (Figure provided by author.)

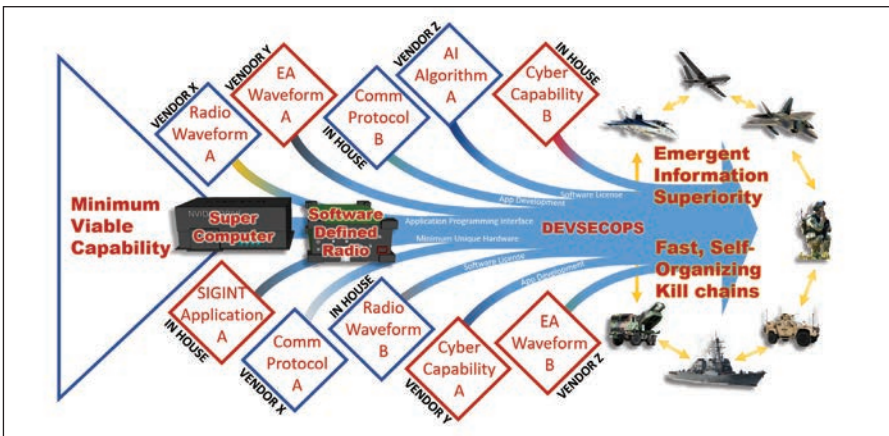


Figure 5. When a minimum viable combination of supercomputer, software-defined radio, and some minimum mission-specific hardware is developed, additional C5ISR(EW) + AI/ML features derived from related systems can be added using DEVSECOPS. (Figure provided by author.)

ongoing design and development in parallel with operations.

There is no best deterministic waterfall approach to obtain information superiority over the enemy. Yet we believe that information superiority is what will emerge when interconnected supercomputer and AI-powered sensor fusion engines and information exchange platforms are employed throughout the battlefield giving rise to faster, self-organizing kill chains. We believe that decisions can and should be made at the lowest level informed by AI-powered sensor fusion and interpretation, leading to an increased understanding of the situation. We believe that open software-defined radios can outpace the enemy's electronic warfare effort. We

**... hire a small army of software development and cyber-security experts and give them a direction to go ...**

argue that rapid software releases and AI algorithms can out-pace the enemy's cyberattack effort and with very fast release cycles, developers can get fast feedback from operators and learn faster what are the optimal information access methods and artificial-intelligence algorithms in that particular context necessary to make the operator most effective

at their uniquely human capability: to make fast, well-informed decisions.

I propose we stop trying to state the capability requirements for a disparate arrangement of hypothetical C5ISR(EW) systems that will be ready 3–10 years from now. We do not know what the situational context will be. Let us instead cultivate a decision-support environment made of tactical supercomputers, software-defined radios, absolute minimum mission-specific hardware, and an open architecture for virtualization to let the C5ISR(EW) + AI/ML possibilities emerge. Let us start with a minimum viable capability (i.e. a supercomputer driven software defined radio with two radio frequency bands, two radio waveforms, two electronic warfare waveforms, the fusion of data from two sensors, and the communications relay of two C2 systems) and see where that takes us. Let us hire a small army of software development and cyber-security experts and give them a direction to go, namely toward making sure every radio platform is also a signals intelligence and EW platform and to make faster kill chains. Let us buy the proprietary software licenses from those companies which already own the code that make our C5ISR(EW) enterprise go but decouple those capabilities from the hardware on which they currently reside through virtualization and/or software integration. Let us define the software interfaces so industry will have an easier time adapting to our hardware



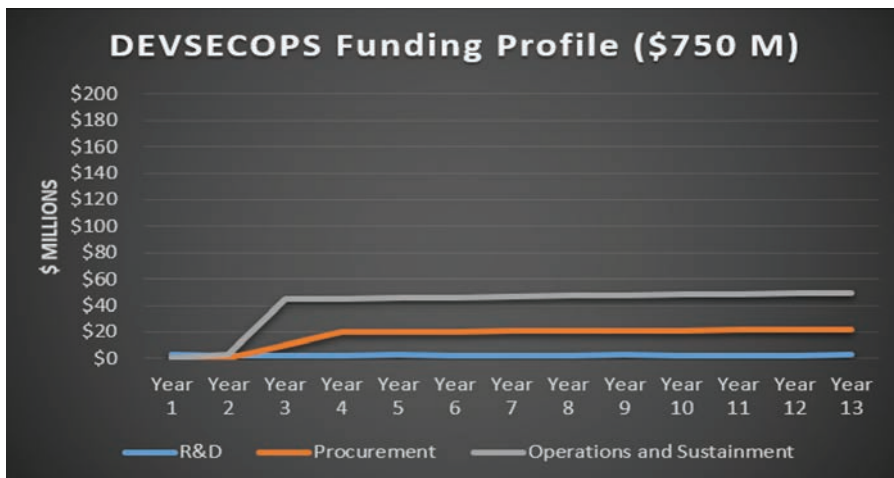


Figure 6. CSISR(EW) System Y is a DEVSECOPS project that does not have a known conclusion, only a primary mission and minimum viable capability definition. (Figure provided by author.)



and together we can conduct faster and faster cycles of optimization.

In conclusion, just as so many Industrial Age commercial-sector companies are being disrupted by Information Age

companies, the defense industry must also adapt or be disrupted. Yes, someone needs to be the manufacturer of hardware. But hardware in many cases is just a commodity where additional

research and development can only result in small but expensive incremental improvements separated by long years. Development of information-related capabilities on common-hardware platforms, however, can result in exponential improvements over the course of minutes depending on how agile we are. So let this be a warning to the defense industry. If you are not willing to be a software-only company and commit to developing software-based capability enhancements for warfighters according to emergent needs in the yet unknowable context of future war, you are going to be replaced by a digital native that is.

## MAJGEN HAROLD W. CHASE PRIZE ESSAY CONTEST



The annual MajGen Harold W. Chase Prize Essay Contest invites articles that challenge conventional wisdom by proposing change to a current Marine Corps directive, policy, custom, or practice. To qualify, entries must propose and argue for a new and better way of "doing business" in the Marine Corps. Authors must have strength in their convictions and be prepared for criticism from those who would defend the status quo. That is why the prizes are called Boldness and Daring Awards

Prizes include \$3,000 and an engraved plaque for first place, \$1,500 and an engraved plaque for second place, and \$500 for honorable mention. All entries are eligible for publication.

### INSTRUCTIONS

The contest is open to all Marines on active duty and to members of the Marine Corps Reserve. Electronically submitted entries are preferred. Attach the entry as a file and send to [gazette@mca-marines.org](mailto:gazette@mca-marines.org). A cover page should be included, identifying the manuscript as a Chase Prize Essay Contest entry and including the title of the essay and the author's name.

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# The Kra Peninsula

The PRC's path toward two-ocean dominance

by LtCol Paul B. Bock

## What the Future May Look Like

Imagine these events: the year is 2039, and the People's Republic of China (PRC) operates two naval bases on either side of the Kra Canal. The PRC built the canal in 2038. In 2028, Thailand yields to the Chinese Communist Party's (CCP) overt influence and agrees to allow the PRC to construct the canal, and two naval bases, one on each end of the Kra Peninsula. The PRC now has People's Liberation Army Navy (PLAN) ships and forces stationed at each naval base. Every ship that enters the canal must pay the PRC a fee for entry and exit. Although the canal is in Thailand, the Thais do not receive direct compensation from ships that transit the canal. Additionally, within the last two years, the Thais no longer have access to the PLAN naval bases. The PRC restricts the Thais from entering any portion of the PLAN naval facilities. The PRC recently hired a new workforce, which does not include any Thais. The Thais suspect their exclusion from the bases is due to their alliance with the United States. Singapore now wants to renegotiate the Memorandum of Understanding regarding the United States' use of facilities in Singapore because they blame the United States for losing over sixty billion Singapore dollars since the PRC's canal opening. This article will now transition from the vignette and provide present-day context.

Since the 17th century, numerous governments and businesses have discussed the need for building the Kra Canal.<sup>1</sup> The ideal location for the canal is in Southwest Thailand on the Kra Peninsula (Figure 1). The Kra Canal could connect "the Gulf of Thailand in the South China Sea directly to the Andaman Sea in the Indian Ocean

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Figure 1. (Image from The World Factbook 2010. Washington, DC: Central Intelligence Agency, 2010.)

and bypass the Straits of Malacca and Singapore.<sup>22</sup> The canal may cost \$28 billion to build and take eight to ten years to complete.<sup>3</sup> The Kra Canal could save ships up to five days in travel time and save each ship nearly \$350K in fuel costs.<sup>4</sup> The current construction plans could enable the canal to handle the world's largest ships, such as supertankers and the U.S. Navy's aircraft carriers.<sup>5</sup>

The hypothetical situation mentioned above could become a reality if the PRC builds a canal on the Kra Peninsula. The PRC could then project additional naval power into the Indian Ocean, further protecting their sea lines of communication. The PRC would aspire to control such a canal because they want to protect their sea lines of communication and project naval power into the world's oceans. As a result of projecting naval power from the Kra Peninsula, PRC forces could more aptly influence actors and events within the Indian Ocean, the Middle East, and Europe. By all appearances, CCP leaders desire to build and control the Kra Canal; the PRC's construction and operation of the Kra Canal would cause significant concern for the United States, along with its regional allies and partners. The PRC's construction of the Kra Canal would significantly improve its force posture and ability to exert influence in the Indian Ocean, to the detriment of the United States and many other maritime states. This article has two arguments. The first argument will show how the Kra Canal could help PRC forces bypass the Malacca Strait. The second argument will reveal how the Kra canal could enable the PRC's two ocean ambitions and how this could harm the United States and its regional allies and partners. Finally, this article will provide recommendations for senior decision makers.

### The PRC's Malacca Problem

The PRC wants to control the future Kra Canal because holding the canal could enable PRC forces to bypass the Strait of Malacca and avoid highly restrictive and congested maritime terrain. Currently, the PRC has three key maritime focus areas, "the South China

Sea, and the wider Indian and Pacific Oceans."<sup>6</sup> Why does the Malacca Strait concern CCP decision makers? The Strait of Malacca is vital to the PRC because the strait connects the Indian Ocean to the South China Sea. The PRC uses the waterway to transport oil from the Middle East to China; oil is critical to the PRC's economy. As Kaplan mentions, "China ... is the second-largest consumer of oil after the U.S ... Chinese officials see this very need for imported petroleum products as a pressure point that a future adversary might exploit."<sup>7</sup> The PRC uses the Malacca Strait "to establish energy security flows in the Indian Ocean."<sup>8</sup> The Kra Canal could provide the PRC with two routes from the Indian Ocean. One sea line of communication would be through the Malacca Strait, and the other route could transit through the Kra Canal. The canal would save the PRC time and fuel costs. Most importantly, the Kra Canal would provide the PRC with a viable alternate sea line of communication if the Malacca Strait became blocked or degraded. A blocked or degraded Malacca Strait would severely impact the PRC's economic activities.

The PRC is highly dependent on the Malacca Strait, as are other nations. Specifically, "80% of China's, 90% of South Korea's, and 90% of Japan's oil passes through the Indian Ocean."<sup>9</sup> Ships must transit through the Malacca Strait to bring immense oil to the PRC, Japan, South Korea, and other oil importers. One of the ways for the PRC to avoid the Malacca Strait is to exert its influence and build the Kra Canal. By constructing the canal, the PRC would avoid the Malacca Strait, reduce the importance of Singapore's ports, and increase the volume at PRC ports.<sup>10</sup> The Kra Canal would set the conditions for the PRC ports of "Shenzhen and Hong Kong" to replace Singapore's ports, "possibly becoming the principal loading centres in Asia for ships traveling to Europe."<sup>11</sup> The Kra Canal could benefit the PRC in two ways. First, the Kra Canal would enable the PRC to bypass the Malacca Strait and import oil through the canal vice a geographic chokepoint that the PRC does not control. Secondly, the Kra Canal would cause economic harm

to one of the United States' most important regional partners—Singapore.

If the Kra Canal were to come to fruition and the PRC were to control it, this would harm the interests of the United States, Thailand, Singapore, and other regional actors. The PLAN would have more freedom to conduct operations within the Indian Ocean because they would not need to contend with the Strait of Malacca. They would have an additional naval base on the Indian Ocean. The United States would have to engage with additional PLAN forces within the Indian Ocean. Singapore could lose substantial revenue as they support approximately 130,000 ships within its ports annually.<sup>12</sup> More specifically, Singapore might forgo just over 4.2 billion Singapore dollars annually if the Port of Singapore becomes marginalized and the Chinese ports become the new primary ports that service the ocean traffic from the obsolete Malacca Strait.<sup>13</sup> This next section will focus on the PRC's use of the Kra Peninsula to expand its naval influence within the Indian and Pacific Oceans.

### The PRC'S Two-Ocean Ambitions

The PRC wants to build the Kra Canal to enable their two-ocean ambitions. The PRC has desires for a two-ocean navy because they want to protect their national interests by protecting their sea lines of communication. The two oceans the PRC covets the most are the Pacific Ocean and the Indian Ocean, as these two oceans provide the PRC with the most enduring benefits. The Indian Ocean is important to the PRC because most of the PRC's oil flows from the Middle East, through the Malacca Strait, and then into China. The Indian Ocean is the main highway between Europe and the Middle East. The Indian Ocean is "the world's busiest trade corridor, carrying two-thirds of global oil shipments and a third of bulk cargo."<sup>14</sup> The Pacific Ocean is critical to the PRC because parts of it serve as the buffer that protects their borders and is the ocean that provides the PRC with its most significant economic highway.

The PRC is rapidly building its military to protect its interests beyond



national borders. We see unambiguous evidence of their global ambitions within their recent national strategy document, *China's National Defense in the New Era*. According to Chinese President Xi Jinping, "A strong country must have a strong military, as only then can it guarantee the security of the nation."<sup>15</sup> To support President Xi Jinping's goals and guidance, the PLAN is "speeding up the transition of its tasks from defense on the near seas to protection missions on the far seas, and improving its capabilities for strategic deterrence and counterattack."<sup>16</sup> The PRC wants to expand its naval influence for two reasons. First, they want to protect their global economic interests, and second, they want to protect their borders. As Kaplan mentions, the PRC is growing its naval capabilities because its "sea power is, first and foremost, an indication that its land borders are not under threat for the first time in quite a while."<sup>17</sup> In other words, the PRC now has the means and the national will to expand beyond its local geographic area. More specifically, "the CCP desires the PLA to become a practical instrument of its statecraft with an active role in advancing the PRC's foreign policy, particularly with respect to the PRC's increasingly global interests and its aims to revise aspects of the international order."<sup>18</sup> The PRC will use the coming decades as an opportunity to expand its global reach by deliberately focusing its efforts on nations that provide the PRC with advantages that counter their weaknesses in natural resources and geographic position.

The PRC seeks to counter its weaknesses in geography by focusing its efforts on crucial pieces of maritime terrain. The PRC has three potential options. Option one, the PRC could influence the actors who own or control the key terrain. Option two, the PRC could control the maritime terrain itself. Option three, the PRC could bypass the maritime terrain and find alternate routes. The PRC wants to bypass the Malacca Strait because they realize that the United States and its regional allies and partners could prevent the PRC from transiting the strait. To compensate for this disadvantage, the PRC

wants to break out of the "the maritime straitjacket" in which it currently finds itself.<sup>19</sup> One of the ways the PRC could do this is to build and control the Kra Canal. The Kra Canal would provide the PRC with two formidable advantages. The first advantage, the PRC could bypass the Strait of Malacca. The second advantage is that the PRC would have additional locations within the Indian Ocean.

