SUSTAINING A LEGACY FORCE

2016 ANNUAL WARFIGHTERS TACTICAL GEAR GUIDE

Humvee Recap  ■  FMTV/GMV Update  ■  Network Integration  ■  DLA/Army Pre-positioning
Expeditionary Logistics  ■  AAV (SU)/ACV 1.1 EMD Phase

MG Clark W. LeMasters
Commanding General
U.S. Army TACOM
Life Cycle Management Command
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Commanding General
U.S. Army TACOM
Life Cycle Management Command

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The 2016 Presidential Election season. The rise of the Zika virus. The Summer Olympics. Regardless of the state of affairs in the American news cycle, the one remaining constant is the hard work, dedication and preparation of the men and women who serve in the armed forces. From the diaspora of ISIS fighters following the recent collapse of their caliphate to the ongoing conflict in Syria and security concerns in the Ukraine, not to mention dictatorship and terror driven fears in the Pacific region, Soldiers, Sailors, Airmen and Marines will continue to deploy to distant, remote battlefields in the name of U.S. security.

The Sep/Oct 2016 Modern Day Marine and AUSA edition of Armor and Mobility is proud to feature an exclusive interview with MG Clark W. LeMasters, Commanding General, U.S. Army TACOM Life Cycle Management. The discussion highlights the organization’s efforts to further streamline ground tactical and DoD maintenance practices, whilst facilitating greater engagement readiness for current and future contingencies. On the acquisitions side, A&M was privileged to speak with the Acting Assistant Secretary of the Army for Acquisition, Logistics & Technology, and Army Acquisition Executive, Ms. Katrina McFarland, regarding Army efforts to streamline processes to achieve broader acquisition reform. From a logistics perspective, A&M delves into critical challenges that Lt. Gen. Michael Dana, Commander of Installations & Logistics, U.S. Marine Corps faces in sustaining an expeditionary force, as well as pro-activity being taken by the Defense Logistics Agency, in coordination with the U.S. Army, on the pre-positioning of excess ammunition stocks from theater. From vehicles sustainment vantage, A&M gives readers an update on the partnership between the U.S. Army and AM General regarding ongoing Expanded-Capacity Vehicle (ECV) protection and modernization upgrades to DoD’s High Mobility Multi-Wheeled Vehicle (HMMWV or “Humvee”) light tactical platform for Active Service and National Guard application.

From a Marine Corps perspective, augmentation of the USMC’s existing amphibious capabilities with the continued evolution of the next-generation Amphibious Combat Vehicle (ACV) 1.1 will see the fielding of a needed compliment to the Corps’ proven Amphibious Assault Vehicle (AAV), under current survivability upgrade. In a featured spotlight on the evolution of the Army’s Family of Medium Tactical Vehicles (FMTV), LTC Frank Bridges, PM Medium Tactical Vehicles, sheds light on critical modifications to ground vehicle capability relevance and readiness.

Finally, the 2016 Annual Tactical Warfighters Gear Guide seeks to showcase a variety of ground-breaking innovations in a myriad of areas. Broken down by category, this year’s Gear Guide emphasizes how each individual product benefits the user, be it warfighters, combat physicians, or first responders.

As always, we welcome your comments and suggestions!

Sincerely,

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Cover: Marines from Landing Support Company, 1st Transportation Support Battalion, 1st Combat Logistics Regiment, prepare a Humvee for transport via sling load underneath a CH-53E Super Stallion helicopter during an assault support tactics exercise at Landing Zone Bull, Chocolate Mountain Aerial Gunnery Range, CA. (USMC photo by Cpl. Summer Dowding)
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There is no doubt that a public-private partnership (P3) is a win for each organization involved. The team at River Army Depot understands that leveraging P3s will not only preserve the Organic Industrial Base (OIB), but will continue ensuring Soldiers have the quality equipment they need. This stands true in the depot’s current P3 with AM General on High Mobility Multipurpose Wheeled Vehicles (HMMWVs) for the National Guard. The partnership has contracted orders totaling nearly $250 million, with a significant pipeline remaining to include $160 million in additional fiscal year 2016 funds.

AM General was awarded a firm fixed priced contract from Product Directorate Light Tactical Vehicles (PDLTV) in June of 2014 to partner with Red River Army Depot (RRAD). The scope of work required the Partnership to deliver recapitalized armored M1152 and M1165 HMMWVs. The business model required RRAD to recapitalize seed HMMWV bodies, while AM General produced new HMMWV chassis. The modernization included automotive technology insertions by AM General and Red River to upgrade the chassis and upgrade the body, respectively. Examples of modernization include improved cooling system, new transmission, upgraded suspension system, increased fuel tank capacity, and improved air conditioning. As a result of these upgrades, reliability has increased significantly, safety has been improved, and vehicle performance regained, as compared to the older, fielded HMMWVs. Once the upgrades were complete, AM General finalized the integration of body and chassis at the Military Assembly Plant in Mishawaka, Indiana, to return like-new HMMWV’s to National Guard units.

“AM General is beginning its fourth year of a Public-Private Partnership with Red River Army Depot in Texarkana to recapitalize National Guard HMMWVs,” said Chris Vanslager, AM General Executive Vice President - U.S. Defense. “The Partnership has modernized more than 1,300 vehicles so far. And the Guard has thousands more HMMWVs that need the recapitalization to maintain a high state of readiness in their units.”

New Cart Facilitates Processes

Through the partnership, Red River upgrades the HMMWV body from M1151 to M1167 TOW Missile Carrier configuration. Red River’s
Production Milestone

For more than a decade, Red River Army Depot (RRAD) in Texarkana, Texas has been instrumental in remanufacturing High Mobility Multipurpose Wheeled Vehicles (HMMWV). To date, approximately 50,000 HMMWVs have been remanufactured on the depot’s production lines. Battle damaged or high use HMMWVs may have even made their way back to the depot more than once. The depot has a multifaceted production facility that is capable of simultaneous repair of different variants of the vehicle. During this same period, AM General (AMG) has been the principal supplier of parts for the HMMWV programs. As the HMMWV original equipment manufacturer (OEM), they’ve ensured parts have been available for the remanufacture (recapitalization) effort of those vehicles. So when AM General began looking for a partner to remanufacture HMMWVs for the National Guard, they knew exactly where to go - Red River Army Depot. Under the partnership with AM General, Red River was responsible for disassembly and demilitarization of the HMMWV chassis. Following the disassembly process, the HMMWV body was completely reworked with all needed upgrades, including additional armor, and then shipped to the AM General plant in Mishawaka, Indiana. There the body was married to a brand new chassis, and made ready for use by various National Guard units across the continental United States. Following the concepts of Lean Six Sigma, a process planning (2P) event was conducted in order to create a production area layout that supported an efficient process. This 2P event enabled RRAD to develop a successful process flow for the production line, while working with the challenges presented by the existing infrastructure. Through this process, and by using equipment from previous HMMWV programs, RRAD avoided spending approximately $4 million to build and equip new maintenance areas to meet the customer’s requirements.

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responsibility is disassembly, demilitarization of the HMMWV chassis, and HMMWV body rework using the National Guard’s guidance. The body is then placed on a specialized cart, newly-fabricated by members of Red River’s team, and shipped to the AM General plant in Mishawaka, IN where the body is married to a new chassis.

Mechanics on the depot’s HMMWV team are actively involved in every aspect of the process as seen with the fabrication of the cart used to carry the HMMWV body. The team recognized a need for a more standardized cart that not only

The HMMWVs bodies are sent to AM General’s facility in Mishawaka, IN. AMG mates the reconfigured body to a new chassis and completes the vehicle assembly. AMG provided specifically designed shipping skids to RRAD for transporting the bodies. The installation of the HMMWV body to the skid was a new task for the Red River team. Prior to the innovation, the process required a forklift, an overhead crane, a large sawhorse type jack stand and three mechanics to perform this task in a dedicated workstation. At 30 minutes per unit, it was costing two hours of labor plus the equipment and floor space to accomplish. Additionally, the procedure was not optimum regarding safety and ergonomics.

The depot’s engineering facility and safety office worked hand-in-hand with Anderson and crew in designing a cart that met the production line’s requirement. The depot’s public work department seemingly fabricated them overnight. The new work cart enabled the task to be incorporated into a work station that performs others tasks as well. With an overhead crane as the only required equipment, the labor was reduced to a fraction of an hour. Ergonomically, it could only be improved if a robot performed the task.

“The newly designed work carts are a tremendous improvement and money saver,” said Russell Anderson, Chief of Red River’s Tactical Division. “Every mechanic, equipment specialist, welder, engineer, supervisor, planner, blaster and painter that was involved with this can, and should be very proud.”

“The previous cart/trailer we were using took three people to pull from one station to the next,” said Mack Anderson, leader for the

HMMWV line. “The old carts were also very low to the ground so we knew there had to be a better way. So, a better way, which seemed an impossibility to some on the floor, soon became a reality through a team effort.”

On Schedule and Budget

The depot has remanufactured more HMMWVs than any other organization. Since 2010, Red River has had 275 partnership agreements, many being multiple contracts like the one with AM General. Just like most vehicles at the depot, HMMWVs are disassembled to the frame of the vehicle and then rebuilt to the vehicle’s particular configuration and statement of work. Red River currently holds a public-private partnership with AM General, the original equipment manufacturer of the HMMWV. Through the partnership, Red River upgrades the Body from M1151 to M1167 TOW Missile Carrier configuration.

“This partnership has enabled Red River Army Depot (RRAD) to provide our nation’s Warfighters with a dependable quality product, on schedule and within cost,” said Marshal McKellar, Director of RRAD’s Business Management Office. “During the past four years we’ve truly become teammates and the depot looks forward to partnering with AM General in the years to come.” Public Private Partnerships (P3s) help to strengthen the Organic Industrial Base and maintain critical skill sets within both the Army and private industry. AM General is a customer focused, reliable partner dedicated to the support of our nation’s defense industry.

AM General and RRAD continue planning to expand their relationship to strengthen the collaborative spirit of their Partnership and to demonstrate the significant value Public-Private partnerships bring to the Department of Defense.

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The U.S. Army’s current Family of Medium Tactical Vehicles (FMTV) entered service in January 1996 and includes a variety of trucks and trailers based on a common chassis. The Army’s FMTVs enable Soldiers to accomplish a wide range of missions transporting equipment, ammunition, personnel, and other supplies in 2.5-ton and 5-ton capacity vehicles. Collectively, the FMTV fleet of cargo vehicles, cargo vans, prime movers, wreckers, Load Handling System (LHS)-equipped vehicles, and dump trucks performs more than 55% of the Army’s local, line haul, and unit resupply missions in combat, combat support, and combat service support units.

The Light Medium Tactical Vehicle (LMTV) fleet includes cargo and van models with a 2-1/2-ton capacity. The Medium Tactical Vehicle (MTV) fleet has a 5-ton capacity, and MTV models consisting of cargo, tractor, van, wrecker, load handling system, and dump truck variants. Sub-variants also provide an air drop capability for contingency and rapid deployment operations, and a fleet-wide focus on commonality between variants significantly reduces operation and maintenance costs.

Recent contingency operations drove an increased need for crew survivability and electrical power to support a growing network of important systems. Yet the current FMTV fleet wasn’t designed for all of the additional weight or power demand, and upgrades and improvements are pushing the limits of its performance envelope. The FMTV fleet’s capacity to accept further operational enhancements without payload reduction and/or performance degradation is limited, and so the Army is investigating changes to ensure its continued ability to support future operations.

Relevancy in Today’s Operational Environment

Once upon a time, a truck was simply a truck, but that grows less true every year. Particularly as communication networks, sensors, and other new technologies become essential systems, our trucks’ character has changed too. Our challenge is to evolve the FMTV so that it remains a viable resource on the battlefield—balancing requirements...
Across the fleet, we know we need to continue incrementally modernizing our vehicles, and recent analyses demonstrated that mature, commercial technologies exist that can allow us to gain back system payload and performance without sacrificing protection or the power Soldiers need to meet increasing demands for C4ISR systems.

