

Spectrum Warfare Tiger Teams

Ensuring survivability and domination in a D3EMSOE

by Maj Jonathan M. George

As Marines, we think of ourselves as the greatest fighting force on earth. It is what keeps many of us in uniform; it is what drives us and what keeps our recruiting numbers high. We send Marines to the field; we shoot, move, communicate, and dominate. When the white flags go up, we high-five each other, retrograde, clean weapons, order pizza, and throw back a few beers—all while posting selfies and happy-snaps on our social media profiles. Every exercise is successful, most after-action reports give glowing reviews, fitness reports reflect, and awards abound. However, we are lying to ourselves. We look in the proverbial mirror and see steely-eyed killers, while our foes see an aging force with an antiquated mission and outdated equipment. What is needed is a shift from complacent thinking and training to actively training and evaluating our force against known threats.

I have written several *Gazette* articles on the looming threats we will face in future combat against peer and near-peer threats, with a focus on survivability and domination in a denied, degraded, and disrupted electromagnetic spectrum (EMS) operating environment (D3EMSOE).¹ Quite simply, we will lose the ability to effectively communicate, navigate, target, and shield our electromagnetic signatures in the early stages of a major conflict. Despite this knowledge, we continue to train in permissive environments against a linear, non-thinking enemy, with no clearly defined EMS threat, no EMS training standards, no EMS measures of performance or effectiveness, and no cohesive way evaluating the force to survive in a D3EMSOE. The crux of the issue is

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shifting the mindset of training from getting a “check in the box” of meeting certain mission essential tasks and ensuring Defense Readiness Reporting System readiness to a mindset of training, evaluating, and then grading our forces in the EMS—then holding Marines accountable. If we fail to do this now, we will be held accountable on the battlefield in lives lost.

To change this mindset, 4th Marine Regiment developed a concept called Spectrum Warfare. Spectrum Warfare in this context is defined as the tactical and tailored integration of electronic warfare (EW), signature management, and tactical deception into all aspects

of training, planning, and operations to enable friendly maneuver and deny the enemy maneuver within the spectrum. It is the deliberate manipulation of the EMS at the tactical level to achieve an enemy cognitive response, and the commander accepting a level of risk to achieve that successful maneuver and domination within the spectrum.

While there are limited exceptions, when Marines go to the field it is more often than not an administrative movement. We telegraph our movements through a copious amount of orders and briefs splashed freely across email and the Internet. We muster hours before movements, we post on social media, we move during the day, and we broadcast our movements and positions via unnecessary and frequent position reports and radio checks. Once in the field, we choose the most advantageous



We advertise where we are going. (Photo by LCpl Jesse Carterpowell.)

and comfortable positions to erect unnecessarily large combat operations centers with an administrative mindset and no regard for terrain or masking our EMS signatures. We fail to reduce radio frequency signatures as well as properly directionalize our antennas while also placing them too close to our combat operations centers. Our radio operators do not know how to properly adjust radio settings to reduce power, limit transmission times, recognize the effects of jamming, or even how to report jamming. We are also poorly trained and equipped on the proper employment of camouflage netting and often use the wrong type. Lastly, we have an aversion to training against ourselves and rarely pit company on company and battalion on battalion. What better foe than ourselves?

Changing the mindset is easy. We know who our peer and near-peer threats are and know their capabilities. The next step is training to beat or mitigate those threats, and that starts with the warning order and continues all the way through the end of the training evolution or exercise. We must treat every evolution as if it is the real thing. The time to train to this standard is not when we have to do it for real. The next piece of solving this puzzle is developing a cadre of staff to train the force, emulate the threat, evaluate the force across the entirety of the EMS, and give them the equipment and training to succeed. As the subsequent paragraphs demonstrate, this capability is available now, inexpensive solutions exist, the manpower is organic at most units, and all that is needed is the desire of the unit commanding officer to actually survive on the next battlefield and train his Marines to that standard.

Stemming from successful spectrum warfare experiments during its Integrated Training Exercise in October 2018,² and further testing and evaluation during Exercise BALIKATAN 2019, 4th Marine Regiment developed a concept for Spectrum Warfare Tiger Teams (SWTTs) to train and evaluate Marines to survive and win in a denied, degraded, and disrupted EMS operating environment. The mission of this organic team of intelligence, in-



The SWTT is composed of intelligence, infantry, and communications Marines. (Photo by SSgt Jordan Gilbert.)

fantry, and communications Marines is to provide training, full EMS analysis, intelligence support, enemy aggressor forces, evaluations, and AARs in order to evaluate the force across the entirety of the EMS and enhance unit survivability in a D3EMSOE.

At present, some of this capability does exist in the Marine Corps at the Radio Battalions; however, over tasking, mission confusion, and lack of desire usurp force training and survival—despite EW, electronic support, and support to force protection being key mission sets of the Radio Battalions. Rethinking the mission of the Radio Battalions is a sore topic, but one that is desperately needed. Signature management and military deception generally fall under the Marine Corps Information Operations Center; however, in nearly ten years since the organization was stood up, bringing these capabilities to the force is still in its infancy and difficult for the Operating Forces to access. A Band-Aid solution is the forthcoming EW red teams, but they will only provide a limited capability to emulate spectrum threats and provide training. Their haphazard employment plan has them falling under disparate parent commands, and it will be several years before we see them fully capable. The goal of the SWTTs is to bridge

this gap and eventually work in concert with the EW red teams to provide a full spectrum training capability.