The PRC seeks terrain that protects their sea lines of communication and topography that best supports their efforts in projecting naval power. The PRC has already taken many actions to ensure that key maritime terrain supports its interests. The PRC has built port facilities and logistic bases along critical sea lines of communication, turning some of these installa-

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***By using the Kra Peninsula ... the PRC may extend its successes within the South China Sea ...***

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tions into PLAN bases.<sup>20</sup> For example, "the PLAN has berthing agreements in Malaysia," which could influence operations within the Strait of Malacca.<sup>21</sup> Additionally, the PRC has basing rights on several other key maritime locations within the Indian and Pacific Oceans, such as Cambodia, Indonesia, Malaysia, Brunei, Myanmar, Bangladesh, Sri Lanka, Pakistan, and the Maldives.<sup>22</sup> The PRC has ports that "provide critical berthing and logistics support to China's merchant marine and the PLAN, including refueling, provisions, and maintenance."<sup>23</sup> The PRC's choice of ports and strategic location now allows the PRC to project naval power into areas beyond the Pacific Ocean.

The PRC wants to build and control the Kra Canal because it would enable them to "address deficiencies in overseas operations and support."<sup>24</sup> The PRC recognizes that the Malacca

Strait is a formidable geographic barrier. Furthermore, the PRC fully grasps that they must continue to find additional options that support their global ambitions. The PRC aspires to build and control the Kra Canal. In doing so, the PRC could support and expand upon their "far seas forces, [and develop] overseas logistical facilities" because they could build two naval bases, one on either end of the canal.<sup>25</sup> Additionally, controlling key maritime terrain ensures that the PRC can more aptly protect their sea lines of communication.

By using the Kra Peninsula as a base of operations, the PRC may extend its successes within the South China Sea to other places within the Indian Ocean. Furthermore, within the Indian Ocean, the Chinese may repeat their pattern of turning maritime features into forward staging bases. These forward staging bases could support the PLAN and PRC aircraft. By building additional naval bases within the Indian Ocean, the PRC is better able to conduct local sea denial operations because they are close to their naval bases. The United States and its regional partners and allies would lose additional operational flexibility because the PRC has minimized space and time advantages by positioning additional forces onto prominent maritime terrain.

### **Different Perspectives**

Some may argue that the PRC's operation of the Kra Canal would have a negligible impact on the ability of adversaries to threaten the PRC's sea lines of communication. The United States and its regional allies and partners should not be apprehensive. To illustrate this point, we must examine recent statements from President Xi Jinping. The PRC does not have any ambitions of building or controlling a future canal on the Kra Peninsula. The PRC is "committed to promoting peace" and will provide the world with "new opportunities" that support other countries' growth and development.<sup>26</sup> Furthermore, President Xi Jinping wants the PRC to "champion cooperation over confrontation" and "focus on mutual benefits."<sup>27</sup> In other words, the PRC



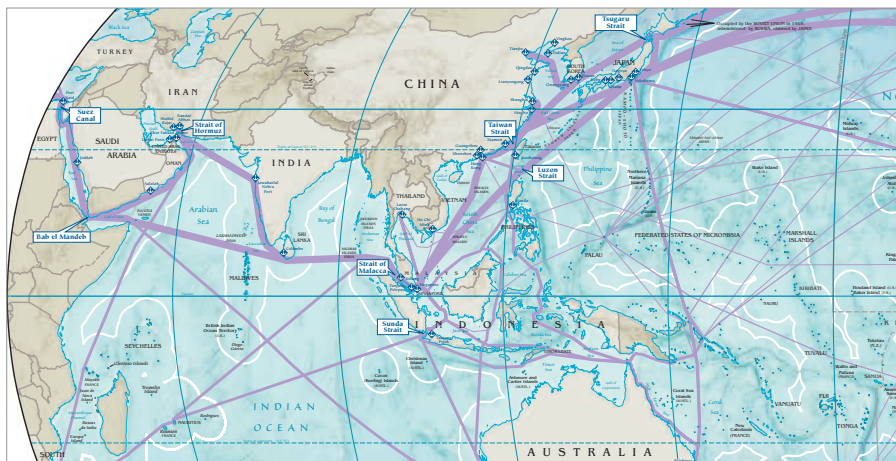


Figure 2. (The World Factbook 2010. Washington, DC: Central Intelligence Agency, 2010.)

does not want to curtail the growth and successes of other countries but to be a positive enabler that supports other countries in realizing their economic gains.

However, this argument runs counter to the PRC’s overt actions. The CCP leadership desires to protect its sea lines of communication and its territory. Over the last several years, the PRC has been identifying critical nodes and key terrain, which support their efforts to protect their sea lines of communication and project naval power. The PRC is employing a “string of pearls” strategy.<sup>28</sup> The central tenet of this strategy is to protect the PRC’s sphere of power by building numerous locations throughout the Indian and Pacific Oceans that allow the PRC to position PLAN forces.<sup>29</sup> More specifically, the PRC wants the “placement of these pearls with one another in order to make a chain of hubs that can serve as both economic as well as military and intelligence cores” within the Indian and Pacific Oceans (Figure 2).<sup>30</sup>

Furthermore, the PRC aims to build a maritime Great Wall along the first island chain and throughout the Indian Ocean’s critical maritime terrain.<sup>31</sup> The Kra Peninsula could become crucial to the PRC’s maritime protection strategy. The PRC’s actions in the South China Sea, coupled with their string of pearls strategy, and the Kra Peninsula would provide the PRC with the essential elements to complete their maritime protective border, or in naval terms, to

set the conditions for local sea control operations.<sup>32</sup> The Kra Peninsula could provide the PRC with prominent terrain that serves as the preeminent bulwark within their maritime border.

**Recommendations**

The United States should not counter the PRC’s ambitions alone but must leverage regional allies and partners. There are several ways in which the United States, along with regional allies and partners, could dissuade the PRC from its interests in the Kra Peninsula. The first approach could be to leverage the Mekong-U.S. Partnership. The Mekong-U.S. Partnership’s primary members consist of Cambodia, Laos, Burma, Thailand, Vietnam, and the United States.<sup>33</sup> As Ambassador Keshap mentioned, the primary purpose of the Mekong-U.S. Partnership is to “strengthen the foundations of stability and prosperity, including good governance, transparency, economic connectivity, human capital, and health and security.”<sup>34</sup> By working through the Mekong-U.S. Partnership, Thailand and the United States may sway countries heavily influenced by the PRC, such as Cambodia and Burma. The United States could highlight key elements from the partnership’s third priority, namely, “to identify and implement solutions for key regional challenges,” using this as a way of highlighting how the PRC could create additional friction within the region by trying to influence the Kra Canal construction project.

Additionally, the United States could continue to draw attention to the issues with the PRC’s Jinghong Dam and how the PRC’s excessive water usage reduces the water flow for the Mekong countries. By highlighting the PRC’s irresponsible use of water to members of the Mekong-U.S. Partnership and other regional allies and partners, the United States would gain additional leverage. Members of the Mekong-U.S. Partnership would gain power by portraying the PRC as an irresponsible steward of natural resources. The Mekong members could argue that if the PRC built the Kra Canal, they would exploit water rights and harm the environment. Furthermore, suppose the Thais want to construct the Kra Canal. In that case, members of the Mekong-U.S. Partnership should lead the construction efforts to preserve environmental equities and ensure that Mekong members derive an economic benefit from canal construction and operation.

The second approach could be to change the location of the RIM OF THE PACIFIC exercise. Instead of having RIM OF THE PACIFIC take place in Hawaii and off the California coast, move the planning and exercise locations to the Indian Ocean. The third approach could be to grow Exercise MALABAR into a much larger regional exercise. Exercise MALABAR should include all the Quad nations: Thailand, Singapore, Malaysia, and Indonesia. By expanding the list of exercise participants, the United States and its regional allies and partners send a combined message to the PRC that they are united in their views of an open Indo-Pacific and will not allow the PRC to repeat their South China Sea actions within the Indian Ocean.

**Conclusion**

If the PRC successfully gains Thailand’s approval to build the Kra Canal, the consequences would be dire for Thailand, the Quad members, and the other regional allies and partners of the United States. By building and controlling the Kra Canal, the PRC could do three things that could erode the credibility of the United States and create additional tensions within the South China Sea and the Indian Ocean. First,

Thailand would lose billions of dollars because the PRC would influence the Kra Canal bidding process and control the canal's daily operations. Secondly, cost-conscious merchant ships would bypass the Malacca Strait, which would cause irreparable financial harm to one of the United States' most important regional partners, Singapore. Singapore would lose billions of Singapore dollars per year because the Port of Singapore would lose substantial business. Finally, the PRC could have other places to forward position PLAN forces from prominent maritime terrain, thus allowing the PRC to exert further influence within the Indian Ocean and the Middle East.

Suppose the United States and its regional allies and partners do not prevent the PRC from building the Kra Canal. In this case, the PRC has a more significant and persistent presence within the world's two most essential oceans, the Indian and the Pacific. Furthermore, the PRC could have unfettered freedom of movement behind their protective maritime barriers. If mutually aligned nations do not act, the PRC's influence and operational reach could span thousands of miles in the world's most populous and vital region. The PRC might control vast stretches of two oceans. The PLAN may well have freedom of movement, from the west coast of Thailand, throughout the first island chain, and to the PRC's most northern border. If the PRC could build and control the Kra Canal, the Malacca Strait would lose much of its geographic significance and no longer serve as a maritime chokepoint to PLAN forces. The PRC would no longer have a maritime space disadvantage because its military forces would have the interior lines and the ability to protect their sea lines of communication within the South China Sea and the Kra Peninsula. The Kra Peninsula, coupled with the PRC's military forces within the South China Sea, could enable the PRC to influence economic and military operations across a large swath of the world's global commons.

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# Some Thoughts about War

Self-education and the profession of arms

by LtCol Gregory A. Thiele (Ret)

I have had a keen interest in military history and military affairs since I was young. I remember quite vividly watching news stories about the Falkland Islands War in 1982. I was equally interested in the U.S. invasion of Grenada in 1983. I wanted to know more and understand what caused important historical events and why they unfolded as they had. Although I retired in 2018, my interest in history and war has not diminished.

My efforts at self-education have continued, but I have resigned myself to the fact that this is a never-ending effort. Still, I thought it might be useful to others, particularly those who may just be starting out in the military profession, to share some of the things I have learned about war and which I believe may be of interest to others. My hope is that readers will consider some of these ideas and add them to the list based on their own study and reflection, so they may improve their understanding of war, conflict, and the use of force.

First, though, a disclaimer: none of the following ideas originated with me. I have tried to learn wherever I could. I will try to point out the source of an idea so those interested can find more information should they wish to do so.

*1. The conduct of war may change, but the nature of war is constant.*

This is a key idea in *MCDP 1*. In the last few decades, futurists of all stripes have created a cottage industry predicting one technology or another would change the very nature of war. In the 1990s, it was precision-guided weapons. Today, some believe drones or artificial intelligence will change not just the con-

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duct of war but also the nature of war. I remain skeptical of such visions. I argue new tools and technology will be used to assist humans in the conduct of war. Since technology and society changes over time, so too will the conduct of war as has occurred throughout history. Since technology will not replace humans, war will remain what it always has been: the realm of violence, uncertainty, and chance.

***My hope is that readers will consider some of these ideas and add them to ... their own study and reflection ...***

*2. Humans fight wars, and the human element is the most important factor in a war's outcome.*

North Vietnamese Gen Vo Nguyen Giap stated this idea succinctly and emphatically: “in war, there are two factors, human beings and weapons. Of these, human beings are decisive. Human beings! Human beings!” Leadership will remain the essential and perhaps the single most important factor in determining victory or defeat. Leaders who can inspire their Marines and under-

stand their capabilities and limitations are essential. When Napoleon claimed that the moral is to the physical as three is to one, he was—in large part—referring to the importance of leadership in inspiring troops to make the difficult sacrifices necessary for victory.

As already mentioned, technology is important, but it is rarely decisive. U. S. forces fought in Afghanistan for twenty years with a significant technological advantage over their adversary and this had no effect on the outcome of the war (except perhaps to delay it). Between closely matched forces, perhaps technology may be the deciding factor, but this is rarely the case in practice. GEN H. Norman Schwarzkopf reportedly claimed that the results of Operation DESERT STORM in 1991 would have been the same had both sides switched equipment.

People are and will remain the most important factor in any conflict. Technology may aid people, but it will not replace them. In addition, technology is unlikely to ever remove the fog of war and allow combatants to know everything which is occurring on the battlefield in realtime. It will still be possible to surprise an adversary (or be surprised ourselves), despite the proliferation of sensors on the modern battlefield. In addition, fear, fatigue, and uncertainty will continue to play an important role in war and strong leaders will be as essential as ever.

*3. It is easier to start a war than to end one.*

Regardless of how a war begins, once a war starts, it often proceeds according to its own logic. National leaders



can quickly find themselves virtual prisoners with little ability to do more than react to events. Because war both shapes and responds to political considerations, it can be nearly impossible to control or direct. American involvement in Vietnam is an excellent example of this idea in action.<sup>1</sup> Even wars that end quickly and appear to be successful can have unanticipated consequences.<sup>2</sup>

*4. A Higher Level of War Trumps a Lower Level.*

I learned this from Bill Lind. Marines typically think of war as fought at the tactical, operational, and strategic levels where the tactical level is the lowest and the strategic level is the highest. Bill often says, “A higher level of war trumps a lower level.” Success at the tactical level cannot make up for failure at the operational or strategic levels, but success at the strategic or operational level can make up for failure at the tactical level.

A couple of examples may help illustrate this point. In Vietnam, U.S. forces “won all the battles” but could not win the war. The strategy to win the war was to inflict casualties on North Vietnamese Army (NVA) and Viet Cong (VC) forces faster than they could be replaced. U.S. forces were driven to seek out and fight the enemy wherever he could be found. The measure of success was the body count of NVA/VC killed (which was routinely inflated). Despite massive casualties inflicted on NVA/VC forces, we now know the rate of attrition inflicted was nowhere near sufficient to prevent the NVA/VC from replacing their losses (thereby forcing them to seek a negotiated settlement).<sup>3</sup>

Alternatively, when the NVA and VC did attempt a country-wide offensive during the 1968 Tet holiday, they suffered a significant defeat on the battlefield. For the North Vietnamese, this tactical/operational defeat was a strategic victory. The Tet Offensive indicated there was a long and uncertain road ahead in Vietnam and caused many Americans to question the overly optimistic assessments they had been hearing from U.S. political and military leaders.

Furthermore, John Boyd, America’s greatest military theorist, also said that war was fought at the physical, mental, and moral levels where the physical level is the least powerful and the moral level is the most powerful. The physical level of war involves simple killing and destruction. The mental level of war is where decisions are made, and the moral level of war is where each side weighs the righteousness of their cause and individuals determine if their cause is worth fighting, sacrificing, or risking death for. Bill Lind merged the traditional levels of war with Boyd’s levels of war in “The Grid.”

	PHYSICAL	MENTAL	MORAL
TACTICAL			
OPERATIONAL			
STRATEGIC			

In the above grid, the least powerful box is the intersection of the tactical—physical levels at the upper left while the most powerful box is in the lower right where the strategic and moral levels of war intersect.

This idea may be more significant than it seems at first. Marines cannot just think of tactical actions in a way that is entirely divorced from higher-level considerations; you cannot just pile up tactical successes and automatically achieve operational or strategic impacts. Marines need to develop their understanding of the levels of war and how they interact. Using the grid can help Marines think about the second and third-order effects of their actions. Bill’s grid is a significant step forward.

