

ARMOR & MOBILITY

SOF ISSUE



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SUSTAINING U.S. SOF GLOBAL DOMINANCE

COMMANDER'S CORNER



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U.S. Special Operations Command
Mac Dill AFB, FL



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GEN Richard D. Clarke
Commander
U.S. Special Operations Command
MacDill AFB, FL

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THROUGH ADVANCED TECHNOLOGY**
COL Ryan Barnes
Director
Joint Acquisition Task Force
U.S. Special Operations Command



MODERNIZING FOR SUSTAINED FUTURE OVERMATCH

The U.S. Army's Combat Vehicle Modernization effort is to ensure American ground-based lethality continues to dominate the global battlefield.

By COL Warren Sponsler



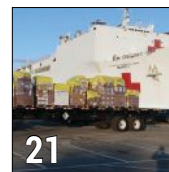
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Program Executive Officer
Fixed Wing Programs
U.S. Special Operations Command



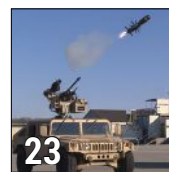
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Program Executive Officer
Rotary Wing Systems
U.S. Special Operations Command



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World leader in remote weapons station (RWS) production introduces a RWS capable of firing heavy machine gun on the move, and over long range.

By BG (Ret.) Phil Coker



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THROUGH VERSATILITY**
Lt. Col. Raymond Feltham
Program Manager
Family of Special Operations Vehicles
U.S. Special Operations Command

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Cover: Staff Sgt. Justin Holley, of 982nd Combat Camera Company, video tapes as Soldiers from Chosin Company, 2/503rd Parachute Infantry Regiment (173rd Airborne Brigade), board a CH-47 Chinook helicopter at Forward Operations Base Blessing, Afghanistan. (U.S. Army)

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INSIGHTS

With ever-present threats to the safety of American and allied interests at home and internationally, the global role of U.S. Special Operations Forces (SOF) is broader than ever before. From the sustainability of force investments to countering violent extremism at the state level and below, U.S. Special Operations Command (USSOCOM) continues to improve SOF readiness for the good of the Joint Force and the United States as a whole.

In the world of today's SOF, what determines friend or foe is often determined by political alliances and the resulting shifts that ultimately support or diminish national security. From the ways and means one country uses to gain understanding of others in current conflict resolution and long-term national defense strategy, leveraging ethical military qualitative advantage is at the heart of USSOCOM's mission. In that vein, GEN Richard Clarke, USSOCOM Commander, spoke with A&M regarding key goals and challenges driving current and forward-looking U.S. SOF operational tempo. With DoD's 2018 National Defense Strategy as a mandate, the Acquisition, Technology, and Logistics Directorate is partnering with industry on various efforts to increase mobility for small teams, realize integrated and secure C2 systems, and improve armed overwatch and aerial support systems.

Comprising primary program portfolios, USSOCOM's Program Executive Offices for Fixed Wing (PEO-FW) and Rotary Wing (PEO-RW), Program Manager for Family of Special Operations Vehicles (FOSOV), and Joint Acquisition Task Force (JATF), spoke with A&M about current and ongoing efforts to provide operators with the latest firepower and protection. In an interview with COL Ryan Barnes, JATF Director, we learn about various initiatives including the latest on SOCOM's Hyper-Enabled Operator (HEO) program poised to couple real-time situational awareness with data distillation to give users greater efficiency and accuracy in decision making. In interviews with PEO-FW and PEO-RW Col. Melissa Johnson and COL Paul Weizer, respectively, A&M readers get insight into upgrades to intelligence, surveillance, and reconnaissance (ISR) proficiency and systems sustainment in preparation for the Army's evolution to Future Vertical Lift (FVL) and how SOF will leverage capabilities. Hearing from Lt. Col. Raymond Feltham, FOSOV Director, we get insight into direction for light, medium, and heavy portfolios, and in particular, the Lightweight Tactical All-Terrain Vehicle, or LTATV.

From a conventional ground combat perspective, an in-depth perspective from U.S. Army Futures Command's Next Generation Combat Vehicle Cross Functional Team (NGCV CFT) and COL Warren Sponsler, Chief of Staff, NGCV CFT, provides a look at the Army's focus for the future of its manned and unmanned ground combat power projection. Not be remiss in coverage of DoD's efforts to mitigate effects of the COVID-19 pandemic, we highlight Defense Logistics Agency efforts to get protective equipment to the front lines.

We welcome your comments and suggestions. Thank you for your continued readership!

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ENSURING ADVANTAGE TO PROTECT NATIONAL INTERESTS

General Richard D. Clarke currently serves as the 12th Commander of U.S. Special Operations Command (USSOCOM), headquartered at MacDill Air Force Base, FL. Prior to assuming command of USSOCOM, General Clarke served as Director for Strategic Plans and Policy (J5), Joint Staff, the Pentagon, Washington, D.C.

GEN Clarke's other assignments as a general officer include: Deputy Commanding General for Operations, 10th Mountain Division from 2011 to 2013; the 74th Commandant of Cadets, United States Military Academy at West Point from 2013 to 2014; and the Commander of the 82nd Airborne Division. His formative and key, Army and special

operations, assignments include: Director of Operations, Joint Special Operations Command from 2009 to 2011. Eight years in the 75th Ranger Regiment first as a company commander, then as a battalion commander, and finally as the regimental commander. He also served as commander of 3rd Battalion, 504th Parachute Infantry Regiment, 82nd Airborne Division.

GEN Clarke has led Soldiers at all levels in Airborne, Ranger, Mechanized and Light Infantry units in five different divisions, the 173rd Airborne Brigade, and the 75th Ranger Regiment in the United States, Europe, Iraq and Afghanistan. His deployments while serving in the aforementioned positions include Operations Desert Shield and Desert Storm, Operation Joint Guardian in Macedonia, three deployments in support of Operation Enduring Freedom, four deployments in support of Operation Iraqi Freedom, and one deployment as the commander of the Combined Joint Forces Land Component Command - Operation Inherent Resolve.



GEN Richard D. Clarke

Commander
U.S. Special Operations Command
Mac Dill AFB, FL

Armor & Mobility had the distinct honor of interviewing USSOCOM Commander GEN Richard Clarke concerning the state of America's Special Operations Forces (SOF) and challenges they face entering a new decade amidst ever-present and growing global threats to U.S. and allied interests and security.

A&M: You have been in command for a little over a year now. What are your priorities for the command?

GEN Clarke: In my first month of command, we held a conference with all of our USSOCOM Service Component Commanders, Theater Special Operations Commanders and Senior Enlisted Leaders. We focused on drafting a clear, concise set of priorities that would apply across the breadth of the special operations enterprise. The five priorities we developed are as follows:

First, SOF need to compete and win for the nation. We are a critical enabler for the Joint Force, and must continue to hone our unique capabilities to provide advantage that protects our national interests.

Second, SOF must preserve and grow readiness to maximize our

competitive edge. Our people are our greatest assets, and we must assess, select, and develop the right skills and training to meet today's and tomorrow's requirements.

Third, SOF must innovate for future threats. The strategic environment is constantly changing, and our tactics, techniques, and technologies must adapt.

Fourth, SOF must advance partnerships at home and abroad. The demand for SOF capabilities will always exceed our capacity; therefore, we need to expand that capacity through meaningful interagency and multinational partnerships.

Fifth, SOF must strengthen our force and family to ensure a resilient and healthy team. This is a solemn commitment to the short and long-term well-being of our people.

A&M: How has the 2018 National Defense Strategy changed Special Operations Forces' and USSOCOM's mission?

GEN Clarke: The NDS has not fundamentally changed our force, but it has significantly changed how we prioritize and employ the force. The



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GEN Clarke, left, listens to MAJ Joshua A. Ray, Commander, B Co., 1st BN, 1st SWTG (A), discuss training objectives during the Tactical Skills phase of the Special Forces Qualification Course at Camp Mackall, NC. The General and members of his team spent the day with U.S. Army Special Operations Command observing a Foreign Internal Defense practical application, SERE training and a C-UAS Demonstration. (U.S. Army photo by Staff Sgt. Keren-happuch Solano)

renewed national-level focus on Great Power Competition has forced us to look hard at the sustainability of our force investments around the globe. We have focused heavily on countering violent extremist organizations (CVEO) over the past two decades. Today, we continue our CVEO efforts, always mindful of the cost. Demand will grow for SOF

capabilities to compete against state-level malign influence, and we will need to ruthlessly prioritize our CVEO commitments.

As far as competition goes, it's not a new phenomenon, and many of our SOF capabilities were developed – or can be easily modified – to compete against state-level actors. We need to train approaches and mechanisms to gain understanding and apply SOF-unique skills and capabilities in context of long-term strategic competition. USSOCOM always seeks to enhance our qualitative military advantage and leverage to protect the nation's interests. We are diligently working on improving our exercises, training, and employment to better enable the Joint Force and the nation.

A&M: Do the headquarters, components, or Theater Special Operations Commands need to reorganize or be reorganized to meet the NDS's priorities and requirements?

