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Commander
U.S. Air Force
Life Cycle Management Center
AFLCMC

Serving a Military in Transition

EXTENDING GLOBAL REACH

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COL Jason Carrico, Commander, Red River Army Depot, discusses Public-Private Partnership capabilities at Red River.

Features

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LEADERSHIP PERSPECTIVE

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COMMAND FOCUS

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From coordinating vast supply chain networks to prioritizing re-supply objectives addressing military and disaster response, America calls upon the U.S. Air Force (USAF) to ensure the nation's needs are answered on time and on budget. The August issue of Armor & Mobility (A&M) explores current and ongoing improvements to processes and capabilities that the Air Force is implementing force-wide, enabling the U.S. Department of Defense to provide critical assets at any time and place they're needed.

As logistics associated with keeping assets maintained and sustained evolves, so does a corresponding need to streamline USAF processes. In an exclusive to A&M, Lt. Gen. Robert McMurry, Commander, U.S. Air Force Life Cycle Management Center (AFLMC), Wright-Patterson AFB, discusses AFLMC's influence over aerial combat missions in Afghanistan and Syria.

The Air Force Sustainment Center (AFSC) 448th Supply Chain Management Wing (SCMW) out of Warner Robins AFB in Georgia is spearheading an initiative called the Enterprise Supply Chain Analysis, Planning, and Execution (ESCAPE) program. This program is intended to improve how the Air Force is modernizing data to predict purchases for spare parts and repair requirements, redistribute inventory where needed, and improve planning for the supply chain.

Whether by ground, sea, air, or cyber, asset transportation is at the heart of global defense logistics. U.S. Transportation Command (USTRANSCOM) stands at the ready to fulfill this varied mission. A&M recently spoke with TRANSCOM Commanding General Darren McDew who revealed some of his priorities for maintaining and enhancing American power projection in countering state and non-state adversaries of free and open global commerce.

Of course, none of what transportation entails is possible without the fuel to make it happen. With this realization, Lt. Col. Vince Zabala, Fuel Efficiency Program Manager, U.S. Air Mobility Command (AMC), Scott AFB, IL, speaks about ways the Air Force is leading advances in fuel life extension across the global defense market. From propulsion upgrades to KC-135 fleet to enhancements in data collection processes, AMC is working to marry current and newer capabilities such as the F-35 Joint Strike Fighter and KC-46 refueling tanker replacement programs with fueling alternatives for greater force readiness.

This issue also provides insight from the nation's top military official in the Middle East, Commanding General Joseph Votel, U.S. Central Command (USCENTCOM), as he details CENTCOM efforts to foster a healthy partnership between the U.S. and Saudi Arabia for advancing peace throughout a troubled region.

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Congratulations for 70 years full of aerospace innovation. We've been happy to be along for the ride into the wild blue yonder.
The Air Force Sustainment Center’s 448th Supply Chain Management Wing (SCMW) is spearheading an initiative to modernize supply chain planning capabilities that will directly impact supportability to warfighter support around the globe.

The AFSC is comprised of nearly 43,000 Total Force Airmen who deliver combat effects for the immediate and long-term requirements of component and combatant commanders in every area of responsibility. Serving as the Logistics Numbered Air Force, AFSC is the supporting command for the readiness of Logistics and Sustainment activities around the world. The Center encompasses three Air Logistics Complexes,

ESCAPING TODAY’S SUPPLY CHAIN CHALLENGES

The Air Force Sustainment Center’s Enterprise Supply Chain Analysis, Planning, and Execution (ESCAPE) program will help the Air Force integrate supply chain planning processes with modern information technology.

By Sandy Windsor, ESCAPE Functional Manager

Tanya Thompson, 561st Aircraft Maintenance Squadron aircraft worker installs hydraulic lines in the airframe mounted accessory drive area of an F-15E during programmed depot maintenance (PDM) at Warner Robins Air Logistics Complex. The aircraft was flown to the base by Col. Christopher Sage, commander of the 4th Fighter Wing at Seymour Johnson Air Force Base, NC. The aircraft was in its fifteenth day in the repair gate, typically a 21-day stop along the F-15 PDM path, which includes in-processing, inspection, repair, buildup and operations check, and functional test flight. (U.S. Air Force photo by Tommie Horton/Released)
three Air Base Wings, two Supply Chain Wings, and 21 CONUS and OCONUS geographically separated operating locations.