*5. War is a competitive learning activity; the longer it goes on, the more each side learns from (and copies) the other.*

It is rare that a nation benefits from a long war. Usually, the longer a war drags on, the more likely a stalemate is to occur which often leads to some sort of negotiated settlement. If neither side gains a significant advantage in a war’s early stages, then both sides will

have time to learn from one another, and each is likely to take on some of the characteristics of their opponent. During World War II, the Germans attempted to defeat the Soviet Union in a single campaign (Operation BARBAROSSA) in the Summer of 1941. BARBAROSSA failed and, after a brutal winter of Soviet counterattacks, the Germans attempted to reorganize and refit their forces for another offensive in 1942. Observing German success employing tank-heavy combined-arms forces in Western Europe, the Soviets reinstated tank corps not long before the German invasion. Over the next

several years in the Darwinian crucible of high-intensity combat, the Soviets dramatically improved the coordination between their infantry, armor, artillery, and air forces and improved their logistical capacity (in part thanks to trucks from the Lend-Lease program). The Soviets survived long enough to learn from the Germans and, in some ways, even bettered the Wehrmacht. In 1944–1945, the Red Army was a truly formidable force, which conducted a “blitzkrieg in reverse,” destroyed the German armies on the Eastern Front, and ultimately captured Berlin.

*6. Nuclear weapons have made war between nuclear powers unlikely (although certainly not impossible).*

Due to the potential for escalation and miscalculation, nuclear powers have refrained from direct military confrontations. Such conflicts between the United States and Russia or China are unlikely as each understands there is little to be gained and a great deal to lose. If a war between nuclear powers does occur, world leaders will likely work to end it quickly. As has been the case since 1945, the practical result is

nuclear powers only wage wars against nations without nuclear weapons.

The only instance in which nuclear powers engaged in direct conflict, the Indo-Pakistani Kargil War in 1999, proves the rule. India and Pakistan went to war in May 1999 over a territorial dispute. Both sides were subjected to intense pressure to end the war quickly and without using nuclear weapons. The war was brought to a close in July 1999.

One of the curious aspects of the current U.S. National Military Strategy (and *Force Design 2030* which is intended to support the National Military Strategy) is that it appears to assume a conflict could occur between the United States and China with neither side using nuclear weapons. While it is possible to hypothesize scenarios in which both sides exercise restraint, it is far easier to imagine circumstances in which one side or the other finds using nuclear weapons a virtual necessity

for military or political reasons. From China's perspective, what if U.S. naval and air forces were able to seize forward bases from which they could threaten the Chinese mainland? Would the United States consider a nuclear strike if Chinese forces were to sink a U.S. aircraft carrier?

attrition facilitated by superior logistics. Our enemies will naturally seek to make U.S. forces do things for which they are ill-equipped and insufficiently prepared. In Iraq, this meant waging an urban insurgency. What will this mean in the future? Leaders should be flexible and not become too wedded

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***The foregoing are just the ideas I believe are applicable now and will remain so for the foreseeable future.***

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The probability of nuclear war will remain low unless or until some nation develops the ability to strike and reliably eliminate the nuclear arsenal of potential adversaries before they can react effectively. Should this occur—or should this condition be thought of near realization—all bets are off.

*7. As long as the United States retains the world's most powerful military, it is unlikely to fight the kinds of wars for which it is prepared.*

This is the paradox of U.S. power. The United States has been the world's preeminent power since the end of World War II. As long as the United States is fighting wars against less powerful adversaries, its enemies will attempt to avoid U.S. strengths and take advantage of U.S. weaknesses. In Iraq, a Marine told me that if the insurgents came out to fight, the war would be over in a day. He was correct, but this is exactly the reason why such a thing never happened. If future enemies cannot challenge U.S. forces conventionally, they will seek to find ways to prevail, which minimizes the U.S. forces' advantages.

The United States is currently preparing for conventional wars against near-peer adversaries. As already discussed, such conflicts are highly improbable. The most likely future fights for U.S. forces will be Fourth Generation wars in which the adversary (or adversaries) are not the forces of another state but ideologically motivated groups that may operate transnationally. Such forces will not fight in a manner conducive to the U.S. style of war: firepower-dominated

to techniques and procedures which are only useful in a high-intensity, firepower-dominated, attrition style of fighting. What if this is not the kind of fight you are called to? Gen Mattis said the United States had a perfect record when it comes to predicting the next war: we always get it wrong.

Thoughtful individuals can probably add several other points to this list. The foregoing are just the ideas I believe are applicable now and will remain so for the foreseeable future. For those who recently started their career in the profession of arms, I hope this provides an interesting starting point for your study of war. For those who may be more seasoned, I hope it will provide food for thought. In any case, may you find fair winds and following seas as you defend our great Nation!

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**Notes**

1. An excellent book that details the decisions leading to U.S. involvement in Vietnam is Brian VanDeMark's *Road to Disaster: A New History of America's Descent Into Vietnam* (2018).
2. My first deployment was to Operation DESERT SHIELD/DESERT STORM. Although an unquestionable military success, the introduction of U.S. troops to Saudi Arabia was one of the reasons Osama bin Laden offered for focusing al-Qaeda against the United States.
3. For more on the problem of using body count as a method to force North Vietnam to sue for peace, see C. Michael Hiam, *Who the Hell Are We Fighting? The Story of Sam Adams and the Vietnam Intelligence Wars* (2006).



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# Marines Need to Think Like Marines

## Understanding “Jointness”

by Dr. Michael E. Doyle

**D**rive through any American town or city and you will see Marine Corps flags flying from houses and Marine Corps emblems affixed to automobiles and store windows. If you did not know any better, you might be confused by this display of Service heritage and think the Marine Corps is the largest of the Armed Forces. Preserving the legacy of the Marine Corps requires the Corps to remain relevant as a separate Service. The Corps will only remain a separate Service if its Marines think like Marines while recognizing the longest threat the Marine Corps has faced is the constant efforts to eliminate it. Today, the only way for the Marine Corps to address this threat is to provide the Joint Force with unique force components and capabilities.

On 29 March 2016, speaking on global security challenges at the Center for Strategic and International Studies, Gen Joseph Dunford, a former CMC and then Chairman of the Joint Chiefs of Staff stated:

The first implication for a joint force is foundational. We need a balanced inventory of joint capabilities that are going to allow us to deter and defeat potential adversaries across the full range of military operations. We actually don't have the luxury of choosing between a force that can fight and one that has a modern nuclear enterprise, robust cyber capabilities, robust space capabilities, [and] conventional and special operations capabilities.

Gen Dunford told his audience that the United States must have a complete inventory of capabilities.<sup>1</sup>

Six years later, the Marine Corps is in the midst of a force redesign and

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an argument concerning which capabilities the Marine Corps can, and should, bring to the joint inventory. Certainly, we bring a talent for fighting, but we need to scope which fights we are best suited to undertake. No Marine disagrees with retired LtGen Paul Van Riper's observation that the Marine Corps should remain a flexible, combined-arms organization, it is part of our organizational DNA.<sup>2</sup> Rather, the issues are what should combined arms look like in the 22nd century, and can the Marines once again reset itself as an amphibious force after another long era of augmenting the Army in conventional ground combat?

If the Marine Corps continues to be used as “fire brigades” to augment the Army, as it has for 72 years, then there is no need for a Marine Corps.<sup>3</sup> The fire brigade mission can be accomplished by an XVIII Airborne Corps, at Fort Liberty, and an XXIX Marine Amphibious Corps, at Fort Pendleton. Each of the three divisions within the XXIX Corps would have a combat aviation brigade. The rest of Marine Air would be “unnecessary,” as would both MCRDs, all MCAS, the MCLBs, Quantico, and HQMC. The Marine Corps Reserve could be absorbed into

the National Guard. Future enlisted “Marines” could attend one station unit training at Fort Pendleton while officers would first branch qualify, like all other Army officers, and then volunteer for duty with the XXIX Corps. There would be no TBS. This would be “good” joint thinking and force design. Imagine the funding that could be freed up to support the other Services; the Joint Force has.<sup>4</sup>

Both presidents Truman and Eisenhower saw no need for a Marine Corps, and both attempted to do away with it, seeing little need for a separate amphibious Service. More recently, a Senior Advisor to the Acting Secretary of Defense proposed disbanding the Marine Corps, arguing the Corps “was living its past glories and was unsuited for combat on today's battlefield, with the possible exception for pushover enemies.” Most of today's Marine force consists of airborne light infantry. This Marine force is designed for use in the developing world against incapable opponents from Haiti to Fiji, but not much else.<sup>5</sup> This is the type of Manichean, self-serving thought concerning the Marine Corps is the result of imposed, Army-centric, joint thinking—and the Marine Corps' willingness to adapt and subordinate

itself to being an adjunct force to the Army—with unification the intended bureaucratic outcome of jointness.

As Marines, we must again answer the question that has plagued our Service since its establishment: Do we really need a Marine Corps? This time the question is further complicated by a perverse misunderstanding of jointness. If Marines are not going to develop a unique force with distinctive warfighting capabilities necessary to the U.S. inventory of defense capabilities, what is the point? This is not an intellectual choice. There is no place for a separate, traditionally configured Marine Corps in the Army's operational thinking (*FM 3-0*). Army "full spectrum operations" supports unification, not jointness.

Marines need to think like Marines. They enjoy a legacy of leading and serving in a superb, combined arms, amphibious force. Part of leading that force is being able to envision where, when, and how MAGTFs integrate into the Joint Force effort. Marines need to continue to read *MCDP 1* but with a focus on amphibious warfare. More training and education need to be devoted to naval operations to regain an understanding that in the maritime environment maneuver warfare is not a doctrinal choice; it is an earned benefit.

Marines need to think like Marines. "Expeditionary" is a meaningless, non-descriptive term that should be stricken from our lexicon and replaced with "amphibious." Every military organization in the world can be "expeditionary," and so can the Boy Scouts. Few entities in the world can claim the unique identifier of "amphibious." Knowing and remembering who you are, and what makes you unique, is an important part of unit cohesion, *esprit de corps*, recruiting and retention, and readiness. Gen Louis Wilson, 26th CMC, understood the need to define the uniqueness of the Marine Corps to the other Services. He continually emphasized the amphibious nature of the Corps while serving as the first Marine Corps CMC to be a full-time member of the Joint Chiefs of Staff.

Like Gen Wilson, our current CMC is faced with a conformed, post air-land

battle conflict Marine Corps in need of both modernization and mission refocus. Much like Gen Wilson, Gen Berger is insisting on force readiness, responsiveness, and mobility by creating fast-moving, hard-hitting, amphibious units, consisting of integrated ground and air firepower, tactical mobility, and enhanced electronics. Whatever the flaws in *Force Design 2030*, Gen Berger is thinking and acting like a Marine, and in the tradition of CMCs that have preceded him—Charles McCawley, George Barnett, John Lejeune, John Russell, Thomas Holcomb, Louis Wilson, and Alfred Grey.

Different from his predecessors' experiences, Marines questioning CMC Berger's efforts have chosen to express their opposition and concerns in popular media. This is antithetical to our Marine Corps values. Marines need to think and act like Marines. The appropriate forum for our discussions on concept and doctrinal matters is the *Marine Corps Gazette*. The establishment of the *Gazette* was part of CMC MajGen John Lejeune's overhaul of Marine Corps professional education. It is where Marines worked out amphibious and small wars doctrine and advanced base operations. Opinions and remarks made elsewhere, no matter rank, betray our sense of identity as embodied in our history, leadership traits, and principles. Marines need to think and act like Marines.

It is past time for a Marine Corps discussion of the philosophy of jointness, its application by Marines, Marine Corps professional military education, and where JPME fits in that education. *Force Design 2030* should also continue to be a main topic of concern since our continued existence as a separate Service may depend upon it.

Marine Corps history is replete with examples of uncommon valor and common virtues. The extraordinary successes that Marines have achieved in battle have earned our Corps a reputation that is the envy of every other Service and that is unequalled in modern history. Our customs are steeped in tradition, and our traditions have been respected and honored by successive generations of Marines. We

are esteemed by our countrymen and feared by our enemies. Our dead are remembered, and those who once wore our uniform, are forever entitled to claim the title 'Marine.' We are indeed a unique and proud brotherhood of warriors.<sup>6</sup>

Preserving this legacy begins with remaining relevant as a separate Service. Remaining relevant as a separate Service requires Marines to think like Marines.

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### Notes

1. Gen Joseph Dunford, "Meeting Today's Global Security Challenges," *Center for Strategic & International Studies*, March 29, 2016, <https://www.csis.org/events/meeting-todays-global-security-challenges%C2%A0-general-joseph-f-dunford>.

2. Paul Mcleary and Lee Hudson, "How two dozen retired generals are trying to stop an overhaul of the Marines," *POLITICO*, April 1, 2022, <https://www.politico.com/news/2022/04/01/corps-detat-how-two-dozen-retired-generals-are-trying-to-stop-an-overhaul-of-the-marines-00022446>.

3. Coming ashore on Pusan in emergency reinforcement of the U.S. Eighth Army, the First Marine Provisional Brigade's commander, BGen Edward Craig, began referring to his command as "the fire brigade" and likened its role to that of a fire department arriving at the scene of a raging inferno. BGen Craig's characterization of his brigade in Korea is also very applicable to other Marine deployments in support of the Army. See: Capt John Chapin (Ret), *FIRE BRIGADE: U.S. Marine in the Pusan Perimeter, Marines in the Korean War Commemorative Series*, n.d., [https://www.koreanwar2.org/kwp2/usmckorea/PDF\\_Monographs/KoreanWar.FireBrigade.pdf](https://www.koreanwar2.org/kwp2/usmckorea/PDF_Monographs/KoreanWar.FireBrigade.pdf).

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5. Col Douglas McGregor USA (Ret), "USMC: Under-utilized Superfluous Military Capability," *Time*, December 3, 2012, <https://nation.time.com/2012/12/03/usmc-under-utilized-military-capability>.

6. LtGen Victor Krulak, *First to Fight: An Inside View of the U.S. Marine Corps*, (Annapolis: Naval Institute Press; Bluejacket Books edition, 1999).



# The Purpose of the Light Amphibious Warship

A modern LST?

by CWO3 Jeffrey M. Hubbard

The year-long experimentation phase for the Marine Littoral Regiment (MLR) has begun, and each of the regiment's organic battalions is working toward integrating its forms and functions to serve the purpose of this new and novel unit. However, the naval component of this paradigm-shifting formation, the Light Amphibious Warship (LAW), is mired in the vicious cycle of shipbuilding, funding, and manning priorities that the Naval Services have long struggled with.<sup>1</sup> The current thinking is that the first LAWs are at least two years from procurement, three years from first hull completion, and ten years from being available in quantities to support the MLR.<sup>2</sup> The Marine Corps is working with contractor options and other current fleet assets to experiment with concepts and tactics we would like to see the purpose-built LAWs perform if or when they become a reality. As such, it is appropriate to give thought to what the LAWs might be capable of as envisioned.

First and foremost, the LAW is a transport vessel in the tradition of vessels like the Landing Ship, Tank (LST) of World War II vintage. LSTs were designed to bring materiel from American factories at home across oceans and deposit this equipment on a foreign and often hostile shore. While considered a single-use vessel, many LSTs made multiple landings after crisscrossing oceanic distances several times. LSTs were also used to convey formations from rear area anchorages and depots to forward areas either close to or in contact with adversary forces. As such, LSTs were both strategic transport vessels and

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operational support vessels. Tactical maneuvers where combat formations might onload onto LSTs for swift end-runs or displacements to alternate positions were rarely, if ever, conducted given the vessel's size and the requirements of amphibious assaults onto coral islands or broad-front advances across secured beachheads.