GEN Clarke: That's a great question. The short answer is yes, but it will be the kind of incremental change that we should be doing all the time. Any good organization is going to have systems that continuously assess requirements based on the strategic environment. The NDS set priorities for a national security environment that has changed, and if we become complacent and fail to adapt, then we will lose our advantage. That's not happening at USSOCOM.

In recent months, we have been conducting in-depth reviews of the mission and manning requirements for all of our forces aligned with the six geographic combatant commands. That assessment is still underway, so it's too early to start publishing results, but there will be changes. Some theaters require more staff horsepower than others. Some may require more information operations capability. Others may already have more than they need and will have to get smaller. This is a design change to align better with the NDS. This type of self-evaluation and optimization is something that we should and will do routinely to ensure that our special operations forces' capabilities are maximized.

A&M: How will NDS priorities impact USSOCOM's acquisition programs in the coming years?

GEN Clarke: First, I have to say that our USSOCOM Acquisitions, Technology, and Logistics directorate has done and continues to do a phenomenal job. Their industry partnerships and outreach efforts have served us well, and will continue to do so. For large programs, there aren't too many secrets with the direction that we have been moving for quite some time – increased mobility for small teams, integrated and secure C2 systems, and improved armed overwatch and aerial support systems.

In general, the NDS guidance to improve the lethality of the force hasn't substantively redirected much of our effort. This will continue to be a major focus as we develop new battlefield systems. And when it comes to continuing defense reform in acquisitions systems, USSOCOM is all in. The department has put in place several rapid capability development and procurement process over the last few years. We will continue to explore and develop best practices for those new tools.

One specific area of increased focus and investment will be artificial intelligence and machine learning (AI/ML). Data-driven technologies have tremendous potential across the board, from intelligence collection and targeting to predictive maintenance and information operations. USSOCOM is committed to being a leader in applying these technologies to military requirements. We have leaned forward as a partner with the DoD's Joint Artificial Intelligence Center, and have even stood up

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a Program Executive Officer SOF Digital Applications to shepherd acquisitions investment in software systems.

Furthermore, I see USSOCOM as a pathfinder for many of the joint small unit weapons, protective equipment, and communications systems that can later scale across the broader defense formation. This is a new direction. Service adoption of select special operations specific programs has happened over the years, but we will be taking a more active approach with the service component capability development teams – Army Futures Command, as one example – to maximize gains for the entire Joint Force.

A&M: Your force has been at a very high OPTEMPO for almost 20 years. What challenges do you see in managing that pace as USSOCOM implements NDS priorities?

GEN Clarke: I've mentioned prioritization a few times in this interview, and that's the key to the OPTEMPO dilemma as well. For too long, we have approached security problems from the perspective of doing "what we can do," rather than "what we must do." We can't afford to keep that approach – it won't work. Our operations need to be sustainable and threat and adversary focused based upon the NDS. I want to clarify that sustainability and focus on NDS priorities does not mean reduced capability, nor does it necessarily mean reduction in our present commitments. We are looking at creative ways to find crosscutting value in our CVEO activities – investments that address multiple priorities or interests simultaneously.

It's important to note the importance of allies and partners within the NDS framework. Building and reinforcing partnerships is a force multiplier. SOF have a proven track record of building partnerships, both at home within the US Interagency and abroad with foreign militaries. Often, a small SOF team can enable a much larger foreign force to achieve mutual goals. It's one of our core competencies, and that will be critical in years to come.

A&M: Last August, you directed a comprehensive review of SOF culture and ethics. Your predecessor GEN Tony Thomas also directed a review in January 2019. What were the differences between the two reviews? Also, what did your review find, and what actions is the command implementing as a result?

GEN Clarke: The two reviews were different but related. The first review was an internal, bottom-up effort led by our component commands. The second, the enterprise-wide Comprehensive Review that we did last autumn, was led by USSOCOM. We constructed a special team and sent them across our force to look at our structure and processes, and talk to people about the issues. I ordered that review to keep faith with the American people and our policy leaders, and to ensure good order and accountability within our formation. Our goal was simple – to make us better. The team compiled and analyzed data from thousands of interviews to identify institutional changes that would help us move forward.

Our review found that, after two decades of sustained combat, we have disproportionately focused on SOF employment and mission accomplishment at the expense of training and development. We have an amazing force comprised of talented men and women, the vast majority of whom maintain the highest standards under some of the most challenging operating conditions around the globe. But in some cases, this imbalance has set conditions for unacceptable conduct to occur due to a lack of leadership, discipline, and accountability.



Coalition Special Operations Forces members sprint to board a UH-60 Black Hawk helicopter during a mission in Kunar province, Afghanistan. The commando-led mission conducted reconnaissance for a future Village Stability Platform, a site Afghan forces and coalition SOF will use to live and work with villagers. (USSOCOM)





We consciously made the results available to the public to demonstrate transparency and to build trust with the American people. But transparency alone is not enough – we need to show improvement. Our next step is to aggressively remedy that imbalance by improving our processes, reinvesting in leader development mechanisms, and protecting our force generation cycles. The SOF service components are doing the lion's share of the work, as each of them struggles with unique challenges of developing our joint force, but there are key measures we will also need to take both within our headquarters and with the assistance of the services. Our great deputy commander, VADM Tim Szymanski, is currently leading the implementation team that will continually assess our progress. As implementation continues, I am confident that SOF will see positive returns from the effort.

A&M: General Clarke, thank you for taking time to answer our questions. Is there anything else you would like our readers to know about USSOCOM or SOF?

GEN Clarke: I appreciate the opportunity to have this conversation with your readers. I think it's worth noting that USSOCOM just celebrated our 33rd Anniversary in April. That event coincided with the 40th Anniversary of Operation Eagle Claw, the failed rescue during the Iranian hostage crisis in 1980. Eagle Claw was a seminal event for our community, and it was probably the single event most responsible for the creation of USSOCOM. The major lessons from that mission – about joint integration and interoperability – have defined the force that we have today, and those attributes are enduring strengths that will continue to be vital as SOF continue to meet the nation's security needs in the future.

I want to add that you can continue to expect great things from the SOF community in the coming years. We are embracing change and are ready to face the challenges in this new security era. We are actively looking for innovators and partners who want to team with our special operators and make a difference.

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MODERNIZING FOR SUSTAINED FUTURE OVERMATCH

The U.S. Army's Combat Vehicle Modernization effort, led by Army Futures Command's Next-Generation Combat Vehicles Cross Functional Team (NGCV CFT), is driving innovation for current and future U.S. Soldiers to ensure American ground-based lethality continues to dominate the global battlefield.

By COL Warren Sponsler, Chief of Staff, NGCV CFT



U.S. Army Mission-Enabling Technology Demonstrators (MET-D) and M113 Robotic Combat Vehicle (RCV) surrogates conduct testing and maneuver training at Fort Carson, CO, in March 2020 prior to Soldier experimentation. These experimentation events are pivotal to support future system requirements and battlefield employment techniques. (NGCV CFT)

The Army and Army Futures Command (AFC) remain committed to modernizing ground combat vehicles with the survivability, lethality, and advanced capabilities to deploy, fight, and win the future fight. The Next Generation Combat Vehicles Cross Functional Team (NGCV CFT) works across the Department of Defense and industry to lead the modernization process and develop the best capabilities that will enable the future success of our mounted Soldiers and formations. Despite the impacts of the recent COVID-19 pandemic, progress continues on the Army's priority efforts maintaining momentum for Army modernization.

The past several months have seen critical developments for the NGCV CFT's signature efforts. Most recently, the Army initiated a refined trajectory for the Optionally Manned Fighting Vehicle (OMFV) program, continued experimentation with Robotic Combat Vehicles (RCV) and made significant progress for both the Mobile Protected Firepower (MPF), and Armored Multi-Purpose Vehicle (AMPV) programs. The goal of the NGCV CFT, working closely with partners in the Program Executive Office (PEO) Ground Combat Systems (GCS) and the Combat Capabilities Development Command



(CCDC), remains constant – to get the best equipment to our Soldiers, rapidly addressing capability gaps to maintain overmatch of the Army's fighting units around the world.

OMFV - TRANSFORMATIONAL CAPABILITIES FOR THE COMBINED ARMS TEAM

Last January, the Army made a bold decision and cancelled its solicitation for OMFV prototypes and entered a new phase in the program. The decision to cancel the solicitation hinged upon the ability for the Army to maintain manageable risk and still achieve the Army's objectives. As the Army pushes the modernization process, the initial prototype solicitation reached exceptionally far by requiring a very aggressive set of initial capabilities on an equally aggressive timeline, extending the limits of what our partners in both government and industry could provide.

To be clear, the Army is absolutely committed to the OMFV program and achieving transformational capability for Armored Brigade Combat Team (ABCT) commanders to maneuver on a

multi-domain, highly-lethal battlefield while defeating the future peer and near-peer threat with stand-off capabilities. Despite the resulting delay in the program, the initial solicitation provided valuable lessons learned and sent a clear message about the Army thinking differently.