As a critical part of the AFSC mission set, the 448th SCMW is leading a transformational initiative called the Enterprise Supply Chain Analysis, Planning, and Execution (ESCAPE) program that is now on contract and on schedule to vastly improve how the Air Force supply chain leverages data to forecast spare part buy and repair requirements, set more accurate spares requirements plans, redistribute inventory to the point of need, and integrate planning throughout the supply chain enterprise.

Mr. Frank Washburn, Director, 448th SCMW, has experienced supply chain transformation first-hand.

“Over the last 41 years, I have been fortunate enough to work in the Air Force supply chain and participate in many transformational changes in our business processes in order to provide better support to our warfighters,” he stated. “With that said,” he continued, “none of these past transformational and modernization efforts are more significant than the fielding of ESCAPE advanced planning and scheduling capabilities in the 448th Supply Chain Management Wing.”

With working capital fund revenues of more than $6 billion annually, the Air Force supply chain is big business, rivaling many Fortune 500 companies. The Air Force supply chain is also complex, managing Air Force depot-level repairable and consumable spares across the globe and supporting a wide range of weapon systems that include 1960s vintage refueling and bomber aircraft, ICBMs, Space and C3I systems, missiles, fighter aircraft with cutting-edge technology, and a wide range of engines. Even more impressively, Mr. Washburn and his nearly 3,000 employees manage this diverse supply chain using spares requirement planning technology from the 1980s – equivalent to using rotary phones in today’s age of smartphone technology. The benefits of transforming to a modernized advanced planning and scheduling system under the ESCAPE initiative include daily visibility of global supply chain transactions, reduced operating costs, and immediate responses to program changes such as increased flying hours or engine overhauls.

The Compelling Need for Change

Over the past 40 years, the Air Force and its industry partners have developed a multitude of capable systems that offer highly customized supply chain advanced planning and scheduling capabilities. However, many of these specialized Air Force systems are becoming increasingly difficult to maintain and integrate with larger “enterprise” processes due to nuances within the systems themselves, a complex data environment, and a rapidly evolving IT and cybersecurity environment. They also require specific skill sets that are exceedingly difficult to grow or replace as a more experienced workforce approaches and enters retirement.

Recognizing the need for change, the Air Force sponsored a demonstration of commercial off-the-shelf (COTS) software for supply chain advanced planning and scheduling in 2010. A successful test of software using five years of Air Force and Defense Logistics Agency-managed historical demands gave credence to the idea that a configured COTS solution could address the Air Force’s complex supply chain spares planning needs while maintaining the “look and feel” of Air Force spare parts planning processes. In other words, it was time for the Air Force to consider upgrading its rotary phone to a smartphone.

In the Fall of 2016, the Air Force took a major step toward modernizing its supply chain planning system and business processes when it awarded a competitive contract to DSD Laboratories and partners PTC and IBM for delivery of an integrated supply chain advanced planning and scheduling service to enhance weapon systems support. Team DSD is working closely with the Air Force supply chain team to consolidate legacy processes, enable more efficient supply chain planning, and improve inventory performance for maintenance operations around the world.

Software as a Service

The Air Force elected to pursue a “Software as a Service (SaaS)” solution and leverage a DoD cloud computing strategy rather than a traditional IT acquisition. The SaaS approach was successfully deployed by the U.S. Coast Guard and mitigates risk through the avoidance of large upfront costs to procure hardware, software, and a system integrator. Incremental roll-outs with a rapid transition into sustainment will streamline configuration activities and incentivize timely delivery of the capability.

Enabling Technology

Currently, government personnel are working with Team DSD to identify appropriate sources of data to enable PTC’s Service Parts Management product – widely considered to be a “best of breed” commercial supply chain planning toolset. Supporting data will be owned and managed by the Air Force and made available to Team DSD, as well as analysts to support business operations.

Moving Forward

Implementation of the supply chain advanced planning and scheduling capabilities is co-led by Headquarters AFMC, Directorate of Logistics, Engineering and Force Protection and the 448th SCMW ESCAPE Core Team, which includes subject matter experts from across the Air Force supply chain and stakeholders from the AFSC Logistics Directorate and the 635th Supply Chain Operations Wing.

Mr. Washburn spoke confidently that an advanced planning and scheduling solution will drive improvements throughout the enterprise. “The most visible change will be having a modernized, integrated solution resulting in more accurate and timely spares requirement for our Air Force… our enterprise will experience performance improvements from the business process transformation.”

With a change of this magnitude, he also recognized organizational change management as a key component going forward. “I believe the first factor in meaningful and positive change is embracing, rather than resisting, the opportunity to be part of transformational change and modernizing our Air Force spares planning capabilities,” he commented. “This is a big deal and we will need the passion and dedication of each employee to bring about positive change. They are the experts. We will need input from each and every supply chain professional during the implementation phases of the advanced planning and scheduling capability.”

