From the JED Archives: Protect and Strike – NAVAIR/PEO-T Advances Naval Airborne EW

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By John Haystead

The DAIRCM program will transition to a Program of Record and enter production for additional installations on USMC UH-1Y helicopters. USMC photo

As stated in the US Navy's "Navy Aviation Vision 2030-2035" document, "RF detection and electronic attack capability coupled with passive broad-spectrum advancements will be required to defeat (an adversary's) advanced Integrated Air Defense Systems (IADS) in the RF spectrum. Investments in IR and RF signature-reduction technologies combined with standoff electronic attack assets will ensure platform survivability

against adversaries that continue to make advancements in targeting technologies. Integrated and layered effects (non-kinetic and kinetic) will provide the tools required for operators to deliver precise lethal effects on the target in any environment."

The Naval Air Systems Command (NAVAIR) is the organization whose mission it is to "deliver these integrated air warfare capabilities to enable the fleet to compete, deter and win – tonight, tomorrow and in the future." Established in 1966, and headquartered at Naval Air Station (NAS) Patuxent River, MD, NAVAIR "provides support (people, processes, tools, training, mission facilities and core technologies) to Naval Aviation Program Executive Offices (PEOs) and their assigned program managers." Organizationally, the Naval Aviation PEOs report directly up to the Assistant Secretary of the Navy (Research Development and Acquisition) (ASN (RD&A), but receive support from NAVAIR through an "Operating Agreement."

Of specific interest to the Electromagnetic Warfare (EW) community is the PEO for Tactical Aircraft Programs, PEO (T), one of four naval aviation PEOs supported by NAVAIR. PEO (T) is responsible for providing full-life-cycle support of both Navy and Marine Corps aircraft, weapons, and systems – including research, design, development and systems engineering; acquisition; test and evaluation; repair and modification; and in-service engineering and logistics support.

AIRBORNE ELECTRONIC ATTACK – PMA-234

PEO (T) supports a number of Program Management Air (PMA) offices, one of which is PMA-234 whose mission is to provide Airborne Electronic Attack (AEA) systems and capabilities in support of combatant commanders. Says CAPT David Rueter, current PMA-234 Program Manager, "Our primary mission here at

PMA-234 is to ‘put the fog into the fog of war.’ AEA is all about creating confusion and raising the noise level to enhance the effectiveness of the self-protection systems of all friendly strike aircraft platforms. Sometimes people tend to view EW as either EA or Electronic Protect (EP), but it’s really both. You need us to really raise that fog and noise level, and thus make your self-protect systems that much more effective.”

Among its major programs is the Next Generation Jammer (NGJ) system which is being developed to disrupt enemy radar and communications systems and hence suppress its integrated air defense capabilities. NGJ will replace the Navy’s current AN/ALQ-99 Tactical Jamming System (TJS) carried aboard EA-18G Growler aircraft. The Boeing-made Growlers can carry up to five of the TJS pods, two under each wing and one under the fuselage.

While NGJ is being developed and fielded, PMA-234 is continuing to also support the ALQ-99, which “will remain in service until all increments of NGJ reach full operational capability.” Developed in the 1960s, the ALQ-99 has undergone a series of upgrades to maintain its capability against evolving and emerging threats.

A joint program between the US DOD and Australian Department of Defence, NGJ is described as “the next step in AEA to meet current and emerging EW gaps, counter growing threat capabilities and capacity, and keep pace with the advanced and emerging numbers of threats and continuous expansion of the AEA mission area.”

Like the ALQ-99, NGJ is also an external-carriage system, with the latest digital software and active electronically scanned array (AESA) technology providing a number of improvements over the ALQ-99, such as increased power and jamming capability at longer ranges and the ability to implement rapid hardware and software updates. Although NGJ operation is

inherently highly-automated, it also allows for a cockpit operator to independently address specific targets with real-time generation and use of dedicated jamming waveforms.

