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March/April 2018

EXTENDING NETWORK REACH

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Major General Randy S. Taylor
Commanding General, U.S. Army Communications-Electronics Command (CECOM)

Rear Admiral William W. Wheeler III
Commander Patrol and Reconnaissance Group (CPRG) CPRG-Pacific

Major General Duane A. Gamble
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INSIGHTS

As the Pentagon works through early 2018 budgetary challenges, U.S. combat forces continue to maintain mission readiness. From the implementation of tactical communication network upgrades to next-generation avionics for anti-submarine warfare to an evolution in force logistics augmentation reflecting strategy in support of Joint force operability, the Department of Defense is committed to winning the fight to keep America's interests secure.

The March/April 2018 issue of Armor & Mobility (A&M) provides an in-depth look at perspectives from key leaders. A&M targets insight into the growth of tactical networking critical to coordination and movement of the U.S. Army in an exclusive interview with Major General Randy Taylor, Commanding General, U.S. Army Communications-Electronics Command (CECOM), Aberdeen Proving Ground, MD. With the acquisition of new technology, CECOM is partnering with the Program Executive Office for Command Control Communications-Tactical (PEO-C3T), an office tasked with ensuring that tactical comms readiness is maximized through advanced combat network modernization.

Logistics support that drives operational capability is surely as important as tactical communications assurance. To this end, the U.S. Army Sustainment Command (ASC) integrates and synchronizes the delivery of a myriad of logistical capabilities and enablers from around the world. Army Sustainment Command, Commanding General, Major General Duane Gamble, spoke with A&M regarding current top priorities in implementing the fifth iteration of DoD's Logistics Civil Augmentation Program or LOGCAP V. Without a strategy for deploying logistics standards across areas of operation (AORs), a tactical force exists only by random maneuver. To address this essential operational need, the U.S. Defense Logistics Agency (DLA) is at the tip of force logistics strategy with the recent release of its Strategic Plan 2018-2026. DLA Director Lieutenant General Darrell Williams, speaks to Agency priorities in strengthening a more lethal force, reinforcing alliances with industry and government partners, and reforming business practices.

March/April A&M also provides a look at the Navy's newest iteration of its anti-submarine air patrol capability, the P-8A Poseidon. The Commander of Patrol Reconnaissance Group (PRG) and PRG-Pacific, Rear Admiral William "Trey" Wheeler III, discusses how the P-8A's computing power and ability to process data from multiple sources more effectively than its predecessor, the P-3C Orion, is giving the U.S. a clear advantage in the international battle for global maritime dominance.

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

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STRENGTH THROUGH TEST

The U.S. Marine Corp's next-generation CH-53K King Stallion Heavy Lift Helicopter is proving up to the task in providing large load carry capability.

By Liz Mildenstein

Features

LOGISTICS FOCUS

Major General Duane A. Gamble

Commanding General
U.S. Army Sustainment Command
(ASC)

COMMANDER'S CORNER

Major General Randy S. Taylor

Commanding General
U.S. Army Communications-Electronics Command
(CECOM)

LEADERSHIP PERSPECTIVE

Rear Admiral William W. "Trey" Wheeler III

Commander
Patrol and Reconnaissance Group (CPRG)
CPRG-Pacific

Departments

Cover: Soldiers from 1st Battalion, 37th Field Artillery Regiment, convoy to a staging area just before sunset during Bayonet Focus 18-02 at Fort Hunter, Liggett, CA. Bayonet Focus 18-02 the capstone training environment design emphasizes individual and collective Soldier skills against an adaptable force in an austere and fluctuating environment. (U.S. Army photo by Staff Sgt. Kenneth Burkhart, 302nd Mobile Public Affairs Detachment)

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AUGMENTING EXPEDITIONARY REACH

Major General Duane A. Gamble assumed the duties as commanding general of the U.S. Army Sustainment Command, Rock Island Arsenal, Illinois, in July 2017. A native of Arbutus, Maryland, Gamble attended Western Maryland College, where he earned a Bachelor of Arts degree and was commissioned as an Ordnance officer in May 1985. He has earned Master of Science degrees from the Florida Institute of Technology and from the Industrial College of the Armed Forces.

Gamble previously served as the commanding general of the 21st Theater Sustainment Command, headquartered in Kaiserslautern, Germany. Prior to that, he served as the assistant deputy chief of staff for Logistics (G-4) at Army headquarters, Pentagon, Washington, D.C. Before joining the Army staff, Gamble served as the deputy commanding general of the 1st Sustainment Command (Theater), headquartered at Fort Knox, Kentucky. Prior to that, Gamble served as commander, 528th Sustainment Brigade (Airborne), supporting Army Special Operations Forces in Iraq, Afghanistan and the Philippines, among numerous other command and staff assignments throughout his 33-year career.

Gamble's awards and decorations include the Distinguished Service Medal, Bronze Star Medal (with Oak Leaf Cluster), Air Assault Badge, and Master Parachutist Badge.

Major General Duane A. Gamble

Commanding General
U.S. Army Sustainment Command

Armor & Mobility spoke recently with MG Duane A. Gamble, Commanding General of U.S. Army Sustainment Command (ASC) regarding the fifth iteration of the Army's Logistics Capitalization (LOGCAP) program, LOGCAP V, which aims to enhance integration and synchronization of Army logistics enterprise activity across a global battlefield.

A&M: What is the Logistics Civil Augmentation Program?

MG Gamble: The Logistics Civil Augmentation Program, better known as LOGCAP, is administered by the U.S. Army Sustainment Command, headquartered here at Rock Island Arsenal, Illinois. ASC's mission is to integrate and synchronize the delivery of logistical capabilities and enablers at the operational and tactical points of need around the world. LOGCAP is the U.S. Army's premier capability to support global contingencies with contracted logistics capabilities.

A&M: What are some of the services that LOGCAP provides?

MG Gamble: LOGCAP provides a variety of expeditionary logistics services to the warfighter which includes support services to deployed Soldiers as well as joint forces, non-military federal agencies and coalition forces in locations throughout the world. LOGCAP provides base operations support services in contingency environments and sustainment services worldwide. This includes services such as shelter and billeting; food service; water and ice service; laundry services; medical health care services; fire and emergency services; engineering and facilities management; and Morale, Welfare and Recreation to personnel. It also provides scalability -- allowing supported organizations to build or expand base camps and draw them down in synchronization with the operational tempo. LOGCAP also provides maintenance, transportation and supply contracted capabilities.

A&M: Is there an example of a crisis in which LOGCAP was crucial for success?

MG Gamble: Most recently, LOGCAP was used to support Army efforts assisting the 3.4 million people affected by Hurricane Maria in Puerto Rico, the worst natural disaster ever recorded on the Caribbean island. Initially, it was used to provide base-life support of deployed U.S. Forces and has since transitioned to executing the receipt, storage, and distribution of construction material to the Army Corps of Engineers in support of their efforts to rebuild the electrical grid. This demonstrates LOGCAP's ability to adapt and scale sustainment operations in synch with changing operational requirements. Two years ago, LOGCAP was used to build life support camps supporting the medical personnel sent to control and end the Ebola crisis in West African nations.

Additionally, LOGCAP supports Army rotations at the National Training Center in Fort Irwin, California. Specifically, it supports the needs of the opposing forces who mimic real-world enemies that rotating units have to "fight". Every year around 10 brigades move through NTC on their way to deploy around the world and LOGCAP enables the tough, realistic training provided by NTC. Also, LOGCAP is currently supporting operations in Iraq and Afghanistan alongside our coalition partners.

A&M: What can you tell us about the benefits of the current LOGCAP?

MG Gamble: LOGCAP can respond quickly and operate under austere conditions. LOGCAP's use of a pool of qualified performance contractors fosters competition to reduce overall costs and to enhance the quality of services. The use of more than one contractor reduces the risk associated with the Army relying on a single contractor while broadening the selection of mission resources. It also established the precedent of aligning one performance contractor to a combatant command region, which significantly increased responsiveness to the supported command requirements.

A&M: How will the next generation of the LOGCAP contract differ from the previous?

MG Gamble: The next LOGCAP contract will retain the strengths of the current LOGCAP contract and will add capabilities to the current LOGCAP portfolio -- a form of continuous improvement. The contract will continue the shift from a more reactionary response to a more forward-looking and proactive posture enabled by embedded LOGCAP planners in the Army Service Component Commands (ASCC).

Said a different way, the next LOGCAP contract will be focused on providing the contracted capabilities required by ASCC and Theater Support Commands to "set the theater". Another important change is the standardization of the performance work statements, structuring of the workload data, and standardization of baseline reporting, to include maximum use of Army automated information systems. This will bring more transparency to the program, and also allow contractors to respond more rapidly to requirements. The focus is on having a pool of agile qualified contractors that can respond quickly to fill capability gaps and then scale contractor operations in synch with the ebb and flow of military operations.

A&M: As the contract evolves, what command level will the LOGCAP program focus on in the future?

MG Gamble: Our focus will remain on our ASCCs. The Army is responsible for operations in the land domain and LOGCAP enables these operations with contracted capabilities that provide scale and endurance. In support of the ASCCs, LOGCAP will include a "Setting the Theater" task order awarded with a 10-year period of performance. This will set the conditions for performance contractors to support the ASCCs deliberate and crisis action planning process.

In support of the ASCC, the performance contractor will also participate in planning and rehearsal exercises. The exercises will be used to proof the contractor's support concepts and build off of lessons learned. This will improve responsiveness by being able to more rapidly define requirements and bring more predictability to cost.

A&M: What are the reasons for recompeting the LOGCAP contract and changing the LOGCAP Program's approach?

MG Gamble: The current LOGCAP contract is scheduled to end later this year so recompete is a natural part of the lifecycle. Additionally, the LOGCAP Program needs to keep pace with changes in the operational environment. The new LOGCAP contract will continue, and improve on, the best practices of the current contract in order to support the whole of government efforts to deliver the capabilities needed to set and surge each specific theater. The new contract is scheduled for award in the fall with transition to begin immediately thereafter.