The Enterprise Supply Chain Analysis, Planning, and Execution program is projected to field initial operating capability in late 2018.
Lt. Gen. Robert D. McMurry, is Commander, Air Force Life Cycle Management Center, Wright-Patterson Air Force Base, Ohio. The organization is the single center responsible for total life cycle management covering all aircraft, engines, munitions and electronic systems.

General McMurry entered the Air Force in 1984 through the University of Texas ROTC program. He has served in a variety of engineering, program management, staff and command positions within Air Combat Command, Office of the Assistant Secretary of the Air Force for Acquisition, Air Force Materiel Command, Air Force Space Command and the Missile Defense Agency. He commanded the 508th Aircraft Sustainment Group, Ogden Air Logistics Center, Hill AFB, Utah, and the Airborne Laser Systems Program Office, Aeronautical Systems Center, Kirtland AFB, New Mexico. He was the Director, Iraq Security Assistance Mission in Baghdad. He also served as Space Programs Director for the Office of the Assistant Secretary of the Air Force for Acquisition, Washington, D.C., and Vice Commander, Space and Missile Systems Center, Los Angeles AFB, California.

Prior to assuming his current position, General McMurry was Commander, Air Force Research Laboratory, Wright-Patterson AFB, Ohio.

A&M: Speak to your role as AFLCMC Commander and your primary areas of focus.

Lt. Gen. McMurry: A few years back, Air Force Materiel Command made the decision to create a single organization focused on the entire life cycle for all fly (e.g. F-22, B-1, C-17, Global Hawk, etc.) and non-fly (e.g. munitions, C2 systems, etc.) systems in the inventory. We are talking from inception, to setting requirements, developing, acquiring and fielding, sustaining and modernizing when necessary until the system is no longer needed and is retired. We like to call it cradle to grave and the command saw an opportunity for real efficiencies by having that single organization with eyes on target.

So now is the time for all the lofty talk about promises goes away and people begin to expect results.

And I think the evidence shows that we are producing real results for the warfighter. Just about any day of the week you can turn on the television and see the Air Force in action, flying combat missions over Afghanistan and Syria, conducting intelligence, surveillance and reconnaissance in dozens of spots around the globe, flying humanitarian missions into Central America and the Caribbean – all using aircraft, pallets, uniforms, meals – all things that were acquired by AFLCMC. Simply put, none of those missions can happen without the work of the total force team of military, Air Force civilians, and contractors in AFLCMC.

A&M: How can you best impact the mission of your organization?

Lt. Gen. McMurry: The Life Cycle Management Center Mission is primarily focused on a train, organize and equip role to support the Program Executive Officers. Our goal is to have the right people, with the right training, in the right organizations executing critical acquisitions and product support for the world’s best air, space, and cyberspace force.

This entails recruiting, training, managing and retaining a team with the acquisition, contracting, financial management and engineering expertise, plus a whole bunch of other enabling skill sets.

All those skills sets combined results in world-class weapon systems. It’s basically about getting the right mix so those people can buy systems that meet all performance requirements, on cost and on schedule.
Now, the real challenge comes when you recognize our personnel numbers are at their lowest in 25 years which means we need to bring on not just more people, but also folks who are highly skilled. Adding to the challenge is our workforce is retiring in greater numbers, so we need to pass on skills to the next generation before our seasoned workers deservedly walk out with skills acquired over decades. For example, our engineering team identified nearly 180 individual engineering skill sets needed to holistically execute their mission. In addition, we are continually assessing which programs require a priority of effort through our strategic resource management model, as well as honing our efficiency thru center-wide standard processes.

My goal is to get to a point where we can demonstrably, with data, show that we are doing this job better every year, and that we can make the case that we are a genuine, "head of the class" organization within the Department of Defense for doing this kind of work. I think that in many areas we are, but presenting hard data as proof is key.

To phrase this more succinctly, I want to make sure we have super highly qualified people doing their job extremely well and that we can prove that with measures that are objective via verifiable data.

A&M: From an assets perspective, what focus areas are AFLCMC targeting in support of legacy programs as well as incoming F-35 and KC-46 integration, while addressing related challenges to keeping these critical airframes on track for USAF/DoD mission readiness?