Immediately following the cancellation of the initial prototype solicitation, the Army began a detailed and open process to get feedback from government and industry partners. This process included one-on-one engagements with traditional and nontraditional vendors, a review of written feedback, and further direct engagements with industry and government partners. Through these collaborative efforts, AFC adjusted the approach to the traditional requirements process by defining an initial set of nine system “characteristics,” which the Army will refine through detailed technical and operational analysis, evaluation of industry preliminary digital designs, dynamic modeling and simulation testing, and Soldier touchpoints.

The resulting requirements strategy preserves flexibility much longer into the acquisition process before necessitating significant hardware investments. The Army and industry will work together to capitalize on collaborative tools for systems design further allowing informed decisions on capability needs, trades analysis, and technology insertions. The OMFV must provide the Army with new capabilities to solve emerging threat challenges as well as supporting enduring ground combat missions. Replacing the Bradley does not mean applying new technologies to



Armored Multi-Purpose Vehicle (AMPV) Medical Treatment Variant conducting cross-country maneuver during the Limited User Test at Fort Hood, TX. The AMPV provides added mobility and survivability to Armored Brigade Combat Teams supporting Army ground vehicle modernization efforts. (NGCV CFT)

legacy assumptions and concepts for mounted warfare. The OMFV must help drive Army transformational concepts for future Cross Domain Maneuver.

Transformational development requires a system capable of technological and tactical adaptation and growth over decades to come. A transformational ground combat system is one that maintains lethality overmatch against the threat, allows commanders and crewmembers to make decisions faster with enhanced sensors

COVID-19-CONTINGENCY DEPLOYMENT

Over 150 recent graduates of Basic Combat Training, Ft. Jackson, SC, recently began training at the U.S. Army Medical Center of Excellence, Joint Base San Antonio, TX, as part of the Army's efforts restrict community contact with the trainees between duty stations due to COVID-19 concerns.

Two civilian airplanes landed at Kelly Field on Friday, April 24, 2020 carrying soldiers who have been in a so-called “protective bubble” of training at Fort Jackson for the past several months. Each trainee was screened for COVID-19 as a new recruit before being sent to basic for at least 10 weeks. Prior to being released to MEDCoE, the soldiers were screened daily for the last 14 days and one final time just prior to the flight departing Fort Jackson. There were no stops in route and the only contact with the community was with the flight crew who were also screened and wore cloth face coverings as a protective measure.

Upon arrival at Kelly Field, drill sergeants assigned to MEDCoE donned personal protective equipment to screen each trainee in a hangar to ensure they were symptom free. When trainees passed screening at arrival, they were allowed to board sterile buses bound



Drill Sgt. Christopher Bullis screens a Basic Combat Trainee from Ft Jackson, SC prior to acceptance into Advanced Individual Training at MEDCoE on JBSA-Fort Sam Houston. (Army MEDCoE)

for Fort Sam Houston to begin their Advanced Individual Training in varying medical military occupational specialties to include Combat Medics, Respiratory Specialists, and Medical Logistic Specialists. Every aspect of the soldier's travel was designed to limit contact with the community to prevent the spread of COVID-19. The soldiers were able to travel in this highly controlled fashion rather than commercial flights as an exception to the Department of Defense stop movement policy that was extended on April 20 to avoid the potential spread of COVID-19 within the military.

This is the first time in history that trainees have arrived via a chartered flight for training at the MEDCoE. The organization conducted a controlled air movement to transport graduating trainees from Fort Sam to their follow-on duty stations with the same type of control measures. The current stop movement policy will be reviewed every two weeks and is expected to be in place until June 30.

More info: medcoe.army.mil

and decision aids, employs adaptable computational abilities, and protects its crew and infantry while continuing to fight adversaries with more and more capable systems of their own. The OMFV must enhance the combat potential of the mechanized infantry, providing advanced situational awareness to the occupants of the vehicle, between vehicles, and with dismounted Soldiers supporting maneuver with organic direct fires. To be transformational, the OMFV must also support the formation's ability to operate semi-independently, maneuvering extended distances, with reduced demand on Army logistics and sustainment systems. Transformational development is not just creating an evolutionary ground combat platform with current technology, but also requires new concepts for the unit in combined arms Cross Domain Maneuver against the pacing threat. It is paramount that the OMFV achieves capability beyond parity and extends decisive and sustained overmatch long into the future.

Concurrent with this new approach to requirements development, the Army is also embarking upon an innovative approach to the program acquisition strategy. The refined strategy focuses on encouraging innovation and maximizing competition through a collaborative five-phase process. The OMFV phases include: strategy and process refinement, preliminary digital design, detailed digital design, prototype design and testing, and finally, production and fielding. Throughout this process, Soldiers will assist the Army and industry partners in refining the vehicle's characteristics and design informing the most feasible and acceptable set of technical requirements for final production.

This approach is new and different, breaking some of the traditional processes in major Army acquisition programs and will be uncomfortable to those most wedded to the traditional way of doing things. Some partners will thrive in this new environment, however it will not be without challenge especially when applying this strategy to a complex combat vehicle program. The Army understands there is risk in innovation and continues to identify mitigation strategies share in the costs, better enable positive business decisions and to maintain competition. This strategy is the approach the Army must take to harness the power of innovation of worldwide industry partners, drive new ideas through competition and produce the OMFV that our Soldiers require to fight and win in the modernized Army on the future battlefield.

RCV - INNOVATION THROUGH EXPERIMENTATION

The past several months also saw several big developments in the RCV program. The objectives of this program remain largely unchanged with three increasingly complex Soldier Operational Experiments (SOE) planned over the next four years. The Army is on a deliberate path to determine the utility and viability of effective and lethal manned-unmanned teaming (MUM-T) for ground combat vehicles by deliberately evaluating technologies and capabilities most useful to our Soldiers and units. The result of this experimentation effort is to inform a future acquisition process. Major recent accomplishments include: completion of several virtual experiments with units from the operating force to develop the RCV's contributions to the future fight; successful development and testing of interim M113-based RCV surrogates and control vehicles to enable the live operational experiments; and completion of two significant contract actions for dedicated RCV surrogate prototypes.

Following successful completion of the design, build, and test phases for the initial set of RCV surrogates and control vehicles, the first MUM-T Soldier Operational Experiment at Fort Carson, CO, was temporarily put on hold due to the COVID-19 pandemic. Soldiers from the 4th Infantry Division were well prepared and highly motivated for a successful operation, only to halt following initial system training and orientation. Despite the pause, initial feedback is exceptionally encouraging, reinforcing Soldier understanding and confidence developed during RCV simulated and constructive exercises. We expect operations for this experiment to quickly get back on track once conditions permit.

In preparation for the second MUM-T Soldier Operational Experiment scheduled to take place in 2022, the Army awarded contracts for industry-built RCV (Light) and RCV (Medium) prototype surrogates. QinetiQ is developing RCV(L) surrogates based on their Expeditionary Modular Autonomous Vehicle (EMAV). This system capitalizes on experience gained from recent USMC experiments with a similar platform, but focuses on capabilities specifically developed to support reconnaissance and security roles for Army Brigade Combat Team employment concepts. Textron is developing the RCV(M) surrogate from its M5 Ripsaw prototype. The RCV(M) is designed to enhance the unit's ability to aggressively maneuver in close contact with the enemy, defeating threats on the contested, highly-lethal peer and near-peer battlefield. Both systems incorporate several key components of US government-provided autonomy, communications and lethality technologies to enable critical capabilities necessary for manned-unmanned employment in close combat.

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The RCV program continues to see outstanding partnership between government and industry to develop this potentially transformational capability for the warfighter. If successful, MUM-T with RCVs in ground combat roles will significantly improve the capability of all three of the Army's ground maneuver formations to expand the operating environment, reduce risk to Soldiers, and enable battlefield commanders to make faster, better-informed decisions.

MPF - SOLDIER FEEDBACK REMAINS CRITICAL TO SUCCESS

The MPF platform brings a long desired, protected, highly maneuverable, and highly lethal direct fire system to Infantry Brigade Combat Teams (IBCT), meeting the challenges of rapid deployment, maneuver in complex terrain, and close combat engagements on an increasingly lethal battlefield. The NGCV CFT and Program Manager (PM) MPF continue their partnership with units in the field, the Maneuver Center of Excellence (MCoE), industry partners, and stakeholders, ensuring the best possible equipment gets to our future Soldiers.

The MPF program continues the prototype build phase with BAE systems and General Dynamics Land Systems, producing two unique competitive combat vehicles. The respective industry teams will deliver fully capable systems for testing over the next several months leading up to a Soldier Vehicle Assessment (SVA) and Limited User Test (LUT) in early 2021. These events provide the Army a unique opportunity for Soldiers to get hands-on experience with prototype vehicles, inform future program decisions, and enable development of Tactics, Techniques, and Procedures for formation-level employment. The upcoming SVA and LUT will build off of lessons learned from the recently concluded yearlong LAV-25 surrogate MPF excursion in the 82nd Airborne Division, to inform future integration requirements for the Army. Soldier's perspectives captured and analyzed through the SVA and LUT will play a significant role in determining the best combat platform for the battlefield and how the Army employs MPF-equipped organizations.