The LAW functions in a similarly strategic and operational manner as the older LSTs but also with a tactical transport role. At the strategic and inter-theater level, the LAW squadron can embark a significant portion of the MLR from home station into theater. Assuming that the final version of the LAW meets the requirement for the maximum planned 8,000 square feet per vessel, a nine-vessel LAW element could embark multiple capability sets, units of employment, and initial sustainment materiel simultaneously.<sup>3</sup> A drawback is the currently envisioned 3,500 nautical mile unrefueled transit range which will necessitate at least one refueling stop for these vessels transiting from west coast ports or Hawaii into the Western Pacific.<sup>4</sup> However, potential future forward basing for LAWs at Guam or Okinawa for the 4th and 12th MLRs, respectively, would remove this strategic deployment limitation. This

ability to embark such a large portion of the MLR allows for movement in competition with reduced demand and requirements on U.S. Transportation Command sourced or contracted lift. It also means that an MLR can deploy en masse during crisis while requiring fewer assets from an already over-tasked U.S. Transportation Command to bring combat formations into theater. This assumes that some portion of the MLR is not already staged forward in the crisis area beforehand as stand-in forces during competition.

Once in theater, the LAW can then operate as an asset for intra-theater lift requirements. In this capacity, the LAWs will need to fulfill multiple requirements for the transportation of materiel and personnel between the MLR operating area and the theater's rear areas. Note that "rear areas" in the proposed area of LAW operations are the numerous small islands and allied enclaves scattered around the vast ocean terrain that the LAW will transit. For example, a two-vessel section of the LAW squadron could be tasked to conduct regular transits between an MLR rear logistics unit in an allied nation and forward operational logistics nodes located on Guam or other islands to be developed and curated in the future. Such a channel-style distribution mission would keep a regular flow of sustainment and parts moving from intermediary areas to forward lines in contact with smaller and less-detectable assets that can offload at beaches and smaller facilities instead of at large built-up urban ports.

It is at the tactical level that the LAW squadron may find its most versatility,



especially after experimentation with current and emergent technologies. At the fundamental level, the LAW's ability to load from shore like a large landing craft will allow full MLR elements to displace across coastal areas and islands with relative rapidity. This also allows for the comparatively quick delivery of supplies through unimproved areas away from prying eyes and electronic eavesdropping. The LAW's close-support capabilities also permit flexible tasking. As an example, the emerging technology of unmanned aerial delivery of supplies via drones allows for a LAW to on-load stocks of food, water, fuel, select ammunition, and select repair parts for on-call distribution to shore positions from a LAW acting as a floating logistics node. An additional example would be to have a LAW act as a mothership for small boats loaded with cases of resupply materiel. The LAW would maneuver close to shore within the rather short operational radius of the craft, launch the small boats to deliver needed supplies at the beach to a waiting MLR node, and then return to their mothership. In these logistics-node schemes, the LAW could carry additional materiel aboard in containers so that multiple resupply runs could be conducted by the same vessel before retiring to fully restock in rear areas.

Evacuation of wounded Marines is a topic of significant concern due to the MLR's stated operating environment of areas where aviation is likely denied or degraded. Marrying a damage control and resuscitation team and additionally available corpsman to a LAW could create a floating provisional triage and treatment facility to stabilize Marines while also evacuating them to higher echelons of care either ashore or afloat on large amphibious vessels. In this role, the key impediment is the relatively slow speed of LAWs compared to other vessels and modes of transportation, but in areas where assets are restricted, even slow conveyances are a permissible means of care and evacuation.

Inherent at each level of potential LAW employment is the question of command and control of the vessels. Naval vessels typically operate in ad-

ministrative squadrons or deployed task forces assigned to a type commander or joint maritime commander respectively. Current documentation points to a littoral maneuver squadron of LAWs supporting the MLR, which seems to draw on an administrative squadron controlling and tasking the nine-ship element in direct support of an MLR.

A key decision in the future of the LAW program will be the relationship the vessels have with both the joint maritime commander where they can support the operational theater and the Marine element and MLR where they can best support tactical maneuver and sustainment. Current Navy-Marine teams like the Amphibious Ready Group and MEU relationship operate with two co-equal O-6 commanders each with specified responsibilities at

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### **... the operational use of LAWs is conceptually more fluid ...**

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different phases of their deployments. This relationship could be replicated with the LAWs and the MLR, but the operational use of LAWs is conceptually more fluid, persistent, and closely tied to tactical maneuver ashore than the Amphibious Ready Group-MEU teams normally operate under which opens additional questions that experimentation must pursue. Contrarily, and possibly controversially, is the deployment or attachment of a littoral maneuver squadron or section staff and vessels subordinate to a MEB or subordinate formation commander to allow for direct tasking and organic support to MLR maneuver. Such a relationship would ensure uninterrupted maneuver and sustainment of the MLR while complicating the ability of LAWs to support the joint force at large while deployed without intervention by the maritime commander.

In a recent interview with *Defense News*, the Assistant Commandant of the Marine Corps, Gen Eric Smith, highlighted some criteria he believes

the stop-gap contracted vessels must address in this period of experimentation while the Marine Corps awaits the final development of the LAW, stating,

How is the loadout? What is your ability to move from point A to point B? What is your ability to hide yourself, electromagnetically and physically? How quickly can you onload and offload? What will you do to connect with fuel? ... What did your supply chain look like? And can you use that vessel to both support you for organic mobility, and can it be used for periods of time to support the joint force logistically?<sup>5</sup>

These questions and the roles, relations, and tactics outlined above deserve rigorous evaluation, not only to inform variations to the LAW concept but also to how we envision small vessels can accomplish in littoral warfare.

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#### **Notes**

1. Lara Seligman, Lee Hudson, and Paul Mcleary, "Inside the Pentagon Slugfest over the Future of the Fleet," *Politico*, July 24, 2022, [https://www.politico.com/news/2022/07/24/pentagon-slugfest-navy-fleet-00047551?utm\\_source=sailthru&utm\\_medium=email&utm\\_campaign=dfn-ebb&STOverlay=2002c2d9-c344-4bbb-8610-e5794efcfa7d](https://www.politico.com/news/2022/07/24/pentagon-slugfest-navy-fleet-00047551?utm_source=sailthru&utm_medium=email&utm_campaign=dfn-ebb&STOverlay=2002c2d9-c344-4bbb-8610-e5794efcfa7d).
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4. Ibid.
5. Megan Eckstein, "US Marines' Assistant Commandant Previews Next Budget Request," *Defense News*, September 7, 2022, <https://www.defensenews.com/naval/2022/09/07/us-marines-assistant-commandant-previews-next-budget-request>.



# Enlisted Manpower Plans

The foundation of talent management

by Enlisted Manpower Plans Section, Manpower & Reserve Affairs

The genesis of *Force Design 2030 (FD 2030)* was the Commandant's clear-eyed recognition that the Marine Corps is not properly postured for the future. His vision articulated in the *Commandant's Planning Guidance (CPG)* initiated a wave of discussions about the resultant benefits, costs, and risks of such change. Nearly four years into this process, the institutional conversation has finally evolved from one largely fixated on the loss of proven capabilities such as tanks, bridges, and tube artillery, to one focused on the investments required to build the future force. The discussion has caught up to the original *FD 2030* logic—*divest to invest*.

Having made initial investments in *FD 2030* technologies, our institutional focus is now shifting to investing more in our Marines. Driven by the vision outlined in *Talent Management 2030 (TM 2030)*, there is growing consensus that the Service must quickly enact significant Human Resource Development Process (HRDP) reforms to accelerate progress and achieve Service-level objectives.

HRDP reform and talent management are not new ideas. Indeed, a long line of previous Commandants has been clear about both enduring manpower challenges and the associated requirement for change.<sup>1</sup> If the problems are not emergent, why now the urgency? In short, we are operating in the most complex, most challenging geopolitical environment since the end of the Cold War. With the world examining the ongoing Russia-Ukraine War while standing on the precipice of another Taiwan Strait crisis, the Marine Corps must continue to meet its responsibility as *the force-in-readiness*. At the same time, the domestic context in which the

Service is implementing talent management reforms is one of the most challenging since the All-Volunteer Force was established in 1973. A declining qualified military available population, decreasing propensity to military service, and escalating war for talent across the civilian labor market and sister Services further complicate recruiting and retaining the quality Marines required for *FD 2030* success. Further deferring significant investments and bold reforms will only put the Marine Corps further behind in its ability to attract and maintain talent, and most consequentially, enhance operational capability within the FMF.

## The Objective

Such a challenging force-management environment demands that the Service gain and maintain a laser-like focus on its ultimate manpower-modernization objective, lest disparate, uncoordinated initiatives and distractions produce counterproductive results across the institution. The institutional manpower objective is clear—support the FMF. In full, this provides a lodestar for all initiatives:

*An HRDP that maximizes the number of fully-trained, experienced, and deployable Marines in the FMF—with a capable supporting establishment—for any given level of resourcing.*

While focused on maximizing FMF combat readiness, this objective is measured and balanced. It recognizes that, though we are trying to maximize capability in the FMF *now*, we are playing a long game—we cannot imprudently reallocate scarce resources away from the supporting establishment to the FMF. In other words, we must also properly resource Headquarters Marine Corps and the supporting establishment, which in turn, will support the FMF

with innovative concepts and capabilities for years to come.

Within the Enlisted Manpower Plans Section at Manpower & Reserve Affairs, we are even more focused on using this objective to get *enlisted* manpower plans right to meet *FD 2030* goals. Why? First, enlisted Marines constitute the vast preponderance of the force. To achieve meaningful HRDP reforms, we must focus on the enlisted Marine population which makes up more than 85 percent of the Marine Corps. Second, young, enlisted Marines will have increasingly more responsibility in the future operating environment, characterized by all-domain, distributed operations in a technology-saturated setting; this is a chief contribution of the *FD 2030* vision. Because of this, discussions of *targeted maturation* are rightfully focused on young, enlisted Marines.<sup>2</sup> Third, Headquarters Marine Corps has a moral obligation to properly resource and prepare the youngest Marines in our force who will be doing the Nation's bidding on battlefields largely unimagined even a few decades ago. Within this context, our transformational efforts must ensure that we are providing the FMF with sufficient resourcing while guaranteeing young, enlisted Marines are fully trained, qualified, experienced, and deployable.

## HHQ Guidance

This focus on prioritizing enlisted manpower plans is aligned with the Commandant's vision. The entire 2019 *CPG*, which initiated many of the current institutional reforms and accelerated others, was predicated on the fact that to be successful as America's expeditionary force-in-readiness, we must change: "*The Marine Corps is not organized, trained, equipped or postured to meet the demands of the rapidly evolving*

*future operating environment.*<sup>3</sup> Perhaps even more importantly, the *CPG* also outlined the linkage between institutional reform and talent management, “Everything starts and ends with the individual Marine.” Said differently, missiles without Marines are meaningless.

The November 2021 publication of *TM 2030* built upon the *CPG* framework and further clarified the talent management vision. When assessed together, the value of these two documents is less about their proclamation of tasks and expressions of guidance and more in their articulation of the problem and the desired future state. These documents provide the Service with all that is required to transform vision into action.

### Current Initiatives

Just as *TM 2030* stated, Manpower & Reserve Affairs (M&RA) has continued its good work throughout recent years. However, many recent successes have been made despite archaic processes and outmoded systems. Despite the challenges of the current system, ongoing initiatives are progressively building on recent successes. In many cases, current initiatives are simply keeping “the plane in the air” while the Service attempts a more radical talent management overhaul. Current initiatives include those across the end strength, accessions, retention, and promotions portfolios.

As the widely attributed quote goes, “Quantity has a quality of its own.” Though *FD 2030* is founded on the idea of getting the *required* Marine in the *appropriate* billet, the aggregate size of the Marine Corps—the end strength—does matter. Not only does end strength enable full manpower resourcing across the FMF, but just as important, end strength receives significant congressional interest and is a key input into budgetary plans.<sup>4</sup>

With a focus on maintaining the appropriate end strength, M&RA uses the annual Manpower Accession and Retention Plan (“Memo-1”) to lay a foundation for manpower planning across each fiscal year. This plan not only provides guidance for manpower planning

across every functional area but also outlines accession and retention goals to achieve the Service’s end strength target. Given this framework, managing end strength throughout Fiscal Year-22 (FY-22) proved more challenging than in recent years. Losses from non-end of active service (non-EAS) attrition, COVID vaccine-related separations, and medical retirements were higher than previous modeling suggested. Just as challenging, reduced accessions did not make up for the increased losses.

Lower accessions have a disproportionate impact on a service that relies on a high volume of new recruits to meet its personnel requirements. Recent national news about recruiting challenges across the Joint Force has brought this model’s risk into stark relief. When one

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### **Lower accessions have a disproportionate impact ...**

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reviews the history of the All-Volunteer Force, there is likely no more challenging scenario than the one we are facing today; it is not hyperbolic to say that we are in the most challenging recruiting environment since 1973. Both societal changes and new processes, like the recent implementation of Military Health System GENESIS at military entrance processing stations, have combined to further exacerbate the challenge imposed by our accessions-heavy model. Though Marine Corps Recruiting Command and its team stationed across the globe bears the vast majority of this burden, the total force must redouble its efforts to properly support the Service’s recruiting effort.<sup>5</sup>

To properly task Marine Corps Recruiting Command with its recruiting objective, Manpower Plans Section uses a combination of art and science to determine required accessions. This methodology recognizes that it takes multiple years to build a fully trained, qualified, deployable Marine. In other words, change does not happen overnight. The total number of E1s-E4s

in the Authorized Strength Reports (ASR) three fiscal years out provides the initial estimate for accession requirements. We then account for non-EAS attrition, length of entry-level training pipelines, and emerging capability requirements to refine this number. This process, which crosses multiple stakeholders, ensures that Marine Corps Recruiting Command’s annual mission satisfies *future* FMF requirements.

The Marine Corps continues to use a recruiting-heavy manpower structure, with only around twenty percent of the most recent retention cohort reenlisting.<sup>6</sup> The Commandant’s guidance is clear—pivot toward an “invest and retain” model. Two points are worth noting. First, though we are making progress now, such a transition will likely take multiple years to fully implement. Second, even once fully implemented, a refined model will likely retain 30–40 percent of a cohort given codified structure requirements and Marines’ own desires to stay or depart the Service. Most importantly though, relative to today, significantly more Marines—especially sergeants—will be seeing second enlistments leading junior Marines in the FMF.

So, how do we improve the current retention model? Two current initiatives are noteworthy. First, we must improve the reenlistment, extension, and lateral move process. The traditional process of Marines walking around the squadron or battalion command post seeking wet-ink signatures for reenlistment, extension, and lateral move packages is unacceptable in the digital age. Second, and relatedly, the entire process must be simplified. A significant step was taken in FY-22 when the Marine Corps launched the Commandant’s Retention Program (CRP).<sup>7</sup> Through the CRP, Headquarters Marine Corps pre-screened more than 2,000 Marines’ records and provided Marines conditional approval for re-enlistment; all the Marines had to do was accept reenlistment. Not only did this accelerate this process, but it also sent a powerful signal to those selected Marines that their service is valued by the Commandant. As the Service’s information technology systems are improved, both manpower



models and portals, like an emergent Talent Management Engagement Portal, will enhance visibility and accelerate reenlistment approval.

