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30 **Cover Article:**
Exercise RIM
OF THE PACIFIC
2016
Staff, 3d Marine Regiment

16 **Innovation**
Capt Joshua Waddell
39 **An MSTP for the**
Future Force
The MAGTF Staff
Training Program

52 **Cyber Force**
Generation
Capt Neal P. Ferrano
77 **Reconnaissance/**
Counterreconnaissance
Task Force
Col Matthew Jones

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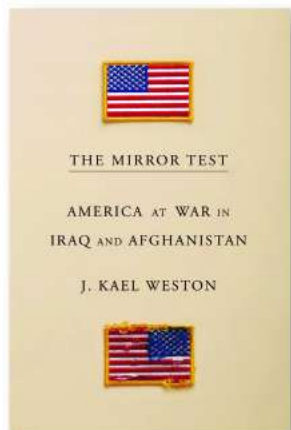




30 Cover Article
Joint and combined amphibious operations in the Pacific AOR. (Photo by SSgt Christopher Giannetti.)

DEPARTMENTS

- 3** Editorial
- 7** BGen Julian D. Alford Letter
- 4** Special Notices
- 82** Books
- 85** TDGs
- 88** Index to Advertisers
- 88** Writers' Guidelines



82 Book Review

IDEAS AND ISSUES

Innovation

- 8** Flipping the Board on Innovation 2ndLt Kevin Huang
- 13** A Critical Advantage Maj John E. Kivelin
- 16** Innovation Capt Joshua Waddell

Current MAGTF Ops

- 21** 2d MEB Staff, 2d MEB
- 24** The Amphibious Operations Brigade LtGen Koichi Isobe
- 30** Exercise RIM OF THE PACIFIC 2016 Staff, 3d Marine Regiment
- 33** MCIPAC LtCol Gary Thomason, et al.

Training

- 39** An MSTP for the Future Force MAGTF Staff Training Program
- 45** The Communication Training Centers Capt Daniel Chamberlin

Armor

- 49** Marine Armor of 2050 Capt Brent Goddard II

Cyber

- 52** Cyber Force Generation Capt Neal P. Ferrano

Experimentation

- 56** Something Old and Something New Col Vince Goulding

Aviation

- 60** Tiltrotor Mobile Combat Formations Maj Nathan J. Hill
- 68** Countering the UAS Threat LtCol Jeffrey Lampert & COL Anthony Scotto
- 71** Countering Commercial Drones LtCol Matthew A. Reiley

Doctrine

- 73** 21st Century Maneuver The Ellis Group
- 77** Reconnaissance/Counterreconnaissance Task Force Col Matthew Jones

WEB EDITION

- 21st Century Reconnaissance The Ellis Group
- Light Infantry Problems and Bicycle-born Solutions Maj John E. Kivelin & 1stLt Cameron Jones
- Innovation, Status Quo, or Relative Regression? MAJ Adam K. Greene
- Robotics in Infantry Battalions Maj Ted W. Schroeder
- The Warfighter LtCol J.J. Mullen
- Decision Time GySgt Paul Nichols

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FEBRUARY 2017

Editorial: Innovation, Adaptation, and Improvisation

As always, the February edition of the *Gazette* focuses on Innovation. BGen Julian D. Alford, commanding the Corps' lead agency for Innovation, the Marine Corps Warfighting Laboratory and Futures Directorate, sets the tone with a letter on page 7. As a result of the Commandant's call for "disruptive thinkers" to look at the future, Marines from around the Corps have contributed their ideas on how to forecast the requirements of future conflict and then how to organize, train, equip, and sustain future Marine forces to succeed in that fight. Some say that we are now in an "inter-war period" where we have the luxury of time for deliberate innovation. While this may be the case, the Corps must also sustain the ability to rapidly adapt to combat while our opponents are simultaneously adapting, and to improvise when surprised by unpredictable conditions, enemy capabilities, and/or political context.

Assessments of the Corps efforts are provided in three articles: "Flipping the Board on Innovation" by 2ndLt Kevin Huang on page 8, "Innovation" by Capt Joshua Waddell on page 16, and "Innovation, Status Quo, or Relative Regression" by MAJ Adam K. Greene, USA, in the Web Edition.

Observations on future MAGTF training are presented in "An MSTP for the Future Force" by the MAGTF Staff Training Program on page 39. In "Decision Time," found in the Web Edition, retired GySgt Paul Nichols provides important first-hand insights into 2d Battalion, 6th Marines' innovative efforts to develop combat decision-making capability in small unit leaders.

Views on modernization and innovation from one of our critical allies in the Pacific are discussed in "The Amphibious Operations Brigade" by LtGen Koichi Isobe of Japan's Ground Self-Defense Force on page 24. Partnership and adaptation in the Pacific is also the focus of "Exercise RIM OF THE PACIFIC 2016" by the Staff, 3d Marine Regiment on page 30. The Staff of 2d MEB presents ideas and observations of innovative and adaptive MAGTF operations and training on the other side of the globe in "2d MEB" on page 21.

We present "Reconnaissance/Counterreconnaissance Task Force" by Col Matthew Jones on page 77, a future focused functional concept for integrating fires, maneuver, and ISR. As a complement to this essay, we have republished the Ellis Group's "21st Century Reconnaissance," originally presented in the January 2017 Web Edition.

Equipment solutions to future requirements are discussed in "A Critical Advantage" by Maj John Kivelin on page 13, "Marine Armor 2050" by Capt Brent Goddard III on page 49, and "Light Infantry and Bicycle-born Solutions" by Maj John E. Kivelin and 1stLt Cameron Jones and "Robotics in Infantry Battalions" by Maj Ted W. Schroeder—both of which are in the Web Edition.

As the today's leadership looks at a potential end strength increase of up to 12,000 Marines, they must wrestle with tough questions of innovation often involving tradeoffs. Does the force simply "grow back" structure and capabilities that had been reduced in the recent past to regenerate the Marine Corps of 15 years ago with increased capacity and enhanced capabilities? Do we prioritize and invest in unscripted free-play training exercises that develop tactical decision makers? Do we continue to recruit and transform civilians into Marines using an "industrial model" that treats young Americans as interchangeable parts? As members of our professional association, your thoughts in answer to these questions can have the greatest impact on shaping the future of our Corps.

Christopher Woodbridge

2016 Kiser Family IW Essay Contest Results

On 6 December 2016, the *Marine Corps Gazette's* Editorial Advisory Panel completed judging for the 2016 Kiser Family Irregular Warfare (IW) Essay Contest. From the numerous essays, the Panel selected four prize winners: First Place, Second Place, and two Honorable Mention essays.

First Place was awarded to Maj Carleton Forsling, USMC(Ret), for his essay titled, "Investing in Marines Gets the Best Results." In the essay, Maj Forsling discusses the fact that, as the U.S. continues its slow withdrawal from Iraq and Afghanistan, the Marine Corps can't prepare to face conventional warfare alone but must expand its capabilities to fight the unconventional threats of the future. Maj Forsling will receive an engraved plaque and a check for \$3,000.

In Second Place was Capt Mark Rothrock's essay, "Preparing for the Future: A Discourse on Readyng the Marine Corps for Irregular Warfare." According to Capt Rothrock, small wars will always be part of U.S. foreign policy, and the Marine Corps must retain the ability to adapt to the unconventional environment. How successful we will be will determine our success in future operations. Capt Rothrock will receive an engraved plaque and a check for \$1,500.

The Advisory Panel also selected two Honorable Mentions for the contest. Capt Brett A. Friedman submitted the essay, "False Choice: Dispelling the Conventional/Irregular Debate," which argues that our maneuver warfare philosophy is as applicable to irregular warfare as it has to be in conventional operations. Also earning an Honorable Mention was Matthew H. Ormsbee, Esq., who in his essay, "The New Approach: How the U.S. Marine Corps Will Remain First to Fight in Irregular Warfare," examines the Corps' hotly-debated topic of irregular warfare in relation to nature of our adversaries. Each author will receive an engraved plaque and a check for \$500.

Reunions

Org: VMFA 531 Gray Ghost Squadron
Dates: 15–17 June 2017
Place: Crossroads Inn, Quantico VA
POC: Roman Makuch
 347-866-0962
 Ray Holmes
 732-267-0518
 rayholmessr@yahoo.com

Org: Hotel 2/7 Vietnam Veterans Reunion (1965–1970)
Dates: 22–25 June 2017
Place: Crowne Plaza, Kenner, LA 70062
POC: Doc. David McCann
 504-909-9972
 nopdret@gmail.com


Org: "Marines of Long Ago" 12th Annual Reunion
Dates: 25–28 April 2017
Place: Quantico and Fredericksburg, VA
Guest Speakers:
 Col Wayne Morris, USMC(Ret)
 and The Navajo Code Talkers
POC: Joe "Red" Cullen, 203-877-0846;
 aircooledmg7@aol.com

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LOCATION:	United States Naval Academy, Leadership, Ethics, and Law Department
DATE CLOSES:	Application review will begin on TBD and will continue until the positions are filled.
ABOUT THE U.S. NAVAL ACADEMY:	<p>The United States Naval Academy is a unique institution of higher learning located in desirable Annapolis, Maryland. As an historic officer accession program and premier undergraduate college, the United States Naval Academy has its own distinctive niche amongst American educational institutions. Our talented faculty and staff are united by one common purpose—to develop the next generation of leaders for naval service. In order to deliver on this promise to our nation, we recruit from all segments of society to find faculty, instructors, and support staff who model the highest professional standards.</p> <p>Every year more than one million people tour “the Yard” to experience what our employees already know—the United States Naval Academy is a special place, with a special purpose. Those selected for employment will find challenging and rewarding work; state-of-the-art facilities which inspire academic and athletic excellence; the benefits of Federal employment; and exceptional quality-of-life.</p>
POSITION DESCRIPTION:	<p>Applications are invited to fill the General Robert T Herres Distinguished Military Professorship in Leadership and Ethics. The Distinguished Military Professor will have responsibilities for NE203, Ethics and Moral Reasoning for the Naval Leader. This three-hour course, which is taken by all sophomores (“Youngsters” in Naval Academy parlance), is structured around classical and contemporary writing in moral philosophy, and its practical application in today’s United States Navy and Marine Corps. The course methodology includes one hour per week of presentation by faculty PhD’s, with two additional hours per week focused on practical application of the fundamental ideas presented. The practical application is done in a small group setting under the instruction of faculty members who have significant personal military experience.</p> <p>The Distinguished Military Professor will coordinate the entire course, as well as act as mentor for the twenty-five to thirty military officers who instruct in the small group class settings. In addition, the Distinguished Military Professor will teach three sections of NE203. Lastly, the Distinguished Military Professor will play a central role in the Naval Academy’s Honor Remediation program and actively engage and cooperate with ethical development efforts Navy and Marine Corps wide. Renewal of this appointment is contingent upon funding, and the needs, and emerging plans of the Naval Academy. This position will be a 12 month employee with a 3 year renewable contract slated to begin in Fall of 2017. Salary is commensurate with experience and qualifications.</p>
MINIMUM AND PREFERRED QUALIFICATIONS:	<p>Minimum:</p> <ul style="list-style-type: none"> • United States Citizen • Masters or equivalent in Ethics or a related field • Retired military officer (O-6 or above) <p>Preferred:</p> <ul style="list-style-type: none"> • Significant operational experience • Recent operational experience • Experience in the classroom teaching a relevant discipline • Passion for imparting knowledge to midshipmen preparing for service to their country as commissioned officers of the naval service. • A Ph.D. or equivalent in Ethics or a related field. <p>Required:</p> <p>All Civilian Faculty Positions at USNA are subject to a background investigation. These investigations are conducted to ensure that individuals hired are trustworthy, of good conduct, and reliable. More information about the background investigation process can be found at the Academic Dean and Provost’s website here http://www.usna.edu/Academics/Faculty-Information/Background-Investigation-Info.php.</p>
HOW TO APPLY FOR POSITION:	<p>1. Send a cover letter, three references, and a CV, including professional experience relevant to the position to CDR Kevin Mullaney, chair of the Leadership, Ethics, and Law Department, at TBD. Application review will begin on 17 December 2016 and continue until position is filled.</p> <p>2. Submit a Demographic Information on Applicants Form to godwin@usna.edu. Your responses will not be shared with the panel rating the applications or to the official making the selection for this position.</p>



03 January 2017

Marines and Sailors,

From the daring assault on New Providence in the Bahamas in 1776—less than five months after our founding—to today, the Marine Corps has been at the forefront of bold innovations in warfare. Marines have since set the tone and pace of American ingenuity, daring, and creativity in combat.

Nowhere in our history is this better demonstrated than during the period between the two world wars, when the Marine Corps rapidly recreated itself into a modern amphibious and expeditionary fighting force. This adaptation was based on the lessons learned from World War I and the prescient insights and analysis of Lieutenant Colonel Earl “Pete” Ellis. Leaders like Lieutenant General John Lejeune and General Thomas Holcomb led the charge, and the Marine Corps met the challenge of World War II better prepared than any other Service. Since then, Marine innovations such as vertical envelopment, the Marine Air-Ground Task Force, and our Maneuver Warfare philosophy have influenced not only how Marines fight, but how our sister Services and allies fight as well.

Today, the Marine Corps Warfighting Lab /Futures Directorate continues that tradition as an engine of bold and visionary innovation for the entire service. Through targeted investments in cutting edge science and technology; deep analysis of future warfare trends; continuous wargaming of new ideas and programs; rapid proto-typing; and collaborative experimentation with our operating forces, the Navy, and USSOCOM, the Warfighting Lab /Futures Directorate intends to ensure that the Marine Corps is armed for the fights of the 21st century and retains its place at the bleeding edge of combat innovation.

Innovation is not just limited to the American military—the pace of technological change and proliferation around the world is increasing at an exponential rate. It is incumbent on us to ensure that the Marine Corps outpaces our adversaries and equips Marines in harm’s way with a qualitative advantage wherever they meet. Since its inception, the *Marine Corps Gazette* has been a partner in spurring innovation. Today, our partnership with the *Marine Corps Gazette* and its readers is critical to our future.

Semper Fidelis,

A large, stylized black ink signature of J. D. Alford, which appears to be a combination of the letters 'J' and 'A' with a long horizontal stroke extending to the right.

J. D. ALFORD
Brigadier General, U.S. Marine Corps
Commanding General
Marine Corps Warfighting Laboratory
Futures Directorate

Flipping the Board on Innovation

From top to bottom, technological to tactical

by 2ndLt Kevin Huang

Since World War II, the United States has enjoyed a significant military advantage over its enemies due to technology. As the first nation to develop nuclear weapons and the Internet, America has long led the world in military innovation, which translates to overwhelming conventional and unconventional advantages. The United States maintains this technological edge through precision missiles, advanced tanks, aircraft carriers, and smart bombs.

America's investment in technological innovation, however, no longer guarantees the same uncontested leadership. Wars in the Middle East gave America's enemies an opportunity to observe American technologies and learn how to counter them. The U.S. military faces sharpening budget constraints; the De-

>2ndLt Huang is a Reserve logistics officer attending LOC at Camp Johnson, NC.

fense Advanced Research Projects Agency (DARPA), "tasked with keeping the U.S. military ahead of the technological curve, has had to slash research and development (R&D) spending by 18% [since 2005]."¹ GEN Martin Dempsey, former Chairman of the Joint Chiefs of Staff, stated, "With our 'ends' fixed and our 'means' declining, it is therefore imperative that we innovate within the 'ways' we defend the nation."² America's competitive military edge, due mostly to its investment in technology, may be at risk.

In the coming decade, technological innovation, and the top-down fashion in which it operates, will suffer from three weaknesses: increased vulnerabilities, shrinking technology gaps, and limited applicability to the infantryman's mission. In light of these weaknesses, America must couple technological innovation with bottom-up tactical innovation in order to maintain its competitive military advantage.

Increased Vulnerability

Technological innovation may actually weaken America's combat effectiveness by creating dependence upon the Internet and vulnerable computer networks. Doctrinally, centers of gravity and critical vulnerabilities "are complementary concepts ... a critical vulnerability is a pathway to attacking a center of gravity."³ Entrenching a machine gun creates a surface along the barrel's principle direction of fire but makes the flanks more easily exploitable. Patrols, listening posts, and obstacle teams establish depth in the defense but also prevent a platoon from massing fires. How defensible those vulnerabilities are determines the amount of risk that is accepted. Thus, innovations must be assessed not only for their benefits but also for the defensibility of the weaknesses they introduce.

The U.S. military increasingly relies on technology to openly communicate across agencies and military units, but that same openness presents an attractive enemy target. As the U.S. military modernizes, more systems rely upon computer networks. In the book *Cyber War*, Richard Clarke writes, "Logistics, command and control, fleet positioning, everything down to targeting, all rely



America's competitive military edge is due to technological advancements like this M1A1 Abrams Main Battle Tank, and it may be at risk. (Photo by LCpl Levi Schultz.)

on software and other Internet-related technologies ... all of it is just as insecure as your home computer, because it is all based on the same flawed underlying technologies and uses the same insecure software and hardware.”⁴ Such a systemic weakness means even small breaches can be catastrophic. In 2010, a glitch within a software upgrade of GPS systems “left almost 10,000 U.S. military receivers unable to log in for days, rendering [everything from aircraft carriers to individual bombs and artillery shells] useless and their systems directionless.”⁵ A faulty upgrade is innocent compared to what a thinking enemy can do. Even an unsophisticated enemy can damage exposed network weaknesses; in 2009, “insurgents in Iraq used \$26 software to hack into and monitor the video feeds from [\$4 million] predator drones via an unencrypted communications link.”⁶

America’s potential exposure is troublingly high. A recent DOD report estimates “approximately 98% government communications travel over civilian owned and operated networks.”⁷ At least 30 countries are estimated to be developing cyberattack capabilities, and more than 100 foreign intelligence organizations have already tried to gain access to U.S. networks,⁸ with U.S. military computers probed by hackers “thousands of times a year, some of whom succeed in disrupting networks for days at a time.”⁹ Thus, the more the U.S. centralizes its technological command and control, the more eggs it has in a single basket. As a result, the growing reliance on computer networks could actually reduce America’s combat readiness and effectiveness.

Shrinking Technology Gaps

The private sector’s role in technological innovation and the rise of cybercrime are creating pathways for foreign competitors to narrow the technological gap between themselves and the U.S. military. As a result, the U.S. military’s return on investment, or “bang for your buck,” for technological innovation is going down, as is its competitive military edge.

When private corporations develop technology faster than the DOD, the

U.S. military retains little control over the technology, and foreign enemies can more easily access new innovations. Since the 1980s, private corporations have spent more on R&D than the DOD.¹⁰ Private corporations seek profit and are willing to sell their technological innovations to foreign entities. For example, the GPS technology developed by the DOD “is now widely available for countless commercial applications that have spawned a \$30-billion-per-year industry[;] ... a growing number of private firms ... sell or give away high-resolution satellite photos via the Internet.”¹¹ Some enemies, such as ISIS,

innovation, the United States cannot easily prevent technological advances from falling into enemy hands.

Foreign competitors can also steal technological blueprints, data, and designs via cybertheft. Even a small group can commit cybertheft, with victims failing to detect attacks for significant periods of time.¹⁴ In 2015, in what the Director of the National Security Agency called “the greatest transfer of wealth in history,”¹⁵ Chinese hackers stole over 50 terabytes of data, the equivalent of five Libraries of Congress. Among the losses included the schematics of the F-35, the B-2, and F-22 fighter-bomb-



Private, off-the-shelf capabilities are outpacing DOD technological advancements. (Photo by LCpl Zachary Ford.)

exploit private corporations’ innovations without fear of U.S. intervention. ISIS uses messaging technology, such as Twitter, Kik, and WhatsApp, to circumvent financial and trade sanctions in order to “routinely launder [monetary donations] through unregistered charities in the form of ‘humanitarian aid.’”¹² Even though “affiliated ISIS Twitter accounts openly publish their Kik usernames,” Kik declares that it does not “see, store, or monitor the content of conversations between users,” leaving the United States without recourse.¹³ Thus, as long as private corporations drive the initiative on technological

ers as well as the space-based laser.¹⁶ In sum, “more than 1,600 network computers were penetrated and at least 600,000 user accounts were compromised ... the damage ... assessed to be more than \$100 million.”¹⁷ By stealing such critical technologies, the Chinese can mimic U.S. military capabilities or develop sophisticated counters for them.

The speed with which foreign competitors can adopt or steal the fruits of American R&D lowers the return on investment of technological investments. Combined with a shrinking DARPA budget, it is unlikely that the United

States can sustain the same technological innovation gap between itself and its competitors indefinitely.¹⁸ The top-down approach that has sustained the U.S. technological edge may soon reach its limit.

Limited Applicability to the Infantryman's Mission

Innovation should improve the infantryman's ability to operate under a variety of situations, objectives, and circumstances; his tools must be as adaptable as the infantryman himself. However, the end products of top-down technological innovation often align poorly to the infantryman's mission, affecting only a short phase of the mission or seeking to entirely replace him.

The hope of replacing the infantryman with technology ignores how wide the spectrum of conflict can be. In 2003, Defense Secretary Donald H. Rumsfeld wanted information- and intelligence-sharing capabilities to reduce the number of troops needed in Iraq. This strategy helped win the conventional war against the Iraqi Army. However, "military operations other than war ... are more probable than a major regional conflict or general war ... many who fight a technologically or numerically superior enemy may choose to fight in a way that does not justify the enemy's full use of that superiority."¹⁹ The overwhelming majority of America's time in Iraq has involved combatting insurgent forces that dragged U.S. troops down to their level of low-tech guerrilla warfare. In the end, the "technocentric vision of military 'transformation' ... left the American Operating Forces ill-prepared for the [counterinsurgency] challenges they would face in Iraq ... a military machine built for one purpose, no matter how superb, could not easily be redirected for another kind of fight."²⁰ Despite superior firepower and technology, the United States is merely the latest in a history of troubled Afghan occupiers, including the Soviets and the British, who struggled predominantly with counterinsurgency, not conventional war.

The complexity of military operations like counterinsurgency requires leadership and initiative, which is best



Technological innovation must be utilized alongside Marines, not in lieu of. (Photo by Benjamin Crilly.)

achieved with boots on the ground. At the tactical level of counterinsurgency, the infantryman must shape, clear, hold, build, and transition territory to civilians. No technology can move through these tactical tasks or earn trust with civilians better than an on-the-ground infantryman nor can technology project the leadership necessary to maneuver in the fog of war. Thus, technological innovation must always be in service of the infantryman's mission, not a replacement.

Widening the Scope of Innovation

Just because technological innovation has weaknesses does not mean the U.S. military should stop investing in it. New threats around the globe compel DARPA to continuously develop new technologies, such as cybersecurity, nanotechnology, and unmanned drones. However, American military leaders should not convince themselves that investing in technology alone would provide a long-term, sustainable advantage.

Though DARPA's top-down approach is not sufficient, it is also abundantly clear that private corporations, though technologically more capable, may not necessarily have U.S. military strategic interests in mind. While the U.S. military will identify military ap-

plications of cutting-edge civilian technology, foreign enemies will be doing the same thing. There should not be an expectation that civilian innovations will increase the U.S. military's competitive edge over its enemies.

Instead, just as decision making has been decentralized, so too must innovation decentralize as opposed to the current top-down, DARPA-led approach. Allowing on-the-ground infantrymen to take the lead on innovation will result in more tactical innovation than technological innovation. Tactical innovation is the art of using pre-existing tools creatively rather than inventing new, more complex ones; Sun Tzu writes in the *Art of War*, "There are not more than five primary colors (blue, yellow, red, white, and black), yet in combination they produce more hues than can ever be seen."²¹

Tactical innovation with limited resources is a strategy that low-tech insurgencies have successfully employed against invading militaries in Afghanistan and Iraq. On-the-ground infantrymen already innovate at the tactical level, but an explicit mandate and funding can empower them to push the boundaries and disseminate the best practices. One example of tactical innovation was a U.S. lieutenant colonel who, realizing IEDs were set off by radio



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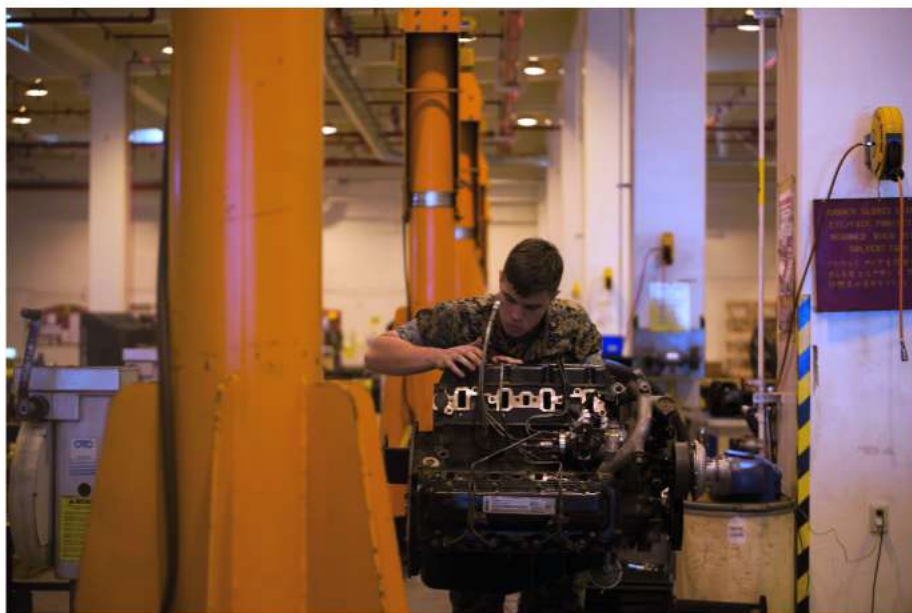
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The Marine Corps must adapt to overmatch our enemy's modern capabilities. (Photo by LCpl Nelson Duenas.)

transmissions from toy cars, “mounted a toy-car transmitter on the dashboard of his Humvee and taped down the levers so that as he drove around it would detonate any bomb on the same frequency within one hundred yards”—something the DOD eventually adopted and expanded.²² Introducing a bottom-up innovation strategy focused on tactical innovation can encourage similar initiatives. It harnesses the on-the-ground experience that more directly confronts the tactical reality of modern warfare than military leadership, private corporations, or bureaucrats.

Doctrinally, “as the hardware of war improves through technological development, so must the tactical, operational, and strategic usage adapt to its improved capabilities both to maximize our own capabilities and to counteract our enemy’s.”²³ By flipping the board on military innovation, the U.S. military can ensure that its Service members are prepared to take better advantage of new technologies than foreign enemies. New American technologies inspire enemies to both copy and counter American capabilities; therefore, American capabilities must adapt.

Conclusion

Due to recent technological trends,

the United States cannot and will not sustain its competitive military edge by solely investing in technology in a top-down fashion. Especially in the 21st century, such an approach creates new vulnerabilities that enemies will target, will quickly be matched by competitors who buy it from private corporations or engage in cybertheft, and may fail to align to the complex missions of the modern infantryman. Instead, the United States should encourage junior Service members on the ground to take ownership of innovation on a tactical level. If Service members can design innovative solutions to the tactical problems they face, the United States will capture the innovative initiative. Such innovations will build on the fighting strategies and practices already drilled into U.S. Operating Forces, and they will be more difficult for enemies to mimic or counter. Though not a “silver bullet” for the challenges that face American innovation, encouraging a bottom-up innovation agenda based on tactical innovation will improve the sustainability of the U.S.’s competitive military advantage over its enemies throughout the world.

Notes

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A Critical Advantage

Suppressors for the modern riflemen

by Maj John E. Kivelin

Our organization is shaped to support one billet—the rifleman. His duty is to kill our Nation's enemies through well-aimed shots from support by fire positions or in the assault with the aid of explosives. The Marine Corps considers marksmanship so fundamentally important that a Marine's rifle score counts for three times more points towards his composite score than his three mile run.¹ As leaders, we should ask ourselves why this skill is so critical to our character. Through blood spilled in combat, our predecessors found the answer. Combatants that become fixed and suppressed by accurate rifle fire have two options—surrender or die in place. Travis Onischuk writes, "Suppression is, always has been, and always will be the critical infantry task."² The Marine Corps must provide our fire team and squad leaders a decisive advantage to

>Maj Kivelin is the CO, Company F, 2d Bn, 7th Marines. He is currently deployed with Crisis Response Company in support of SPMAGTF-CR-CC.

suppress and fix our enemies by integrating suppressors into all rifles, light machine guns, and medium machine guns.

Uncertainty

Combatants that are engaged by suppressed weapons find enemy target acquisition nearly impossible to determine. During the turn of the 20th century, riflemen firing smokeless powder gained an advantage over riflemen firing black powder because smokeless powder diminished the instant target reference point.³ Similarly, riflemen firing with suppressors possess a decisive advantage

over infantrymen firing with standard compensators. Our doctrine states, "Squad members are trained to identify the *target area* quickly and accurately and to place a high volume of fire on it even though no enemy personnel may be visible."⁴ We choose "target areas" by determining the direction through audible estimation and then guessing the terrain in which the enemy is concealed. Suppressors make that guessing game more difficult. Michael Musselman wrote, "A silencer does not make a rifleman silent, but it does make him invisible."⁵ Without enemy rifle reports, combatants struggle to identify valid target areas. The loud supersonic cracks and pops—which all Marines are familiar with from standing in the rifle range target pits—will cover up any residual noise from the support by fire position. Under these conditions, the RTR (return fire, take cover, return accurate fire) battle drill becomes impractical. Our Marines, firing with suppressors, provide no distant rifle reports for the enemy to orient towards. How can an enemy return fire, let alone accurate fire, when he is unsure about the direction to our position? Even choosing adequate cover becomes a struggle for him because he is unsure what side of the micro-terrain to crouch behind. With suppressed weapons, Marine squads are more survivable because they become increasingly difficult to audibly locate.

Fires Assignment and Control

When using suppressed weapons, fire team and squad leaders can control support by fire and ambush positions by voice. Although suppressed weapons still make noise, non-commissioned officers can distribute and control fires more easily than when non-suppressed automatic rifles reports are drowning out all voice commands. With sup-



The Sure Fire SOCOM 5.56mm Mini adds 5.0" and 14.5 oz to each weapon. (Photo by SureFire.)

pressed weapons, Marine squads will become more deadly because small unit leaders can shift and redistribute fires more quickly.

Human Factors

Our warfighting philosophy seeks to achieve victory by creating “a turbulent and rapidly deteriorating situation with which the enemy cannot cope.”⁶ At the small unit level, we seek to deteriorate our enemy’s will by instilling panic and fear, which “contributes to the corrosion of will.”⁷

Suppose an insurgent team of six fighters is accurately pinned down by a Marine squad in dense terrain. The enemy cannot determine the origin of incoming fire, but it appears to be from several directions. One of the insurgents is slightly wounded in the arm and decides to make a run for it. A burst of seven rounds from an automatic weapon crack through the air, killing him nearly as quickly as he stands. The Marine squad’s fire becomes more accurate and seems to be gaining geometries from different positions as insurgent casualties begin to rise. The insurgent team quickly realizes it has two options—surrender or die.

I provide this vignette as an example of how the technological advantage of suppressors gains our Marines a decisive

Equipment Type	System	Cost
Weapons	M-4	\$640
	IAR	\$2,280
	M240B	\$7,930
Day Optic	M4 RCO/A4 RCO/SDO	~ \$870
IR Laser Pointer	PEQ-16	\$1,440
Night Vision Device	PVS-14	\$3,600
	PAS-13D	\$11,300
	PVS-17C	\$7,100
	Mini-Thermal Imager	\$9,330
Suppressor	5.56mm Suppressor	\$730

psychological advantage over the enemy’s will to fight. Our current enemy is lighter and faster than our squads loaded with gear and a full ammunition complement. However, our Marines can leverage the advantage of suppressed weapons to help prevent the enemy from choosing the best direction to withdraw, thus diminishing his speed advantage.

Cost

Currently, we outfit each Marine with weapons suites costing between \$6,500 and \$21,000. Above is a table of weapons and equipment costs.⁸

This technology is expensive, but it allows us to locate and accurately engage the enemy under limited visibility conditions. We should invest an

additional \$730 per Marine to purchase suppressors for each weapon. These suppressors will facilitate our fire control while disrupting our enemies’ abilities to observe and orient on our Marines, both day and night.

Effects on Precision

I have listed the benefits of a suppressor, but some readers will have questions about a suppressor’s effects on precision. Many shooters are more precise when firing suppressed weapons.⁹ The precision and maximum range of a round is slightly affected by a suppressor. However, the shooter slightly increases his overall precision because of the decreased recoil and report of the rifle, both of which cause minor flinching. For any skeptics that doubt effects on precision, it should be noted that the only suppressors on an infantry battalion consolidated memorandum receipt are for sniper or designated marksmanship rifles.

Operational Risk Management

Suppressors provide some additional benefits to the health and safety of our Marines. Suppressors will vastly reduce the hazardous noise to which Marines are exposed, reducing the number of veterans suffering from tinnitus.¹⁰ Additionally, position safety officers and range safety officers will be able to call cease fire more quickly in the event of a potential safety issue.

Conclusion

All 5.56mm and 7.62mm caliber rifles should be suppressed. Design engineers should integrate suppressors into the barrel design of future rifle and machine



If these Marines used suppressors, they could diminish the enemy’s awareness. (Photo by Cpl Trevor Statz.)



We spend thousands of dollars on Marine gear. Suppressors are an additional, but necessary, cost. (Photo by Cpl Trevor Statz.)

gun models.¹¹ This design will allow our squads to distribute fires and will disrupt our enemies' ability to orient on our support by fire positions and assault elements. Integrated suppressors will also decrease the overall length of the weapons system that will be temporarily extended through the use of detachable models. We invest thousands of dollars per rifleman to own the night; let's invest a few hundred dollars more to own the day.



Like all innovations, Marines must train with suppressors to be able to use them in the field. (Photo by LCpl Sarah Petrock.)

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11. Engineers will have to conduct further testing on machine guns to determine the feasibility of suppressing weapons with high rates of fire. Suppressors generate high pressures, which can cause barrels to heat up more quickly. This may require machine gun teams to change the barrels more often.



Innovation

And other things that brief well

by Capt Joshua Waddell

I am now thoroughly convinced there is something deeply wrong with the part of the Marine Corps occupying the I-95 corridor leading to the Pentagon. What has become painfully apparent to me is the drastic difference between the mindset of the Operating Forces and the Supporting Establishment. While I grant that, in the case of the former, the prospects of being shot, blown up, or otherwise extinguished tend to be wonderful motivators to constantly improve and perform, the Marine Corps Supporting Establishment is filled with senior officers whose backgrounds include extensive experience in combat within the Operating Forces. Why then is there such a divide between the organizational energy and innovative agility of our Marines and the depressive stagnation found within the Supporting Establishment?

I believe I know a big part of the answer: self-delusion.