Lt. Gen. McMurry: Looking across the board, it's true our Air Force fleet is older now than ever, and we have pilots flying the same aircraft their grandfathers once flew. Age is only part of the story. The other factor is usage. It's the old adage, "It's not the years, it's the miles." There is truth to that. We've been flying combat operations non-stop since 1990—this takes a physical toll on weapons systems. Many of our weapons systems require upgrade modifications to remain operationally relevant. These are the reasons that recapitalization of our fleets is so important. It is vital to the continued security of this nation that the Air Force modernize and keep it an unfair fight against our adversaries. I'm proud to be on a team that is a key contributor towards this goal.

As new weapon systems come on-line, especially newly developed platforms, you face a multitude of challenges. We generally refer to this as "discovery." These are simply the unknowables you can expect to encounter as you tread new ground. Every program goes through it. The F-35 has unprecedented computing capability and has had challenges finalizing the millions of lines of code in its software. Earlier, the KC-46 discovered excessive axial loads on the boom during testing that required some modifications. But we as an Air Force must always press the envelope on technology, if we don't, our opponents will. These challenges will be overcome, its the nature of this business. Again, an agile team that is smart and flexible enough to adapt to any number of challenges is crucial.

Last, but not least, sustainment of the fleet is the lynchpin holding all this together. Lt. Gen. Lee Levy and his team at the Air Force Sustainment Center do a remarkable job keeping the depots moving and keeping aircraft in the air. Supply chain stability has been on the rise thanks to their efforts, but it is something that requires constant attention. It was one of the reasons that early on during the recent hiring freeze, the DoD granted a waiver to AFSC to
continue hiring. Maintenance at the depots is very labor intensive work, so it is vital they have the human capital on hand that they need. But overall, I think they've done a remarkable job working with the program offices in AFLCMC to keep the fleet ready and available to the warfighter.

The proof, as they say, is right before your eyes. The Air Force is out there taking the fight to the bad guys and executing our national strategy. Our pilots, our maintainers, our team is getting the job done.

A&M: What are some of the current and future challenges facing AFLCMC and how are these being addressed?

Lt. Gen. McMurry: Front and center are the big three acquisition priorities for the Air Force; F-35, KC-46 and B-21.

There isn’t much we can say about B-21 other than the program is managed out of the Pentagon, but much of the work is under way here at Wright-Patterson. We are still looking at procuring 100 aircraft for a unit cost in the $550 million range for an aircraft that will be highly survivable with the ability to enter heavily defended airspace and attack targets without prohibitive losses.

Today, the F-35A is combat ready, and can perform interdiction, basic close air support, and limited suppression and destruction of enemy air defenses. Moving forward, we look to achieving full warfighting capability with the capabilities inherent in Block 3F software. We are embarking on exponential program growth in numbers of aircraft, trained pilots and maintainers, and in operational units. While combat ready today, the F-35 program will continue to mature and deliver capabilities for the warfighter and the nation.

Regarding the KC-46, they are steadily working through the test program and approaching the day when Pegasus tankers will start arriving at Air Force bases. That’s important, because the capabilities this tanker brings to the fight are revolutionary. The KC-46A will have significant refueling capacity, improved efficiency, and increased cargo and aeromedical evacuation capacities. The KC-46A will support day and night operations for joint, allied, and coalition forces. It will underpin U.S. humanitarian missions. The KC-46A is expected to have higher mission-capable rates and less maintenance downtime, further assuring our nation’s Global Reach future.

Another critical program at the moment is the Presidential Aircraft Recapitalization. Air Force leadership has recently named Maj Gen Duke Richardson as the Program Executive Officer for the PAR program. As I said earlier, programs change as they move through the timeline and this program has advanced to the point of warranting a PEO. From my perspective, I need to ensure the program has all the right contracting officers, financial specialists, engineering talent, and program managers they need to execute their mission. It goes back to the building the right team for the time and mission. Although PAR will only procure two aircraft, they are the pride of the nation, and will perform a very unique and vital role not only in our national security but in the history of our country. This aircraft will provide safe, secure, worldwide transport necessary to ensure the President can execute the duties of Commander in Chief, Head of State, and Chief Executive while airborne. It is a crucial mission and we have to get it right.
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.
It takes more than steel, advanced electronics and engine thrust to make the F-35 the world’s greatest stealth fighter – it requires a comprehensive sustainment system that’s a lynchpin for readiness. The Autonomic Logistics Information System (ALIS) is the IT backbone for the F-35, enabling Warfighters across the U.S. and allied military services to sustain the fleet.