Even this brief outline of ongoing efforts raises a key question—how do we integrate such seemingly disparate initiatives, especially in a complex, adaptive system that is the Service’s current, complex manpower management model? We are integrating these initiatives through three complementary efforts. First, we are conducting continual analysis on MOS “health” to inform enlisted manpower plans and to provide evidence-based support to the occupational fields most in need of assistance. Said differently, an MOS-centric evaluation provides a complementary lens through which to view enlisted manpower plans’ portfolios. Second, we are building an enlisted manpower system assessment process. The current framework is using the FY-22 First-Term Alignment Program reenlistment cohort to closely study attrition, reenlistment, and assignment behavior. And third, we are improving synchronization through the refinement of a progressive, predictable battle rhythm across all stakeholders. By using M&RA forums like the action officer-level Manpower Plans Working Group and the O-6-level Manpower Plans Board, we can better synchronize enlisted manpower planning efforts that include accessions, retention, promotion, and end strength.

**Future Initiatives**

As additional momentum is generated within the HRDP, the speed of change will accelerate while maintaining focus on meeting critical FMF requirements. Future initiatives must continue to be focused on maximizing the number of fully trained, experienced, and deployable Marines in the FMF. Five planning efforts are on the horizon.

First, we will review and optimize the current Program Enlisted For (PEF) structure. PEFs are groupings of primary MOSs with similar prerequisites and are used by Marine Corps Recruiting Command to match applicants with programs based on individual qualifications. M&RA’s Manpower Management Integration Branch then uses

PEFs to assign an intended MOS to each recruit while at recruit training based on individual PEF, follow-on school availability, and additional screening requirements.

As we pivot toward an invest-and-retain model, assigning the proper PEF to individuals is essential. The truth is that, for a variety of well-intentioned reasons, some PEF groupings and associated prerequisites have been made without sufficient empirical justification. Looking ahead, a refined PEF system will more logically group MOSs into each PEF. This will increasingly align a recruit’s aptitude and desires with the Marine Corps’ needs. Additionally, we will use a more objective approach in determining the appropriate prerequisites that enable success in initial MOS school training. Finally, we will seek to differentiate prerequisites for newly accessed Marines and those

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**... it is in the best interest of the Marine Corps to retain committed and qualified Marines ...**

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for seasoned Marines who laterally-enter a new MOSs. This differentiation is founded on the idea that a proven, high-performing Marine seeking a lateral move should be judged primarily on recent performance, proficiency, and conduct—not an ASVAB score from junior year of high school.

Second, we will invigorate a more proactive, dynamic retention campaign. Gone are the days when the majority of the required Marines would pursue reenlistment themselves with little pursuit by the institution. In today’s war for talent, leaders at every echelon must proactively seek every desired Marine’s continued service and incentivize it appropriately. Future retention campaigns will seek a better “weapons-target” match by combining monetary and non-monetary incentives to provide individual Marines sufficient reason to “stay Marine.” Another aspect of this effort will be to properly communicate

the retention campaign and all available incentives. This will require a tailored, targeted communications strategy founded on a clearly articulated communications plan, which will include an assessments framework.

Third, we will review current Enlisted Career Force Control (ECFC) policies. Originally designed to shape the inventory of Marines by grade and MOS as well as standardize promotion tempo across MOSs, ECFC’s up-or-out approach was built for a different time. Today’s talent management initiatives demand that we re-examine policies, like ECFCs, which were designed in 1985 and unnecessarily separate significant numbers of Marines for their inability to serve at the next higher grade. In other words, these legacy policies may be counterproductive to *targeted maturation* and the overarching objective of keeping more qualified Marines in the FMF. Updated policies will recognize that it is in the best interest of the Marine Corps to retain committed and qualified Marines up to their grade service limits. Taking a fresh look at current ECFCs will then also enable us to consider establishing an indefinite EAS for senior staff non-commissioned officers.

Fourth, we will examine the optimal allocations for meritorious promotion to sergeant. While maintaining the current time-in-service requirement for regular promotion to sergeant at 48 months, a potential increase in meritorious allocations may better enable commanders to promote those Marines who are ready for greater responsibility while supporting *targeted maturation*. If optimized, an increase in meritorious promotion allocations may incentivize Marines to reenlist and mitigate the risk that we currently face in having a shortage of approximately 2,700 active component sergeants across the institution.<sup>8</sup>

Fifth, we will consolidate gains and solidify reforms by supporting reviews of force structure and force optimization. Despite our best efforts to think creatively about *targeted maturation*, we remain wed to the logical grade pyramid model and the associated view of MOS health. The result is that we are

unable to effectively register *targeted maturation* requirements within the current requirements process. Working closely with Combat Development and Integration, M&RA will provide a targeted-investment model which refines the current pyramid shape and informs grade structure requirements, balancing both current operational requirements and a desired increased return on investment. Through this process, the Service will be able to more effectively codify manpower requirements to achieve the *TM 2030* vision.

### Challenges

As we continue to nudge the system towards increased lethality and readiness, we must keep in mind that the HRDP is a complex, adaptive system. In other words, there are innumerable stakeholders, initiatives, as well as balancing and reinforcing feedback loops that often have hidden interdependencies across the system. Moreover, reforms implemented now often have a delayed impact on the institution. We must act now knowing that much of the current work will not bear fruit for years. Recognizing this reality, we must overcome two primary challenges to achieve the Commandant's vision.

First, we must improve transformation-related communication. As one of the most influential contemporary systems-thinkers stated, "Missing information flows is one of the most common causes of system malfunction."<sup>9</sup> The speed of *FD 2030* transformation requires unobstructed information flows across the institution. Having readily transparent data alone can highlight both successes and failures. Within the *FD 2030* context, open forums, in which senior leaders deliberate current problems and make key decisions in front of broad audiences, not only unify the institution's efforts but also accelerate transformation since more relevant stakeholders hear guidance and decisions in realtime.

Second, some cultural resistance will continue to create disrupting, turning, fixing, and blocking obstacles across the Service. A paradigm shift is required to fully achieve change. How do we make that happen? Key leaders must "keep

pointing at the anomalies and failures in the old paradigm ... keep speaking and acting, loudly and with assurance."<sup>10</sup> The failure in the current paradigm is clear: more than 6,600 personnel from a single cohort lost to non-EAS attrition, only 20 percent of a cohort reenlists, and the Service remains 2,700 sergeants short of requirements. By continuing to point at these failures in the current system, speaking clearly about an alternative, and placing new visionaries in key leadership positions, the Marine Corps' HRDP paradigm will change.

### Conclusion

In conclusion, the Service has a mandate to change with a sense of urgency not previously seen in decades. Both the *CPG* and *TM 2030* make it clear that the Marine Corps must make the required investments in our personnel system; failure to do so will not only prevent our achievement of the Commandant's vision and degrade FMF readiness. Though our current HRDP worked adequately for the time in which it was designed, it must be continually improved. New challenges require novel solutions. As we move out to solve these HRDP challenges, it is conventional wisdom that is likely our greatest obstacle. Only with the audacity to challenge our own outdated paradigms and think creatively will we be able to create a system that fully resources the FMF.

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### Notes

1. Published in 1995, Gen Krulak's CPG is notable. His assessment of non-EAS attrition remains valid, "*Non-EAS attrition is a sea anchor on a Marine Corps moving at battle speed. Every year we lose one-third of our first term force before they complete their first enlistment.*" Yet, despite this assessment nearly 30 years ago, little has changed. The FY-22 FTAP reenlistment cohort lost more than 6,600 recruits/Marines to non-EAS attrition. See Victor Krulak, "Gen Charles C. Krulak's Commandant Planning Guidance," *Marine Corps Association*, April 13, 2022, <https://mca-marines.org/blog/2022/04/13/gen-charles-c-krulaks-commandant-planning-guidance>.

2. Recent discussions have used the term *mature the force* to refer to efforts to increase younger Marines' experience, competence, and, in turn, rank. However, recent planning has shown that we must focus institutional efforts on maturing those personnel that require it; thus, *targeted maturation* is a more accurate reflection of these, more focused, efforts.

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

4. National Defense Authorization Acts traditionally establish a specified end strength authorization. The 2023 NDAA authorizes 177,000 active component Marines. Moreover, end strength waivers must be submitted if the service falls below the specified end strength.

5. *MARADMIN 438/22* Total Force Support to Command Recruiting emphasizes the CMC's White Letter from June 2022 in which he called the total force to support recruiting by providing opportunities for Marines to temporarily serve on recruiting duty.

6. Of the 29,442 Marines in the FY-22 FTAP retention cohort, 5,918 have reenlisted.

7. As stated in *MARADMIN 305/22*: "The Commandant's Retention Program (CRP) is focused on retaining the most talented First Term Marines by streamlining the reenlistment process and offering meaningful incentives to reenlist. The Marines selected for the CRP have distinguished themselves from their peers through exceptional performance and professional competency. Throughout their enlistment, these Marines have embodied the whole Marine concept and represent the top echelon of qualified Marines within their Primary Military Occupational Specialty (PMOS). Simply put, these are the best Marines in our formations."

8. This shortfall is based on the August 2022 *Authorized Strength Report* published by Deputy Commandant, Combat Development & Integration.

9. Donella Meadows, *Thinking in Systems* (Chelsea: Chelsea Green Publishing, 2008).

10. Ibid.



# Appropriate Skills and Experience

The imperative to mature the infantry company XO

by LtCol Ben Wagner

***“Our personnel system and service culture must recognize that superior performance and proficiency are not exclusive characteristics of commanders or officers seeking command. Marine Corps units and staffs will be most effective when led by officers with the appropriate skills and experience, and who derive personal satisfaction from their work. To that end, we will begin exploring new ways to better value our diverse human capital.”<sup>1</sup>***

The current method used to select an infantry company executive officer (XO) is wholly inadequate. It is time to establish a formalized process for the selection and development of a small group of officers optimized for service as company XOs to improve the effectiveness and efficiency of our infantry battalions. Commandant Gen Berger has repeatedly directed actions to mature the enlisted ranks, specifically within the infantry community.<sup>2</sup> Maturing our enlisted ranks alone, however, will not meet the Commandant’s intent to “improve decision-making, problem solving and risk assessment among our junior leaders, with immediate positive effects on our performance in competition and combat.”<sup>3</sup> This article will describe a new low-cost/high-return process by which the Service can create a sustainable cadre of more mature,

trained, and capable officers to exponentially increase the capacity and lethality of our infantry companies to succeed in both competition and conflict.

The current method of selecting infantry company XOs is highly subjective and the quality of these assignments is completely reliant on the available lieutenants within a battalion. The accepted method is similar to, but even more subjective than, that used to select infantry battalion commanders before the implementation of the Command Screening Program (CSP) in 1992.<sup>4</sup> Prior to the CSP, Headquarters Marine Corps would assign lieutenant

colonels to the divisions and, from that population, the CGs would select those who would get to command infantry battalions within their respective divisions.<sup>5</sup> The Corps recognized the flaws inherent to this system and appropriately implemented the CSP to ensure the best-suited officers were selected for command. Currently, and similar to the pre-CSP norm, a future infantry company XO is selected by the sitting battalion commander from the pool of lieutenants assigned to the battalion by Manpower Management Officer Assignments (MMOA). There is neither Marine Corps order nor directive guiding the selection process and certainly no formal training or education beyond that learned during entry-level training to prepare these young officers for service in one of the most challenging billets in an infantry battalion. This accepted process of assignment is far from ideal and lacks any method to ensure that the most qualified and capable officers are slated to serve in this critical billet.

## The Who

The target population for company XOs of the future is not a new demographic or recruiting mission. The Corps already accesses these officers each year. This type of officer joins the Corps for adventure, challenge, and the allure of potential combat. These smart,

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independent-minded officers routinely leave the Corps at the conclusion of their obligated service as highly capable but highly frustrated first lieutenants. They thrive as platoon commanders, want to stay as operational as possible for as long as possible, and are not intrigued by the idea of a billet in the supporting establishment. These young officers are faced with a binary choice as they near the end of their active service. They either choose to accept orders to the supporting establishment or they hang up their uniforms and leave. There is no option to remain in the FMF, and this lack of opportunity results in the loss of some of our best and most capable company-grade officers.

This population is the correct group from which to select company XOs because they have a strong work ethic, can solve complex problems, and demonstrate superior management skills. They demonstrate an ability to look up and out in ways that their peers do not; to understand the why when their peers are trying to grasp the how. Finally, this group of officers does not necessarily want to make the Corps their career, but at the same time, they are not ready to end their service just yet. The idea of serving the remainder of a twenty-year career is not enticing to them because they have so many options and desires beyond the Service. Lieutenants who fit this description exist in every infantry battalion, and they are a source of underutilized potential that the Corps loses each year because we do not offer them a viable option to satisfy their goals and desires *at that particular point* in their professional or personal lives. Implementing this new “XO track” provides a third, non-binary option to retain those officers most naturally qualified to serve as optimized company XOs. Providing this choice is a win for the Corps and provides an appealing option to this highly capable officer.

The current method of selection, training and education, and assignment of infantry lieutenants does not need to change to accommodate the recommendations in this article. This article assumes that the future force will include 21 active-duty infantry battalions. Since the final structure for

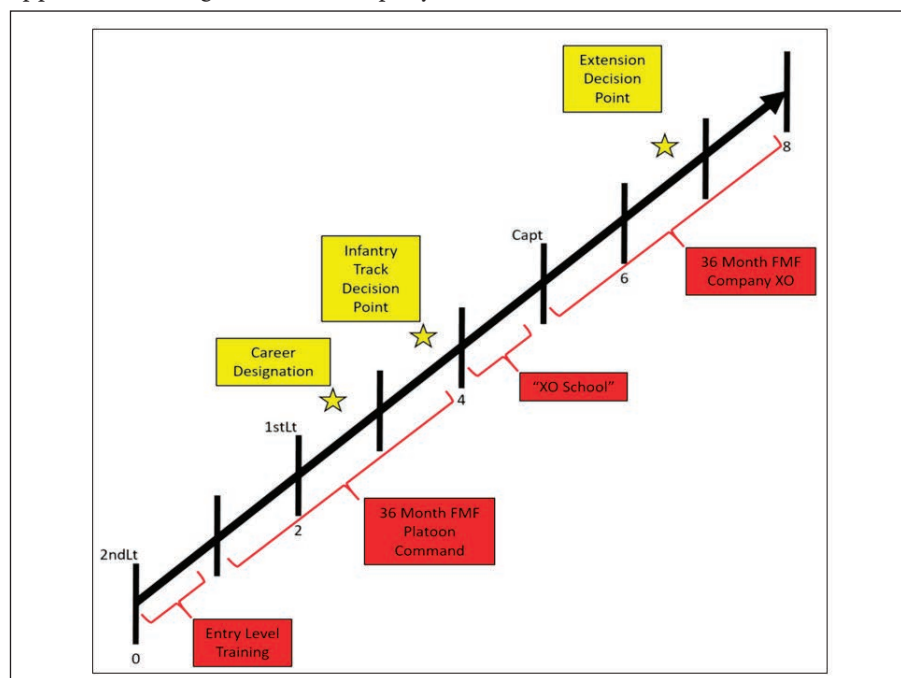
the future infantry battalion is still in development, a planning factor of five company XOs per battalion was used. The path outlined below, applied to 35 lieutenants each year, would result in trained and educated *volunteer* XOs assigned to each infantry company within three years from inception. Assignments from each of the three Divisions would be supervised by MMOA to ensure that the total annual number selected did not exceed 35 and that, if necessary, boat spaces were reassigned between divisions based on available inventory and qualified volunteers.