Let us first begin with the fundamental underpinnings of this delusion: our measures of performance and effectiveness in recent wars. It is time that we, as professional military officers, accept the fact that we lost the wars in Iraq and Afghanistan. Objective analysis of the U.S. military's effectiveness in these wars can only conclude that we were unable to translate tactical victory into operational and strategic success.¹ As military professionals, it is not sufficient to offload the responsibility for these failures, at least in their entirety, to decision makers in Washington or in perceived lack of support from other governmental agencies. We must divorce ourselves from the notion that criticism of our performance is an indictment or devaluation of the sacrifices our Marines made on the battlefield. Like many of you, I lost Marines in the "Long War" as well. It has taken sev-

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The Marine Corps must scrutinize its inception-to-implementation vector for innovative technologies. (Photo by Sgt Melissa Karnath.)

eral years of personal struggle to arrive at the conclusions I am writing now. What makes this necessary, however, is that if you accept the objective, yet repulsive, fact that our Marines died on the losing side of our most recent wars, you cannot then accept that the status quo of the Marine Corps, and the larger defense establishment, is in an acceptable state of affairs. This is further compounded by future forecasts of conflicts with adversaries that are beginning to look like more like peers despite the self-aggrandizing "near-peer" label we assign them.² We allow ourselves to look at our impressive defense budget and expensive systems and throw around hyperbole about the United States having the greatest military in the world. How, then, have we

been bested by malnourished and undereducated men with antiquated and improvised weaponry whilst spending trillions of dollars in national treasure and costing the lives of thousands of servicemen and hundreds of thousands of civilians? Judging military capability by the metric of defense expenditures is a false equivalency. All that matters are raw, quantifiable capabilities and measures of effectiveness. For example: a multi-billion dollar aircraft carrier that can be bested by a few million dollars in the form of a swarming missile barrage or a small unmanned aircraft system (UAS) capable of rendering its flight deck unusable does not retain its dollar value in real terms. Neither does the M1A1 tank, which is defeated by \$20 worth of household items and scrap

metal rendered into an explosively-formed projectile. The Joint Improved Threat Defeat Organization has a library full of examples like these, and that is without touching the weaponized return on investment in terms of industrial output and capability development currently being employed by our conventional adversaries.

More to the point, I am proposing a moratorium on our senior leaders using the word “innovation” in response to these challenges. I was privileged enough to spend time adjacent to our Nation’s “cradle of innovation” in central California. Frankly, it is embarrassing to compare what is being accomplished by private industry to what you see in the average Marine Corps innovation brief. I am convinced this is a self-inflicted wound. In our quest for fair competition and misguided desires to preserve a Cold War-era industrial base, we have created a Byzantine acquisitions system that privileges insiders (an objective affront to our Nation’s capitalist philosophy) and degrades institutional agility.

Despite variations of the word “innovation” occurring 18 times within the newest *Force Development Strategic Plan*, these well-meaning policies are hollow without the corporate environment in which they can be successful. Our current structure calls for innovation, then bludgeons those initiatives with the full weight of the Program Objective Memorandum (POM) cycle combined with institutional lethargy and reactionary resistance to change. I am convinced we can create a structure that is more responsive to the real world requirements of a true global force-in-readiness. Instead, by repeatedly espousing the need for innovation in the Marine Corps, while refusing to foster the corporate processes which encourage industry engagement beyond defense insiders, we delude ourselves into believing in our parity with the capability possibilities of the modern age, and this, in turn, adds to the general malaise one experiences in the defense acquisition establishment.

It is worth noting that, over the past three decades, the wellspring of innovation in Silicon Valley did not happen in a vacuum. Like the Renaissance,



The Supporting Establishment should have the same aggressive, invasive, and innovative drive that our forward deployed Marines do. (Photo by LCpl Julien Rodarte.)

certain conditions existed within the culture and regulatory environment that enabled the technological boom we now envy to occur. Therefore, it is not enough to issue mandates for the department to innovate. Rather, the more consequential, and what I would argue is the more difficult, course of action is demanding an organizational ecosystem that organically fosters innovation and allows innovative concepts to grow and mature. This isn’t to say that a storied and disciplined military organization such as the Marine Corps should strive to replicate the corporate oddities found at some Silicon Valley firms. Rather, the Marine Corps must carefully examine the inception-to-implementation vector for innovative concepts and the supporting regulatory and statutory mandates that affect them. In much the same way we would track adversary indications and warnings in a threat network, we must track the flow of ideas within the Corps to determine why so many end up dead on arrival. This must also come with a cultural recognition that, outside of the Constitution and Title 10 authorities, there are no “bibles” in the Marine Corps. Every order, regulation, or business process is malleable—it simply takes bold leadership to recognize and implement these necessary changes.

To complement this argument, one must acknowledge the capabilities of the phenomenal young men and women we recruit to be Marines. There is no reason that the Marine Corps, with a work force that is, on average, better educated and disciplined than their civilian counterparts, can’t replicate the advances in just-in-time logistics perfected by UPS and Amazon or the austere networking capabilities deployed by Cisco, to name a few. By their age alone, it is laughable to think that they would have difficulty adapting to new IT and C² systems since they have likely spent every day of their lives connected to a smartphone and have more Internet protocol networking knowledge as a result of online gaming than many of our own C² policy makers.

As an isolated example, it is shameful that our company commanders are buying Android tablets with their own money for their units to use with Special Operations Command (SO-COM) open-source software to conduct en-route C² in our SPMAGTF-CR units while HQMC hides behind a log-jammed and unnecessarily restrictive certification process. Here, I would invite critics of this particular effort to explain how they foresee tactical adversaries breaking advanced encryption standard 256 encryption

and other commercially available cybersecurity measures on a protected, yet unclassified, network as being a risk more unacceptable than our infantrymen being shot or our Ospreys being downed. However, if the U.S. Army's 82d Airborne and 75th Rangers have outpaced our capacity for expeditionary communications (which they have), then the Marine Corps should be rethinking its role as the Nation's first choice as its crisis response force. Yet, we are satisfied with ourselves for finally providing the PRC-117G to the Operating Forces while our adversaries outmaneuver our C² infrastructure with cell phones, third-party applications, and open source encryption. Only through aggressive HQMC leadership and the adoption of a sweeping campaign of modernization that favors commercial and government off-the-shelf solutions will the Marine Corps begin to come back up on par not only with the civilian sector but with our fellow expeditionary units within the DOD.

The relative small size of the Operating Forces is one of our greatest strengths in that it should allow for similar agility to that enjoyed by our SOCOM brethren. Their aggressive utilization, not bypass, of the Joint Capability Development and Integration System (JCIDS) process should embolden capability developers to be more aggressive and less risk averse in meeting battlefield requirements.

Additionally, I propose a moratorium on the phrase "fiscally constrained environment," an often used term in the context of hand-wringing regarding the comings and goings of Congress and fluctuations in the defense budget. Ignoring for a moment the fact that "constrained resources" is a constant for every industry and indeed every biological organism on the planet, we must disabuse ourselves of this sentiment because of its impact on the mindset of acquisition professionals and capability developers: seemingly offloading the ownership of fiscal responsibility to uncontrollable externalities. From an internal perspective, we must remind ourselves that the DOD, to include the Marine Corps, is still incapable of being successfully audited.^{3 4 5} To say nothing

of the frequent cost overruns, acquisition nightmares, and ever-expanding overhead that frequent the pages of the national news services, it is unthinkable that a successful corporate entity can be able to operate without having its books fully in order. This is separate and distinct from the moral implications of squandering the tax dollars offered to us in good faith by the American people whom we are sworn to defend.

Taking an external view of our so-called "fiscally constrained environment," it is illustrative to put our budget in comparative terms. The President's budget for the Department of the Navy in FY16 was \$161 billion, with an additional \$7 billion in funding for overseas contingency operations. This year, the budget for the entire Russian military,

"If Google bought a military tomorrow, what would it look like?"

the one that embarrassed our national policies in Ukraine and Syria, was 3.1 trillion Russian rubles, which comes out to roughly \$42 billion by the exchange rate at the time of this writing.⁶ Even adjusting for the collapse of the ruble (ironically giving the United States, a nation with strategic cash reserves in the international exchange currency, more buying power), their previous modernization budgets roughly meet less than half of the Department of the Navy's corresponding yearly budgets. This is the same Russian military whom the RAND Corporation has estimated would be unstoppable in an initial conventional conflict in the Baltic States, even against the combined might of the NATO forces stationed there.⁷ Given the generous funding the American people have bequeathed us to provide for the common defense, is it so unreasonable to seek an efficient frontier of that resource's utility?

During my time red-teaming emerging joint concepts with Joint Staff J-7 and engaging in the daily business of MCCDC, the themes discussed above

seemed to echo across the DOD. However, while we are quick to offer speculations as to what our third offset strategy might be or how we might conduct manned-unmanned teaming, defense professionals consistently take an impotent tone in discussing the less glamorous organizational ails of the department. It is here that the bold leadership we associate with military virtue is so desperately needed. As a starting point for discussion, I propose the following immediate changes to our supporting establishment:

Aggressive execution of the JCIDS to favor open purchase of commercial off-the-shelf and government off-the-shelf materiel in order to catch up to the current defense state of the art while independently assessing future force requirements. While the JCIDS process is not inherently broken, its usage among the various stove-piped HQMC agencies is crippling inefficiency. Consolidation of major acquisition and capability development commands into a streamlined structure could eliminate key delays in the execution of this established process. Business process reengineering should be undertaken to eliminate common points of friction, whether they be people or processes. Additionally, we must ask ourselves the hypothetical question, "If Google bought a military tomorrow, what would it look like?" We have focused on modernization through the lens of analogous programs (think ACV vice AAV) rather than expanding our conceptual realm of possibilities. We should employ what physicists would call "first principals" and hypothesize what true modernization would look like for the Marine Corps outside of the framework of past assumptions. Here again, the relative small size of the Corps is actually a benefit in that we can outfit and reorganize ourselves with far greater agility than our other conventional brethren in the DOD. Otherwise, we will be like the Belgian defenders relying on traditional forts and castles in the age of railway siege guns at the onset of the First World War.

Immediate Marine Corps-wide limited audit with the goals of identifying duplication of effort between existing structure and/or contractor support as well

as reviewing all established programs, JCIDS or otherwise, with multi-year funding over \$250,000 for gross lack of performance. Marine Corps organizations should be forced to reconcile the position descriptions and billets of their structure and find redundancies between structure elements and between salaried personnel and contract personnel. There is no reason we should be paying twice for the same work or, as is often the case, paying government personnel for work that they have instead outsourced to more capable contractors for tasks within the government worker's job description. I would be willing to bet that a savvy staff officer with access to these position and billet descriptions as well as contracting line items could save the Marine Corps millions of dollars by simply hitting Control+F (find all) on his keyboard, querying key tasks, and counting redundancies. Additionally, all funded programs should be audited for gross cost and schedule overruns and their program officers held accountable for lack of performance. This problem is most glaring in our information technology programs where a system can be allowed to be overdue by years while not being able to deliver on the requirements set forth in the original programming documents while costing the service millions of dollars. These steps are an absolute minimum to begin to earn back the good faith and confidence of the American taxpayers. It amazes me that the same Marine Corps that will summarily fire a company commander because an attachment fell off the rifle of one of his 183 Marines and was lost will then treat the systematic fraud waste and abuse inherent in our headquarters and acquisitions establishments as the cost of doing business and "just the way things are."

Immediate reform in the government civilian positions within HQMC is needed to ensure all general schedule (GS) employees are required to follow a diversified career path rather than allow civilians to attain *de facto* tenure within the existing structure. Commands must be required to both recompile and review/update 20 percent of position descriptions for civilian employees, staggered

annually, in order to prevent stagnation. This will allow existing employees to serve at least four years in their designated position with the option to recompile for their current position should that position description remain generally the same. Likewise, it would allow those employees to compete for another lateral or higher position as they come available. This will ensure the retention of corporate knowledge beyond the typical PCS timeline of their uniformed counterparts while providing a mechanism for organizational evolution. This should be done in such a manner as to allow qualified defense civilians the opportunity for true career advancement while ensuring all allotted structure serves in the best interest of the Marine Corps. While it is critical to maintain faith with our

training at notable civilian institutions with strong STEM and business management programs. While the Naval Postgraduate School does an admirable job, there is an opportunity to see cost savings in engaging with select public higher education programs while reducing the overhead of maintaining an entire university in Monterey, California. Instead, these Marines could augment existing ROTC programs while bringing a more diversified academic experience back to the Marine Corps. Additionally, there must be a service-wide review of billets coded to specific military operational specialties produced from the SEP pipeline to ensure the optimal allocation of officers with specific technical and managerial skills to their appropriate billets. As it cur-



Is there a disconnect between the Operating Forces and the Supporting Establishment? (Photo by Sgt Sara Graham.)

defense civilians, the greater imperatives of national security require the Marine Corps to ensure it always maintains the most highly qualified workforce possible. As such, efforts should be made to recruit STEM and managerial talent from the entry to executive levels. While prior military service can be an asset, it can also be a hindrance to organizational change. Our civilian headquarters billets should not be, as one analyst recently described it to me, akin to a "no colonel left behind" program.

Reform of the allotment of Special Education Program (SEP) billets to include

rently stands, the occupation fields for SEP billets are misaligned to their current billet assignments in a significant number of cases.

Reform of the manpower model to recruit the necessary talent for 21st century warfare. It is unreasonable to expect to recruit and retain highly qualified individuals while offering compensation at conscript/poverty levels.⁸ While current education benefits are generous, the overall compensation for enlisted ranks is insufficient to ensure the maintenance of a professional NCO corps in the 21st century. Cuts to overhead in military

medicine, continuing reform to pension programs, and reductions in non-critical structure would fund these increases to more competitive levels. Marines will continue to reflect all that is best in soldierly virtue due to the ethos of the Corps. However, with continued deployments to conflicts without end and with competitive employment options for skilled labor in the civilian force, to include private military firms, we can't expect our most highly talented Marines to stay with the Corps simply for the love of the game. Nor should we expect that the Marines whom we have incentivized with a time horizon in the form of a lifetime pension rather than meaningful career goals be inclined to take risks that are in the best interests of the institution. This is instead incentivizing "playing it safe and making it to 20."

Establish a Marine Corps Warfighting Laboratory rapid prototyping lab aboard Marine Corps Air Ground Combat Center, Twentynine Palms, or Marine Corps Air Station, Yuma, and interface directly with the newly formed Defense Innovation Unit—Experimental and relevant industries and start-ups nationwide. The availability of facilities and ranges to conduct tests and evaluations while better positioning military innovators near high-tech industry clusters would allow the Marine Corps to rapidly test new equipment, both lethal and nonlethal. This lab should also be directed to take on the costs of certification and defense policy compliance in the cases of onboarding technology from companies outside the defense establishment. Easing this regulatory barrier to entry will foster more open and fair competition among defense suppliers which will result in eventual savings being passed along to the Marine Corps.

Form a Marine Corps sovereign wealth fund to replace the need for OCO spending in the future. This fund would be implemented simultaneously with modifications to congressional budgetary law requiring the complete expenditure of a given year's fiscal budget. Incentivizing managers to find efficiencies in their programs and budgets and passing those savings to

the fund will grant the Marine Corps operational responsiveness in the face of crises in the form of operational or capability requirements that far outpace the legislature's ability to approve a defense authorization act or a president's budget. This would be sold to Congress as a multi-year cost savings strategy with the potential to curb the initial costs of major deployments in the future. This fund could also be tapped at the request of the Commandant for the rapid acquisition of capabilities designated critical and unforeseen in a typical fiscal year's funding allotment. I offer Norway's national sovereign wealth fund as a potential model for this much smaller fund.

Here's the reality: we have a headquarters establishment that has grown too comfortable. When I watch entrenched civilians treat orders from Marine Corps generals as minor annoyances as they wait out that officer's PCS timeframe, or observe officers deferring executive action to loosely organized integrated planning teams which spend their first year simply attempting to agree on their own charter, I begin to doubt the objective effectiveness of our headquarters. Only aggressive executive action on the part of emboldened and passionate leaders, both military and civilian, will be able to break the gridlock we currently face. If we recognize our recent failures and the coming challenges to the force, this becomes a moral imperative. A military department charged with the duties of the Nation's crisis response force is a department that must be on permanent war footing. Our supporting establishment's leaders should execute aggressive and invasive leadership throughout their organizations to ensure the same fighting spirit we find in our forward deployed Marines exists in the hallways of the Pentagon and in Quantico.

I have watched Marines charge headlong into enemy fire and breach enemy defenses with the enemy's own captured IEDs in order to engage in close combat. This same fighting spirit from which we draw so much pride must be replicated by our senior leaders in leading comprehensive reform of our Corps' capabilities and in creating a supporting

establishment truly capable of fostering innovation. As the Marine Corps aggressively pursues force structure changes in the coming years, I implore our leaders to address the organizational culture of our headquarters establishment. Much like the service's shift to maneuver warfare and the development of *MCDP 1, Warfighting*, (Washington, DC: HQMC, 1997), following failures in Vietnam, we have an opportunity to enact meaningful changes to the way the Corps conducts force development as well as force employment functions while the lessons learned from recent conflicts are fresh in our minds. Otherwise, we will return to a comfortable business-as-usual mindset while we delude ourselves with hollow phraseology that briefs oh so well.

Notes

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2d MEB

Ready for crisis

by Staff, 2d MEB

Over the past three years, 2d MEB transformed from a small exercise staff into a joint task force (JTF)-capable command element ready to respond to crises or serve as the advance force for II MEF. From the shores of Norway to the sunny, tropical scenes of Morocco, 2d MEB demonstrated II MEF's unique capabilities to the Marine Corps and two geographic combatant commands through execution of eight mission rehearsals and one operation. Serving as the core of a MAGTF or JTF, 2d MEB showcased the ability to understand the mission, form a team, and execute complex operations. Although not an assigned force, 2d MEB focused on fulfilling U.S. Africa Command's (USAFRICOM) requirement for a crisis response JTF and was formally recognized as JTF-capable in June 2015 and declared full operational capability in September 2015.

In November 2012, 2d MEB declared initial operational capability (IOC) although only three Marines were permanently assigned to the staff. In May 2013, the staff executed BOLD ALLIGATOR (BA) 13, a service-level synthetic exercise designed to test cri-

... the staff deployed to Spain in response to growing concern of violence in Libya ...

sis response and compositing models from the MEB *Concept of Operations*. The staff consisted primarily of II MEF personnel from across the Force. The exercise included aggregating a MEU, a SPMAGTF, and follow-on forces in order to composite a MEB and execute

crises response operations. Although synthetic, the exercise highlighted the challenges of standing up a staff and compositing forward deployed forces to conduct amphibious operations.

Over the next year, the core staff grew to approximately 30 Marines while planning for Exercise AFRICAN LION (AL) 14, a command post exercise in the country of Morocco. In March, the staff deployed to Morocco and formed a combined joint task force (CJTF). Over the course of the month, 2d MEB executed a variety of simulated missions from humanitarian assistance to stability operations. The staff returned to Camp Lejeune to focus on BA 14, which would serve as the live version of the previous year's crisis response exercise.

In May, the staff deployed to Spain in response to growing concern of violence in Libya, forming a crisis response JTF under USAFRICOM. With forward deployed forces, including the MEU, SPMAGTF, and additional aviation forces from U.S. Air Forces Europe and Africa's 3rd Air Force, 2d MEB coordinated a sophisticated air plan to meet the evacuation requirements. 2d MEB utilized a joint air component coordination element to feed into the theater joint air force component command (JFACC) to coordinate the various aviation requirements, including airspace control measures and de-confliction with naval assets. When the MEU was redirected to other missions, the MEB redeployed to North Carolina.

Upon return, the staff refocused on BA 14, which was the live, crisis response version of BA 13 and included compositing a MEB with forward deployed forces. The lessons from the USAFRICOM mission enabled the staff to form the command element and smoothly execute 17 missions over



BA 16 focused on improving Navy-Marine Corps amphibious core competencies along with coalition, NATO, allied, and partner nations. (Photo by Cpl Joey Mendez.)



LSE is a combined U.S. Marine Corps, Canadian, and British exercise conducted at the Brigade-level, designed to enable live, virtual, and constructive training for participating forces.
(Photo by Cpl Tyler A. Andersen.)

11 days, including simulated embassy reinforcement, small-scale amphibious assault, and raids. Within the BA 14 scenario and based on forces available, the staff planned for a transition ashore and shift to a JTF. This enabled direct linkage and the lead-in for the upcoming US AFRICOM exercise, JUDICIOUS RESPONSE (JR) 15.

One week after BA 14, the staff shifted to Fort Bragg for the crisis action planning (CAP) for JR 15, working with the 82d Airborne Division, and transitioned into a JTF staff with augmentation from the AFRICOM components, joint enabling capabilities command (JECC), and observer/trainers from the Joint Staff J-7. In coordination with the 82d Airborne, 2d MEB developed the non-combatant evacuation operation (NEO) concept of operations for USAFRICOM, assisted in training the AFRICOM staff, and briefed the combatant commander on the concept at the end of the week. JR 15 tested multi-combatant command coordination and stressed DOD's ability to support multiple operations. During execution of JR 15 two months later, the MEB successfully served as a subordinate JTF to execute the simulated NEO in a western Africa scenario utilizing a 24-hour battle rhythm over 10

days. Based on the staff's performance and assessment by the Joint Staff J-7, USAFRICOM formally recognized 2d MEB as a JTF-capable headquarters in a letter from the combatant commander.

Over the next three months, the staff continued planning for AL 15, including deploying personnel for pre-exercise

In August, 2d MEB executed LSE 15 in Twentynine Palms, compositing a regiment, Marine air group, and combat logistics regiment for execution.

training with the Moroccan staff. In April 2015, the MEB staff deployed to Morocco and executed a partial maritime prepositioning force ship offload while forming a CJTF for AL 15. With a combination of joint, coalition, and Marine forces, the MEB executed a command post exercise and live fire field training exercise while working with the theater JFACC for coordination of aviation.

Upon completion, the MEB re-deployed to North Carolina and shifted to a more traditional MAGTF role over the next four months, planning

for LARGE SCALE Exercise 15 (LSE 15). In August, 2d MEB executed LSE 15 in Twentynine Palms, compositing a regiment, Marine air group, and combat logistics regiment for execution. The scenario included executing major combat operations in a desert environment against a near-peer enemy with degraded communications and cyber operations. Upon successful completion and evaluation of LSE 15, combined with the successful JTF-capable recognition by USAFRICOM, 2d MEB declared full operational capability in September 2015.

From one extreme to the other, 2d MEB shifted to planning Exercise COLD RESPONSE 16 in Norway. Beginning in January 2016, 2d MEB personnel deployed to Norway and formed as a MAGTF to conduct reception, staging, onward movement & integration of forces and drew equipment from Marine Corps Prepositioning Program-Norway, consisting of over 3,000 items, including M1A1 tanks, AMTRACS, Howitzers, and other vehicles. The 2d MEB transformed into a CJTF headquarters for execution, which included a truly integrated coalition staff, including five international one-star subordinates with a combined force of over 11,000 personnel. The sub-

ordinate commands consisted of the Norwegian Air Operations Center, two amphibious task groups, the Northern Brigade, and Special Operations Command. The live force-on-force exercise tested Marines and machines in the extreme cold weather of Norway against a Swedish combined force in the offense and defense over a 10-day period, including an amphibious assault and maritime operations.

Returning to North Carolina, the staff formed the core of the II MEF command element, executing MEFEX 16 against a near-peer enemy at the



The Arctic training was conducted by the U.K. Royal Marine Commandos and hosted by the Norwegian military to improve the U.S. Marine Corps' capability to support their NATO allies in Arctic/mountain environments. (Photo by Cpl Emmanuel Johnson.)

Corps level. II MEF used the BA scenario, which enabled a quick transition two months later into the synthetic BA 16. The BA 16 scenario was designed to further Navy-Marine Corps integration and amphibious core competency by conducting a large-scale, forcible entry operation in a medium to uncertain threat environment against multiple air, sea, and under-sea threats. In coordination with Expeditionary Strike Group 2 and the British Royal Marine 3 Commando Brigade, 2d MEB executed the planning and simulated conduct of mine counter-measures, shaping operations with the MEU under a carrier strike group, and forcible entry operations against an adapting, asymmetric enemy. Reflecting real-world authorities overseas, the MEB simulated the aggregation of multiple forward deployed units with follow-on forces in order to refine the current concepts and set the stage for BA 17. With the same scenario, BA 17 will be conducted as a live, forcible entry operation including up to ten ships and 15,000 personnel from 10 countries on the East Coast of North Carolina.

Over the past three years, 2d MEB trained over 1,200 II MEF personnel in command element operations, provided

critical training to 14 colonel-level commands, and demonstrated the flexibility within II MEF to conduct the full spectrum of operations. Over the next year, 2d MEB will pursue JTF-capable re-assessment through execution of AF-RICOM's JR 17. Additionally, 2d MEB will continue to refine coalition forcible entry capabilities through the largest coalition exercise on the East Coast in BA 17, once again demonstrating flexibility, relevancy, and readiness to respond when the Nation calls.

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The Amphibious Operations Brigade

The establishment of the JGDSF brigade and its challenges

by LtGen Koichi Isobe, JGDSF(Ret)

When you hear “amphibious operations” or “landing operations,” what do you imagine?

Some of you may recall movie scenes of Normandy or Iwo Jima. Normandy is famous as the French northwest coast where the largest landing operation in history was conducted in June 1944 during World War II (WWII). Iwo Jima is a tiny volcanic island in the Pacific Ocean where one of the fiercest battles took place between the Japanese Imperial Army and Navy and U.S. Marine Corps and Navy in February 1945.

This article intends not to focus on such large scale amphibious operations as those conducted in WWII but rather to focus on operations to retake sovereign islands by employing amphibious capability.

The Japan Ground Self-Defense Force (GDSF) is establishing an amphibious operations brigade (AOB) in JFY 2017 (Japan Fiscal Year 2017) based upon the National Defense Program Outline (NDPO) of 2013. The AOB is designed to retake islands which are inherent to Japanese territory if they were to come under foreign attack.

In the past, the Japan Self-Defense Force (JSDF) did not possess the capability to conduct amphibious operations. Considering the recent aggressive military activities of neighboring countries, especially in the Southwestern Islands (SWI), the Japanese Government decided to develop an amphibious operations capability. Japan is an island nation comprised of slightly less than 7,000 islands, including 300 inhabited ones. As the JSDF’s mission is to defend its territory, establishment of an amphibious capability is an ur-

>LtGen Isobe served in the JGDSF.

gent and critical need for the defense of Japan.

At first, the article covers how the JSDF is trying to strengthen the overall defense posture in the SWI, and then describes the AOB itself and its historical background. It explores how the JSDF would conduct amphibious operations, referring to U.S. Marine Corps’ concept of operations, and finally crystallizes future challenges.

Strengthening the SWI Defense Posture

The Ministry of Defense and JSDF is making energetic efforts to strengthen

the defense posture of the SWI based upon the “Dynamic Joint Defense Force” concept which was adopted in NDPO 2013. Establishment of the AOB is one of the primary efforts for SWI defense. Before going into details of this amphibious capability, it is appropriate to learn about the overall efforts of SWI defense.

The efforts are comprised of the JSDF force deployment in the SWI, regular-basis intelligence, surveillance, and reconnaissance (ISR) activities, and, in case tensions arise, maintenance of maritime and air superiority, ground force rapid deployment from mainland Japan, and, lastly, buildup of amphibious capability for retaking its sovereign islands.

A prominent feature of SWI is its geographical expanse of air and mari-



The Marine Corps and the Japan GDSF have a long history of cooperation and respect. (Photo by Cpl Samantha Braun.)

time space. The SWI stretches from the southernmost Kyushu island, which is one of the four major islands of Japan, to Okinawa island, then to Yonaguni island, the westernmost soil of Japan. Its area extends more than 1,000 km, or 600 nautical miles. The Japanese archipelago stretches 3,000 km from Hokkaido to Yonaguni. The SWI occupies one third of it. In the SWI, very few JSDF installations are stationed except in Okinawa, Amami-oshima, and the Miyako Islands. There exist vacuums of unit deployments. In addition, the neighboring countries' military activities are sharply increasing. For example, the number of aircraft scrambles conducted by Japan Air Self-Defense Force (ASDF) fighters in JFY 2014 was 943, the highest number since JFY 1984. Most of them were against Russian and Chinese aircraft. The number of scrambles conducted by the Southwestern Air Composite Command, which is responsible for the SWI airspace, drastically increased by four times in comparison to four years ago.

Considering these situations, the JSDF is trying to strengthen its deployed force level and to fill the gap of unit deployments. The ASDF upgraded its 83rd Air Squadron to the 9th Air Wing in Naha Base, fighter squadrons were beefed up in January 2016. The GSDF opened a new camp on the westernmost island of Yonaguni in March 2016. The GSDF is considering additional unit deployments on Ishigaki and Omami-oshima of the SWI.

In peacetime, the next important measure for the defense of the SWI is regular-based ISR activities. The JSDF are employing destroyers, submarines, patrol aircraft (P-1), and surveillance helicopters (SH-60). In addition, the JSDF is introducing unmanned aerial vehicles in the near future. The ASDF is augmenting its E-2C squadron in Naha Base and is trying to enable mobile surveillance and control radars deployed in the remote islands. The GSDF established a new coastal surveillance unit on Yonaguni. Coordination and linkage with relevant agencies such as the Japan Coast Guard is also important for ISR activities. These efforts enable the JSDF to prevent foreign adventur-



Marines train with GSDF units in order to enhance Japan's amphibious capability. (Photo by LCpl Jay Parks.)

ous actions and monitor symptoms of foreign military activities in advance.

The third point for the SWI defense is, in case military tensions arise, a quick response to the crisis, rapid deployment of GSDF units from mainland Japan to the SWI, and then deter escalation. Under this recognition, the ASDF is going to introduce C-2 cargo aircraft. The C-2 is replacing the C-1 cargo aircraft and drastically improves payload. The MSDF is refurbishing its Oosumi-class LDPs and contracted with the private sector for a private cargo ship Hakuo. The GSDF is modernizing brigades and divisions that are more agile and mobile, in order to rapidly deploy forces to the SWI. The final stage of an effective SWI defense is creating an amphibious capability, mainly the establishment of an AOB for recapturing sovereign islands.

Outline of AOB

The purpose of an AOB is mainly to engage in amphibious operations to retake Japanese sovereign islands if the islands were to be occupied by foreign forces; it also is anticipated to conduct other operations, such as disaster relief type operations if the situation does not allow access over land. The AOB will be activated in March 2018 at Camp Ainoura, Nagasaki Prefecture. The AOB is

going to build a training facility in the Sasebo area.

The AOB is comprised of three amphibious assault regiments, one amphibious assault vehicle (AAV) regiment, and other units. The amphibious assault regiment is roughly equivalent to a U.S. Marine Corps battalion, and the mission is conducting amphibious assault operations. The AAV regiment is one which carries the amphibious assault regiment from sea to shore. The AAV regiment will possess approximately 30 AAV-7s. The other units perform various functions such as field artillery, reconnaissance, engineer, communications, and logistics. The total strength will number 3,000 personnel. In March 2015, the AOB preparatory unit was organized, then started personnel, equipment, facilities, education and training preparations.

The Efforts in the Past

The AOB will not be created at once from a zero base. When the 21st century was in sight, the GSDF foresaw the SWI were increasingly critical, looking at future regional security challenges. The GSDF decided to establish the Western Army Infantry Regiment (WAIr), consisting of three infantry companies, in March 2002. The regiment stood up at Camp Ainoura.

Normally, an infantry regiment falls under a division or brigade. However, the WAIr is under direct control of the Western Army Commander in order to conduct island defense and disaster relief operations in the SWI. Although the WAIr is named one of the infantry regiments, it is unique and a special purpose unit. Since its establishment, and for fourteen years, it has conducted training with the Japan Maritime Self-Defense Force (MSDF) and with the U.S. Marine Corps. The WAIr will become the nucleus of the AOB.

The GSDF has started challenging bilateral exercises with the U.S. Marine Corps. In 2005, the IRON FIST (IF) exercise started. The exercise has been conducted at a U.S. training area, the southern west coast, aimed to improve tactics and techniques necessary for island defense and bilateral coordination between the two forces. When I recall the early 2000s, as Exercise Branch Head, Ground Staff Office, I initiated the budget request for IF. Although it is an exercise between the GSDF and U.S. Marine Corps, the Japan Joint Staff (JJS) initiated the joint and bilateral field training, DAWN BLITZ (DB), with U.S. forces. DB was initially a U.S. unilateral joint exercise. The JJS coordinated with U.S. counterparts and implemented it as a joint and bilateral exercise DB 2013. During the exercise, I had an opportunity to observe it as Vice Chief of Staff, JJS, with then-I MEF commander, LtGen John Toolan, whom I had worked with since 2007. I was amazed observing GSDF CH-47s and MSDF LCACs departing from the Oosumi-class LPD *Shimokita* (LST 4002) heading for San Clemente Island off San Diego. I recognized that the JSDF amphibious capability was drastically improving.

Without U.S. forces' tremendous support, especially the U.S. Marine Corps, the JSDF could not have accomplished these remarkable improvements. Having looked at the past, the JSDF activated the WAIr as a frontrunner of the Japanese Marines, initiated bilateral exercises with the U.S. Marine Corps, and evolved to DB.

What are Amphibious Operations?

Referring to the U.S. Marine Corps' manuals, amphibious operations will be conducted as follows:

First, the JSDF units secure and hold maritime and air superiority over a relatively broad area in the vicinity of an island or islands where the enemy forces have landed. It sets up an amphibious objective area (AOA) in order to command and control air, sea, and fires. Next, GSDF units infiltrate the island and reconnoiter unit size, disposition,

An amphibious operation is an extremely complicated operation.

and equipment of enemy landed forces. The infiltrating unit will guide naval gun fire and close air support on the enemy positions. Demining the approach route of AAVs is also important for the success of landing operations. Lastly, the WAIr and other GSDF units launch landing operations toward the island from the sea and air, with the support of close air support from F-2 fighters and AH-64 attack helicopters. Simultaneously, in order to deceive the enemy's command, deception, or demonstration

operations—electronic warfare and any available means—would be employed. The above mentioned flow is a typical amphibious operations flow. However, the operations would not necessarily progress in regular sequence; sometimes some phases would occur simultaneously or in reverse order.

An amphibious operation is an extremely complicated operation. We can say it is an ultimate or high-end joint operation. The reason why I say ultimate and extremely complex is that the operational space rapidly changes in accordance with the operation progress. I would name the operations "simultaneous equations composed of three dimensional spatial axis and timing axis." Ground, sea, or air combat operations are relatively simple because the major player or component is definite. In an amphibious operation, the main operational space quickly transfers from maritime-undersea, to sea-air, to seashore, and to ground. Amphibious operations require the most appropriate command and control (C²) structure as every time phase transfers. When I was Commander, Eastern Army, I had an opportunity to plan and execute YAMASAKURA-67 in December 2014, the largest bilateral command post exercise of the GSDF. During the exercise, the GSDF executed amphibious operations in the scenario. I realized



MV-22B Ospreys land aboard the Oosumi-class LPD Shimokita during Exercise DAWN BLITZ.
(Photo by Sgt Isaac Lamberth.)

the difficulties of decision making when to launch, and how to establish the appropriate command and control structure in a rapidly changing operational environment.

U.S. Task Organization for Amphibious Operations (AO)

If asked whether, when the newly-established AOB gets on board, it will be able to easily conduct amphibious operations from the sea or not, I would say “no.” To do so, the AOB should transform its appropriate task organization and accumulate training lessons learned.