Composed of more than 9 million lines of code, ALIS is now delivering resource management and networking capabilities that were conceptualized long ago – allowing warfighters across the global fleet to maintain the F-35 tip-to-tail while fully modernizing the logistics process. Pilots plan and debrief missions, and sustainment professionals maintain the F-35 using ALIS. Providing an integrated interface to maintenance, supply chain and sustainment information, ALIS is the single management tool supporting all F-35 operations. ALIS integrates a broad range of capabilities including operations, maintenance, prognostics, supply chain, support services, training and technical data. ALIS is a secure information environment for the F-35, transmitting aircraft health and maintenance information to the warfighter, enabling warfighters to make strategic decisions to keep the fleet healthy.

The F-35 is the first tactical aviation system to have sustainment tools engineered in concert with the aircraft for efficiency and cost effectiveness. Initially fielded in 2009, ALIS is maturing alongside the F-35 aircraft. ALIS 2.0.1 included a deployable hardware suite to support operations on carriers, amphibious craft and at austere locations. ALIS 2.0.1 supported the U.S. Marine Corps Initial Operating Capability in summer 2015.

ALIS supports mission preparation, maintenance tasks and fleet management. Core capabilities are:

- Mission planning and debrief from an off-board mission systems (OMS) environment
- Fault diagnostics and maintenance work order processing
- Supply chain management
- Aircraft configuration management
- Pilot and maintainer training management

The latest iteration of the F-35's IT backbone enables holistic maintenance and predictive resource planning.

F-35 Program
Understanding that the F-35 could be subject to hostile cyber environment, the F-35 Joint Program Office has a robustly resourced and recurring cyber testing activities across all spectrums of the program including air vehicle, training systems, mission software, reprogramming laboratories and logistics support systems. Throughout the F-35’s development, the program has supported more than 2,000 cyber tests to safeguard against the continually evolving cyber threat.

Improving Sustainment Efficiency

The latest version of ALIS – version 2.0.2 – will soon be fielded at all F-35 sites. ALIS 2.0.2 integrates propulsion data for the Pratt & Whitney F135 engine, which was previously accessible only through a separate system. This critical advancement will eliminate the need for multiple maintenance systems and contracted field service representatives to assist with engine diagnostics, analysis and maintenance.

“The biggest improvement is the incorporation of the propulsion system within ALIS,” said Senior Master Sgt. Jory Cyr, 34th Aircraft Maintenance Unit lead production superintendent at Hill Air Force Base, Utah. “This alleviates the need to have multiple products to manually track time change items and inspection times. This ALIS update combines Air Vehicle and propulsion system times in one location.”

ALIS 2.0.2 also enables authorized users to tag assets like support equipment, tools and spares, facilitating the efficient collection and delivery of information to manage the logistics tail. ALIS simplifies the creation of deployment packages by determining what equipment F-35 squadrons take with them to operate away from their home bases. The system harnesses big data – linking supply chain and lifecycle management information with electronic planning tools to enable warfighters to better forecast part requirements and boost aircraft availability.

While ALIS 2.0.2 is currently in the field, Lockheed Martin is nearing completion on ALIS 3.0, the final software release to close out the System Design and Demonstration phase of the F-35 program. After the delivery of 3.0, the F-35 Joint Program Office and industry teams will continue to make system improvements to ALIS and deliver increased capability to the warfighter.
ENSURING MULTI-DOMAIN MOBILITY AMIDST GLOBAL UNPREDICTABILITY

Gen. Darren W. McDew is the commander, U.S. Transportation Command, Scott Air Force Base, Illinois. USTRANSCOM is the single manager for global air, land and sea transportation for the Department of Defense.

General McDew was commissioned in 1982 following his graduation from Virginia Military Institute. He began his flying career at Loring AFB, Maine. His staff assignments include serving as a member of the Air Force Chief of Staff Operations Group, Air Force aide to the President, chief of the Air Force Senate Liaison Division and the director of Air Force Public Affairs. General McDew served as vice director for strategic plans and policy for the Chairman of the Joint Chiefs of Staff. He also served as the commander of 18th Air Force, Scott AFB, and commanded at the squadron, group and wing levels as well as at an Air Force direct reporting unit. He deployed in support of ongoing operations in Central and Southwest Asia as an air expeditionary group commander and later as the director of mobility forces. Prior to his current assignment, General McDew was the commander of Air Mobility Command, Scott AFB.

A&M: Can you speak to some of the challenges and concerns facing USTRANSCOM?