AMPV - REFINEMENT FOR NEAR-TERM CAPABILITY

Six decades after first fielding the venerable M113 family of vehicles, the Army is on-track to replace this platform in the Army's ABCTs with the AMPV. Critical tactical enablers in the ABCT will again have comparable mobility, survivability, and reliability with the primary combat vehicle platforms resident in our formations today with growth for the future. The AMPV program continues with initial low-rate production supporting delivery of the first vehicles to the Army scheduled for later this year. The first full BCT fielding is expected to be complete in 2022.

Following last year's AMPV LUT, the combined CFT and PM AMPV team actioned over 24 separate improvements to the vehicle design taking in user feedback and engineering efforts in record time – fixes immediately integrated into the production line. These improvements will further enhance the combat capability and employment of these systems as the first production models come off the assembly line.

Overall user feedback from the field on the five variants of the AMPV has been overwhelming positive as these vehicles will provide the mobility, survivability, network integration, reliability, and growth that will serve the Army's ABCTs in the decades to come.

The NGCV CFT continues to drive ground combat platform modernization, prioritizing the Army's signature efforts that will have the most significant impact on how the Army fights. Experimental Prototyping, Soldier Feedback, industry partnerships, and innovative problem solving are critical to modernization of the Army's ground vehicle fleet. As stated by the NGCV CFT Director, Brigadier General Ross Coffman, "All our efforts center on the Soldiers and the units who will fight these platforms in the worst conditions, at the worst time, and against a determined enemy. Our job is to do all we can to make sure that fight is not fair." The NGCV CFT remains mission-focused on leading the ground vehicle modernization enterprise to support a future force that will enable the U.S. Army to defeat our adversaries and decisively win on the future battlefield. ■



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PROMOTING OPERATOR LETHALITY THROUGH ADVANCED TECHNOLOGY

COL Ryan Barnes is currently the director of U.S. Special Operations Command's Joint Acquisition Task Force (JATF). The JATF provides proof of concept prototypes filling capability gaps at the farthest tactical edge of SOCOM's future operating concept. Currently, the focus is on hyper-enabling SOF operators in partner-nation operations. Previously, he served as Chief of SOF Ground Systems Operational Test & Evaluation within SOCOM's J8 directorate, providing oversight to all OT&E for systems acquired by Program Executive Office SOF Warrior. In this role, COL Barnes ensured equipment being fielded by operators was safe, suitable and effective for SOF-specific and SOF-peculiar missions. He received his commission in 1994, previously enlisting in the U.S. Marine Corps as an infantryman and serving as a TOW missile gunner.

COL Barnes separated from the Army in 1999 and accepted a position with Data Quest, Limited as the Vice President of Operations, managing more than 100 employees located in offices nationwide. He re-entered service in 2001 after witnessing the September 11, 2001 terrorist attack in New York firsthand from Manhattan. He re-entered the Army as a Civil Affairs officer where he commanded a Civil Affairs Tactical Support Team in Iraq for 13 months supporting 3rd Bn, 3rd Special Forces Group (Airborne) in special operations and intelligence work. Col. Barnes later worked at Massachusetts Institute of Technology-Lincoln Labs where he oversaw and managed operations and security for 53 classified research and development programs for the U.S. government worth more than \$195 million.



COL Ryan W. Barnes

Director
Joint Acquisition Task Force
U.S. Special Operations Command

Armor & Mobility had the chance to speak with COL Ryan Barnes, Director of USSOCOM's Joint Acquisition Task Force (JATF), regarding some of SOCOM's target capabilities procurement efforts going forward in 2020 and beyond.

A&M: With SOCOM's evolution from TALOS to Hyper-Enabled Operator (HEO), what are primary variations of enhanced capability?

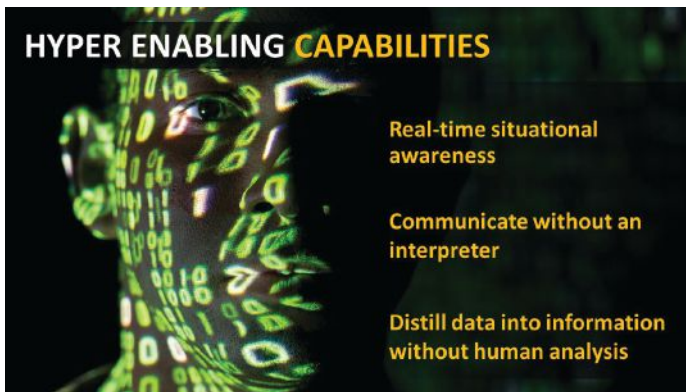
COL Barnes: TALOS was focused on physical performance and personal protection. HEO is focused on cognition and decision making: enabling operators to make better decisions faster. This objective entails being able to acquire raw data, extract meaningful information from that data, and present the relevant data to the right operator in an easily understandable format and timely manner.

A&M: As HEO offers an enhanced system architecture, talk about primary aspects of comms, computing and interfacing for the user?

COL Barnes: In a lot of ways, HEO is about doing for operators what smart phones do for consumers and virtual dashboards do for executives. A smart phone gives its user instant access to the internet and all of the information stored there, and dashboards provide executives the right amount of information to monitor business activities and make relevant decisions. Executive dashboards are populated from inputs across an enterprise and are available to augment decision making with the right amount of information, at the right time and in an easily understandable format.

If you want to go for dinner in an unfamiliar city, you can use the phone to identify restaurants by your preferred cuisine, read reviews to evaluate which are best, book a reservation, and get turn-by-turn driving directions that account for current traffic conditions, all with a single device that fits in your pocket. Our issue is smart phones assume a reliable connection to the internet, which requires a robust network and necessitates computation on remote servers.

Special Operations Forces (SOF) operators need to be able to work in austere and contested or denied environments. In many cases, they



The SOF Hyper-Enabled Operator (HEO) effort encompasses these primary tenants. (USSOCOM)

are unable to depend on reliable connections to remote servers. Consequently, the HEO places a heavy emphasis on edge computing and unconventional communication modes. That said, communications and computing will not – by themselves – hyper-enable the operator. To be useful, the HEO solution needs to present information to the operator and allow the operator to make inputs. A HEO system's interfaces need to be non-intrusive and maximally intuitive so the system supplements rather than interferes with the operator's ability to complete the mission. This needs to happen seamlessly with or without conventional communication capabilities.

A&M: With advancements in artificial intelligence continuing, how will AI enable proactive data collection and qualification for operator decisiveness?

COL Barnes: Simply dumping data on the operator will not improve decision making. In a HEO system, AI is needed to quickly extract the important information from the sea of available data and present it to the operator quickly in a situationally-relevant and intuitively understandable way. The technology needs to be operator focused to augment their abilities, rather than having to re-educate operators and/or re-invent their tactic, techniques and procedures to maximize the technology.

A&M: What are some milestones expected moving forward?

COL Barnes: Our internal milestones involve iterative development and testing of the HEO architecture throughout fiscal year 2020 with prototype capabilities layered on that framework. We are maximizing contact with SOF operators to remain focused on their needs and missions to garner early feedback on technology developments. Our task this year is to establish the HEO software architecture, perform proof of concept experiments for our unconventional communications and operator-worn kit lines of effort, integrate commercial computer applications, and initiate lines of effort for a HEO display/presentation layer and a data analytics layer.

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LEVERAGING CAPABILITY TO ACCELERATE FIELD-READY APPLICATION

Col. Melissa A. Johnson is the Program Executive Officer (PEO) for Fixed Wing Programs at U.S. Special Operations Command (USSOCOM) headquarters in Tampa, Florida. She is responsible for developing, producing, testing, modifying, fielding, and supporting Special Operations Forces (SOF)-unique fixed wing aircraft and sub-systems, equating to more than 100 programs and projects worth \$1.7 billion in 2017. SOF aviation capabilities include AC-130 and MC-130 variants, MQ-1C, MQ-9, CV-22, U-28, MC-12, C-145, C-146, other remotely piloted vehicles and precision guided munitions. Prior to her current assignment in Tampa, Col. Johnson was the Chief of Integration for the Ground Based Strategic Deterrent program at Hill AFB, where she was responsible for all programmatic integration of the \$85B recapitalization of the land-based portion of the nuclear triad.

Col. Johnson received her commission from the United States Air Force Officer Training School in March 1996. She has served as an aerodynamic propulsion analyst at the National Air Intelligence Center where she developed new modeling tools for missile propulsion assessments. While assigned to the 28th Test Squadron, she was a special projects engineer and program manager for classified electronic warfare and command and control test activities. Col. Johnson also served at the Air Force Research Laboratory's Directed Energy Directorate as the Engineering Test Director and High Power Microwave (HPM) Applications Program Manager. During her assignment at the Air Force Rapid Capabilities Office, she served as the Chief of the Offensive Capabilities Branch, where she was responsible for integrating acquisition efforts in support of multiple classified programs valued at over \$600M.