The NGJ program is being managed as an evolutionary acquisition with three planned elements. Although the specific frequency range of each is officially classified, NGJ is eventually intended to encompass three system components covering the Mid-Band, Low-Band and High-Band frequency ranges. Currently, the Mid-Band and Low-Band system programs are underway.

The Mid-Band "AN/ALQ-249(V)1" element is comprised of two pods together with small hardware and software modifications to the Growler aircraft itself. The program achieved Milestone C in June of 2021 with Low Rate Initial Production (LRIP) I and II contracts awarded to Raytheon Technologies (Arlington, VA) in July ($171.6 million) and December ($227 million) of that same year.

In March 2022, Boeing Defense Space & Security (St. Louis, MO) won a $17.7 million contract modification to procure the necessary test and engineering support to complete the development of NGJ – Mid-Band and the phased replacement of the AN/ALQ-99 TJS.

Rueter says they're currently finishing up developmental testing on the NGJ-MB pod and looking to transition to operational testing soon. "Moving to the next phase of testing is exciting," he says, "and we're looking forward to completing it by the end of this year/early next. We're currently in negotiations for an LRIP III contract which should be our last LRIP lot award prior to approval of full-rate production upon completion of operational testing." The Navy ultimately plans to buy 135 NGJ Mid-Band pod sets.

NGJ LOW-BAND

Unlike the NGJ Mid-Band program, the progress of the NGJ Low-Band effort has been, to say the least, a storied tale, beginning in December of 2020, with the award by PMA-234 of a $496 million Engineering and Manufacturing Development (EMD) contract to L3Harris Technologies (Melbourne, FL). The contract called for supporting final design efforts and manufacturing of eight operational prototype pods and four test pods for various levels of testing and fleet employment to include airworthiness, functionality, and integration with the EA-18G aircraft.

However, Northrop Grumman filed a protest of the award, alleging the Navy failed to consider the impact of a potential conflict of interest. The Government Accountability Office (GAO) agreed, noting that there was the appearance of an unfair competitive advantage in favor of L3Harris. A stop work order was then issued to L3Harris, which the company responded to with its own protest.

Reportedly, the three parties have now agreed to a settlement that was accepted by the Court of Federal Claims, which details a path for reopening discussions with both vendors, a re-evaluation of their proposals and ultimately a re-award for the Low-Band EMD contract. According to Rueter, the official status right now is that, “the effort is currently in source selection due to corrective action from a sustained protest.”

Although, as a result of the award re-evaluation, the contract deliverables described in the original award to L3Harris will no longer apply, Rueter emphasizes that, “the important thing to focus on is that the capability is still desperately needed. Even though we’ve been delayed by legal issues over two years, the threat hasn’t gone away, and we need to get this critical capability fielded – the warfighter needs it, so our focus is on getting on contract to develop and deliver the

solution the Fleet needs.”

NGJ HIGH-BAND

As for the third element of NGJ – NGJ High-Band – although there is not yet a funded program for the capability, Rueter says they’re working with their requirements and resource sponsors, both the US and Australia, “looking at understanding the trade-space, understanding how the threat has evolved, and what this means for a future High-Band program as we move forward.” Early projections for NGJ High-Band called for it to be operational in the 2026-2028 timeframe.

LOOKING FORWARD

Because the NGJ system is a self-powered unit, it can potentially be integrated onto other aircraft that have the ability to carry external stores. This may include unmanned aircraft beyond the jammer-carrying Miniature Air Launched Decoys (MALD-J) drones that Growlers already work with. Says Rueter, “This is something we’re continually looking at for NGJ systems. Although the Growler has always been our threshold platform, and we have a very close relationship with PMA-265 – F/A-18 and EA-18G Program – I keep pushing the team toward the need to think ahead to the Navy’s ‘Air Wing of the Future,’ and what its composition will look like. As such, we’re continually working with other platform program offices to make them aware of what EA capabilities we offer and why they might want to consider integrating some of these capabilities in future.”