Gen. McDew: This is truly an exciting time to be the Commander of United States Transportation Command (USTRANSCOM). Every day, I’m humbled by the selfless sacrifice of the more than 140,000 airmen, soldiers, sailors, Marines, coast guardsmen, civil servants, and families who dedicate their lives to our great Nation. This year we celebrate our 30th Anniversary, and our team remains postured to provide rapid power projection and deliver national objectives. Today’s global security environment is more diverse and complex than it was when USTRANSCOM stood up 30 years ago. A resurgent Russia and a rising China present a near-peer threat while Iran, North Korea, and violent extremist organizations persist as regional threats. Our adversaries are continuously seeking new ways to undercut our dominance and counter our power projection capabilities across all domains – land, sea, air, space, and cyber – to contest our standing as a world power.

Additionally, USTRANSCOM, unlike most other combatant commands, is globally focused, and provides a multifunctional, multidomain, and trans-regional capability to all other combatant commands. USTRANSCOM considers readiness across the entire Joint Deployment and Distribution Enterprise, which includes the readiness of people and equipment spanning all of the services and commercial industry. We do face future readiness challenges; our global mobility platforms are aging, especially our strategic sealift vessels and air refueling tankers, and our U.S.-flagged commercial sealift carrier numbers are in decline. However, with every challenge comes opportunity. The challenges I highlighted provide opportunities to cultivate our partnerships with joint service and commercial industry, leverage both existing and emerging technologies to maximize our capabilities, and synchronize logistics processes in more effective ways ensuring the Joint Forces’ success on the battlefields of today and tomorrow.

A&M: How is USTRANSCOM addressing critical supply chain challenges in the ever shifting geopolitical environment?

Gen. McDew: Dynamic geopolitics and the varying geography of the Middle East present an ongoing challenge for logisticians and planners, not just across land distribution channels, but across air and sea routes as well. Various nations are vying for influence and power while violent extremist organizations and other agitators seek to undermine regional stability. Operations in land-locked locations like Afghanistan complicate delivery and create limitations on our distribution networks, which requires us to develop flexible options to fulfill requirements. Our relationship with the Department of State plays a significant role in helping us overcome challenges with authorities and diplomatic clearances. Although geostategic challenges threaten our supply chains, USTRANSCOM leverages the global enterprise to deliver wherever and whenever required. In
coordination with our defense, interagency, and commercial partners, we are working fervently to maintain open supply chains in support of our warfighters. I know we can meet this challenge head on, and I remain inspired by the entire USTRANSCOM team’s dedication and drive to make our processes, procedures, systems, and platforms better every day.

A&M: How is USTRANSCOM working to bolster cooperation with Joint Service and Industry?

Gen. McDew: USTRANSCOM partners with Joint Service and industry to maximize a broad range of military and industry capabilities to deliver an immediate force tonight and a decisive force when needed. I often refer to the commercial industry as our ‘fourth component’ as a large portion of our distribution is executed by our industry partners, both in peace and in war. USTRANSCOM’s senior leaders regularly interact with interagency and industry leaders to ensure we’re aligned with current trends and technology—whether it’s drafting our problem statements in cooperation with the Defense Innovation Unit Experimental (DIUx), or introducing an initiative to harden our data which is shared on military and commercial networks, by prioritizing innovation and collaboration to advance our logistics capabilities. At the action-officer level, we leverage the incredible expertise within the commercial enterprise to improve innovation and agility across all levels of our organization. Together with our component commands, our team partners with organizations like the National Defense Transportation Association, which provides a forum to address common interests and ensure the logistics enterprise remains at the leading edge of innovative thinking on force projection. We also participate in executive working groups, industry days, and coordinate with the Department of Transportation on our Voluntary Intermodal Sealift Agreement (VISA), Civil Reserve Air Fleet (CRAF), and surface trucking and rail networks. We remain keenly focused on building, sustaining, and strengthening partnerships to bolster our logistical capability and modality across the services and in partner industry. It is by, with, and through these critical relationships that we provide a broad range of options to the President and deliver national objectives.

A&M: Are there technologies USTRANSCOM sees as playing a key role in your future operations specifically autonomous logistics vehicles equipped with cybersecurity tools and how they would be integrated?

Gen. McDew: Although our joint and commercial partners remain critical to maximizing support to the warfighter, providing the best support possible also requires us to capitalize on opportunities to improve our equipment and our systems. One of my priorities is advancing our cyber domain capabilities in which technology plays a critical role. We are examining our cyber vulnerabilities to determine how best to protect our critical supply lines and personnel movements, particularly in our sharing of information with our commercial partners. Our first step in this process is to leverage existing technologies and modernize our network by migrating our systems to the cloud-based networks. However, the protection of our data provides the lens for our modernization efforts, which will require innovative, practical, and measurable solutions, and advanced technologies. Though the future remains uncertain, we know with certainty that our ability to provide mission assurance in a contested cyber environment will be the difference between winning and losing on tomorrow’s battlefield.