The U.S. Marine Corps has its unique organization: the MAGTF. The MAGTF is comprised of command element (CE), GCE, ACE, and LCE, and is organized to conduct operations as one team. According to the requirements of operations, there are three force levels of the MAGTF. The largest one is the MEF; the CE is the Marine division, with a total strength of approximately 50,000. The brigade level is the MEB, composed of less than 20,000. The battalion level is the MEU of approximately 2,000 personnel. The MAGTF possesses its organic aviation assets—both rotary-wing and fighters, thus able to conduct air-ground operations as a team.

Professor Ikujiro Nonaka, Ph.D., mentioned the MAGTF’s uniqueness as saying, “this *ireko*-pattern (laired [layered]-boxes in accordance with size) force structure demonstrates superb flexibility for mission-oriented organization; the MAGTF can accommodate any kind of operational requirements.”¹

The AOB has its organic GCE and LCE functions, but does not have an organic ACE. The ASDF F-2 fighters and GSDF attack helicopters perform as a substitute of the ACE.

Before commencing AO, the U.S. Navy forms amphibious squadrons (PHIBRON), composed of amphibious assault ships, landing ships, and then the PHIBRON and MAGTF are consolidated into an ARG. The ARG is responsible for amphibious operations. However, AO cannot be accomplished only by the ARG. In conjunction with the ARG, in order to gain maritime



GUARD AND PROTECT is a joint exercise designed to enhance base defense operations. (Photo by LCpl Brooke Deiters.)

and air superiority, the expeditionary strike group (ESG) and carrier strike group (CSG) advance to the vicinity of the AOA area.

If the JSDF applies U.S. operational concepts to JSDF AO, the amphibious regiment is almost equivalent to the MEU, and the AOB is equivalent to the MEB. As a substitute of the ACE, ASDF fighters and GSDF attack helicopters will be employed. The PHIBRON’s role will be played by the MSDF Oosumi-class ships and Hyuga-class destroyers. The ESG and CSG roles will be conducted by the MSDF fleet and ASDF fighter squadrons.

The establishment of the AOB will offer the JSDF the ability to conduct AO with the corporation of the MSDF and ASDF. This will enhance the deterrent posture of the defense of the SWI.

Future Issues

The prototype of the AO originates in the 1920s. One Marine major foretold that the Pacific theater warfare would begin with a Japanese raid toward U.S. advance bases. He insisted on the need for offensive assault landing operations toward enemy advance bases, rather than adopting defensive operations to protect its own naval bases. His name was Earl H. Ellis. Dr. Nonaka crystalized his achievement by saying,

“Amphibious Operations could not be introduced from the extension of the past experiences of the Marine Corps. It is not an evolution, which stems from current improvements; it is the revolution which suddenly emerges out of fault line.”²

The introduction of the AO concept and its implementation will surely be one of the biggest challenges in the 60-year JSDF history. The JSDF should tackle it with vigorous resolve and vision.

The JSDF planners should keep in mind that the AOB is not a U.S. Marine Corps in miniature, nor a robust expeditionary force. The AOB should be designed in accordance with its missions and geographic features. The U.S. Marine Corps is designed to project forces from CONUS (continental United States) or overseas U.S. bases to the area where the Nation requires and conduct various operations including AO for certain periods of time. U.S. Marine forces are expected to be globally mobile and agile. The AOB also requires readiness and agility. While keeping in mind the differences of the AOB and the U.S. Marine Corps in an amphibious assault phase, both the MEB and AOB do almost the same operations. In that context, the AOB definitely needs to learn from the U.S. Marine Corps.



It is imperative that Japan be able to logistically support GSDF forces should conflict in the region boil over. (Photo by Sgt Luis A. Vega.)

This article details the future issues, task organization for AO, command and control, doctrine, equipment, operational infrastructure/logistics, and training elements.

Task Organization for AO

Based upon the U.S. task organization for AO, the JSDF's task organization is as follows: the MSDF sets up PHIBRON consisting of the Oosumi-class LDPs and Hyuga-class HDDs. The ARG will be formed by PHIBRON, the MEU-equivalent amphibious assault regiment, and the GSDF rotarywings. The ARG commander is basically dual-hatted as the PHIBRON commander. In addition to it, the MSDF vessels advance to the operations area in order to gain maritime superiority; and in the air, the ASDF fighters conduct air operations to seize air superiority in the area. F-2 fighters also conduct close air support operations to assist the regiment's landing.

In order to C² the entire operations in a timely manner, a joint task force (JTF) should be established. The ideal posture is to have a standing SWI JTF. If it is difficult for the JSDF to do so, at least a major command (GSDF Ground Central Command, MSDF Self-Defense Fleet) headquarters should be augmented on a regular basis by other

Service staff officers. The task organization should be organized based upon mission, operations area's features, and participating units.

Command and Control (C²)

Fleet Marine Force Manual 1, Warfighting, says "in order to generate the tempo of operations we desire and to best cope with the uncertainty, disorder, and fluidity of combat, command and control must be decentralized."³ It encourages subordinate commanders or commanders on the field to act on their own discretion, rather than waiting for higher command's detailed instructions.

A prominent characteristic of AO is an all-service-involved high-end joint operation in a rapidly changing operational environment. The establishment of a C² structure is critical for successful operations. Timely and strict C² is key. Each component should synchronize efforts to the clearly defined mission. Once the C² structure is set up, each subordinate commander should follow the commander. And such culture should be rooted in the JSDF.

In addition, taking into account of the importance of decentralization which *Warfighting* stresses, higher commanders should leave to subordinates' discretion.

Doctrine

Warfighting again says,

Doctrine establishes a particular way of thinking about war and a way of fighting. ... In this manner, doctrine provides the basis for harmonious actions and mutual understanding ... Our doctrine does not consist of procedures to be applied in specific situations so much as it sets forth general guidance that requires judgement in application.⁴

AO conducted by the JSDF are not to conduct expeditionary operations abroad but to retake sovereign islands which become occupied by foreign forces. Compared with the U.S. Marine Corps, which has organic aviation assets in the MAGTF, AOB is not equivalent to the MEB or MEU either. All three Services will coordinate and mutually support the operations. The JSDF should develop its own operational doctrine of AO. The doctrine should include prominent features of the JSDF AO, operational objectives, roles of respective Service component units, C² structure, and bilateral operations principles. Once the doctrine is complete, it would provide the basis and standard for AO training.

Equipment

The GSDF is going to be equipped with AAVs and MV-22s, and then the AOB will be functionally operable. The launches of Hyuga and Izumo class HDDs have upgraded C² capabilities on board. The issue is a quantitative aspect: Oosumi-class LPDs only total three. Considering the long-time maintenance period of ships, we can only expect two or even one in operational status. The JSDF should examine LPDs operational requirements from AO perspective and feed back to the desirable number of LPDs.

By observing DDH's 5-inch gun fires toward San Clemente island at DB 2013, I recognized more accurate and longer range ship-to-surface ammunition is required in the future.

As for air superiority, F-35 fighters will be fielded soon. In order to extend their operational time over the SWI area, air refueling functions will be doubled according to the NDPO 2013.

From the close air support perspective, ASDF's introduction of JDAM (joint direct attack munitions) and L-JDAM enabled fighters to attack precisely enemy forces on the ground. A longer range and stand-off air-to-surface munitions will give more effective performance and survivability.

Equipment improvement requirements are expected from frontline units through training and exercises. Furthermore, new equipment will also be required based on geographic and meteorological features from now on. Continuous efforts of equipment improvements and new equipment procurement will be required.

Operational Infrastructure/Logistics

From a logistical perspective, preparation for AO is insufficient. For SWI operations, the GSDF logistical base will be Kyushu Depot, Saga Prefecture, northern Kyushu. Considering the distance and sea or air lift requirements, the GSDF should establish a depot detachment on Okinawa island and should stockpile ammunition and other important materiel on the island. With regards to defense infrastructure, the GSDF established Camp Yonaguni on the westernmost island but needs more defense infrastructure in SWI.

The MSDF logistical bases are presumably Sasebo, Nagasaki Prefecture, and Kure, Hiroshima Prefecture. Not only because of AO operational requirements, but also the vast ISR area necessity, supply functions in the SWI should be augmented.

The ASDF's operational base for SWI defense is limited to Naha Base, except Kyushu air bases. Due to the fact that the Naha runway is used by both military and commercial aircraft, the runway is always congested. Once military tension rises in SWI, Naha base would become much busier due to reinforcement by operational aircraft from mainland Japan. On a regular basis, the establishment of a memorandum or coordination of military use of commercial airports is required.

From a joint perspective, establishment of a joint logistic support base at southern Kyushu or Shikoku island, which is geographically close to the

SWI, may be an option. Commercial air and sea lift should be accessible to the base. This base could become a disaster relief logistic center in case of a Nankai Trough mega-earthquake.

As for communications infrastructure, SWI is vulnerable. C² is heavily depending on communications. Duplicate communications lines, satellite communications, and all other available communications measures should be readied in order to facilitate C² from higher command to front line units.

Resilience should also be taken into account. It may not directly affect AO, but resiliency of defense infrastructure in the SWI is very important for sustaining operations.

Cultivating AO capability cannot be accomplished only by establishing an AOB ...

Training

For more than 10 years, the JSDF has conducted IF and DB exercises, and has accumulated lessons learned through these exercises. The AOB is going to be a major player in a few years, and training should focus on the AOB's operational capabilities by using newly fielded equipment. Furthermore, in a realistic combat environment, experimental training should also be conducted to extract equipment improvements, C² structure, and so forth. Training locations are important, too. IF and DB have been conducted on the west coast of CONUS, but taking into account for more realistic environments, U.S. training areas in Guam and Tinian could be suitable and desirable options. In addition, possessing a training facility in the SWI is a practical option. The training location where the JSDF conducts exercises has the effect of sending a strategic message to neighboring countries. The JSDF should strengthen bilateral exercises with U.S. forces, especially the U.S. Marine Corps, thus

preventing crises and assures stability in the region.

Not only field training, but also command post exercises are very important to forge strong leadership. As repeatedly emphasized, AO is a quadratic equation with a timing dimension and spatial dimension. In a very complex and rapidly changing operational environment, AO's leadership needs to immediately and appropriately grasp the situation, timely issue orders and guidance, and simultaneously develop future operations concepts. Command post exercises are the most effective and efficient way to improve such capability.

Conclusion

This article firstly overviewed the SWI defense posture, the AOB, and its background before exploring what an AO is, referring to the U.S. Marine Corps manuals. Finally, it analyzed future issues that the JSDF may tackle with in the future.

Cultivating AO capability cannot be accomplished only by establishing an AOB but means that all the Services should tackle the above mentioned issues as one team. In more than 60 years of JSDF history, building up AO capability had not been challenged yet. I sincerely expect the JSDF will tackle it with brilliant resolve and historic perspective.

Notes

1. Ikujiro Nonaka, *Amerika kaiheita* (*The U.S. Marine Corps*), (Chuko-shinsho: 1995).
2. Government of Japan, Ministry of Defense, *Defense White Paper 2015*, (Nikkei Printing).
3. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997). (*MCDP 1* was originally referred to as *Fleet Marine Force Manual 1*).
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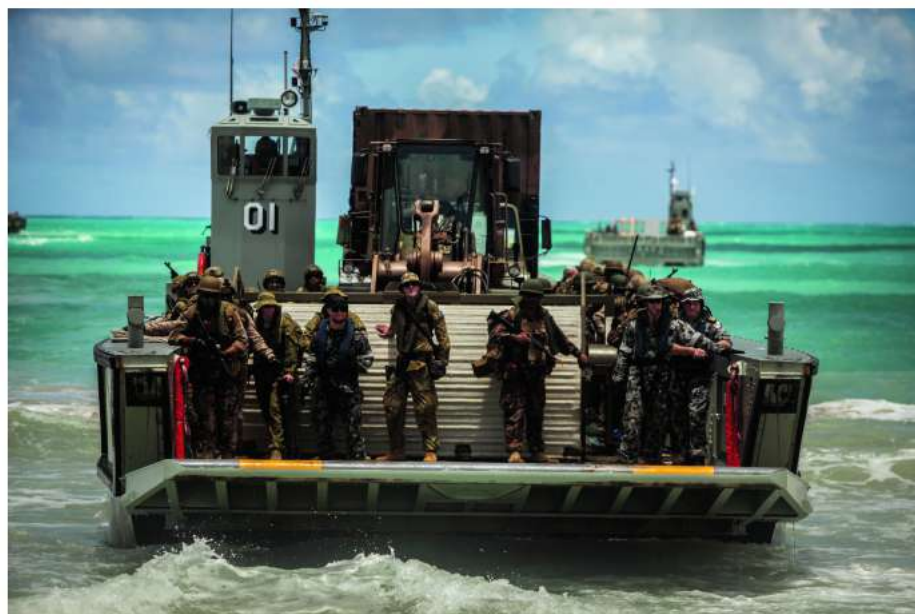


Exercise RIM OF THE PACIFIC 2016

Capable, adaptive partners
by Staff, 3d Marine Regiment

Exercise RIM OF THE PACIFIC (RIMPAC), conducted biannually in the Hawaiian and Southern California operating areas, is the world's largest, multinational maritime exercise. Along with Exercises BOLD ALLIGATOR, DAWN BLITZ, and SSANG YONG, Exercise RIMPAC is one of the four major amphibious exercises routinely supported by U.S. Marine Corps Forces. It is executed in a region distinguished by a body of water so vast that you can fit all of the Earth's land mass inside it with remaining unoccupied space. As regional populations, political aspirations, and economies continue to expand, so too does the potential for conflict. These dynamics further exist in a physical environment that is highly susceptible to a variety of hyper-destructive weather and geological events, which could destabilize the region overnight. Conducting military operations across such an expanse presents numerous challenges, particularly in an era characterized by pressurized defense budgets, limited access to regionally-aligned forward-basing locations, and increased competition for resources to address global security concerns. This set of circumstances demands the U.S. and its Pacific allies and partners be adept at conducting joint/combined amphibious operations within the maritime domain. Against this backdrop and within these conditions, participating nations come together every two years to conduct Exercise RIMPAC.

Exercise RIMPAC 2016 was the 25th iteration of the exercise and included over 25,000 participants from 26 contributing nations. The recurring theme of Exercise RIMPAC is "capable, adap-



Marines practice coordinated amphibious assaults with combined forces during RIMPAC 2016. (Photo by Sgt William L. Holdaway.)

tive, partners," and the overall exercise objective is to increase the interoperability of the contributing nation forces across the range of military operations within the maritime domain. Commander, U.S. Pacific Fleet schedules the exercise; Commander, U.S. 3d Fleet leads the exercise; and Commander, U.S. Marine Corps Forces Pacific provides Marine Corps forces to support the exercise.¹ For Marine Corps Forces forward deployed to Hawaii, Exercise RIMPAC is critical to generating and sustaining forward-deployed readiness because it is the single opportunity to access the three key elements necessary for a joint/combined amphibious force mission rehearsal: ally and partner forces, an amphibious task force, and a combined arms Marine Air Ground Task Force (MAGTF). More impor-

tantly, as the exercise theme implies and the operating environment demands, Exercise RIMPAC advances regional stability in the Asia-Pacific through increased cooperation and joint/combined interoperability.

To advance cooperation and joint/combined interoperability, designated elements of the exercise force were task-organized as a joint/combined amphibious force. Commanding Officer, 3d Marine Regiment, was designated Commanding Officer, Provisional Marine Expeditionary Brigade-Hawaii (PMEB-HI). PMEB-HI was subsequently assigned as the landing force for the New Zealand-led Combined Task Force 176 (CTF-176). Major subordinate elements of PMEB-HI included 2d Battalion, Royal Australian Regiment; 2d Battalion, 3d Marine Regiment;

1st Battalion, 12th Marine Regiment; Combat Logistics Battalion 3; and Marine Heavy Helicopter Squadron 463 (Reinforced). Ally and partner forces that reinforced PMEB–HI ranged from a battalion task force of the Australian Army, which included a combat service support company, a New Zealand Army infantry company, and a His Majesty's Armed Forces of the Kingdom of Tonga infantry platoon, to platoon-sized elements from the Indonesian Marine Corps, Japanese Self-Defense Force, Malaysian Army, and Republic of Korea Marine Corps. Additionally, contributing nations provided individual augmentation to the PMEB–HI staff. Based on ally and partner force national training objectives and political considerations, units were task organized for the entire duration of the exercise. This resulted in platoons from eight nations cross-attached at the company level, and every training event over the course of exercise was, as a result, a combined training event. This task-organization facilitated the development of mutual trust and respect across the joint/combined team through increased understanding of ally and partner cultures, competencies, and capabilities. It also provided significant opportunities for all participants to develop personal relationships, exchange best practices, and hone warfighting skills in a genuinely joint/combined environment.

Within CTF-176, the Australian-led combined forces maritime component, PMEB–HI was partnered with U.S. Navy Amphibious Squadron 3 (PHIBRON–3), which was assigned as the amphibious task force. PHIBRON–3 was comprised of the USS *America* (LHA-6), USS *San Diego* (LPD-22), and HMAS *Canberra* (LHD-02). Unlike previous iterations of the exercise, Exercise RIMPAC 2016 did not have a designated combined force land component commander. Having Marine Corps Forces organized within the maritime component served as an opportunity to reinforce to both internal and external audiences the capabilities and employment of an amphibious force. The amphibious task force and the landing force project power and conduct operations in the maritime



Joint operations allow Marines to practice commanding and sustaining MAGTF operations on land and sea. (Photo by SSgt Christopher Giannetti.)

domain. More importantly, amphibious task forces and landing forces retain the ability to reconstitute, maneuver at sea, and strike in support of other joint/combined force commander objectives. Organization of Marine Corps Forces within the maritime component, without planned transition to a land component, better demonstrates amphibious force employment to ally and partner forces (many of which are army vice marine forces), is more consistent with Marine Corps operating concepts, and advances Navy-Marine Corps interoperability.

... landing force growth will further challenge amphibious ship requirements ...

Beyond unit-level interoperability, task-organization as a joint/combined amphibious force also provides opportunities to test the interoperability of major combat systems. During Exercise RIMPAC 2016, PHIBRON–3 and PMEB–HI successfully completed a series of combat system interoperability tests between HMAS *Canberra*

(LHD-02) and U.S. Navy-Marine combat systems. PHIBRON–3 and PMEB–HI completed helicopter and tiltrotor aircraft (MH-60R/S, UH-1Y, AH-1W, MV-22B, and CH-53E) deck landing qualifications and assault amphibious vehicle (AAV) and surface connector well-deck qualifications between the HMAS *Canberra* (LHD-02) and USS *San Diego* (LPD-22).

Exercise RIMPAC also provides the opportunity for the joint/combined team to conduct amphibious operations as a MAGTF. In multilateral exercises, tension occasionally surfaces between meeting specified exercise objectives and conducting challenging, relevant training for participating forces. These were not mutually exclusive goals in Exercise RIMPAC 2016 but rather complimentary concepts. By design, the exercise utilized scenarios and training events that not only supported the development of joint/combined capabilities but also provided PMEB–HI and its major subordinate elements a realistic opportunity to conduct MAGTF operations. Over the course of the exercise, PMEB–HI integrated joint/combined forces into the MAGTF and planned, rehearsed, and executed a series of MAGTF operations. These operations included, among others, surface and air amphibious

ous raids, assaults, and withdrawals; offensive and defensive operations; and stability operations. PMEB-HI forces also executed combined-arms, live-fire and maneuver and fire support coordination training. Commanding, controlling, supporting, and sustaining MAGTF operations, from afloat and ashore, across multiple islands and multiple amphibious platforms, presented a significant challenge and an exceptional learning environment for the command element and major subordinate elements.

As valuable an opportunity as Exercise RIMPAC 2016 was for the joint/combined team, preliminary observations identified areas to address in future iterations of the exercise. The first of these observations is growth of the landing force and availability of amphibious shipping and training areas to support amphibious operations. Exercise RIMPAC has achieved continued yearly growth across the Force, to include growth within the landing force, which has increased the demand for amphibious shipping. And, for 2016, the exercise was extended into the Southern California operating area, which further increased the demand for amphibious ships. PMEB-HI exceeded the capacity of the three assigned ships of the amphibious task force, requiring limitations on embarked personnel and equipment. In mitigation, each major subordinate element prioritized capabilities for embarkation to ensure exercise and unit training objectives were achieved. Mitigation in future iterations of the exercise may include the use of alternate platforms and surface connectors.

Growth of the exercise force, specifically the landing force, is necessary to continue to broaden the opportunities for contributing nations and support combatant command and component-level engagement priorities. However, continued landing force growth will further challenge amphibious ship requirements, as well as range and training area congestion. Achieving optimal supportability of the overall exercise objectives will require continued balance between a growing exercise force and the availability of amphibious shipping,



The HMAS Canberra (LHD-02) was one of the 40 ships and submarines that participated in RIMPAC 2016. (Photo by Lt Andrew Ragless, Australian Defense Force.)

alternate platforms, and training areas to support amphibious operations.

The second of these observations is joint/combined capability development. The overall objective of Exercise RIMPAC is to increase the interoperability of the contributing nation forces, and each nation establishes its respective national exercise objectives. However, there is no fully-defined, exercise-to-exercise linkage toward a desired future end state for capability development. Interoperability is only relevant if it achieves a capability available for integrated employment in support of a specified type of operation. For subsequent exercises, in order to advance joint/combined capability development, specific exercise events require early identification and inclusion in the overall schedule of events. Then, during the course of the exercise, participating forces can accomplish intermediate interoperability objectives and test integrated employment. For example, if capability development specifically targets support to humanitarian assistance/disaster relief operations, integrated employment during Exercise RIMPAC will be designed accordingly. More broadly, these joint/combined capability development goals require progressive linkage over successive iterations of not only Exercise RIMPAC

but other routinely executed joint/combined exercises in the Pacific.

For Marine Corps forces forward deployed to Hawaii, Exercise RIMPAC is critical to generating and sustaining forward deployed readiness because it is the single opportunity every two years to access the three key elements necessary for a joint/combined amphibious force mission rehearsal: ally and partner forces, an amphibious task force, and a combined arms MAGTF. More importantly, as the exercise theme implies and the operating environment demands, Exercise RIMPAC advances regional stability in the Asia-Pacific through increased cooperation and joint/combined interoperability.

>Author's Note: This article was adapted from the command's exercise after-action report submitted in August 2016.

Note

1. COMTHIRDFLT 211822Z OCT 15 EXERCISE RIMPAC 16 IMPLEMENTING DIRECTIVE.



MCIPAC

Strategic theater engagement platform-forward

by LtCol Gary “Grinch” Thomason, LtCol Seth Wolcott,
& Capt Caleb Eames

“For decades, the United States has helped create the stability in the Asia-Pacific. That stability has allowed people, economies, and countries to rise, to prosper, and to win. And miracle after miracle occurred. First, Japan, Taiwan, South Korea, Southeast Asia, and now, China and India, have risen and prospered. Hundreds of millions of Asians have been lifted into the middle class. And democracies, taken hold.”

Ash Carter

Secretary of Defense

**Remarks at Reagan National Defense Forum,
7 November 2015**

Just after 2025 ... On the seabed floor, 50 miles off the coast of Manado, Indonesia, a 9.0 magnitude earthquake shifts the landmasses, creating a tsunami wave travelling at more than 100 mph. As the massive wave approaches the shallow areas of ocean along Manado—a city of 400,000—concentrated by the geography of the shoreline, it rises to a height of 150 feet. The tsunami strikes with terrifying force, toppling buildings, washing away the population centers along the coastline, and ruining the ports. Half of the city’s population is feared dead—with little warning time not many were able to evacuate to high ground. The earthquake has also damaged the nearby airport and fractured the surface of the tarmac, making it inoperable. Hundreds of thousands of survivors will quickly run short of food and water, and with the terrible heat, infants and elderly are at severe risk without electricity. The nearest operable ports and airfields are

hundreds of miles distant, and the situation grows dire.

Because of our expeditionary nature and the ability to operate in austere, dispersed environments, the Marine Corps gets the call to respond. The directive comes from U.S. Pacific Command (USPACOM), whose headquarters resides on Camp Smith, part of Marine Corps Base Hawaii. Marines on duty at the forward-based III MEF headquarters, located on Camp Courtney, Okinawa, receive a warning order activating their alert contingency mission (ACM) and are told to be ready

for deployment in six hours. III MEF immediately coordinates activities with MCIPAC (Marine Corps Installations, Pacific), located on Camp Foster, for regional support. The KC-130 Super Hercules refueling transport aircraft at MCAS Iwakuni are tasked to sortie to Okinawa, receive Marines and relief supplies, and deploy to Brunei, where the base of relief operations will be. MV-22 Ospreys from MCAS Futenma will echelon with no need to land en route because they can aerial refuel from the KC-130s. Relief supplies are transported from the warehouses at Camp Kinser to MCAS Futenma, where they meet the KC-130s and are embarked. Marines from Camps Foster, Hansen, and Schwab are moved quickly to Futenma’s flight line, and, within hours, help is on the way.

At the same time, the 31st MEU, America’s expeditionary force-in-readiness based out of Camp Hansen, has just completed training in the Marina Islands and is on a port call near the site of the new Marine Corps installation in Guam. Marines are recalled quickly to the Navy ships and specific supplies are sent from the new base out to the ships, which get underway within hours of notification. As soon as the ships are within range of Manado, the Ospreys launch from the flight deck with Marines and supplies embarked to provide assistance. MCB Hawaii, some 5,500

>LtCol Thomason is the Chief of Staff, MCAS, Iwakuni, Japan.

>>LtCol Wolcott is the XO, Headquarters & Services Bn, Marine Corps Bases-Butler, Okinawa, Japan.

>>>Capt Eames is the Public Affairs Officer, MCIPAC.



MV-22s on the flight line at MCAS Futenma. (Photo by Cpl Jessica Collins.)

miles distant from the disaster but still within MCIPAC's area of responsibility, provides additional forces and equipment to aid in the mission.

The Navy ships will function as "lily pad" refueling sites for the Marine Corps, joint, and partnered country aircraft involved who will help in the rescue/relief operations. Within 12 to 24 hours, U.S. Marines are on the ground at the scene of the disaster, rendering aid and saving lives when and where it is needed the most. This quick reaction is possible because of MCIPAC's forward-

based presence, with power projection platforms arrayed strategically across the region, serving strategic imperatives and national interests.

MCIPAC

MCIPAC is a network of diverse platforms that provide unique force projection, sustainment, and throughput within the Marine Corps' greater installations and logistics framework. This forward-based command is regionally-focused with an operating area, area of interest, and problem sets that are far



Marines are prepared to load relief supplies in support of humanitarian relief/disaster relief operations within the MCIPAC theater. (Photo by Cpl Justin Fisher.)

more complex than traditional Marine Corps installations in the United States.

MCIPAC operates in conjunction with USPACOM, Marines Forces Pacific (MARFORPAC), and III MEF to provide bases, stations, and camps from which the joint force, our allies, and partners can receive forces, train, and operate. These forward-based platforms are vital to allow the U.S. Government time and space to assess and manage the vast and complex challenges to regional peace, stability, and security. The Marine Corps must continue to innovate and function as a networked

"MCIPAC achieved full operational capability on 1 October 2012 and is currently comprised of six installation commands: [Headquartered at] Marine Corps Base, Camp Smedley D. Butler (MCBB) [Consisting of Camps Kinser, Foster, Lester, Courtney, Hansen, Schwab, and Gonsalves]; Combined Arms Training Center (CATC) Camp Fuji; Marine Corps Air Station (MCAS) Iwakuni; MCAS Futenma; Camp Mujuk; and Marine Corps Base Hawaii (MCBH), which includes MCAS Kaneohe Bay."

**Marine Corps
Installations Pacific
2025: Strategic Vision**



Marines conduct training exercise at the Combined Arms Training Center, Camp Fuji. (Photo by LCpl Aaron Henson.)

team of teams that is fully integrated in all aspects of planning and operations; this is especially important when forward based and requires Marine Corps installations to synchronize with the Operating Forces and joint partners so that they remain relevant, responsive, and forward thinking for peacetime and contingency operations.

The Region

The Indo-Asia Pacific region exhibits its true complexity. This region is vast, with extensive geopolitical intricacies and regional diplomatic, political, military, and economic uncertainty. The Indo-Asia Pacific region is home to 7 of the 10 largest standing armies and contains the 3 largest economies in the world. It contains key commercial corridors—30 percent of the world's trade passes through the South China Sea annually. The region has been home to some of the most dramatic economic success stories in history, from Japan's post-war recovery to the economic miracles of South Korea, the People's Republic of China, Taiwan, and India. These successes do not come without challenges, ranging from piracy and terrorism to territorial disputes in the East China Sea and South China Sea.

For this reason, MCIPAC and its bases, stations, and camps stand as a

rock in the storm of swirling uncertainties, one that is integrated into regional plans across the spectrum of operations. MCIPAC must be integrated and synchronized with its intergovernmental, joint, and regional partners prior to any crisis in order to maximize all elements of national power in an efficient and responsive manner in conjunction and coordination with our regional partners. Planning assumptions and force laydown must accurately reflect the command's true capabilities in a variety of potential scenarios and, most importantly, must reflect fiscal, infrastructure, and personnel constraints.

MCIPAC's Significance As the Essential First Element

As the first essential element and the foundation upon which the Operating Forces build readiness, MCIPAC enables all of the MAGTF's elements to project power, in a variety of forms, within the region. When networked, MCIPAC's combination of nodes enables the United States to respond in a timely manner with the application of strategic power in frequent humanitarian relief/disaster relief scenarios while simultaneously postured and prepared for operational plan requirements.

An essential operational mandate of the future will be aggregating MAGT-

"We're also modernizing our alliances and partnerships that are the bedrock of peace and stability. As the threat environment evolves, our partnerships will evolve, too. Modernizing our relationships in the region also means advancing alliances into platforms for regional and global cooperation, as we've done with Australia, Japan, and the Republic of Korea, and which is further indicated by the blossoming of new trilateral networks among the nations here today."

***Ash Carter,
Secretary of Defense,
Remarks at ASEAN
Defense Ministers'
Meeting, Malaysia,
4 November 2015***

Fs in conjunction with the joint force from disaggregated and conventional/unconventional nodes arriving from dispersed locations ashore and sea at a point and time of our choosing in order to reinforce national security strategy by projecting national power.

F = M x A

MCIPAC's forward-based camps and stations allow the joint force to "probe and sense" the critical environment in



The Marine Corps must practice the massing and movement of forces to overcome the “tyranny of distance.” (Photo by LCpl Jesus McCloud.)

phase zero. These facilities allow the joint force to remain in the operating area 365 days a year, building cultural, political, and intelligence awareness while providing the United States and its partners the vital nodes required to support actions (work) across the spectrum of operations. Not only does MCIPAC lie in the midst of the “Ring of Fire,” the area of tectonic action that results in earthquakes, volcanic eruptions, and their subsequent tsunamis, but it is also near a number of “competing territorial and maritime claims.”¹ The Senkaku Islands in the East China Sea lay southwest, within the MCIPAC area of responsibility, and are an area with significant fishing stocks and possible hydrocarbon resources. The Senkakus are a source of contention between Japan and China; MCIPAC’s bases and stations allow the joint force to remain responsive and proactive while maintaining a presence in close proximity to this point of friction.

As force is mass times acceleration, our Nation establishes and maintains the foundational networked nodes of forward installations that permit our forces to mass. The networked nodes of installations must also allow for an increasing or decreasing rate of change—an acceleration—in order to enact a force at the right place and time,

whether it is designed to deescalate a competing maritime claim or to respond to an earthquake or typhoon. Much like maritime prepositioned shipping, we must provide contingency provision for our installations, which allows variable increases and decreases in rates of force flows, logistics, and sorties (acceleration). The United States can accelerate a response with the right mass to exert the right force, whether it is MREs, water, or GBUs.

Likewise, work is force applied through a distance. Within the Indo-Asia Pacific theater, one can be assured of the “tyranny of distance.” There is no substitute for forward deployment; distance is our biggest challenge to forming and reforming in order to immediately respond to crisis with the right resources at the right time. MCIPAC’s area of operations encompasses great distances over which our forces must be prepared to respond.

Staying with the analogy, power can be represented by a change in work over time. By continuing the work of developing networked nodes of installations, we will enable capacity to project our Nation’s power at key locations and times. MCIPAC is well-positioned institutionally to think and act regionally, balance priorities, and anticipate the challenges to regional stability that grow

and become increasingly more difficult to overcome with deterrence. MCIPAC must leverage investments now to learn, adapt, and anticipate future infrastructure resource shortfalls and nodal requirements. This is our essential work. We have little time to conduct this work, but MCIPAC does have the advantage of being located at or near the points of potential friction. If our work is done within the right timeline, we will exert the proper power.

Remaining Innovative and Focused on the Future

MCIPAC, supporting III MEF and our joint forces, is a regionally-oriented command at the forefront of the Marine Corps’ team in the Indo-Asia Pacific. It is essential that MCIPAC utilizes long-term and thoughtful design to enable collaboration with the wider U.S. Government to understand the region and facilitate the basing of the elements of national power to meet future challenges. Obtaining success in the midst of complexity requires us to learn, adapt, and anticipate quickly—resources are required to do that. MCIPAC’s establishment has already seen benefits in a variety of areas, including facilities

“Marine Corps installations are key national defense assets that offer a unique combination of ocean, coastal, riverine, inlands and airspace training areas.”²

maintenance and long-term master base planning. The timelines for installation development stretches into decades. Military construction funds alone are planned on a five-year cycle. The political investments in partnering with our allies at our overseas installations stretch into multiple decades. These relationships take longer than typical force development timelines. They are even

longer than most of the acquisitions projects; we must look ahead and act now to present an appropriate posture for an uncertain future.

MCIPAC has been successful in this regard by coalescing all facilities planning with a regional power projection capability focus, prioritizing and advocating for military construction, and recapitalization projects while eliminating duplication of effort and leveraging expertise across the joint force. For instance, long-term infrastructure challenges have resulted from a lack of recapitalization, especially with regard to military family housing, some of which are more than 60-years-old. Using a regional approach and fostering a healthy partnership with the U.S. Air Force, MCIPAC successfully obtained more than five million dollars in recapitalization funds to restore military family housing in Okinawa. Housing is an often forgotten, but essential, element necessary to attract and retain the talented work force required to innovate, plan, and operate successfully in a dynamic and complex operating environment. At MCAS Iwakuni, MCIPAC developed the largest military-run housing in the Marine Corps, growing from 736 units to a total of 1,790 housing units at the conclusion of the Defense Policy Review Initiative in 2018.

Furthermore, MCIPAC has been able to operationalize in increments, engaging in a series of exercises with its partners at III MEF, the joint force, and bilaterally with our Japanese allies to tie in the Operating Forces' short- and long-term planning efforts. These exercises vary from non-combatant evacuation scenarios and contingency logistics support to force protection condition validation and evaluation exercises.

Culturally, Americans do not tend toward multi-decade plans and architectures, but many other cultures within the Indo-Asia Pacific have centuries of such practice. Some nations seem to think and plan three entire chess games in the future, while our Nation seems to react only to the next immediate crisis.

Should we try to match others and be better classic chess masters? Or perhaps there is another way, a way that is more in-line with our own cultural tenden-

cies as an open, inclusive republic? Our heritage of fostering fertile ground for innovation has brought most of the spectacular advances in technology over the past 200 years. We should leverage this for setting global conditions that strengthen America's strategic advantage not just today but for decades to come within the geopolitical landscape of the Indo-Asia Pacific and beyond. We

"Careful installations management is critical in order to overcome the challenges and leverage the advantages arising from the complex interdependency of force readiness, energy, security, environmental stewardship, and community relationships."