A&M: What has ASC done to engage industry in support of the LOGCAP contract competition?

MG Gamble: ASC partnered with Army Contracting Command-Rock Island to conduct multiple Industry Days over the past year and a half. Part of each Industry Day consisted of one-on-one sessions with potential offerors.

The event gave ASC's LOGCAP Program Office the opportunity to update industry and ensure they had a comprehensive understanding of the capabilities and concepts the U.S. government was requiring in the LOGCAP contract recompete. It also allowed for an open exchange with industry on capabilities, limitations, and future trends, and gave industry the opportunity to ask questions and provide feedback.

The Industry Days also served to create a networking opportunity for large and small businesses to develop relationships as prime contractors and sub-contractors. In summary, the Industry Days provided the government the opportunity to engage with industry to ensure both sides understand the performance requirements and proposal packaging and evaluation methodology. With this common understanding, the U.S. government is best postured to receive high-quality proposals from capable contractor teams.

A&M: What is the LOGCAP Program Office doing to improve predictability and transparency regarding costs from a program management perspective?

MG Gamble: The standardization of how requirements are developed will give both government and industry a common perspective, which will allow both to better predict costs based on labor models and desired outcomes. This inherently builds in transparency, cost predictability, and ultimately accountability, because historical data can be leveraged to define future rough order of magnitude costs for specific services – known in the acquisition community as 'should cost.' During and after performance execution, the final costs can then be compared to those predicated costs consistently across the Army for all task orders. This ultimately provides the requiring activities the required effects within the predicted cost estimates.

A&M: Can you tell us how LOGCAP fits into the overall mission of providing logistical support to the warfighter?

MG Gamble: LOGCAP provides ASCCs and operational commanders with expeditionary contracted logistics capabilities that enable them to scale operations quickly and to create the endurance required for military operations. LOGCAP is a flexible tool that is able to respond quickly and operate in environments where requirements fluctuate with the ebb and flow of operations. Whatever mission, ASCCs can use LOGCAP to enable mission success.

DEFINING LOGISTICS SERVICES DELIVERY FOR CONTINGENCY:
A REVOLUTION IN PARTNERED LOGISTICS EFFECTIVENESS

By Ella Studer, Senior Vice President of Logistics Programs, KBRwyle

Ella Studer serves as Senior Vice President of Logistics Programs for KBRwyle. She is responsible for a portfolio of multiple Department of Defense and Interagency programs including LOGCAP IV, AFCAP IV, and numerous global service support initiatives.

The requirements for contracted service support are marked today with a compelling need for advancements in systems and delivery evidenced by recent contingency operations extending from the Pacific Rim to Europe and the Middle East.

The contractual force can advance service delivery through the development and implementation of systems that are leaner, faster and more agile. Streamlined delivery must reduce contractual risk both institutionally and at the point of service delivery. The U.S. Armed Services are well partnered with services specialized defense firms today. The military has made tremendous strides in defining contractual risk over the past 10-15 years.

Lesser Risk Spirals Logistics Effect

Advancement in systems and delivery will be framed by risk reduction in the future which is at the core of Army Materiel Command's strategy of delivering readiness seeking to leverage advances in services delivery to achieve strategic logistics effect leading to advantages over future adversaries. This strategy allows the military to improve the combat readiness of the future force by emphasizing Industry collaboration to achieve a dependable tactical and operational logistics stance founded upon controlling risk.

Risk control to deliver readiness is relational across seven risk areas: (1) providing sustainment for an agile force where and when needed; (2) employing effective measures to control costs and ensure best value; (3) ensuring that costs can be traceable to execution; (4) having confidence in cost estimates when levels of effort are known; (5) reliably providing the full spectrum of sustainment services across the full range of possible missions; (6) adhering and complying with regulatory and contractual requirements; and (7) rapidly expanding or reducing resources to meet mission objectives.

Significant investments are already made in services risk management and systems advancements which provide positive dividends for the Army in global agility and readiness. KBRwyle developed and implemented key initiatives related to service delivery systems, structures, and synchronization. Hence, cost control as part of best value is realized through international local vendor alliances. Rapidly expanding and reducing resources through networked transportation and distribution solutions

Transportation Operations during Operation Inherent Resolve

consistently exceed mission objectives in Europe and the Middle East during critical operations. Costs and their estimates gain confidence parameters and direct traceability by benchmarking to internationally recognized cost engineering standards. Synchronized experientially based structures reduce global logistics complexity allowing for the ready sustainment of an agile force where and when needed.

Spiraled Logistics Effect Today

Over the past decade, KBRwyle developed, validated and matured various systems which capture risk variables, isolate them, and reductively manage their adverse results to deliver logistics effect. Specifically, KBRwyle's integrated asset management, supply chain and business systems have removed "waste" from maintenance processes and enabled full cost transparency for all purchases, transfers, and issues. Continued systems refinement will validate the capability to consistently exceed risk area requirements for high reliability, transparency and interoperability in contingency operations.

This is a critical period for the Armed Services as performance, capability, and stability frame delivery and readiness. Logistics contracting focus will need to shift from acquisition centers to the field. There is a need to invest in experience with troops at the point of delivery while institutionally reducing risk at the institutional level. Specifically, the LOGCAP IV program is familiarizing military logisticians with more expeditionary based supply and transportation solutions, and introducing KBRwyle systems to operationally realistic conditions at different global locations. Services delivery based upon these real-world backdrops allow for proactive rather than reactive logistics development in anticipation of future conflicts.

Forward Momentum

Life Support Area for Sabre Guardian '17 Exercise

KBRwyle continues to mature and advance services delivery capabilities by working side by side with the military to determine the best way to integrate logistics considerations into joint exercises while simultaneously supporting real-world contingencies. Investing in the development of risk reduction concepts and putting them and integrated systems with troops will fuel the success of services delivery systems methods when they are called upon in the future.

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EMPOWERING READINESS THROUGH C4ISR INTEGRATION

Major General Randy S. Taylor assumed duties as the 15th Commander of the U.S. Army Communications-Electronics Command (CECOM) and Senior Commander of Aberdeen Proving Ground on April 13, 2017.

As the commanding general for a 16,000-person, two-star global command and the senior commander of a 28,000-person military base, General Taylor serves as the U.S. Army's command, control, computers, communication, intelligence, surveillance, and reconnaissance (C4ISR) materiel integrator. He is responsible for enabling the U.S. Army's warfighting readiness by providing sustainable global C4ISR support.

General Taylor enlisted in the U.S. Army at the age of 19, later graduated from the University of Maryland, attended Infantry Officer Basic Course in 1988 and was first assigned to the Berlin Brigade, West Berlin, Germany, as rifle platoon leader. He holds a Bachelor of Science degree in Technology and Management and holds Master's degrees in Telecommunications Management, and National Security and Strategic Studies. He is a graduate of the U.S. Naval War College.

Major General Randy S. Taylor

Commanding General
U.S. Army Communications-Electronics Command (CECOM)

A&M: You have been in command at U.S. Army Communications-Electronics Command (CECOM) now for almost one year. Can you tell us what you have learned during that time?

MG Taylor: Before becoming the commanding general in April 2017, like most Soldiers I thought of CECOM as the ones who rebuilt communications gear after redeployment or provided technical support in the field. I underestimated the scope of CECOM's vast responsibilities and capabilities. That is because CECOM's work, when we are doing our job well, is primarily behind the scenes. And that's a good thing.

The American Soldier, to fight and win, depends on CECOM to sustain expeditionary command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) readiness. It is amazing how much our team of roughly 16,000 Soldiers and Civilians do to enable mission command across multiple domains. In fact, the most common statement I hear from Soldiers who visit is that they wish they'd known earlier everything that CECOM does.

A&M: Could you give us an overview of CECOM's mission and structure?

MG Taylor: Simply put, we empower the Soldier with winning C4ISR capabilities. This means that our talented professionals are laser-focused on providing the Soldier with the best logistical support, from birth to grave, for virtually every piece of electronic equipment in the Army's warfighting inventory. Our work ranges from protecting and updating Army's software, to maintaining communications and electronics equipment, to conducting interoperability and certification testing with coalition partners, to upgrading the White House's network infrastructure. CECOM is headquartered at Aberdeen Proving Ground (APG), MD, where I also serve as the senior installation commander.

At APG, our Software Engineering Center (SEC) is a major part of CECOM. Most Soldiers don't think about software on a day-to-day basis, but SEC touches them daily. When they scan their badge to eat in the dining facility, when they order supplies, and when they use C4ISR systems in their command post, SEC provides and sustains the software for those systems. One of the most critical things SEC provides is force protection—writing and fielding the software that protects aircraft from enemy radar and missiles and our ground troops from remote-controlled IEDs, among other threats.

Also at APG, we have our Integrated Logistics Support Center (ILSC). Through rapid acquisition, maintenance, and fielding, the ILSC repairs C4ISR systems as far forward as possible to support combatant commands, including in Southwest Asia, the Korean peninsula, and Europe. Forward repairs reduce turnaround time, and in some cases repair-cycle time, decreasing the duration the Soldier is without equipment.

Maj. Gen. Randy S. Taylor, commanding general of the U.S. Army Communications-Electronics Command (CECOM), highlights C4ISR equipment readiness for Army Prepositioned Stock (APS) with Maj. Anne Rennard of the 403rd Army Field Support Battalion during a visit to the APS-4 climate controlled warehouse on Camp Carroll, South Korea. (Official US Army photo)

Another key part of CECOM is the Tobyhanna Army Depot (TYAD) in Pennsylvania, which maintains more than half of all communications and electronics equipment for the Department of Defense. TYAD provides full-spectrum logistics support to the Soldier, including fabrication, integration, and field support to C4ISR systems. With 51 forward depot-level locations worldwide, approximately 20 percent of our TYAD professionals are in the field actively supporting our units.

At Fort Hood in Texas, our Central Technical Support Facility (CTSF) team performs Army Interoperability Certification testing and configuration management for all operational through tactical-level C4I systems, applications, and hardware before release. Essentially, the CTSF ensures that all network components operate together as intended in the field.

