AOC ADVOCACY

ASSOCIATION OF OLD CROWS
ADVOCACY NEWSLETTER
September 2019

HASC Looks at EW Planning, but Needs to Look at EMS Workforce too

The House-passed version of the FY 2020 National Defense Authorization Act, HR 2500, contains Direct Report Language calling on GAO to "assess the [Department of Defense's] electronic warfare (EW) and electromagnetic spectrum operations (EMSO) strategy and implementation efforts." The AOC supports this provision and appreciates the leadership role that the House Armed Services Committee (HASC) is taking to advance these critical warfighting disciplines. Yet, the parameters for the assessment miss an alarming gap, the need for a Defense EMS Enterprise Workforce.

As the House NDAA provision states, all Joint Warfighting Functions, such as "movement and maneuver, fires, command and control, intelligence, protection, sustainment, and information, are accomplished" within or through the EMS. The US must project, attain, and sustain EMS Superiority – freedom of actions within the EMS – against peer competitors to win any major future military campaign. This imperative is shedding a renewed light on gaps and capabilities across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities, and Policy (DOTMLPF-P). The FY 2019 NDAA included an important legislative provision (Sec. 1053) that established both an EMSO Cross-Function Team and a Senior Designated Official (SDO), currently the Vice Chairman of Joint Chiefs of Staff (VCJCS). The SDO through the EMSO CFT is working to consolidate the largely administrative 2013 DoD EMS Strategy with the more operational focused 2017 EW Strategy to produce a comprehensive 2019 DoD EMS Superiority Strategy, Road Map, and Implementation Plan. The goal of this effort is to consolidate and harmonize these documents to produce efficiencies in requirements, acquisition, and employment; and set the conditions for strategic superiority across the US warfighting capability portfolio based upon the need for unity of effort in the EMS domain.

Against this backdrop the GAO assessment will take place. Since the House provision in the FY 2020 NDAA is report language, it is not a conferencable provision and unable to be revised; however, the AOC believes a true assessment of DoD EW and EMSO cannot be completed without studying carefully how the DoD must take deliberate steps to establish, track, and sustain a skilled, comprehensive, and enduring Defense Electromagnetic Spectrum Enterprise Workforce that can anticipate and adapt to complex electromagnetic operating environments and adjust resources to meet dynamic mission requirements. The AOC hopes GAO and ultimately the HASC will review the current DoD guidance on staffing caps and reductions that may be contrary to achieving the objectives of Section 1053, which will require the staffing of key EMS Enterprise leadership and management positions, once determined.

HASC Looks at EW Planning (cont)

The bottom line is that while EW and EMSO are receiving greater attention today than in years past, this attention has not translated into systemic and enduring reforms to how we build and govern the EMS Enterprise. Congress will need to continue its oversight role to close gaps in EMS-related workforce and skill sets at the OSD, Joint CCMD, Service, Agency, and Center levels, which is essential for leading, equipping, and operating in the EMS domain.

AOC Hosted Quantum Briefing on Capitol Hill

On August 27, AOC hosted a roundtable on quantum technologies for congressional staffers. Subject matter experts Dr. Ned Allen and Dr. Kristen Pudenz from Lockheed Martin and Dr. Clayton Crocker from Keysight Technologies discussed quantum radar and quantum computing. Quantum is an extraordinarily diverse field with amazing promise but uneven progress. The expert panel started by discussing what differentiates quantum technologies using either superposition or entanglement to perform complex tasks that classical systems cannot, such as lowering a radar's signature, thus making it harder to detect and jam. From sensor collection to data storage to secure communications, quantum may fundamentally change the way we fight, yet today we realize only a small slice of capability. This also means that the US is not alone in its pursuit of quantum technologies. China is also dedicating tremendous resources to this field. While they boast of progress, they have yet to solve the underlying problem of quantum beam decoherence that holds back an operationally effective quantum radar. Yet it is only a matter of time until this challenge is solved and the solution will provide a tremendous operational advantage.

Quantum computing, however, is less illusive. According to Dr. Crocker, quantum computing is in the research phase currently. There are computers in labs across the country running algorithms, but it will take more research for them to solve more complex problems. He stressed to debunk a myth that quantum computers are not simply classical computers running a billion times faster; quantum computing is a fundamentally different design, methodology and application using qubits as building blocks that can be in many different states at once.

Quantum technology is an elusive field and experts are only beginning to understand the overwhelming promise. It is imperative that the US coalesce research and development efforts, especially through DoD and service labs to ensure it does not fall behind competitors in this game-changing discipline. The AOC will continue its education and awareness activities focusing on quantum technologies and serve as a resource to stakeholders in both the private and public sector.

Quantum Funding Highlights in FY20 Budget Request

The following is a sample of RDT&E programs for quantum that we are monitoring through the FY 2020 defense budget process. For more information on program funding levels in the defense budget, please contact Amanda Crowe, Congressional Affairs Manager, at crowe@crows.org.