### The What

The recommended identification and selection of infantry company XOs occurs during the last twelve months that a first tour lieutenant is assigned to an infantry battalion. All infantry lieutenants will continue to go through the same entry-level training and will compete for career designation as is the current model. Selection for an XO billet will occur after career designation. This ensures that each officer is provided the maximum opportunity to gain experience upon which to base their decision for the future of their commissioned service. Selection and approval for assignment as company

XOs would be managed at the division level with CGs making their final recommendations to MMOA for the Service-wide selection of no more than 35 lieutenants each year for continued service along this path. Similar to the former Squad Leader Development Program there is no need for a centralized selection board.<sup>6</sup> Those officers selected would agree to remain assigned to their parent division for the next four years. Permanent change of station orders would only be issued by exception to fill anticipated gaps in staffing goals as directed by MMOA. This assignment takes advantage of on-station experience, provides for family stability, and saves the Service money spent annually on permanent change-of-station moves for service members and their families.

Upon receipt of orders from MMOA, selected officers would transfer to the Division’s Headquarters Battalion for the following twelve months of training and education.<sup>7</sup> Throughout the next year, the future XO would work under the direction of the division’s headquarters battalion commander, an O-6 commander. Throughout this year dedicated to professional development, the prospective XOs will complete three directed objectives—two training and one education.



General timeline. (Figure provided by author.)

The first training objective is a three-week course under the supervision of the division gunner that is developed with the staff of the Infantry Officer Course and approved by Training Command. During this training period, the XO focuses on fires integration, training plan development, and new equipment training for weapons, optics, and communications equipment. This three-week training period will provide an opportunity for rounding out the technical knowledge of the officers as well as (if not more importantly) provide an opportunity for building relationships and making connections. This networking cannot be understated because it provides an opportunity for exposure to different experiences in training and on deployments that does not happen intentionally until officers are assigned to a resident career-level school. Completing this leveling period, the selected officers begin the second

program will facilitate battalions operating more effectively in areas such as training, maintenance management, and adherence to orders and directives across functional areas. The focus of this rotational program is not to replace or supplant formal professional military education (PME) but rather to expand the technical, process-oriented knowledge and understanding of the company XO so that he is a true multiplier of the company command team's efforts.

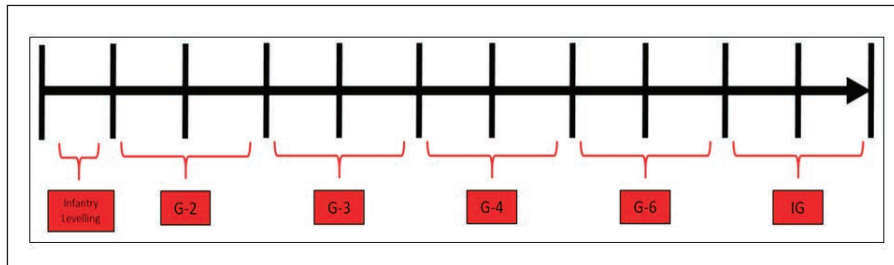
The formal education objective is the requirement to complete the Warfighting sub-course of the Expeditionary Warfare School Distance Education Program. This is to ensure that these officers possess the requisite capability to participate in battalion-level and higher-planning efforts and to assist company command teams in tactical planning using the Marine Corps Planning Process. A thorough understanding of the

serve as company XOs for the next three years—fully prepared to exponentially increase the effectiveness and efficiency of their companies.<sup>9</sup>

### The Why Not

The recommendation to train and educate company XOs before assignment as described above would take change and, as our Corps has experienced over the last two years, change creates friction. Challengers could say that this plan would put more work on a few already task-saturated individuals, that it would be harder to implement in 3d MarDiv due to geographic laydown, or that the distance between Twentynine Palms and Camp Pendleton could present a challenge. It could entice officers who might otherwise remain in the Corps for a twenty-year career to depart after only eight years. All of these arguments have elements of truth, but they are all focused on the mechanics: the how and not the why. The potential negatives are not nearly as compelling as the fact that properly trained and educated company XOs with the proper attitude and desire will ultimately improve the effectiveness and efficiency of their companies, improve the positive culture within their battalions, and increase the readiness across their divisions.

Infantry battalion XOs will not need to spend as much time explaining techniques and procedures; operations officers will not need to spend as much time correcting training plans and risk assessments; logistics officers will not need to spend as much time refining training support requests. These are just some of the benefits to the battalion staff and do not even address issues in supply, the motor pool, or the armory. Company commanders will have more time to actually command and will not need to spend as much time on the control of their company's operations. Company gunnery sergeants will have to worry less about logistics and training support and be able to focus more on serving as the senior enlisted infantry Marine in the company. First-tour lieutenants will spend longer periods of time leading platoons, learning their craft, and developing as professional



Twelve-month timeline. (Figure provided by author.)

training objective to provide exposure to the division staff and opportunities to understand the why behind tasks frequently received with little or no explanation.

This second objective will form the bulk of the training for the future company XOs and would occur over the course of ten months. Selected officers would spend one to two months each working in the G-2, G-3, G-4, G-6, and Inspector General Divisions. This rotation would be similar to GE's Junior Officer Leadership Program and provides perspective and exposure not normally available to an infantry lieutenant. Assistant chiefs of staff would determine assignments and tasks with a focus on expanding the XO's capacity and capability to serve effectively at the company level.<sup>8</sup> This training

Marine Corps Planning Process will allow these officers to develop estimates of supportability that are factual, complete, and acceptable.

Ultimately, by the end of this year of dedicated training and education, these newly promoted junior captains are far more capable of assignment as company XOs than is the case today. They have a working knowledge of the capabilities of the regiments and independent battalions within their division, a thorough understanding of the commanding general's intent and the staff's efforts to meet that intent, and a network of peers and seniors to whom they can reach out for assistance as they *anticipate* and remain ahead of challenges or obstacles. Based on recommendations from the division leadership, at the end of this year, MMOA assigns these Marines to

officers. They will have more knowledgeable, experienced, and mature role models who are not in competition for ranking or follow-on orders. Finally, the impact on culture and positivity within a command will benefit as well. XO's are frequently perceived as disgruntled and overworked, and they feel as though they are largely underappreciated. This is the emotional result of not training or educating our most junior XO's. From day one they are behind because routinely they are only one step ahead of the other lieutenants in the company. They are regularly *building a plane in flight* as they learn proper techniques and procedures through trial and error rather than knowing beforehand how to accomplish a task properly the first time. All of the benefits listed can only have a positive impact on readiness throughout our divisions and increase our capacity to handle the myriad of tasks associated with competition and campaigning.

### Conclusion

The value and impact a company XO has on his company cannot be overstated. While the goal is a positive impact, our current system of selection and assignment not only fails to guarantee an XO's success but also readily accepts the inherent inefficiencies, costs, and lost opportunities. We invest much into making infantry lieutenants at The Basic School and inside Mitchell Hall. As a community and Service, we have an opportunity to fill this most critical billet with officers possessing the training and education required to optimize their capability and capacity.

### Notes

1. Gen David H. Berger, *Talent Management 2030* (Washington, DC: November 2021).
2. Each of the following documents signed by the Commandant reference maturing the enlisted force with a particular emphasis on the E-4 to E-7 ranks and the infantry community: *Force Design (FD) 2030* (March 2020); *FD 2030 Annual Update* (April 2021); *FD 2030 Annual Update* (April 2022); and *Talent Management 2030* (November 2021).

### 3. *Talent Management*.

4. Prior to establishing the Command Selection Program in 1992, the selection of all O-5 commanders occurred in this fashion across the FMF. Only those in the infantry community are addressed in this article.

5. Maj Douglas C. Marr, *A Statistical Analysis of the U.S. Marine Corps Lieutenant Colonel Command Screening Process*, (thesis, Naval Postgraduate School, 1997).

6. Headquarters Marine Corps, *MARADMIN 393/16* (Washington, DC: August 2016).

7. Infantry lieutenants would become available for selection throughout the year based on when they reported to their respective battalions. Therefore, the Divisions would hold either quarterly or semi-annual selection boards to select future XO's. The twelve-month training and education schedule would be tailored at the division but would run throughout the year.

8. Information available at <https://jobs.gecareers.com/global/en/leadership-jolp-page>.

9. The argument could be made to retain these officers for continued service at this point in their careers. That is a separate topic with its own considerations, both positive and negative, and not germane to this discussion. For example, during the final year of their obligated service (eighth year of commissioned service), these officers could be offered an opportunity to extend for an additional 24 months. This extension would come with a monetary bonus and PCA orders to a billet such as on a regimental or MEU staff, an Expeditionary Operations Training Group, or at one of the Schools of Infantry.



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# “Don’t Give Up the Ship”

A story of EABO

by LtCol Brian Kerg

**10** July 203X. Expeditionary Advanced Base (EAB) Itbayat, Philippines. 156 km from Taiwan.

1stLt Stephanie “John Paul” Jones stood in the company command post (CP) with her platoon sergeant, SSgt Billy Wickem. They were both trying to ignore the stifling humidity that wrapped around their woodland cammies like a hot blanket. The company CP consisted only of cammie netting tied to trees, a map hanging from fifty cord, MRE boxes, and a high frequency (HF) low probability of detection radio connected to a laptop.<sup>1</sup> Still, it was a welcome reprieve that caught a fair amount of wind coming in off the coast despite being hidden in the treeline.

She and her Marines had been persisting at their EAB with the rest of Charlie Company, waiting to be employed in support of the Littoral Combat Battalion for a month. Her hair, rolled in a moto-bun, was starting to get crusty. She wondered how the company commander might react if she asked if she could shave her head or cut it to male high-and-tight grooming standards, both to better cool off and break the monotony for her platoon.

But more than that, the sheer boredom of waiting for their shot was eating the morale of her Marines. Alpha Company was slinging enhanced naval strike missiles at People’s Liberation Army-Navy ships across the area of operations, and Bravo Company was cruising around in Mark VI patrol boats, boarding and disabling or sinking People’s Armed Forces Maritime Militia craft. Alpha and Bravo were racking up notches on their belts. Meanwhile, “Check-in-the-Box” Charlie Company, which covered down on all the other mission

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The Mark IV patrol boat. (Photo by Sgt Desmond Martin.)

essential tasks for their battalion, was still kicking rocks in this godforsaken jungle. Her platoon, which owned the expeditionary mine warfare mission set, did not seem to have much of a place in the defense of Taiwan.

A rustle in the brush caught Stephanie’s ear, snapping her from her reverie. Capt Phan stepped out of the jungle and into the CP, followed by his operations chief, Gunny Malone. The skipper, it seemed, was omnipresent, constantly cutting through the network of covered trails, checking in on every platoon day after day, night after night, reminding the Marines that above all else they were

there to *persist forward indefinitely*, a hallmark of Expeditionary Advanced Base Operations.<sup>2</sup>

“Lieutenant, Staff Sergeant,” Pham said, smiling and nodding at each of them. “Glad you came so quickly. How’s your platoon holding up?”

“Oh, sir, you know,” Stephanie said, trying to match Pham’s alacrity. “Persisting forward.”

“Indefinitely,” Wickem added, a blunt, tired punctuation.

“Sounds like they’re getting comfortable in the routine,” Malone said, grinning. “Maybe we’ll have to kick ‘em off the island.”

Stephanie raised an eyebrow, glancing from Malone to Pham. “Sir?”

“It’s your platoon’s lucky day, Jones,” Pham said. He tapped on the radio. “You’ve got a mission.”

Stephanie’s heart beat rapidly in her chest, and she fought back a smile, maintaining her bearing. “The platoon’s ready for anything, sir.”

Malone stood in front of the map, and everyone closed in around him. As he briefed them, he tapped at each point on the map.

“Here’s us, at our EAB in Itbayat,” he said. “About 150 clicks north of us is Taiwan. When China launched its operation to ‘reclaim’ the island, Taiwan fought back hard. Flooding the Taiwan Strait with mines and surrounding the island with mobile maritime minefields has been the lynchpin of their defense. They can remotely open the minefields to allow shipping to reach the island, then close the fields to keep China out. The PRC didn’t anticipate how long it would take to clear these fields, or that mining would sink more of their ships than any other weapon system in the fight.<sup>3</sup> This is what bought our task force time to deploy to the AO.”

“Washington, of course,” Pham said, “isn’t looking to escalate this into a full-blown war with China. If that happens, we all lose. We’re just here to support Taiwan.”

“Right,” Malone said. “And supporting Taiwan means keeping them in the fight. China can’t break through to Taiwan, so they’re looking to blockade Taiwan instead.” He traced a line connecting Japan, Taiwan, and the Philippines.<sup>4</sup> “Taiwan’s holding its own within its territorial waters, but they can’t cover international waters. Chinese ships can hook around and cast a wide net. So, the Coalition has declared an exclusion zone, here.” He traced another line between Indonesia and Taiwan, crossing the Bashi Channel. “Any Chinese ships that try to break through it are fair game, so they can’t effect a blockade. ‘Fair game’ so far has been blasting them with rocket artillery from our EABs.”<sup>5</sup>

“Sea denial 101,” Stephanie said.<sup>6</sup>

“But there are just too many targets,” Pham said. “They have more pawns on

the board than we do, and they don’t care how many get killed. We’re starting to run dry on missiles, and it’s going to be a minute before our battalion gets resupplied. Hell, at this rate, the entire task force could go Winchester before we know it.”<sup>7</sup>

“And we come in where, exactly?” Stephanie asked. Malone tapped the map between Taiwan and Itbayat. “The Bashi Channel. You’re going to mine it.”

Wickem cleared his throat. “I thought it was already mined. The Navy’s had an Upward Falling Payload at the sea floor there since before things kicked off.”<sup>8</sup>

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### **... supporting Taiwan means keeping them in the fight.**

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“They did until the PRC detected and cleared the field,” Pham said. “Which is good, because they won’t expect another minefield, and won’t be looking for one inserted like this.”

“Lay the mines, then hold tight at Mavulis Island and control your minefields from there,” Malone said. “Signature management is key. Communicate by exception only. Turn radios on only to receive at our designated comms windows.”<sup>9</sup>

“And remember,” Pham said.

“Persist forward,” Stephanie said, indulging in a half-smile.

“Indefinitely,” Wickem muttered.

### **The Bashi Channel**

Stephanie sat in the pilothouse of the modified Mark VI patrol boat, staring out at the waters of the Bashi Channel. While usually acting as a maritime, mobile CP for her platoon, their task required most of the boat’s capabilities be avoided. With GPS and other electronic means of navigation disabled to avoid detection, her navigator, Cpl Schwab, was plotting their location on a map using a compass, ruler, and manual calculations. The current plot showed them about halfway between Itbayat,

far to the south, and Taiwan’s Orchid Island to the northwest.

“It’s about that time,” Wickem said, looking from the chart to his watch. Stephanie nodded and stepped out of the pilothouse to watch the payload get delivered.

Sgt Ortega was at the boat’s stern, watching his team finish preparations of the mine racks. Twenty smooth black orbs were in each of the ten racks, glistening in the noon-day sun.

“Wouldn’t it be awful if Supply screwed up the order and these were bowling balls instead of mines?” Ortega asked, eyeing the racks.

“Bowling balls or mobile mines, all I care is that they can give us a strike,” Stephanie said. “Launch ‘em.”

“Launch!” Ortega ordered.

“Launching!” his Marines replied. They opened the rack gate and flipped a switch. As the boat sailed forward, the mines rolled one after the other into the water with a heavy splash.<sup>10</sup> They immediately vanished into the water, following their algorithms to spread out, submerge to the correct depths, and stand by. If any targets met the strike criteria, the mines would close with the craft and detonate. Beyond that, they would sit idly by, in receive-only mode, waiting for an operator to give them the command to move to another location.<sup>11</sup>

Their mines released, Stephanie eyeballed her watch, giving her other squads operating just in sight to her north and south ample time to deliver their payloads in turn. Satisfied, she nodded at her radio operator, LCpl Kim.