2015 Marine Corps Installations and Logistics Roadmap, 18 June 2015

should embrace our cultural capacity as humble gardeners. Perhaps, as the humble gardener, we can till the right grounds, plant the right seeds, and nurture the right relationships to grow. As such, we could out maneuver the exquisite, but limited, set-piece thinking of the chess masters.

**Right Organization, Right time, Right Alignment:
MCIPAC Supporting the Operating Forces**

MCIPAC ensures effective platforms are available and equipped to support operations, activities, and actions within the joint force, our allies, and our partners. Ensuring rapid and effective reception, staging, onward movement,

and integration, MCIPAC allows synchronized force flow of formations in and from multiple dispersed locations to respond to crises, to contribute to deterrence, and to enhance regional stability. This is not simply theory; this is actual practice, as evidenced by the Corps' support from MCIPAC bases and stations to 17 disaster responses since 2004 alone.

As the essential first element power projection, always forward based, nesting within the national strategic goals, and in partnership with the host countries, MCIPAC and its partners at MARFORPAC and III MEF must look 20 years from now and beyond—not

"The gardener creates an environment in which the plants can flourish. The work done up front, and vigilant maintenance, allow the plants to grow ..."³

days, weeks, or months. Significant investments by both the U.S. Government and host-nation in infrastructure and people are required now to regain the advantage for the future.

In order to maintain a strategic competitive edge in the region, MCIPAC will continue to recruit the very best of our Marine Corps work force—teams of critical thinkers, innovators, and bold leaders that identify challenges and quickly gain consensus for solutions. We will increase our facilities investment and new military construction to provide critical, capable, and responsive platforms that are able to support future high-tech weapon systems, such as the Joint Strike Fighter, while designing the future plans that will relocate Marines and facilities under the Defense Policy Review Initiatives across the Indo-Asia Pacific.

Conclusion

MCIPAC leverages guiding principles to focus the vast array of personnel

across multiple nodes and installations to achieve the desired end state. Our mission statement is:

Marine Corps Installations Pacific strengthens and enables force projection in the Indo-Asia-Pacific with our allies and partners to protect and defend the territory of the United States, its people, and its interests. Our camps and installations, arrayed across the region with purposeful designs, clearly set theater-strategic conditions for partnered presence, logistics throughput, command and control, and military readiness. Our utility, resiliency and strategic design represent the requisite and foundational support to the power of Marine Corps Forces Pacific.”⁵

With the right application of mass enabled by our forward-based projection platforms and acceleration through pushing Marines and equipment to speed to the scene of a crisis, thereby equaling the force necessary to accomplish our Nation’s strategic objectives in

a dynamic and complex environment, MCIPAC is a powerful national asset that is increasingly relevant to security strategy in the Indo-Asia Pacific.

“Communicating priorities and cultural expectations to our team of teams spread across multiple continents was a challenge. Written guidance was essential ...”⁴

Notes

1. Department of Defense, *Asia-Pacific Maritime Strategy*, (Washington, DC: 2015), 5.
2. MajGen Juan G. Ayala, “MCICOM: Providing Sustainable Force Projection Platforms to the Warfighter,” *Marine Corps Gazette*, (Quantico, VA: October 2014).
3. GEN Stanley McChrystal, USA(Ret), *Team of Teams: New Rules of Engagement for a Complex World*, (New York: Penguin, 2015), 225.
4. Ibid.
5. MCIPAC mission statement accessed at www.mcipac.marines.mil.



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An MSTP for the Future Force

Evolving to address the complexities of a dynamic and challenging future operating environment

by The MAGTF Staff Training Program

The Marine Corps was originally introduced to the newly formed MAGTF Staff Training Program (MSTP) back in a 1994 *Marine Corps Gazette* article by then-Colonel James F. Amos, the Deputy Director of MSTP and eventual 35th Commandant of the Marine Corps (CMC).¹ Much has changed, however, in the ensuing 22 years. The birth of the cyber domain, the expansion of activities in the information environment, and the sophistication of potential adversaries across the globe are just a few examples. Additionally, resource shortfalls in people and equipment further complicate matters, especially as adversary capabilities continue to expand. Consequently, MSTP, as a

self-proclaimed learning organization, has new demands placed on it as it strives to keep pace with change. Following the relatively recent transition away from Iraq and Afghanistan-related mission rehearsal exercises, MSTP now leverages an assortment of Service and joint partners as it evolves to meet the complexities of the future operating environment. Guidance and perspective contained in the 37th CMC's *FRAGO 01/2016: Advance to Contact*, and other sources,² informs the growth and evolution of MSTP. The path forward is reasonably well lit.

The Main Effort

MSTP supports Marine Corps readiness through its enduring focus on an

institutional imperative: excellence in MAGTF warfighting. MSTP's mission, codified in *Marine Corps Order 1500.53B*, is to

provide training in MAGTF operations across the range of military operations, within the context of a joint and/or combined task force environment, to improve the warfighting skills of senior commanders and their staffs.

This mission and its purpose are critically important, as MSTP is the single organization in the Marine Corps charged with training the warfighting MAGTF.

The specified task to provide "training in MAGTF operations," by necessity, precludes a narrow focus on just the MAGTF command element (CE), instead demanding a MAGTF-wide view that encompasses all of the MAGTF's major subordinate commands (MSC). Because MAGTF headquarters don't achieve operational success by themselves, all elements of the MAGTF have real relevance in the training MSTP designs and executes. It is the integration and interaction among all the elements of the MAGTF that meets the MAGTF commander's intent and ultimately determines mission success. With this approach, there can be no "primary" and "secondary" training audiences (TA).

MSTP's primary focus is on MEF and MEB warfighting through a comprehensive, five-part training package that is designed to train each MAGTF (MEF and MEB) at least once every two years. This five-part training package consists of: (1) Battle Staff Training (BST); (2) a Warfighting Seminar



MSTP supports Marines by providing them with realistic training scenarios, including role-play exercises. (Photo by LCpl Mark Garcia.)

(WFS); (3) a Planning Practical Application (PPA); (4) a Command Post Exercise (CPX), also known as a final exercise or FINEX; and (5) a Facilitated After-Action Review (FAAR). BST consists of command and control systems (C²) training and internal MAGTF CPXs to rehearse and build staff cohesion and proficiency. The WFS introduces MSTP-observed trends in MAGTF operations with corresponding classes to address them, as well as core courses in design, MAGTF operations, breakout sessions on specialized topics, and an assortment of other planning and warfighting topics.

For the PPA, MSTP presents a planning problem to the MAGTF derived from an exercise or real-world scenario. The TA convenes an operational planning team with MAGTF instructor support from MSTP and uses the Marine Corps Planning Process (MCPP) to produce a detailed, executable written order. Reinforcing the criticality of a MAGTF-wide approach, MSCs also plan to provide the required bottom-up refinements for the MAGTF CE to develop a complete and highly integrated MAGTF plan. As part of its enduring assessment, MSTP provides written feedback to the MAGTF CE and its MSCs on their orders prior to CPX execution. The CPX provides the MAGTF commander and staff a venue for implementing their plan and exercising staff processes in a simulated, highly complex operational environment. A CPX normally runs 7 to 10 days—long enough for the complete execution of several targeting, air tasking order, and battle damage assessment cycles. At the conclusion of the CPX, MSTP facilitates an after-action review for the MAGTF and MSC commanders and their staffs focused on identifying those actions and processes that should be sustained or improved. The facilitated after-action review is comprehensive, lasting over two hours, and covers the MAGTF's performance from planning through execution. Roughly 30 to 45 days after the completion of the CPX, MSTP delivers a final exercise report to the MAGTF commander, an even more comprehensive mission essential task-based assessment that numbers in



MSTP uses real-world scenarios. (Photo by SSgt T.T. Parish.)

excess of 40 pages. All told, this is no small investment of time for MSTP or the MAGTF it trains. The exercise life cycle, from the initial Concept Develop Conference for the exercise to the electronic delivery of the final exercise report to the MAGTF commander can span nearly one year.

Relevance of the Future Operating Environment

MSTP is nothing if not credible and relevant. The program's credibility derives in part from the quality and upward mobility of the active duty and reserve personnel (IMA detachment)

MSTP is nothing if it is not credible and relevant.

assigned to the program. Perhaps most critical to the credibility of the program, however, are the Marine Corps' highly qualified experts—senior mentors, retired general officers (historically, lieutenant generals) who collectively provide expertise across all elements of the MAGTF. Without a pool of senior mentors that can combine experience

as Wing, Division, MLG, MEB, and MEF commanders, MSTP is far less effective in its role as MAGTF trainers. Since the training of MEB and MEF commanders, and their staffs, suffers greatly without senior mentor presence, the Marine Corps must pay very close and continuous attention to recruiting and sustaining this valuable effort.

MSTP's relevance comes from a willingness to appreciate and embrace future challenges in warfighting, effectively designing exercises that bring those challenges squarely into every combat operations center across the MAGTF. MSTP has, therefore, fully embraced the Marine Corps Intelligence Activity's publication, the *2015–2025 Future Operating Environment: Implications for Marines*, to include its top-five findings³:

- Global communications and social media and its impact on the speed of decision making of our adversaries.
- The ability of adversaries to commercially acquire technology and capabilities that rival or exceed our own.
- The prevalence of ambiguity and uncertainty in the future operating environment.
- The proliferation of threat capabilities with stand-off that exceeds that of Marine Corps and joint forces, placing friendly forces perpetually within the threat rings of adversary weapons,

enabling adversary area denial and greatly challenging friendly access.

- Adversary pursuit of overmatch in the information environment, as defined in its broadest sense.

In order to address these challenges, MSTP typically uses a hybrid threat, one conceived as a conventional “near-peer competitor”⁴ effectively integrated with unconventional forces and criminal threats and able to influence actions in all five warfighting domains. This hybrid threat creates a complex operational environment for the MAGTF and precludes a singular or overly-narrow focus on any one geographic area or adversary capability. Significant threat capabilities generally include:

- A navy capable of coastal defense/area denial.
- An integrated air defense system and fourth-generation fighter aircraft.
- Robust cyber and information warfare capabilities.
- Unmanned, networked aircraft systems at all levels.
- Effective integration of combined arms.
- Active and capable special operations forces.
- Irregular tactics (e.g., improvised explosive devices, rear area ambushes, swarming).
- Coordination with irregular forces, criminal organizations, and other non-state actors.
- A limited chemical weapons capability.

Faced with this threat, the MAGTF works with the joint force to define conditions for shaping such as the destruction of coastal defenses and the neutralization of integrated air defense systems, before the MAGTF can decisively employ forces in Phase II or Phase III operations. While decisively engaged, the MAGTF must employ combined arms to overcome a threat possessing ground and air defense systems that frequently outrange its own, a formidable endeavor by any measure.

MSTP has also been working closely with MCIA, Marine Forces Cyber Command, and the Marine Corps Information Operations Center—the aforementioned Service partners—to

create realistic operational environments requiring MAGTFs to continuously embrace information warfare.⁵ They must also be able to operate with degraded communications against adversaries capable of success in the information environment. Along with its “thinking” opposing force, MSTP forces the MAGTFs to adjust plans and make decisions shrouded in uncertainty. Scenarios also provide ample opportunities for MAGTFs to demonstrate a maneuver warfare mindset in both the “physical and cognitive dimensions of conflict.”⁶ In the spirit of *MCDP 1, Warfighting*, (Washington, DC: HQMC, 1997), decentralized execution, employment of combined arms, a bias for action, boldness in execution, and tempo in order to overwhelm and defeat the adversary are always rewarded.

FRAGO 01/2016: Advance to Contact

Armed with an appreciation for the future operational environment, MSTP has similarly embraced *FRAGO 01/2016* and its specified and implied tasks for the program. Specifically, the *FRAGO* states that the Marine Corps

will immediately frame exercise and experimentation of MEF and Marine Expeditionary Brigade warfighting as part of a naval campaign in a crisis, and as part of an A2/AD [anti-access/

area-denial] environment in the 2025 timeframe.

The guidance in the *FRAGO* also demands training that emphasizes the basics of combined arms and expeditionary operations; operations in a degraded command, control, communications, computers, and intelligence environment; operations in a nuclear, biological, and chemical environment; and decision making in rapidly unfolding and uncertain situations. Said another way, *FRAGO 01/2016* sharpens MSTP’s focus. When taken collectively with the enduring thrust of *MCO 1500.53B, Marine Air-Ground Task Force Staff Training Program*, (Washington, DC: HQMC, March 2013), it provides MSTP with a clear path forward in its efforts to design and execute warfighting exercises that drive naval and joint integration and meet the complex demands of the future operational environment.

In recent practice, MSTP endeavored to design and execute warfighting exercises that meet the full scope of the guidance received. In all cases, the MAGTF is part of a combined and/or joint task force. MEB exercises typically focus on Phase II operations and feature an amphibious assault or take place just after a permissive landing. MEF exercises typically focus on Phase



MSTP designs exercises that requires the MAGTF to operate as part of a combined joint force.
(Photo by Cpl Shaltiel Dominguez.)

III operations following a forcible entry and/or permissive landing and offload in Phase II operations. A naval expeditionary deployment (usually a combination of amphibious and maritime prepositioning) enables all exercises. Exercise history provides examples of both combine force land component command (CFLCC) and combined force maritime component command (CFMCC) constructs, and both have been used to meet some or all of the guidance contained in *FRAGO 01/2016* and other supporting documents.

Often times these exercises see a MEF operating under a CFLCC during sustained operations ashore. During the LARGE SCALE Exercise 2016 (LSE 16), however, MSTP provided a CFMCC and staff as the MEF's higher headquarters. While an unpracticed command and control arrangement for MSTP, it was employed at the MAGTF's request for the specific purpose of enhancing perspectives on naval integration. It was facilitated by augmentation from the Naval War College (to include a retired flag officer) and the U.S. Navy Fleet Forces Command. In practice, this effort proved successful in addressing the MAGTF's training goals. The relative size of the landward area assigned to the MEF significantly challenged the CFMCC's ability to effectively resource the needs of its assigned forces during the conduct of sustained operations ashore. C²; logistics; integration of fires; and provision of intelligence, surveillance, and reconnaissance all proved complicated. Tensions between two echelons of headquarters and a recurring collision of priorities, realism that MSTP prefers, generated sharpened perspectives—and significant learning—both within MSTP and the training audience. A Canadian brigade operating within the GCE proved equally helpful.

MSTP supports integration with naval and joint forces in every exercise it designs, executes, and supports. In order to do this effectively, MSTP leverages relationships with other Marine Corps and joint organizations, some previously mentioned. Of particular note, MSTP is an accredited Joint National Training Capability (JNTC)⁷ program, which grants it access to support managed by



While MSTP is undeniably successful, some aspects of warfighting fail to translate to the simulated environment. (Photo by Sgt Tia Dufour.)

the Joint Staff J-7 (Joint Force Development) that enhances Service training through the incorporation of joint support and systems. MSTP has seized on this program, incorporating over 350 joint force enablers for MAGTF exercises since fiscal year 2012. For all exercises, MSTP establishes a simulated combined air operations center (CAOC) and a U.S. Army battlefield coordination detachment (BCD) supported by U.S. Air Force and U.S. Army augments. U.S. Special Operations Command supports the establishment of a special operations force (SOF) response cell and SOF liaison elements at the MAGTF CE and GCE. MSTP also establishes a theater logistics cell supported by U.S. Army theater logistics subject matter experts. MEF and MEB exercises also emphasize interagency interaction through country team role players collocated with the MAGTF and the higher and adjacent headquarters response cell. In combined Navy-Marine Corps exercises, such as BOLD ALLIGATOR, the MAGTF (MEB) works alongside its counterpart, the expeditionary strike group staff, while MSTP works with its U.S. Navy counterparts at Carrier Strike Groups 4 and 15 to provide naval exercise design support.

As MSTP continues its efforts to meet the 37th CMC's intent and op-

erationalize an exercise improvement philosophy, it seeks to generate realistic naval and joint integration wherever possible while presenting the Operating Forces with the complexities of sustained operations ashore. The reality is MSTP is challenged to truly drive naval integration in exercises that are not Navy-Marine Corps exercises due to a lack of U.S. Navy participation. MSTP, therefore, always endeavors to do the following:

- Maximize U.S. Navy participation to extent possible and driving naval unity of effort.⁸
- Include a naval component within every exercise, although not necessarily always the higher headquarters for the MAGTF.
- Ensure a CFMCC is always an adjacent force or another headquarters within the JTF.
- Scope the amphibious portion of exercises in order to focus on executing operations ashore.⁹
- Support the transition from MEB-level amphibious operations under a CFMCC to MEF-level sustained operations ashore under a CFLCC.

Beyond the specific issues of joint and naval integration, and squarely within the intent of *FRAGO 01/2016*, MSTP strives to further challenge MAGTF commanders and staffs (and their coun-

terparts at the MSC level) by: (1) better simulating the level of adversary information warfare capabilities; (2) enhancing the fidelity of MAGTF information warfare effects; (3) refining practices to better portray an adversary's efforts to overcome friendly information warfare effects; and (4) strengthening the employment of nuclear, biological, and chemical capabilities. MSTP can also drive improvements in: the participation of Marine Corps forces in sea control and counter-A2/AD efforts, as was done with a scripted coastal defense cruise missile threat during LSE 16; the assessment of losses resulting from adversary A2/AD systems; the conduct of advance force and pre-landing operations; and the overall quality of "unity of effort in littoral warfare."¹⁰ While U.S. Army units or foreign military forces fighting within or adjacent to the MAGTF are always pursued, strengthening interactions with joint and coalition partners, as well as host-nation security forces and civilian populations, is always meaningful.

Lastly, to better address the enduring "conduct training in MAGTF operations" task, MSTP is on solid ground with any exercise enhancement that does one or more of the following: (1) presents the MAGTF with diverse adversary capabilities highlighted in the MCIA *Future Operating Environment*; (2) stresses the information environment; (3) generates a collision between opposing wills in one or more warfighting domains simultaneously; (4) forces the MAGTF to appreciate its battlespace and battlefield framework and the concept of the single battle, to include the single naval battle; (5) presents the MAGTF with problems of such complexity that only MAGTF solutions will suffice (as opposed to single MAGTF MSC solutions); and (6) demands decision making despite incomplete knowledge or insufficient understanding.

Challenges and Limitations

As MSTP takes stock of meaningful exercises improvements, its most prevalent challenges and limitations are currently in the areas of simulation capability, exercise duration, and subject matter

expertise. Some aspects of warfighting simply don't model particularly well.¹¹ Exercise control personnel, instructor controllers, and response-cell personnel must, therefore, conduct additional training to overcome simulation limitations associated with these challenges and others in the cognitive space. While the MAGTF Tactical Warfare Simulation (MTWS)¹² accurately models weapons systems effects, it does not model the adversary's cognitive reactions to friendly information warfare efforts. As a result, exercise control and response cell personnel must understand the MAGTF's information warfare plan and how it has been designed to influence the adversary. The opposing force must then manually alter the adversary's activity within the simulation. On order

... MSTP endeavors to present MAGTF commanders and their staffs with the truly thorny operational problems ...

to mitigate this shortfall, MSTP has added an information warfare battle manager during exercises to better integrate, and replicate, the effects of information warfare activities on both the MAGTF and the opposing force. Working with the Marine Corps Information Operation Center, this initial effort will be expanded to a cell in the near future to enable greater realism. A recently developed MSTP-run cognitive working group (first implemented during LSE 16), spearheaded by exercise control during execution, considers the quality of MAGTF information operations planning, how well the MAGTF fights with information, and puts that in competition with the realities of the opposing force. MSTP grants the MAGTF "credit" for its information environment planning and execution accordingly. The MAGTF analyzes MSTP developed and disseminated intelligence reporting and other injects

in order to determine what they have achieved. This analysis is done squarely within the MAGTF; MSTP provides no specifics. While the doctrinal foundation in *MCDP 1* for this focus on mental factors is well-established, and such a focus is consistent with the *Marine Corps Operating Concept's* stress on the cognitive dimension of warfighting, this is new exercise ground that MSTP will continue to plow.

While MSTP recognizes certain processes would take longer in real-life execution, exercise duration can be a limiting factor in addressing some identified improvements. For example, MAGTF commanders have, in the past, explored opportunities to further examine compositing, but complexities associated with doing so during an MSTP-sponsored CPX limit the ability to address other important training goals and objectives. Similarly, operations designed to destroy an adversary's A2/AD capabilities in order to facilitate forcible entry operations could realistically take days, weeks, or longer. Exercising this portion of the problem would limit the amount of time available to train the MAGTF in its core mission essential tasks—the critical blocking and tackling. One way to mitigate this challenge would be to design an exercise in two parts: a short Part A that would involve advance force operations to roll back an A2/AD threat, while a longer Part B would focus on either an amphibious assault by a MEB or sustained operations ashore by a MEF. Currently, MSTP-sponsored exercises simply don't last long enough to do both.

Finally, adequate subject matter expertise within MSTP to accomplish the mission is both a "type" (simulation, technical, and warfighting) and a "quantity" (depth) discussion—and a direct contributor to program credibility and relevance. As mentioned throughout this article, MSTP leverages a community of interest that borrows warfighting subject matter expertise from throughout the Marine Corps and joint community in order to conduct the best possible MAGTF training. As critically important warfighting expertise is not organic within MSTP, this effort seizes upon information warfare,



Command post exercises are part of the MSTP package. (Photo by Cpl Tyler Dietrich.)

intelligence, cyber, special operations, technical, and other Service and joint expertise to keep pace with previously identified challenges. With an organizational structure that limits depth in personnel by granting MSTP roughly two dozen active duty Marine Corps officers on-hand to service the full scope of MAGTF warfighting training, a healthy portion of the program's subject matter expertise comes from its contractor force (a group generally three times as large as MSTP's active duty officer contingent). Acknowledging the perceived downward pressure on reducing contractors, significant degradation of MSTP's contractor force would prove catastrophic to mission success absent a corresponding—and significant—increase in officer staffing. Contractors are the lifeblood of MSTP.

Conclusion

Even a cursory read of General Amos' 1994 article reveals one constant: MAGTF warfighting excellence remains the mission of MSTP. Considering projections on future threats and operating environments, there is always continued room to improve exercise quality, with an eye toward designing and executing more realistic and challenging exercises that highlight the implications for future warfighting. MSTP fully embraces the imperative to evolve and present the Marine Corps'

MEF and MEB commanders with the challenging problems of the 21st century operational environment, not those of the last conflict. MSTP does not, however, seek MAGTF comfort and ease in execution. It seeks to challenge commanders, planners, and staff officers with realistic scenarios and adversary actions that demand reflection well beyond the facilitated after-action review and generate an unease that lingers. Reinforced through well-established connections with the Marine Corps and joint partners that strengthen the joint and combined context and expand available subject matter expertise, MSTP endeavors to present MAGTF commanders and their staffs with the truly thorny operational problems they have undoubtedly heard so much about. There is certainly more that can be done on this front, and MSTP is eager to do it, for a healthy measure of Marine Corps warfighting readiness depends on it.

Notes

1. Col James F. Amos, "The MEF is Our Mission ... the MAGTF Staff Training Program (MSTP)," *Marine Corps Gazette*, (Quantico, VA: February, 1994), 26–27.
2. In the design and conduct of its training exercises, MSTP embraces the September 2016 *Marine Corps Operating Concept* (which supersedes *Expeditionary Force 21*) and the MCIA's

publication, the *2015–2025 Future Operating Environment: Implications for Marines*.

3. See the MCIA, the *2015–2025 Future Operating Environment: Implications for Marines*, 5.

4. MCIA's Future Operating Environment document asserts that "regional conflict with a peer or near-peer competitor remains a significant risk." Accordingly, the *Marine Corps Operating Concept* asserts the MEF will "remain capable of conducting major operations in the littorals, ashore, and inland," to include "large-scale, forcible entry operations."

5. Per page 20 of the *Marine Corps Operating Concept*, the Marine Corps "will have to fight for information and with information ... [and will] confront adversaries who seek to disrupt, degrade, or destroy our information capabilities and systems." They must be countered with an "information warfare approach integrated with C², ISR, and precision fires ..."

6. See the *Marine Corps Operating Concept*, 8.

7. Established in 2003, JNTC seeks to improve joint training by increasing joint context in service and USSOCOM training. JNTC uses a mix of live, virtual, and constructive forces, models, and simulations in an integrated network of persistent training sites to provide the most realistic collective joint mission training experience possible.

8. Theme from the *Marine Corps Operating Concept*, 12.

9. In addition to MSTP exercises, MSTP is also engaged with MARFORCOM's Maritime Working Group (MWG) and Campaign Plan for Amphibious Operational Training (CPAOT) efforts to better align exercise scheduling with ship availability and the integration of experimentation into amphibious exercises.

10. See the *Marine Corps Operating Concept*, 12.

11. Typical modeling limitations include information warfare, casualty play, UAS/counter-UAS, infrastructure targeting, and others.

12. MTWS is the Marine Corps' Program of Record constructive training simulation. Advantages of MTWS include its ability to represent ground, air, and maritime operations. Compared to constructive simulations operated by other Services, MTWS is relatively cheap and simple to operate. As portions of the code are more than 30-years-old, MTWS needs updating in order to remain a relevant USMC training tool.



The Communication Training Centers

The Operating Forces Swiss Army knife

by Capt Daniel Chamberlin

As you read this article, non-communications Marines are preparing to use a radio in a field exercise, and even though it isn't part of their primary MOS, they are proficient in its use. In another part of the world, a Marine is participating or preparing to support a humanitarian assistance and disaster recovery mission. Elsewhere, a Marine is preparing to close with and destroy an enemy of the United States in a high visibility exercise or real-world mission. All three scenarios have one thing in common: the Marines involved in these situations have either been trained at a communication training center (CTC) or by someone who attended a CTC during their units' workups for its exercise or deployment.

From its humble beginning as a squad (minus) of Marines supporting II MEF with communications training to a global command and control (C²) training capability on which the sun never sets, the CTCs have proven their need in the ever-changing realm of supporting our warfighters with necessary communications and maintenance training. The CTCs are the mission essential capability that is needed to support warfighters in the Marine Corps for years to come. This article is a synopsis of the origins of the CTCs, what they have evolved to, and how they will support the Marine Corps in the future.

>Capt Chamberlin was the Director, Communication Training Center 2, Camp Lejeune. He is currently a student at EWS.

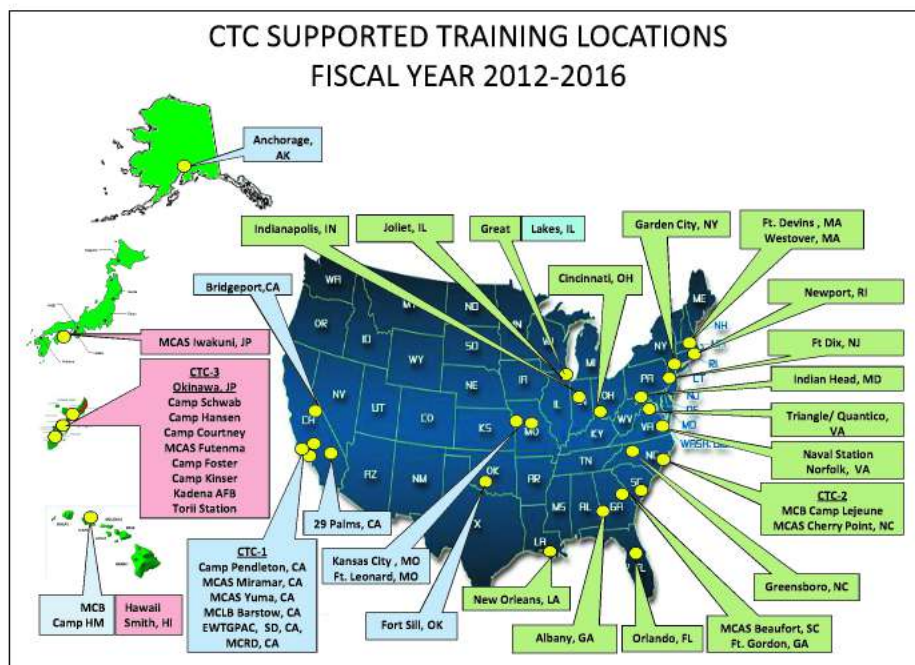


Figure 1.

The Origin of the CTCs

As the global war on terrorism increased in size and complexity in the early 2000s, Marine Corps Communication-Electronics School (MCCES) in Twentynine Palms, CA, identified the need for formalized training facilities for communications training adjacent to the MEFs. During this time, MCCES searched for a formal learning establishment to act as their direct interface with the Operating Forces on a daily basis; decreasing temporary additional duty (TAD) funding to units and bringing some of its training capability closer to the warfighter. In 2007, MCCES established the first Communication Training Center (CTC) in Camp Lejeune, NC. This proof of concept,

which surpassed expectations, resulted in the establishment of CTC 1 at Camp Pendleton, CA, and CTC 3 at Camp Hansen, Okinawa, Japan, to directly support DOD personnel affiliated with the Marine Corps expeditionary forces. Within its first few years, CTC 2, in Camp Lejeune, grew its area of responsibility to support Marine units east of the Mississippi River from other Marine Corps commands. CTC 1 meanwhile began to support units west of the Mississippi River, and CTC 3 grew to enhance its geographical support off the island of Okinawa in support of the Pacific area of operations. Each CTC is numbered in conjunction with the regional MEF that it is collocated with. The *Marine Corps Gazette* article "Com-



Maintenance Marines attending the Maintenance Supervisor Course. (Photo provided by author.)

munication Training Centers: A Force Multiplier for the Marine Corps” gave a great overview of the development of the CTCs and our history noted above.¹ This 2010 article, and the outstanding daily performance of the CTC staffs in their areas of operation, directly influenced the creation of the 2011 joint letter “Operational Force’s Requirement for Long Term Sustainment of the Communication Training Centers,” signed by the CGs, I MEF, II MEF, III MEF, U.S. Marine Forces Command (MARFORCOM), U.S. Marine Forces Pacific (MARFORPAC), and U.S. Marine Forces Reserves (MARFORRES).² These efforts further solidified the long-term requirement for the CTCs, a requirement that is now more important than ever before.

The Mission and Evolution in Training the Warfighter

The overall mission of the CTCs is to plan, coordinate, execute, and supervise communications training for each MEF. This includes formal and informal training, contracted training, vendor training, and new equipment training. Additionally, the CTCs manage and coordinate all communications training resources to include funding, personnel, facilities, equipment, and curriculum support for each MEF’s communications training requirements.

Since their inception, the table of organization (T/O) has evolved to meet the overarching needs of the Marine Corps. Today, each CTC currently has the following for their T/O:

CTC Director—Captain/0602.

CTC Deputy Director—GS-12/1712.

CTC Staff Non-Commissioned Officer In Charge—MSgt/0699.

CTC Data Networking Chief/Instructor—GySgt/0659.

CTC Data Server/Storage Chief/Instructor—SSgt/0659.

CTC Transmissions/Radio Chief/Instructor—GySgt/0629.

CTC Telecommunications Chief/Instructor—GySgt/0619.

CTC Maintenance Chief/Instructor—GySgt/2862.

CTC Maintenance Instructor—SSgt/2862.

This T/O is under review for potential personnel increases due to force modernization requirements, to include regional 06xx chief courses for staff sergeants and gunnery sergeants.

The CTCs also have contracted employees to support the quantifiable demands for courses. These contractors are certified in the courses they instruct and are hand selected by their contracting agencies for their technical proficiency.

The CTCs currently instruct over 32 formal and informal courses, including cybersecurity, satellite and radio transmissions, telecommunications, networking, and server communications. Some of these courses are MOS skills progression specific while other courses give equally essential supervisory training for 06XX/28XX Marines. From incidental operators to MOS-specific courseware, their intent is to support the warfighter with communications and maintenance training as they prepare for their deployments and exercise workups. Classroom spaces also



Marines attending new equipment telecommunications training. (Photo provided by author.)



Students in a Microsoft course on server installation and operation. (Photo provided by author.)

welcome Sailors, Soldiers, Airmen, and Federal employees who are looking to train for their continuously evolving DOD standards as class availability and job requirements permit.

The Microsoft Training Academy has been upgraded to instructing Microsoft Server 2012 and Microsoft Exchange 2013, and we are currently working on a training package for Windows 10 courseware based off of requirements from *MARADMIN 304/15 Marine Corps Bulletin 5234*.³

The CTCs conduct tactical telecommunications skills progression training, to include system upgrades and voice over Internet protocol (VoIP) services, as required by the operational forces.

Beginner to advanced tactical radio and very small aperture terminal (VSAT) courses continue to be widely used across all three MEFs and are attended for incidental and MOS-specific level training.

The CTCs Cisco Networking Academy has undergone curriculum updates and is utilized by various MOS for cross training or the opportunity to excel at network design, installation, and operation.

Virtualization and data storage courses have been recent mission critical additions. Virtualization and software-based storage management systems have resulted in hundreds of thousands of

dollars in savings Marine Corps wide in physical equipment, providing more dependable services with recent software upgrades.

The CTCs conduct supervisor courses for transmission, telecommunication, cyber, and maintenance Marines looking to enhance their capabilities. The supervisor courses are provided onsite at our CTCs, giving the necessary for-

The majority of CTC courses are “train the trainer” courses, while cyber security courses are honed to instruct anyone who is within the cyber security workforce (CSWF).

mal learning center training for Marines between entry- and career-level training courseware. While Marines who attend are predominantly NCOs, lance corporals nearing promotion to corporal and SNCOs returning to their occupation are welcome to attend based on seat availability.

The majority of CTC courses are “train the trainer” courses, while cyber security courses are honed to instruct anyone who is within the cyber security workforce (CSWF). CTC CSWF courses are based off of training any

DOD individual in support of an information assurance billet per the DOD 8570 and its replacement, the DOD 8140.01.

The CTCs stand out in their adaptability to the warfighter’s requirements. They continually construct and provide new communications courses for MEF-wide requirements. For example, CTC 3 recently completed the training of a revised Cyber Network Supervisor Course, CTC 2 recently implemented the RedCom Slice 2100 (commercial telecommunications) course and revised the Maintenance Supervisor Course, and CTC 1 is currently undergoing the build out of a Black Core Routing Course. These collaborative efforts provide timely and relevant training to the operational forces, allowing the CTCs to remain relevant and crucial to Marine Corps unit-level success.

This year alone, the CTCs supported training for individual units preparing for special purpose MAGTF deployment, MEU deployments, humanitarian assistance/disaster relief, garrison Marine Corps Enterprise Network (MCEN) support, and other specific unit deployment programs. Predeployment training, 2000-level training and

readiness standard instruction, new equipment training, and mobile training teams have become the foundation of the CTCs.

Mobile training teams continue to be an integral part of the CTC capability. The CTCs have supported instruction in over 50 different geographical locations for I MEF, II MEF, III MEF, Marine Corps installations, MARFORRES, Marine Corps Special Operations Command, MARFORCOM, and other Marine Corps units within the National Capital Region.

Training Benefits and Cost Savings

Combining formal, informal, new equipment training, and mobile training team classes, the CTCs continually train over 7,000 DOD personnel annually.