Col. Melissa Johnson

Program Executive Officer-Fixed Wing Programs
U.S. Special Operations Command

Armor & Mobility had the opportunity to speak with Col. Melissa Johnson, PEO Fixed Wing Programs, USSOCOM, regarding efforts to sustain and field critical capabilities essential to SOF operator airborne combat and intelligence, surveillance, and reconnaissance (ISR) proficiency in 2020 and beyond.

A&M: Provide a general overview of SOCOM's fixed wing priorities looking ahead in 2020.

Col. Johnson: PEO Fixed Wing (PEO-FW) remains focused on fielding airborne intelligence, surveillance, and reconnaissance, strike, and mobility capabilities to our Special Operations Forces warfighters. Looking ahead in 2020, our key priorities are accelerating secure/resilient capabilities to the field to meet current & future fight; improving overall adaptability and affordability throughout system lifecycle; and aggressively identifying, leveraging, demonstrating and implementing new technology. Critical capability challenges include the need for advanced defensive systems, the ability to fight through GPS-degraded environments, and advanced weapon

systems that reduce collateral damage. PEO FW is committed to these acquisition challenges as we continue to support SOF worldwide.

A&M: In terms of warhead focus areas such as explosive yield and shaping, talk to current goals.

Col. Johnson: Our current warhead development focus includes both yield and shaping while developing acquisition approaches to reduce cost. The goal of our munition development is to continue to ensure a one-shot, one-kill environment with minimal collateral damage. In order to accomplish this, USSOCOM continues to work technology solutions that enable selectable yields during different stages of the engagement scenario along with selectable effects such as articulating warheads that shape blast patterns to control fragmentation. Although these are not new solutions, the application and integration into different munitions such as the Small Glide Munition, Griffin, and Hellfire variants present our SOF with increased weapons selection and engagement



An MC-130J fires 30mm cannon rounds during an exercise. The airframe is a critical component of U.S. SOF's fixed wing arsenal. (USSOCOM)

flexibility. A critical piece of selectable effects munitions includes data-linking to control and maintain communications with the munition throughout the entire engagement from target coordinate designation through impact.

A&M: From a GPS-denied perspective, what are some areas of focus in near term?

Col. Johnson: Operating through GPS-degraded environments will likely continue to be a challenge for navigation and weapons release. To overcome this challenge, we are leveraging several different approaches, such as advanced antennas and beam steering technology. In addition, we are researching several other technologies such as image-based navigation and land-marking known electromagnetic emissions from the earth to use as calibration points.

A&M: As munitions-specific data link, Link 16 waveform, requirements persist, what integration goals are there?





Col. Johnson: There is definitely a demand for increased data-linking as we look to build interoperability between coalition partners, increase the engagement effectiveness of munitions, and continue to develop the concept of swarming technologies for both kinetic and non-kinetic effects. As stated earlier, data-linking is a critical piece of selectable effects munitions to control and maintain communications throughout the entire engagement.

A&M: In terms of laser capabilities, talk about potential for semi-active integration.

Col. Johnson: The integration of semi-active laser (SAL) technology into our aircraft and munitions is just another way for us to address GPS challenges while ensuring our munitions retain a one-shot, one-kill capability against the most challenging targets. We will continue to develop and integrate SAL technologies in our suite of munitions ranging from the Griffin and Small Glide Munitions all the way through our Small Diameter Bombs and Hellfire variants.

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FORGING FUTURE CAPABILITY FOR VERTICAL LIFT READINESS

COL Paul I. Weizer currently serves as the Program Executive Officer Rotary Wing Systems at U.S. Special Operations Command (USSOCOM) headquarters at MacDill Air Force Base. He recently served as the Director, Armaments Cooperation for the U.S. Mission to the North Atlantic Treaty Organization (NATO) in Brussels, Belgium and previously served as the board-selected Product Manager for Special Operations Forces Training Systems, Program Executive Office for Simulation, Training and Instrumentation in Orlando, Florida.

COL Weizer enlisted in the Army in 1990 and served as an Air Traffic Control Specialist for two years before accepting the "Green-to-Gold" scholarship to attend the Army ROTC program at the University of Tampa (Class of '94). He graduated with a Bachelor's degree in Business Management and was commissioned as a second lieutenant in the Aviation branch. He completed the resident aviation basic and advanced officers' training courses and has served as a platoon leader, executive officer, battalion logistician and company commander.

Upon completion of his tour as company commander, COL Weizer transitioned in the Army from aviation to material acquisition management. As an Acquisition Corps officer, he has served as an operational test officer, contract management officer, systems integration officer, assistant project manager, Department of the Army systems coordinator, theater acquisition advisor, product manager, and joint/interagency land armaments advisor. He has completed the University of Tampa MBA program (Class of '11) and the National Defense University's Eisenhower School Master of Science in National Resource Management along with the Defense Acquisition University's Senior Acquisition Course concentration (Class of '17).



COL Paul Weizer

Program Executive Officer-Rotary Wing Systems
U.S. Special Operations Command

Armor & Mobility spoke recently with COL Paul Weizer, PEO Rotary Wing Systems, USSOCOM, regarding some focus areas SOCOM is targeting for sustainment and advancement of critical Future Vertical Lift (FVL) capability so that it's there when and where SOF operators need it.

A&M: As Future Vertical Lift (FVL) development continues, how is SOCOM helping shape SOF future vertical lift requirements?

COL Weizer: SOCOM has subject matter experts assigned to the various future vertical lift enterprise agencies, such as the Future Vertical Lift (FVL) Cross Functional Team, to ensure open communications between SOCOM and the Army. Also, SOCOM, working with Congress, has secured additional funding to ensure Special Operations Peculiar (SO-P) equities are engineered into the early designs of the competitive prototypes. Ideally, the production models of the future vertical lift aircraft will need minimal modifications post production to become SOF platforms.

A&M: With future long-range assault a focus area for future

vertical lift, how is SOCOM working to influence capability for SOF application?

COL Weizer: The Systems Integration Management Office (SIMO) of the Special Operations Aviation Command has been conducting experiments within the Future Long Range Assault Aircraft (FLRAA) lines of effort to assist the future vertical lift cross functional team in developing doctrine, tactics, techniques and procedures utilizing future technologies in support of multi-domain operations. This office provides risk reduction along the spectrum of capability technology maturation before it is inserted wholesale into the service-led program. SOCOM is also investing early into the design phase of the program to ensure SO-P equities get baked into the baseline platform.

A&M: From a future attack recon perspective, how is SOCOM looking to transition to future vertical lift from MH-6 Little Bird?

COL Weizer: SOCOM will continue to re-validate its requirements and current capabilities as FARA (The Future Attack Reconnaissance



The MH-6M Little Bird, seen here moving U.S. combat troops, remains an important SOF vertical lift platform with the continued evolution of Army Future Vertical Lift (FVL). (USSOCOM)

Aircraft program) develops into production aircraft. SOCOM will work hard to ensure SO-P equities are engineered into the early FARA candidates, but it is too early to determine whether the mission(s) currently conducted by the A/MH-6 “Little Bird” are suited to be conducted by the production FARA platform. Ideally, some or all of the current “Little Bird” missions could/would be assumed by one or more of the future vertical lift platform variants.

A&M: In terms of affordability, talk about ways SOCOM is achieving budget goals while addressing future vertical lift integration goals?

COL Weizer: SOCOM relies heavily on the Services to meet its budget goals. The more SOCOM can mainstream SO-P requirements, the less it must utilize its own limited budget to develop and deliver capability. PEO Rotary Wing systems utilize a variety of business initiatives and reforms to get the most capability to the SOF Warfighter for the least amount of investment. All of these efforts place mission accomplishment at the forefront of our planning and execution of SOF materiel development and delivery.

ADVANCED AEROSPACE COATING

The aerospace industry needs accurate coating thickness measurement whenever plating, anodizing, powder coating or other coatings are required. This is particularly important when the coatings play a critical role in preventing the corrosion or wear of metal substrates. Properly applied coatings, with thickness measured in mils (.001 inch) or microns (.001 mm) are crucial to avoid coating breaches leading to corrosion of the underlying substrate.

“Incorrect paint consistency can affect drying times or eventual flaking of the paint film,” says John Bogart, Managing Director of Kett US, a manufacturer of a full range of coating thickness testers. “Too little paint coating and you are left with cosmetic issues in opacity, and protective issues like corrosion, wear, and exposure.”

Until recently, conducting frequent laboratory-quality coating thickness tests throughout the manufacturing process or in the field has been difficult. Traditionally, this required meticulous sampling and preparation, as well as taking the sample to the lab for evaluation. Although portable coating thickness gauges are not new, most fail to provide the accuracy, speed, or simplicity required for anyone to conduct quick checks as needed on the production line or in the field. Fortunately, handheld devices are now available that allow personnel to easily and quickly perform lab-quality coating thickness measurements.