Finally, CECOM includes the Information Systems Engineering Command (ISEC) in Fort Huachuca, Arizona. Our ISEC engineers provide network upgrades to increase the bandwidth, reliability, and security of legacy information systems globally. ISEC's work enables Soldiers to send and receive voice, data, and video transmissions more quickly and efficiently.

CECOM also maintains operational control of the U.S. Army Communications-Electronics Research, Development, and Engineering Center and Army Contracting Command - Aberdeen Proving Ground (ACC-APG). These partnerships allow us to align technology efforts within the C4ISR portfolio and ensure the Army maintains its competitive advantage.

A&M: CECOM is a C4ISR sustainment command. Why is C4ISR sustainment so important to battlefield readiness?

MG Taylor: It may come as a surprise, but even with the cost of research, development, production, testing, and fielding, up to 70% of the life cycle time and cost for a piece of C4ISR equipment is in sustainment. That is mostly because the Army upgrades, modernizes, and continues to use capabilities long after they are fielded. When it comes to supporting Soldiers' post-deployment reset of C4ISR capabilities under the Army's Sustainable Readiness Model, which is the successor to the decade-old Army Force Generation model, CECOM now has to reset in less than half the time. Pushing software patches, updating hardware, keeping the supply part inventory rightsized, and removing obsolete equipment from unit inventories is a huge job. But it's incredibly important for both battlefield readiness and fiscal responsibility.

A&M: Management of software, licensing, and intellectual property are a growing problem to the Army. We see that CECOM's SEC will soon host the third Army Software Solarium at APG. How is this getting after the software management problem?

MG Taylor: You hit the nail on the head with the first part of that question. Literally every piece of combat equipment, business system, and the computer on everyone's desk runs on software. Until our SEC took the lead, no single entity within the Army enterprise had responsibility for software management. We have the armor, fires, Soldier, and aviation centers of excellence, as well as the Program Executive Offices and Program Managers for hardware systems. But there's no equivalent structure for software. And remember, all that hardware needs

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A Soldier from the Korean Augmentation to the U.S. Army assigned to the 304th Expeditionary Signal Battalion, Camp Humphreys, South Korea, explains his duties to Maj. Gen. Randy S. Taylor, commanding general of the U.S. Army Communications-Electronics Command (CECOM). (Official US Army photo)

software to perform and operate on a network. This results in disparate software management that each branch of the Army does its own way. And that's no way to run sustainment.

So the SEC, with the partnership of the Army Chief Information Officer, convened the first Software Solarium in 2016 to begin getting our heads around that conundrum. After taking that initial look, last year the vision was a little more defined, and we agreed on several lines of effort. This year, we will push further ahead on getting a coherent enterprise-wide software management philosophy into place.

One recent development to help this effort was the designation of SEC as the Army's Center of Industrial Technical Excellence for software. This allows the SEC to enter into public-private partnerships, secure intellectual property rights, and greatly expand the knowledge base of its workforce. In turn, that enables us to more rapidly and accurately react to software challenges our units face in the field.

A&M: APG is known as the "Home of Innovation" for the Army community. What new or innovative programs or processes are paving the way for the future, specifically in C4ISR sustainment?

MG Taylor: There are several areas where CECOM is anticipating the needs of the Army and positioning support for the future force. I can start right where acquisition starts: in contracts. The truth is, until recently most acquisition contracts only spoke to delivery. In other words, produce and field a piece of equipment. But what happens after that? Well, the almost 70% I spoke of before—sustaining that equipment for the remainder of its useful life. That sustainment has been an afterthought, which is an extraordinarily inefficient and ineffective approach, and that just cannot continue.

So we have been working closely with ACC-APG to add game-changing sustainment language into acquisition contracts. This will allow us to better manage the resources needed for life cycle support. We can also better leverage our industrial partners to provide that support when needed by having them think about sustainment from inception, as well as work to secure data and intellectual property rights for commercial technologies that we use.

Another area of concentration for us has been supply availability. My boss, General Gus Perna, commander of Army Materiel Command, has charged us with providing 100% supply part readiness to units. That's not the simplest thing to do when you have 187,000 Soldiers abroad supporting combatant commanders in 140 countries. But tied in with divesting obsolete equipment—getting old gear out of the inventory so we can concentrate on sustaining current stock—we have been making steady progress in this area as well.

A&M: Any last thoughts?

MG Taylor: Absolutely. I often think of a quote from General Douglas MacArthur: "The history of failure in war can almost be summed up in two words: Too late." We have a responsibility to make sure our Soldiers have everything they need to execute their mission effectively, wherever and whenever they may face an adversary. This responsibility belongs to all of us—every position on the CECOM team impacts our Soldiers and their readiness. This is what motivates us and is the key to our success. We cannot, and will not, be "too late."

ENHANCING THE ARMY'S NETWORK TO "FIGHT TONIGHT"

By Paul D. Mehney, Director of Public Communications, U.S. Army Program Executive Office Command, Control, Communications – Tactical (PEO C3T) and Justin Eimers, Public Affairs Specialist, PEO C3T

The U.S. Army has implemented a plan to update mission command network software and hardware across 400 Army, Army Reserve, and Army National Guard units through 2019. This robust effort will reduce the number of disparate software and hardware systems in today's command post environment. (Photo Credit: U.S. Army photo by Bridget Lynch, PEO C3T Public Affairs)

In recent years, the Army's information technology modernization has been outpaced by rapid change in the commercial world. U.S. adversaries leverage commercial off-the-shelf technologies, which allow them to gain an advantage over Army mission command systems at a fraction of what it costs the Army to build them. As a result, the service branch recently undertook a robust study to optimize current requirements development, acquisition and business processes to capitalize on the private sector's advancements in communications and networking.

A NEW STRATEGY

The new network modernization strategy is designed to enable the Army to "fight tonight" while also actively seeking next-generation solutions to stay ahead of potential adversaries. Soldiers must be able to shoot, move and communicate effectively while the Army continually assesses and adjusts to operational needs and technological evolution. Immediately, the strategy focuses on: halting programs that do not address operational requirements; fixing the existing programs that are necessary to fulfill the most critical operational shortfalls; and pivoting to a new acquisition methodology. This pivot will develop the future state network by rapid technology insertion through concept evaluation, experimentation/integration and then requirement definition represents a fundamental change in the Army's approach to tactical network modernization Army forces ahead of adversaries.

Through a collaborative effort across the requirements, materiel and operational communities, the service has identified four network modernization lines of effort to improve the network: creating a unified network; building a simplified mission command suite of applications; improving interoperability among Army elements, and with the Joint force and coalition partners; and improving command posts' expeditionary mobility and capability (for full-spectrum operations).

The 51st Expeditionary Signal Battalion, 35th Signal Brigade, trained on its tactical network equipment, including transport equipment, during a field exercise at Joint Base Lewis-McChord, Washington. The Army's tactical network provides an agile, modular "tool kit" of integrated network capabilities. (U.S. Army photo)

The network modernization strategy will deliver capabilities in the near term to close gaps, and continue to emphasize maintaining superiority through longer-term efforts and continued optimization. Significant improvements can be remedied among high-priority units in the next 12 to 24 months through program delivery of interim capabilities that will: improve command post (CP) survivability and mobility; integrate tactical network transport; provide a mission command application suite that resolves incompatibilities between echelons; improve radio and network survivability against electronic warfare and cyber threats; and increase joint/coalition interoperability and access to joint fires and close air support.

SECURING CONTINUITY OF COMMUNICATIONS

Program Executive Office Command, Control, Communications – Tactical (PEO C3T) project offices are supporting near term efforts including mission command hardware and software standardization, modernization of tactical network transport connectivity across all components, fielding new data radios, improving expeditionary satellite communications capability and ensuring commanders have resilient and redundant network capacity. Critically, the latter involves procurement of terrestrial capabilities to improve transport resiliency (Troposcatter and Terrestrial Transmission Line of Sight Radios). The Army is also pushing to integrate Secure Wi-Fi to the field to enable units to stand up command posts faster and get connected to the network easier while in maneuver.

"The key benefit provided by Secure Wi-Fi is the velocity that it brings to [the setup of] my mission command systems," said Col. Michael Adams, commander of 1st Armored Brigade Combat Team, 3rd Infantry Division. "Near-peer adversaries are much more capable than enemies we trained against previously. In a decisive action training environment, [armed with Secure Wi-Fi], we are much faster and more mobile, and that equates to survivability."

In May 2017, the Army's G-3/5/7 (Operations, Plans and Training) issued an Army-wide directive for more than 400 tactical units to consolidate to a single software baseline for mission command applications. To execute the order, elements from PEO C3T mobilized to support fielding approximately 290 units in FY18 and the remainder of the Army next fiscal year.

MAXIMIZING COMMONALITY

The Army is also committed to resolving incompatibilities and unnecessary complexity in its existing mission command systems through the establishment of a Common Operating Environment (COE). The COE will replace current stovepiped mission command systems that perform individual functions but do not integrate easily and often fail to create a complete common operating picture.

"The rapid pace of deployments in the past 15 years has led to a significant increase in the Army's mission command systems as units have requested additional capabilities," said Col. Troy Crosby, project manager for Mission Command, who has the lead for implementation of the fielding efforts. "The Army is changing how it fields and sustains these systems, necessitating a move to a single baseline today, while we continue developing the next baseline as part of the Army's Common Operating Environment effort."

To collapse legacy warfighting systems, reduce the burden of compiling data and shrink the technical and physical footprint of the CP, the Army is developing the Command Post Computing Environment (CP CE), a core part of the COE. CP CE will feature a simplified user experience by combining warfighting functions into a common user interface, reducing Soldier training and accelerating the integration of new capabilities. Work on CP CE has progressed significantly over the last year. The CP CE infrastructure, consisting of a new single tactical server infrastructure plus a common software baseline, will provide Soldiers an underlying core CP system upon which additional warfighting functionality can be built. The program is leveraging commercial software to support the baseline, which has saved time and money in the development process.