We are also looking at the ways in which autonomy can augment our current capabilities. Our initial assessment is that autonomous vehicles have the potential to affect the number of pilots, sailors, and drivers we need to perform some of our most critical functions. Industry is already developing this expertise, and one of the things we’ve learned from our partners is that a robust, autonomous delivery network requires global situational awareness. Maintaining world-wide visibility requires data feeds, digital protections, information sharing, communications platforms, and a myriad of other capabilities to collect, transmit, and manage that information. A large quantity of useful information already exists; it’s how we harness that information and analyze it that will facilitate accurate decision making at the speed of war and enable our ability to capitalize on emerging technologies.

A&M: Any closing thoughts?

Gen. McDew: Despite our successes with digital networks, industry partnership, and advances in technology, we still face many challenges in the days, months, and year ahead. We have already seeing a shift in focus from the wars in Iraq and Afghanistan to a strategic environment challenged by emerging threats. These trans-regional threats require greater flexibility in our thought processes and ultimately, in our capabilities. As a global distribution network provider, our challenge remains delivering national objectives on any battlefield anywhere in the world, today and tomorrow.

The ability to answer the call—wherever and whenever needed—lies in our workforce. Make no mistake, we, along with the rest of the Department of Defense, are competing for talent with Silicon Valley and Fortune 500 companies. It’s our charge to recruit, train, and retain the best talent America has to offer in our military and civilian workforce. Only by increasing our talent pool will we garner the agility to meet the complex demands of tomorrow. Today, I see the perseverance of USTRANSCOM through its dedicated men and women, and I can’t thank them enough for pushing this command forward. It’s what we’ve done for 30 years, and it’s what we’ll keep doing to overcome complexities posed by future demands.
Colonel Jason A. Carrico is a native of West Plains, Missouri. He received his commission upon graduation from the Virginia Military Institute in 1992 with a degree in History and International Studies. COL Carrico’s military education includes the Command and General Staff College and the School of Advanced Military Studies at Fort Leavenworth, Kansas. He holds a Masters of Organizational Management from the University of Phoenix and a Masters of Military Arts and Science from the US Army Command and General Staff College. In addition, he has completed the Infantry Officer Basic Course, Light Infantry Leaders Course, Jungle Warfare School, Air Assault and Airborne school, Ranger School, Quartermaster Branch Qualification Course, Combined Arms and Services Staff School, Petroleum and Water Officer Course, Support Operations Course, and the Security Assistance Orientation Course.

COL Carrico began his career as a Rifle Platoon Leader in 3-327 IN, 101st Airborne Division (Air Assault). While with the 101st he also served as an Anti-Armor Heavy Weapons Platoon Leader (TOW), Assistant Brigade S-4, Support Operations Movement Control Officer, and deployed with “Joint Task Force Bastogne” to Haiti as a J4 Supply Officer where he served as the officer in charge of the “Weapons Buy Back and Seizure Program” and served as a liaison officer to the Haitian National Prison and the police training program. In the Second Infantry Division, Republic of Korea, he served as the Division Repair Parts Officer and as Company Commander of A/702d Main Support Battalion. COL Carrico then served as a Regimental Operations Officer for the 3/290th Infantry Regiment in Oklahoma City and as a “Training with Industry” Logistics Intern with the Army Air Force Exchange Service in Dallas, Texas. Upon completion of the internship he served as the Assistant Executive Officer and as a Program Analyst for the Deputy Chief of Staff G-4 at the Pentagon, Washington D.C. COL Carrico then served as a III Corps Plans Officer at Fort Hood, Texas and deployed as a Multi-National Corps Iraq C-3 Plans Officer in Baghdad, Iraq.

Armor & Mobility had the opportunity to speak with COL Jason Carrico, Commander, Red River Army Depot, Texarkana, TX regarding successes and challenges relating to Public-Private Partnerships.

A&M: What does a Public-Private Partnership (P3) program entail at Red River Army Depot?

COL Carrico: P3 programs are a vital part of Red River Army Depot and the Organic Industrial Base. They allow the depot and private industry to work together to support the Warfighter avoiding the pitfall of placing depots and private industry in direct competition. Currently, Red River has 23 on-going partnering agreements in place. Since 2008, the depot has entered into over 200 partnering agreements generating more than $412 million in revenue. The end result is a win-win for both partners and ultimately our nation’s Armed Forces.

