

The 21st Century MAGTF

This article includes extracts and ideas from the *MOC*
by the Staff, MCWL

The Marine Corps experience in the 21st century so far has been characterized by long-term stability and counterinsurgency operations against insurgent forces and terrorist organizations, a situation which necessitated a focus on the demands of land operations against such enemies. However, the evolving nature of the operating environment now requires a recalibration toward restoring our maritime focus and ensuring our decisive advantage over peer and near-peer adversaries. The operating environment of the 21st century requires a MAGTF trained and equipped to counter emerging threats and exploit emerging technology and capabilities.

The *Marine Corps Operating Concept (MOC)*, (HQMC, Washington, DC: 2016) guides our collective efforts to ensure the Marine Corps' future readiness and relevancy. It is intended to describe in broad terms how the Marine Corps will operate, fight, and win in 2025 and beyond, as well as to shape our actions as we design and develop the capabilities and capacity of the future force. The *MOC* describes the 21st century MAGTF as one that:

conducts maneuver warfare in the physical and cognitive dimensions of conflict to generate and exploit psychological, technological, temporal, and spatial advantages over the adversary. The 21st Century MAGTF executes maneuver warfare through a combined arms approach that embraces information warfare as indispensable for achieving complementary effects across five domains—air, land, sea, space, and cyberspace. The 21st Century MAGTF avoids linear, sequential, and phased approaches to operations and blends maneuver warfare and combined arms to generate combat power needed



The MOC is designed to guide efforts to ensure the Marine Corps' future readiness. (Photo by LCpl Timothy Shoemaker.)

for simultaneity of action in its full range of missions. The 21st century MAGTF operates and fights at sea, from the sea, and ashore as an integrated part of the Naval force and the larger Combined/Joint force.

Essential to how we operate is our identity as a maritime force. The Marine Corps operates as a forward naval expeditionary force allowing persistent engagement within potential threat areas. Operating forward, the Marine Corps is postured within contested space under potential adversary threats. In the event of potential conflict, the MAGTF can distribute and fight forward to hold key terrain and assist in maritime security, deterrence, and sea control by denying freedom of action along key sea lines of communication. The key to fighting forward is integrating into the naval/joint force, winning the battle of

signatures, maintaining maritime domain awareness, and integrating Marine Corps strike capabilities (aviation, unmanned swarms, and missiles) in the naval fight for sea control.

Currently, MAGTFs employ effective and relevant capabilities across air, land, and sea domains. To make the MAGTF more relevant and capable in the future, the Marine Corps must integrate space and employ cyberspace capabilities in addition to enhancing our capabilities across all five domains. Once realized, the Marine Corps will achieve the vision laid out in the *MOC* to provide an enhanced, expeditionary, multi-domain force to the nation.

The Marine Corps is pursuing technological enhancements to support amphibious and expeditionary operations so that they may maneuver in a distrib-

uted manner with reduced signatures in order to mass and concentrate effects as the mission dictates. Coincident with technology integration is the development of new and updated doctrine and tactics, techniques, and procedures to fully realize the potential of the 21st century MAGTF.

This effort is underpinned by a campaign of learning that integrates force development and Operating Forces' concerns to understand and solve our most vexing warfighting challenges. The Marine Corps Warfighting Lab, as a driver of innovation, has re-instituted the SEA DRAGON experiment campaign designed to explore the changes necessary to thrive in the future operating environment. Through the development of an innovation portal, MCWL captures the best ideas from individual Marines to identify best practices and incorporate emerging ideas into the experimentation campaign.

We have actively sought to create enduring relationships between concept developers and technology developers through our Advanced Naval Technical Experiment (ANTX) series. This series was started with the Ship-to-Shore Maneuver Experimentation and Exploration (S2ME2) Task Force, established by the Deputy Commandant for Combat Development and Integration and the Deputy Assistant Secretary of the Navy for Research, Development, Test, and Evaluation. This process pairs Naval Warfare Center engineers with operational Marines in an in-depth examination of an operational problem set to see what capabilities are required and what technology is in the realm of possibility to help solve it. After a series of workshops, wargames, and exercises, best-of-breed technologies from industry, academia, and government labs are assessed and selected for rapid prototyping, limited fielding, or entry into the acquisition process.

In 2017, MCWL conducted a S2ME2 demonstration held at Camp Pendleton, CA. The S2ME2 provided a forum for civilian entrepreneurs and government scientists to showcase new and innovative technologies for Marine Corps evaluation in an innovative program to accelerate the identification of

new, operationally relevant technologies. This initiative is one component of an expansive program to identify and advance promising capabilities in areas of networked command and control; networked sensors and weapons; autonomy, manned-unmanned teaming, and robotics; precision effects; and cognitive computing.