The Army is now prepared to begin a competition for a series of Engineering Change Proposals (ECPs) to upgrade our current design and the begin producing the next generation of FMTVs—leveraging competition and focusing on affordability. This effort is intended to rebalance the Iron Triangle (protection, payload, performance) and restore performance while decreasing the burden placed on Soldiers driving the truck. At the same time, we want to plan smartly for future demands by providing a margin for growth in engine power, electrical power, and payload, as well as incorporating essential safety technologies. Specifically, we seek for the FMTV A2 to incorporate:

- A higher capacity suspension, addressing weight capacity and ride quality concerns. The improved suspension will support protection/survivability enhancements, improved ride quality and increased reliability.
- Integrated electronic stability control (ESC), which along with the anti-lock braking system (ABS) increases safety and stability.
- Underbody protection, which has already been tested and proven that it can provide improved protection in possible contingency environments.
- A higher output 24V alternator, which reduces complexity and simplifies troubleshooting, along with an upgraded data bus to enable units to integrate improved driver safety capabilities and provide for condition-based maintenance.

FMTVs for the Long Term

Of course, even as we begin this effort we also recognize that many of the Army's current FMTVs and FMTV-variants—used for both transportation and as part of other systems like HIMARS—will be in the fleet requiring sustainment for years to come. Managing the fleet we have is essential to today's Army, including obsolescence challenges as vehicles age. Intelligently divesting of older trucks and making smart decisions about a balance of armored, armor-capable, and non-armored vehicles in the fleet is essential to effective program management over the long term.

Working with a top-notch team of civilian and military professionals, the MTV team is committed to providing the best for America's Soldiers. PM MTV has a wealth of knowledge and experience with tactical wheeled vehicles and works diligently to build relationships across our stakeholders. The team maintains a keen eye on the future by developing strategies for the A2 program, maintaining the correct fleet model mix, sustaining the legacy fleet through the life cycle, and looking to future technologies for continued product improvement like active safety technologies. They continue to amaze me by finding intelligent and innovative ways to leverage resources, build consensus, and implement real solutions that ultimately benefit the Soldier and accomplish the mission. PM MTV has truly made a positive and lasting impact on the tactical wheeled vehicle community and will continue to do so for decades to come.
Major General Clark W. LeMasters assumed command of the U.S. Army TACOM Life Cycle Management Command on 2 May 2016. His previous assignments include: Deputy Chief of Staff for Operations and Logistics, G-3/4, U.S. Army Materiel Command August 2014-April 2016; Commanding General of the 13th Sustainment Command (Expeditionary); Chief of Ordnance and Commandant of the U.S. Army Ordnance School July 2010-March 2012; Executive Officer for the Army G-4 July 2009-July 2010; Director, Distribution Management Center, Army Sustainment Command July 2007-July 2009; Student, Army War College; Chief, Logistics Readiness Center, J-4 Operations, USCENTCOM August 2004-June 2006; Commander, 123rd Main Support Battalion, 1st Armored Division June 2002-August 2004; Executive Officer, 1st Armored Division Support Command May 2000-June 2002; Executive Officer, 703rd Main Support Battalion, 3rd Infantry Division April 1999-May 2000; Materiel Officer, 3rd Infantry Division MMC May 1998-April 1999; and Support Operations Officer, 703rd MSB June 1997-May 1998. MG LeMasters was previously assigned to Fort Lee, Virginia from December 1994-July 1996 as a Staff Officer in the Force Development Directorate, U.S. Army CASCOM.

MG LeMasters was commissioned as a 2nd Lieutenant in 1982 from the ROTC program at Marion Military Institute, Marion, Alabama. Following his graduation from Marion, he served as a Platoon Leader in the 1-115th Infantry Battalion, MDARNG, until he completed his Bachelor’s degree in Chemistry at Frostburg State University, Frostburg, Maryland. MG LeMasters was assessed to active duty in September 1984 as an Ordnance Officer. He also holds Master's Degrees from Florida Institute of Technology and the Army War College. His military education includes the Ordnance Officer Basic and Advanced Courses, the Army Command and General Staff College, and the Army War College. During his career, he has served overseas in Germany, Iraq, Qatar, and Afghanistan.

Interview conducted by A&M Editor Kevin Hunter

A&M: Please speak to your role as TACOM CG and some of the key focus efforts for late 2016, going into 2017.

MG LeMasters: Our role is to support the No. 1 priority of the Army -- Readiness. Every member of the TACOM team is focused on this priority, from our headquarters in Warren, Michigan, to each of our depots and arsenals, and to every Logistics Assistance Representative (LAR) and Senior Command Representative (SCR) supporting Army units around the globe. I hate to provide you a list, but it’s the best way to tell you what the TACOM team will focus on and continue to deliver to our Army: expect high-quality equipment and secondary items management; we will deliver quality products from our depots, arsenals and manufacturing facilities. If something we provide is not right, let us know.

Continued engagement of our LARs and SCRs with Soldiers and leaders around the world to train and resolve equipment issues. If the expertise is not available at your location, from engineering support to quality equipment maintenance and supply, we will bring it to you.

Our goal is to deliver fully integrated, resourced and planned support throughout the life cycle of our supported systems. If you are having issues, we want you to tell us so we can help you; TACOM and our supported Program Executive Offices will find solutions and deliver results.

Supporting the readiness of our fleets requires rapid and precise acquisition and contracting actions that deliver capabilities to the field, increasing readiness of our supported systems. As you all know, many of the repair parts required to support our systems are not available from multiple sources -- sometimes this could result in long lead times. Our team will do everything possible to find alternate solutions.

We will leverage the expertise of the Army’s Research, Development and Engineering Centers to improve or solve readiness issues.
TACOM, RRAD, PD-LTV and AM General came together with a vision to create a Public-Private Partnership to upgrade the National Guard’s HMMWV fleet in a way never done before. To date, over 1,500 modernized HMMWVs have been delivered to units nationwide, with many more to come. The HMMWV Recapitalization Program is a true testament to the commitment and success of great partnerships, ensuring mission success.
item managers determined that improper slave starting of the Bradley by TACOM equipment specialists, Original Equipment Manufacturers and the normal rate, while DVDB demands doubled. Research and analyses tackles and the Digital Vehicle Distribution Box (DVDB). Average monthly problems with Bradley Fighting Vehicle Urban Survival Kit (BUSK) hull bat- readiness issues. A few years ago, the Army started experiencing prob- lems with Bradley slaving and battery maintenance practices.

TACOM LARs worked closely with U.S. Army Europe to develop the Stryker Common Chassis Program of Instruction to train unit mechanics on troubleshooting, repairing and maintaining the Stryker platform. The course provided MOS 91S and 91B system maintainers the fundamental skills beyond advanced individual training to perform diagnostic troubleshooting, malfunction isolation and corrective action on the Stryker platforms. This training has been widely regarded as the hallmark of excellence and continues to yield improvements in fleet readiness in USEUR.

In response to SOUM 15-002 regarding a cease fire of M109A6 Paladins due to corrosion in the bore evacuator holes of the M284 Cannon Tube, TACOM LARs partnered with the Field Artillery Product Integration Directorate and the U.S. Army Research, Development and Engineering Command to field 23 two-person inspection teams to conduct visual inspections of 100 percent of the 544 fielded M109A6 Paladins in the active Army and Army National Guard. The forward positioning of the LAR workforce coupled with the close unit working relationships expedited the completion of the inspections and subsequent repair to the fleet.

These are just a few of the ways the TACOM team has addressed tactical platform readiness and support issues throughout their fielded life cycles.

A&M: From a sustainment perspective, please speak to ways TACOM is addressing key Joint tactical platform life cycles and minimizing challenges associated with them.

MG LeMasters: For systems and capabilities under development, TACOM is fully integrated with our supported PEOs and their subordinate Program, Project and Product Managers. This team will ensure thoroughly planned and resourced systems are fielded to the Army, and where appropriate, to Joint Forces.

For fielded systems, the TACOM Integrated Logistics Support Center, the PEOs, Defense Logistics Agency, and Army Contracting Command work as an integrated team to provide units across the Army a wide range of support. We find solutions for long lead time repair parts and provide sustainment-level repair teams from our depots and arsenals. We share systemic equipment problems and provide necessary training. TACOM will also analyze Army readiness issues and provide the appropriate guidance in the form of Ground Precautionary Messages, Maintenance Advisory Messages or Safety of Use Messages. Find your nearest TACOM LAR and ask for help!

Here are a few examples of how the TACOM team has dealt with readiness issues. A few years ago, the Army started experiencing problems with Bradley Fighting Vehicle Urban Survival Kit (BUSK) hull batteries and the Digital Vehicle Distribution Box (DVDB). Average monthly demands spiked for hull batteries over a three-year period by 14 times the normal rate, while DVDB demands doubled. Research and analyses by TACOM equipment specialists, Original Equipment Manufacturers and item managers determined that improper slave starting of the Bradley Fighting Vehicles caused power surges within the electrical and power distribution system that induced premature DVDB failures. Improvements in BUSK hull batteries testing procedures, coupled with packaging and handling of batteries to avoid terminal damage reduced consumption and increased their reliability service life. TACOM provided this information to all our LARs to begin unit-level training and released to the field a Maintenance Information Message that clarified Bradley slaving and battery maintenance practices.

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A&M: In terms of how TACOM is modernizing to stay relevant, please speak to ways the command is facilitating improvements to legacy and implementing newer technology-driven solutions.

MG LeMasters: TACOM’s principal role is to support Army systems that are fielded to the tactical formations. As technology or threats change, Army equipment may need to be modernized. PEOs develop modernization programs; for example, the next incremental improvements known as Equipment Change Proposals are in the works for M1A2, Bradley M2A3/M3A3 and the Paladin Integrated Management program. These proposed improvements are developed, approved by the Army leadership and executed with the TACOM team fully engaged with the PEO/PM.

Like the system hardware, the sustainment system and concept of support is also modified. This is done by a total team effort, where new support requirements are developed that range from repair parts contracts; modifying or updating repair, overhaul and RESET capabili- ties at our organic depots; and working with equipment manufacturers and the PEO/PMs to develop a Materiel Fielding Plan. The TACOM Field Support Operations Directorate’s Materiel Fielding Team will execute nearly all new Materiel fielding training across the Army. New equipment training will be delivered; TACOM LARs and SCRs would support units and provide additional support after fielding, and most importantly, provide the direct link for readiness issues from the using unit to TACOM and the PEO/PMs.
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A&M: From an industry partnering vantage, please speak to ways TACOM is partnering with private sector technology suppliers to provide solutions to Army commanders.

MG LeMasters: TACOM, PEOs/PMs and OEMs will all continue to partner to deliver systems to the field. TACOM’s organic depot and arsenals look for opportunities to partner with industry to deliver increased capabilities and readiness to the Army, while reducing the operation and support costs. Partnerships preserve and strengthen the Organic Industrial Base (OIB), leveraging capabilities of the OIB to benefit from industry sharing of best business practices all focused on providing our units and Soldiers with the highest quality equipment. Some examples of partnerships include: Red River Army Depot’s partnership with AM General to execute the recap of over 800 Army National Guard High Mobility Multipurpose Wheeled Vehicles to integrate reliability, maintainability and supportability improvements to the fleet. For the OIB, this type of arrangement helps to maintain critical skill sets for welders, repairers and mechanics.

Watervliet Arsenal has a key long-term partnership with Electralloy that allows the company access to a very large, unique rotary forge normally used for just large cannon production. The non-Department of Defense work brought to Watervliet by Electralloy, helps Watervliet cover operating costs, as well as providing the workforce more time on this unique piece of equipment to preserve critical manufacturing skills. The OIB also benefits from Electralloy’s investment in equipment upgrades and machine maintenance. This partnership has been identified as a “Best Practice” across all of DoD; the original agreement was for five years and has been expanded to a 20-year agreement.