NGJ is also expected to take advantage of technology developed through the Navy’s Reactive Electronic Attack Measures (REAM) program. REAM was an Office of Naval Research (ONR) Future Naval Capability (FNC) activity supported by Northrop Grumman (Falls Church, VA) under a $7.2 million cost-plus-fixed-fee contract awarded in April 2018. REAM software applies machine-

learning techniques to assess an unrecognized radar/emitter's intent and general characteristics. The system would then be able to automatically determine an effective jamming technique, as well as adjust its attack parameters according to the emitter's response. Rueter says they're looking at transitioning functions from the REAM FNC into NGJ and other programs. "Our objective for NGJ Mid-Band is really to build a system that can be rapidly updated and reprogrammed to pace the threat. This is where I see REAM functionality potentially coming in through the continuing follow-on development of the Mid-Band system."

AN/ALQ-231 – INTREPID TIGER II

Another program under the purview of PMA-234 is the AN/ALQ-231 (V) Intrepid Tiger II (IT II) system. IT II is an externally-carried communication-jamming pod, or internally installed, networked EW system for Marine Corps fixed- and rotary-wing aircraft that can be controlled either from the cockpit of the aircraft or by a ground operator.

IT II implements an open-architecture design and rapid re-programmability capability that allows it to keep pace with and adapt to newly-appearing and future threats. It has evolved over the years through a number of variant stages. Having achieved Full Operational Capability (FOC) last year, the ALQ-231 (V3) variant is currently deployed with the fleet on UH-1 "Huey" helicopters of Marine Light Attack Helicopter (HMLA) detachments. The (V)3 variant has more capability in terms of direction finding (DF) and electromagnetic warfare support (ES) than earlier variants, in addition to its baseline communication jamming capability.

The newest variant, ALQ-231 (V)4, flew for the first time on an MV-22B Osprey aircraft in the summer of 2021. This was also the first time the capability was incorporated internally rather than as a pod. A roll-on/roll-off kit, the (V)4 has

similar capabilities to the V()3, but with additional ES/DF capabilities. Captain Rueter says they're planning on the (V)4 entering operational testing later this year. Initial Operational Capability in the MV-22 is slated for mid-2024.

A (V)5 variant of the system is also being developed for KC-130 platforms through an aircraft modification program, and various research efforts are being explored with a focus on providing an ES capability for proposed Marine Air-Ground Task Force (MAGTF) Unmanned Aerial System (UAS) Expeditionary for Medium-Altitude, Long-Endurance – or MUX/MALE – platforms.

Rueter says the thing that he always focuses on with regard to Intrepid Tiger is that the program has really demonstrated the power of a government-owned design and software architecture. "It's really been amazing how we've been able to take all the building blocks of the Intrepid Tiger architecture and repackage them into the different variants. As the Marine Corps has identified new platforms that require some sort of EMW [electromagnetic maneuver warfare] capability, we've been able to fairly-rapidly repackage IT II parts to serve those needs." Rueter observes that it has also illuminated ways that the same kind of mentality can be adopted for other systems, "like the ALQ-99 for example, to solve problems in a different way, or show us maybe where we need to go with the multiple NGJ band systems. With the rapid pace of microelectronics advancement, the only way we're going to be able to pace the threat is to take the same kind of mentality on all of our EMW systems."

ADVANCED DEVELOPMENT IPT

The PMA-234 Advanced Development (ADEV) Integrated Product Team (IPT) works to focus and integrate the efforts of Science and Technology, Advanced Techniques Group/Advanced Capabilities, Jammer Technique Optimization (JATO) and Joint Warfighter Organizations to deliver technology roadmaps, trade

study analyses and funding inputs to shape the Navy's future AEA programs.

Among its activities, the team provides "EMW technique development; conducts long-term assessment of future technology and techniques for incorporation into operational weapon systems; develops advanced modeling and simulation systems; and develops a common, flexible, standardized architecture that is reliable, easily upgradable, reconfigurable, and maintainable to facilitate rapid technique development and portability."