Core CP CE common infrastructure functions will provide chat, a standardized map, message centers and an extensible data model. These functions will serve as the foundation for every warfighting application and remain the same for every computer and every Soldier, regardless of branch or military occupational specialty. CP CE will undergo operational test in late 2018 and be ready for early fielding in 2019.

PARTNERING FOR ENHANCED OPERABILITY

To support long-term network improvements, the program office is teamed with the Communications-Electronics, Research, Development and Engineering Center (CERDEC) to seek upgrades to Blue Force Tracking (BFT) 2, the Army's key situational awareness network. In use since 2002, BFT provides friendly force tracking information and is integrated on more than 98,000 platforms across the Army and joint services. The next-generation BFT modernization effort, BFT 3, will employ several new and enhanced features including

increased network capacity to transfer data, advanced resiliency to electronic warfare attacks and improved means of moving data from source to destination in different operating environments.

"This capability improvement is necessary as the United States faces increased cyber and electronic warfare threats from near-peer adversaries," said Lt. Col. Shane Sims, product manager for Joint Battle Command-Platform, assigned to Project Manager Mission Command (PM MC). "The goal of the next-generation BFT 3 is to reduce the cognitive burden on Soldiers by creating a simple and intuitive network. The network has to be smart and fast enough to support these future missions."

CERDEC is leveraging partnerships to establish cooperative research and development agreements (CRADAs) with industry and academia that will inform aspects of the BFT 3 upgrades. Information leveraged from these agreements will be shared with the Army Training and Doctrine Command, or TRADOC, to help scope BFT modernization requirements. Goals of the CRADAs include sharing lessons learned and insights into technology trends, providing a forum to review stakeholders' concerns, and enabling a common understanding of the BFT's future architecture, said Peter Bach, a CERDEC electrical engineer who is helping lead the effort.

"The Army is bringing in the best minds from industry and academia through CRADAs to support this upgrade," Bach said. "The CRADAs will allow us to work collectively among our stakeholders to solve this problem from a modernization perspective. We're aligning all efforts to ensure we have a strong industrial base." Utilizing data from the partnerships, the program expects to release a request for proposal in early 2020, with anticipated incremental fielding of BFT 3 by 2025.

CHANGES MOVING FORWARD

To seek material solutions allowing for greater command post mobility and survivability, the Army recently released a directed requirement to enable the material development community to begin seeking command post integration and capability solutions. The Army authorized the implementation of the Command Post Integrated Infrastructure, or CPI2, effort in December 2017 to address mobility issues and to ensure communications hardware and mission command application integration across platforms. PEO C3T program managers will lead material development phases with involvement from the Army Research, Development and Engineering Command; Army Test and Evaluation Command; and industry. The Army will invite industry to compete and participate in certain aspects of the integration effort via a process known as other transaction authority. "We'll be synchronizing with our S&T and PEO partners to determine when solutions reach a mature technology readiness level," said Kim Reid, product director for Strategic Mission Command, which reports to PM MC.

As part of the materiel development, integration and prototyping phase the Army has directed the program office to develop prototypes for five brigade sets of command post solutions. Each type of Brigade Combat Team (BCT) is represented in this effort. The First Unit Equipped date will be in Fiscal Year 2020 with the rest of the BCTs getting fielded in FY2021. "We will continue to identify future S&T efforts, and then based on the schedule, see where those transition points can be inserted into production. We'll leverage the expertise of the Army's scientists and engineers in these technical disciplines," said Reid.

These and other efforts require significant institutional and cultural change in how the Army modernizes the network. Critical to the strategy is taking advantage of institutional reforms, made possible through authorities given to the Army in recent National Defense Authorization Acts, which will enable rapid prototyping, demonstration and experimentation with existing and emergent technologies. These efforts, coupled with predictable resources and real-time Soldier feedback, will allow the Army to keep pace with emerging threats, capitalize on private-sector advancements in communications and networking, and focus S&T efforts on anticipating and countering new threats. This strategy will enable the Army to prepare for war, "fight tonight," and win against any foe.

A graduate of Michigan State University, Paul D. Mehney currently serves as the Director of Public Communications for the U.S. Army Program Executive Office Command, Control, Communications – Tactical (PEO C3T). Located at Aberdeen Proving Ground, Maryland, PEO C3T's 1,600 personnel develop, integrate and field Army tactical network systems. Mehney previously served in communication management roles at the Communications-Electronics Command, and the Assistant Secretary of the Army (Acquisition, Logistics and Technology), Future Combat Systems program.

Justin Eimers is a public affairs specialist for PEO C3T. His public affairs experience also includes more than six years at Tobyhanna Army Depot. He holds a Bachelor of Arts degree in mass communications from King's College.

REINFORCING FORCE EXPEDIENCE

The U.S. Defense Logistics Agency's new Strategic Plan lays out goals for 2018-2026.

By Beth Reece and Melissa Bohan, DLA Public Affairs

The Defense Logistics Agency (DLA) is reaffirming its commitment to support warfighter readiness in a complex and rapidly changing environment with its new 2018-2026 Strategic Plan. The plan supports Department of Defense priorities to strengthen the nation's military by building a more lethal force, reinforcing alliances with industry and government partners, and reforming business practices.

LTG Darrell Williams
DLA Director

As the agency developed its new plan, Director Army LTG Darrell Williams challenged his leaders to remember why the organization exists and why it serves, a concept he took from Simon Sinek's book, "Start with Why." The subordinate commanders and staff members' response to that question—"service to the warfighter and the nation"—readily met the task to recognize the *why*, just as they identified the *what* and the *how*, with the goal of leading DLA to improve its mission understanding, performance and outcomes.

Williams requests that every employee use the 16-page plan as a blueprint for future operations.

"When I reviewed our previous plan I saw a strong set of core principles. It served the agency well over the past several years and it focused our efforts to support the warfighter. But the global security environment has changed, and that's necessitated several important updates to our lines of effort and to our strategic priorities," Williams said in a video announcing the document's release.

The plan features five lines of effort:

- **Warfighter First** – Strengthen service and combatant command readiness and lethality
- **Global Posture** – Prepared for immediate action
- **Strong Partnerships** – Leverage the joint logistics enterprise, interagency, industry, and partner and allied nations
- **Whole of Government** – Support to the nation
- **Always Accountable** – Assured supply chain, financial and process excellence

Each line of effort includes three to five objectives. The plan is also supported by a separate People and Culture Plan that outlines steps for fostering a highly skilled, diverse workforce.

Firmly Focused on the Warfighter

Throughout the strategy, DLA's fundamental theme is its constant commitment to the core mission—supporting the military services and combatant commands—by embracing Warfighter First as the agency's top strategic priority, a cornerstone for DLA since the agency was established five decades ago.

Priorities under Warfighter First range from supporting DoD's nuclear enterprise to linking DLA's performance with service readiness rates. DLA will provide new and innovative logistics solutions using emerging technology like unmanned vehicles and robotics. The agency will also continue to address operational risks, cyber security, terrorism and counterfeiting through all of its supply chains and lifecycle sustainment.

Under Global Posture, DLA will ensure logistics support is located where warfighters need it. DLA major subordinate commands and liaisons will synchronize DLA capabilities based on customer needs, while its regional commands in Europe, the Middle East and the Pacific will provide an essential presence for combatant commanders and other customers in those areas of the world. As a former DLA customer, Williams recognizes the importance of a single point of entry into an extensive organization like DLA. "DLA has done a great job of streamlining its operations over the last four or five years, and this concept will continue to pay significant dividends," said Williams.

Expeditionary forces like rapid deployment teams, DLA support teams, deployable depots, expeditionary contracting support teams and the DLA Joint Reserve Force will also train for emerging missions that support customers and key partners such as the U.S. Transportation Command.

Emphasizing Cross-Sector Cooperation

The Strong Partnerships priority aims to extend collaboration with military logistics providers, other government agencies, suppliers and allied nations. DLA will strengthen partnerships using tenets of Joint Publication 4.0, a DoD doctrine on logistics support in joint environments. These new partnerships will help the agency support aging weapons systems and lifecycle planning for new equipment. Open communication with suppliers and industry associations will also help DLA develop responses to supply chain vulnerabilities and implement stronger business practices.

Through the Whole of Government focus, the agency will continue sharing its expertise across numerous supply chains with more than 40 government agencies conducting domestic and international operations, including such agencies such as the Federal Emergency Management Agency, the Departments of Homeland Security, State, Energy and Interior and the U.S. Forest Service.

These and other partner organizations have leveraged DLA's expertise in supply chain management and its global supply network to

provide food, fuel and medical supplies for disaster relief efforts and non-food items for refugees in the Middle East. The agency also procures and stores equipment such as hand tools, batteries, shovels and hoses, providing critical support of the Forest Service effort to fight wildfires and deal with other fire-related emergencies.

Goals in this line of effort include strengthening crisis-response and contingency operations, as well as using DLA's global assets to provide more cost-effective solutions, eliminating duplication and capitalizing on economies of scale.