Anniston Army Depot also has a work share partnership for M1 conversions and Stryker overhaul. For the past 16 years, the M1 partnerships between PD Main Battle Tank Systems, ANAD and General Dynamics Land Systems have converted or reset over 3,644 tanks, surging in 2010 to produce a program high of 383 vehicles. With the Stryker family of vehicles, PM Stryker Brigade Combat Team involved the depot early in the acquisition process; as a result ANAD has been a partner on all variants of the Stryker from new build through combat/battle/accident damage, through the RESET of the Stryker brigades and the double V hull program, and into overhaul. The early involvement directly enhanced ANAD’s growth of capabilities to support system overhaul. Starting in 2009, the Stryker reset program also directly contributed to the readiness of the warfighter when ANAD and GDLS had to RESET Stryker brigades against a very strict Army Force Generation timeline. This year, ANAD and GDLS will embark on an 85-vehicle Stryker lethality workshare partnership to increase the readiness and lethality of our USAREUR-based STRYKERS.

ANAD has also shown great success in a partnership with Honeywell to support Total Integrated Engine Revitalization (TIGER) - the M1 tank AGT-1500 engine conditions-based maintenance program. This partnership is an overwhelming success. The program centers on an integrated team set up to improve the M1 engine’s fleet Mean Time Between Depot Repair (MTBDR) to 1400 hours, doubling the time between overhauls without increasing operation and sustainment costs. The enterprise was set up as a partnership between TACOM ILSC, PD-MBTS, ANAD and Honeywell with a common goal of improving availability and durability of the No. 1 cost driver in the Army supply system. Honeywell provides parts and technical support while Anniston performs the depot maintenance on all engines. TIGER has allowed the ANAD team to apply condition-based overhaul procedures and scope repairs based on hours and reason for failure resulting in reduced average repair cost and increased reliability.

A&M: Speak to any other challenges TACOM is addressing going forward.

MG LeMasters: TACOM, like every other Army organization, will be impacted by resourcing decisions that could impact manpower authorizations and funding levels for support programs. Prioritizing these reductions against Army missions and changing priorities has been, and will continue to be, the toughest challenge we face.

Our team continues to work long lead time parts and the demand planning process very hard. The ability to project parts requirements has always been a challenge -- like any projection they are a victim of history and changing demand patterns. The TACOM ILSC Readiness and Sustainment Directories, along with our Field Support Operations Directorate, works daily with everyone, from your units to the DLA, to identify and resolve readiness issues. As Army requirements for training, exercise support and contingency operations changes, TACOM will work to stay linked in with planning efforts and the projection of support priorities and requirements. As the Sustainable Readiness Model becomes fully operational, predicting what units across the Army will do will become somewhat easier and help with this process.

What can you do to help us help you better? Pull in the LARs and SCRs as soon as planning begins for any mission. The Brigade Logistics Support Team, Army Field Support Battalion and Army Field Support Brigade should be your starting point. To develop a fully integrated concept of the operation, the entire “sustainer” team must be brought to the table as early as possible.

TACOM is committed to supporting you and your units anywhere in the world. If you have a problem or issue with support of any tracked, wheeled, armament or Soldier support system, give us a call.
Mr. William Cannon, Director, Electronics & Communications (EC) Business Unit, Advatech Pacific, a provider of advanced engineering solutions to the aerospace and defense markets. Mr. Cannon discussed the capabilities of Advatech Pacific’s Tactical Cross-Domain Solution (TACDS™) which enables the automated exchange of tactical information between security domains and is specifically designed to meet the unique needs of warfighters at the Tactical Edge. Built on the CyberGuard™ Core, TACDS™ provides a low cost, small Size, Weight, and Power (SWaP), rugged, tamper-resistant cross domain solution that is ideal for tactical vehicles, mobile shelters, ground sensor systems and aircraft.

A&M: Why is CDS needed on today’s battlefield?

Mr. Cannon: In today’s increasingly connected battle space, instant information sharing is a necessity. For such systems, a cross domain solution (CDS) is a key enabling technology. A CDS allows selective, assured communication between networks of different levels of security by controlling the data flowing between the two networks. A high quality CDS does this by content aware inspection of the data, passing the data items unchanged, sanitizing individual items, or blocking the data flow entirely, according to a pre-specified security policy rule set.

As mobile devices become an essential part of the warfighter’s kit, the need for network connectivity extends down to the individual soldier. At the tactical edge, a CDS must not only protect sensitive systems from cyber threats, but it must also protect itself from compromise in the event that it falls into adversary hands.

A&M: Speak to software capabilities within CDS.

Mr. Cannon: TACDS™ is Advatech Pacific’s rugged, low SWaP, tactical CDS for use on military ground, airborne, and maritime vehicles. It delivers secure, robust, bi-directional filtering and validation of tactical data transfers including common operating picture, full motion video, sensor feeds and control, and health and usage data. TACDS™ has been fully qualified to military environmental, EMI, and power standards. In addition, it is NSA certified and on the Unified Cross Domain Services Management Office (UCDSMO) baseline Control List (UCL).

A&M: If not currently fielded, is there testing and/or contract bidding expected?

Mr. Cannon: Advatech Pacific’s Tactical Cross Domain Solution (TACDS™) is currently in the process of being fielded by the Canadian Department of National Defense (DND) on several of their tactical ground and air vehicles. It is also being fielded on a UAV platform. TACDS™ has been selected for use on several U.S. DoD programs of record including ground combat vehicles, ISR sensor systems, and rotary wing aircraft.

We have many more evaluation efforts on-going by various Army, Navy, Air Force, Marine Corps and Special Operations Command systems/platforms and expect more programs of record to adopt TACDS™ for their tactical Cross Domain Solution (CDS) requirements. Several bids/quotes are currently in process or awaiting award. The latest version of the TACDS™ is currently undergoing recertification testing with the Unified Cross Domain Services Management Office (UCDSMO) with enhanced capabilities and several new filters.

The unit has been tested to MIL-STD 810G, 461F, 1275D, and 704E for ground and air vehicle environments. It has also been successfully evaluated at several of the U.S. Army’s Network Integration Evaluation (NIE12.2 and 13.1), Joint Users Interoperability Communications Exercise (JUICE-2013, 2014, 2015, and 2016) and Command, Control, Communication, Computers Intelligence Surveillance and Reconnaissance (C4ISR) exercises as well as a Canadian DND demonstration for the Tactical Armored Patrol Vehicle (TAPV).
Any significant endeavor requires clear direction and purpose to achieve success. Recently, the U.S. Army’s Training and Doctrine Command (TRADOC) published a holistic vision for the Army’s network entitled “The Mission Command Network: Vision & Narrative”. Defining the Mission Command Network as “integrated mission command and network capabilities”, this document provides a holistic vision for operational capabilities looking forward to 2025 and beyond. This vision is nested within the context of the U.S. Army’s Operating Concept: “Win in a Complex World”. The document offers a unified vision for operational capabilities looking forward to 2025 and beyond. This vision is nested within the context of the U.S. Army’s Operating Concept: “Win in a Complex World”. The document offers a unified vision and operational view, and offers key terms & ideas for the entire network. It describes characteristics, design principles for modernization, and articulates requirements by echelon and formation (strategic to company level). This vision is the guidepost for the Army’s mission command network modernization strategy.

Integrated Joint Planning

The highest levels of Army leadership realized we needed a vision for the network from the perspective of the commander. In the summer of 2014, the Chief of Staff of the Army (then General Odierno) asked for an overarching vision and narrative for the entire Army/Joint network, firmly rooted in a mission command perspective, which would allow him to make decisions about network capabilities. He felt at the time that network issues were presented to him without a holistic view of the network. He asked TRADOC to develop a narrative that holistically addressed the network from a mission command perspective. An integrated planning team (IPT) was promptly formed to produce that narrative, along with a comprehensive assessment of the network as it existed at that time.

The IPT was formed under leadership from the U.S. Army’s Capability Integration Center and Combined Arms Center (specifically the Mission Command Center of Excellence), with the mission of assessing the network and producing the requested narrative. Team members included all significant mission command and network stakeholders across the Army staff, the Army’s acquisition community, and TRADOC. The IPT focused on developing
COMMAND POSTS OF THE FUTURE
By COL Mike Ernst, TRADOC Capability Manager, Mission Command/Command Posts

In the highly competitive and dynamic operational environments of the future, U.S. Army command posts must facilitate the exercise of mission command amongst widely dispersed and decentralized forces. Leaders will integrate and synchronize their units’ capabilities with those of joint, inter-organizational, and multinational partners from command posts that enable expeditionary maneuver. Future command posts must be agile and scalable and enable uninterrupted mission command functionality from home station, enroute, and deployed nodes by leveraging the concept of reach. These concepts are captured in the Mission Command Center of Excellence’s Command Post 2025 Concept of Operations, 1 September 2015, and the Concept for the Army Command Post of 2040: Agile and Expeditionary scheduled for publication later this year. The Command Post 2040 Concept documents and Command Post Strategy directly support the Department of the Army-level Mission Command Network Refinement effort through Focused Endstate 5, Agile and Expeditionary Command Posts.

Phased Development

The improvement and evolution of command posts can be understood through the lenses of near, mid, and far stages of evolution. Near term improvements are those that the Army will procure and field between now and approximately 2025. Examples of such improvements include improved computer server infrastructure, secure wireless capability, intelligent power microgrid, improved tactical satellite communications, leading-edge web-based applications. Significant work is also ongoing to determine formation appropriate platforms to host on-the-move mission command capability for armored, infantry, and Stryker formations that enable commanders and staff to utilize beyond line of sight networked information systems.

Mid-term improvements can generally be categorized as those capabilities for which the Army has a demonstrated requirement, but either the concept or development needs more analysis before the Army makes a procurement decision. These capabilities will generally be available between 2025 and 2035 and include such improvements as a new command post support vehicle that consolidates radios and networking equipment, unified voice management systems, next generation displays, and web based applications to replace current systems, next generation displays, and unified voice management systems. Deployable command posts will be connected to home station mission command centers which will enable commanders to tailor their forces and reach forward and backward to maximize capability while minimizing risk.

The future beyond 2035 is less well known, and under significant study by organizations across the Army. As part of the effort to achieve this vision for command posts, Brigade Modernization Command (BMC) and the Mission Command Center of Excellence co-hosted a command post summit at Fort Bliss, Texas from 14 to 17 June 2016. The forum brought together members from across the Army including those from Centers of Excellence in Training and Doctrine Command, Army Capability Integration Center, Brigade Modernization Command, Program Managers, Communications-Electronic Research, Development and Engineering Center, and Department of the Army Staff to develop, discuss, and refine an Army command post strategy and map out the way ahead. The strategy seeks to provide a way forward taking into account aspects of doctrine, organization, training, material, leadership and education, personnel, facilities, and policy (DOTMLPF-P) as applicable to future command posts.

Lessons Learned

Going Forward

Several key ideas either emerged or were reinforced at the summit including a central theme that the command post is a socio-technical system, the purpose of which is the meaningful exchange of knowledge driven by the unit’s battle rhythm. The command post functions and human interaction requirements drive physical command post capabilities, common operating environment capabilities, and network capabilities. In order to maximize these capabilities, the Army must adopt a “weapon system approach” to manage capabilities where all aspects of DOTMLPF-P are integrated and synchronized to maximize human, procedural, and technical aspects of command post operations.

As part of the summit, leaders discussed experimentation and prototyping opportunities nested with the strategy for potential assessment during Network Integration Exercises (NIE) and Army Warfighting Assessments (AWA) held at Fort Bliss, Texas and hosted by BMC. The working groups within developed near-term (FY 18-22), mid-term (FY 23-33) and far-term (FY 34+) nominations of a total of more than 20 different concepts for assessment in NIEs/AWAs.

The summit group will refine the command post strategy and way ahead, and come back together in the fall of 2016 to develop the proposed implementation plan for the Command Post Strategy.

Future tactical communications infrastructure will enable commanders to execute mission command through agile, scalable, and tailorble command posts leveraging the DoD/Army information network (MC CoE).
a clear vision statement for the Army’s Mission Command Network. After several months of vetting across the Army, the vision statement became “Achieve expeditionary, uninterrupted mission command; through a network comprised of intuitive, secured, standards-based capabilities adapted to commander’s requirements; and integrated into a common operating environment. Network capabilities are assured, interoperable, tailorable, collaborative, identity-based, and accessible at the point of need in operations that include unified action partners.”