“Confirm delivery for me, would you, Kim?” Stephanie asked.

“You know, ma’am,” Kim said, pulling a pair of flags out of her pack, “my recruiter told me going into Comm was going to let me work with cutting-edge technology. You know, set me up for success in the outside world.” She stood, raised the flags, and sent a semaphore message to the two other patrol boats. She lowered her arms, glanced at Stephanie, and held the flags up helplessly. “This is BS.”

Stephanie couldn’t help a smile. “I guess if it doesn’t get us killed, it’s cut-

ting edge. “Everything old is new again, right?”

Kim grinned and looked back to the horizon. “You’re starting to sound like my dad,” Ortega snorted. “If the lieutenant is our dad, does that mean Staff Sergeant is our mom?”

Kim shook her head. “I always imagined Staff Sergeant as more of a drunk uncle.”

Stephanie crossed her arms and forced a smile, reflecting on their banter while they set about emplacing their killing field. Was this gallows humor? Anxiety? Or were they too relaxed, taking their eye off the ball?

Kim squinted, reading the flags sending her a message back. “Payloads delivered.”

Stephanie nodded. “Let’s go home.”

Kim waved her flags again, signaling all to return to base, then tucked the flags back in her pack. As her patrol boat turned around, three missiles shot across the sky.<sup>12</sup>

“Theirs or ours?” Ortega asked.

“Ours,” Stephanie said, recognizing their signature from live-fire Expeditionary Advanced Base Operations exercises at Marine Corps Littoral Combat Center-Hawaii. “Looks like Alpha Company is staying busy.”

“Hope that’s three good kills,” Ortega said.

Stephanie shook her head. “We need a three-to-one saturation ratio to make sure we beat most Chinese ship defenses. It’s probably just one target. And it’s why our magazines are running dry so fast.”

Wickem stepped up behind her, watching the missiles fly. “And bad timing for us. That’s going to bring a whole lot of sensors looking in our direction. Alpha’s shooters are going to scoot to a new island while we head back to Mavulis.”

Stephanie nodded, seeing the missiles now as a bad omen. “We’ll have to go full dark when we get back. Let’s just focus on the next step.”

### **EAB Mavulis Island. 98 km from Taiwan.**

With their boats hidden under signature dampening blankets and the Marines out of sight in the small structure

abandoned by the Philippine military at the start of hostilities, Stephanie knew she should have felt confident in their concealment.<sup>13</sup> *Out of sight, out of mind*, she told herself. But a lingering doubt nagged at her gut.

Sitting in an old fishing hut, she was passing the time by playing a game of *Go* on a small, portable nine-by-nine square board against Wickem. She looked at the black and white stones and mulled her strategy of laying the pieces to keep her black stones connected while simultaneously encircling Wickem’s white stones.

*This is how it all fits together*, she thought. *EAB-hosted precision fires and mine warfare. Sea denial is a game of Go.*

The crackling of her HF-Low Probability of Detection radio snapped her back into focus. Then the implications of being contacted crashed against her like a wave.<sup>14</sup>

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### **“We’ve been compromised ... Maritime militia are closing in on Mavulis.”**

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Scrambling to the radio, she snagged the handset. Wickem ran to the window, shouted at the Marines to stand-to, then hurried back to his lieutenant.

“What’s the scoop, ma’am?”

“We’ve been compromised,” she said. “Maritime militia are closing in on Mavulis.”

“How many boats?”

Stephanie’s face was grim. “A lot.”<sup>15</sup>

“Do we have time to bounce?” Wickem asked.

Stephanie shook her head. “There’s too many, and they’re too close.”

Wickem grabbed his rifle from its spot against the wall. “Guess we’re fighting until the cavalry arrives or until the bitter end, then. I’ll get the platoon to their fighting positions.”

“Wickem,” Stephanie said, her mouth widening into a macabre smile.

Wickem sighed. “You’re going to say it, aren’t you, John Paul?”

Stephanie grinned. “Don’t give up the ship!”

“We won’t, but we might just sink with it,” Wickem said, shaking his head, then stepped toward the door. Stephanie held up a hand, her eyes wide, illuminated with a sudden thought.

“Wait. Get me Ortega first.”

Moments later, most of the platoon was covered and concealed in fighting positions with weapons oriented out to sea toward the incoming ships. But Stephanie was on one knee, next to Ortega, over a rugged laptop connected to a receiver transmitter. The laptop showed a map of their position at Mavulis Island and the surrounding waters. She pointed to a spot about a kilometer out from the beachhead.

“There,” she said. “Right there.”

Ortega looked from the laptop to Stephanie. “Are you sure? Sending the signal will blow our cover.”

“It’s already blown,” Stephanie said. “We don’t keep using hand and arm signals after we’ve started shooting. We’re in a firefight already; it just looks different.” Ortega nodded and entered the command. Then, they waited.

Soon, a collection of People’s Armed Forces Maritime Militia ships were visible on the horizon, a motley crew of trawlers that Stephanie knew didn’t spend any time trawling. Through her binoculars, she could see medium machine guns on gun mounts, and crews wielding small arms. Stephanie stopped counting at twenty boats, estimating there were at least a hundred.<sup>16</sup>

“That ... is a lot of boats,” Ortega said. “How can they mass so many? So fast? For such a small objective?”

“Quantity has a quality all its own,” Stephanie quoted.

“Is this going to work?” Ortega asked.

Stephanie slapped her hand on his shoulder and gave it a squeeze. “It worked in our war games,” she lied. “It’ll work here.”

Ortega glanced at Stephanie and smirked. “We never wargamed this, ma’am. But thanks for trying to keep things positive.” He winked. “We won’t give up the ship.” Stephanie slapped his shoulder again and laughed, and Ortega laughed with her.



They turned their heads to watch the approaching boats, and their laughter died on the wind. Their smiles slid from their faces, which became stone masks, mere witnesses to the next moves of the game.

They saw the explosion before they heard it. The lead boat was consumed in a fiery blast, contrasted by the arcing splash of seawater that burst into the air. Then a second boat, a third, and a fourth were struck. Boat fragments and sailors were sent in all directions. Five, six, seven explosions, then too many together to count. The rest of the trawlers turned, broke, and fled from Mavulis Island.

“Should we pursue?” Ortega asked. “These aren’t just mines, they’re munitions. We can chase those boats down and strike them as easily as return the mines to their original position.”

Stephanie shook her head. “We’re trying to give the Chinese an off-ramp, not escalate. Let them run and report this. Maybe we’ll get inside their heads. Make them reconsider if the juice is worth the squeeze.”

Some of the sailors in the water were still moving, thrashing to stay afloat. “Aren’t their guys coming back to scoop them out of the water?” Ortega asked.

“It doesn’t look like it,” Stephanie said, her voice a near whisper.

Ortega watched, confused. “Why won’t they?”

“They don’t need to,” Stephanie said, bile rising in her throat.<sup>17</sup>

Ortega was breathing, hard, confused. “Then will we?”

Stephanie wondered the same thing, afraid to listen too closely to her conscience. Wickem stepped up behind them.

“Only if we want to die. They only sent the militia to try and get some of us alive. Now they’ll just rain missiles down on us. Those aren’t POWs. They’re a trap.” The surviving sailors started disappearing beneath the waves, one by one, toward Davy Jones’ locker.

Stephanie felt a hollowness opening up within her, watching the drowning men. Then she glanced at Ortega, imagined him in the water instead, face down and surrounded by the burning remnants of their patrol boat.

“Staff Sergeant’s right,” she said, clearing her throat and steeling herself. “Let’s get off this rock and bed down at our alternate position.”

Soon, the platoon was sailing away from Mavulis Island. Stephanie watched Ortega issue another command to the mobile minefield, moving the remaining mines back to their original blocking position in the Bashi Channel.

As they departed, she forced herself to watch the burning boats and the drowned men and imagined that the black, oily smoke rising to the sky was a burnt offering to King Neptune, one mariner’s prayer that the war might end before it got any worse.

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# Adapting

by Mr. Joseph Miranda & Dr. Christopher Cummins

**T**actical Tenet #4 defines (also *MCDP 1-3*) Adapting as “modifying our decisions based on changed circumstances or sudden opportunities.” Adapting includes *anticipation* and *improvisation*, conducted through *flexible plans* and *decentralization*.

Anticipation is necessary because the modern battlefield is characterized by friction and fog of war factors, including uncertainty, disorder, limited intelligence and rapidly changing situations. The commander will have to adapt plans to gain the victory. Anticipation requires situational awareness to make quick decisions, which will exploit an otherwise chaotic situation.

Similarly, commanders must be able to act quickly and often without preparation time. This is called *improvisation*. Adapting requires proficiency in both anticipation and improvisation.

For example, in March 2022, U.S.-Coalition forces attacked Taliban and al-Qaeda guerrillas dug in at the Shah-i-Kot valley in eastern Afghanistan. The initial plan fell apart owing to some friendly fire incidents and lack of coordination with Afghan forces. Commanders on the ground quickly adapted to the situation, improvising a communications network and using it to call in aerial delivered fire. This worked because individual units had the training and initiative to operate in a decentralized situation. The result was a multi-day battle in which U.S.-Coalition forces gained a tactical victory against the Taliban-al-Qaeda force.

## The battle at Khe Sanh

In 1967 Marine Corps forces occupied the fire base at Khe Sanh in north-eastern Republic of Vietnam (RVN). Khe Sanh was a vital military position.

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**>>Dr. Cummins, PhD, MBA, is the publisher of Strategy & Tactics Press and CEO of Decision Games. He has led a team in publishing over 400 board wargames and 600 magazine issues over the past 35 years. He is a former Army psychologist and continues to practice part-time specializing in assessing, testing, and treating individuals with stress disorders.**

It anchored the northern flank of I Corps, which included the important cities of Quang Tri and Hue, and the big Allied base at Da Nang. Khe Sanh also had strategic importance because it was in a position to interdict North Vietnamese Army (NVA) infiltration across the western demilitarized zone and the Ho Chi Minh Trail running through southern Laos.

In late 1967, the NVA moved against Khe Sanh, committing two divisions reinforced with tanks to besiege the Marine Corps fire base. Then on 31 January 1968, the NVA and their allies in the Viet Cong (VC) launched the Tet Offensive, attacking Allied forces throughout the RVN. U.S. Military Assistance Command, Vietnam (MACV, the higher headquarters for U.S. and allied forces) was initially taken by surprise by Tet but then moved quickly, launching a series of counterattacks across Vietnam. Holding Khe Sanh became a major priority for MACV, both for the aforementioned military reasons and also because the fire base had become something of a political symbol of American resolve in Vietnam. This meant adapting to a constantly shifting situation.

MACV launched a series of actions to ensure the defense of Khe Sanh, culminating with a major relief operation

led by the U.S. 1st Cavalry Division (Airmobile). And on 8 April, the 1st Cavalry linked up with Khe Sanh’s Marine defenders. All this is modeled in Decision Games’ **Khe Sanh** wargame (designed by this author).

## Adaptation: The Khe Sanh Wargame

The solitaire player takes command of Allied (United States, RVN) foes at Khe Sanh and its surrounding areas. The game system controls Communist NVA/VC forces.

The game’s units of maneuver are at the brigade, regimental and battalion levels, with some specialized companies. The Allied player has considerable air assets—fixed wing and helicopter. The map shows various points in and around the battle area, classified by type of terrain, including Khe Sanh itself, the NVA siege lines, and the nearby Lang Vei Special Forces camp. Communist units are initially deployed face down. The player does not know their strength, introducing a fog of war element.

(The numbers on the bottom of the game’s ground unit counters are combat and movement values; for airpower they are the bombardment strength.)

The central game system employs two decks of cards. OPFOR (Opposition Force, using a Cold War term) cards



are shuffled into a deck and drawn one per turn to generate actions for NVA/VC forces. For example, the *Tet Offensive Heats Up* card represents a major communist effort, replacing three eliminated NVA/VC units and then advances all communist units towards them.

The cards also have a time cost on them (the number in the upper right). This moves the *Turn* marker toward the scenario's end. Certain cards cost more time than others, and in a few cases will provide additional time. Overall, these represent the tempo of various operations, ranging from intense assaults to longer periods of buildup.

The time factor is critical because you never know how many more turns remain in a game until the clock runs out, and if you have not won at that point, then you lose. Drawing the cards

from a face down deck introduces fog of war and friction factors. You never know what the enemy will do next, so you have to anticipate NVA/VC actions.

To give another example, the *Communist Infiltration* card will move up NVA/VC units to their own siege lines but costs no time, representing low level activity (as opposed to the *Tet Offensive Heats Up* card which represents an accelerated period of activity).

How does the Allied player deal with the challenges? The answer is adapting by having flexible plans. The player has a deck of Action cards representing various courses of action. For example, *Operation NIAGARA* enhances Allied airpower. NIAGARA was the MACV joint air operation to coordinate Air Force, Marine Corps, and other Allied air operations in support of the defenders of Khe Sanh, bringing

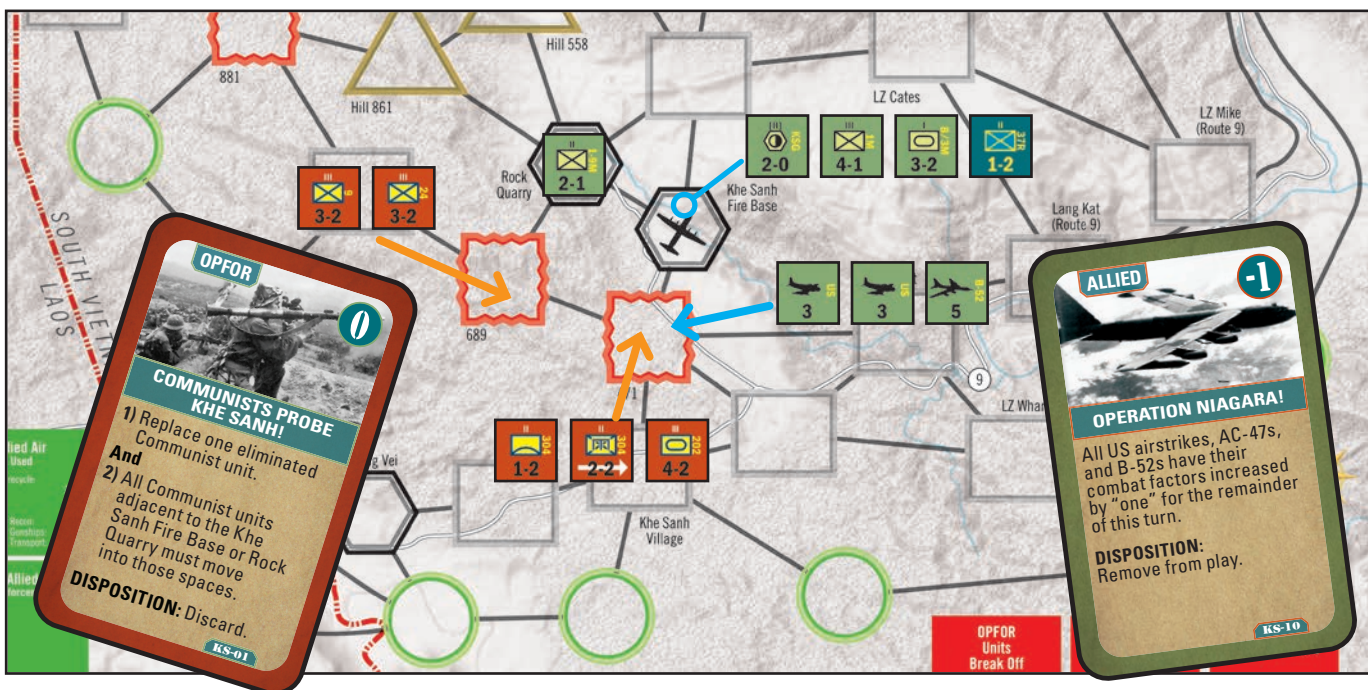
in masses of ordinance to shatter the besieging NVA divisions. In the game, this card is very useful for destroying NVA/VC about to overrun friendly forces. However, the card can be played only once per game, so you have to think wisely about when to use it.