A large advantage to the physical emplacement of the CTCs is their financial savings to the Marine Corps. Marine Corps units would have to send their personnel TAD to MCCES in Twentynine Palms to obtain similar training. The cost would be substantial to send our communicators and maintainers out for training. All told, a strong estimate has been made showing the CTCs save the Marine Corps over 17 million dollars annually by instructing adjacent to the MEF.⁴ This process also negates the administrative time it would take for Marines to physically return from TAD and get reacclimated to their units.

The parent command for the CTCs is the Communication Training Battalion (CTB), located at MCCES in Twentynine Palms. The merger of the CTCs under the battalion last year has given the CTCs daily access to CTB operational representatives and has continued to improve communications and maintenance training Marine Corps wide. With CTB officially forming in 2015, the direct correspondence of the CTCs provides CTB and MCCES with more insight to the ever-changing operational forces picture.⁵

The Future for Supporting Command and Control

Expeditionary Force 21 (EF 21) highlights a wide gamut of communication requirements. Cyberspace operations, information operations, electromagnetic spectrum, and C² are topics that are continually evolving.⁶ Our efforts to remain superior in these realms require a formal training pipeline to support our Marines in the areas where they train and begin their deployment workups. The CTCs have been and will continue to be that solution.

Also noted in *EF 21*, manpower is an ever changing issue as force modernization plans evolve. Whether you are part of a garrison unit, a SPMAGTF, or a battalion landing team, you have to be proficient in all of the commu-



CTCs provide Marines with simulated training environments to help them prepare for a number of scenarios, including humanitarian/disaster relief operations. (Photo by Sgt Adwin Esters.)

nications devices you utilize. As MOS adjustments continue, cross training in communications assets will continue to be critical to unit success.

The CTCs directly support DOD personnel in their daily operation and usage of our mission essential communications equipment. They are the Swiss Army knife of communications knowledge as units prepare for exercises and deployment workups.

The CTCs will continue to be the formal learning centers that support these ever changing requirements, supporting the warfighter just as they have for this past decade.

To get in contact with your CTC for training and a list of current courseware, please utilize the following contact information:

- Communication Training Center 1, Camp Pendleton, CA, (760) 763-7898;
- Communication Training Center 2, Camp Lejeune, NC (910) 451-2942;
- Communication Training Center 3, Camp Hansen, Okinawa, Japan (315) 623-1051.

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Notes

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Marine Armor of 2050

Modern vehicles to counter modern armor

by Capt Brent Goddard II

Without a significant investment in new armor vehicles, the Marine Corps' current generation vehicle set will be outclassed by the year 2050. The Marine Corps needs to develop new vehicles to counter contemporary armor threats from our adversaries.

Our peer competitors are investing in unique and innovative armor. Russia has reorganized, consolidated, and streamlined the way they develop main battle tanks (MBT). UralVagonZavod is now the largest developer of MBTs in the world, and their newest creation, the T-14 Armata, is the new benchmark in tank technology. With its unmanned turret, fast auto loader, and increased crew survivability, the T-14 is the most innovative step in tank design since the M1 Abrams.

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UralVagonZavod is keen on making Armata the basis for an entire armada of armored vehicles such as armored personnel carriers and anti-aircraft missile launchers, flame throwers, armored self-propelled artillery, tank salvage units, bridge-layers and mine-sweepers—all vehicles that will be operated by robots.¹

Their end goal is to have an entire family of vehicles (FOV) based on the Armata chassis, a family remotely controlled on the battlefield.²

UralVagonZavod's website depicts a prototype armored vehicle called AT-OM-Armored Modular Vehicle BMP.

It is an 8 wheeled, 32-plus ton vehicle similar to the Marine Corps' new amphibious combat vehicle (ACV). Its 57mm automatic cannon has a range of 6 kilometers; it can carry 8 troops in the back, and its ballistic protection is up to NATO level 5 (STANAG 4569).³ If this vehicle goes into mass production, the ATOM would outclass the new ACV before the ACV is even delivered to the fleet. These peer competitor armor threats are just two examples of how the Marine Corps is falling behind.

Smaller governments and non-state actors are using another method to counter armor on the battlefield, namely anti-tank guided missiles (ATGMs). ATGMs pose a great threat to all armored vehicles on the modern asymmetric battlefield. The Marine Corps requires new vehicles that can survive and fight a wide range of ATGMs. The proliferation of advanced ATGMs systems across the world by all major super powers, however, has drastically increased the availability of ATGMs to anyone with money to burn. Syria, ISIS, Sudan, al-Qaeda-linked groups, and several of our near-peer competitors now possess a wide range of ATGMs. These ATGMs include the 9M133 Kornet, RPG-29 Vampir, FGM-148 Javelin, and the BGM-71 TOW. "It's undeniable that there are more Kornets in the hands of non-state actors than there ever have been before," said Nic Jenzen-Jones, Director of the Armament Research Services consultancy group.⁴

A simple YouTube search will show how these groups are engaging and defeating T-72B main battle tanks and BMP-3 infantry fighting vehicles with catastrophic effects.⁵ On the asymmetric battlefield, these small ATGM teams



The M1A1 MBT's life cycle has been extended to 2050. (Photo by Cpl Akeel Austin.)

can strike quickly with little notice. For example, in 2006, Hezbollah used the Kornet missile against the Israeli Defense Force, destroying two Merkava-4 tanks.⁶ Our current mechanized forces cannot survive direct hits from these modern ATGMs.⁷ The Marine Corps needs vehicles designed to counter these ATGM teams that have the ability to continue in the fight after a missile strike.

The Marine Corps has limits; it cannot walk or air assault everywhere on the battlefield. Walking leaves friendly forces vulnerable and lacks speed/tempos. Vertical envelopment, while effective to reach an objective, leaves forces exposed, lacks direct firepower, and lacks high-speed ground lift support. Whether it be a high-end kinetic fight or humanitarian operation, the Marine Corps needs a form of high-speed cross country mobility that is survivable, provides squad-sized lift, and delivers direct firepower and shock effect.

The solution to the issues of contemporary enemy armor, modern ATGMs proliferation, and the continued requirement for high-speed survivable lift is to develop FOVs from the ACV and to influence the Army when they develop a new main battle tank. An ACV FOV gives the Marine Corps options to accomplish the mission. As the Nation's scalable middle-weight force, the Marine Corps needs armor options that can accomplish the mission at hand.

ACV 1.1, currently in prototype testing as an 8-wheeled personnel carrier,⁸ should replace the now 30-year-old legacy LAV-25. The Marine Corps should develop and equip the ACV 1.1 as an infantry fighting vehicle with an automatic cannon in the 30mm to 100mm caliber range. This size will enable ammunition with air burst capability against dismounted infantry formations and retain kinetic and chemical energy armor-piercing rounds. This ACV will provide the lift required with the speed and security for the infantry forces.

The ACV 1.2 is planned to be the Marine Corps' swim variant.⁹ As a ship-to-shore connector, it will provide high-speed squad-sized lift and assume the missions of the current AAV. This variant can be the Marine Corps swim/



A conceptual look at the ACV. (Photo by author.)

lift choice employed during amphibious operations or when landbased mechanized operations are necessary.

Similar to the LAV mortar and anti-tank (AT) variants, ACV mortar and AT variants should be developed. The ACV-M should be large enough to embark the 120mm expeditionary fire support and its ammunition. This will provide fast, responsive, and organic indirect fires to a mechanized force. The ACV-AT variant should be able to fire four TOW missiles without reloading and provide long-range AT missile support to mechanized forces. This FOV

munications suite to remain relevant on the modern battlefield. The U.S. Army leadership is discussing the possibility of developing a light tank to exponentially increase the effectiveness of infantry formations. BG Scott McKean, USA, Chief of Armor/Commandant, stated,

The Army should also innovate with direct energy, a new infantry fighting vehicle, and a future tank with autonomous capabilities ... I saw firsthand the impact a light tank brings to an infantry force and how it exponentially increases the formation's effectiveness ...¹⁰

The ACV 1.2 is planned to be the Marine Corps' swim variant. As a ship-to-shore connector, it will provide high-speed squad-sized lift and assume the missions of the current AAV.

will provide the Marine Corps with its swim and medium armor options.

The heavy armor option will remain the M1A1 MBT for the Marine Corps. The M1A1 life cycle has been extended to the year 2050. In the meantime, the Marine Corps needs to continue upgrading its tank ammo; fire control system; lighten its logistical footprint; and its sights, survivability, and com-

It is essential that the Marine Corps begin to influence and show interest in investing in the development of such a tank.

The critics of these solutions might argue that this solution would make the Marine Corps "too heavy." There is an argument against armor, suggesting that we need to become lighter to stay expeditionary. The critics may also say the

current environment of sequestration makes it impossible to earmark money for such an acquisition endeavor. They may also argue that armor is a dying form of warfare and—in the future—all armored targets will be adjudicated via air, land, and seabased fires during the shaping phase of major operations.

The too heavy argument is a matter of survivability and risk tolerance that the U.S. military and the American public are willing to accept in the form of casualties. As shown during Operation IRAQI FREEDOM and ENDURING FREEDOM, the American public has little tolerance for mass American casualties. Survivability is always a major concern, but to survive mines, improvised explosive devices, and ATGMs, the vehicle needs to at least be 30 to 50 tons to have an armor package capable of withstanding the blast/explosively formed penetrators.

The lack of money argument requires a major paradigm shift on where the Marine Corps invests its money. There is a strong internal cry to “rebalance the force” by modernizing the Marine Corps’ GCE. In order to support this rebalance of the force, money will be well spent in creating a strong fleet of ACV FOVs.

The argument that armor is a dying form of warfare dates back 40 years to the conclusion of the Yom Kippur War.¹¹ Since then, military experts routinely have asked why modern militaries continue to develop expensive armored vehicles. History, however, has shown that armor is a worthwhile investment. The most recent example of this can be seen in comparing the Battle for Fallujah and Battle for Marja. The Battle for Marja had 15,000-plus ISAF (Iraq Security Assistance Forces) forces clearing 400 to 1000 insurgents. Sixty-one ISAF members were killed in that battle.¹² No armored vehicles were used in the battle. By comparison, the Battle for Fallujah included armored forces among the 13,500 coalition troops that went toe-to-toe with 4,000 insurgents. 107 coalition members were killed in that battle.¹³ Fallujah had four to ten times the number of enemy. This is only one example that shows that when infantry is supported by armored

forces, casualties might be incurred at less than half the rate than without armor.

The final argument for Marine Corps armor is that air, land, and seabased fires will adjudicate all targets during the shaping phase of any major operation—this is a false dichotomy. Intelligence is not perfect, and you cannot destroy every target if you cannot find those targets. Those targets will be engaged by infantry, and the critics are not taking into account the added value of armor supporting infantry on the ground. They are also not considering

**... U.S. peer competitors
are investing in and de-
veloping unique and in-
novative armor.**

the widespread proliferation of small, portable ATGMs. These small ATGM teams are extremely hard to target with long-range fires. Survivable armor will be needed to support the infantry and counter this threat during the decisive phase of any operation.

The bottom line is that the U.S. peer competitors are investing in and developing unique and innovative armor. So should the Marine Corps. If the Marine Corps does not begin to modernize its armored forces, it will become obsolete and irrelevant to major operations within 15 years. This has not happened since the end of World War II. ATGM proliferation demands an investment in new armored vehicles that can match them with survivability. As the scalable, middle-weight force, the Marine Corps requires flexible mission options via an ACV FOVs. In conclusion, the Marine Corps needs to acquire modern vehicles to counter the modern armor threats presented by our enemies.

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Cyber Force Generation

Finding a balance to enable better performance, readiness, and retention

by Capt Neal P. Ferrano



1 MEF Marines monitor network activity during a large-scale exercise. (Photo by Cpl Garrett White.)

The Marine Corps is losing the investment, experience, and training it has put into its cyber forces to the civilian sector, other intelligence agencies, and government contractors at a rate it cannot replace or afford to sustain. There is a growing need for senior technical advisors on a general's staff that come from a career in a technical occupational field. Standard duty rotation cycles and the overarching philosophy of requirements for career progression do not fit the current mold for cyber forces. These practices inhibit the generation of a skilled technical officer corps as well as contribute to low retention rates on cyber warriors. These actions will continue to leave the USMC without generals and colonels

who have a solid background in the cyber field.

There is no need to debate the criticality of cyber and its growing significance when it comes to national security. The importance of building the offensive and defensive capabilities of these forces in the DOD has also been emphasized by Secretary of Defense Ashton Carter since he has taken office.^{1 2 3} Secretary Carter has surrounded himself with technical experts and openly expressed his desires to drastically change the 36-year-old *Defense Officer Personnel*

Management Act and the "up or out" mentality in the DOD.^{4 5 6}

Cyber has become the priority at the highest levels, but manpower management changes are not occurring fast enough at the component level. MARFORCYBER and USCYBERCOM have been in the force generation stage for over six years and are still building.⁷ Great strides have been made, but if we continue with the same personnel management system used for conventional forces, we will never reach a fully capable staffed force.

The leaders of our Nation desire to have capable and experienced technical advisors by their side when making decisions. President Barack H. Obama recently established the position of a Chief Information Security Officer for his Cyber Security National Action Plan and Secretary Carter recently announced his Defense Innovation Board (DIB).⁹ The President has prioritized partnerships with the leaders in cyber and technology with trips to Silicon Valley and calls to the private sector to fight terror online.^{10 11}

There is a cyber seat at the table to assist in the new calculus for decision makers today. The DIB members are not who you would think the Secretary of Defense would have advising him. It has the standard decorated and experienced military advisor, retired Navy ADM Bill McRaven, but

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the others break tradition, such as Reid Hoffman, co-founder of LinkedIn, and Walter Isaacson, President of the Aspen Institute.¹² The balance of a senior combat advisor, a technical expert, and an intellectual leader creates a powerful advisory team.

Leadership is an inherent trait in senior members of the Marine Corps. Currently, we have career *combat* leaders from the infantry, career *aviation* leaders from years in the air wings, and expert *logisticians* from experiences in engineering and logistics battalions, but there are no senior leaders in *technical* community the Marine Corps.

What we have now, and are continuing to perpetuate, are generic intelligence officers who may have a single tour with a signals intelligence unit and few that will have one tour at the *one* Marine command for cyber. There are two dozen infantry battalions, numerous air wings, and logistics battalions, but only *one* cyber command. There is no structure in place to keep officers in a cyber field throughout their career. The generation of a technical cyber occupational field for officers will create a channel to generate seasoned technical advisors with years of experience in operational and staff level positions.

Marines rotate from their monitored command code (MCC) after three years with the slightest possibility of returning to that same unit ever again. With this practice in place the growth of officers who have years of technical cyber experience cannot be developed.

Currently, there should be Marines returning from a fleet tour back to a cyber billet who have also completed a cyber tour in the past. The harsh and bleak reality is, now six years into this cycle, this “cyber unicorn” is yet to return among the ranks to continue their cyber career development. In the two most recent rotation cycles, there has not been an officer returning to MARFORCYBER who had completed a previous cyber tour. Experiencing this first hand further compels Marines in cyber billets to find alternative methods to serve their nation in a cyber capacity.

The Marine Corps is making the investment of time and money into the generation of cyber warriors but is

failing to retain them in the Marine Corps. Assuming a check-in with the appropriate clearance and polygraph, the most aggressive timeline to complete the training pipeline is about eight months for an officer and almost a year for enlisted Marines depending on their specific MOS. This assumes vacancies and timing are all aligned in their favor. Most training takes over a year because of clearance processing and course schedules. Once training is complete, they are placed, and HQMC would receive a return of about 20 months on one of its most expensive personnel investments before they start the rotation process. At this point, time and time again, the most qualified and trained subject matter experts in the cyber field are given orders to rotate to a unit that most likely does not even have top secret classified computer access. These Marines are leaving a field where they are contributing to challenging and relevant intelligence countering national security threats while supporting deployed units. This self-induced rotation has stripped the cyber forces of the best of its fighting forces. These cyber warriors will now have their skills atrophy and qualifications lapse while they are at conventional non-cyber units.

The government and private sector recognize the skills and qualifications

these Marines possess and pay top dollar for them. In CYBERCOM and the National Security Agency, you will see that many of their positions are filled with transitioned Marines. MARFORCYBER has actually hired many of the transitioning Marines as civilians without even leaving a gap in their pay period. It becomes ironic when the team that lost a particular skill set because of a Marine transitioning hired that Marine as a civilian to fill the same role in order to maintain the unit’s readiness. Marines who take the contracting or private sector route are immediately approached with salaries one and a half to two times their current salary (base pay and basic allowance for quarters included). Recently, a transitioning staff sergeant began a contract in the same building for \$150,000.

It is not the money that draws these Marines away—a majority of them would continue to serve should the option in the cyber field exist. They have found an arena where they are relevant, challenged, and can have a measurable impact in service to their Nation. They have worked through some of the most mentally demanding training pipelines in the military, acquiring elite qualifications that will all be for naught after a permanent change of station move. Adjusting rotations between Marine



The Marine Corps needs to better manage cyber force assets, especially personnel. (Photo by Cpl Garrett White.)



Cyber Marines operate daily in a top secret environment. (Illustration by Jennifer Sevier.)

Corps security battalion companies at various National Security Agency sites, MARFORCYBER, CYBERCOM, and Marine Corps Cyberspace Warfare Group (MCCYWG) would allow these Marines to continue to maintain their qualifications; continue to develop in various operational, tactical, and staffing positions in cyber; and, most importantly, season the cyber skills across all ranks over their career.

A tangible return the Marine Corps receives from regular rotations is the different experiences and personnel mixed between units. The standard reasoning to cross-pollinate the USMC by duty rotations does not apply to cyber. Some would say it is even more critical to rotate cyber experience back to the MAGTF so that cyber can be employed and understood at the core operational units. This theory sounds promising, but in application, it fails holistically.

Every Marine in a cyber billet has a polygraph and a top secret (TS) clearance requirement. Cyber Marines operate every day in a sensitive compartmented information facility (SCIF), and some are even working compartmented programs. When these Marines transfer, they are “read out” of all their programs, meaning they cannot discuss or handle any information concerning the program. For some, the entire context of their experience and knowledge has restricted dissemination. Due to security policies, they cannot even talk about their missions or the operations they

were involved in, planning considerations, intelligence reporting, and even their billet descriptions at fleet units.

At an infantry battalion there are a very limited number of Marines who have a TS clearance outside of the intelligence section (generally less than five). At a regimental staff, 25 percent of the officers on a planning session may have a TS clearance. So the cyber Marine cannot even contribute to the operation without jeopardizing classified information to un-cleared personnel. In the best case scenario where everyone had a TS clearance and was read in to all the appropriate programs, the planning conferences would need to be in a SCIF. There are only a handful of SCIFs on Marine bases, and it is unrealistic to have each regimental and higher exercise plan, brief, and wargame occur in the limited conference rooms cleared for this level of discussion.

The reasoning for regular duty rotations to spread experience and knowledge is a fallacy when applied to cyber. The utility of sending cyber skilled Marines to the Operating Forces is completely negated by clearance requirements and security regulations that inhibit the exchange of experiences and the contribution to the planning process.

The actual reality of the damages from the rotation of cyber forces out of this career field is apparent in the ongoing force generation by MARFORCYBER after six years. MARFORCYBER is still understaffed and underqualified

because the trained personnel are sent away. After 6 years, the Marine Corps was under 50 percent trained and trailing nearly all other Services in readiness.¹³ MARFORCYBER has made great lengths since then but now faces yet another permanent changes of station season and will attrit its trained personnel again. A look at one of the offensive cyber teams currently manned now will lose over 70 percent of their trained officers in the 2017 change of station season. During this time, the team’s mission continues, and the deployed units depending on them will still require support. When you also factor in one-third of the team in the training pipeline, the team will spend nearly every year at 70 percent trained capacity after losing its trained forces from a standard 3 year rotation cycle, before the new arrivals are qualified. It is critical for cyber units to maintain a higher level of readiness at all times. There is no rebuilding and training period for cyber units since they are always operational and the missions are enduring.

The challenges facing the Marine cyber forces are not financial. They do not need more money. It is not a training deficiency; cyber Marines have proven they are the most capable after they complete the pipeline. They do not need more buildings, computers, or new technology. The challenge facing the MARFORCYBER is manpower management. A failure from HQMC, and the DOD at large, to rapidly address the manpower issues in its cyber forces will only continue to impede future generation of U.S. cyber force capabilities and unit readiness.

This is a self-induced problem. The false belief that duty rotations of three years and varying a career path for intelligence and technical personnel benefit the Marine Corps with soon bare its ugly head. The cyber domain will continue to grow in strategic importance at a faster rate than other sectors of war and will further outpace our force capacity. Extended duty rotations of at least four years to overlap the training cycle requirements, the securing and tracking of training qualifications in a favorable cyber career field in, and the

methodical placement of personnel in cyber force structure will help allow for the USMC to maintain the readiness that is required of cyber units. This will ensure that the Marine Corps is able to remain ready, relevant, and responsive in the cyber environment as it has in its aviation and ground forces.

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MajGen Harold W. Chase Prize Essay Contest Boldness earns rewards...

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.

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* 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. A cover page should be included, identifying the manuscript as a Chase Prize Essay Contest entry and include the title of the essay and the author's name. Repeat title on the first page, but author's name should not appear anywhere but on the cover page. Manuscripts are accepted, but please include a disk in Microsoft Word format with the manuscript. The *Gazette* Editorial Advisory Panel will judge the contest in June and notify all entrants as to the outcome shortly thereafter. Multiple entries are allowed; however, only one entry will receive an award.

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Something Old and Something New

MOOSEMUSS,¹ concepts, and exercise-based experimentation

by Col Vince Goulding, USMC(Ret)

In the minds of some, distributed operations (DO) contradicts the “first” (at least alphabetically) Principle of War: Mass. As one respected and well qualified author opined in a recent *Gazette* article describing his significant personal experience, “The honored battle principle of mass should not be applicable axiomatically to Vietnam, or to any future conflict involving American forces [emphasis added].”² That author’s future is today—discussions on the relationship between DO and mass frequently include the caveat that distribution of tactical formations is acceptable, so long as the means exist to “mass” these same forces when confronted with the appearance of a numerically superior enemy. Apart from the fact that reversion to physical concentration flies in the face of history and the evolution of military operations, it is worth noting that mass and concentration are not synonymous. *Joint Publication 3-0 (JP 3-0)*, *Joint Operations*, tells us the purpose of the former is to:

... concentrate the effects of combat power at the most advantageous place and time to produce decisive results ... massing effects of combat power, rather than concentrating forces [emphasis added], can enable even numerically inferior forces to produce decisive results and minimize human losses and waste of resources.³

Despite the obvious discomfit to English teacher’s worldwide caused by the Joint Staff’s use of a term to describe a term, *JP 3-0*’s message is clear. For its part, *MCDP 1* does not address the Principles of War *per se*, but it does mention massing with the

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caution that “this massing will also make them [Marine forces] vulnerable to the effects of enemy fires and they will find it necessary to disperse.”⁴ *MCDP 1* uses the term “focus” relative to centers of gravity and critical vulnerabilities, raising the conversation to operational even strategic levels, where those terms more comfortably exist. It goes without saying, however, that all the strategy and operational acumen in the world are useless unless paired with highly capable and survivable tactical formations.

DO is not a tactic. From its inception as both a concept and subject of experimentation, DO was viewed as a *capability* applicable across the range of military operations and all six phases of a joint campaign. In fact, it might well be most applicable in Phases 0 (Shape) through 2 (Seize the Initiative)—conceivably preempting the combat operations normally associated with Phase 3 (Dominate).⁵ In joint terms, DO could be construed as one of a number of a combatant commander’s flexible deterrent options typically employed during Phase 1 (Deter) of his campaign plan. Should deterrence fail, a strong argument could be made that the skillful employment of highly trained distributed tactical formations could enable transition from shaping or deterring to achievement of *JP 3-0*’s bottom line



Water is one unique aspect of the Philippine environment. (Photo by LCpl Damon McLean.)

of enabling “even numerically inferior forces to produce decisive results,” begging the question of why any commander would want to concentrate his forces just because a numerically superior enemy shows up. Current political, fiscal, and military realities have already created the likelihood that U.S. forces will fight outnumbered and, as recently demonstrated in the Ukraine, the combination of airborne intelligence, surveillance, and reconnaissance assets and robust indirect fires can prove lethal to traditionally organized and employed combat formations.

Concepts and Exercises Coming Together

The Marine Corps Warfighting Lab (MCWL) has conducted DO-informing experimentation in conjunction with exercises starting with RIM OF THE PACIFIC 10, focused principally on company-sized formations (not necessarily infantry), in a MAGTF force context. As the CMC-approved concept for *Enhanced Company Operations* tells us, “the company is the smallest formation capable of sustained independent operations.”⁶ Experimentation was designed to assess that statement’s plausibility and then turn it into reality. The logical next step was the company landing team, spawned by the necessity of giving these formations the non-organic support they would need to operate in truly distributed fashion for an *extended duration*. Only from real Operating Forces is ground truth discovered, good and bad—and experimentation uncovered some of both. Regardless, these exercise-associated events were characterized by detailed planning, in many cases for over a year, ensuring that experimental equities and appropriate technologies were seamlessly woven into the exercise’s fabric and that the forces involved emerged from the event at a higher level of capability than when they came in. Experimental technologies sometimes accompanied Marines on subsequent deployments; however, invariably, MCWL found that new manning and innovative tactics, techniques, and procedures yielded longer-term results. The model worked—but limited experimentation to a small number of events.



U.S. and Philippine forces trained bilaterally during BK 16, preparing for natural disasters and other potential crises in the Indo-Asia Pacific. (Photo by LCpl Jessica Etheridge.)

The recently conducted (April 2016) BALIKATAN 16 (BK 16) exercise in the Philippines took a different tack and could rightfully be called a watershed event in that Futures Directorate/MCWL played only an indirect role in exercise planning; yet, it was a principle beneficiary of what took place. Ideally, draft concepts are wargamed, refined, then subjected to live-force experimentation. In the case of BK 16, the system described in *MCDP 1* worked.⁷

Through research and interaction with Futures Directorate concept writers, Marine Forces Pacific (MARFORPAC) planners developed an in-depth grasp of DO and the emerging expeditionary advance base operations (EAB) concept.⁸ A cursory look at Figure 1, taken from the draft EAB operations concept, should explain their interest—especially vis-à-vis BALIKATAN. MARFORPAC’s participation in a 3 to 5 November 2015 MCWL-sponsored



There is a great deal to understand about HIMARS employment. (Photo by Cpl John Baker.)



Figure 1.



Figure 2.

EAB operations wargame solidified a critical linkage between Quantico's Futures Directorate and the Operating Forces. The MARFORPAC commander's intent and commitment to incorporating experimentation in this large-scale exercise set the conditions for linking strategic ends with tactical means and spoke volumes about the Operating Forces commitment future capability development.

Figure 2 portrays the distribution of sites and forces during BK-16 and underscores the exercise's focus on "experimentation opportunities" dealing with "Distributed Operations, Alternative Places, and Expeditionary Advance Base Operations."⁹ The relationship between Figures 1 and 2 and what we read about in the Asia-Pacific region, specifically in the South China Sea is self-evident. It is also worth mentioning that, although unrelated, during the execution of the BALIKATAN exercise, 18 soldiers from a Philippines Army infantry battalion were killed and 56 wounded in a single engagement against Abu Sayyiah Islamic militants on the southern island of Basilan. (See Figures 1 and 2.)

Lessons for Combat Development

BALIKATAN was large and extremely complex. Noteworthy is the fact that its size did not preclude MARFORPAC planners from setting the conditions for learning—no better definition of experimentation. While too many events transpired across the archipelago to recount even a representative percentage here, several are worth mentioning, not only for what they accomplished, but for their role as building blocks for subsequent exercises and follow-on experimentation. The process has already been put into motion by subject matter experts in Quantico and Honolulu.

An integral, and highly visible, component of MARFORPAC's execution of BK 16 was distributed employment of a HIMARS detachment from Fox Battery, 2d Battalion, 14th Marines, 4th MarDiv (Oklahoma City) to Palawan Island, the Philippines' western most major island. The detachment officer-in-charge clearly understood a great deal more about HIMARS employment than what he learned at

Fort Sill. Conversations with him underscored a deep understanding of the substance and imperative of DO, EAB operations, non-traditional command relationships, and the strategic value of his weapons system. From a tactical and future experimentation perspective, what immediately come to mind was development of a “fires landing team,” comprised of HIMARS, attached infantry unit, and perhaps a small USN/USMC logistics element. Consider a scenario where such a team deploys to theater during Phase 1 or 2 via non-traditional shipping, displaces via C-130 to a remote firing position and links up with Armed Forces of the Philippines (AFP) forces for “outer ring” security, then displaces to a number of alternative sites, far from well-known and presumably targeted facilities. This gets to the current MAGTF experimentation “model.” Might not the fires landing team function as a commander joint force maritime component commander (vice purely MAGTF) asset and contribute to his desire to control sea lines of communications and perhaps even target shipping when required? Such an event would be a gold mine of issues, ranging from command and control to tailored logistics to integration of U.S. and AFP tactical formations.

As a necessary first step, most of the BK 16 logistics operations took place from distributed but established sites (ports and airfields). MARFORPAC planners clearly understood and supported exploration of alternative approaches, especially as they related to forward arming and refueling points (FARPs) or combat logistics points, as they were referred to during BK 16. Real-world challenges arose during the exercise, such as employing short-legged helicopters the distances required by the distributed laydown and over water. Water, in fact, is what makes the Philippines unique. It also offers a potential solution. Traditional FARP operations are land-based and place a heavy tax on heavy lift aviation assets, assets better husbanded for tactical mobility of troops and combat support. The EAB operations concept introduces the notion of barge FARPs, designed to store and distribute Classes I, III, IV while

blending into commercial maritime traffic. MARFORPAC planners agree and steps are already being taken to develop and examine such a capability in future BALIKATANs.

A final example addresses the MARFORPAC commander’s desire to employ non-traditional shipping, such as the T-AKE and expeditionary fast transport (EPF) more tactically, simultaneously taking them out of the harm’s way of established deep water port facilities. The challenge is well known: T-AKE’s, for instance, do not have organic lighterage, complicating the notion of “engine-running” instream offload of sustainment to distributed formations ashore. A solution could be as simple as an AFP liaison officer aboard the ship who is funded and enabled to contract

... MCWL played only an indirect role in exercise planning ...

for commercial lighterage compatible with the T-AKE’s or EPF’s instream offload capabilities. It would be a simple “experiment” and excellent venue for intellectually expanding the concept of alternative shipping beyond those flying U.S. flags and employing today’s methods of operation.

BK 16 opened the eyes of the four-man MCWL concept development and assessment team to a number of things that were heretofore hidden directly in front of them; first and foremost that the operating forces understand and embrace what Quantico is producing. Second, there is room in exercises of all sizes to accommodate some degree of experimentation and combat development. Finally, while the MAGTF should continue to be the centerpiece of capability development, we need to institutionally look beyond it—especially to the inclusion of Navy and allied components as we seek to “enable even numerically inferior forces to produce decisive results and minimize human losses and the waste of resources,” alluded to in *JP 3-0*.

Inadequate and vulnerable amphibious shipping is a situation that is not going to change. MARFORPAC understood that and built an exercise that sought to work around it in order to examine alternative means of employing a distributed maritime force. There were myriad lessons learned; perhaps foremost that the Principles of War can be achieved differently and more effectively if we let our operational concepts serve as a guide. The “surprise” (eighth Principle of War) might be on us.

Notes

1. The nine Principles of War as described in *U.S. Army Field Manual 3-0, Operations*, (Washington, DC: Department of the Army, 2011): Mass, Objective, Offensive, Security, Economy of Force, Maneuver, Unity of Command, Surprise, Simplicity. To this have been added three Principles of Operations: Restraint, Perseverance, Legitimacy.
2. F.J. “Bing” West, “The Strike Teams: Tactical performance and Strategic Potential,” *Marine Corps Gazette*, (Quantico, VA: May 2016), 69.
3. Joint Staff, *Joint Pub 3-0 (JP 3-0), Joint Operations*, (Washington, DC: August 2011), Annex A, describes 12 Principles of Operations.
4. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997), 10.
5. *Joint Pub 3-0*, Chapter V, describes six phases of military operations (Shape, Deter, Seize the Initiative, Dominate, Stabilize, Enable Civil Authorities) and how they often overlap.
6. Gen James T. Conway, *A Concept for Enhanced Company Operations*, (Washington, DC: HQMC, 28 August 2008).
7. *MCDP 1*, 53, “The Marine Corps’ force planning is concept-based ... [and] derives from a common set of concepts.”
8. Copies of the latest draft EAB Ops concept are available from Mr. Art Corbett at Futures Division Concepts Branch (arthur.corbett@usmc.mil).
9. Headquarters Marine Forces Pacific, “MARFORPAC Pre-deployment Brief,” slide 9. (Honolulu, HI: 17 March 2015).



Tiltrotor Mobile Combat Formations

Implications on future conventional warfare

by Maj Nathan J. Hill

The MV-22B is a unique mobility platform with unexplored potential. Tiltrotor technology may be as revolutionary as the shift from horses to motor vehicles nearly a century ago, but its potential in conventional warfare has largely been unrecognized. The Marine Corps is currently the only force in the world capable of projecting large-combat-formations with the tiltrotor. The MV-22B can quickly deliver light infantry, ready to fight, at unprecedented ranges. Organized, trained, and equipped tiltrotor mobile forces can mass quickly from disaggregate locations, projecting combat formations long distances in a relatively short period. Such forces are useful as a crisis response force in the defense and offense, creating battlefield asymmetries heavily favoring the military with tiltrotor mobility formations.

Examined as a component of the joint force, USMC tiltrotor capability is exclusive, underscoring the Marine Corps' role in forcible entry. Tiltrotor mobile formations

ensure[s] we are prepared to fight with what we have today ... and to improve our ability to advocate for the development of critical Navy and joint capabilities.¹

Tiltrotor mobile formations provide decisive, asymmetric mobility advantages to the GCE and increase the MAGTF forcible entry options at reduced response times. Leveraging the mobility advantage of the MV-22B, the Marine Corps can develop a tiltrotor mobile force that provides an unparalleled crisis response force, flexible defensive options, and a decisive offensive formation.

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Marines can be landed behind enemy forces, thereby creating a dilemma for the enemy commander. (Photo by LCpl Cameron Darrough.)

The Problem

The MV-22B is not a helicopter. A flight of eight MV-22Bs can move 192 Marines 390 miles in approximately 1 hour and 40 minutes. The same flight could refuel and subsequently deliver 192 more Marines about 3 and 1/2 hours later. The helicopter that the MV-22B replaced, the CH-46E, would require a forward arming and refueling point to range the objective. Further, the CH-46E requires two to three times the number of aircraft to

lift the same number of troops.² Finally, it would take the CH-46E 2 hours and 50 minutes, excluding time in the forward arming and refueling point, to get to its objective, while the MV-22B is already returning for its second trip through the pickup zone. The tiltrotor does not replace the helicopter; it upgrades the ACE just as the helicopter upgraded the all fixed-wing ACE after World War II (WWII).