The vision statement, key ideas, and design principles were briefed back to General Odierno in December 2014. Further refinement continued, culminating in a brief to General Milley in September of 2015, where he stressed the importance of deployability and tactical mobility. The vision was published with his requested refinements in October 2015.

Operations-based Focus

The network must be understood by its operational role. The primary role of the Mission Command Network is to enable globally responsive joint combined arms teams to maneuver across domains and locations. It enables uninterrupted mission command across home station, enroute, and deployed conditions. It matures within a theater, is immediately available upon initial entry (through satellite), and thickens over time with aerial and terrestrial capabilities. It provides a common user experience across echelons, formations, and phases. Command posts function in consolidated and distributed configurations, are able to deploy quickly, and then scale to the desired capacity.

Mission Command Network capabilities are tailored to each commander’s requirements based on echelon and formation, fully considering the unit mission profile and leader/soldier workload, enabling training and unit readiness.

“Our Army’s ability to conduct expeditionary maneuver and Joint Combined Arms Operations depends on a Mission Command Network that is assured, interoperable, tailorable, collaborative, identity-based, and accessible at the point of need,” said LTG H. R. McMaster, Director, Army Capabilities Integration Center (ARCIC). “We must evaluate and prioritize network-related efforts based on the degree to which they contribute to this vision and how network-related capabilities effect our ability to operate consistent with the Army Operating Concept.”

Key elements of the vision are the design principles for the Mission Command Network. Mission command is a complex human endeavor requiring sophisticated decision tools and capabilities, all supported by the Mission Command Network. As mission command is exercised during the most demanding of conditions, simplicity and interoperability are particularly important. The Mission Command Network must be designed to enable the warfighter, rather than distract or hinder. In order to fully enable leaders and Soldiers, the document outlines nine design principles which should guide Mission Command Network modernization: (1) Simplicity, (2) Intuitive, (3) Integrated, (4) Interoperable, (5) Assured, reliable, durable, (6) Adaptive, flexible, responsive, (7) Scalable, tailorable, (8) Secure, and (9) Affordable.

Streamlining Continuity

The network must be able to meet our most demanding missions. “Expeditionary” refers to the ability to deploy task-organized forces on short notice to austere locations, capable of conducting operations immediately upon arrival. The Army Operating Concept defines expeditionary maneuver as the rapid deployment of task-organized combined arms forces able to transition quickly and conduct operations of sufficient scale and ample duration to achieve strategic objectives. The essence of mission command is not changed, but within the context of expeditionary maneuver, expeditionary mission command is “mission command of forces conducting expeditionary maneuver from multiple locations and projecting power across all domains; integrating institutional and operational capabilities, with unified action partners, to execute joint combined arms operations.”

“The goal is to achieve expeditionary, uninterrupted mission command,” said Maj. Gen. Willard Burleson, then Director, Mission Command Center of Excellence (MC CoE). “These network capabilities must be assured, interoperable, tailorable, collaborative, and accessible at the point of need. This enables expeditionary mission command, expeditionary maneuver from multiple locations, and projecting power across all domains.”

We must be prepared for situations where the network is not fully functional. Uninterrupted mission command is the ability to exercise mission command across multiple locations, with continuity of purpose, in spite of discrete breaks in communications. It has two components: (1) a single mobile, protected network which maximizes connectivity and capacity for operations; and (2) leaders and soldiers proficient in leveraging network-delivered capabilities, who are equally able to continue the mission across a range of degraded network conditions.

From Location to Formation

As a holistic document, the Mission Command Network Vision & Narrative seeks to articulate the unique needs of each location, echelon, and formation. In order to do so, it speaks to the enterprise or strategic aspects of the network, to include home station requirements. It then articulates the needs of deployed formations from theater army to company level. For each echelon/formation in question, the document describes (1) operational conditions, (2) critical locations and nodes, (3) essential capabilities, (4) information needed by key leaders in that formation, and (5) communication / collaboration requirements with key subordinates, peers, superiors, enablers, and mission partners. This portion of the Narrative establishes several key attributes that
the network needs to enable tactical formations. For example, the network must enable formation and platform agility but fitting with size, weight, and power constraints. Network components must also have equivalent tactical mobility to the formation it enables. There are also special areas of interest such as air ground operations, cyber electromagnetic activities, and operations in disrupted, intermittent, and limited conditions.

“The Mission Command Network is our means to create synergy between the institution of the Army and deployed forces,” said LTG Robert B. Brown, CG, Combined Arms Center, now GEN Brown, CG, U.S. Army Pacific (USARPAC). “This narrative offers the commander’s perspective on how the Mission Command Network will enable our Army to prepare, educate, train, and fight.”

Present Focal Development

Currently the document is serving as the vision for the Army's Mission Command Network Modernization strategy. This strategy has six endstates which seek to attain the key ideas and capabilities outlined. These endstates are focused to (1) integrate the network across formations, (2) leverage common standards and technologies, (3) simplify and protect the network, (4) attain interoperability with mission partners, (5) create agile, expeditionary command posts, and (6) develop an enterprise network that enables expeditionary mission command, training, and readiness. Each endstate consists of objectives over time that move the Army toward the desired capabilities.

The second use of the vision document is to align the body of requirements documents that the Army staff and TRADOC are writing. The Integrated Planning Team mentioned earlier is currently ensuring that there is an appropriate set of requirements documents in development for each key component of the Mission Command Network. For example, there is a family of requirements documents in development that will provide the “common user experience” articulated in the narrative.

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A&M: What steps have been or are being implemented to improve the Army’s acquisition processes?

McFarland: One area of critical focus in which we are streamlining our efforts is in program requirements. Requirements lay the foundation for the acquisition process as a whole and can play a large role in the success or failure of a program, ultimately affecting Soldier readiness. Having a series of affordable, technically sound, and achievable requirements is a significant factor in an acquisition program’s ability to meet cost, schedule, and performance objectives. We are continuously working to better leverage our systems engineering talent during the requirements generation process to produce trade space between requirement, total lifecycle cost, schedule, and risks.

In our efforts towards streamlining requirements, we are reinvigorating the Army Requirements Oversight Council (AROC), chaired by the Army Chief of Staff. Within the 2016 National Defense Authorization Act, Congress legislated changes to defense acquisition and called for a review of internal processes. As part of this internal examination, renewed attention to AROC ensures that the Army’s acquisition efforts are more reflective of developers and end-users of Army programs. Expanding the AROC process allows the customer’s voice to be heard throughout the Army’s acquisition activities. AROC fosters collaboration across the requirements, resourcing, and acquisition communities; enforces accountability; establishes priorities to balance resources and requirements; and ensures that the Soldier receives the right capabilities in a timeframe that guarantees the program is both relevant and within cost.

We are also actively streamlining other processes to achieve broader goals of acquisition reform. As a means of strengthening and revamping acquisition, we are dedicated to upholding the guidelines of the Defense Acquisition Executive’s Better Buying Power program and other Department of Defense (DoD) initiatives. One of these measures is a concentrated effort to reduce the documentation burden in the acquisition process. Documentation and reviews driven by statutory requirements build up annually through accretion, creating a significant challenge to program managers and contracting officers. To make measurable progress in acquisition reform, we have to look at service policies that implement DoD and Federal regulations. To this end, we are undertaking a comprehensive review of Army acquisition policy to streamline duplicative documentation requirements. So far, we have reduced this documentation burden by over 50 percent, saving time and resources while enhancing the overall effectiveness of the acquisition process.

Recognizing the importance of acquisition reform, we understand that the “how” is as important as the “what.” As we look toward next-generation technologies to mature our aging fleets and portfolios, we remember that it is not enough to modernize our technology – we also have to work to modernize our methods of acquiring it. Only then can we maintain our technical advantage.

A&M: Please speak to the Army’s current efforts in positioning for key current program acquisition goals as well as addressing strategies for 2025 and beyond.

McFarland: Focusing on enhancing the expeditionary capabilities and readiness of the Army, the Force 2025 and Beyond strategy aims to shape the Army of the future into a faster, leaner, more mobile, and more lethal force. By making strategic assessments of our capabilities
today, the Army will be ready to respond to ever-changing and ever-increasing security challenges.

From an armor and mobility standpoint, this means the ability to project additional combat power but with a much smaller force. In this case, efficiencies have to come from what we call “combat enablers.” We need to look into how to make incremental improvements in critical areas like base camp technology, operational energy, fuel economy, etc. Reducing fuel and water consumption allows those resources to be invested elsewhere.

We also look to procure systems like Ground Mobility Vehicle or Maneuver Support Vessel – Light to expand maneuver options and enhance our ability to respond to enemy threats in multiple ways. This new approach to maneuvering is more than just transportation: it is essential to building a leaner, more mobile force.

A&M: Please discuss cooperation with Joint Service partners in achieving current goals and developing plans to proactively address future requirements.

McFarland: The United States Army is truly the foundational force, providing the preponderance of sustainment, logistics, and other key capabilities to US Armed Forces around the globe. As we move forward, our operations will likely be increasingly more joint in nature. In both of these cases, we see a clear opportunity to improve joint development opportunities and improve interoperability and efficiency, which makes us more effective and more cost-efficient from program design to execution as well as supporting overall Army readiness. The Joint Light Tactical Vehicle program is a great example of success in this area. Two Services with different operational needs – the Army and the Marine Corps – were able to agree on a common set of requirements, ultimately minimizing any differences. Not only did we achieve significant cost efficiencies as a result, but Soldiers and Marines in the future will continue to operate from common platforms with critical interoperability in performance, maintenance, etc. This potential extends well beyond major programs, such as vehicles, to smaller systems like generator sets, mission command & communication gear, and shelters. When we are able to reach a common, standard set of requirements for more than one Service, there is tremendous potential benefit for the acquisition and operational enterprises.

A&M: In terms of partnering efforts with industry, how is ASA(ALT) taking advantage of know-how across the private sector?

McFarland: The Army recognizes the importance of strong relationships with our industry partners. Through these partnerships, we can ensure our Warfighters’ readiness and equip them with the best capabilities while balancing the need to effectively utilize taxpayer dollars and promoting innovation and competition in an ever-changing industrial environment. By identifying, assessing, and monitoring at-risk suppliers in the Defense Industrial Base (DIB), the Army strives to preserve and maintain a ready and capable industrial base.

The Army utilizes four programs to improve and maintain DIB capabilities: public-private partnerships; the Defense Production Act (DPA) Title III Program; the Manufacturing Technology (ManTech) Program; and the National Network for Manufacturing Innovation (NNMI) Program.

Public-private partnerships or P3, establish agreements between an Army facility and private-industry to perform work or to use the
Army’s resources (facilities, equipment, and/or personnel) for the benefit of both. The goal of a P3 is to leverage the power of partnerships to enhance and preserve the Army’s unique organic industrial capabilities while offering private industry access to those same capabilities. Partnership arrangements result in more effective fulfillment of Army contracts at a lower cost and reduced risk to industry partners. They also sustain production lines and unique equipment & machinery, as well as the critical skill sets of our nation’s industrial workers.

The DPA Title III Program provides the DoD with a tool to ensure the timely creation and availability of domestic production capabilities and capacities in the domestic industrial base for items essential to national defense. Title III actions stimulate investment in production resources by reducing the risks associated with the capitalization and investments required to establish the needed production capacity. The DoD funds Title III recipients directly to develop the production capabilities and capacities identified.

The Army’s Manufacturing Technology (ManTech) Program matures and demonstrates processes for the affordable and timely production and sustainment of Army systems. This program affects all phases of the acquisition cycle and aids in achieving reduced acquisition and total ownership costs. It accomplishes this goal by developing, maturing, and transitioning key manufacturing technologies in direct partnership with the defense industrial base. To achieve this, the Army often relies on an innovative private sector and actively participates in the National Network for Manufacturing Innovation (NNMI). The Army also serves as the Program Manager for four of DoD’s six Manufacturing Innovation Institutes (MIIs) and on the strategic and technical advisory boards for all DoD-led MIIs. Major lines of effort with the MIIs include collaboration on research & development, technology transition, and coordination of workforce development and STEM activities.