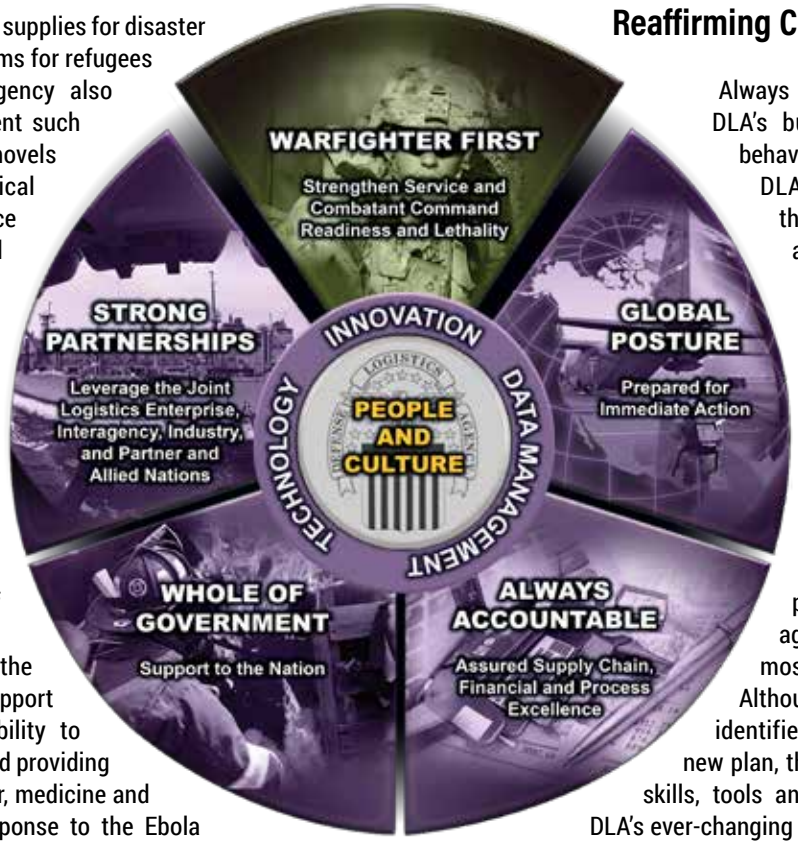
Over the last several years, the agency has increased its support and rapid deployment capability to global crises. This has included providing much-needed fuel, food, water, medicine and other critical supplies in response to the Ebola crisis in Liberia, Hurricanes Sandy and Matthew and, most recently, Hurricanes Harvey, Irma and Maria.

"These situations demand a rapid response capability that is much more than ad hoc—something that is planned, something that is a systemic part of what we do. This growing rapid-response requirement must be more prominently reflected in our strategic plan," Williams said.

In supporting recent hurricane relief, DLA deployed more than 100 people to work alongside FEMA and other federal agencies, augmenting logistics support and providing forward command-and-control capability. Some of the staff provided were members of the DLA's rapid deployment teams. DLA has three full-time teams of volunteers ready to deploy on short notice. There are 13 members from DLA headquarters and its major subordinate commands on each team, representing each of DLA's supply chains, as well as distribution, disposition, information technology, expeditionary contracting and legal services.

DLA's relief efforts also included members of all three of DLA's expeditionary distribution teams that until the 2017 hurricanes had not deployed simultaneously in response to a natural disaster. The teams helped FEMA and military units receive, store and manage staging areas as thousands of trucks filled with food, water, personal hygiene kits and other critical supplies arrived on military bases for distribution to those in need.

DLA's other support included providing nearly 3 million gallons of jet fuel, diesel, gas, and propane; millions of meals ready to eat and shelf-stable meals that can be stored to meet ongoing needs; thousands of cots, sleeping bags, and tents; thousands of maps; thousands of generators and radios; and hundreds of different types of pharmaceuticals to support the Navy hospital ship USNS Comfort's relief efforts. The agency also helped link up contractors with military units requiring storm debris cleanup.



Reaffirming Clarity of Commitment

Always Accountable objectives ensure DLA's business is guided by ethical behavior, reliability and transparency. DLA will achieve auditability through documented processes, automated tools, and controls that are secure and compliant. Risk assessment and mitigation measures also remain top priorities.

The new strategic plan underlines that the key to mission success across these priorities is its people and culture—for the agency's plan must be carried out by people. They are the core of each agency goal and objective and, most importantly, each solution. Although "People and Culture" is not identified as a line of effort in the new plan, the workforce must possess the skills, tools and supporting culture to meet DLA's ever-changing demands, Williams said.

"In previous DLA Strategic Plans, 'People and Culture' was a separate line of effort that focused on building and sustaining a workforce capable of meeting current future mission requirements. Under this strategic plan, we are calling out people and culture as a foundational, critical element of everything we do, and therefore have created a separate companion human capital plan appropriately titled the 'DLA People and Culture Plan,'" Williams said.

Objectives include professional development, attracting a highly skilled and diverse workforce, maintaining life/work balance and rewarding performance.

"I think people do best in organizations where they feel valued, where they feel empowered and where they feel that what they do makes a difference. They understand the why" Williams said.

Additional guidance for implementing the plan will be released in 2018 and will be incorporated into Annual Operating Plans throughout the enterprise. Progress will be measured by plans and policy experts, who will also provide detailed, constructive feedback to ensure success.

"I urge each of you to do your part in helping the agency carry out this plan," Williams said. "This will give us the best chance of overcoming the unforeseen challenges we know are in our future."

REASSERTING SUB-MARITIME DOMAIN DOMINANCE

A native of Cross City, Florida, Wheeler graduated with a Bachelor of Science degree in Oceanography from the United States Naval Academy in 1988, and was awarded a Master's Degree in National Security Strategy from the National War College in Washington D.C. during 2008.

As a career Naval Flight Officer, Wheeler has served a tour with the War Eagles of Patrol Squadron (VP) 16, and as an instructor with the Pro's Nest of VP-30. He served as the officer-in-charge of the Maritime Patrol and Reconnaissance Weapons Tactics Unit at the Pelicans of VP-45, and was the commanding officer of the Red Lancers of VP-10, and the commander of the Patrol and Reconnaissance Wing ELEVEN.

While serving in the joint environment, Wheeler was the commander of the Provincial Reconstruction Team at the Forward Operating Base Sharana in Paktika Province in Afghanistan. Likewise, he served as the Deputy Brigade Commander for Interagency and Joint Operations at Task Force YUKON, 4th Brigade Combat Team (Airborne) with the 25th Infantry Division at Forward Operating Base Salerno in Afghanistan. Prior to reporting for his current assignment, Wheeler was the Deputy Commander at the Combined Joint Task Force – Horn of Africa in Djibouti, Africa.

Rear Admiral William W. "Trey" Wheeler III

Commander
Patrol and Reconnaissance Group (CPRG),
and CPRG-Pacific

By Denver Beaulieu-Hains, PMA 290 Public Affairs

"Today, we are seeing a renewed interest in airborne anti-submarine warfare and in the underwater domain," says Rear Adm. William "Trey" Wheeler III, the U.S. Navy's commander of Patrol and Reconnaissance Group and Patrol and Reconnaissance Group Pacific. "Imagine in the early 60's, black and white television compared to what we have today, that's the technology jump we're seeing between the capabilities of the legacy P-3C Orion (P-3C) and its successor, the P-8A Poseidon (P-8A)."

The Maritime Patrol and Reconnaissance Force (MPRF) led by Rear Adm. Wheeler, consists of 12 active component patrol squadrons, two reserve component patrol squadrons, and a fleet replacement training squadron. During 2012, the MPRF began its transition from legacy platforms to a new family of systems, including the P-8A Poseidon multi-mission aircraft, the MQ-4C Triton Unmanned Aerial System, and a Tactical Mobile ground support system.

Wheeler says it is technology, communication and teaming that makes this an exciting time for operators and stakeholders in the Maritime Patrol and Reconnaissance community. Today, the P-8A Poseidon brings speed to the fleet, the power of secure networks, and twice as much acoustic capability.

A&M: Tell us about the P-8.

Rear Adm. Wheeler: The P-8A was designed and built to replace the P-3C Orion, which I believe has been in the fleet since 1962, and has been doing great work for us for a long time. The Navy really invested in the P-8A to do that traditional role of anti-submarine warfare. So, it's built to accomplish that mission and it's doing a tremendous job.

A&M: How is it different than the P-3? What new capabilities does it bring to the fight?

Rear Adm. Wheeler: Obviously, the most striking difference is its two engines, jet propulsion, as compared to the four-engine propeller-driven P-3 Orion. As I mentioned, the P-3 has been flying since the early 60's. You can imagine the technology that has changed since then. Really, what the P-8 brings is that new technology. It takes an airframe that is very dependable in the Boeing 737 and combines it with some of the great sensors our industry partners have developed over the years combined with great computing power.

A&M: How is this helping the Navy in its modernization efforts, and meeting the operational goals of the Navy right now?

Rear Adm. Wheeler: What the P-8A really brings is that culmination of technology. If you imagine in the early 60's black and white television compared to what we have today. Well, that's the technology jump that we're seeing, between a P-3C and a P-8A. The computing power alone, and being able to take all the information that's available to that crew

and bring it into one platform, process it and then have the ability to communicate that out to the warfare commanders, both on the carrier [carrier strike group], or at a fleet operations center or really just about anywhere around the world…where it's needed…to get that information to the right decision makers. It's a tremendous technology and a leap for the warfighter.

A&M: How do you think the crew is enjoying it? Do you think they really like flying the P-8A?

Rear Adm. Wheeler: They absolutely love the P-8A. For us old-timers, we grew up on that P-3, and it was a long mission, but it was a worthwhile mission. I think the difference today is that crew is still doing that long mission, but it's a little smoother flying. They typically fly at a little higher altitude and, when they get back, they aren't completely worn out. That level of improved comfort actually helps you on station when you are looking for a submarine. You stay fresh longer, and the technology on that plane fits what they grew up doing. They actually love it!

A&M: Can you explain how the P-8A operates in the Family of Systems?

Rear Adm. Wheeler: The Family of Systems really refers to the Maritime Patrol Reconnaissance Force that we are looking to build. It takes the P-8A Poseidon, couples it with the MQ-4C Triton, and then we have a ground node, if you will, in our Tactical Mobile.

What we are able to do is to look at the complementary missions that these two airframes bring and then merge the information from them both and get it to the right folks to act on it. From a P-8A standpoint, it's taking advantage of a manned platform, which can get to a location quickly, deliver weapons if needed, and return; couple that with a Triton, which is a high-level, persistent intelligence, surveillance, and reconnaissance type platform and you have an unbeatable team. We take advantage of the best of both and use that ground node to help translate that information and pass it around. It is a nice, strong family.

A&M: Where are we now as far as development and delivery?