A large portion of ADEV's work is with the JATO team, whose responsibility is to ensure that warfighters are achieving the maximum effectiveness from current systems. JATO focuses on the development of the most optimal jamming algorithms and techniques, as well as up-to-date tactics, techniques, and procedures for operational use. It utilizes warfighter lessons learned, the EW database, engineering, software, and hardware development expertise to maximize warfighter effectiveness. JATO supports the EA-18G Growler, ALQ-99 Tactical Jamming System, Next Generation Jammer, Intrepid Tiger II and Miniature Air-Launched Decoy – Navy (MALD-N) programs.

As described by Rueter, JATO is unique in that it's a national organization of civilian, military and contractor individuals. Managed by PMA-234, JATO provides the latest EW mission data updates to the US Navy and Marine Corps as well as Royal Australian Air Force EW units. "We really think of JATO as the people who put the bullets in our non-kinetic weapons. So, when we talk about pacing the threat, it's a dedicated group of people that are continually watching and evaluating what the threats are doing, developing new and better jammer techniques to defeat them, and then turning those techniques out to the Fleet on a monthly basis."

ADVANCED TACTICAL AIRCRAFT PROTECTION SYSTEMS – PMA-272

Clearly, aircraft strike capabilities are only as effective as their ability to survive in the threat environment. This is where NAVAIR's Advanced Tactical Aircraft Protection Systems Program Office (PMA-272) comes to the fore. PMA-272 manages the development, demonstration, acquisition and sustainment of EW self-protection and Aircraft Survivability Equipment (ASE) acquisition programs for fixed-wing, rotary-wing and tiltrotor aircraft defense. As described by PMA-272 Program Manager, Col Tamara Campbell, USMC, "We deliver affordable airborne defensive, electromagnetic warfare self-protection solutions to protect aircraft from evolving enemy threats and missiles as they advance through enemy airspace and survive. We focus on three key areas: aircraft self-protection, mission execution, and technology risk-reduction in order to provide that linkage to the high-end fight." PMA-272 is composed of three Integrated Product Teams (IPTs): Strike, Assault, and Common. Together they are responsible for a range of EW systems, including radar warning receivers (RWRs), IR and EO countermeasures, RF countermeasures, countermeasure defense systems and expendables. Says Campbell, "We provide a multispectral response from detect-to-defeat with multi-suite capabilities for multiple platforms, not only within the Navy and Marine Corps arsenal but across the DOD and Allied partners as well." In total, PMA-272 currently supports about 20 programs on about 1,500 aircraft.

STRIKE IPT

Principal among the programs of PMA-272 is the AN/ALQ-214 Integrated Defensive Electronic Countermeasures (IDECM) system, which protects Navy and Marine Corps F/A-18 aircraft from surface-to- air and air-to-air radar-guided threats. In addition to the L3Harris AN/ALQ-214 On-Board Jammer (OBJ),

IDECM also integrates Raytheon's AN/ALR-67 Radar Warning Receiver (RWR), as well as BAE Systems' AN/ALE-55 Fiber-Optic Towed Decoy (FOTD), which provides an off-board jamming capability to the system as well. The AN/ALE-55 decoy works in concert with the AN/ALQ-214 to produce a variety of countermeasure techniques against both pulsed and CW threats. The ALE-55 replaces the legacy Raytheon AN/ALE-50 FOTD, and it will, in turn, be replaced by the next-generation Dual-Band towed decoy (DBD). Emerging from the Navy's Dual-Band Intelligent RF Expendable (DIRE) S&T program, BAE Systems and Raytheon each won DBD prototyping contracts in 2019. DBD is a Program of Record which is now in source selection, with BAE and Raytheon competing for the Engineering Manufacturing and Development (EMD) contract valued at approximately $60 million. DBD IOC is scheduled for mid-2026.