The MV-22B is an operational connector. The evolution of the ACE to

a tiltrotor-based assault support force enables the other elements of the ACE. The ACE possesses other assault support assets capable of lifting light infantry; however, the operational effect of troops moved solely by MV-22B, due to its speed and range advantage, is significant. With the exception of the KC-130, other USMC assault support aircraft are not capable of reaching a combat radius of 390 nautical miles without refueling at some point along the route, slowing tempo, and requiring ships to move closer to shore. (See Appendix A.)

Current concepts use the helicopter as the final stroke in operational exploitation. In spite of the tiltrotor's dominance in speed and range, no concept exists for employment of tiltrotor mobile forces during large-scale conventional combat operations. Richard Simpkin notes in *Race to the Swift* that "exploitation of the dynamics of manoeuvre theory calls for rare excellence in training and the exercise of command."³ Currently, the Marine Corps has exceptional pilots with excellent equipment, but today's ACE is not trained to move any formation larger than a battalion for any purpose.

The missing element required to harness tiltrotor mobility exists in training the MEB, MEF, MAG, and MAW and the repeated practice of this promising capability by these formations. Marine medium tiltrotor squadrons (VMM) are skilled movers of Marines, but ensuring that higher-level commands have the appropriate SOPs and practice for such a mission are prospective training objectives with a substantial return on investment.

Presently, the largest lift conducted by MV-22Bs are long-range raids, employing company landing teams and a combined helicopter/tiltrotor battalion lift during semi-annual Weapons and Tactics Instructor courses in Yuma, AZ. According to *Expeditionary Force 21*, the MEB is the USMC's "main effort in force development;"⁴ however, if called upon in a heavy, conventional fight, the Corps' concept for moving a brigade would look much the same as it did in the later portion of the last century. The Marine Corps has the opportunity to

RW TR Comparison				
Air Frame	Airspeed (Knots)	Passengers	Distance (NM)	Time (hours)
Helicopters				
CH-46E	140	12	390	2.8
CH-47D/F	130	36-55	390	3.0
CH-53E	150	36-55	390	2.6
UH-1Y	130	8	390	3.0
UH-60	130	11	390	3.0
Tiltrotors				
MV-22B	240	24	390	1.6
Fixed Wing aircraft				
KC-130J*	340	92	390	1.1

* The KC-130J has a real advantage in terms of moving troops quickly in a permissive environment; however, in a medium to high-threat environment, the flight profiles required for the KC-130J make it much more vulnerable than a tiltrotor aircraft, which can fly much lower.

Appendix A.

develop *revolutionary* mobility on the battlefield by creating a tiltrotor mobile, light infantry brigade and division combat formations.

The Capacity

Troops ideally suited for use as a tiltrotor mobile force are light—moving without any heavy equipment or fire support larger than 120mm mortars.

A regimental-, brigade-, or division-sized movement includes the fighting formations and the senior headquarters. For example, 7,200 is the number of Marines in a MEB derived from the GCE number of 6,072 and MEB command element (CE) number of 1,125, rounded up. At the sustained sortie rate, in one 20-hour period, a squadron of 12 aircraft is capable of moving a Marine

The aircraft's ability to take disaggregated combat formations from shore and/or sea-based sites and quickly concentrate them on an objective, ready to fight, is unprecedented.

The MV-22B is capable of cruising at 240 knots while carrying 24 combat loaded Marines a distance of 390 nautical miles.⁵ Currently, the Marine Corps has 15 operational squadrons of 12 MV-22Bs; by 2018, the Corps will have 18 operational squadrons of 12 airframes.⁶

infantry battalion 390 miles. Based on these planning factors, a MAG assigned 6 VMMs could move an entire regiment in 8 hours and a 2 regiment MEB in approximately 23 hours.⁷ Further, the same MAG could move an entire division in 29.3 hours at the sustained sortie rate.⁸ Using only MV-22Bs to

General MV-22B capacity for large formation lift

Formation+	Miles	Unit assigned	Aircraft sorties to move formation*	Aircraft assigned	Surge rate	Sustained rate	Miles	Airspeed	Hours per wave \$	Minutes per wave	Total number of waves at the surge rate^	Hours to complete movement @ surge &	Total number of waves at the sustained rate ^	Hours to complete movement @ sustained &
Generic														
squadron	390													
Battalion	1000	VMM	42	12	10	8	390	240	3.3	195.00	5	16.3	6	19.5
Regiment	3200	MAG	133	72	58	48	390	240	3.3	195.00	3	9.8	3	9.8
Brigade	7200	MAG	300	72	58	48	390	240	3.3	195.00	6	19.5	7	22.8
Division	10000	MAG	417	72	58	48	390	240	3.3	195.00	8	26.0	9	29.3
Marines														

\$ This number is miles/airspeed doubled (to get the aircraft to the zone and back to its origination).
+ Formation strength is derived from MSTP's 5-0.3 MAGTF Planner's Reference Manual. The author added numbers from the notional MEB, Division, Battalions and rounded up.
* This is determined by dividing the number of Marines by the number of seats in the aircraft.
^ This is determined by multiplying the sortie rate by the number of squadrons in the MAG, rounded up.
& This number indicates the number of hours that will be required to lift the entire formation to their intended destination.

Appendix B.

accomplish this movement frees other assault support aircraft to conduct supporting or parallel missions requiring less speed or range. (See Appendix B.)

Except for the KC-130 and the MV-22B, Marine assault support aircraft are not capable of reaching a combat radius of 390 nautical miles without refueling at some point along the route, slowing tempo. Although the ACE possesses other assets capable of lifting light infantry, the MV-22B's speed and range advantage is asymmetric compared to a force that moves solely by helicopter.⁹ Investigating possible applications for tiltrotor mobile forces underscores their potential.

The USMC has developed no new concept for employing the aircraft in conventional military operations, yet an organized, trained, equipped, and ready tiltrotor mobile force provides strategic leaders with combat formations of Marines ready to act as a fire brigade in support of national objectives. Further, the aircraft's capability in the offense and defense is pioneering.

Fire Brigade Capability

In 1950, the First Marine Provisional Brigade was "forced by a shortage of shipping to leave all their heavy equipment in the United States."¹⁰ While it took several weeks for the First Provisional Marine Brigade to arrive in Pusan, a similar Provisional Marine Brigade using MV-22Bs from Okinawa could be in Pusan within a day of their deployment order. Marine light infantry, trained and equipped to deploy

quickly and ready to fight, could secure perimeters or key logistical nodes while the heavier, but slower, combat power marshals and deploys via traditional means. The following scenario illustrates such a capability.

On 1 June 2021, North Korea crossed the 38th parallel into South Korea. Within a week, Seoul fell, and the United Nations' coalition was in retreat toward the southern quarter of the Korean peninsula. During that week, 1 MAW, as the ACE for III MEF, was allocated three CONUS-based VMMs and 2d MEB was attached to III MEF. CONUS-based tiltrotors self-deployed to Okinawa. Joining the two squadrons already at Futenma, III MEF now wielded the fastest and longest reaching aviation force the world had ever known—eight VMMs.¹¹

2d MEB increased III MEF CG's response options. Recently deployed as a deterrent option before hostilities started, the MEB is positioned 135 miles southeast of Pohang on the evening of 9 June, maximizing the defensive advantage provided by Japanese air defense systems. III MEF ACE supported 3d MarDiv¹² with five VMMs.

Eighth U.S. Army requested III MEF in Korea on 10 June. The MEF CG moved his 3d MarDiv Marines decisively, maximizing the mobility and flexibility advantage afforded by his tiltrotor mobile formations. He assigned three objectives on the peninsula: 3d MarDiv objectives were Saechon and Pusan in the south; II MEB objective was Pohang in the east. Marines, staged for combat at camps and airfields all over Okinawa, loaded onto MV-22Bs and started the Korean buildup.

Surging to complete their mission, 2d MEB ACE inserted a battalion in Korea in slightly less than three hours. Four hours later, 2d MEB had a regiment on the ground in Pohang. Meanwhile 3d MarDiv Marines were moving from Okinawa to their peninsular objectives. Within 31 hours of the execute order, all 10,000 division Marines were in Korea, assembled for combat.

Coalition naval and air power shaped the battle space. Supremacy at sea was crucial, but the only thing required for entry into these coastal objectives was local air supremacy around the objectives and heavy coalition tanker support. One hundred miles after the Okinawa-based VMMs left their insert LZ, each flight rendezvoused with tankers that dragged them back to Okinawa; there, aircraft topped off fuel while embarking troops, then launched the next wave for insert.

Concurrently, ACE helicopters were the first to move to Korea, providing fires, mobility, and prepositioned sustainment for the fire brigade. Two VMMs on Okinawa followed supporting the division's movement to the peninsula. Once the Marines were on the peninsula, the tiltrotor force was just as responsive with fewer assets. Due to shorter distances, the two VMMs on the peninsula are capable of moving an entire battalion two and a half hours and a regiment in seven and half hours.

If the MEF CG assigned 2d MEB to lift a regiment, the ACE could move that regiment anywhere on the peninsula in under eight hours.¹³ Although the MEF would not anticipate fighting as a full MAGTF for more than a week, the 3d

MarDiv is positioned to reinforce the line or fill a gap. The support of the ACE, combined with the geography of the Korean peninsula also facilitates the use of each regiment separately, or as an operational reserve. (See Appendix C.)

An often-mentioned shortfall of the current ACE is the so-called “gap” between the range of helicopters and the range of tiltrotors. While this shortfall exists when supporting a long-range raid, the above vignette illustrates that the gap is less evident in heavy, conventional conflict. Once the division is ashore, the distances on the peninsula are supportable by helicopter. Thus, the F-35B, legacy tactical aviation assets, the AH-1W/Z, and the UH-1Y provide aviation fire support until the MEF’s artillery and tank assets are ashore.

This vignette illustrates the role of the MV-22 as an operational connector and the relevance of today’s ACE to future war. The aircraft’s ability to take disaggregated combat formations from shore and/or sea-based sites and quickly concentrate them on an objec-

tive, ready to fight, is unprecedented. Opponents of this concept may attack this plan as vulnerable to poor weather, but the operational design mitigates this detractor when used as a fire brigade and in the defense.

Weather is unpredictable and could potentially cause havoc with a force moving by air to a tactical zone; however, this operation is not an insert into direct enemy contact. Rather, the MV-22B repositions large numbers of troops from a position of relative safety in the rear (in this case in a separate country and the Sea of Japan) and moves them to an airfield (Busan, Saechon, and Pohang) for movement. Thus, the MV-22B serves as an operational asset, rather than a tactical asset. Each of the airfields identified above is capable of recovering and launching aircraft in all but the worst weather conditions. After arrival at the airfield, there are several options for moving the troops to their tactical areas of responsibility. Worst case, subsequent movement could be executed via foot or whatever transportation was available (cabs, civilian

vehicles, and buses); best case, these forces could be moved via Korean or 8th Army vehicles from the assembly area to their line of departure. Thus, all but the worst weather patterns do not inhibit this operationally significant movement. Once III MEF deploys its tiltrotor mobile forces, the operational artist—the III MEF CG—now has more combat power to employ in the defense. This combat power is impossible without tiltrotor mobile formations.

Defensive Capability

In the defense, the tiltrotor provides the commander with flexibility and speed from long distances. Compared to the enemy, a reserve with such vast range and speed advantage is decisive in action and asymmetric in combat power. In WWI, divisions were designated as a reserve and positioned near the front, outside of the enemy’s artillery range, ready to occupy the second or third line defenses. Operational reserves supported armies with troops who used trains for operational movement, then

MEB Fire Brigade vignette

Formation+	Miles	Unit Assigned	Aircraft sorties to move formation*	Aircraft assigned	Surge rate	Sustained rate	Miles	Airspeed	Hours per wave \$	Minutes per wave	Total number of waves at the surge rate^	Hours to complete movement @ surge &	Total number of waves at the sustained rate ^	Hours to complete movement @ sustained &
Generic														
squadron	100													
Battalion	1000	VMM	42	24	19	16	100	240	0.8	50.00	3	2.5	3	2.5
Regiment	3200	MAG	133	24	19	16	100	240	0.8	50.00	7	5.8	9	7.5
Marines														
Camp Courtney to Pusan														
	525													
Battalion	1000	VMM	42	30	24	20	525	240	4.4	262.50	2	8.8	3	13.1
Regiment	3200	MAG	133	30	24	20	525	240	4.4	262.50	6	26.3	7	30.6
Futenma to Saechon														
	530													
Battalion	1000	VMM	42	30	24	20	530	240	4.4	265.00	2	8.83	3	13.25
Regiment	3200	MAG	133	30	24	20	530	240	4.4	265.00	6	26.50	7	30.92
MEB afloat to Pohang														
	135													
Battalion	1000	VMM	42	36	29	24	135	240	1.1	67.50	2	2.25	2	2.25
Regiment	3200	MAG	133	36	29	24	135	240	1.1	67.50	5	5.63	6	6.75

\$ This number is miles/airspeed doubled (to get the aircraft to the zone and back to its origination).
+ Formation strength is derived from MSTP's 5-0.3 MAGTF Planner's Reference Manual. The author added numbers from the notional MEB, Division, Battalions and rounded up.F10
* This is determined by dividing the number of Marines by the number of seats in the aircraft
^ This is determined by multiplying the sortie rate by the number of squadrons in the MAG, rounded up.
& This number indicates the number of hours that will be required to lift the entire formation to their intended destination.

Appendix C.

marched to the sound of guns. Thus, the speed and concentration of train movement paired with subsequent short marching distances allowed the appropriate reserves to reinforce formations reeling from an enemy's attack, preventing the breakthrough.

Arguably, German breakthroughs during the spring 1918 offensives were less of a German success and more of an Allied failure because the Allied units were too far back and could not reach the point of penetration.¹⁴ The responsiveness of the operational reserve is crucial to the health of the defense. Granted a tiltrotor mobile formation, the operational commander's capability to deploy his reserve quickly and over a comparatively long distance creates a combat asymmetry.

Contrasting with WWI reserves, WWII commanders placed reserve echelons further back due to the truck mobility of the reserve force and the air threat. However, the concept of "two up, one back" prevailed. Tiltrotor mobile formations break this paradigm. Tiltrotor mobile formations conceivably only require a reserve at the division or army level, increasing economy of force while simultaneously increasing the speed at which the reserve moves into position to counterattack. The response time for most reserves, generally division elements, was several days until the combat formation was fighting in formation. The tiltrotor mobile formation has the capability to maneuver a division in about a day.

*Belarus, Eastern Front, 2022: I MEF is the U.S. 3d Army's operational reserve. From their position outside of Brest, I MEF ACE, with six VMMs, is ready to move Marines to the front, which stretches from Riga in the north to Odessa in the south. Each of the 2d MarDiv's regiments stages east of Brest oriented north, south, and east. Overall, division response time to a penetration near Riga, Latvia is, 22 hours; response to eastern Belarus, near Kursk, is under 35 hours; finally, response time to Odessa, in southern Ukraine, is 33 hours.*¹⁵ (See Appendix D on next page.)

Such a scenario is interesting from several perspectives. First, tiltrotor mobility covers ranges that in WWII

sheltered several army fronts. Second, tiltrotor mobile forces respond more quickly than WWII reserve divisions even though the distance is vastly larger than its historical counterpart. Third, this unique capability supplies the resource needed most during a conventional defense, the fighting manpower of a division, quickly; its guns and heavy equipment can move to the defensive position later. While blunting the enemy's tempo and freeing up reserves at lower levels, the reserve formation with tiltrotor mobility provides two more advantages to the defense—increased operational security and tempo.

Conceivably, an operational reserve might be able to support more than one army, although the wisdom of this would be dependent on the situation and a thorough cost-benefit analysis. Reducing reserve requirements because of increased flexibility and responsiveness frees formations to fight creating an additional combat asymmetry allowing a smaller defending force to be employed more economically. Further, tiltrotor mobile formations allow the operational commander to use his forces more efficiently—centralizing his reserve elements location, or dispersing them, or concentrating dispersed elements later, while simultaneously reducing their response time.

Historically, the desired response time for operational reserves is about 24 hours.¹⁶ A tiltrotor mobile brigade assigned as the operational reserve can move 390 nm in 22.8 hours. This formation is not tied to roads and can arrive at an assembly area or can be inserted close to the decisive point in combat formation.

Comparatively, according to the *MAGTF Planner's Reference Manual*, an armored or mechanized brigade reserve transits an average of 31.7 kilometers (17.1 nm) per hour during a tactical road march.¹⁷ From 390 nautical miles, the motorized reserve's lead trace, not the entire combat formation, would just reach the battle in 22.8 hours. While most armored or mechanized operational reserves are closer, closer proximity requires more brigades assigned as operational reserves, underscoring the economy of force created by tiltrotor

mobile capability. The tiltrotor mobile combat formation responds quickly, at greater distances, without being tied to the road network.

While the U.S. (and the Marine Corps in particular) maintain a monopoly on tiltrotor mobility, the use of tiltrotor mobile forces as a reserve strengthen the defense simply based on their battlefield presence. *The advantage that they promise is theoretical prior to their employment and overwhelming after their employment.* Because the tiltrotor mobile force's speed provides quick reinforcement anywhere on the line, theoretically, the defending commander's army is stronger at all points along the line, making it difficult for the offense to gain the 3:1 force ratio historically necessary to penetrate and operationally exploit the defense.¹⁸

If two divisions are facing each other in conventional combat and one side is not required to provide a reserve due to the availability of a tiltrotor mobile reserve, then the side without tiltrotor mobile formations is at a 2:3 disadvantage, measured in battalions, over the opposing force. However, the attacker's disadvantage grows after the attack. A reserve tiltrotor mobile division, reinforcing at the point of attack, increases the defender's advantage 9:1, discouraging attack. Thus, operational reserves with tiltrotor mobile capability require the attacker to gather even more combat power to penetrate the defense in depth and still risking stalemate after the attack. Meanwhile, the attacking force must mass via foot, truck, or helicopter—requiring more time, congesting the road networks, and tipping their hand to the enemy.

Historically, operational reserves occupy second and third lines of defense; however, these lines usually remained unmanned because the forces are not available or the time to move and employ the reserve is too short. Tiltrotor mobile forces' responsiveness promises to strengthen the defense with the capability to man and defend second and third lines of a defense in depth. If the corps or army combat formation provides the reserve, divisions need not provide their own reserves. Thus, divisions freed from supplying their own reserves can occupy

Defense vignette

Formation+	Miles	Unit Assigned	Aircraft sorties to move formation*	Aircraft assigned	Surge rate	Sustained rate	Miles	Airspeed	Hours per wave \$	Minutes per wave	Total number of waves at the surge rate^	Hours to complete movement @ surge &	Number of waves @ Sustained +	Total number of waves at the sustained rate ^	Hours to complete movement @ sustained &
Generic squadron 390															
Battalion	1000	VMM	42	12	10	8	390	240	3.3	195.00	5	16.3	5.18	6	19.5
Regiment	3200	MAG	133	72	58	48	390	240	3.3	195.00	3	9.8	2.76	3	9.8
Brigade	7200	MAG	300	72	58	48	390	240	3.3	195.00	6	19.5	6.22	7	22.8
Division	10000	MAG	417	72	58	48	390	240	3.3	195.00	8	26.0	8.64	9	29.3
Marines															
Brest to Riga 290															
Battalion	1000	VMM	42	12	10	8	290	240	2.4	145.00	5	12.1	5.18	6	14.5
Regiment	3200	MAG	133	72	58	48	290	240	2.4	145.00	3	7.3	2.76	3	7.3
Brigade	7200	MAG	300	72	58	48	290	240	2.4	145.00	6	14.5	6.22	7	16.9
Division	10000	MAG	417	72	58	48	290	240	2.4	145.00	8	19.3	8.64	9	21.8
Marines															
Brest to Kursk 460															
Battalion	1000	VMM	42	12	10	8	460	240	3.8	230.00	5	19.2	5.18	6	23.0
Regiment	3200	MAG	133	72	58	48	460	240	3.8	230.00	3	11.5	2.76	3	11.5
Brigade	7200	MAG	300	72	58	48	460	240	3.8	230.00	6	23.0	6.22	7	26.8
Division	10000	MAG	417	72	58	48	460	240	3.8	230.00	8	30.7	8.64	9	34.5
Marines															
Brest to Odessa 430															
Battalion	1000	VMM	42	12	10	8	430	240	3.6	215.00	5	17.92	5.18	6	21.50
Regiment	3200	MAG	133	72	58	48	430	240	3.6	215.00	3	10.75	2.76	3	10.75
Brigade	7200	MAG	300	72	58	48	430	240	3.6	215.00	6	21.50	6.22	7	25.08
Division	10000	MAG	417	72	58	48	430	240	3.6	215.00	8	28.67	8.64	9	32.25
Marines															

\$ This number is miles/airspeed doubled (to get the aircraft to the zone and back to its origination).
+ Formation strength is derived from MSTP's 5-0.3 MAGTF Planner's Reference Manual. The author added numbers from the notional MEB, Division, Battalions and rounded up.F10
* This is determined by dividing the number of Marines by the number of seats in the aircraft
^ This is determined by multiplying the sortie rate by the number of squadrons in the MAG, rounded up.
& This number indicates the number of hours that will be required to lift the entire formation to their intended destination.

Appendix D.

the second and third lines of defense, further reinforcing the defense in depth. This asymmetric capability maximizes the army commander's forces, especially when the enemy force does not have a tiltrotor mobile capability.

Defensive tiltrotor mobile forces mitigate common sustainability issues associated with moving large combat formations long distances. Employed in the defense as an operational reserve, the tiltrotor mobile force falls in on an existing joint or coalition defensive system. Artillery and air support are previously established, thus a tiltrotor mobile force is simply using its speed and range to support more of the battlefield while remaining dispersed and ready for combat.

Due to its distance from the front and its capability to quickly aggregate from dispersed locations, the enemy will have a hard time "seeing" a tiltrotor mobile reserve's movement. When the enemy does see decisive movement, it is too late. The enemy cannot mass against the reserve without knowledge of its employment. On the other hand, the employment of a tiltrotor mobile re-

serve happens too quickly for the enemy to mass effectively.

A final advantage to tiltrotor mobile formations is the reduced requirement on the road network. During periods of heavy combat, refugee populations trying to leave the area saturate road networks near the front. A motorized operational reserve requires the same roads for movement toward the front, but the tiltrotor mobile operational reserve does not. In poor weather, the tiltrotor mobile force can use local airfields to move close to the objective before marching cross country to their defensive or counter attack positions. In good weather, the tiltrotor mobile division can land at points advantageous to the commander's scheme of maneuver, further increasing the speed of deployment for a tiltrotor mobile operational reserve. This key advantage also translates to an asymmetric offensive capability for the side wielding a tiltrotor mobile force.

Offensive Capability

Race to the Swift notes that helicopters "can move dispersed and fight concentrated."¹⁹ The MV-22B is not a

helicopter, but the concept holds. Tiltrotors "can move dispersed and fight concentrated" at greater distances from the forward edge of the battle area (FEBA), and the dispersion of combat formations make tiltrotor mobile forces difficult to observe until they mass decisively. Consider the use of tiltrotor mobile forces on the Mediterranean battle space in WWII. Tunis, Sicily, Corsica, Sardinia, and Malta are five viable options for staging combat divisions, which are easily within MV-22B range of central Italy. Malta and Tunis, the most distant points, are less than one and a half hours of tiltrotor flight from central Italy.

Historically, air-delivered forces have some drawbacks. Dispersion during the drop encumbers airborne troops, short ranges hinder helicopter troops, and the requirement to use roads and trafficable terrain impedes motorized troops. Tiltrotor formations harbor an inherent time advantage over other truck or airborne troops as they do not have to load trucks and convoy to an assembly area on roads and over terrain. Moreover, the tiltrotor mobile forces inherently reduce and avoid the congestion on the road

network that is historically prevalent during operational movements. While refugees, casualty trains, and defeated formations are typical problems for motorized troops moving into the attack, tiltrotor mobile formations do not have to fight through this chaos to bring their combat power to bear. Tiltrotor mobile forces can land on airfields, roads, railroads, or in any area where the commander wishes it to assemble. Motorized troops, on the other hand, are bound to the road network—narrow, poorly engineered, or missing.

The MV-22B allows dispersed troops to conduct a bold move on the enemy's flank or rear, pressuring the enemy *from behind while attacking back toward the FEBA*, a "crackback" attack. The crackback concept envisages a tiltrotor mobile force attacking enemy formations in conventional defensive positions. The crackback force inserts between the defense's operational reserve and the defensive front line attacking back toward a friendly holding force, which is attacking simultaneously. The tiltrotor mobile force is the hammer; the holding force is the anvil.

The defense in depth is viable because of the operational reserve, thus the crackback attack is mainly a problem of defeating the operational reserve simultaneous with the attempt to penetrate the defense. There are several methods of employing a tiltrotor mobile division in such an attack. In channelized terrain, the division could designate two regiments as the assault element while a regiment delays the arrival of the defense's operational reserve. A regiment defending defiles, which are avenues of approach to the main defensive line, could hold up a division for a decisive period with only Javelin missiles and air support.

In open terrain, the tiltrotor mobile division has two options for conducting the crackback attack. If the enemy's operational reserve is in close proximity to the defensive line, the tiltrotor mobile force could simply assault the operational reserves in bivouac or column before they can interfere with the breakthrough. The tiltrotor mobile division fixes the operational reserve while the breakthrough force flanks the opera-

tional reserve, fundamentally defeating the defense in depth. Alternatively, if time was on the side of the attacker, the tiltrotor mobile force could assault the enemy's rear area fast enough that the breakthrough will occur before the operational reserve can react leaving the main breakthrough force to deal with an off-balance operational reserve after it has conducted a passage of lines with the breakthrough force.

The crackback attack creates a combat asymmetry due to the attack's geometry and the character of the forces pitted in the fight—light infantry attacking service support positions from behind or light infantry attacking an operational reserve in bivouac or column on the road. Even if the operational reserve is able to deploy and fight, they are engaged by/with the tiltrotor mobile force and the defense in depth is at least degraded, if not defeated. The movement of a division into a proximate position behind enemy lines will require the defense to turn, *but if the enemy turns, they face defeat from the FEBA force—enabling the breakthrough.*

The MV-22B is a technological breakthrough.

Artillery positions are also vulnerable to this method of attack, as they have limited capability against closing infantry when unsupported by infantry units of their own, especially if they are engaged while facing the wrong direction. The artillery focused on supporting the fighting divisions is surprised and at a positional disadvantage.

The crackback attack has cascading effects for the breakthrough. A crackback operation facilitates breakthrough operations and employs infantry at an advantage over their enemy while they need minimal fire support. Largely ignored throughout history, the crackback attack is feasible for an amphibious force attacking an enemy flank tied to a coast. The sea is maneuver space for friendly forces, enabling forcible entry. The MV-22B adds speed,

surprise, and shock to the crackback attack, facilitating an asymmetric employment of combat power—infantry against artillery.

Joint operational commanders looking for a forcible entry capability to break an enemy's defense would greatly benefit from a MEB capable of conducting tiltrotor mobile assaults with Marine infantry. After coalition naval assets establish local sea superiority, the MEB could conduct amphibious operations in the breakthrough area. An amphibious assault originating from 225 nautical miles southwest of Inchon is a 2-hour round trip for the MV-22B. Thus, a tiltrotor mobile MEB could move its infantry ashore in approximately 24 hours. The enemy is reacting to the attack at the front and to the attack on his operational reserves. Conversely, the operational artist wielding the tiltrotor mobile force chooses the timing and place of the attack.

The tiltrotor mobile formation promises other advantages in the offense. Following a breakthrough, tiltrotor mobile forces provide the commander a fresh means for conducting an operational exploitation. Richard Simpkin uses the analogy of a nutcracker to describe operational exploitation.²⁰ The conceptual nutcracker begins with a breakthrough, develops it with an armored penetration, followed by a light armor thrust, and finally, a rotary-wing thrust.²¹ However, the MV-22B has a capability vastly different from rotary-wing platforms. Tiltrotor mobile forces can also engage reserve echelons of the enemy force or seize secondary defensive lines, key lines of communications, bridges, railroad junctions, or airfields. The conceptual nutcracker is intact; however, tiltrotor mobile forces simultaneously disrupt enemy combat power and hasten his defeat.

Rotary-wing platforms are not obsolete; they complement the tiltrotor's capability to go even deeper, making the problem more complex for the enemy by cutting lines of communication and decapitating C² structures at several echelons with aerial assault forces. Operational exploitation with tiltrotors is both sustainable and decisive when a combat formation has seized an ad-

vanced airfield, opening an air hub for sustainment of the exploitation.

A tiltrotor mobile force is particularly capable of seizing airfields, forcing the enemy to attack a light infantry formation with a strong defensive capability in Javelin missiles, 120mm mortars, and the lifeline inherent to their geographic position—the airfield. Similarly, the tiltrotor mobile forces could seize rail junctions or bridges, denying the enemy critical mobility links, or preserving them for use by friendly mechanized or motorized forces conducting the operational exploitation.

A final offensive capability of tiltrotor mobile forces is their capability in pursuit. Tiltrotor mobile forces provide the commander a means for even the most exhausted combat formation to move long distances, quickly. Alternatively, tiltrotor mobility provides a formation formerly in reserve as a fresh formation in pursuit of the enemy. For the first time in the history of warfare, pursuit may involve fresh troops at the decisive point, due to their rapid movement in the MV-22B and the range from which the formation embarks. The combination of fresh troops with MV-22Bs may be decisive in cutting off the enemy's retreat and their final destruction.

Conclusions

A trained and equipped tiltrotor mobile force is a revolutionary capability on the battlefield. Once developed, a trained and equipped tiltrotor mobile force provides strategic leaders a responsive deterrent option when conflict is likely or imminent. Additionally, the tiltrotor mobile force can provide flexibility in the defense with unprecedented speed and range. During decisive offensive operations, tiltrotor mobile forces can attack the enemy in the most advantageous way possible, employing strength on weakness with shocking speed. A tiltrotor mobile force can conduct forcible entry from the sea provided with only local air superiority or attack an enemy's rear echelons or reserves facilitating a breakthrough.

Reconsidering the battlespace in light of tiltrotor aircraft increases the Corps' relevance in forcible entry and underscores the Corps' position as the

most responsive member of the joint force. Remarkably, this capability only requires a change in thinking and focused training. None of these concepts requires an airframe that is not in the current ACE inventory. Streamlined aviation command and control systems

A trained and equipped tiltrotor mobile force is a revolutionary capability on the battlefield.

emphasizing seamless, selectable data between the squad leader and the division commander and regular training for the MEB and the MEF develop this latent capability.

The MV-22B is a technological breakthrough. Operational concepts maximizing the mobility advantage of the MV-22B focus the Marine Corps on projecting combat power quickly in support of a coalition or joint force. Whether employed in conventional or unconventional warfare, MEF and MEB tiltrotor mobility forces provide the Marine Corps with a capability to respond with speed and overwhelming tempo in any clime or place.

Notes

1. Commandant of the Marine Corps, *36th Commandant's Planning Guidance: Innovate, Adapt, Win*, (Washington, DC: 2015), 10.
2. Originally, the CH-46E advertised the capacity to carry 17 Marines; however, during its last several operational deployments the CH-46E often was limited to 8 to 12 passengers due to age-induced engine and airframe limitations.
3. Richard E. Simpkin, *Race to the Swift*, (London: Brassey's, 2000), 57.
4. Headquarters U.S. Marine Corps Aviation, *2015 Marine Corps Aviation Plan*, (Washington, DC: 2014), 13, accessed at <https://marinecorp-conceptsandprograms.com>.
5. Bell Helicopter, *MV-22 Guidebook*, (Fort Worth, TX: 2014), 58, accessed at <http://www.bellhelicopter.com>.

6. *2015 Marine Corps Aviation Plan*, 2, 5, 7.
7. See Appendix A for the general capabilities of a six VMM ACE.
8. See Appendices C and D for a comparison of the eight VMM versus the six VMM ACE.
9. See Appendix B for a general summary of helicopter versus tiltrotor capabilities and limitations.
10. John C. Chapin, *Fire Brigade: U.S. Marines in the Pusan Perimeter*, (Washington, DC: History and Museums Division HQMC, 2000), 12.
11. Three MEB VMMs plus two Okinawa VMMs plus three CONUS VMMs equals eight VMMs total for III MEF.
12. According to *MSTP Pamphlet 5-0.3, MAGTF Planner's Reference Manual*, (Quantico, VA: 2001), 3d MarDiv consists of only two infantry regiments. The third is LAR and is not considered for tiltrotor mobility in this article. This article does consider the Hawaii-based 3d Marine Regiment as deployed to Okinawa and ready for combat operations.
13. See Appendix C for detailed calculations supporting these movements.
14. Bradley J. Meyer, "The Spring 1918 Offensives," unpublished paper, August 2008.
15. See Appendix D for detailed calculations supporting these movements.
16. G.C. Wynne, *If Germany Attacks: The Battle in Depth in the West*, (London: Faber, 1940).
17. *MSTP Pamphlet 5-0.3, IV-47-48*. This number is an extrapolation based on 12 hours of daylight and 6.5 hours of nighttime.
18. Bradley J. Meyer, *The Breakthrough Battle*, unpublished paper, August 2008.
19. Richard E. Simpkin, *Race to the Swift*, (London: Brassey's, 2000), 120.
20. Richard E. Simpkin, *Deep Battle: The Brainchild of Marshal Tukhachevskii*, (Washington, DC: Pergamon-Brassey's, 1987), 55.
21. Simpkin, 100–102.



Countering the UAS Threat

What it looks like from a joint perspective

by LtCol Jeffrey Lamport, USAF, & COL Anthony Scotto, USA(Ret)

As technology advances and the U.S. military touts the advantages of drone warfare, other countries, terrorist organizations, and criminals will continue to develop and procure low-cost unmanned aerial vehicles (UAVs). Often, these small, complex systems are equipped with cameras, laser designators, radio frequency (RF) collection devices, and/or weapons to provide battlefield intelligence and engage friendly forces. The size and composite materials used in UAV production make them inherently difficult to defeat with traditional force protection measures and short-range air defense (SHORAD) systems commonly employed by brigade and below maneuver forces.

One of the most significant uses of unmanned systems on the battlefield today is occurring in Ukraine, where both Ukrainians and Russian-backed separatists are operating UAVs in relatively large numbers. They are reportedly operating more than a dozen variants including fixed- and rotary-wing configurations, each functioning at different altitudes with various sensor packages designed to complement each other's capabilities.

The battlefield is not the only susceptible area to the effects of nefarious UAV operators. Our Nation's capital, nuclear facilities, correctional facilities, borders, and sporting venues are among targets already "attacked" with this rapidly proliferating technology. Terrorists leverage UAVs to interrupt our daily routine, while criminals defeat traditional security (e.g., fences, walls, and "no-fly" zones) to scout low-risk routes for illegal alien and drug transport across the border and contraband

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>>COL Scotto was commissioned as an air defense artillery officer through the Reserve Officer Training Corps, University of Alabama, in 1984. His key Army assignments include: the Patriot Advanced Capability Project Officer for the Directorate of Combat Developments; the Chief of Air Defense, Chief of Intelligence and the Deputy Commander for the 2nd Battlefield Coordination Detachment; Commander of the 3rd Battalion, 346th Infantry Regiment at Camp Shelby, MI. He retired from the Army in June 2014 after 30 years' service during which he served in both the Active and Reserve Components. In his civilian career, Scotto is a senior analyst, Counter-Unmanned Aerial Systems Program, JDAT, Eglin Air Force Base, FL.

delivery to prisoners. While these are not traditional military missions, DOD specialized equipment and personnel may be tasked to support civil agencies in the Defense support to civil authorities construct.