Rear Adm. Wheeler: So, we started the transition around 2012. The first P-8A deployment was in December of 2013. Since then, we've been working from one squadron to another. We're a little over halfway. For the east coast, those squadrons that reside in Jacksonville (Fla.), they are complete. They are P-8A pure. Whidbey Island has completed their second squadron transition, and they're well on the way to their third. It's been a great thing to watch both from a leadership perspective, and as an operator ... looking at what the airplane brings; it has tremendous, tremendous capability.

A&M: What do you expect to see in the future?

Rear Adm. Wheeler: I think our imagination is our only limit on what these planes will be able to do. The P-8A itself, one of the advantages we have is simply capacity. There is room on the plane, in the internal infrastructure, for growth, which is how it was designed for future development. I think our anti-submarine warfare role, which is really the core of the maritime patrol and reconnaissance community is here to stay. We are the only community that does long-range Airborne ASW. That mission is here to stay and we look forward to flying the P-8A for a long time.

A P-8A Poseidon is refueled mid-air from a USAF KC-135. This aerial refueling capability, currently undergoing testing and expected to be available this year, enhances the P-8A's strategic mission by extending its range and endurance. (U.S. Navy Photos)

The P-8A Poseidon, 'Guardian of the Seas,' sustains and improves the armed maritime and littoral intelligence, surveillance, and reconnaissance capabilities for United States Naval force. The aircraft may be used during traditional, joint and combined roles to counter changing and emerging threats. Wheeler says, the aircraft is performing well, as the fleet continues to transition from the P-3C Orion to the P-8A. The P-8A Poseidon is interoperable, net ready, secure and fully-capable replacement for the P-3C Orion.

A&M: Why the interest from the international community?

Rear Adm. Wheeler: Our foreign military sales and cooperative partners, currently the UK and Norway, and partner Australia provide tremendous leverage for us as a collective. When the partners come in, not only do we get closer from a commonality standpoint, but it allows us to leverage each other's buying capital. By leveraging our partners, we can buy, produce, and procure things quicker, maybe than we could by ourselves. It's tremendous leverage for us all. And, it's great to have great allies.

From a teaming standpoint, the maritime patrol and reconnaissance force has really enjoyed a great team from the folks here at Pax River, PMA 290, as well as our resource sponsors up at the Pentagon. It's a great, great team, great communications, and again the industry partners involved in both the P-8A and MQ-4C have been crucial. There are absolutely no complaints from where I sit.

As for the P-8A, the computing power alone, being able to take all the information that's available to that crew, bring it onto one platform, process it, then have the ability to communicate that out to the warfare commanders, both on the carrier strike group or at a fleet operations center, or really just about anywhere in the world that it's needed to the right decision maker, tremendous technology, and again, a leap for the warfighter.

STRENGTH THROUGH TEST

The U.S. Marine Corp's next-generation CH-53K King Stallion heavy lift helicopter is proving up to the task in providing large load carry capability.

By Liz Mildenstein, H-53 Heavy Lift Helicopters (PMA-261) Communications Support

The CH-53K King Stallion flies a test flight in West Palm Beach, Fla. The CH-53K is intended to replace the CH-53E Super Stallion by 2030. (U.S. Marine Corps photo by Lance Cpl. Molly Hampton)

Bystanders stand in anticipation as the muffled rumble of rotors can be heard in the distance. It's a slow cadence at first, followed quickly by a deep choppy roar as the blades cut the air nearby. It's the distinct sound of the world's most powerful helicopter, the CH-53K King Stallion.

Today, the flight schedule includes a first-of-its-kind event: the CH-53K will hover, carrying the Joint Light Tactical Vehicle (JLTV) via a single hook. The JLTV family of vehicles is the Army and Marine Corps' replacement for the majority of today's High Mobility Multipurpose Wheeled Vehicles (HMMWV).

"From both a development and production standpoint, 2017 was a banner year for the CH-53K program," said U.S. Marine Corps Col. Hank Vanderborght, PMA-261 program manager. "We are working tirelessly to bring this superior and unrivaled capability to the warfighter."

The Lot 2 Low Rate Initial Production (LRIP) contract for the aircraft is expected later this year; full rate production is planned during 2020.

Unparalleled Load Capacity

The CH-53K has unmatched payload ability, its triple that of its predecessor, the CH-53E Super Stallion. Prior to lifting the JLTV, the CH-53K successfully hovered with an external payload of 27,000 pounds at 100 feet, demonstrating the aircraft's ability to lift and carry extreme weights under stressful lift conditions. It is designed to carry this high payload to a radius of 110 NM in severe and harsh weather conditions. At lower payloads and during less extreme ambient conditions, the range of the aircraft is much longer.

The internal payload has been improved as well, one key upgrade being the CH-53K's compatibility with the U.S. Air Force's 463L Master Pallet (used to transport military cargo). The CH-53K can

carry two of the pallets without having to break them down into smaller assets between airlifter and helicopter transfer, as previously required. The aircraft's cargo capability can take the form of a variety of relevant payloads ranging from an internally loaded HMMWV or the European Fennek armored personnel carrier. In addition, it was designed to support three independent external loads at once, providing mission flexibility and system efficiency.

The greater lift capability is facilitated by increased engine power (nearly 7,500 shaft horsepower versus 4,380 horsepower per engine in the CH-53E) and a composite airframe, previously metal. The engines provide enough power to complete an operation at max gross weight at density altitudes at more than 3,000 feet.

A CH-53K King Stallion lifts a Joint Light Tactical Vehicle during a demonstration. Using the single point hook, the helicopter hovered up to 100 feet for approximately 10 minutes while carrying the 18,870-pound vehicle (JLTV). (U.S. Navy photo by Emanuel Cavallaro)

Cockpit Upgrades

In addition to payload enhancements, pilots have the benefit of a modern glass cockpit featuring digital panels and full authority fly-by-wire flight controls and mission management. These features reduce the pilot's workload, enabling the entire crew to focus more on mission execution.

Pilot features include advanced stability augmentation, flight control modes that include attitude command-velocity hold, automated approach to a stabilized hover, position hold and precision tasks in degraded visual environments, and tactile cueing.

"The human/machine interface and advanced control laws have the potential to make our more difficult tasks, such as dusty landings and low light level flying, easier and safer," said Maj. Hayden Tyler Stevens, a CH-53K project pilot for the test program. "The aircraft nearly flies itself."

From a logistics perspective, the CH-53K was designed with the maintainer in mind. During the research and development phase, a working group of Marine maintainers and Sikorsky engineers discussed lessons learned from their experience with the CH-53E. This information was used to identify ways to reduce the maintenance man hours per flight hour. Improvements are seen throughout the aircraft including the tail rotor gearbox, Integrated Vehicle Health Monitoring Systems and fuel pump system.

A Day in Test, Decades of Heavy Lift

After the initial ground turn, the massive helicopter takes-off and within moments, it is hovering above the helipad and JLTV. The Helicopter Support Team swiftly approaches, connecting the CH-53K's single hook to the rigged-up JLTV. After a signal from the safety officer and crew chief, the team carefully backs away a safe distance, avoiding the down wash of the aircraft.

The 18,870-pound load as configured for this test, dangled above at up to 100 feet for at least 10 minutes. When the demonstration was over, the CH-53K carefully set the JLTV down and using its internal controls; the hook was released.

"The biggest thing my unit noticed was the stability of it," said Cpl. Ronald Fritter of Combat Logistics Battalion (CLB) 25. "Safety is paramount while underneath the bird because you have so many variables with the down wash of the aircraft to the hook … with the hook not moving around at all, little to none, it makes our jobs easier."

Although this is a historic test for the program, it is just one of countless events designed to test the extensive heavy lift capabilities of the CH-53K; it is a fast-paced test and acquisition program committed to achieving Initial Operational Capability (IOC) and Initial Operational Test and Evaluation (IOT&E) during 2019.

Test highlights include a high-speed flight of 207 knots, sloped landings up to 12 degrees, starting dual point external loads and auto-jettisons and the first full auto blade/tail fold test.

During 2017, the CH-53K program achieved approval to move forward with LRIP, a key acquisition milestone. From that decision, the program could negotiate and award the first production contract with Sikorsky. Valued at $304 million, the contract includes two aircraft and the engineering and integrated logistics support, spares, and peculiar support equipment (i.e., unique tools and support equipment specific to the CH-53K).

Following close behind, NAVAIR awarded GE Aviation a $143 million LRIP contract to build 22 T408-GE-400 engines that will power the CH-53K. The T408 LRIP contract also includes logistics support, technical publications and organic support development.

"Step-by-step, these key test and production activities bring this game-changing platform closer to fleet delivery," Vanderborght said.

Partnering for Success

In addition to delivering the aircraft to the Marines, the program office is continuously working with potential international partners to procure the CH-53K, with the goal of increasing the total aircraft procured above the 200 planned for the Marines. This increase in production could provide a significant cost decrease per unit, based on the number of aircraft sold internationally.

International sales also provide the opportunity for cost savings through the operations and support (O&S) phase as investments needed for non-recurring engineering can be shared by all CH-53K users. For example, if hardware or software modifications are required, the U.S. will be able to share this cost with its international customers as all parties will benefit from 21st-century upgrades.

Finally, international sales strengthen alliances with foreign allies and foster conditions for economic growth between countries sharing the same vision. NAVAIR and Sikorsky hosted the first orientation flight in the CH-53K for Brig. Gen. Nir Nin-Nun of the Israeli Air Force, during November 2017. Nin-Nun is the commander of the Air Support and Helicopter Division.

The program is currently supporting Israel through their sustainment of the CH-53D Sea Stallion.

A CH-53K King Stallion takes off from NAS Patuxent River, Maryland, during its first orientation flight. (U.S. Navy photo)

2018 and Beyond

"Fleet delivery is on the horizon," said Vanderborght. "The development program has made great strides in expanding the flight envelope and the coming year will be no different."

Since the CH-53K's first flight in 2015, the integrated test team has been pushing through the development schedule, each data point collected to demonstrate and verify the capabilities of the platform and identify technical challenges that arise through discovery.

As the flight test program continues, the design of the aircraft is refined, addressing the typical challenges of a new development program. The government-industry team continually identifies, analyzes and finds acceptable and innovative alternatives for deficiencies to continue advancing the test program.