Campbell points out that the AN/ALQ-214 system has incorporated several Engineering Change Proposal (ECP) upgrades over the years. The (V)3 version of the system, currently deployed on F/A-18E/F aircraft, is being replaced by the Modular Open System Architecture (MOSA)-compliant (V)4/5 variant, which provides improved capability, technology-insertion upgrades, and quicker reprogrammability for theater-specific configurations in a smaller and lighter form factor. The (V)4/5 variant is currently in full-rate production with deliveries expected to be completed by FY 2025. Campbell says she expects the system will be deployed this summer on Navy F/A-18C/D aircraft and on E/F aircraft by the end of the calendar year.

PMA-272 conducts continuous upgrade and improvement efforts for the IDECM system to provide additional future capabilities. These currently include a Digital Receiver Technique Generator (DRTG) improvement activity to develop optimal responses to threat systems, and the Adaptive Radar Countermeasures (ARC) program.

ARC is a program that PMA-272 worked on with the Defense

Advanced Research Projects Agency (DARPA) and is now supported by Leidos. Says Campbell, “ARC software-based capabilities will allow EMW systems to be more agile and agnostic in terms of detecting and countering threats. As opposed to relying on known-threat emitter databases, ARC leverages advances in signal processing and machine learning to autonomously develop intelligent algorithms to characterize and address any detected potential radar threat.”

ADVANCED EW PROJECT

The latest IDECM-related project that PMA-272 is working on – in tandem with the F/A-18 and EA-18G Program Office (PMA-265) – is the Advanced EW (ADVEW) project. ADVEW is an anticipated ACAT 1C Program that aims to provide a new EW suite for Navy F/A-18E/F Super Hornet aircraft ensuring improved situational awareness and survivability against modern threat systems. The Navy’s FY24 budget request says ADVEW “replaces the outdated ALR-67 radar warning receiver (RWR) and the limited ALQ-214 self-protect jammer into a modern, combined EW suite providing automated EW processing in an Open System Architecture. The suite will enable both offensive and defensive capabilities for the F/A-18E/F, as well as interoperable EW effects across the Carrier Air Wing and joint forces. Funding will support multiple sensor enhancements to include the AN/APG-79 radar Wideband Receiver (WBR) upgrade providing instantaneous bandwidth and integration of EW signals into the ADVEW suite. When fielded in FY27, this system will provide all-aspect, high sensitivity detection of full spectrum complex/agile/cognitive Radio Frequency (RF) threats keeping the Super Hornet a highly capable strike fighter asset in the Great Power Competition through platform sundown in 2040.”

In January, NAVAIR released a Request for Information seeking industry input as part of an ADVEW acquisition strategy and materiel solution analyses. Specifically, it sought information on frequency coverage, RF-performance

characteristics (both RF countermeasures and RWR); mechanical performance, interface requirements, hardware form factors (mass properties should not exceed the currently installed AN/ALQ-214A(V) and AN/ALR-67(V) platform limitations), flight-envelope carriage performance, and platform size, weight, power, and cooling constraints. Campbell says the program is currently in competitive down-select.

In terms of schedule, the ADVEW program will move rather quickly compared to previous EW programs. It is expected to begin EMD at the beginning of in FY2024 and undergo Performance Design Review in Q4 FY2024. ADVEW is expected to achieve IOC in Q3 FY2027. A Low-Rate Initial Production decision to manufacture 35 ADVEW systems is anticipated in Q1 FY2027 and the first Full-Rate Production award (for another 35 systems) is expected in Q4 FY2027. The WBR, currently in development by Raytheon, is expected to complete EMD in FY27.