Developing mutually beneficial partnerships with industry allows the Army to proactively manage risk and benefit from industry-wide best practices. This is particularly advantageous for the Army during times of fiscal uncertainty. With this approach, the Army is setting conditions for sustaining those critical industrial capabilities essential for the safety and mission success of the nation’s Warfighters.

A&M: How is ASA(ALT) working to maximize gains in the face of budget cuts and similar constraints hampering procurement efforts today and into the future?

McFarland: We are committed to maintaining operational readiness and our technological advantage in an era of fiscal constraint. Due to prolonged budget instability, Army programs are at risk of being overextended or cancelled, and per-unit costs of items increase as a result of reductions in procurement quantities.

To address these challenges, the Army has to be prepared to do more with less. We have adopted a five-fold, 30-year modernization strategy for enhancing our efficiency in the wake of extended budget cuts. This framework includes plans for our ground vehicle portfolios. First, we must reduce operations and sustainment costs by divesting over 25,000 vehicles the Army no longer needs. We must also reset and sustain equipment coming out of theater, including combat service support systems, to be ready for our next engagement. Next, we must sustain and modernize our vehicle fleet in the near- to mid-term, including incorporating Engineering Change Proposals necessary to modernize the Abrams, Bradley, and Paladin M109A7 programs. As the next stage in our modernization strategy, we focus on new systems. Even in this challenging fiscal climate, we have to invest in the next generation of ground vehicle capabilities. Specifically, the Army is investing in the Ground Mobility Vehicle, Stryker Lethality upgrades, Mobile Protected Firepower, and the Armored Multi-Purpose Vehicle. Lastly, we are prioritizing Science & Technology investments to develop breakthrough technologies, including active protection systems (both ground and air); electronic warfare efforts that focus on research & development, technology transition, and coordination of workforce development and STEM activities.
on designing countermeasures to address threats against ground mounted platforms, Army rotorcraft, and dismounted Soldiers; the Combat Vehicle Prototyping program to demonstrate advanced capabilities for the combat vehicle fleet; and efforts to reduce technical risk for future programs, including the Future Fighting Vehicle. Even in the face of austere budget realities, we cannot lose sight of strategies for future innovation. The Army’s future readiness, the Service’s top priority, depends on the strategic choices we make today.

A&M: What efforts are in place to strengthen system interoperability, particularly with regards to international partnerships?

McFarland: Interoperability is a key component of the Army’s strategic plans for bolstering readiness in the future force. The Army of tomorrow must be conducive to supporting joint and multinational operations. To do this, we need to pursue a base technological architecture into which other Services and allied militaries can operate.

As we are forced to draw down Army force levels in this era of unprecedented instability, we recognize the importance of interoperability and its role as more than just a technology issue. It helps us achieve unity of effort through mutual understanding with international partners. Interoperability is an essential part of our acquisition strategy as we address potential international cooperative development, Direct Commercial Sales (DCS), or Foreign Military Sales (FMS) early in the acquisition planning process and throughout a program’s lifecycle. The first step towards interoperability with international partners is to design programs with future exportability taken into consideration. This includes using open systems architecture to the greatest extent possible, which not only promotes interoperable configurations but also increases potential for cost-effective integration of the best global defense technology.

We also impact interoperability with our role in the technology security and foreign disclosure process. Decisions to transfer technology are made through a very deliberate multi-agency process. This process is vital to protecting our technological edge while ensuring we have capable partners to fight alongside. ASA(ALT) is responsible for developing and managing the tech transfer policy for Army platforms and reviewing tech transfer licenses which total around 7,000 applications a year.

In addition to the tech transfer process, our FMS activity is perhaps the most visible indicator of our efforts to develop partner capacity and creating the conditions for interoperability. The U.S. Army had over $20B in foreign military sales in Fiscal Year 2015. I would like to emphasize that this figure is not a measure of success so much as insight to the magnitude of FMS activity. Sales are not the purpose of our FMS programs but are a measurable indication of how we’re progressing toward our objectives of increasing partner capacity and achieving higher levels of interoperability. FMS sales remain high again this year with nearly $12B in sales to date with definite potential to approach the same high numbers of the last few years.

Finally, we are able to influence interoperability through our role as the U.S. representative to the NATO Army Armaments Group and management of the NATO Standardization Agreements (STANAG) for the Army.

A&M: Feel free to address other areas which ASA(ALT) is addressing going forward.

McFarland: I’d like to say a few words about the acquisition enterprise. Our most critical asset is our people, and we are committed to professionalizing the acquisition workforce as one of the key tenets of the Better Buying Power program. Before my arrival in DoD and ASA(ALT), I served as president of the Defense Acquisition University (DAU), where I oversaw the development and expansion of acquisition curriculum and supported learning opportunities for over 150,000 members of the Defense Acquisition Workforce. Upon joining ASA(ALT), I immediately appreciated that the Army acquisition team has been equally dedicated to enhancing the professionalism of the Army Acquisition Workforce. In ASA(ALT), we understand the importance of strengthening the acquisition, requirements, procurement, and logistics enterprises so we can equip our Soldiers with the solutions they need to dominate the battlefield.

In 2014, the Army celebrated the 25th anniversary of the Army Acquisition Corps (AAC), an elite team of civilian and military specialists who develop and procure the capabilities upon which our Warfighters rely for mission success. The AAC and the broader Army Acquisition Workforce are over 36,000 members strong, consisting of professionals across the Army and throughout the world. These diverse, talented men and women ensure that the United States Army maintains readiness and remains the best-equipped fighting force the world has ever known.
Communications play a key role in the U.S. military's global reach and responsiveness. This is especially important at the tactical level, where smaller units need to stay connected to installations hundreds, if not thousands, of miles away. Beyond-line-of-sight satellite communications (SATCOM) forms a significant link to the U.S. Army's tactical networks and existing capabilities including the Warfighter Information Network-Tactical (WIN-T). These advanced space-based capabilities allow widely dispersed forces to maintain situational awareness through secure, integrated, video and data connectivity.

Mission needs are always evolving, often faster than existing dedicated military systems and equipment can be modified or developed to keep up. However, innovative and agile commercial satellite technologies can be quickly deployed to help the Army and the Department of Defense (DoD) as focus and strategies change. Commercial systems use more flexible advanced technology to provide a variety of capabilities, such as ultra-lightweight SATCOM terminals that can be rapidly integrated into existing networks such as WIN-T using government or commercial satellites. Above all, these commercial systems provide Army tactical communications with the added degree of resiliency needed for operations in today's chaotic and contested environments.

Contested-proof Comms

The DoD sees the urgency of creating more robust resiliency in communications to withstand existing vulnerabilities. Adding this critical element to military resources will allow warfighters in the field to focus on their mission, rather than worry about whether their communications network will maintain functionality throughout the operation. Commercial satellite service and technology providers such as Hughes understand this need for heightening resiliency, and more specifically, in anti-access and area denial (A2AD) environments to counter possible threats. Hughes incorporates various methods to help maintain network resiliency, including flexible modem interfaces, advanced protected waveforms, wideband frequency hopping, and secure management systems. In addition, commercial software and equipment play a significant part in ensuring new levels of resilience. These technologies consistently include security protocols that closely follow or exceed U.S. government networking standards.

The SATCOM network equipment and software all work as a unified system, and forms a secure and rugged ground infrastructure that links to the space segment via protected waveforms. One of these highly advanced and flexible waveforms developed by Hughes, the Scrambled Code Multiple Access (SCMA) Waveform, is a vital part of the emerging tactical communications capability that can support DoD-wide resiliency anywhere in the communications network.

The core waveform for Hughes' new family of lightweight tactical terminals, SCMA, is based on very low-rate coding and new multiple access techniques. The waveform works independently of the selected frequency band, such as Ku-, Ka-, and X-band, strengthening the operational flexibility and creating more appeal to the warfighter community. SCMA also operates under the communications noise floor, making it difficult for adversaries to even detect it for spectral analysis. Variable code rates, modulation, and spreading factors allow the terminals using SCMA to flexibly trade between throughput and bandwidth against power and anti-jamming capabilities.

The SCMA waveform is synchronized to support reliable and assured operation in very adverse noise and jamming environments. Besides having the capability to run frequency-hopping functions to increase bandwidth, SCMA also includes Upper Layer Protocol Enhancement protection against pulse jamming and other disruptions. The combination of these capabilities provides the waveform with inherent low probability of detection and interception as well as natural anti-jamming characteristics. These elements support easy integration and consistent operation against adversarial threats.

Running the SCMA waveform, the new Hughes HM series products are rugged, easy to operate systems. These systems can be deployed in a variety of operational environments and on multiple platforms that support expeditionary and other first entry groups, enabling situational awareness and ISR gathering. The DoD is looking for more mobile and portable satellite communications equipment that can provide affordable and resilient connectivity to assure bandwidth availability on demand. Hughes is filling these communications gaps with new, innovative hardware that leverages software-defined modem technology paired with the SCMA waveform to bring a new level of tactical resiliency to the front lines.

Evolving to Meet New Missions

Protecting today's national security requires many different strategies that vary greatly from those in past conflicts. The current contested environments and increasingly aggressive adversaries have caused the DoD to embrace various emerging technologies that ensure robust and resilient systems that support mission success in every environment. Technology like this is now coming from newer, emerging defense companies and should be actively welcomed by the DoD to ensure dominant strategic power for the U.S. and its Allies. Every year commercial industry is bringing new solutions with more affordable, secure and resilient capabilities that help keep warfighters aware and connected anywhere on the planet. The DoD should make it as easy as possible to test and acquire this new technology given the rapidly changing landscape of today's global conflicts.
With the latest adaptations of firearms, protective equipment and tactical accessories, the SHOT Show is packed with opportunities to meet directly with manufacturers and suppliers who can provide the best gear for tactical teams arriving in theater.

The SHOT Show is a trade-only event. Professional affiliation is required.
With the latest adaptations of firearms, protective equipment and tactical accessories, the SHOT Show is packed with opportunities to meet directly with manufacturers and suppliers who can provide the best gear for tactical teams arriving in theater.
Just as medical personnel need the highest-quality equipment in the field, this section features innovative devices that can dictate the difference between combat-ready health and in some cases life and death.

The new NOMAD MD
aseptico.com

The new NOMAD MD is revolutionizing the way radiographs are taken during combat and humanitarian missions. It is designed primarily for extremities like hands, feet, ankles, thighs, arms, wrists and knees. Practitioners can now stay with their patients while taking radiographs wirelessly. This means that critical care and diagnosis can be achieved earlier than ever before. Humanitarian missions can now have x-ray capability in areas that previously were not possible. The NOMAD MD is lightweight, handheld, fully shielded, rechargeable, efficient and versatile. This new device is great for the U.S. Armed Forces, mobile healthcare providers, disaster-relief and emergency medicine.

Using the Morgan Lens, medical personnel may treat other patients or injuries while simultaneously irrigating all regions of the eye. Acids, bases, solvents, cleaning solutions, biological or radiological agents, and small particulates are among the many contaminants that are quickly removed. No other method frees medical personnel, and nothing else allows continuous irrigation while the patient is being transported. Since the eyes may be closed, the patient rests more comfortably, allowing irrigation to be continued for hours if needed for proper treatment. Bilateral irrigation is simple using two Morgan Lenses.

Requiring minimal training, the Morgan Lens is ideal for use in the hospital or in the field. After attaching the lens to the Morgan Lens Delivery Set (or I.V. tubing) and a bag of irrigating solution, it’s slipped under the eyelids, and in less than 20 seconds the most efficient treatment possible is underway. Fast, effective, and easy to use means the Morgan Lens is the perfect option for treating injured eyes in all situations.