In 2018, the ANTX rapid prototyping process will be Urban 5th Generation (U5G) operations, focusing on the company level and below. At Camp Pendleton, CA, Operating Forces will assess technologies suited to urban operations over a two-week period. Promising technologies will be identified for rapid prototyping and inclusion in follow-on experiments or large-scale exercises. In 2019, MCWL

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will shift the ANTX series to look at technologies that will support expeditionary advanced-base operations.

Ultimately, it will be through these and other innovative efforts that the Marine Corps will develop the methods and means to achieve the following ideas as listed in the MOC:

- *Integrate the naval force to fight at and from the sea:* To support deterrence, sea control, and power projection, the Marine Corps must operate in all domains as part of an integrated naval force. To do so requires additional capability and capacity in a wider variety of naval platforms, integrated Navy/Marine commands and staffs, tailored capabilities that support sea control and power projection missions, integrated command structures, and shared naval concepts such as littoral operations in a contested environment.
 - Devise and refine an approach to operate from more diverse platforms and expeditionary advanced bases as part of a naval campaign.

- Employ fire support systems (anti-ship missiles and unmanned swarms) to affect sea control.
- Integrate weapons, sensors, and command and control into naval command and control architecture, supported by expanded experimentation and naval exercises.
- Ensure the interoperability of Marine and Navy command and control systems while increasing integration with combined/joint force maritime component commands.
- *Evolve the MAGTF:* The 21st century MAGTF must retain the essential advantages conferred by its inherent flexibility. The MAGTF requires the ability to fight as an integrated naval and joint partner integrating command, control, and informational

tools as well as MAGTF and special operations capabilities; the ability to rapidly composite MAGTFs in forward locations; the ability to fight as distributable forces; the exploitation of automation technologies; and a total force approach to readiness.

- Pursue an aggressive wargaming experimentation exercise program that leverages thinking adversaries, force-on-force training, and live, virtual, and constructive capabilities.
- Develop capabilities that support a forward expeditionary posture.
- Develop autonomous systems, artificial intelligence, and machine learning to enhance how we operate.
- Fully leverage advanced aviation capabilities that contribute to force protection through a layered air-defense capability, combining airborne defensive counter-air with persistent ground-based air defense and integrating command and control and networked sensors to allow target engagement closer to a weapon's

maximum effective range, effectively increasing the range and depth of protection coverage.

- *Operate with resilience in a contested-network environment:* The modern battlefield is saturated in information and digital network technology, which presents both opportunities and challenges. We must maneuver in the electromagnetic spectrum, establish and defend networks that support increased situational awareness and higher-tempo operations, exploit networking for rapid and precise fire support, utilize the processing power of modern computers at the tactical edge, and expand and enhance military intelligence concepts.

- Reduce the electromagnetic signature of the 21st century MAGTF and employ low-signature, reliable digital communications networks.

- Provide persistent, multi-spectral battlespace awareness for the MAGTF through a family of sensor-equipped manned and unmanned aircraft.

- Provide a protected, long-range, integrated command and control network that enhances the capacity to gain and maintain an understanding of friendly and enemy environments.

- Develop layers of persistent multi-spectral armed unmanned systems to cue, target, and provide kinetic and non-kinetic fires.

- Institutionalize the MEF information groups to employ information-related capabilities such as electronic warfare, cyber warfare, and space-based systems.

- Develop and train a viable mission-command framework to continue operations when communications are degraded or denied and positive control is not feasible.

- *Enhance our ability to maneuver:* Operating in all five dimensions requires maneuver in and through five dimensions. This includes naval and littoral maneuver, a broader concept of combined arms that includes information warfare, enhancing our ability to fight in and through urban environments and complex terrain, improving the mobility of ground combat and logistics forces, employ-



Long-range command and control networks will be required in order for Marine forces to be kept informed of both friendly and enemy situations. (Photo by Sgt Joshua Jackson.)

ing a mix of light and heavy forces, sustaining distributed forces through expeditionary logistics, and exploiting operational energy.

- Employ modern, highly mobile and protected vehicles, connectors, and mobility systems incorporating unmanned sub-surface, ground, and air vehicles.

- Enhance our armored mobility to support maneuver on land and from the sea.

- Develop effective stand-off detection and breaching capabilities for operations in the urban littorals.

- Develop a hybrid logistics system (built on existing capabilities + AM, unmanned distribution, sense and respond capabilities, and improved integration with naval, joint, and Defense Logistics Agency enterprises) to support distributable forces across a dynamic and fully contested battlespace—because iron mountains of supply and lakes of liquid fuel are liabilities and not supportive of maneuver warfare.

- Employ unmanned systems and automation at all echelons and in every domain because mastering the man-machine interface offers a revolution in military operations.

- Continue to experiment with concepts and emerging technologies to

enhance energy storage, distribution, and throughput capability to support maneuver forces.

- Reduce our dependency on fuel using emerging energy generation technologies.