In response, aerospace industry innovators have developed a number of advanced designs for handheld coating thickness test devices. One example is Kett’s LZ990 portable coating thickness gauge which combines two of the most widely used measurement methods, magnetic inductance and eddy current, in a dual mode device that can measure the coating thickness of almost any non-magnetic coating on both ferrous (magnetic) and non-ferrous (non-magnetic) substrates. Since the unit is able to automatically determine the substrate and use the appropriate measurement circuit, this enables instant, non-

LZ990 Portable Coating Thickness Gauge (Kett)



destructive testing on painting, plating, anodizing, and organic coatings with accuracy up to 0.1 μm. Such testing takes less than a second to display the measurement.

Because the key to providing accurate, repeatable measurements is the operator’s ability to reliably make consistent contact between the instrument and the test surface, the unit also utilizes a spring-loaded probe to generate a consistent contact pressure with the measured surface. This integrated probe also includes built in edge guides to enable easy measurement

of even curved and edged surfaces. To ensure device stability during measurement, the foot of the probe is also designed to provide a firm platform when placed onto the test piece. According to Bogart, a number of other design considerations in handheld coating thickness gauges can also simplify measurement and improve versatility. In order to improve accuracy and durability on the aerospace factory floor or in the field, it is best for the unit to have no moving parts, other than the probe.

Similarly, the unit should be impervious to vibration, with measurement independent of its orientation. To save time during the testing process, Bogart recommends utilizing a unit with a large screen that enables the quick reading of results. Those results should be able to be stored in the gauge and transferred to a computer and/or printer for documentation and averaging purposes. An instrument that stores many test measurements is best so operators can perform numerous tests before downloading the results.

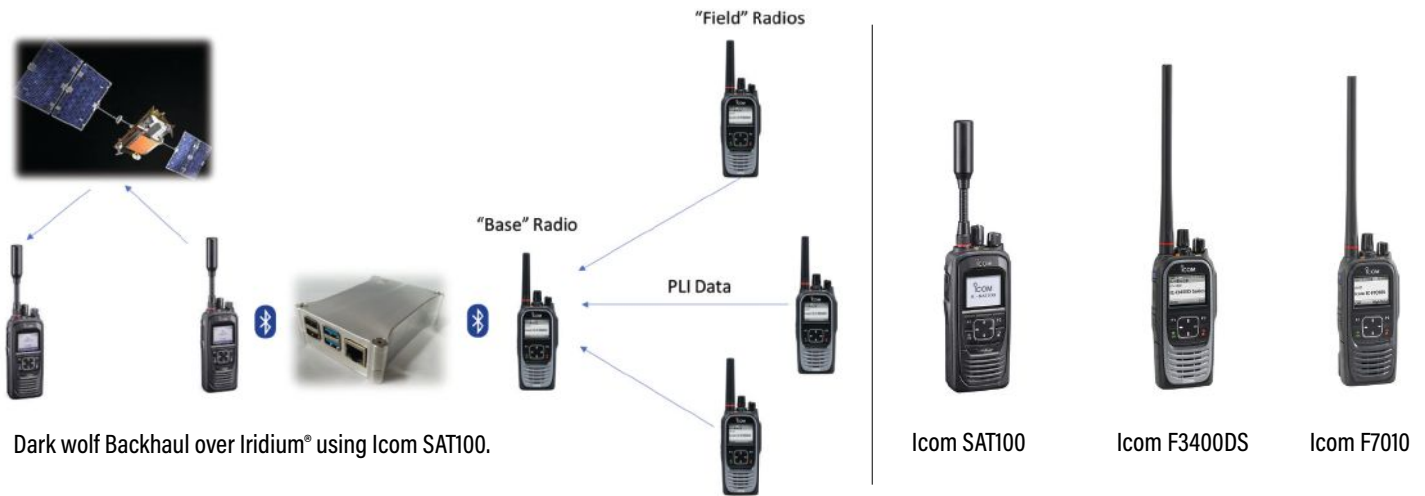
“Easier, more accurate aerospace coating and plating measurement with handheld units will help to improve quality checks wherever needed,” added Bogart. “So, defects can be immediately detected and corrective action undertaken to minimize scrap and faulty components or aircraft.”

More info: kett.com

MAXIMIZING COMMS CAPABILITY SUPPORT

Icom America, supplier of tactical communication products, introduces the first ever ATAK Plug-in family of radios: the F3400D/F4400D, F7010 (P25), SAT100, Dark Wolf Ventures SATCOM back haul device.

By Glenn Williams, Federal Solutions Manager, Icom America



The F3400D/F4400D is either a UHF/VHF 5-watt radio that will handle messaging and PLI. The F7010 radio is our P25 radio (smallest P25 radio on the market) that will also do PLI and messaging. The SAT100, connected to the Iridium® satellite network, will also plug into ATAK allowing for PLI to show up on the map. The Dark Wolf Ventures back haul device will allow the PLI from the UHF/VHF radios to be back hauled to other locations in the world as long as you have the SAT100 connected via the Dark Wolf Ventures device, and cable and a connection with Iridium®. An Android tablet or phone can be either connected via Bluetooth® or a new smart PTT that was developed in conjunction with DEM Manufacturing (currently the SAT100 must be Bluetooth® only). This product will work either as a plug into ATAK (Mil or CIV version).

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PROJECTING TACTICAL CAPABILITY THROUGH VERSATILITY

Lt. Col. Raymond Feltham has been in his current assignment as program manager for the Family of Special Operations Vehicles (FOSOV) at U.S. Special Operations Command at MacDill Air Force Base since August 2018. He first entered the United States Marine Corps in 1989 when he began his career at Parris Island, South Carolina as an enlisted Marine and was subsequently assigned to Marine Corps Air Station Cherry Point as a crash fire rescue man. After completion of this assignment and nearly 22 months as a civilian, he re-entered the USMC as an air traffic controller and was assigned to Marine Corps Air Facility Quantico, Virginia. After completion of this assignment, he received orders to Marine Air Control Squadron (MACS) 4, Okinawa, Japan. While stationed at MACS-4, he deployed with the 31st Marine Expeditionary Unit to Kuwait as part of Operation Desert Fox and was selected for the Meritorious Commissioning Program, Officer Candidate Class 175. He commissioned as a second lieutenant in December 2000.

From 2000 to 2003, he was assigned to MACS-2 in Cherry Point, North Carolina as an air traffic control officer. While assigned to MACS-2, Lt. Col. Feltham deployed to Kyrgyzstan as a Facility Watch Officer in support of Operation Enduring Freedom. From November 2003 to May 2005, he served as the detachment commander for MACS-2 Detachment Bravo and deployed in support of Operation Iraqi Freedom to Camp Korean Village. From May 2005 to July 2007, as the air traffic control facility officer at MCAS New River, Lt. Col. Feltham deployed to Kabul, Afghanistan in support of Operation Enduring Freedom. He served as the deputy national security planner for the Combined Forces Command-Afghanistan while deployed to Kabul. From July 2007 to May 2008 he attended Expeditionary Warfare School at Quantico.



Lt. Col. Raymond P. Feltham

Program Manager
Family of Special Operations Vehicles (FOSOV)
U.S. Special Operations Command

Armor & Mobility had the opportunity to speak with Lt. Col. Raymond Feltham, PM FOSOV, USSOCOM, regarding some priority goals and challenges the FOSOV portfolio is looking at moving forward.

A&M: Can you give an overview of SOCOM's current fleet of ground vehicles?

Lt. Col. Feltham: The Special Operations-Peculiar (SO-P) Family of Special Operations (FOSOV) vehicles are specifically developed to operate in the range of military operations our operators will use during a multitude of mission sets. We divide our portfolio up into light, medium and heavy vehicles, along with our Non-Standard Commercial Vehicle (NCSV) which we also categorize as a medium vehicle. The Lightweight Tactical All-Terrain Vehicle (LTATV) is a Special Operations Forces (SOF) modified commercial off the shelf (COTS) lightweight vehicle internally air transportable via V-22, H-53 and H-47 aircraft. It consists of two and four seat variants with the ability to change configuration based upon mission and/or threat. It's intended to perform a variety of missions to include offset infiltration, reconnaissance and medical evacuation.

The team is currently planning on a life cycle replacement of the LTATV providing an avenue into autonomy and hybrid electric. The current NSCV is based on commercial vehicle platforms enhanced with mission-specific modifications to increase protection, mobility performance, and durability. In an effort to save on sustainment cost, the team has leaned into a purpose-built avenue to supplement the current NSCV II platforms. The Ground Mobility Vehicle 1.0 (GMV 1.0) is a medium class High Mobility Multipurpose Wheeled Vehicle (HMMWV) with SO-P modifications. Several variants have supported our operators for over thirteen years in contingency and combat operations. The GMV 1.1 is a highly mobile CH-47 internally transportable special operations combat vehicle with the operational flexibility to support a wide range of lethal and non-lethal special operations missions and core activities. With operator-requested engineering change proposals, the GMV 1.1 continues to perform well overseas. The Mine Resistant Ambush Protected (MRAP) family of vehicles currently consists primarily of the MRAP-All Terrain Vehicle (M-ATV) and RG-33-A1, and does the heavy lifting for the teams. The vehicles are also modified to meet SOF-unique requirements.