Russell PneumoFix™
boundtree.com

The Russell PneumoFix™ is a sterile chest decompression device designed for the management of tension pneumothorax, simple pneumothorax and pleural effusion. Designed by practicing clinicians who understand the limitations of conventional equipment, the Russell PneumoFix™ has the following features:

- For medical professionals, use of the Russell PneumoFix™ is quick, simple and intuitive.
- Unlike the intravenous cannula, used historically in an improvised way for the management of tension pneumothorax, the Russell PneumoFix™ is designed specifically for this purpose.
- The Russell PneumoFix™ has been designed to be inserted without the need for a scalpel or skin incision.
- The device incorporates a Veress-tipped needle to minimize risk of injury to lung tissue.
- 11cm long catheter – long enough to reach the pleural cavity of the vast majority of patients.
- Low pressure one-way valve – to allow air and fluid out but nothing in.
- Graduated markings and X-ray detectable catheter – for depth recording and accurate localization at hospital.
- 12-Gauge catheter– allows for rapid venting of air in tension pneumothorax
- Material chosen which minimizes the risk of kinking of the catheter.

H&H MEDICAL
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H&H Medical’s breakthrough ClearCool™ sterile hydrogel dressing builds on H&H’s long experience in medical hydrogels to develop a novel wound dressing for acute and extended field care that protects the wound, provides a cooling analgesic effect, but leaves no residue. ClearCool™ transparency allows for frequent wound checks without disturbing existing dressings. ClearCool™ provides the benefits of a wet hydrogel dressing, with a dry sterile dressing system. ClearCool™ hydrogel is a very effective medium for the instantaneous quenching of burning white phosphorus. Part No. HHCC01.
Get Troops Back in the Field in 3 Minutes!

**Zanfel®** – a safer, faster and more effective option than steroids or antihistamines for relieving poison ivy, oak or sumac.

**Zanfel** gets at the cause of the problem by removing the poison ivy, oak or sumac toxin (urushiol) from the skin **ANYTIME** after outbreak of the rash while relieving the itching within 30 seconds. **Zanfel** is also effective for **Mosquito** and **Chigger Bites**, **Sand Flea** and **Sand Fly Bites** and **Other Insect Bites** and **Stings**.

Benefits and Savings to the Medical Command and the Warfighter.
• The use of **Zanfel** improves **READINESS** and allows the poison ivy, oak or sumac affected warfighter to return to duty within a matter of minutes, (versus a week or more), in an itch-free and healing state.
• Significant and immediate cost savings to the unit and medical command.

**Packet** = Single dose.
Great for IFAK kitting.

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Packet = Single dose.
Great for IFAK kitting.

**Carton = 15 doses.**
NSN #6505-01-611-2071
Contract #V797P-5223B
Great for Hospital and Battalion Aid Station Settings.

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As with all TACOPS® medical kits, TSSi will modify the contents of the Rolling Mass Casualty Kit at the user’s discretion to best support your organization’s budget and specific equipment preferences.

ZANFEL
zanfel.com

Get Troops Back in the Field in 3 Minutes!

What is Zanfel? Zanfel® Poison Ivy Wash is the only product clinically shown to remove urushiol, the toxin found in poison ivy, oak, and sumac, and many other plants around the world. ANYTIME after outbreak of the rash, Zanfel relieves itching within 30 seconds. Unlike Zanfel, other products temporarily reduce itch but do nothing to remove urushiol. With a small amount of water, Zanfel removes urushiol during a 3-minute skin wash. Once the urushiol has been removed, the body is in a position to immediately heal the rash.

In addition to being used as a treatment for poison ivy, oak and sumac, Zanfel is also extremely effective for pain and itch associated with:
- Mosquito and Chigger Bites
- Sand Flea and Sand Fly Bites
- Bee, Wasp and Hornet Stings
- Fire Ant and Black Ant Bites
- Other Insect Bites and Stings

Zanfel can be applied on any external body area, including the face and genitals. There are no known side effects. Zanfel is available at your local Exchange Store, along with retail pharmacies.

Zanfel Benefits and Savings to the Medical Command and the Warfighter:
- Force protection and readiness through rapid and improved return to duty (RTD) rate, after outbreak.
- Improved training success, as a result of reduced student recycle rates.
- Significant and immediate cost savings to the unit and medical command.
- Reduced cost to the force and dependents globally for DoD.

XSTAT® 12
PanakeiaUSA.com

The Rolling Mass Casualty Kit

The Rolling Mass Casualty Kit provides significant enhancements in capabilities, functionality and versatility over every other multi-casualty kit. A large rolling duffle, complete with removable shoulder straps, enables the kit to be quickly and easily transported over long distances and in stairwells. Inside are ten removable Trauma Pouches, each individually capable of treating 3-4 casualties having traumatic injuries.

These pouches include tourniquets, pressure bandages, hemostatic agents, chest seals, airways and other essential equipment. Two additional internal pouches contain much larger abdominal bandages and hypothermia blankets.

Within the lid are multiple moldable splints and burn/blast dressings. Tucked away on either side of the inner compartment are six disposable pole-less litters.

The Rolling Mass Casualty Kit was specifically designed for civilian first responders to use in any location where large crowds typically gather. Due to its easy transportability, there are several options for deploying this kit:
- Permanently Positioned – Shopping Malls, Schools, Transportation Hubs, etc.
- Pre-staged for Special Events – Stadiums, Arenas, Tent Events, etc.
- Transported by Vehicle – Carried on Emergency Response Vehicles.
Training time is valuable, why WASTE it on SET UP and RESETS?

Fast set-up allows for more scenarios, more hands-on exercises and leads to increased trainee confidence.

TECHLINE® TRAUMA WEARABLE WOUND SIMULATIONS allow instructors to swap out casualties and realistic, bleeding wounds faster than it takes to remove the used bandages. The anatomically correct wounds can be integrated into existing training, driving the students to practice life saving interventions on wounds that look and feel real. The extremely rugged wounds slip on or wrap around the patient, holding them in place during drags and evacuation. Bleeding can be supplied by hand pumps or a SKEDCO Field Expedition Bleeding Simulation System (FEBSS) Hydrasim® (not included) for realistic training.

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There is no shortage of interesting, innovative updates in the technical, tactical world. Here we look at miniature rifle optics, LED Lights and versatile rail-mounted tactical lighting, radio power docking capability, and an X-Ray identification for EOD and bomb squads.

Trijicon® takes the science of the red dot sight to the next level with the Trijicon Miniature Rifle Optic or MRO™, a red-dot sight tough enough for combat, the mean streets of law enforcement, competition shooting or hunting in the harshest of environments. Light and rugged, the Trijicon MRO mounts easily, zeros quickly and adapts to almost any shooting scenario.

With its large objective lens and shortened optical length, the MRO virtually eliminates the "tunnel vision" or tube-effect common to so many red dot sights. The 2 MOA dot is bright and crisp, and is perfectly sized for fast target acquisition at CQB distance out to extended ranges.

The MRO features eight brightness settings, including two that are night vision compatible, plus one extremely bright setting for use with lights or in very bright outdoor conditions. It gets five (5) years of continuous use on a single 2032 battery.

Half-minute adjustments with 70 MOA total travel allow for zeroing in most any configuration on a variety of platforms. The brightness control atop is ambidextrous, so your shooting hand need not leave the fire control area. The MRO is parallax free, with infinite eye relief for quick and accurate engagement no matter your position.
Streamlight’s TLR-1 HL® (High Lumen)
streamlight.com

Streamlight’s TLR-1 HL® (High Lumen) is a versatile rail-mounted tactical light that delivers the optimal balance: brightness, power, performance, run time – and cost. Whether for room clearing, illuminating dark alleys, or search and rescue operations, the TLR-1 HL provides an 800 lumen blast of light to flood an entire area, while also providing a wide beam pattern to illuminate what may be lurking along perimeters or in dark corners. The lightweight, compact light features a shock-proof C4® LED to provide 1.75 hours of continuous run time, and also includes a user-programmable strobe for signaling and disorienting. Its one-handed interface keeps hands safe when attaching or detaching the light to weapons. Powered by two 3-volt, CR123A lithium batteries, the TLR-1 HL is fabricated from 6000 series machined aluminum, and features impact-resistant construction. Weighing 4.18 ounces, and measuring 3.39 inches in length, the light is IPX7 rated for waterproof operation to one meter for 30 minutes and has an operating temperature range of -40 degrees F to +120 degrees F.

LED Smart
ledsmart.com

The patented HTL system is designed for use with expeditionary or long-term structures. This system can function as both the LED lighting and electrical grid for the shelter. The lightweight system is secured to the shelter either by the provided hanging straps or hooks. The daisy chainable lights allow for flexible set-up. The low power, 160° wide-angle, 3400-lumen light output reduces the number of lights needed. For combat operations HTL System equipped with dual color modes for regular and blackout (NVIS Red, Green or Blue) conditions, as well as a non-battery emergency light mode. Multi-functional, operates with 120 or 220V systems. The widest operation condition for LED lights of its type on the market today.

The whole lighting system can be controlled by Light Control Switches or controlled individually.

Each main kit includes three lights, two GFCI receptacles and one Light Control Switch, along with a standard 50’ extension cable.

Optional 120V or 220V Power Distribution Panel allows for the power from the generator to the shelter for any electrical product use.

This system can be erected and disassembled quickly and efficiently with little training. This tough system is rated for -51°C ~ 60°C operating temperature and IP67.

SHATTER THE DARK
WITHOUT BREAKING THE BANK.

Introducing our first ProTac® lights engineered with rugged, integrated mounts for MIL-STD 1913 rails.

![ProTac® Rail Mount 1](image)
ProTac® Rail Mount 1
350 Lumens
219 meter beam
TEN-TAP® Programming

![ProTac® Rail Mount 2](image)
ProTac® Rail Mount 2
625 Lumens
297 meter beam
TEN-TAP® Programming

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Merlin-3™ Radio Power Adapter—Enabling communications where you need it, when you need it. No excuses.

The Merlin-3™ RPA is an alternate power source for AN/PRC-117G radio systems. It receives input from a variety of AC and DC power sources to power the radio system. It serves as a UPS, providing efficient battery charging for the BX-XX90 battery contained within the battery box. The hot-swap feature allows battery change-out without radio interruption or crypto-fill loss. The Merlin-3™ RPA can also export significant power to run laptops, speakers and other ancillary equipment. It configures automatically, requiring no controls and LED indicators display the status of input/output power availability, radio power, and battery health. Peak Power Tracking algorithms efficiently manage energy from solar panels to support the radio, DC output, and charge the battery. More robust EMI/EMC reduction measures ensure clear communications when it matters most.

Compact, rugged, and quiet, the Merlin-3™ RPA allows the radio to be used in all environmental conditions without compromising signal integrity.

C-AT
c-at.com

The Communications-Applied Technology ICRI-2PM™ (NSN 5820-01-564-4593) tactical interoperability gateway has now been integrated with the Perkins Technical Services vehicle-mount power supply/radio docking station to expand the functionality of tactical military radios (i.e.: PRC-117G, PRC-150, PRC-152, PSC-5, RT-1523).

The integration of the ICRI permits an RTO to rapidly “bridge” the radios in the docking station, to function as an LOS-to-BLOS repeater even when the radios are operating with otherwise incompatible waveforms, frequency bands, or encryption keys.

The PTSTM AC/DC docking station supplies power to these and other dismounted mobile radios.

The “bridge” can be remotely enabled/disabled from the keypad of a “remote” radio (option).

A JTOC commander, situated at the ICRI/PSDS, can select, by a switch, to establish a private voice link with either radio connected to the ICRI/PSDS (option).

B.E. Meyers
bemeyers.com

The MAWL™-DA laser from B.E. Meyers & Co., Inc. is a full-featured infrared and visible green aiming laser for use with individual carbines. MAWL-DA offers improved ergonomics, interface, and performance over the legacy laser aiming devices on the market and was designed from the ground up to meet the needs of the modern warfighter. To address the common use of space as well as the ergonomics shortcomings of lasers on shorter carbines like the SOCOM MK18, MAWL-DA laser mounts offset from the rail to minimize the impact on hand positioning and field-of-view. MAWL-DA eliminates granular illuminator adjustments and complex multi-position switches, instead consolidating these choices into three distinct settings: Close-Range, Mid-Range, and Long-Range, with power and beam divergences appropriate for each setting while providing a significantly improved beam pattern and quality at all ranges compared to current solutions on the market. MAWL-DA is also a modular system: the body, tail cap, and head are separate interchangeable components that allow for ambidexterity, expansion, and mounting as the user sees fit. The MAWL-DA laser is now available to verified military and law-enforcement agencies.