For nearly three decades, the U.S. Army and unified action partners have had the luxury of conducting ground and air operations in a virtually uncontested airspace environment. As such, development and fielding of dedicated SHORAD systems has declined and passive air defense skills have atrophied across the force. Continued UAV technology development, UAV fielding acceleration, and "bad actor" successes around the world clearly demonstrate that we are faced with a viable air threat. Leaders at all levels cannot be lulled into a false sense of security because of the small size of these UAVs. They are as effective, if not more effective, than tra-

ditional manned aircraft (or even stealth aircraft) in reconnaissance, surveillance, and target acquisition precision attack and indirect fire support. Troops must assume they are being watched and targeted and take appropriate action to minimize mission impact.

What Leaders and Soldiers/Marines Need to Know

UAVs can create serious problems for maneuvering or static forces. Their size, composite construction, small radar and electromagnetic signatures, and quiet operation make them difficult to detect and track. Their low-cost, lethality, and rampant proliferation make them an air threat that we can no longer ignore. Some factors contributing to the counter-unmanned aircraft system (C-UAS) challenge are:

- a. Small, slow, and low profiles provide significant challenges to traditional

air defenses. Conventional systems often “filter” out these tracks to avoid confusion with clutter, large birds, and aerostats. Systems optimized for this threat often forfeit effectiveness against other target sets (e.g., manned aircraft, cruise missiles, rockets and mortars, and ballistic missiles).

b. Reduction of dedicated SHORAD units to maneuver brigades creates potential gaps in air defense coverage.

c. Soldiers/Marines are “numb” to UAVs. Recent combat experience in Iraq and Afghanistan indicates troops may be highly accustomed to friendly UAVs and, therefore, less likely to be concerned about them flying overhead and less inclined to actively search for UAVs operating in their battlespace.

d. Many Soldiers/Marines lack UAV recognition training. Without training, it is extremely difficult to observe characteristics visually, which can easily distinguish threat UAVs from friendly systems supporting the mission. This issue is compounded by the ever-increasing proliferation of new UAV designs and off-the-shelf systems sold to multiple countries.

e. U.S. Army and joint doctrine have not kept pace with the threat.

C-UAS training is not a priority for most units, and many units have not updated plans to address the hazards they present adequately.

Understanding the Threat

UAVs pose a significant threat to safety and mission accomplishment by providing the enemy critical intelligence such as a unit’s precise location, composition, and activity. They may also provide laser designation for indirect fires or direct attacks using missiles; rockets; small “kamikaze” munitions; or chemical, biological, radiological, and nuclear weapons. Some payload configurations can contain radar and communications jamming or other cyberattack technology. UAVs may operate autonomously with little or no RF signature or under pilot control using a ground control station (GCS). The following list describes threat UAS characteristics:

a. Typically comprised of a UAV, a sensor and/or weapons package,



Employment of UASs are limited only by our imagination and resource priorities. (Photo by LCpl Brianna Gaudi.)

GCS, and communications equipment to support navigation and data transfer.

b. Available on the open market, often “clones” of U.S. systems, and cheaper than stealth.

c. Often rely on GPS for guidance/targeting and use multiple RF bands including frequency modulation (FM), ultrahigh frequency (UHF), satellite communications (SATCOM), and cell phones.

d. Small UAVs have a limited range and flight duration, meaning they are frequently operated from within the observed unit’s battlespace.

Threat Mitigation

Conducting a comprehensive air threat analysis as part of the intelligence preparation of the battlefield (IPB)/intelligence preparations of the environment (IPE) while utilizing any resources available helps mitigate risks



The MQ-9 Reaper. (Photo courtesy of Air Combat Command.)

associated with any air threat. Defeating the UAS threat begins with the planning process:

- a. Understand the UAS threat. Conduct a deliberate analysis to ascertain the potential UAV type and GCS likely to be employed, understand their capabilities and employment doctrine, predict where and how they will be employed, and identify their most likely targets.
- b. Honor the threat. Ensure there are adequate/appropriate resources to counter UAS effects in and around your unit's battlespace. If specialized sensors are not available, be certain to establish "air guards" to scan the airspace continuously. Ensure you understand and are in compliance with the area air defense plan (AADP).
- c. Maintain disciplined flight operations. Although flight clearances for friendly UAVs are sometimes perceived as untimely or overly restrictive, they are critical to ensuring other friendly forces in the area do not engage your UAV. Ensure flights are in compliance with local airspace coordinating measures to aid in proper identification.

C-UAS Considerations

UAVs are the air threat of the next fight. UAS technology development and employment around the world demonstrates a relevant and viable air threat. Air defense artillery liaison officers cannot be lulled into a false sense of security because of the relatively small size of these platforms. Air defense artillery liaison officers should consider the following when working with/within the integrated air defense system:

- a. Take an active role in AADP development to ensure it adequately mitigates threats to the maneuver force.
- b. Suggest UAV-specific rules of engagement (ROE) when there is a reliable ability to distinguish unmanned platforms to maximize attrition of low-regret targets. Identification and engagement authority for low, slow, and small UAVs should rest at the lowest possible tactical level.
- c. Ensure criteria for "hostile act" and "hostile intent" specifically address UAVs are written in terms any Soldier/Marine can understand and

adequately address ground troop protection.

- d. Consider requesting liberal "Hostile" symbology use and identification forwarding through the air defense and airspace management cell to the common operational picture.
- e. Ensure all joint data link contributors utilize a common set of track amplification data (i.e., air type, air platform, and air activity) to categorize the UAV target set.

National Capital Region and Inter-agency Support

Critical assets within the continental U.S. have already been "attacked" by nefarious UAV operators. While no deaths have been attributed to these

UAS development and fielding is gaining momentum with our adversaries ...

UAVs, it is only a matter of time before these systems are directly or indirectly responsible for loss of life or interference with critical infrastructure in the homeland. In some circumstances, Title 10 military personnel and equipment may be required to operate subordinate to civil-military organizations, and the following are considerations for working in this environment:

- a. Per *Department of Defense Directive 3025.18 (DODD 3025.18)*,¹ DOD resources may be used in an immediate response to prevent loss of life, mitigate damage to infrastructure, or in support of mutual aid agreements (Title 42 USC) to address certain pre-coordinated conditions or as directed by the President as part of the national response framework.
- b. All DOD activity within the homeland is conducted in support of a primary Federal agency to minimize impacts to the American people, infrastructure, and environment.
- c. It is unlikely that most organic communications systems will be compati-

ble with the civil organization(s) being supported, thereby increasing reliance on knowledgeable liaison officers.

- d. Missions may include air defense coverage for the National Capital Region, key power/communications infrastructure, national borders, sporting arenas, political conventions, and presidential inaugurations.
- e. Technology countering the UAS threat within our own borders must be in compliance with existing Federal Aviation Administration and Federal Communications Commission regulations. Military planners cannot assume they are exempt from fines or prosecution for violating civil airspace or spectrum management policies in the interest of thwarting a potential hazard.

Conclusion

UAS development and fielding is gaining momentum with our adversaries, and with each new innovation, they are becoming more capable than the previous generation. We must assume targets of vital interest are being watched and targeted. UAS operations are not limited to the battlefield; they have already been used to disrupt our daily routines at home and violate traditional security measures surrounding our borders, prisons, nuclear facilities, and premier sporting venues. Not all may be traditional military missions; civil authorities will also benefit from our research and analysis, leverage our technology, and request assistance defending airspace around sensitive domestic targets. Leaders across all warfighting functions must take an active role in educating themselves and training their units to defeat this threat.

Note

1. Department of Defense, *DODD 3025.18, Defense Support of Civil Authorities*, Change 1, (Washington, DC: September 2012), 21.



Countering Commercial Drones

Three techniques to get after the problem

by LtCol Matthew A. Reiley

You would have to be living in the Unabomber's old cabin for the past couple years to not be aware of the exponential increase of commercially available small unmanned aerial systems (C-sUAS) being used recreationally, as well as by state and non-state actors. These sUAS have been observed dropping radiological material on the doorstep of the Japanese Prime Minister,¹ used by ISIL in Syria and Iraq,² and have provided targeting solutions that enabled Russian artillery units to wipe Ukrainian armor formations off the map.³ So ... what options does the Marine Corps have to get after this problem, particularly in phase 0 environments? As you might have guessed, the Marine Corps has little to no organic capability against this threat. This needs to change, and quickly! I'd propose the Marine Corps pursue three different vectors to get after this C-sUAS problem. This triad should include: electronic warfare (EW)/cyber capabilities built into our information operations (IO) and radio battalion (RadBn) detachments; directed-energy weapons; and countering sUAS with our own sUAS. Some of these options are low cost, others require a more significant investment, and all require immediate consideration if we are to enable our deployed units to protect themselves from this emerging threat.

Fundamentally, when we frame the C-sUAS problem, the issue is less about the quadcopter above your head and more about the adversary controlling it. Employing EW/cyber is a four-step process that involves detecting the drone, discerning what the drone is looking at, determining the location of the drone's

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controller, and disrupting or destroying both the controller and the drone (as appropriate).

One might say the detection part is easy because you can often see the sUAS. However, when the sUAS is operating at night, in an urban environment, while employing an infrared (IR) camera and the platform is too low and

quadcopter fly over officer housing in the vicinity of Del Mar. Were they collecting against the MEF or "creeping" on people on the beach? In order to discern whether the sUAS is a threat, you need to collect, process, and analyze the datalink. This is particularly critical in a Phase 0 environments because units always have the right to force protection, but it is unlikely the deployed unit will be allowed to destroy every recreational sUAS in their vicinity absent a compelling justification.

Once it is determined the drone is collecting against the deployed unit, the immediate desire is likely to kill

sUAS have been observed dropping radio-logical material on the doorstep of the Japanese Prime Minister, used by ISIL in Syria and Iraq, and have provided targeting solutions that enabled Russian artillery units to wipe Ukrainian armor formations off the map.

slow for organic radars to see it, you are now at a pretty significant disadvantage. Fortunately, each sUAS has a distinguishable electronic signature—think radars and operational electronic intelligence which, when focused with the right electromagnetic spectrum observation tools, can cue an information operations or radio battalion detachment to transition to step two of the EW/cyber C-sUAS technique.

Not all sUAS in your vicinity will be a threat to the MAGTF. Just the other day, Camp Pendleton, had a small

it. The problem with this approach is that if you kill a \$600 DJI quadcopter, it is reasonable to conclude the adversary can afford another one, and you still do not know where he is located. The next step is to find and fix where the sUAS controller is located. For the overwhelming majority of sUAS, the controller will be within a couple miles of the drone. This assumption is based on the limitations of the most common command and control (C²) links (mostly WIFI/802.11) and the typical drone's battery power. Provided



Drone technology is readily available. (Photo by Cpl Logan Snyder.)

the drone is being controlled manually, it will require a continuously transmitting signal from the controller, which is exceptionally vulnerable to being geo-located. This continuous transmission provides opportunities for ground- and air-based resources to geo-locate the controller's location precisely enough to disrupt, deter, or attack the controller as appropriate.

The last EW/cyber step is to disrupt or destroy the platform. There are a variety of EW and cyber techniques that can break or seize control of the C² link. In the interest of keeping the discussion unclassified, I'll refrain from going into detail on the specifics (google "hijack" and "drones" to learn more); however, I will touch on the authorities required to employ these techniques. The authority to deliver EW/cyber effects must be pre-approved and delegated to the MAGTF commander before he commences operations against a sUAS-using adversary. Seeking such authorities after a drone has presented itself is not a viable option; it will simply take too long. Getting these permissions, particularly in Phase 0 environments, will require Marines to demonstrate a high degree of EW/cyber proficiency during major exercises to ensure these Marines can employ these techniques while simultaneously containing their effects.

Using directed energy weapons to destroy/disrupt small drones is another technology the Marine Corps should pursue. Limited range directed energy weapons can provide another solution for the deployed user to disrupt drones either through "dazzling" the camera or simply cooking a rotor engine and forcing it to crash. For example, Boeing's Compact Laser Weapon System (CLWS) is advertised to destroy a Group 1 UAS at a max range of three kilometers and blind out to seven kilometers. Boeing demonstrated this capability at BLACK DART 2015.⁴ Once again, however, directed energy weapons will require pre-approved authorities to be relevant to the deployed user.

The last C-sUAS technology we should pursue embraces the concept of "fighting fire with fire" and employing our own, slightly larger, drones. Drones are appealing for our adversaries because they are cheap and easy to use. We can use this same low-cost approach to protect the force. The Tokyo police recently activated a drone squad that employs large quadcopters with nets to counter an emerging drone threat there.⁵ With a relatively minimal commitment of time, training, and resources, this solution could be available to Marines within a few months. This strategy is particularly appealing because it costs little, likely requires little to no permission

from a higher headquarters to employ, and works across the range of military operations for deployed MAGTFs and their subordinate units.

Proliferation of drones will continue, possibly at the exponential rate typical of other information technology-enabled innovations. The threat they represent in hostile hands, already significant, will become ever more pervasive. This trend is compounded by the increasingly accurate weapons systems available today to near-peer competitors and projected to be available to actors across the range of military operations within the very near future. It is imperative the Marine Corps start integrating C-sUAS themes into *every* exercise scenario and empower deployed commanders with the tools and authorities to decisively address this emerging sUAS threat and protect the force.

Notes

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21st Century Maneuver

Mastering maneuver spaces

by The Ellis Group

What is perhaps the longest armored raid in military history occurred in August 2014 in Eastern Ukraine. Under then-Col Mikhail Zubrowski, the Ukrainian 95th Air Assault Brigade, which had been reinforced with armor assets and attachments, launched a surprise attack on Separatist lines, broke through into their rear areas, fought for 450 kilometers, and destroyed or captured numerous Russian tanks and artillery pieces before returning to Ukrainian lines. They operated not as a concentrated brigade but rather split into three company-sized elements on different axes of advance. Col Zubrowski is a graduate of the U.S. Army Command and General Staff College and modeled the attack on a similar raid that occurred during the American Civil War.¹

The story of Zubrowski's raid demonstrates that certain principles of warfare hold true across military history. Since that time, however, the conflict in Ukraine has solidified. Russian-supported Separatist forces operate advanced capabilities, including electronic warfare (EW) and persistent intelligence, surveillance, and reconnaissance (ISR) enabled by advanced commercial off-the-shelf (COTS) unmanned aircraft systems. Ukrainian positions have been reduced to a lengthy series of underground trenches reminiscent of World War I. During that conflict, the ubiquity of indirect fire artillery produced stasis in the lines through sheer imprecise volume of fire. In Ukraine, that same stasis is the result of precision-guided munitions married to persistent ISR that renders volume of



Maneuver sets us up to attack the enemy from an advantageous position. (Photo by LCpl Juan A. Soto-Delgado.)

fire unnecessary. No Ukrainian offensive has been able to repeat the success of Zubrowski's maneuver.

Maneuver is the core of our maneuver warfare philosophy. It is also the core of our force structure: every MAGTF is built around a maneuver unit. Maneuver, however, is not just limited to a spatial definition, and maneuver units are certainly not the only units required to execute maneuver warfare. Maneuver is described in *MCDP 1, Warfighting*, as any means of attacking from a position of advantage.² The original *FMFM 1-3, Tactics*, identifies two general types of maneuver: in space and in time.³ The *Marine Corps Operating Concept (MOC)* identifies four ways to gain advantage: psychologically, technologically, temporally, and spatially.⁴ Maneuver warfare means that we favor

any indirect or non-linear method to gain an advantage, whatever means by which we maneuver. In the years since the adoption of maneuver warfare as the Marine Corps' warfighting philosophy, spatial maneuver has been favored. In the 21st century, however, Marines must also master alternative maneuver spaces. What does maneuver mean in a strategic environment where every movement can be detected?

Strategic Context

To understand maneuver in the 21st century, we must examine it against a backdrop of the strategic environment in which it will be employed. The current and near-future operating environment has been described in the *MOC* and in this series of articles as being characterized by complex terrain, technol-

ogy proliferation, information warfare, EW (“The Battle of the Signatures”), and an increasingly contested maritime domain.⁵ These trends offer not only threats but also opportunities for maneuver—for us and our adversaries.

The proliferation of advanced weaponry and technology to even non-state actors is clearly an opportunity for our adversaries and, thus, a threat to us. Access to high-end weapons systems not only allow adversaries to mitigate our technological advantages but, due to other factors such as their willingness to accept or inflict civilian casualties, allows them access to advantages barred to us.

The global digital media environment enhances an already existing aspect of the nature of war, information, and influence. Even high-end peer competitors, like Russia and China, now routinely employ military deception in any action because of the potency of information warfare. EW will no longer be an option but will necessarily be central to large operations, both offensively and defensively.

Complex terrain limits traditional forms of maneuver but allows other forms. We see the rise of megacities, especially in the littoral environment, as a challenge and a limitation to maneuver. Adversaries, however, see megacities and their concentration of civilians as terrain to exploit in an attempt to negate our fire support and airpower advantages. Cities, however, are just one form of complex terrain; arctic, mountain, and jungle environments will see more conflict in the 21st century.

Lastly, because of the wide availability of advanced weapons systems, fortifications are returning to wide use, and every environment is contested. A network of trenches that would not be out of place during World War I now exists in Ukraine, and both sides in the ongoing Battle of Mosul are using fortification techniques. This trend reduces the ability of forces to employ spatial maneuver and places a new premium on armor and combat engineer units.

These trends combine to form two major conclusions. First, the line between conventional and irregular tactics is all but dissolved. The non-state actor

known as the Islamic State holds territory that it won with our own weapons, and the Russian military in Ukraine employs as much, if not more, deception and information warfare as any terrorist organization. “Hybrid” warfare is no longer a special designation, but simply the normal form of warfare. Secondly, the combination of technology proliferation, automation of weapons, and constant aerial surveillance make the modern and near-future battlefield more dangerous than it has ever been, with the one exception of World War I.

Tactical Trends

These trends add up to a battlefield where protection and mobility are still important, but the need for units to operate in a dispersed and decentralized manner is vital. This is not to say that massing in order to concentrate combat power against enemy vulnerabilities will not happen or will not need to happen. It will. Rather, units will need to operate on a dispersed base routinely and only concentrate as the mission and situation dictates. This means that a maneuver unit’s agility—its ability to transition quickly between concentration and dispersion—will matter more than its ability to do one or the other.

Consequently, legacy command and control (C²) hierarchies will be increasingly ineffective in modern combat. Because of both advanced cyber and EW that can disable the means of C²—communications—and the high tempo of tactical decision making required to survive the battlefield, decentralized C² will become a matter of survival. When a maneuver unit’s survival on the battlefield depends on quick concentrations and dispersions, C² hierarchies designed solely for top-down command will no longer be feasible. Some measure of hierarchical C² necessarily remain, especially in non-maneuver units. The point is not to entirely favor one or the other, but our C² system is no longer “one size fits all.” More organic and flattened C² will need to be adopted based on battlefield realities.

A high tactical tempo and greater dispersion must be enabled by organic firepower at the lowest levels. Maneuver forces need the capability to use fire and

maneuver without losing tempo and, thus, initiative. In other words, this means utilizing combined arms without sacrificing the ability to continue to move in space and/or time. This requires an organic combined arms approach down to the squad level—a mix of direct and indirect fire weapons, including high explosives such as grenades, out to roughly 800 meters. There will still need to be an ability to call for fire support from outside agencies and battalion/regiment mortars, but tempo should be sacrificed to leverage inorganic support only when absolutely necessary. A stationary unit is a detected unit. This translates to the greater use of shoulder-fired missiles and/or rockets by infantry forces and places a premium on combat engineering at the bleeding edge of the fight.

Lastly, to be successful on this modern battlefield, sustained investment needs to be made in maneuver forces, particularly infantry units. As firepower and ISR drives a greater need for dispersal of smaller and smaller units of maneuver, the danger to those forces of being outnumbered and defeated in detail increases. To mitigate this risk, the training and employment of infantry forces must be modernized; increasing squad-level firepower is only part of the solution. The dilemma is how to increase the capability and potency of infantry forces without overburdening them with gear. In a recent book, retired Army MG Robert H. Scales laid out a plan to do just that. In *Scales on War* (Annapolis, MD: Naval Institute Press, 2016), Scales describes numerous ways to increase infantry capabilities based on a modern, scientific understanding of the physiology of humans in combat that takes into account cognitive, physiological, and social aspects of the nature of infantry combat. In a recent issue of the *Gazette*, four infantry officers reviewed the book and offered detailed recommendations tailored to the needs of the Marine Corps. Many of these recommendations are inexpensive, or are only expensive in the short term, but still offer an asymmetric advantage that adversaries will be unable to match.

Maneuver Spaces

The technical capabilities of the



Fire support will be critical. Marines must train to maneuver fire support assets into positions to support by fire more quickly. (Photo by LCpl Juan A. Soto-Delgado.)

weapons and systems that maneuver forces can bring to bear are important, but conceptually, the most drastic change is the need to expand our idea of maneuver space. As the Nation's amphibious force, we inherently seek to leverage the sea as maneuver space. However, this is just one way by which we seek to gain advantage.

Psychological. We seek to gain a psychological advantage over the enemy by either removing his ability to react to our actions or corrupting his perception of our actions and the situation. We can accomplish the former through surprise and the latter via military deception efforts. Boldness and aggressive action also offer psychological advantages that cannot be discounted.

Technological. A technological advantage can be acquired and maintained both by ensuring that maneuver forces have both the organic equipment to outmatch their opponents (discussed above) and the ability to "reachback" and leverage inorganic support from across the MAGTF and the joint force. However, we should be wary about relying too much on technological advantages. They are always temporary as adversaries acquire similar technology or develop countermeasures.

Temporal. We gain a temporal advantage over the enemy by manipulating the relative operational tempo to our advantage and to gain and maintain the

initiative and by preserving our ability to make decisions and act upon them faster than the enemy. We mitigate the enemy's temporal advantage via counter-mobility and interdiction actions. If the enemy's temporal advantage is that he can outlast us in theater—such as is the case with insurgents in Iraq and Afghanistan—we must take steps to ensure we do not culminate or contribute to the culmination of domestic political support.

Spatial. Expanding our conception of maneuver space does not mean that achieving a spatial advantage over opponents by maneuvering against flanks, rear areas, and gaps in the opponent's system will not remain an important tool. The ability to maintain our mobility in the face of enemy attempts to diminish it, such as improvised explosive devices, is of the utmost importance.

Informational. We seek an informational advantage by exploiting various information warfare means to selectively withhold and release information. We utilize operational security to prevent the enemy from gaining an awareness of our actions and operations. We seek to gain information about enemy forces not only to assist in our planning processes but also to use it to our advantage. Information regarding enemy actions that violate the Law of Armed Conflict, for example, can be released and highlighted in order to undermine the

legitimacy of their goal among local and international audiences.

To be sure, these maneuver spaces overlap. For example, a temporal advantage allows us the ability to rapidly employ spatial maneuver, which contributes to the ability to surprise the enemy, creating a psychological advantage. Utilizing decentralized decision making assures our temporal advantage by forcing the enemy to react to increasingly inaccurate information as he is successively out-cycled. Additionally, because any enemy is a thinking and reacting entity, they will attempt to gain their own advantages in each realm as well. Evaluating the enemy system and identifying both surfaces and gaps in terms of maneuver space across these dimensions will be imperative for future fights.

21st Century Maneuver Forces

While 21st century maneuver involves more than just "maneuver forces," they remain the core of our organization and the base unit of any operation.

True light infantry forces will be a necessity on near-future battlefields. The more complex the terrain, the higher the premium placed on light infantry. As improvised explosive devices, precision guided anti-tank guided missiles, and precision ordnance continue to proliferate, the use of motorized and mechanized infantry forces will become more restricted. Since light infantry forces lack protection and rapid mobility, air assault operations will become more prevalent. Additionally, the Marine Corps needs to make innovation focused on augmenting infantry units without overburdening them an institutional main effort. Manned-unmanned teaming will be the most lucrative area of investment, but weapons systems that contribute to combined arms operations at the squad level and modern training simulators equivalent to those used to train pilots will be important as well.

That being said, the proliferation of firepower systems—both improvised and traditional—demands the MAGTF employ highly-mobile mechanized forces alongside light infantry. It is especially important for the MAGTF to have a dedicated reconnaissance/counterreconnaissance task force able to both

ascertain gaps in the enemy's array and to protect friendly vulnerabilities (see "21st Century Reconnaissance," *MCG*, January 2017). MAGTF commanders will also need a capable mechanized force to act as a reserve and to exploit enemy vulnerabilities identified by the reconnaissance/counterreconnaissance task force. Being able to transport troops via armored personnel carriers is vital to both efforts. Additionally, the options available to "upgrade" an infantry unit's mobility via vehicle transport will have to expand. Unarmored flat-bed trucks, like the MTRV, will not always be the best or even a viable option. Maneuver units will more and more often look to options such as the internally transportable vehicle (ITV), all-terrain vehicles, or other small mobility platforms. This means that infantry forces will need to be prepared to fight like dragoons (18th and 19th century units that travelled mounted on horses but fought as dismounted infantry once enemy forces were located).

Recent declarations that tank warfare is dead are false; tanks and tank warfare will remain a presence on the battlefield. Tanks themselves, however, will almost certainly evolve. Remotely-operated unmanned tanks are already in use in Iraq.⁶ With the rise of unmanned tanks, they will increasingly be employed more as a weapons system than a crew/unit. Once the unmanned tanks become common, the variety of tanks will increase. Light tanks, medium tanks, tank destroyers, and other tank concepts that were less than successful during the manned tank's apex in World War II will become more viable. Unmanned tanks designed for specific complex terrain—urban terrain for example—will be both necessary and possible. Infantry operations in megacities becomes a little less daunting if every squad leader has a "hip pocket" tank small enough to be mobile in canalized urban terrain. In the long term, a modular tank chassis can be deployed and then outfitted with weapons systems 3D-printed on the battlefield based on the real time needs of forward forces.

One way to increase the capability of maneuver units without overburdening them is to revitalize combat engineer-

ing. The habitual relationships between infantry and combat engineering units in the division should be as intimate as those between infantry and artillery, if not more so. Combat engineers bring key mobility and countermobility solutions to the lead units, and as automation and robotics advance, the capabilities of combat engineers will only increase in both capability and importance.

Lastly, the importance of mortars as the maneuver commander's "hip pocket artillery" will in no way diminish. Although precision-guided munitions will extend the range and increase the utility of mortars, especially in urban terrain, the ability to mass a high volume of indirect firepower will still play a key role in combined arms and maintaining tempo.

The Maneuver-Fires Relationship

As the characters of both maneuver and fires on the 21st century battlefield evolve, the relationship between the two will also need to evolve. Since some aspects of fire support lag behind adversary capabilities, the Marine Corps will increasingly need to maneuver to fire; fire support will require more enablers in order to be effective. Spatially, territory may have to be seized to get fire support within range of enemy forces. Maneuvering to fire will not just occur at the tactical level; Marine forces may be called upon to seize and hold territory in order to emplace anti-air defense or anti-ship cruise missiles emplacements that enable joint forces. Other maneuver spaces, such as informational and psychological spaces, will increasingly play a role and perhaps a more important role. As mentioned in "21st Century Reconnaissance," recon units will be called upon to force the enemy to react so that Marine forces can detect his positions. Marine forces will also need to prevent enemy forces from doing the same to us.

Using fires to enable maneuver will still be a key component of maneuver warfare but will be covered in detail a future article.

Conclusion

In some ways, equipping our maneuver forces—both physically and men-

tally—is the easiest way to prepare for the battlefields of the 21st century. The cost is less than even some single copies of higher-end platforms. In other ways, however, it is the most difficult. It will require innovative ideas and sustained effort, and it will mean traditions will have to bend. The hierarchical organization currently in use is flexible only to a point, a point that is being reached. More organic and modern command and control organizations are now necessary. (This will be addressed further in a future article, "21st Century Command and Control").

Combined arms across five domains requires a greater variety in the type of weapons that the MAGTF can bring to bear. Greater diversity of arms, and thus flexibility, will be reflected within maneuver units as well not just among the wider Marine Corps. Maneuver is about attacking the enemy from an advantageous angle. The MAGTF itself is reflective of this as it is structured to shift between ground, air, and logistics efforts at any time. Maintaining our ability to maneuver in the 21st century is about maximizing the amount of options and arms available to the Marine on the ground.

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Reconnaissance/Counterreconnaissance Task Force

Confronting the hybrid war

by Col Matthew Jones

Since at least 2007, when Frank Hoffman published his “Conflict in the 21st Century: The Rise of Hybrid Wars,”¹ many Marines have wrestled intellectually with the challenge of confronting a hybrid conflict, “a diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually benefiting ends.”² With ample combat experience against a variety of irregular enemies over the past decades, Marines have considered with some apprehension the prospect of confronting forces just as capable at that end of the spectrum, but armed with advanced technology and backed by, or perhaps even consisting in some significant part of, the organized military forces of an advanced nation state. This threat gained prominence with the 2015 publication of Marine Corps Intelligence Activity’s (classified) publication describing the predicted future operating environment out to 2025, a document providing considerable detail on the capabilities of a hybrid adversary employing existing and near-future technologies. With the initiation in March 2016 of MCCDC’s *Future Force 2025* (FF 2025) effort, focused at least in part on identifying how the Marine Corps of today will have to change to meet the near-peer hybrid threat (along with other threats at other points along the range of military operations), dedicated efforts and concrete proposals are taking shape.

This article will contribute to that discussion, specifically taking on a

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CMC challenge that has not received specific attention thus far in the institutional dialogue. This challenge, number 12 on a list presented to the FF 2025 working groups, directs consideration to the formation of a “Reconnaissance Task Force.” While little specific guidance accompanies CMC’s challenge, it nests easily with existing tradition and doctrine, embodied in long-standing GCE organizations, such as the light armored reconnaissance and reconnaissance battalions, and with more future-oriented ideas, such as the 2014 “Operate to Know”³ concept, published in these pages. The connecting file between past and present is the need to “fight for information” and to fight to prevent the enemy’s collection of information on us. These are reconnaissance and security tasks, for which there exists today a significant body of relevant doctrine.⁴ What that doctrine does not adequately cover, this concept argues, is the conduct of reconnaissance and security against today’s and tomorrow’s near-peer hybrid threats.

This article takes up CMC’s challenge and will lay out the case for forming “Task Force R&S” (reconnaissance and security) to meet the challenges of those tasks in the complex warfighting environments of the 21st century.

It will offer several broad possibilities for how such a force might be organized and where it might fit within the MAGTF C² hierarchy. The article is laid out somewhat formally as a functional operating concept, so the argument for the proposal is supported by review of relevant facts and assumptions and an explicit statement of the military problem calling for the proposed solution. All elements, of course, are wide open for challenge and debate. The author hopes that those with the experience, expertise, and perspective we lack will weigh in to deliver it.

Purpose of the Concept

“Reconnaissance/Counterreconnaissance Task Force” is a future-focused functional concept intended to generate thinking on the benefits and risks of integrating a range of maneuver, fires, and ISR (intelligence, surveillance, and reconnaissance) assets under a tactical maneuver force commander. This commander would be directly subordinate to the MAGTF or GCE commander and would be charged with conducting doctrinal reconnaissance and security missions within a defined portion of the MAGTF’s battlespace.

The concept seeks to promote options for new solutions to the age-old military problem of reconnaissance and security. It suggests that under modern conditions (our assumptions on what these are follow below), the MAGTF needs a renewed emphasis on fighting for information, and against enemy collection of information, rather than the

essentially passive collection approach which has predominated since the end of Operation IRAQI FREEDOM in 2003. Existing C² structures and unit organizations, I believe, are not adequate for the requirement under the expected conditions.

Time Horizon and Basic Assumptions

The near-peer hybrid threat exists in nascent form today. Irregular forces employing elements of advanced technology are familiar to Marines from the battlefields of Afghanistan and Iraq, and more so to the Israeli Defense Force from their experience with Lebanese Hezbollah during the Second Lebanon War of 2006.⁵ Russia and China have both shown variations on a hybrid threat model in their behavior since 2014 in the Crimean Peninsula, Ukraine, and the South China Sea. As noted earlier, Marine Corps Intelligence Activity's assessment of the future operating environment shows such threats expanding over time. Therefore, the time period in which I expect this concept to be relevant extends from today through at least 2030 and probably beyond.

- Assumptions: listed to make explicit our view of the context for this operating concept.

- Mission: Marines will operate as part of a naval expeditionary force in a limited contingency operation or Phases 1 through a portion of Phase 3 of a major contingency operation

- The scale of mission will require commitment of a MAGTF larger than a MEU—a MEB or MEF.

- Enemy: fully-capable, near-peer hybrid operating with realistic advantages (home field, sanctuaries, range of assets, and advanced capabilities) and disadvantages (political and strategic constraints; nuclear threshold).

- Terrain and Weather: complex physical and human terrain (urban littorals); temperate climate with seasonal weather.

- Troops: MEF GCE is only available general purpose land force; basing available within range for MEB/MEF (forward) air (potentially at risk from threat long-range



Today's MAGTF has difficulty operating against true, near-peer hybrid threats. (Photo by Cpl Trevor Statz.)

strike). Joint special operations forces will be present in theater upon commitment of the MAGTF. The MAGTF may be augmented with some joint capabilities (notably ISR assets and information-related capabilities), but not with significant joint ground combat elements.

- Time/Space: 30-day minimum before closure of first heavy ground forces; MAGTF controls battlespace deep enough for employment of deep air support and long-range ISR assets under MEF C².

- Logistics: initially seabased. Major innovations in logistics delivery have not yet occurred; today's static and vulnerable logistical nodes will be at significant risk from threat ISR and long-range strike.

- Institutional resources (structure and funding): limited; 182,000 cap with structure increases supporting any capability requiring commensurate structure decrease in others.

Description of the Military Problem

Bottom line up front: Although integration of ISR, fires, and maneuver certainly occurs in today's MAGTF, this happens at too high a level and with insufficient agility to cope with a

true, near-peer hybrid threat operating within the complex political, human, and physical terrain of 21st century expeditionary warfare.

The problem of the enemy. The near-peer hybrid enemy operating in complex terrain is difficult to identify and engage. At the same time, because he has something approximating a mature command, control, communications, computers, intelligence, surveillance, and reconnaissance-precision strike capability, he can do serious damage to easily identifiable friendly formations, C², and logistical nodes operating according to current doctrine. This enemy, understanding U.S. ISR capabilities and, fearing the lethality of our fires, deliberately operates ambiguously, operates in close proximity to noncombatants, and skillfully uses the full range of traditional deception and camouflage techniques to complicate targeting. Though possessing capable long-range strike and other advanced capabilities, he hides these assets and does not unmask them until he is forced to or has a target worth the risk of his life. He employs irregular and special operations forces skillfully while retaining the ability to concentrate significant "conventional" combat power at critical points though he prefers to achieve his primary effects against opposing mili-

tary forces through heavy, precise fires rather than through fire and maneuver.