A&M: Provide an overview of current FOSOV focus priorities for 2020 and forward.

Lt. Col. Feltham: In my second year as the program manager for FOSOV, my direction has been relatively simple and direct from the beginning of assuming responsibility. I've expressed to the team our focus is to do our part, in everything we do, to save lives with the vehicles that we provide to the operators while equipping the vehicles when able and as directed with lethal weaponry and high tech mobility capabilities to give our operators the advantage over the enemy. We can leverage COTS technology to aid in modernization of vehicle platforms, for example, electric, autonomy, heavy-duty suspensions or when required, engine repower. It is key that we communicate with industry here at SOFIC and other venues to maintain an understanding and appreciation for emerging capabilities available in order to align and enhance our technology insertion roadmap. FOSOV's current focus is similar to the previous fiscal year. Procurement of the Ground Mobility Vehicle 1.1 (GMV 1.1), and Non-Standard Commercial Vehicles (NSCV) continues. Additionally, a production contract for life cycle replacement of the LTATV is expected to be awarded this year. This new LTATV will give the program office an opportunity to begin addressing autonomy opportunities. Furthermore, FOSOV will begin to develop the Purpose Built Non-Standard Commercial Vehicles (PB NSCV). The PB NSCV will provide hybrid/electric vehicles as test platforms and expand into integrated automated and autonomous technologies, leveraging commercial off the shelf technologies when cost effective and practical. While the team leans forward in research and development of FOSOV's

follow-on platforms, we will continue to maintain and sustain over 3,200 vehicles at home and locations overseas.

A&M: From a light and medium platform perspective, talk about mission evolution for each.

Lt. Col. Feltham: SOF operators are continuing to request additional payload on the light (LTATV) and Medium (GMV 1.1) platforms. In fact, both the LTATV and GMV 1.1 are going through payload enhancements to ensure the vehicles meet the growing mission requirements. Along with improving the payload, FOSOV has also been working efforts to reduce the weight of vehicles with a particular focus on the weight of the armor of the GMV 1.1. Furthermore, the Non-Standard Commercial Vehicle (NSCV) team has been engaged in a lightweight armor study that is expected to yield nearly seven hundred pounds in weight reduction.

A&M: From a heavy platform and recovery perspective, what are some areas of improvement?

Lt. Col. Feltham: The focus for improvement on the FOSOV heavy fleet is geared toward long-term sustainment. Currently, FOSOV is conducting an MRAP reset program at Red River Army Depot to ensure vehicles that have been in theater for more than 10 years reach their expected life cycle of 25 years. The work done at Red River Army Depot has been exceptional. The reset line has provided life extensions to frame rails, the crew compartment and, in a few cases, the powertrain.

A&M: As automation advances continue, what are some FOSOV challenges to semi/full autonomy?

Lt. Col. Feltham: It is conceivable the first vehicle autonomy operations that occur in an operational environment will be performed by the SOF Operator. Albeit, the predominance of technology FOSOV is working is to understand how semi-autonomy or autonomy can be used in the SOF mission sets. While each SOF mission set that uses autonomy may be different, human-machine trust and assured communications are just a few of the inherent challenges identified in the employment of such systems in GPS-denied environments.

A&M: Feel free to speak to other goals/hurdles moving forward.

Lt. Col. Feltham: The upcoming opportunities to succeed in support of the SOF operator includes current evaluation of the Joint Light Tactical Vehicle (JLTV). We must understand its operational effectiveness and suitability in the SOF mission while simultaneously assessing how the JLTV fits within the SOF family of vehicles. Likewise, SOF is evaluating the integration of hybrid and electric systems into SOF platforms. While this integration is sure to bring with it several challenges -- to include safety testing of lithium batteries, logistical challenges as well as maintenance challenges -- most believe the costs/benefits of stealth and signature management gains are valued tradeoffs. Finally, the game changing integration of autonomous technology into SOF mobility platforms is going to be a challenge. FOSOV is working diligently to help ensure SOF operators understand the technology available within autonomous technologies and begin to identify some initial functional requirements. Like electric, one of the big hurdles with autonomy will be operator familiarization. Therefore, getting the technology in the hands of the operator in a tactically relevant environment is vital to beginning to understand how autonomous systems can supplement driver responsibilities to provide a tactical advantage.



REINFORCING NATIONAL RESPONSE TO A GLOBAL PANDEMIC

The Defense Logistics Agency (DLA), traditionally contributing to America's military readiness with items such as fuel and food, has so far ordered more than \$920 million in lifesaving supplies and equipment to support the nation's COVID-19 response.

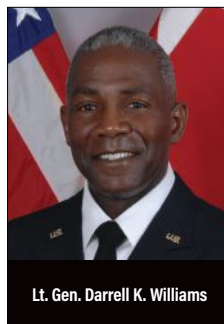
By Chris Erbe, DLA



Employees at DLA Distribution San Diego, CA, load 31 pallets of material onto USNS Mercy, Naval Base San Diego, in support of the COVID-19 pandemic, March 21. (Photo by DLA Military Liaison Officer Marc Walker)

Time-tested processes and partnerships developed during past humanitarian assistance operations enable the Defense Logistics Agency to provide supplies and services that few organizations, public or private, can match, said DLA Director Army Lt. Gen. Darrell K. Williams.

"While DLA is a combat logistics support agency whose mission is to support our military services and combatant commands, its support to the whole of government during times of national crisis is indispensable," he said. It manages about \$42 billion in annual sales for the military services, 11 combatant commands and 42 federal agencies, as well as partner and allied nations.



Lt. Gen. Darrell K. Williams

during times of stress on the industrial base like we're seeing today."

By late April, the agency had procured more than:

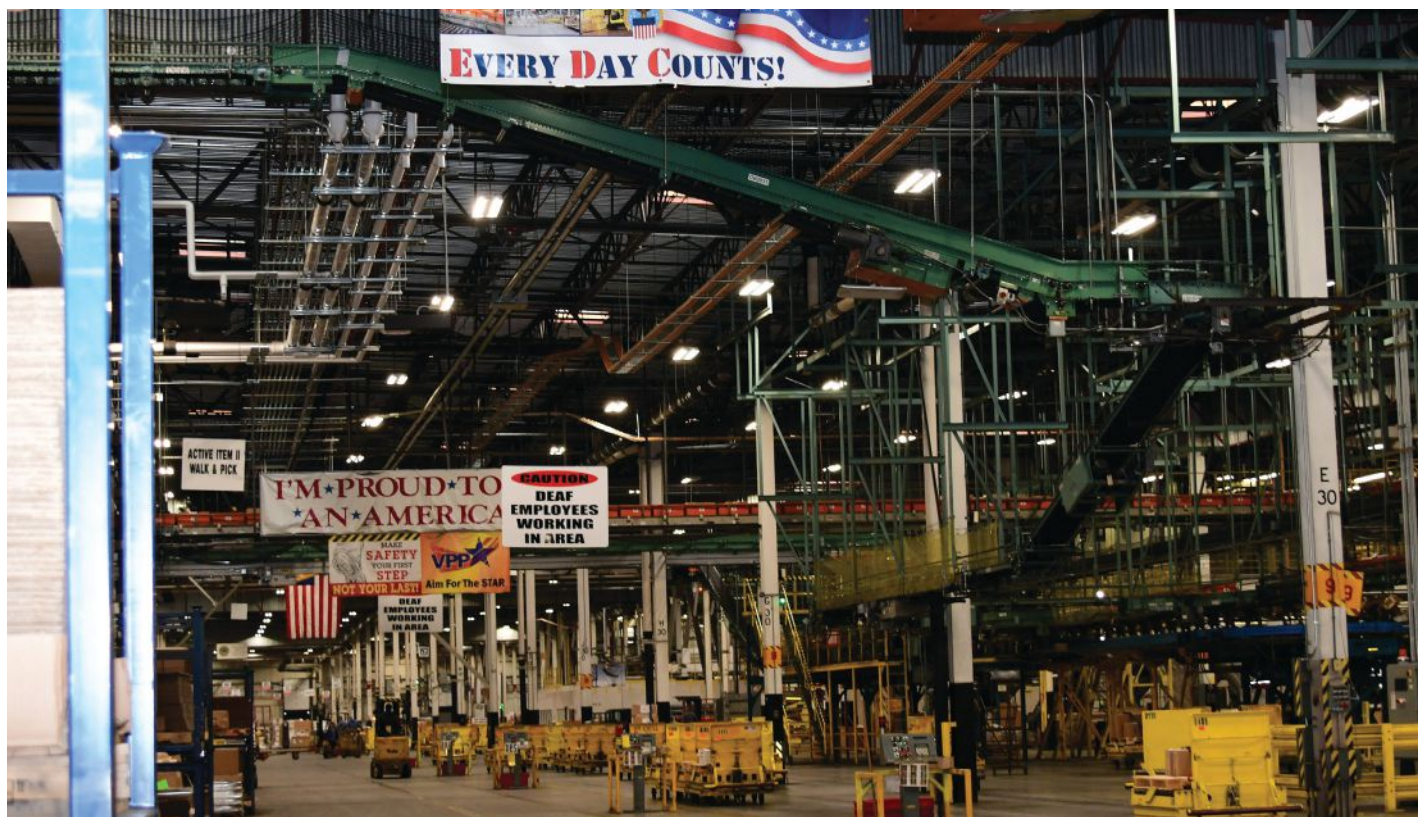
- 4 million N95 respirator masks;
- 14.4 million nonmedical and surgical masks;
- 92.2 million exam gloves;
- 816,300 hand sanitizers;
- 821,000 test components;
- 8,000 ventilators; and
- 2.5 million isolation and surgical gowns for military and federal agencies.