One way to anticipate enemy actions is by playing *Operation IGLOO WHITE*, representing various Allied intelligence operations. Outcomes include revealing hidden Communist units, examining OPFOR cards (allowing you to anticipate enemy actions), and gaining an additional turn (for additional operational tempo owing to Allied staff planning being enhanced by intelligence information). There's also a potential negative outcome that causes the permanent loss of the card. It had to be used judiciously.

When it comes time to launch the relief of Khe Sanh, there is *Operation PEGASUS*. PEGASUS gives the airmobile brigades of the 1st Cavalry additional combat strength. The card is useful in a wide range of situations, from an emergency reinforcement of friendly positions to launching a strong counteroffensive.



**The OPFOR card is Communists Probe Khe Sanh. Two NVA infantry regiments move from west to east to occupy Entrenchment 689. NVA tank regiment plus sapper and antiaircraft battalions move from Khe Sanh Village to Entrenchment 471. The Allied player decides to counter the threat to the Rock Quarry (held by a single Marine Corps battalion) and Khe Sanh Fire Base (held by a Marine Corps infantry regiment, tank company, RVN rangers, and garrison troops). The player selects Operation NIAGARA to call in airpower to destroy the threat.**







When it comes to fighting the NVA/VC, a certain degree of improvisation is needed. Let's say the Lang Vei Special Forces camp is under attack and your ground forces are tied up

elsewhere. But you have airstrikes in the Available display (representing aircraft on the ramp), so you combined them with the *Operation NIAGARA* card to get them into action. This requires a degree of anticipation, because air units can be employed only once per turn, either offensively (to support your attacks) or defensively (to counter enemy attacks). Further, air units have a recycling factor, representing the logistical cost to get them back into the air after flying sorties. You need to think a

turn or two ahead to maintain sufficient airpower for emergencies and be flexible enough to exploit opportunities as they arise.

The card system provides an additional effect insofar as they provide the player with branching courses of action. The system results in a narrative structure to game play, useful for understanding the overall course of the campaign at Khe Sanh.



FEEDBACK REQUESTED!

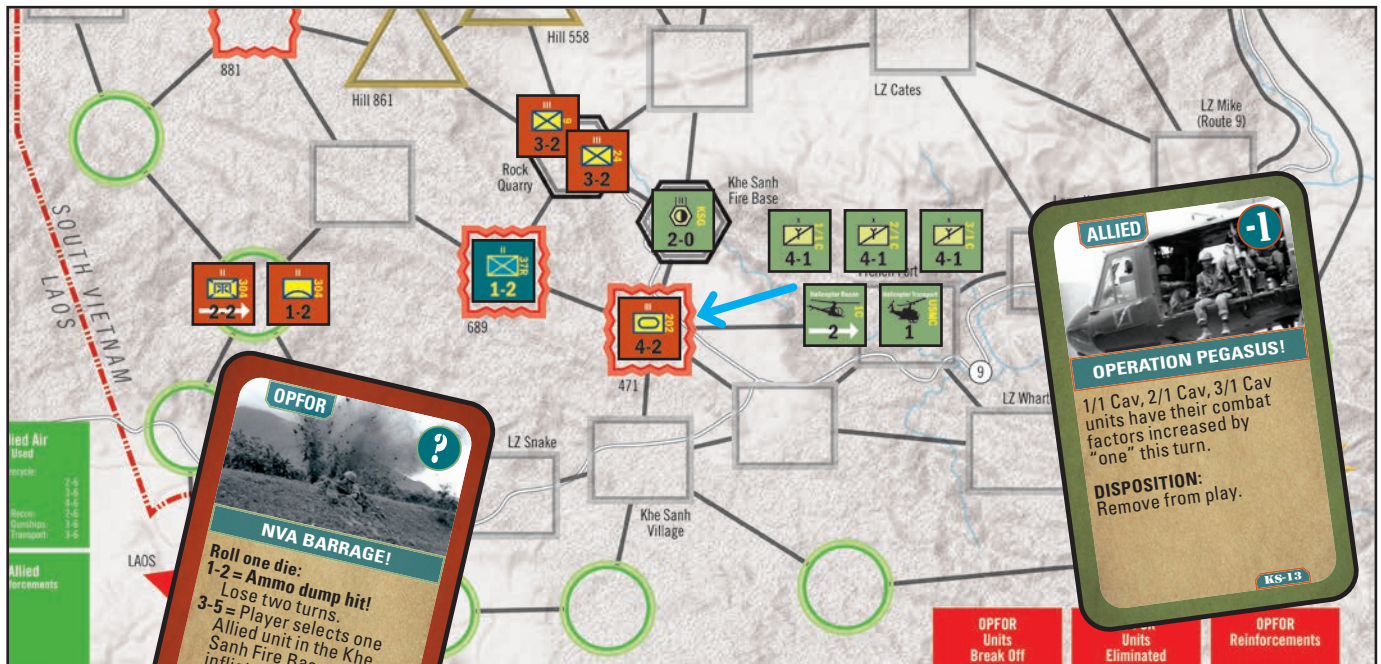
We would appreciate feedback regarding this wargaming column. Please let us know:

1. What was the best individual topic or series in the column thus far?
2. What made it the best?
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4. What would you like to know more about in board wargaming?

Please email you feedback to

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Thanks!




*NVA has overrun the Rock Pile. Khe Sanh still holds. RVN rangers captured Entrenchment 689. The OPFOR card of Barrage has the potential for ending the game if an Ammo Dump is hit. Allies play Operation PEGASUS, committing the 1st Cavalry Division (Airmobile) to relieve Khe Sang Fire Base.*



MINI GAME SERIES

## Khe Sanh '68

Marines under siege



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### Khe Sanh '68: Marines Under Siege

Khe Sanh '68 places you in command of the campaign to hold the United States Marine Corps firebase at Khe Sanh during the Vietnam War. The historical campaign was a race against time as the US high command feared the North Vietnamese were going to attempt to overrun the base. All resources put into the Khe Sanh fight, however, were subtracted from those available to deal with the Tet Offensive elsewhere. Your mission is to inflict maximum Communist losses before the clock runs out.

- **Players:** Solitaire
- **Level:** Regiment-Brigade
- **System:** Cold War Blitz

# D-DAY AT SAIPAN



**D-Day at Saipan** simulates the first five days (15–19 June 1944) of the US invasion and conquest of the island of Saipan. Conquest of the island provided a secure base that put the Japanese home islands within range of B-29 bombers.

D-Day at Saipan is a solitaire game where the player controls the US forces against a card driven Japanese system. It features the 2nd and 4th Marine Divisions storming ashore and overcoming fierce Japanese resistance. Lots of tactical decisions to be made, a tough game to win, and plenty of replay-ability via a variety of shorter or longer scenarios.



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# Tactical Decision Game

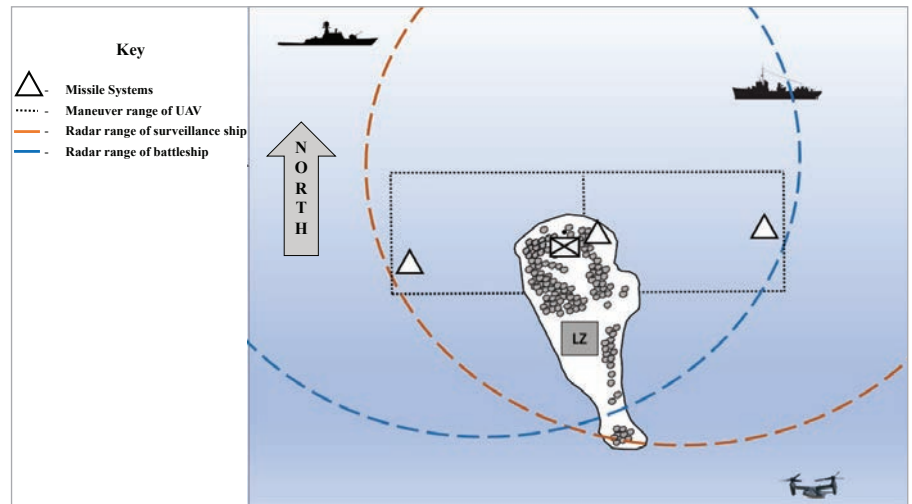
## #23-04

Hide and seek

by GySgt Chase McGrorty-Hunter

The year is 2031, and the world is at war. You are the squad leader for 1st Squad, Alpha Company, 3rd Marine Littoral Regiment. You are tasked with maintaining a low signature sensing cell on the small island of Pamitanin in the Philippine archipelago. Enemy ships frequent the straight between your island and the island approximately nine kilometers to the north. Although remaining undetected to protect sensing capabilities is the primary mission, your squad is equipped with one squad deployment missile system, which has eight missiles as well as two unmanned aquatic vehicles each carrying sixteen surface-to-surface launched missiles. Your weaponry allows you a last line of self-defense if spotted and enables a strike capability in case of a high-priority target as designated by the fleet commander.

You have been on the island for 57 days and are quickly approaching the end of your 60 days of rations and logistical sustainment. Resupplies have been planned for your squad twice in the past three weeks but have fallen through due to unexpected enemy movement in the area that could reveal your positioning or down the incoming aircraft. Three days ago, your 1st fire team leader, Cpl Snow, developed a high fever. He has been vomiting, in and out of consciousness, and recently finished the last IV bag. A medevac for Cpl Snow and a logistical resupply is now a necessity. To avoid detection, you are limited to one randomly generated comm window a day that lasts for two minutes. During the last window, it was passed that an MV-22 Osprey would be landing at



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your LZ at 0900 with a medical crew for an extract of Cpl Snow and a logistical resupply of 60 days of sustainment.

As you are preparing the second fireteam to move to the LZ and rendezvous with the Osprey a Marine from your squad grabs you to tell you to look at the radar. You look to see your sensor has picked up not one but two enemy ships. To your northeast is an enemy sensing ship capable of picking up any transmissions that use SATCOM, HF, and VHF within seconds and pinpointing its location for precision-strike capabilities to act on. To your northwest heading toward the other ship is an enemy battleship capable of ship-to-air and ship-to-shore precision-ballistic strikes. It would take approximately 36 of your organic

missiles to overwhelm the battleship's defense capabilities and 24 for the sensing ship. Each ship is equipped with a standard radar system that can track incoming missiles from origin and spot aircraft within their area. The Osprey that is inbound is only minutes from being within range and is currently flying dark on comms only able to be reached by an emergency VHF net that you could contact to call them off. A strike from the enemy destroyer would be on target within 90 seconds with an attack from the nearest enemy-held island being 5 minutes. The time is 0852, what do you do?

USMC



# Danger Zone

reviewed by LtGen Mike Dana (Ret)

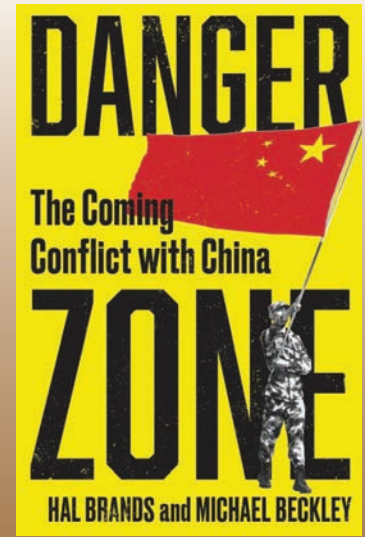
**D**anger Zone is a comprehensive narrative on the threat posed to the United States by China in the coming decade. The authors spare no detail in describing the economic, military and geopolitical challenges presented by China. They believe China has reached its pinnacle of power due to an aging demographic, a soon-to-be sluggish economy, and underlying political instability. In the early 2000s, China had 10 working age adults per every senior citizen (65) and older; by 2050, that number will drop to a 2 to 1 ratio. By 2100, China's population will drop to 700 million from 1.4 billion. The authors argue this "demographic time bomb" will have far-reaching repercussions on China's economy and political stability. To remedy this decline, the authors argue China will flex its military muscle in the Pacific. They cite the fact that between 1990 and 2020, China's military spending grew tenfold. Though some argue we are in a 100-year marathon with China, the authors maintain we are in a "ten-year sprint." Based on their analysis, they believe China has evolved into a peer competitor that has the ability to challenge the United States in all facets of national power. Most troubling, they predict that China will have the upper hand in critical technological capabilities, such as artificial intelligence, telecommunications, quantum computing, and synthetic biology.

In the military realm, the authors argue forward-positioned U.S. forces are at risk, especially our Pacific bases that host our logistics and command and control (C2) networks. To mitigate this risk, they propose that our forces be distributed, resilient and regenerative. China's vision for victory is centered on "system destruction warfare." This means destroying

**>LtGen Dana retired from the Marine Corps in September 2019 after 37 years of service. His last assignment was Director of the Marine Corps Staff, Headquarters Marine Corps, Washington, DC.**

or immobilizing America's forward-deployed aircraft, preventing the flow of U.S. or allied reinforcements to the conflict, and by incapacitating C2 and logistics networks. U.S. forces will need to be able to operate in a communication and data-denied or degraded environment. Major installations will need to be hardened and will require extensive anti-air and anti-missile defenses.

The last chapter of the book provides a very direct and recognizable menu of actions that the United States needs to execute in order to counter China. These are set within the context of great-power competition, and they draw upon Cold War lessons learned. Though the military, economic, and diplomatic tools used by the United States did bring an end to the Soviet Union, China is by every important measure a more complex and capable opponent. The authors do not spend much time discussing ways in which we could increase cooperation and trust with China but instead focus on ways to gain competitive advantage. In this vein, determining what victory looks like against China is a top priority. Answering this question will help inform the whole-of-government, whole-of-nation effort against China. Most importantly, it will provide clarity and focus to the most important U.S. undertaking this century. To prevail, the United States needs to shape the competition by shaping the international system that the United States and China are vying



**DANGER ZONE: The Coming Conflict with China.** By Hal Brands and Michael Beckley. New York: NY, W.W. Norton Company, 2022.

ISBN 1324021306, 304 pp.

to exert influence on. The authors recognize that the United States would benefit from getting our own house in order politically. In the war of ideas against China, there is a stark contrast between what democracy and communism offer. The last principle cited in the book is for the United States to "be patient," which is at odds with the breathless tone, tenor, and urgency of the book. War is clearly on the horizon in this decade, and Taiwan is both the most likely and most dangerous accelerant for this soon to occur conflict. Overall, this book is well written and thought provoking. However, it does contain an air of inevitability and certainty that future events may discredit. It also examines China in isolation, vice through the lens of its symbiotic economic relationship with the United States. Nevertheless, *Danger Zone* is a must read for those engaged or interested in our future relationship with China.



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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:

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- **Letters:** Limit to 300 words or less and DOUBLE SPACE. Email submissions to [gazette@mca-marines.org](mailto: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.
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**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.

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**Submissions:** Authors are encouraged to email articles to [gazette@mca-marines.org](mailto: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.



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