Among various planned tests this year, large-scale milestones include aerial refueling, night operations, initial shipboard and high/hot altitude testing. In addition, the aircraft will lift its heaviest external payload to date, 36,000-pounds.

Another key milestone this year will be the aircraft's participation in a logistics demonstration (frequently known as "Log Demo"). The sequence of tests evaluate the platform's supportability; adequacy of maintenance planning; technical publications; logistics data; training and training devices; manpower and personnel integration; test, measurement, and diagnostic equipment; common and unique tools; spares and/or repair parts, according to Defense Acquisition University. The demonstration ensures the Marines have the logistical capability required for the platform and it is a key step to achieving IOC. An aircraft will deliver to Marine Corps Air Station New River, North Carolina, in spring 2018 for the demonstration.

The four Engineering Development Model aircraft and one System Development Test Article aircraft in flight test have logged more than 700 flight test hours to date. Additionally, the Ground Test Vehicle has logged more than 700 test hours. IOC continues on pace for 2019 and is defined as having four aircraft, with combat-ready crews, logistically prepared to deploy. The Marine Corps plans to stand up eight active-duty squadrons, one training squadron, and one reserve squadron to support operational requirements.

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EXPANDING THE COMBAT POWER ENVELOPE

The U.S. Army's Tank Automotive Research and Development Center (TARDEC) has been advancing the Army's Advanced Combat Engine (ACE) program, an effort to provide existing and future ground combat vehicles with next-generation propulsion power and efficiency to address mobility needs.

By John Tasdemir, Powertrain, Team Leader, U.S. Army RDECOM TARDEC GVPM

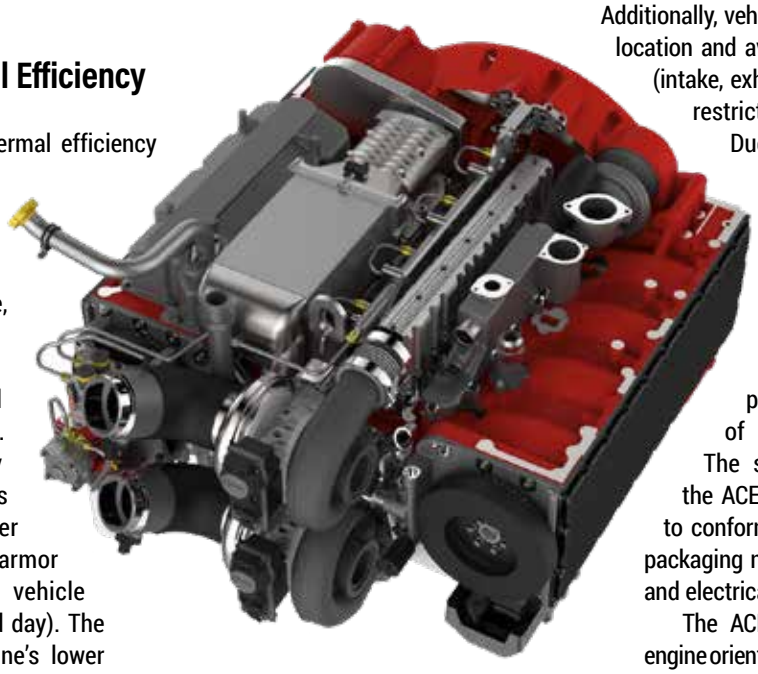
Combat vehicle weights have been steadily increasing due to battlefield realities associated with evolving enemy threats (both conventional and asymmetrical warfare). In order to decisively confront these threats, the warfighter needs overwhelming technological battlefield superiority with greater armor protection, increased lethality weapon systems, secondary defensive weapon systems, greater electrical power generation capabilities, and enhanced prime power (mobility).

These enhanced defensive and offensive capabilities result in increased vehicle weight at the cost of mobility. Under-armor volume is valuable in a combat vehicle because the weight of the vehicle increases exponentially with volume.

John Tasdemir

Advances in Thermal Efficiency

Through improvements in thermal efficiency and lower heat rejection, the two-stroke opposed-piston Advanced Combat Engine (ACE) will provide a reduction in total powertrain system volume, including in the intake and exhaust ducting, cooling system, air management system, fuel system, controls, and accessories. ACE also brings fuel economy improvement opportunities realized through either smaller fuel tanks (reducing under armor volume/weight) or extended vehicle range (lengthening the battlefield day). The resulting benefits from the engine's lower heat rejection to coolant will also reduce parasitic and accessory system loads (through reduced cooling system fan power), thereby increasing power available to the sprocket for increased mobility, enabling greater electrical power generation, or a combination of both.



The Advanced Combat Engine provides enhanced power in a compact and scalable package, enabling advancements in vehicle mobility for the Army's highest-demand vehicle applications. (TARDEC)

The ACE engine is being designed by Cummins with a scalable and modular architecture (250 horsepower per cylinder increments). This feature will enable a military family of combat engines that share a large number of common parts (pistons, rings, replaceable liners, injectors, connecting rods, bearings, seals, fasteners, etc.) bringing lower logistics costs (higher production and reduced price) and reduced inventory burden while minimizing technician training and lowering technical manual publication costs.

Countering Rising Vehicle Mass

Combat vehicle platforms have recently experienced weight gains associated with increased armor protection to offset growing improvised explosive device (IED) and other kinetic threats. Heavier vehicle weight ultimately has a detrimental effect on mobility (dash speed, side slope, acceleration, top speed, etc.). The ACE engine is designed to return lost mobility, provide extra power for electrical power generation, and enhance performance.

Additionally, vehicle designs are also limited in the location and availability of openings for air flow (intake, exhaust, and cooling) with additional restrictions caused by ballistic grills. Due to the inherent high thermal efficiency of two-stroke opposed-piston engine design and the noticeably lower heat rejection to coolant, the ACE engine will help minimize under-armor volume requirements and provide fuel efficient, compact prime power solutions across a wide range of military vehicle configurations. The scalable and modular nature of the ACE enhances the engine's capability to conform to individual vehicle powertrain packaging needs with greater range, mobility, and electrical power generation.

The ACE design also allows for flexible engine orientation (vertical to horizontal), greatly increasing the number of possible engine-to-transmission configurations (three transverse and two parallel) utilizing the same basic engine hardware with minor modifications.

When integrated with other Advanced Powertrain Demonstrator (APD) technologies such as Advanced Combat Transmission (ACT), Integrated Starter Generator (ISG), and Advanced Thermal Management System (ATMS), installed propulsion system power density may increase from 50% to 100% depending on the vehicle application. The resulting reduction in under armor volume and weight (and reduced parasitic power losses) may deliver an estimated 20 percent improvement in vehicle fuel efficiency.

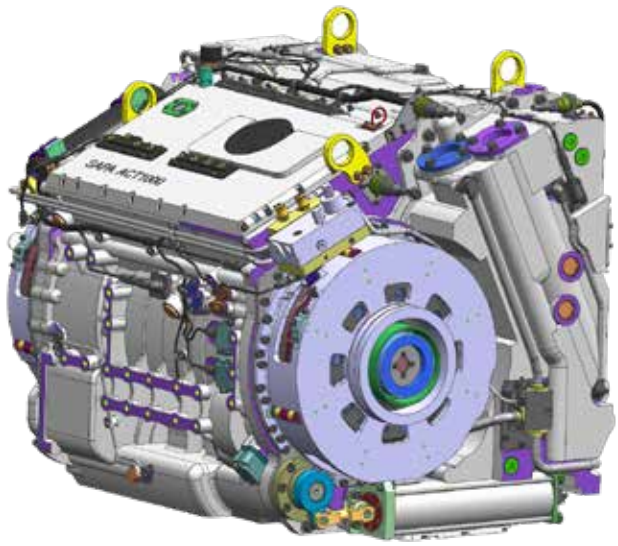
Addressing Future Adaptability

The ACE engine was designed specifically to be scalable and modular, enabling various ACE engine displacements and incremental horsepower/torque ratings to optimally match the power requirements of a combat vehicle. Coupling the ACE engine with the Advanced Combat Transmission (ACT), being developed by SAPA Transmissions that offers 32 speeds, will ultimately produce highly efficient power, dense powertrain solutions tailorable to meet any combat vehicle configuration (front/rear drive) and weight class (40-80 ton), while ensuring better conformation to individual Army/Joint vehicle platform requirements. Lastly, the engine utilizes standard interface protocols (SAE mounts, electrical, and fluid couplings) to enable smooth integration with mating system components.

The ACE engine design will continue to focus on improvements in efficiency and reduction in heat rejection. The program will investigate thermal barrier coatings to the pistons and exhaust port liner to reduce engine heat rejection while improving coating reliability that ultimately will reduce the thermal burden on the vehicle cooling system while providing more power to sprocket.

Other possible avenues for exploration include high-temperature tribology materials and coatings for use on critical wear components (pistons, liners, and wrist pins) which may minimize frictional/heat losses and improve fuel economy.

The ACE engine currently specifies use of a high viscosity 15W-40 oil (MIL-PRF-2104) while operating at high temperatures in order to prevent cylinder scuffing and other lubrication issues. Cummins will investigate critical engine tolerances to determine the impact of Single Common Powertrain Lubricant (SPCL) for reducing engine friction and develop a plan for eventual transition to this low viscosity oil during the next design phase.



The Advanced Combat Transmission drastically improves the efficiency for combat vehicles while offering maximum optimization of the engine to increase the power density of the powertrain by increasing power at the sprocket to greatly enhance combat vehicle mobility. (TARDEC)

ARMORED VEHICLE DEFENSE NEEDS A CRITICAL UPGRADE

By Dr. Ronald M. Meixner, ADS mbH

Vehicle armor has proven to be largely ineffective against Rocket-Propelled Grenades and Anti-Tank Guided Missiles. Experience has shown that these small, lightweight and easily deployed weapon systems can be lethal against even the most well armored vehicles. Automation is the key to reversing this situation.