The SRV X810™
federalresources.com

The SRV X810™ is the new pulse of X-Ray identification for EOD and Bomb Squads. The rugged SmartRayVision system is available in several wired/wireless connectivity configurations. The system has fast image capture and is equipped for long exposure with capabilities for multiple volleys of high or low pulse count to achieve an extremely high image resolution of 6.5 lp/mm.

SmartRayVision HD X-Ray systems are sold in different sizes: 8x10, 10x12, and 14x17 with multiple configurations.

The controller is a solid state tablet with 2.4-5GHz remote WiFi Generator. Utilizing the touch/zoom function of the tablet, the operator can zoom in for extreme detail as well as brightness and contrast control for better analysis of the suspected target. Simply plug in a COTS network cable and become automatically wired. Unplug the network cable and automatically go wireless.

The SmartRayVision software also comes complete with an Auto-Stitch function to seamlessly stitch multiple X-Ray images perfectly into one image. Federal Resources can integrate the SRV X810 or the other sizes into a custom integrated foam kit inside a rugged waterproof case for easy access and storage of the system.
APLS Thermal Guard Mylar Tactical

APLS Thermal Guard Mylar Tactical is a portable absorbent litter that provides maximum thermal protection during emergency transport. Designed by a team of absorbent and military medical experts, APLS Thermal Guard Mylar Tactical features an integrated system for improved patient care – the Mylar-lined bag and detachable hood retain body heat, the highly absorbent cellulose core wicks fluids away from the patient, and the treated nylon backing protects against wind and moisture.

The portable litter also features a rugged skid plate material and two heavy duty buckles for dragging rescued personnel through challenging terrain. Eight closable access points enable medical personnel to better treat the patient at point of injury. APLS Thermal Guard Mylar Tactical can retain 1.7 liters of bodily fluid while safely supporting up to 350 pounds. The innovative litter includes re-sealable pockets for securing medical documents and personal effects.

FLIR identiFINDER® R-Series

FLIR identiFINDER® R-Series can be used to detect, locate, and identify radioactive material. Each handheld identiFINDER can be used to detect, locate, and identify radioactive material. ONE SIZE DOESN'T FIT ALL There's a reason FLIR offers more than one instrument - to provide differing levels of performance that are right-sized for the mission. Different types and sizes of detectors complement one another during a radiological event and provide a greater level of safety.

GRAB IT AND GO When operating in stressful and hazardous environments, the easy-to-use common operating interface allows users to complete the task at hand without worrying about how to operate the instrument. The common screens and data presentation means that users familiar with other identiFINDER handelds will be able to operate each device immediately. The familiarity between products reduces training time and costs, while increasing inter-operability between teams using FLIR instruments.

W.L. Gore

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W.L. Gore’s NFPA-certified products provide excellent mobility and durable CBRN protection while helping to reduce heat stress so you can stay actively involved longer.

Certified to NFPA 1994, Class 2, multi-threat suits made with GORE® CHEMPAK® ultra barrier fabric enable you to move more easily with an increased range of motion, improved peripheral vision, and excellent dexterity. This lightweight fabric allows you to remain engaged longer by promoting evaporative cooling when its outer layer is wet down.

The Extended Response Team (XRT) suit made with GORE® CHEMPAK® selectively permeable fabric is the only breathable garment certified to the NFPA 1994, Class 3 Standard for warm zone environments. The XRT suit allows you to remain on duty for up to eight hours, and its durability gives added confidence about CBRN protection.

The Chemical/Biological Protection System (CPCS) made with stretch GORE® CHEMPAK® selectively permeable fabric allows you to operate discretely, while maintaining a ready posture in the event of a terrorist incident. Wearing this breathable undergarment keeps you protected without alarming the public.

UTS Systems

UTS Systems, LLC provides integrated system solutions for CBRN Collective Protection (ColPro), Base Camps, Medical Facilities, and Command & Control. In addition, UTS Systems manufactures a complete line of shelters including Utilis and the innovative UTS Single Skin ColPro with chemical/biological barrier infused into the outer fabric. Our folding frame technology significantly reduces system set-up time and has also been through extensive MIL-STD-810 environmental testing to include: blackout, snow load, wind load and durability. The UTS Systems “Single Skin” ColPro system eliminates the need for an additional Chemical and Biological resistant liner saving valuable pack out space and weight. Our shelters do not require a compressor, power, or even a ladder to erect and can be erected in less than 5 minutes. With the UTS shelter system, there is no need to sacrifice durability for speed of set-up and operability.
U.S. Army and Defense Logistics Agency disposal and distribution teams are removing more than 1.2 million pieces of excess equipment from inventories.

By Beth Reece, DLA Public Affairs

The effort, known as “All Army Divestiture,” is expected to free soldiers from costly, time-consuming maintenance on unneeded items as the service reduces its force structure.

“All this extra equipment encumbers the service in terms of people, manpower hours, resources and money for parts. As we help take unneeded equipment off the Army’s property books, soldiers can focus on the mission-essential equipment that’s staying in the force structure. It’s all about readiness,” said COL Mike Arnold, DLA’s Army national account manager.

DLA will assist with divestiture efforts at 13 U.S. installations. Initial planning for each location will be based on the Army’s Master Divestiture List and equipment calculations in the Army’s Decision Support Tool, which weighs the items on units’ property books with what units are authorized. That data will be used to create a plan agreed to by a joint working group comprising installation and unit leaders, as well as representatives from the Army’s Deputy Chief of Staff for Logistics, U.S. Army Forces Command and Army Materiel Command.

“We’re all going to sit down together and look at what’s excess, then do a bottom-up review of it. We’ll agree, on an installation and unit basis, to what’s going to be turned in or destroyed, what space it’s going to be done in and the process for how it’s going to be done,” Arnold said.

DLA gives units two options for divesting surplus equipment. They can turn it into DLA Disposition Services, which will make it available to other federal agencies as required by law. If no federal agency wants the materiel, DLA Disposition Services will demilitarize it, then auction it off to the public — or break it down into scrap material that can be sold.

The service may also transfer excess equipment to DLA Distribution for repair and storage. In the past, units spent “an inordinate amount of money” shipping equipment to Red River Army Depot in Texas or Sierra Army Depot in California only to have it shipped elsewhere, Arnold said.

“The second-destination costs associated with doing that was a huge expense for the Army that can now be mitigated through DLA’s partnership with the Army. DLA has agreed to send in a team from DLA Distribution to accept items the Army wants to keep on its property books at numerous CONUS-based Army installations where there is sufficient equipment to warrant our forward presence.
From there, we'll ship it off to the appropriate depot for them," he continued.

DLA Disposition Services will also send teams to installations if necessary, but most stateside installations already have personnel and facilities for property turn-ins and disposal.

The agency has already supported divestiture efforts for 3rd Brigade, 1st Cavalry Division at Fort Hood Texas, and 2nd Brigade, 1st Armored Division at Fort Bliss, Texas. Initial planning for other units and installations is scheduled to take place through December, and multiple visits will be made to some installations to accommodate units' deployment and training schedules. Visits included Fort Bragg, NC, and Fort Irwin, CA, this past July.

Equipment being turned in will range from common items like tools, tents and generators to entire fleets. All light tactical vehicles that aren't fully armored are being turned in, as well as some versions of the mine-resistant, armored-protective vehicle, Arnold said.

“Due to the rapid nature of how we procured MRAPs to keep soldiers safe in combat, we ended up with several different versions from numerous manufacturers. By streamlining the fleet to particular models, the parts become standard and how the Army fixes them becomes routine," he added.

Helping the service "clean the attic" gives DLA a unique opportunity to mentor future logisticians and improve soldiers' understanding of command supply discipline and maintenance.

“Our disposition and distribution folks on the ground are training, mentoring and guiding troops through the process," Arnold said. “Rather than tell a sergeant he didn’t fill the form out right, our guys are walking them through it so the property can be turned in."

The process is just as much about changing a culture as the physical act of taking equipment off soldiers' hands, he added. Soldiers deploying to Iraq and Afghanistan became accustomed to having their equipment handed to them upon arrival in theater. That resulted in a “rental-car mentality” in which soldiers lost the art of logistics, Arnold said. Many are unfamiliar with forms required for property turn-ins and which items must be demilitarized. To help them, DLA created a “smart book” and a series of YouTube videos that outline proper forms and steps of preparing equipment for divestiture.

“There’s a whole generation of officers and noncommissioned officers that don’t know the inherent responsibility in maintaining and keeping accountability of all these fleets of equipment," Arnold added. "One of our goals is to get that mindset back."
A&M: Please speak to some primary areas that USMC logisticians are facing in today’s complex maritime/land combined environment.

Lt. Gen. Dana: We believe we are in the midst of an evolution of logistical affairs in the Marine Corps. On the one hand, our current inventory of aircraft, vehicles, and weapon systems are more lethal, maneuverable, and survivable than any time in our history. On the other hand, these systems are heavier and more logistics intensive. This means that in the next 15-20 years, our Corps will experience a blend of old and new logistics, an era we are calling hybrid logistics.

We will still have to move large quantities of fuel, water, and ammunition throughout the battlespace, but unmanned platforms, 3D printing, and predictive maintenance have the potential to optimize tactical distribution, enhance the supply chain, and increase equipment readiness. Marine Corps logisticians will have to support Marine Air Ground Task Forces operating across the Range of Military Operations in all five dimensions of warfare. To do this, we are proposing an evolutionary shift in how Marines provide support.

In conflicts to date, we have built a mountain of logistics at the operational level, while radiating tactical logistics support from that main (and vulnerable) hub. In the future, we will create a hybrid model that mixes traditional stockpiling with caches, on-call modular logistics packages, and technology enhanced lift and distribution. Further, hybrid logistics must be capable of operating in an Anti-Access/Area Denial environment. Finally, we will need to support forces that are operating in a distributed manner, while also having the ability to aggregate and reposition those forces rapidly.

A&M: From a lighten-the-load perspective, please speak to ways your office is working to minimize Marines/Joint Warfighter burdens and challenges associated with them.

Lt. Gen. Dana: This is an operational imperative—our expeditionary Marine Corps requires a logistics capability that is leaner, lighter, and less energy intensive.

We are working with our service counterparts and Marine Corps stakeholders to lighten the load for the individual Marine. A Marine in WWII landed with 30-35 pounds of gear, while today’s Marines carry upwards of 100 pounds. We have asked industry to find ways to reduce the weight of protective body armor, ammunition, and communications gear. Many experts have indicated that the “optimal load” for a person is ¼ their body weight—so for a 200 pound Marine, that Marine is still carrying double the recommended weight.

We are also looking for ways to make “each Marine a producer” through the use of solar panels to charge batteries and individual water purification kits. There are several companies that have made exciting advances in the development and production of lightweight, but durable plastic (polymer) ammunition. This ammunition is 35 percent...
lighter than conventional brass ammunition. We are also looking at exoskeleton technology and robotics that have the potential to reduce the combat load on our Marines. There is no one technological solution to lightening the load for our Marines, but there are multiple evolving capabilities that have great promise.

**A&M:** From a lift and distribution perspective, in what ways I&L is facilitating improvements to legacy and implementing newer technology-driven solutions.

**Lt. Gen. Dana:** In order to reduce and maximize operational lift and tactical distribution requirements, we believe there are four major actions required. First, forward operating bases - all of them - need to be expeditionary. No Burger Kings. Second, we are working with industry to make current equipment as fuel efficient as possible. Rolling stock and generators could be networked and monitored to increase their fuel efficiency and use. Third, unmanned platforms have the potential to greatly enhance tactical distribution in the air, on land, and sea. We are working with the Army on the Picatinny (flying) pallet carrier, while also exploring the continued use of the KMAX UAS that saw great success in Afghanistan. We are working with the Navy on submersible drones that can be cached on the bottom of the littoral ocean floor and then brought to the surface for a resupply mission. We are reaching out to the Army on their unmanned ground vehicle efforts, which will change the nature and capability of once manned resupply convoys. Lastly, based on our experience in Afghanistan, we are exploring ways to better account for and track how we move people and things around the battle-space by air. We did not provide our aviation team the needed visibility of where cargo and people were, and as a result, we burned through valuable flight hours.