The problem of ourselves. Meanwhile, on our side, ISR capabilities, fires, and maneuver assets are not fully integrated below MEF (three-star headquarters) level. Today's C² programs of record do not provide access to all relevant information or capability to maneuver headquarters below division level, creating delays in response to enemy action and, far more importantly, challenges to understanding and correctly interpreting ambiguous information regarding enemy action. At higher levels on the range of military operations—the true nation state near-peer adversary—developing enemy air defense and information warfare capabilities may limit the availability of some airborne ISR and fires platforms or force their diversion to higher headquarters priorities at the expense of the MAGTF. Also, crucially, the hybrid enemy has no great respect for our element boundaries—he will frequently have units and capabilities operating beyond the typical divisional battlespace (at or near the outer limit of the range of our tube artillery) that can and will have dramatic effect within those boundaries.

Synopsis of the Central Idea

The central idea is seamless integration of ISR, fires, and maneuver assets under the command of a maneuver commander to enable the location, classification, and engagement through fires and by fire and maneuver of hybrid enemy elements operating in complex terrain throughout the MAGTF's battlespace. We suggest that today's largely passive integration of ISR assets at higher command levels will not be enough to meet the challenge. Information and understanding will have to be conveyed through effective C² means to commanders able to integrate fires and maneuver for the specific purpose of forcing the enemy to reveal elements of his disposition and intentions. In doctrinal terms, this means to commanders specifically charged with the execution of reconnaissance and security missions. These commanders, to repeat a recently coined phrase, will have to operate to know. Given our assumption of

relatively limited resources, along with CMC's specific challenge to explore the idea of a "reconnaissance task force," we suggest that the logical place to start implementing the required capabilities is within those existing organizations already charged with reconnaissance and security missions—the divisional reconnaissance and light armored reconnaissance battalions. Other solutions could be entertained, from simply training harder and more effectively to integrate ISR, fires, and maneuver through existing systems and doctrine via temporary task organization, to the creation of entirely new reconnaissance and security organizations, perhaps at the MEB/MEF level. Some of these alternatives are addressed in the recommendations that conclude this article.

Application and Integration of Military Functions

Although no warfighting task can really be performed without integrating all five warfighting functions, this concept focuses primarily on the integration of maneuver, fires, and intelligence for the purpose, broadly speaking, of force protection. Seamless integration of these functions will enable Marine forces to identify, classify, target, and engage enemy forces in a defined security area in order to force them to clarify their disposition, capabilities, and intent before coming into contact with the main body of our friendly force. In addition, this will buy time and space for concerted higher-level planning and action.

Necessary Capabilities

With a few notable exceptions, the capabilities required to execute this concept exist, at least in part, today. What does not exist is the C² structure, the C² capabilities, and, to some extent, the doctrine necessary to execute the concept. Secondarily, shortcomings in training, leadership, and education inhibit the employment of existing capabilities to best affect this or any related concept.

Doctrine. With the exception of the highly attenuated force reconnaissance capability (currently residing in the division's reconnaissance battalion and a bone of contention between MEF and

division commanders), reconnaissance and security capabilities, along with the purpose-built units tasked with conducting them, reside in the GCE rather than the MAGTF. This concept suggests—as a matter for debate, wargaming, and experimentation—that the MAGTF commander requires the ability to better integrate ISR, fires, and maneuver to fight for information, and that this function may be best performed by a commander assigned the reconnaissance and security mission set. Doctrine for this, outside the specific context of the GCE, does not currently exist.

Organization. Various organizational constructs could be envisioned that would get at the main idea of this concept, including the temporary assignment of task-organized forces from the division/regimental landing team to MEF/MEB, creation of permanent MEF-/MEB-level reconnaissance and security unit(s), and improved methods of communications and coordination among existing units and elements within the existing C² structure. Each should be tested through wargaming and experimentation under realistic conditions.

Training. Without doctrine and organization to implement this concept, training to do so naturally does not exist. Such training would follow naturally from doctrinal and organizational decisions. Significant practical issues affecting training—basing locations, tasking authorities, airspace availability and usage restrictions, etc.—would have to be overcome to allow realistic training of a reconnaissance and security task force. It is likely that the depth and intensity of the training required for the seamless integration the concept demands would exceed the limits of what is possible for temporarily task-organized forces, but this is a matter for further wargaming and experimentation to determine.

Materiel. The glaring materiel gap affecting the implementation of this or any related concept lies in MAGTF C² systems—specifically the capability to project to all levels of command a truly integrated current operations and intelligence picture (COIP). The imperfect COIP possible today terminates at, at best, the regimental level (direct air sup-

port center or air support element, potentially providing key elements drawn from ACE C² systems, are found no lower). In any case, it cannot integrate or display elements of information drawn from intelligence systems operating at levels of classification above Secret. This capability gap has been discussed extensively elsewhere (reference OTK) and will not be covered further here. This concept, though it would be vastly empowered by the provision of such capability, can theoretically be executed without it through task organization and provision of relevant C² systems and communications assets. The impact of such task organization on the broader requirements of the MAGTF must be further assessed through wargaming and experimentation and may be so severe as to point with renewed urgency to the requirement for a major upgrade in MAGTF C² systems.

Leadership and education. Perhaps more fundamental than any issue in executing this concept will be developing leaders able to execute it. A fusion in the mind of the relevant commander of skills for advanced intelligence, fires (including the full range of non-lethal fires capabilities lately being described imprecisely as information warfare capabilities), and maneuver capabilities, at a pace and at a level of complexity beyond the demands of any recent com-

bat experience, will be essential to make it work. Encouragingly, many current and rising commanders have faced, and in some cases mastered, elements of this challenge in combat operations in Afghanistan and Iraq. Those who have mastered it need to be culled out from those who have not and placed in command of any reconnaissance and security task forces we may create. In addition, the training and education establishment needs to adjust its curriculum and focus to better prepare future leaders for this challenge. A significant increase in the use of realistic tactical-level wargames focusing on the challenges of the modern battlefield could help a great deal.

Personnel, facilities, and funding. The specific solution adopted to the identified problem will largely drive the requirements in these areas. It is likely that some of the structure related to ISR and information warfare capabilities that are currently being contemplated under the *FF 2025* initiative might be better employed in organizations dedicated to the reconnaissance and security mission as described above rather than dispersed throughout the subordinate elements of the MEF. Robust information-related capabilities at the MEF level, generally as envisioned in the *FF 2025* proposals as of the date of this writing, should be sustained.

Spatial and Temporal Dimensions

Significant uncertainties exist in this area that we can only resolve through wargaming and real-world experimentation. Existing doctrine envisions much of reconnaissance and security as GCE functions, to be performed by dedicated units (supported by GCE and MEF staff effort) within a portion of the GCE commander's battlespace specifically designated as a security area. The analogous MEF security area is covered largely by passive collection means or, at the most active level, by aerial-armed reconnaissance. Clearly, this allocation of space and time is inadequate to the threat (to name only one example, long-range strike assets may exist in the MEF security area that, with appropriate advanced technology, could do unacceptable damage on their first salvo, but which would likely remain undetected by existing collection means and tactics, techniques, and procedures until they actually fired)—but the question of whose job it will be to work in these spaces must be determined. At its most expansive, this concept might suggest a single commander in charge of reconnaissance and security for the entire MAGTF battlespace, but would his job then be easily distinguishable from that of the MAGTF commander? Perhaps MAGTF and GCE should each have dedicated commanders who would conduct reconnaissance and security in designated portions of the respective battlespaces according to their commanders' requirements.

Recommendations for Further Development

1. Identify distinct alternative approaches for detailed development. A range of possibilities is provided below; others undoubtedly exist.

- a. Better integrate existing capabilities and C² structures to obviate the need for a reconnaissance and security task force—basically “do better what we already say we should be doing.” In considering this option, the burden of proof will lie with its advocates to show how we will solve the military problem identified here with existing structures and processes, presumably used more effectively



Marines practice live fire exercises to enhance tactical capability. (Photo by Sgt Rebecca Floto.)



Marines must be prepared to use non-traditional methods to deal with near-peer hybrid threats in any number of environments. (Photo by Cpl Kelly Street.)

by virtue of better training, leadership, and education.

b. Permanently assign a colonel-level commander directly subordinate to the MEF commander as commander of “Task Force R&S,” with command authority over an appropriate mix of maneuver reconnaissance and security, ISR capabilities, and corresponding C2 and logistical support. To minimize additional investment and get greater bang for the buck, replacing the *FF 2025* proposal for the “MEF Information Group” with a reconnaissance and security task force comprising much of the same structure would be a logical move. The specific skillsets required of such a commander and his staff would require review.

c. Permanently or temporarily assign a lieutenant colonel-level commander, currently subordinate to the division CG, to the MEF commander as commander of Task Force R&S with command authority over relevant capabilities as in section b above. Logical choices for such reassignment would be an LAR battalion or the division reconnaissance battalion. Of the two, as currently organized, the LAR battalion is clearly better optimized for the integration of ISR, fires, and maneuver

to fight for information as this is its core function within the division at present. Development of this option should carefully consider the pros and cons of the *FF 2025* proposal for the armored reconnaissance battalion, incorporating tank and LAR components under one headquarters, as they apply to a MAGTF-level reconnaissance and security task force concept.

d. Retain a lieutenant colonel-level commander, subordinate to the division CG, as commander of Task Force R&S, but permanently reinforce that commander with relevant capabilities as in b above. Evaluation of this approach should focus heavily on the impact of the dispersal of enemy capability beyond the boundaries of the GCE battlespace and the effect this might have on an active reconnaissance and security effort confined largely to the GCE.

e. Adopt any one of the previous three proposals, but on a temporary, task-organized basis. Advocates of this option would need to show how such temporary organizations would master the training challenges implied by the level of integration demanded by the concept, particularly under current operational tempo driven by force generation requirements.

f. Adopt a composite proposal—for example, creating reconnaissance and security task forces (permanent or task-organized) at both division and MEF level.

2. Having developed at least two alternatives in some detail, compare these alternatives first through rigorous, realistic tabletop wargaming and then, to the extent possible, through live force-on-force experimentation under realistic conditions of complex physical and human terrain. As with any military concept, only through the application of such rigor can any idea proceed confidently from mere notion to concrete reality.

Notes

1. Frank Hoffman, “Conflict in the 21st Century: The Rise of Hybrid Wars,” (Arlington, VA: Potomac Institute for Policy Studies, December 2007), accessed at <http://www.potomac-institute.org>.

2. Headquarters U.S. Army, *U.S. Army Training Circular TC 7-100, Opposing Force Tactics*, (Washington, DC: November 2010).

3. LtCol Drew Cukor, et al., “Operate to Know,” *Marine Corps Gazette*, (Quantico, VA: April 2014).

4. Basic U.S. Marine Corps and Army doctrine emphasizes the centrality of reconnaissance, counterreconnaissance, and security operations at all times and units, regardless of type. Both, however, authorize specific ground units (LAR for the Marine Corps; cavalry for the Army) whose core mission centers on these functions. Other organizations involved in reconnaissance tend to be addressed under the intelligence warfighting function. Integration of these various organizations is little discussed and is assumed to occur through normal staff processes. For more information, see Headquarters Marine Corps, *Marine Corps Doctrine Publication 1-0, Marine Corps Operations*, (Quantico, Virginia: 2011); Headquarters Marine Corps, *Marine Corps Warfighting Publication 3-14, Light Armored Reconnaissance Battalion*, (Quantico, Virginia: 2009); and Headquarters U.S. Army, *Cavalry Squadron*, (Washington, DC: 2012).

5. David E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza*, (Santa Monica, CA: RAND Corporation, 2011).



The Mirror Test

reviewed by Maj Brad Fultz

This is a story only Kael Weston can tell.

John Kael Weston, a diplomat on assignment for the U.S. Department of State, may not have donned the MARPAT (Marine pattern) uniform over the course of his seven years in Iraq and Afghanistan, but he shared the hardships and dangers with Marines at the tip of the spear during the most pressing and darkest of days. It may feasibly be argued that nobody had the keen familiarity with the wars of the 9/11 generation as closely as Kael Weston. This raw account of diplomacy and war ably ties the strategic backdrop of Washington politics to the front lines of a complex, confusing, and costly war. He ultimately poses the difficult but necessary questions for decision makers of today and the future.

The Mirror Test is a testament to the wisdom gained during the course of this seven-year journey; the wisdom that accompanies humility, reflection, research, and true understanding. It is not experience alone that makes us better, but the prudent acumen gained through deep deliberation ensures the lessons are entrenched and never to be repeated. This book provides the avenue for the reader to benefit from such hard earned perspectives.

The Mirror Test differs from other memoirs and reflections of war in one very substantial way, which alone makes this 564-page book well-worth the investment. Weston is able to bridge Washington politics to frontline realities through the use of personal discussions with those closest to the fight, from Senators to lance corporals, to address broader themes, thereby providing valuable insights for those priming to make important

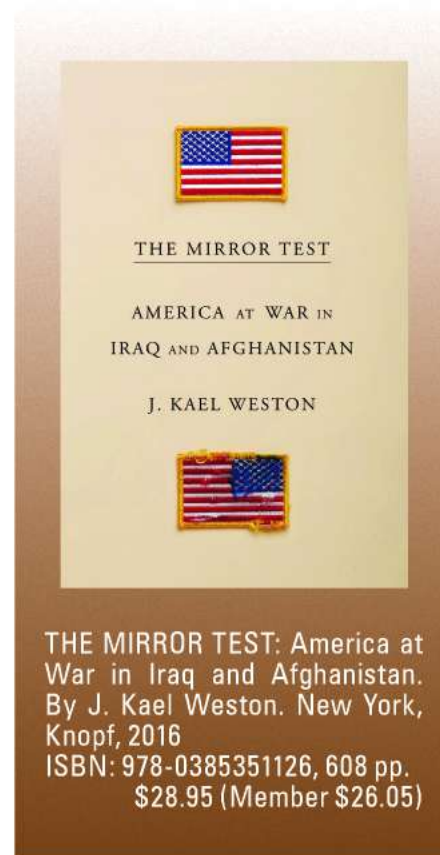
>Maj Fultz is an O202 currently serving as Company Commander, Intelligence Operations Company, 3d Intelligence Battalion, Okinawa, Japan.

decisions for the future of the Nation. He provides a front line perspective to the consequences of beltway debates.

This is a book many have been waiting for—neither the self-pity filled tragedy, nor is it the chest-beating portrayal of shooting guns and killing bad guys. This is a sophisticated juxtaposition that will satisfy the academic, the political junkie, the historian, the military expert, the veteran, and, most importantly, the soldiers, Marines, and diplomats of the future. Part memoir, part history lesson, part political commentary, and part tribute to our Nation's killed and wounded, Weston brings it all together in this powerful and straightforward narrative that forces the reader to reflect on how things could have been—might have been—somehow different.

The Mirror Test is divided into three dichotomous sections, each a story unto itself. His story begins in Iraq's tumultuous Anbar Province, traveling through two years in Afghanistan's harshest tribal regions both in the mountains of the east and the poppy fields of Helmand, and ultimately culminates in America's heartland, where the costs of America's effort was paid for in the lives of America's small town heroes.

During the summer of 2003, Weston, the optimistic but skeptical foreign service officer, embarks on the adventure of a lifetime by accepting an assignment to Baghdad in an effort



THE MIRROR TEST: America at War in Iraq and Afghanistan. By J. Kael Weston. New York, Knopf, 2016
ISBN: 978-0385351126, 608 pp.
\$28.95 (Member \$26.05)

to establish a credible and legitimate political entity following the fall of Saddam Hussein. Weston believes the war in Iraq to be a mistake and clearly expresses this sentiment from the outset. Nevertheless, opposed to setting back and criticizing the war effort from a more comfortable State Department post, Weston puts himself in the heart of the action, quickly recognizing that, from the beginning, "we were all in way over our heads." Promptly realizing the solutions to assisting the Iraqi government and American efforts would not be found in the pool parties and barbecues of Baghdad's Green Zone, Weston maneuvers to get close to the people, live their realities, and listen and learn along the way. Following an educational stint as a liaison to the Iraqi Truckers Union, Weston finds himself as the sole diplomat in the middle of the hornets' nest of Fallujah, "The City of Mosques," during Operation PHANTOM FURY. Weston's lucid account of the lead up, conduct of, and the three-year aftermath of the largest Marine battle since Vietnam provides

360-degree insight to Fallujah and the new American way of war. Weston's language is biting and candid, a sentiment justified by the macabre conditions confronted by those trying to establish a new Iraqi government in this small corner of what Weston would describe as an ill-advised war. By early 2007, it was time for a change of scenery.

Afghanistan's rugged eastern tribal belt provided a backdrop not as close to the headlines, but every bit as complex and dangerous, as Anbar. Here, in Khost Province, Weston feels more at home, carefully navigating the tight line between tribal interests in the rugged and isolated terrain

presents a strategic slant amongst the mountains and the valleys of the most tucked away place on earth. Weston confronts controversial topics such as women in combat leadership roles, Guantanamo Bay detention center, girls' education, treatment of "unlawful enemy combatants," and the counterproductive aftermath of nighttime special operations raids.

In military parlance, the "main effort" refers to the best-equipped and most prepared units. The 2d MEB, headed to Helmand Province, served as the main effort following the election of a new administration interested in transferring focus from the unpopular Iraqi deserts, to the "Good War" in

consequences of war. The narrative is raw, and the message is somber. Weston's frustrations begin to come apparent at one point highlighted in his saying to a wounded Marine, "I work for the State Department, which means I get to say thank you on behalf of our country, even if our country is disconnected from what is going on over here." This section, like the first, concludes with heartfelt tribute; this time to the 91 Marines and Sailors who lost their lives during the year in Helmand.

"Would this all be worth it?" asks a young Marine to Weston in Anbar Province during the second Battle of Fallujah. This is precisely the question the author wrestles with throughout the book: was it all worth it? Accompanying Weston home, the piercing question leads him on a journey to the small town cemeteries of 31 fallen Marines whose helicopter crashed in the western Iraqi desert. It is not solely Marine casualties that haunt Weston, but the countless Iraqi and Afghans who lost their lives caught up in the wrong moment of inertia that only the momentum of war can bring.

Ultimately, Weston tackles the broader question of what the Spirit of America is. Traveling through the country, visiting small towns, and large memorials, Weston shares anecdotes of patriotic Americans interested in doing their part to contribute, some who have lost loved ones in our Nation's wars. In an effort to find closure, Weston reflects deeply on his experiences following the attacks on 11 September. His Nation called, and Weston ran to the sound of the guns for seven years. His reflections are heartfelt, authentic, and provide a comprehensive and contemplative firsthand account of a Nation, its war, and the impact.

In other words, this is a story only Kael Weston can tell.



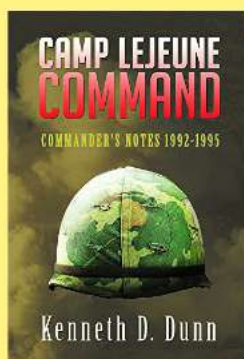
Weston's language is biting and candid, a sentiment justified by the macabre conditions confronted by those trying to establish a new Iraqi government in this small corner of what Weston would describe as an ill-advised war.

near the seamless Afghanistan-Pakistan border. Adept at the nuanced diplomacy required while consuming endless cups of green tea, Weston describes how listening is a valuable commodity while detailing the intellectual effort and needed patience to bring outlying and feuding tribes closer to an all too distant central government in Kabul. It is here, amongst the abundant high altitude paths and Taliban fighters, where Weston's nerves are tested traversing mountain roads, dodging improvised explosive devices, and avoiding sniper attacks only in an attempt to draw a better understanding of the people. Quite simply put, Weston risks his life to listen. Hedging tribal leaders, reformed Taliban fighters, curious university students, confused civilians tallied as "collateral damage," and furious former Guantanamo detainees all have a story to tell—a story Weston transcribed for his weekly cables sent back to the U.S. Embassy. The prose

Afghanistan. Once again, Weston finds himself at the point of friction serving as the political advisor for a storied unit that would ultimately be awarded the coveted Presidential Unit Citation. Continuing his approach of addressing political issues, Weston comments on the debate surrounding the repeal of "Don't Ask, Don't Tell" and discord in the relationship amongst the closest of partners—the United States and the United Kingdom.

Weston communicates a narrative of seasoned diplomat-warrior growing ever more concerned about the cost in lives for matters of peripheral interests. The fighting in unknown, faraway places like Now Zad and Taghaz become a focal theme connected to the nightly ramp ceremonies of transferring the fallen back to Dover, Delaware. By describing the grim prognosis for the wounded visited at the camp surgical unit, the reader gains an appreciation for the tragic

For Further Reading



CAMP LEJEUNE COMMAND: COMMANDER'S NOTES 1992-1995. By Col Kenneth D. Dunn, USMC(Ret). Reviewed by LtCol Hezekiah Barge, Jr.

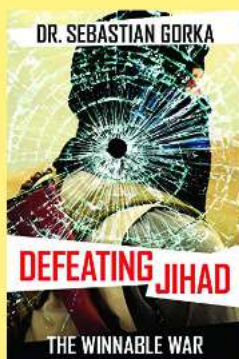
This book is about Col Ken Dunn, USMC(Ret), and his two years as the CO, 5th Battalion, 10th Marine Regiment, an artillery battalion at Camp Lejeune, NC. I found his conversational style of writing easy to read. Although I have read many books on leadership throughout my military career, I was impressed with his willingness to reflect on the "human nature" side of command. His transparency about professional and personal life joys and challenges is captivating. For example, he discusses the details of simultaneously preparing his battalion for future training events, attending his kids sports events, and keeping his financial house in order. It keeps you engaged from page-to-page as you learn more about his story. Though some will want to dismiss his personal accounts concerning the struggles of a minority Marine officer, the truth must be understood and used as a lesson in the quest for discovering strength in diversity. While the book's intended audience is Marines, Marine family members will appreciate the insights of the work and family balance struggle that every commander faces.

Bloomington, IN: AuthorHouse, 2015.

ISBN: 978-1491857625, 170 pp.

NonMember: \$16.95; Member \$15.26

<http://bit.ly/2fx9YIs>



DEFEATING JIHAD: THE WINNABLE WAR. By Dr. Sebastian Gorka. Reviewed by Thomas J. Waters.

Since 11 September 2001, the United States has been engaged with an enemy that has become increasingly difficult to combat. The traditional battle plans to defeat nation-state enemies have not easily been adapted to face this new threat. By examining the methodology of counterinsurgency and military history, Dr. Gorka has put forth a proposal in his new book to bring this new type of combatant into sharper focus. Rather than purely emphasizing the historical context of jihadism, *Defeating Jihad* has placed the ideology within the context of a previously-defeated one: communism.

While we have seen two presidential administrations execute the global war on terror, the value of *Defeating Jihad* for the warfighter is readily apparent. This book identifies the need for a specific war plan that not only attacks the enemy on the battlefield, but also disrupts the jihadist narrative. By utilizing the methods used to destabilize and ultimately defeat the Soviet Union, the author believes that jihadism can suffer a similar fate if the same tactics are properly applied. The book does two things very well: it helps the reader understand the threat posed by global jihadism and discusses how to best defeat that threat.

First, the book lays the groundwork for the reader to understand how radical ideologies occur within societies. Providing the context of jihadism makes identifying the weaknesses in the narrative possible and helps decide where to promote the anti-jihadist narrative. The virtue of this type of analysis is that it allows for an honest dissection of the policies and methods that have proven ineffective in the past while suggesting how to modify future action to ensure a more favorable outcome.

An honest approach to the U.S. efforts in the Middle East is also a necessary first step for truly knowing the enemy we are facing. Gorka takes a look at the jihadist movement from an academic and military perspective, acknowledging that the two are not unconnected. On the theoretical level, Gorka invokes the works of Clausewitz, Machiavelli, Sun Tzu, and Napoleon to substantiate the foundation of his theories. By combining the theoretical and practical, Gorka has developed a battle plan that has been tangibly proven in the real world.

Second, Gorka proposes that the new battle plan to defeat jihadism be based on the same methods used to defeat the Soviet Union. Throughout the book, Gorka argues that jihadism is an ideology and, as such, not all that dissimilar from communism. By providing an effective counternarrative through both domestic and international efforts, Gorka asserts that jihadism will be limited in its spread and ultimately defeated.

By utilizing methods contained in previously classified national security documents, Gorka believes that the United States can remedy the more ineffective approaches and ultimately overcome the more recent actions governed by political correctness. These methods are not limited only to military or Federal government actions—on the domestic front, Gorka promotes the same type of policies implemented by the New York Police Department in their counterterrorism divisions. By prescribing responsibility all the way to the individual citizen, Gorka believes that the United States can build an even more effective intelligence model.

This book proves to be a useful tool for warfighters engaging in the fight against global jihadism and the global war of terror. By providing the historical context and the best practices moving forward, *Defeating Jihad* gives context to the reader on how the struggle extends far beyond the current battlefields and has become a global struggle against an ideology. Ideology is much harder to defeat, but Gorka shows how the United States can change the narrative. Dr. Gorka has provided a substantive tool that can bridge the gaps between past methods and future victory.

Washington DC: Regnery Publishing, 2016.

ISBN-978-1-62157-457-6, 244 pp.

NonMember: \$27.99; Member \$25.20

<http://bit.ly/2iDZQxe>

Tactical Decision Game 02-17

Part I: What now, Red Death Six?

by the Staff, *Marine Corps Gazette*

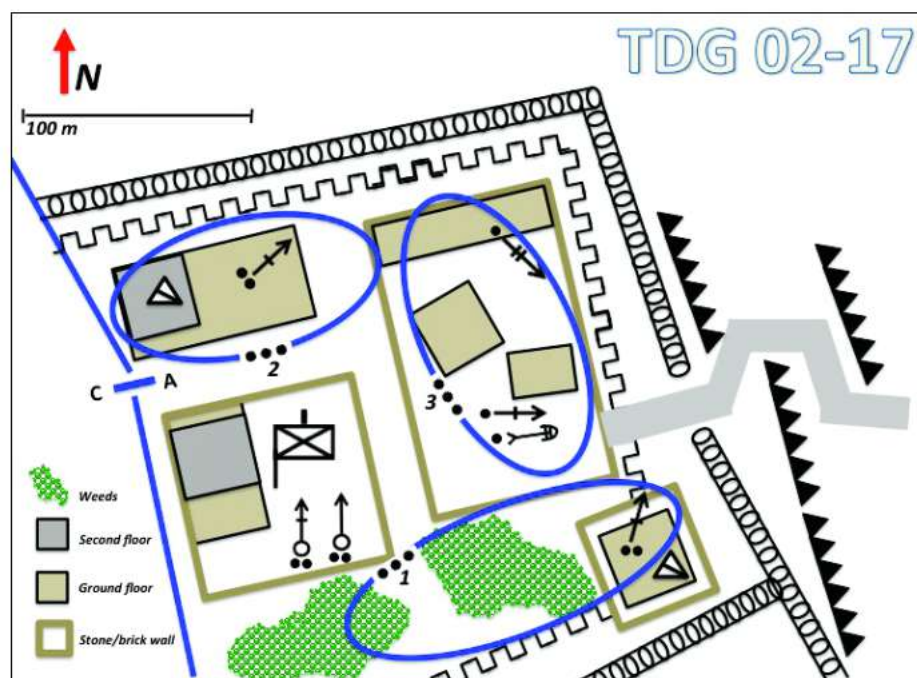
Situation

You are the CO, A Company, 1st Battalion, 1st Marines (1/1)—a storied unit in Marine Corps history affectionately known as “Red Death” to your Marines.

Your company deployed ashore with the rest of your battalion task force in the former Republic of Al Ouaddiya, a failed state in the rare earth metals-rich archipelago of Raz al Dezzel. The island is rugged semi-desert that had been largely urbanized by the former Al Ouaddiyan regime. The population is of Arab and African descent and speaks a dialect of Arabic and French. Islam is the dominant religion with a mix of Sunni Salafi and Sufi sects, mixed with some persistent pre-Islamic folk traditions.

Al Ouaddiya was historically a monarchy colonized by Arabs and the French. The post-colonial period saw the establishment of a brutally repressive socialist secular regime. After decades of civil strife between the regime and various sectarian extremist and tribal groups, the recognized government collapsed, and, for the last three years, numerous factions have fought each other for control of the population and the island’s resources. A moderate, Western-backed faction has recently emerged and been recognized internationally as the new lawful government of Al Ouaddiya. However, not all of the tribal and sectarian factions have recognized the new regime since an expatriate “Westernized” descendant of the ancient royal family is the new head of state.

Anti-government factions include members of the former regime’s army and special forces, mostly French and Russian trained and equipped with loot-



ed weapons and equipment, including BTR-80s and T-72 variant tanks. These groups support a return to the repressive secular regime. Other sectarian groups include Salafi extremists supported by international terrorist organizations and several like-minded nations who seek to establish a caliphate. The last group of anti-government forces includes the gangs of several tribal warlords who are fighting to maintain control of mineral mining and export. These groups are well armed and paid by Chinese industrial interests in the region.

Eighteen months ago, under a United Nations mandate and with the invitation of the new Moderate Unity Government of Al Ouaddiya (MUGA), a U.S.-led joint task force (JTF) was deployed to conduct stability operations

in order to strengthen the new government, reduce further violence between the remaining factions and the government, and to reduce the humanitarian crisis among the local population.

Your battalion, along with 3/3 and 1/7, are under the command of RLT 7, the GCE of 5th MEB, which is both the Marine component of the JTF and part of the combined forces land component (CFLCC) of the JTF. Two BCTs [brigade combat teams] of the U.S. Army’s 10th Mountain Division round out the U.S. component of the CFLCC, which also includes numerous allied forces. This deployment is the third “rotation” of U.S. and allied forces in support of the U.N. mission.

Over the past week, 1/1 has relieved 2/8 in the regimental combat team’s

area of operations. The battalion has been assigned to a large forward operating base that contains a training facility for the local security forces and a distribution point for food, water, medical aid, and household fuel.

A Company's mission is to

Secure the eastern entry point into the battalion FOB in order to prevent disruption of the battalion's mission. On order conduct security and combat patrols partnered with local security forces. Be prepared to conduct offensive operations in order to disrupt anti-MUGA factions.

Your battalion commander's "intent" is as follows:

Essential Tasks: Develop local security forces; support material needs of local population; disrupt anti-government factions.

Your company position is built around a group of abandoned buildings of local stone and brick construction, one or two stories high, with the thick exterior walls around the compound ubiquitous in this part of the world. A berm and triple-strand concertina wire surround the position and tie in to the existing walls and building.

To the east, you have reinforced the entry control point (ECP) with heavy obstacles covered by fire. To the west, you share a boundary with Company C. To the northeast and south, open ground with grassy weeds surround small farms and the outskirts of the port city of Minna Sultan Usween, where the JTF is headquartered along with various NGOs [nongovernmental organizations] and PVOs [private volunteer organizations] involved in humanitarian assistance.

You have assigned each of your platoons to a group of buildings and a sector of the company perimeter. 3d Platoon, your main effort, is responsible for security of the ECP. 1st Platoon has the north sector and 2d Platoon the south. All of your platoon commanders have continued to fortify their assigned buildings in accordance with the standard priority of work in the defense.

You have the following attachments and assets available to you:

- 1 squad heavy machineguns (2x .50 Cal. 12x MK-19) with associated vehicles.
- 1 Javelin team.
- 2 scout sniper teams, which you have assigned to firing positions on the roofs of the highest building in your position.
- 1 section 81 mm mortars (4 tubes).

The company's weapons platoon is fully manned and equipped.

The overall company strength is roughly 80 percent effective due to DNBIs [disease and nonbattle injuries], emergency leave, and various battalion "working parties."

You have assorted Class IV materials, including 10,000 sandbags and a SEE Tractor [small emplacement excavator] with operators.

For the last four days your Marines have been improving your company position and have conducted six security

patrols—four day and two night. The patrols' interaction with the local population has been neutral, but groups of 20 to 40 women and children have been making the trek up to 3 miles from their farms to obtain food, fuel, and medical support. None of the patrols have made contact with any anti-government factions although they have all heard small arms fire and a few explosions—most likely RPGs and/or mortars. No casualties have appeared at the ECP seeking medical aid.

It is 0935, roughly 72 hours since occupying the company position. You hear a high-pitched buzzing noise and see several Marines on sentry duty pointing at the sky. What appears to be a commercial, "off-the-shelf" quad-copter is overflying your position approximately 300 feet directly overhead.

Requirement

- What are your orders to your platoon commanders?
- What, if any, modifications to the company defensive plan do you direct?
- What do you report to the battalion? Do you have any requests for support?

Complete your frag order to your platoon commanders and requests to higher headquarters. Include an overlay indicating any changes to your current positions and provide a brief discussion of your rationale behind your actions. Submit your solutions to the *Marine Corps Gazette*, TDG 02-17, Box 1775, Quantico, VA, 22134, or by email to gazette@mca-marines.org. The *Gazette* will publish solutions in an upcoming issue.



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Index to Advertisers

CDET.....	38
Chase Prize Essay Contest.....	2, 55
MCA&F.....	5, 86, 88 WE13
Oshkosh.....	CIV
MARSOC.....	CII
The MARINE Shop.....	23, 87, WE17
USAA.....	CIII, 11



Editorial Policy and Writers' Guidelines

Our basic policy is to fulfill the stated purpose of the *Marine Corps Gazette* by providing a forum for open discussion and a free exchange of ideas relating to the U.S. Marine Corps and military and national defense issues, particularly as they affect the Corps.

The Board of Governors of the Marine Corps Association & Foundation has given authority to approve manuscripts for publication to the Editorial Advisory Panel and editor. 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 also judges all writing contests. A simple majority rules in its decisions. Other material submitted for publication is accepted or rejected based on the assessment of the editor. The *Gazette* welcomes material in the following categories:

- **Commentary on Published Material:** The best commentary can be made at the end of the article on the online version of the *Gazette*. Comments can also normally appear as letters (see below) 3 months after published material. BE BRIEF.

- **Feature Articles:** Normally 2,000 to 3,000 words, dealing with topics of major significance. Manuscripts should be DOUBLE SPACED. Ideas must be backed up by hard facts. Evidence must be presented to support logical conclusions. In the case of articles that criticize, constructive suggestions are sought. Footnotes are not required except for direct quotations, but a list of any source materials used is helpful.

- **Ideas & Issues:** Short articles, normally 750 to 1,500 words. This section can include the full gamut of professional topics so long as treatment of the subject is brief and concise. Again, please DOUBLE SPACE all manuscripts.

- **Letters:** Limit to 200 words or less and DOUBLE SPACED. 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. Email submissions to gazette@mca-marines.org are preferred.

- **Book Reviews:** Prefer 300 to 750 words. Please DOUBLE SPACED. It is a good idea to check with the editor in advance to determine if a review is desired. Please be sure to include the book's author, publisher (including city), year of publication, number of pages, and cost of the book.

Writing Tips: The best advice is to write the way you speak. Organize your thoughts. Cut out excess words. Short is better than long. Avoid abbreviations as much as practicable. Write to a broad audience. The key is to start with a thesis sentence or two and put the main idea up front.

Submissions: Articles may be submitted via email to gazette@mca-marines.org. That is the preferred method. Email the manuscript in Microsoft Word format DOUBLE SPACED in Times New Roman 12 font as an attachment. **Photographs and illustrations must be in high resolution TIFF, JPG, or EPS format (300dpi) and must not be embedded in the article. 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 address. Submissions may also be sent via regular mail and should include one hard copy of the manuscript and a disk. 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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