Active Protection Systems provide an automated and immediate response to these anti-armor threats by destroying or disabling the incoming missile. This type of "Hardkill" APS not only increases survivability, it also provides much greater situational awareness as APS sensors generate and communicate critical data that identifies the type and vector of an incoming RPG or ATGM threat, enabling an immediate and effective response.

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Latest Generation APS

Active Protection Systems have been in development for decades. Russia deployed early versions of APS in the 1980's. Since then, many lessons have been learned and APS has continued to evolve in response to increasingly advanced threats and changing combat situations.

Critical APS Design Objectives	Key Requirement Drivers
Safe-by-Design	APS must be safe for vehicle crews, dismounted infantry and civilian non-combatants, and must not disrupt normal operational tempo.
Defeat the Multi-Attack	APS must be effective in complex threat scenarios, including defeat of simultaneous attacks and tandem warhead threats.
Minimize Threat Defeat Distance	APS must be capable of reacting quickly enough to effectively defeat threats fired from very close range (objective should be 10 meters or less).
Top Attack Defense	The drone attack is commonplace today as is urban combat with attackers in high buildings. APS should be able to defend against these evolving and increasingly common top-attack threats.
Low Power Detection	The slow reaction time of early APS designs required significant radar range for the system to effectively detect and respond to incoming threats, creating high EW exposure and broadcasting the vehicle's presence on a battlefield. To avoid this APS radar signature should be minimized.
Modular Design	A modular approach to APS design enables integration on a wide variety of vehicle platforms, from light trucks to tanks.

Upgrade Vehicle Defense, not the Vehicle Design

New vehicles in development today typically do not consider APS in their original designs so the ability to effectively integrate APS during in-service upgrades is critical. SWaP has to be mitigated and balanced with defensive performance requirements. A modular design that incorporates the same system components to detect, classify and counter potential threats makes the task of integration easier because placement of these APS components can be tailored to vehicle design limitations. This enables APS integration across a wide range of vehicle types. This type of modular APS design is also easier to deploy and to upgrade as future advancements in technology become available.

FENCE EXPERTS

MOST RELIABLE ACTIVE PROTECTION SYSTEM

ADVANCING DYNAMIC COMBAT CAPABILITY

Last October, SAIC announced it will compete to develop combat tactical vehicle prototypes for the U.S. Army's Mobile Protected Firepower (MPF) program. The Army has outlined an aggressive acquisition strategy for the MPF and plans on rapidly fielding two sets of prototypes to soldiers at Fort Benning. In order to meet that schedule, the Army has asked all of industry to come forward with what's available now in terms of existing combat vehicle technology. In response, SAIC's MPF solution marries ST Kinetics' Next Generation Armored Fighting Vehicle (NGAFV) chassis and CMI Defence's Cockerill Series 3105 turret. Both are mature, currently in production, and can be fielded quickly.

Jim Scanlon
Senior Vice President and General Manager of SAIC

In a recent Q&A with SAIC's Jim Scanlon, senior vice president and general manager of SAIC's Defense Systems Customer Group, he outlined the company's vehicle strategy and how they plan on offering the best MPF solution while still meeting the Army's tight deadline.

A&M: Traditionally, SAIC is a services company. Why is SAIC entering into this new area of business? How will the company compete against the original equipment manufacturers?

Mr. Scanlon: This is certainly not a new area for SAIC. We have an established reputation as a great technical services provider, but we also have an outstanding pedigree and significant experience integrating vehicles and customizing them to meet Army requirements, and most recently, U.S. Marine Corps requirements. We've had a substantial amount of vehicle integration work and relevant past performance for more than 20 years.

SAIC's major platform journey accelerated with the integration of communications equipment on thousands of High Mobility Multipurpose Wheeled Vehicles (HMMWV) and then the integration of tens of thousands of Mine-Resistant Ambush Protected (MRAP) vehicles for the Department of Defense. Now, most recently, SAIC is helping the Marine Corps to modernize their Amphibious Assault Vehicle and build the new Amphibious Combat Vehicles – two Marine Corps programs that SAIC is currently prime on.

As a leading technology integrator, SAIC offers the ability to find the best technologies and innovations available for every individual program. We're not limited to solutions that we've developed ourselves. We are a conduit for innovation and technology, particularly in the combat vehicle space - anywhere in the world. We work with a wide variety of global partners in this market across many programs to ensure that we meet our customers' requirements with the best solutions that we can deliver. We understand the Army's MPF emphasis on speed and schedule, and we certainly are poised to address that in the way that we're structuring our approach to this critical program.

The SAIC approach is really in many ways technology-agnostic but focused on Army requirements first.

This is in SAIC's DNA and we are looking forward to working with the Army on this next program, the MPF.

A&M: On the programs you mentioned, I'm sure that SAIC has encountered challenges. How has SAIC navigated these challenges?

Mr. Scanlon: All programs that develop, modernize, and provide new capabilities to the warfighter are bound to have challenges. That's an expected and normal part of every engineering and manufacturing development phase. More important, is how SAIC attacks those challenges, leveraging our strong program management, engineering and systems integration capabilities to meet our customers' requirements.

We are also offering a new approach to acquisition programs in the Department of Defense. DOD is really challenging industry to deliver on very short schedules within very tight budgetary constraints. It's a new paradigm. They are also emphasizing use of rapidly developed or rapidly fielded technologies – not technology that will be mature many years down the road. As a services provider and technology integrator, SAIC can effectively navigate these very challenging constraints.

A&M: The Army has laid out an aggressive timeline. How will SAIC approach this?

Mr. Scanlon: The premise behind the MPF acquisition strategy is that the Army wants to very rapidly field two sets of prototype vehicles. They want something that can be fielded very quickly, that's mature, and production-ready. SAIC is best positioned to meet that challenge because we are leveraging strong, industry-leading partners to provide key components of our MPF design. We are aligned with Singapore Technologies Kinetics to use their chassis and CMI Defence's turret, both of which are currently being produced on hot production lines.

The advantage there is twofold. First, because the chassis and turret are in production, we can transition to field to the Army very quickly, given the accelerated schedule requirement.

Second, because these major components are modern and new, SAIC's offering is not something that's obsolete or a blast from the past. It's a very modern, digitized, capable platform for the 21st Century soldier, such that the Army can field it and continue to upgrade it over time once it's fully fielded.

A&M: Why does the Army need this vehicle? What is the problem it's going to solve?

Mr. Scanlon: As the Army looks ahead to where threats are evolving and how it will fight in 21st Century combat environments, they see that they need a capability to move infantry forces very quickly to the front of the fight, potentially in urban settings. Our forces have to be able to engage with an enemy that may have tanks and other significant threats. In order to rapidly move our infantry forces, the Army is seeking the ability to provide an armored vehicle that has enough lethality to be able to engage the enemy and to move our infantry units to the front of the fight.

That's where the mobile protected firepower requirement came in. It's something the Army has looked at and studied for the past couple of years. As they see the dynamics of how our soldiers will fight in those urban environments of the future, they determined that

it is an important threat that requires a stronger capability. That's why I think they're looking at a very aggressive fielding schedule - to make sure that they can address the need should the call arise and field a modern solution that meets that requirement.

A&M: To do this, SAIC is suggesting that the Army should take a new acquisition approach. What are the benefits of a new acquisition approach from an industry perspective in the Army?

Mr. Scanlon: One of the mantras of acquisition reform going back to the 1980's was "fly before you buy." As the Army now looks at major modernization programs, they are focused on getting full, working prototypes into the hands of the users before they lock in a requirement.

With this model, the Army can significantly increase their confidence that the program requirements are right, and they can lean on industry to come forward with mature, production-ready technologies. Those two attributes are certainly going to allow the Army to field a system much quicker than the normal, historical 8 to 10-year development and production timelines you would have on a major modernization program.

SAIC is poised to deliver in this new environment. Our approach is to look at what is available now that is not developmental. It's an approach that we're very comfortable with, and as I mentioned earlier, given the fact that our two major subsystems – the chassis and turret – are in hot production, we can surge to meet Army production requirements now and into the future.

A&M: Where is the bid sample being integrated and how's it going so far?

Mr. Scanlon: We are leveraging the active production lines of our partners at STK in Singapore and CMI in Belgium. SAIC has integrated these subsystems into our MPF design at our vehicle integration facility in Charleston, South Carolina. The bid sample integration and testing are going extremely well and we are excited to submit the vehicle to the Army for evaluation.

SAIC is currently testing its MPF program prototype, also known as a bid sample, at the Nevada Automotive Test Center. SAIC's MPF solution marries ST Kinetics' next-generation Armored Fighting Vehicle chassis and CMI Defence's Cockerill Series 3105 turret. (SAIC photo)

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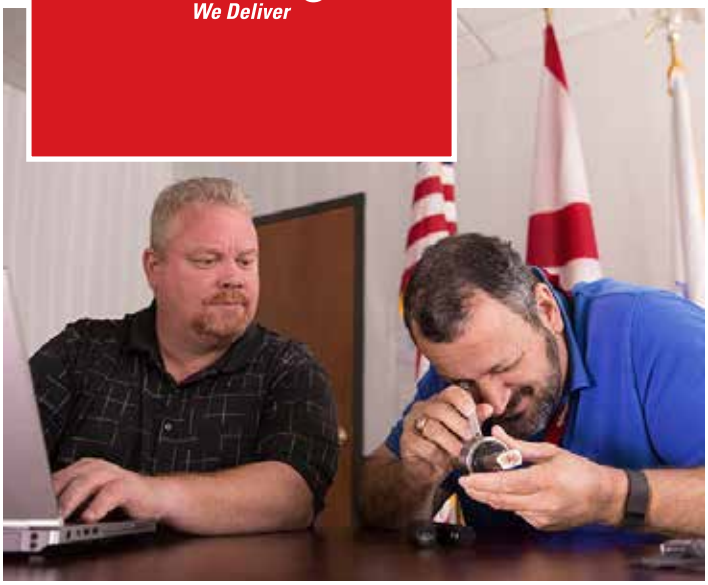

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