**A&M:** From a modernizing supply and maintenance perspective, how is your office leading efforts to bring better processes online and up to speed?

**Lt. Gen. Dana:** We have three ongoing efforts to modernize supply and maintenance in the Marine Corps. First, we are working very hard to bring GCSS-MC to its full fielding potential. We have made important gains in GCSS-MC, but network improvements, wireless access, and inter-operability with other logistics databases are required. Second, and most promising, is the introduction of 3D printing /Additive Manufacturing. This technology has great potential, tempered by production time and materiel challenges. We see a future where the very nature of the supply chain is disrupted in a positive way. We envision a flattened supply chain with 3D capability arrayed in key forward operational and tactical locations, ready to manufacture “good enough” parts for emergent readiness requirements. Third is the resurgence of a previous Marine Corps effort to achieve “Sense and Respond” logistics. We are partnering with industry to monitor our vehicle fleet at our Motor Transport School at Fort Leonard Wood, Missouri. This effort seeks an ability to create aviation-like predictive maintenance capability with our ground equipment set. If we can receive “notification” that a major component (engine, transmission, etc) will fail on a vehicle, we will save many man hours in recovery and maintenance costs while enhancing the responsiveness of the supply chain.

**A&M:** Please speak to any other challenges I&L is addressing going forward.

**Lt. Gen. Dana:** We have a great I&L team responsible for the management of a $3.8 Billion annual portfolio of programs, systems, and projects in support of Marines and their military equipment and supplies valued at over $30 Billion and real property valued at over $70 Billion.

We are focused on providing Marines the finest support possible in garrison and in combat. To achieve that, we are very focused on innovation. Technology is evolving at a dynamic pace and we are doing our best to capitalize on the efficiencies and effectiveness that new technology can provide. At our bases and stations, we are looking to increase the use of renewable energy and to adopt “smart city” like technology. We are even looking at different ways to provide on-base transportation and services. As mentioned, we are also pursuing unmanned platforms, 3D printing, and predictive maintenance. Fortunately, there are many exciting opportunities available today to improve logistics support across the Marine Corps and we are aggressively implementing.

Most important are the tremendous logistics of Marines and civilian Marines serving today. They tirelessly work and always provide tremendous support. To realize the future we seek, the continued professional development of the I&L team is essential. We must enhance the training and education available for logisticians today. Virtual reality and augmented reality are exciting new capabilities that are more interactive and user friendly. Expanding the use of modern interactive training tools has great potential.

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The U.S. Marine Corps is overseeing the evolution of its next-generation Amphibious Combat Vehicle (ACV) 1.1 to augment its Amphibious Assault Vehicle fleet currently receiving a survivability upgrade (AAV SU). ACV 1.1 will rely on a maneuvering capability with ship-to-shore connectors, while a later 1.2 variant will have enhanced amphibious capabilities, including increased water speed and the ability to self-deploy from amphibious ships.

By Kevin Hunter, A&M Editor

This past March, the Marine Corps took delivery of the first of 10 Marine Assault Amphibious Vehicle prototypes (AAV-SU) Survivability Upgrade of the Corps' legacy Assault Amphibious Vehicles, beginning a rigorous testing period before taking the upgrades into full production. Developmental testing and low rate initial production (LRIP) delivering 52 vehicles for operational test and evaluation and to USMC units. This single-award, firm fixed-price contract to SAIC's previously announced initial contract value of $16 million for the engineering phase of the contract, with a total contract value of approximately $194 million over five years if all options are exercised. Under the contract, SAIC will upgrade AAVs to provide improved protection while gaining back land and water mobility that improves the AAV's ability to fight. Upgrades include armor, engine rebuild to improve horsepower and torque, replace aging transmission, upgrade suspension components, install new water jets, install blast-resistant seats, and upgrade vehicle control, instrumentation and driver interface systems.

In November 2015, ACV 1.1 contracts were awarded BAE Systems and Scientific Applications International Corporation (SAIC) to develop prototypes for evaluation. BAE Systems contract was for $103.8 million and SAIC's for $121.5 million, and each company is to build 16 prototypes to be tested over the next two years. Both vendors are expected to start delivering their prototypes in the Spring of 2017 for testing, and the Marines expect to down select to a single vendor in 2018. Initial operational capability (IOC) is expected by the end of 2020, and all ACV 1.1 vehicles are planned to be fielded by the summer of 2023. Plans are to equip six battalions with ACV 1.1s and 392 existing upgraded AAVs. BAE Systems prototype can accommodate 13 Marines and can travel 11.5 miles at about 7 miles per hour (mph) in surf and 65 mph on land. BAE Systems version incorporates a V hull design intended to protect passengers from underside blasts and has external fuel tanks for increased safety. SAIC's version is said to travel 7 mph in water and incorporates a V hull design as well as blast-mitigating seats. The Marines are also conducting a carry-over study of a high speed water studies effort, ACV 2.0, being transferred to the Navy Science and Technology for R&D.

"SAIC is on track to build 16 prototypes for the U.S. Marine Corps and anticipates delivery of the first vehicle in Spring 2017,"
said Tom Watson, senior vice president and general manager of the Navy and Marine Corps Customer Group. "During the EMD phase, SAIC, along with teammate ST Kinetics, will provide the Marine Corps with 16 prototypes. The Marine Corps anticipates down selecting to a single vendor in Summer 2018. Work will be performed primarily in SAIC’s facility in Charleston, South Carolina, where the company is currently providing the Marine Corps with initial survivability upgrades to 10 Assault Amphibious Vehicle (AAV) prototypes. SAIC’s solution provides the Marine Corps with an ACV that is fully-protected and has superior maneuverability with amphibious ship-to-shore capability. SAIC and ST Kinetics’ enhanced ACV 1.1 solution, called TERREX 2, is an 8x8 wheeled, armored ACV with improved mobility that can transport a combat load of up to 11 embarked Marines and three crew members through hostile territory. On land, TERREX 2’s independent suspension system improves ground mobility and ride quality for U.S. Marines. In water, TERREX 2’s hydraulically driven propulsion systems with full independent thrust control authority allows safe operation at Sea-State 3 and through six-foot plunging surf.

BAE Systems completed Preliminary Design Review/Contractual Design Review (PDR/CDR) in June and is on track to deliver vehicles to the Marine Corps according to the customer’s original timeline. “As the original equipment manufacturer of the Assault Amphibious Vehicle (AAV), and an equipment provider to the Marine Corps for over 70 years, BAE Systems is proud to soon deliver 16 pre-production Amphibious Combat Vehicles (ACV) 1.1 for USMC test and evaluation during its EMD Phase,” said John Swift, BAE Systems Amphibious Combat Vehicle (ACV) 1.1 program director. “The BAE Systems offering uses a mature, fully amphibious, ship launch-able and recoverable 8x8 wheeled platform developed by our partner Iveco Defence. The vehicles were designed from the ground up as a fully amphibious combat vehicle and is currently in production at our York, PA facility. Our offering has a capacity to carry 13 embarked Marines in addition to a three-man crew and has undergone extensive testing that includes evaluations for open ocean and land mobility, ship launch and recovery, survivability, human factors, and stowage capacity. We also installed a new engine in the prototypes we are building for the Marine Corps, which now includes growth beyond 690HP and has significant exportable power.”

Evolving a Multi-Pronged Solution

With the cancellation of the Expeditionary Fighting Vehicle (EFV) program in 2011, a series of studies were begun including the high speed water vehicle effort which lasted until 2013. The Marine Personnel Carrier (MPC) program study was a wheeled vehicle effort begun in 2007 as a complimentary capability with EFV and also ended in 2013. In January 2014, Marine Corps leadership convened in the Nevada desert to test some MPC wheeled demo vehicles. Based upon the MPC demo and results of a high water speed study for potential High Speed Vessel (HSV), findings indicated that though the high water speed application was technically achievable, it would be very costly and there would be quite a few capability trades to keep the weight down.

During testing demonstrations of MPC vehicles at Camp Pendleton, CA, the evolution of the wheeled ACVs, with extensive swim tests at the AVTB Amphibious Vehicle Test Branch, showed that wheeled vehicles were capable swimmers with some variants designed to be capable swimmers from initial concept inception.
Technology Development (TD) phase being a vehicle based on a non-developmental platform, hence, the program entered directly into the Engineering Manufacturing and Development (EMD) phase. Test results will go to the requirements community which will in turn inform their requirements development for ACV 1.2.

Program threshold and objective requirements for 1.1 were in many cases similar to the requirements being developed for 1.2. In source selection, incentivization through extra credit in certain areas such as improved survivability and increased carrying capacity was given. Within the same weight class and at similar swim capabilities, there was a protection to troop carry trade-off with less-protected AAV SUs at 17 and more protected ACV 1.1s at 10-13 personnel. Each additional troop carry adds additional weight to include all rucksack and accessory equipment,” said Mr. John Garner, Program Manager for Advanced Amphibious Assault, U.S. Marine Corps Systems Command. “In the higher protection offered by ACV such as added armor and underbelly configurations like a V-hull, the biggest distinguisher between what are likely to be two similarly-capable platforms is a better protection package and ground mobility offered by ACV.”

The intent of the ACV 1.1 capability would be to lean forward to a more amphibious-capable vehicle ACV 1.2 which would be another large fielding of 490 vehicles with the difference between 1.1 and 1.2 being the requirement to self-deploying capability coming off an amphibious ship. “ACV 1.1 was designed to be a good “swimmer” with a range at least 3 nautical miles, able to cross inland waterways, without a requirement to self-deploy off an amphibious ship and go longer distances on/off ship,” remarked Garner. “ACV 1.2 would require such a deployable, longer range AAV type capability with development in the 2018/2019 timeframe and be ready to follow-on with 1.2 production following completion of 1.1. The intent would be to minimize modification of 1.1 to field 1.2. At every step, requirements development followed reason for what was possible within budget, with the ultimate goal being that doing 1.1 right would position 1.2 well with only a few engineering changes that would be easily retro-fittable on 1.1s making all the wheeled amphib self-deployable.”

With both the AAV SU and ACV 1.1 to be fielded within the 2019-2020 timeframe, the Corps has a current compliment of 392 amphibious vehicles for upgrade with a projected order of 204 ACV 1.1 vehicles for fleet integration within the 2019-2022 period. This was determined to be the most rapid and least risky path to attain the required survivability envelope for AAV as well as the required swim/
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The United States military now has the option of a combat utility knife based on the proven Swiss Soldier design. The knife is made by Victorinox in Ibach, Switzerland.

This knife was approved by the U.S. Government in March 2016 for national defense use and assigned National Stock Number (NSN) 1095-01-653-1166.

Special features include a one-hand opening-partially serrated locking blade, awl/reamer, Phillips screwdriver, can opener with small screwdriver, locking cap opener with large screwdriver, wire stripper, wood saw and lanyard ring. The knife uses a mid lock, similar to the liner lock without using the liner. Date of manufacture is on the blade. The implements are stainless steel, RC 55-56 and are black anodized/oxide. The handle is a dual density nylon-polymer material. The knife does not have a clip. Clips catch on equipment and have a tendency to get lost. Total weight is 4.6 oz. The knife is designed to be low profile.

The knife is exclusively distributed by The Windrose Group, LLC, 150 Selkirk Road, Williamsport, PA 17701.

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The Combat Dive Dry Suit from USIA is the latest in innovative, tactical gear to assist a warfighter in undersea operations. Designed by Special Operations Combat divers to enhance efficiency in closed-circuit diving operations, the Combat Divers Dress is made from 400 D series urethane-coated Pac-cloth with a 1000 D Military Spec. Multi-Cam Cordura overlay. In addition, the suit is fitted with a YKK Mil Spec waterproof zipper and features a myriad of other designs intended for use:

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- Urine Dump Valve, providing ambient suit balance

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