ASSAULT IPT

In addition to RF-guided threats, PMA-272 is also charged with protecting Navy and Marine Corps rotary- and tilt-wing platforms against RF, EO and IR-guided weapon systems. This is the role of the Assault IPT, which manages a number of ASE systems, including the AN/AAQ-45 Distributed Aperture Infrared Countermeasure (DAIRCM) system. Developed by the Naval Research Lab and Leonardo DRS (Arlington, VA), the system’s open/scalable architecture allows it to be optimized for various type/model/series aircraft including emerging Future Vertical Lift (FVL) programs. The system is composed of an integrated suite of missile warning, laser warning, hostile fire indication (HFI) and IR-countermeasure components.

The DAIRCM program was originally initiated as a Joint Urgent Operational Needs Statement (JUONS) effort with the Navy, Air Force and Army to protect small and medium-sized assault platforms from vehicle-launched IR-guided missiles and Man-

portable Air Defense Systems (MANPADS). It was first fielded for testing on the Air Force HH-60G Pave Hawk Combat Search and Rescue Helicopter, later receiving Operational Test and Evaluation (OT&E) accreditation and fielded on Navy MH-60S helicopters, and Marine Corps' UH-1Y and AH-1Z platforms. The original JUONS program is still being worked, but PMA-272 has also awarded a subsequent $120 million contract to Leonardo DRS to transition the JUONS to a Program of Record (POR) with fielding of the capability on other DOD aircraft. An Acquisition Category (ACAT) II program, it is currently in in the Engineering Manufacturing Development (EMD) phase, and Colonel Campbell says it should achieve Initial Operational Capability in FY 2028. Under the POR, the Navy plans to buy an additional 84 systems for its UH-1Y fleet.

For protection of larger aircraft against IR/EO threats, PMA-272 manages the AN/AAQ-24(V) Department of the Navy Large Aircraft Infrared Countermeasures (DoN LAIRCM) systems. Like DAIRCM, DoN LAIRCM was also initiated as a JUONS effort, beginning in 2006 for medium and large heavy-lift assault helicopters. Under contract to Northrop Grumman, the system reached IOC in 2009.

DoN LAIRCM defends against surface-to-air infrared missile threats by combining an advanced, two-color Infrared Missile Warning System (MWS) and high-intensity, directed-laser countermeasure to automatically detect, track and jam threats. Specifically, it consists of five major components: Infrared (IR) MWS sensors; a dedicated Central Processor; a Control Indicator Unit (CIU) for cockpit display; two Pointer-Tracker/Jamming Subsystems or Guardian Laser Tracker Assemblies (GLTA) consisting of four-axis stabilized gimbaled system, a Fine Track Sensor (FTS) and a "Viper" laser.

The Navy awarded a $115 million production contract to Northrop Grumman in March of 2021 for the latest version of the system replacing old sensors and subsystems, and incorporating new improved, sensors, processors and lasers.

Installation began in 2022.

As noted by Campbell, the IR/EO and RF threat protection systems aboard rotary-wing and tilt-wing aircraft are tightly integrated and must operate together to defend against EO/IR-guided threats. In the case of Navy and Marine Corps rotary-wing aircraft, the (Northrop Grumman) AN/APR-39D(V2) digital Radar Warning Receiver (RWR) works together with the DAIRCM/LAIRCM system to provide multi-spectral threat warning and countermeasures. It also works in tandem with the aircraft's chaff/flare dispenser system. As described by Northrop Grumman, "the APR-39D(V)2 Radar Warning Receiver (RWR)/Electronic Warfare Management System maximizes survivability by improving aircrew situational awareness via interactive management of all onboard sensors and countermeasures."

The AN/APR-39D(V)2 is currently in production for the Army, Navy and Marines. The Army is working with Northrop Grumman on the next-generation variant of the system – the AN/APR-39E(V)2. An ECP to the Navy's AN/APR-39(V)2 with advanced technologies, the APR-39E(V)2 is currently in development and expected to field by the end of Fiscal Year 2024. As a side note, Campbell observes that although the RWR system on the F/A-18 is currently the AN/ALR-67 (a legacy part of IDECM), "it's conceivable that this functionality could also be provided by the AN/APR-39 for tactical assault aircraft in future."