Air Force

PE 0601102F, Defense Research Sciences

$42.639 million for Project: Physics and Electronics, Activity: Complex Electronics and Fundamental Quantum Processes

Army

PE 0602146A, Network C3I Technology

$3.917 million for Project: Advanced PNT for GPS Independent Environments Tech, Activity: Quantum Effects for Assured PNT in Zero-GPS Environments

PE 0601104A, University and Industry Research Centers

$3 million for Project: Army Collaborative Research and Tech Alliances, Activity: Center for Exploitation of Quantum Effects

Navy

PE 0602750N, (U)Future Naval Capabilities Applied Research

$55.72 million for Project: (U)Future Naval Capabilities Applied Research, Activity: C4ISR and Special Projects

DARPA

PE 0601101E, Defense Research Sciences

$9.8 million for Project: Math and Computer Sciences, Activity: Alternative Computing

Quantum Funding Highlights (cont)

OSD

PE 0602251D8Z, Applied Research for the Advancement of S&T Priorities

$51.883 million for Project: Applied Research for the Advancement of S&T Priorities, Activity: Applied Research for the Advancement of S&T Priorities

PE 0602234, Lincoln Laboratory

$4.973 million for Project: Lincoln Laboratory, Activity: Quantum System Sciences

Rare Earth Materials Provision in House FY2020 NDAA

H.R. 2500, the House FY2020 National Defense Authorization Act (NDAA), contains section 807-Acquisition and Disposal of Certain Rare Earth Materials. This section is vital in this era of near-peer competition, particularly for vacuum electronic device (VED) manufacturers who depend on these materials. VED technology, specifically traveling wave tubes (TWT) are experiencing a renewed focus as both commercial and defense electronics are operating at higher frequencies, such as 5G and millimeter wave (MMW). This new trend is highlighting a dwindling industrial base for the safe and secure supply of rare earth elements. Specifically, the provision calls for the acquisition of rare earth materials and the establishment of a secure supply chain from the United States and non-adversarial sources. It also wants to ensure that the United States no longer depends on China for these materials by 2035. China supplies almost all our rare earth materials, which is a risk to our defense industrial base and national security. These materials are defined as those with the presence of yttrium, scandium, or any lanthanide series element. Section 807 also calls for tantalum to be designated as a strategic and critical material under the Strategic and Critical Materials Stock Piling Act. This provision also enables the National Defense Stockpile Manager to acquire aerospace-grade rayon, electrolytic manganese metal, pitch-based carbon fiber, rare earth cerium compounds, and rare earth lanthanum compounds. Up to $14,420,000 from the National Defense Stockpile Transaction Fund can be used to purchase these materials for FY 2020 to FY 2024.

For more information on this provision and how it affects the AOC community, please contact Ken Miller, AOC's Director of Advocacy and Outreach, at **kmiller@crows.org**.

Secretary of Air Force Nominee Discusses EW

In her advanced policy questions as the nominee to be the next Secretary of the Air Force, Barbara Barrett was asked about her views of EW within the Air Force. Her written responses to the Senate Armed Services Committee are below.

Recently the Department concluded the Electronic Warfare (EW) Enterprise Capability Collaboration Team. Considering that the Air Force has relied on Navy and Marine Corps EW capabilities since retiring the EF-111 Raven aircraft in 1998:

What is your vision for the future of Air Force EW capabilities?

Barrett: In order to compete, control, and dominate the Electromagnetic Spectrum (EMS), the Air Force will need to employ distributed systems and capabilities, operating in coordination to defeat an adversary with complex systems aligned to degrade or deny our Nation's capabilities. The Air Force will need to explore, develop, and produce new and innovative concepts and doctrine that expand on historic electronic warfare principles in favor of enterprise Electromagnetic Spectrum Operations.

What is your assessment of the adequacy and efficacy of the EW training that Air Force personnel received in an Air Force environment in specific airframes? In a joint environment with other Military Services?

Barrett: Recent Air Force findings call for renewed unity of effort in the Electromagnetic Spectrum (EMS) domain spanning enhanced airman proficiency and contested environment training across all Air Force airframes. I believe the other Services face training challenges similar to those of the Air Force because it is a joint fight in extremely complex electromagnetic operating environments. The Joint force will need to face this challenge together through tighter integration in day-to-day training, wargames, and exercises.

Given the difficulty in defining where cyber operations and EW merge, if confirmed, how you would organize, train, and equip the Air Force to minimize gaps and seams with regard to threat assessment, requirements determination, material solutions, and concept of operations development for these two critical mission areas?

Barrett: If confirmed, I would engage with the Air Force leadership team to evaluate the threat of gaps at the confluence of cyber and EW. Currently, the Air Force is transforming cyberspace career fields for officers and enlisted airmen. For officers, the Air Force is creating a new career field plan, establishing deliberate pathways for development of defensive and offensive cyberspace operations expertise. For enlisted airmen, the Air Force is streamlining career opportunit-

Secretary of Air Force Nominee (cont)

ies to maximize depth in cyber security, network operations, and advanced cyber defense operations. The impact of these changes on EW counterparts will be of interest.

ICYMI

In July, Secretary of Defense Mark Esper referred to the EMS as a domain in his advanced policy questions for his Cabinet nomination to the Senate Armed Services Committee. A transcript can be found below.

Q: China has embarked on a massive shipbuilding program. By 2030, China will have almost 100 more ships than the U.S. Navy; China will possess more major surface combatants and more attack submarines, most of which will be newer and more capable. And while all of China's Navy will be focused on the Indo-Pacific, the United States maintains only about 60 percent of its fleet in the Pacific. In your assessment, how should the United States adapt to this shifting maritime balance in the Indo-Pacific?

Sec. Esper: To maintain DoD's military edge in the Indo-Pacific region, the Joint Force will develop all-domain solutions that expand our advanced capabilities beyond the maritime environment, including new joint capabilities in the space, cyberspace, air, electromagnetic spectrum, and land domains. These capabilities must all work in unison. Future Service and Joint concepts must also incorporate asymmetric and irregular approaches that create dilemmas for adversaries on a global scale. DoD should also exploit its subsurface advantages and, when required, use standoff air and surface long-range fires to hold surface combatants at risk. It is also critical that we work with our allies and partners to ensure freedom of navigation in peacetime and freedom of action in crises.