- *Exploit the competence of the individual Marine:* With the emergence and proliferation of new technologies and capabilities, the only distinguishing feature between our forces and our adversaries' may be the qualities of the individual Marine. The power of the MAGTF rests squarely on the quality of our individual Marines. Current Marines have grown up and thrived in a digital, interconnected, federated, and fast-paced environment. Our young Marines are naturally adept at creatively employing an ever-changing set of tools. The Marine Corps must continue to adapt itself as an institution in order to take advantage of those strengths, from the bottom up, while we cultivate the strong moral and ethical foundation demanded by our complex operating environment. Recognizing that the U.S. Marine is the Marine Corps' decisive and unique advantage, the Service must expand opportunities and mechanisms for Marines to reach their full potential, using the training and education continuum to leverage their unique

strengths and skills. The Marine Corps can achieve this vision using tough and realistic training against a thinking and determined adversary and by incorporating technology that augments the capabilities of the individual Marine.

- Expand enlisted education opportunities and reinforce MOS progression training to foster Marines as tactical and technical experts in their field.
- Incorporate live, virtual, and constructive training events against a realistic and adaptive adversary to fully exercise and strengthen decision-making skills across the force.
- Adopt human resources systems to better foster unit cohesion, professional development, and readiness.
- Institutionalize “trust-based” tactics through leaders that coach and mentor through mission command-style orders and foster team-focused command climate at all levels.
- Set the moral, mental, and physical standards for Marines across the MAGTF through a mission-driven perspective that fully recognizes the demands on expeditionary forces conducting operations in austere and uncertain environments.
- Develop leaders at all echelons who know how to fight in the complex terrain of densely populated urban environments and understand the power of information and information warfare because “fighting hard” and “fighting smart” are mutually reinforcing.
- Design and implement manpower systems, policies, and processes to attract, develop, retain, and support highly qualified Marines and civilian employees prepared for the rigors of 21st century expeditionary operations.
- *Utilize 21st Century Combined Arms across all domains:* This requires using all available means across all domains to confront the enemy with multi-faceted, reinforcing, and rapidly shifting dilemmas in order to shatter his cohesion, corrupt his decision making, and increase friction. It is vital that the Marine Corps achieves a tight level of integration combining the physical

and cognitive effects, kinetic and non-kinetic, lethal and non-lethal, across all capabilities.

- Provide enhanced, long-range precision, lethal and non-lethal fires as well as the ability to mass effects at ranges beyond potential adversaries.
- Provide fires that deny access to sea lines of communication from expeditionary locations ashore.
- Develop swarming, armed air, surface, and sub-surface capabilities.
- Leverage networking to shorten the kill chain to the tactical edge by linking distributed forces to sensors and fires with the ability to rapidly provide precision fires and massed effects.
- Develop organizational and employment concepts for information warfare efforts to ensure the MAGTF has a cohesive, organic capability to employ effects across all five domains.
- Develop an organic air/UAS- and missile-defense capability.
- Organize, train, and equip all echelons to integrate information warfare as a combination of creative thinking and advanced technology.
- Provide expeditionary air and missile defense, to include counter-UAS.

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- Integrate networks; Marine aviation should link sensors and shooters across the naval force, contributing speed and range to the combined arms capability of the MAGTF.

Conclusion

To fight and win the Nation’s battles in the future, we must innovate to meet the challenges of adaptive and innovative adversaries. To achieve this, we will leverage and exploit any and all military research labs, individual Marines, and commercial outlets. Ultimately our

ability to successfully execute as a 21st century MAGTF greatly depends on the extent to which we accomplish the above points and:

- Integrate as a full partner with the Navy, special operations forces, and the joint force because Marines both contribute to and benefit from unique and complementary capabilities across the range of military operations and across all five domains.
- Master the implementation of 21st century combined arms as our means to conduct maneuver warfare across all domains because we will exploit every opportunity to gain an advantage.
- Design and protect our command and control and intelligence, surveillance, and reconnaissance networks as a multi-source information-sharing architecture that reliably serves disparate MAGTF elements because distributing actionable information keeps operations in chaotic environments from becoming chaotic operations.
- Configure the MAGTF to fight and win when it fluidly distributes and concentrates elements because maneuver warfare and combined arms create combat power at any scale.
- Enable small units to achieve greater effects because they can leverage the full combat power of the MAGTF and naval/joint forces.
- Overcome the enduring obstacles to leveraging and sustaining commercial off-the-shelf systems because affordable “70 percent” solutions now are better than outdated solutions 10 years from now.

The 21st century MAGTF is within our reach. Even as the Marine Corps defends the Nation abroad, the institution is driven to rapidly innovate to meet the challenges of the emerging operating environment. This comprehensive program, properly resourced and focused, underwrites the MAGTF’s contribution to the joint force and the Marine Corps’ role as our Nation’s expeditionary force in readiness.