COMMON IPT

The EO/IR and RF protection systems managed by the Strike and Assault IPTs work in conjunction with the countermeasure dispensing systems provided by the Common IPT. The Common IPT's portfolio consists of numerous air-expendable countermeasures (active and passive), countermeasure dispenser systems, and EW tactical training pods. Currently, the Navy's

primary countermeasure dispenser is the AN/ALE-47 system supplied by BAE Systems Electronics and Integrated Systems (Austin, TX). The AN/ALE-47 is used with both US and NATO RF and IR decoys.

The Common IPT is also responsible for the “Common Carriage” program, PMA-272’s newest POR that will replace the AN/ALE-47 dispensers. Common Carriage provides significant upgrades in terms of expendable capacity, dispenser system capability and broader platform commonality. Pointing out that the Navy has been the only Service to use round-shaped expendables, Campbell says that Common Carriage “is our initiative to move to square expendables in line with the other Services. Commonality and interoperability is a force-multiplier for DOD and our Coalition partners.” Campbell describes the current activity as replacing the dispenser housing, but says, they’re also doing another program that will look at the programming of the system and upgrade the capabilities of the dispenser’s processor. “The biggest thing is really that it allows commonality and for evaluation of a broader range of possible expendable types beyond the chaff and flares that we currently have,” she explains. “The threat is evolving, and in order to meet it we need to be able to create some different types of expendables. It also allows us to carry more expendables than we currently do.”

The Navy awarded a $13.2 million Common Carriage development OTA contract to BAE Systems in September 2022 to develop the Common Carriage technology, including a new sequencer. (The ALE-47’s current sequencer uses a 1980s-era Intel 8-bit 80C32 processor and outdated software code.) The Common Carriage system is slated for carrier air wing fixed- and rotary-wing aircraft with plans to also outfit Navy tiltrotor and maritime patrol aircraft. Currently in EMD, it is expected to reach IOC in FY2027.

SCIENCE & TECHNOLOGY

Another important aspect of what PMA-272 does, says Campbell, is their Science and Technology (S&T) portfolio. “It’s what allows us to stay current with what’s coming in terms of future requirements. So, while we’re not taking our eyes off of the traditional platforms that we support, we’re also shifting our focus a little bit and also looking at what platforms are coming, particularly non-traditional airborne platforms, such as UAVs and their survivability needs. We’re also looking at other high-value assets such as maritime-patrol aircraft, to ensure that we understand what their current and future needs are.”

Pointing out that, “Technology is continually evolving, and that with open-system architectures, and software-based advances, it’s happening ever more rapidly,” Campbell emphasizes that “it’s important for people to recognize that in dealing with the multi-spectral threat environment, we’re no longer talking about individual system ‘stovepipes,’ but rather of suites of capabilities.” A system, for example like Common Carriage, doesn’t work alone, it has to work in tandem with a platform’s IR/EO sensors and with its RWR to provide the best level of survivability. This is true for all the platforms we need to support now and into the future.”

Campbell concludes by pointing out that, an important part of their S&T work is taking a future focus and looking at what’s out there in industry and the Service laboratories, etc., in terms of advanced capabilities. “They may not be near-term, but are things that we need to keep our eye on that may be able in future to provide a new drop-in capability or lead us to what the future will look like. We know that the near-peer threat is right in our face, so the emphasis is on getting these new capabilities to the fleet faster to support the Naval aviation enterprise and our other stakeholders – whether other Services or our Allied partners. The scope of EMW is

expanding widely, and if we’re not making sure that the capabilities that we currently have are properly aligned, as well as being nose-to-ground regarding what’s coming in future, we can’t have mission success. Often, people don’t realize, when they think about our capabilities, that we’re much more than the ASE systems of the past. We have an ability to impact the entire kill chain with the detect-and-defeat capabilities that we bring to the fight.”