While admittedly this spectrum warfare concept and dream team came together through a series of fortunate personnel moves by the monitors, the right Marines were placed with the right command with a force employment plan that supported ideas to make all this come to fruition. What has come out of the past year of experimentation is a concept of employment that can be replicated across the Marine Corps.

For staffing, our SWTT is led by a 0203 Ground Intelligence Officer with a background in computer science. He is supported by several hand-picked 0231 Intelligence Specialists who have displayed the proper aptitude to understand EW concepts, enemy EMS threats, and are able to think and act independently. This team is then task organized depending on the mission to include 0211 Counterintelligence/Human Intelligence Marines, 0311 Infantry Marines, 06XX Communication Marines, and scout/sniper or reconnaissance augments when an opposing force is needed. As a foundation, this team received basic training in EW fundamentals and then on-the-job training, working side-by-side with other subject matter experts. The bottom line is that

this team was sourced internally and sought out available training opportunities to become proficient.

As the key to providing full EMS analysis and support is the proper equipment, our SWTT has been utilizing Virtual Radio Observation and Detection Systems (VRODS) borrowed from the Marine Corps Warfighting Lab. This arrangement allowed for what is traditionally a Radio Battalion asset to be utilized by our infantry units. Understanding that the VRODS is an expensive system, our SWTT hand-built an organic Marine off-the-shelf³ spectrum analysis system with VRODS-like capabilities. Dubbed the Tactical Spectrum Warfare Analysis Tool, or T-SWAT, this system costs 1/100 of the cost of a VROD and is currently being duplicated and evaluated by MCWL.

tions as well as how friendly jamming will affect enemy systems, developing emissions control conditions, understanding friendly and enemy physical signatures, and even taking into account the effects on local population. The products produced help inform the commander and staff, train the force to understand the threat, and allow for adjustment to plans to better ensure survivability and mission success. The intelligence support to spectrum warfare teams also provides the critical link to organic collections system like small unmanned aerial systems, the Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise, and theater and national collections capabilities to truly evaluate the force across the EMS with the same means and methods as the threat we are training for.

From warning order to deployment and beyond, the SWTT provides training to educate the force on the threat, how to reduce signatures through signature management, how to incorporate and employ electronic warfare capabilities, and how to integrate tactical deception.

Imagine the force multiplying aspect of getting hundreds of cheaper systems in the hands of Marines who need them vice over-priced systems. Our SWTT also utilizes radio frequency beacons, night vision devices, thermal imaging, and infra-red systems to provide full-spectrum signature analysis.

To truly understand the threat and train to that standard, intelligence support is critical. Our SWTT has developed a Spectrum Warfare Generic Intelligence Requirements Handbook that walks the intelligence analyst through the tools and products necessary to support operations in a D3EMSOE, to include: establishing friendly and enemy spectrum baselines, conducting both friendly and enemy kill chain analyses, understanding how friendly radio frequency systems will be affected by enemy electronic attack and collec-

From warning order to deployment and beyond, the SWTT provides training to educate the force on the threat, how to reduce signatures through signature management, how to incorporate and employ electronic warfare capabilities, and how to integrate tactical deception. Once the force is in the field, the SWTT establishes a full spectrum baseline, recommends changes in operations and posture to reduce EMS signatures, teaches the unit how to exploit the EMS to achieve an enemy cognitive response and gain the tactical advantage, reevaluates throughout the evolution, provides continued training to the force, and can even provide EMS opposing forces to red team the training audience. Depending on the location and authorities, the team can also conduct limited electronic attack against the training audience.

This training cannot be successful unless there are evaluations throughout the process, opportunities for correction, and sincere AARs that are actually read and subsequently referenced by other units. More often than not, it seems each unit reinvents the proverbial wheel, and best practices and refined tactics, techniques, and procedures are rarely shared. What works in 4th Marine Regiment's favor is the constant rotation of forward deployed battalions on the Unit Deployment Program that are trained and evaluated to operate in a D3EMSOE; thus, take these best practices back to home stations on both the east and west coasts as well as Hawaii so that they may be promulgated throughout the Corps. Because of this constant flow of Unit Deployment Programs with a wide breadth of experience, we are able to continuously refine our training and evaluation packages as well.

Too often, we sit back and wait on higher headquarters or others to solve our problems. Instead of waiting on solutions and more gear, what the SWTT concept has proven is that with a clearly defined problem and desired end state, a Marine Corps-wide deficiency can be solved at the tactical level. The SWTT concept has proven a viable means to train and evaluate Marines to survive and win in a denied, degraded, and disrupted EMS operating environment, and the Marine Corps should look to replicate this concept, tools, and tactics, techniques, and procedures throughout the Corps.

Notes

1. Maj Jonathan George, "Marine Corps Electronic Warfare," *Marine Corps Gazette*, (Quantico, VA: October 2018). See also Maj Jonathan George, "Spectrum Warfare Integration," *Marine Corps Gazette*, (Quantico, VA: May 2019).
2. "Spectrum Warfare Integration."
3. Marine off-the-shelf, or MOTS, refers to equipment sourced and/or built by individual Marines to solve big Marine Corps problems with inexpensive solutions.