MITIGATING NEED THROUGH PARTNERING

DLA has supported the Defense Department's COVID-19 response by increasing production and acquisition of critical items through existing large-scale contracts across multiple supply chains.

"Our outreach to industry has been ongoing for years with strategic supplier alliances, prime vendor relationships and other tailored logistics vehicles," said Tim Stark, DLA ombudsman. "These partnership-type connections allow us the flexibility to respond rapidly

DLA also stocked the Navy hospital ships USNS Comfort and USNS Mercy with more than \$14 million in protective equipment, pharmaceuticals, medical supplies, fuel, food and repair parts. Other military medical support went to Army field hospitals in places such as the alternate care facility at the Jacob K. Javits Convention Center in New York City. Respirators and other medical equipment have been used aboard the USS Ronald Reagan, USS Nimitz and USS Theodore Roosevelt. Gloves, masks and hand sanitizers were sent to troops in



The Defense Department's largest distribution processing facility continues packing and shipping vital supplies to military services and federal agencies supporting the global COVID-19 response. (Photo by Ed Shank, DLA Distribution Public Affairs)

South Korea.

Specialized items such as COVID-19 test kits, patient monitors and nonmedical fabric face masks were also researched and introduced into DLA's inventory. And to address critical supply shortages early, DLA broadened its manufacturing base to acquire medical supplies through global and domestic sources. Using additive manufacturing technology, DLA procured 11,000 laser-cut protective face shields for New York City medical workers. The agency also met N95 mask shortages by awarding a contract to provide the Federal Emergency Management Agency and the Department of Health and Human Services with 60 Critical Care Decontamination Systems, each capable of sanitizing 80,000 masks a day for reuse. Even items previously scheduled for disposal or reuse have been provided, with DLA Disposition Services sending thousands of respirators, surgical masks, gowns, gloves, goggles and other items to military and federal customers.

Luis Guzman, area manager for DLA Disposition Services at Camp Pendleton, California, said his team has provided temporary hospitals throughout the country with everything from tents and cots to mattresses, exam tables and diagnostic lighting. "Our personnel here are doing everything within their power to identify property that can support this COVID-19 pandemic response," he said.

The agency can also deploy expeditionary logistics capabilities around the globe at a moment's notice.

"DLA is a consequential partner in supporting the whole-of-nation response," said Air Force Maj. Gen. Allan Day, director of DLA Logistics Operations. "And while we recognize that COVID is the enemy here, we're not losing sight of our mission to provide readiness support for all of the services." Though DLA is a DOD agency, support to other federal agencies is a priority that comes to the fore during crisis response such as COVID-19. The partnership involves federal, state,

local and tribal entities, said Stephen Dubernas, chief of DLA's Whole of Government Division. "In fact, through the State Department and the U.S. Agency for International Development, we're integrating with many foreign countries, so I would call it a 'whole-of-globe' response." Dubernas said the agency's focus pivots to support the nation when needed. "Never has this been more important than the response to COVID-19," he said. "On a daily basis, we're touching a large number of our more than 40 interagency partners."

PROVIDING SUPPORT FOR ANY REQUIREMENT

DLA has provided logistics support for 26 disaster relief and humanitarian assistance responses since 2010, including hurricanes Harvey, Irma and Maria in 2017, and Florence and Michael in 2018. The agency also played a major role in response to the 2014 Ebola outbreak in Liberia. Those events gave agency employees real-world experience consolidating support with government agencies such as FEMA, the State Department, and Army Corps of Engineers. To support the current crisis, DLA liaisons are embedded with FEMA, HHS, the White House Task Force, U.S. Northern Command and the Pentagon's Joint Acquisition Task Force.

"I think in many ways DLA was put together for such a time as this," Day said. "We're what the nation needs right now, and I'm really proud of the people who are making it happen."

Williams added that DLA is solidifying its role as an invaluable asset for DOD and the federal government by showing its unique ability to leverage logistics expertise for humanitarian response while maintaining warfighter support. "I've always been proud of DLA's support to our warfighters and our nation," he added. "Our people remain the secret sauce of this agency – they're the ones who make all of this support possible." ■

ENHANCING LETHALITY FOR REMOTE WEAPONS STATIONS

By Chad Lemond, Director of Business Development for Defense, EOSDSUSA, Inc.

EOS successfully fires multiple Javelin Anti-Tank Guided Missiles from the R400S. (EOS Defense Systems)



EOS Defense Systems USA, Inc., Huntsville, AL, is a world leader in Remote Weapons Station (RWS) design, development and production, incorporating advanced electro-optic applications based on core technologies in software, electronics, optronics, gimbals, and precision mechanisms. The company recently introduced the R800S RWS. The heavy gimbal R800S was developed to provide medium-weight vehicles with more lethal weapons by mounting the Mk44S 30mm x 173mm cannon. The R800S is also dual weapon capable (optional sub-caliber coax) and can deploy an Anti-Tank Guided Missile (ATGM) or air defense missile as a 3rd effector. The R800S, with weapons and ammo, weighs less than 1800 pounds above the roofline and has a height of 40 inches. This system can carry additional ballistic protection up to STANAG Level II.

VERSATILE, AGILE FIREPOWER

The R400S is a medium weight, medium caliber, RWS capable of deploying machine guns from 5.56mm to .50 caliber and other

weapons like the 40mm Automatic Grenade Launcher, the M134 7.62mm Gatling Gun and the M230LF / XM914 30mm x 113mm cannon. In the dual configuration, the R400S can mount a 5.56 or 7.62mm coaxial machine gun, adding extra lethality. This past February, EOS successfully fired two Javelin ATGMs in between 30mm cannon engagements, demonstrating the interoperability of the two weapons from our RWS. BG (Ret) Phil Coker, CEO for EOS Defense Systems USA, Inc. commented, "The ability to effectively counter any maneuver threat on the modern battlefield is a significant advantage to an Army that has to deploy to any fight. At the same time, the capacity that the R400 offers to clearly identify friend-from-foe at the Javelin's max range is an advantage that few other systems offer."

EOS has developed the capability to mount other 3rd effectors, such as surface-to-air missiles or counter-unmanned aerial system (C-UAS) launchers. It is important to note that whatever the mix of weapons, the R400S delivers precise, medium-caliber firepower from an RWS that weighs less than 1000 pounds above the roofline (including

weapons and ammo) at a height of only 35 inches. The R400S has been mounted, and fired, from a range of platforms like the Toyota Land Cruiser and Polaris DAGOR, to heavy robotic platforms, Strykers, and Abrams Tanks.

The R150 is the world's lightest RWS capable of mounting and firing the M2HB .50 caliber heavy machine gun with precision, on the move, and over long range. The reduced mass of the R150 enables it to be installed on a wider range of light tactical and logistics vehicles where the roof structure may not support the full weight of a larger RWS. The R150S provides excellent self-defense capabilities for any platforms when mounting a light, medium or heavy machine gun ranging from 5.56mm to .50 cal. The R150S weighs 187 pounds before adding weapons and ammunition.

PRECISION AND VISION

The precision which makes the EOS family of remote weapon stations unique is rooted in a gimbal that incorporates proprietary algorithms which compensate for atmospheric conditions, gun and platform attributes as well as ammunition characteristics. The system delivers less than 1 milliradian dispersion at extended ranges. This level of performance is enabled by our best-in-class Sensor Unit (SU), which is an advanced, compact, day/night, targeting and aiming system based on cooled thermal imager technology. For over 20 years, EOS has been producing sensors that are hermetically sealed in a single, submersible unit which ensures boresight retention to 0.1 milliradian for all sensors for the product lifetime. The SU incorporates both a color day electronic imaging system and a second-generation Forward-Looking Infrared (FLIR) camera which provide target detection beyond 12 km, recognition greater than 5 km, and identification beyond 4km. This level of precision is especially useful when targeting small, highly-maneuverable targets like Class I UAS. In a recent demonstration of our system capabilities, the R400 repeatedly shot down maneuvering UAS at ranges beyond 350 meters.

Contact info: defense@eosdsusa.com

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