A&M: How long have P3 programs been in existence at Red River?

COL Carrico: The depot’s first Public-Private Partnerships started in 2002. The longest running P3 at Red River is with BAE Systems, the Original Equipment Manufacturer (OEM) of the Bradley Fighting Vehicle, which began in 2004. It is our longest continuous partnership spanning thirteen years, and it has generated more than $600 million in revenue. We’ve also partnered with many other private companies including AM General, Navistar, Robbin Industries, LOC Performance, Caterpillar, Raytheon, Lockheed Martin and L3 Com. Our partnership programs have ventured outside of workload opportunities to include partnering with our local college and university: Texas A&M University at Texarkana and Texarkana College. Since 2011, the TC at TexAmericas Center has specialized in training our workforces in heavy equipment operations including training for Caterpillar engines, Allison transmissions and dynamometer testing.
Courses are also available for mechanics, welding, CPR, first aid, hazardous waste operations and emergency response. Texas A&M University provides on-site courses for our depot employees in Leadership, Program Management and Logistics. Together, we are able to further the education of our current workforce as well as prepare people in our local communities desiring to work at our depot in the future. It is our desire to remain proactive in our training methods and continue to explore new opportunities in today's technology-driven world.

A&M: How has Red River benefited from Public-Private Partnerships?

COL Carrico: Our partnerships are a tremendous benefit for the depot, private industry and the Army as a whole. We use our partnering relationships to share technology and look for potential improvements to our current processes. We are able to benchmark our operations at the depot and share “best practices” with our industry partners. The relationships we’ve established enable us to evaluate all of our production processes and benefit from the achievements of our partners in private industry. It also allows private industry to learn from our skilled artisans. The talented men and women of Red River Army Depot maintain an amazing safety record with a lost time case rate of 0.45 and total case incident rate of 2.49 which are 85% and 62% below private industry rates respectively. Utilizing “best practices” paved the way for achieving another great milestone for the depot. In 2015, Red River was selected as an Occupational Safety and Health Administration Voluntary Protection Program Star Site. Red River was the first depot to achieve star site status within the Tank-automotive and Armaments Command. The Red River team is a winner of eight Shingo Medallions as well the Army Award for Maintenance Excellence and the prestigious Robert T. Mason award.
which recognizes excellence in manufacturing. Together with our private industry partners, we can continue to provide the highest quality products available for our customers.

A&M: What does Red River look for in a Public-Private Partnership?

COL Carrico: A primary component of military strategy is technological superiority. With decreasing budgets, this is more challenging than ever. However, the use of Public-Private Partnerships is a way to maintain that superiority while optimizing the infrastructure and skillsets within the OIB. Appropriate partnering with private industry helps sustain core maintenance capabilities at the depots and arsenals; it should also sustain and improve technical expertise in the workforce. Additionally P3s can evolve to the point that they improve the financial viability of organic activities and eventually result in increased private sector investment in facilities and equipment.

A&M: Can you share some of the positive outcomes and accomplishments through your P3 programs?

COL Carrico: One positive outcome of our P3 programs has been the continuous positive feedback we receive from our customers. We have found with many of our P3 programs, we’ve been able to exceed the customer’s requirements and quality standards. Partnerships allow the Army to leverage the skills and capacity of our industry partners while enhancing the production capability of the Organic Industrial Base.

One example of finding a solution for our customer resulted from our partnership with AM General, the OEM of the High Mobility Multipurpose Wheeled Vehicle (HMMWV). Through the partnership, our team was responsible for completing upgrades to the body of the M1151 converting it to the M1167 Tow Missile Carrier configuration. The HMMWV bodies were then sent to AM General’s facility in Mishawaka, IN, where each was joined to a new chassis. Our team was able to design and fabricate a cart enabling employees to easily move the bodies up and down the production line. Prior to the cart innovation by the Red River team, the process required a forklift, an overhead crane, a large jack stand and three mechanics to perform the task in a dedicated workstation. Collectively the team worked to design the carts which not only allowed the production line to be more efficient, but, more importantly, to be safer for our team members.

Beyond the obvious workload advantages to partnerships, you cannot overlook the tremendous technical and production process advantages that both the depot and private industry gain through partnerships. Another part of the partnership effort is the sharing of expertise, LEAN manufacturing processes and techniques. In the end, both entities gain knowledge from sharing best practices, not to mention a better trained, more capable workforce. Good partnerships pave the way for other opportunities to work with industry. Partnering also provides a built-in surge capability for the OIB that allows us to more effectively support the soldier in the field.
The Logistics Officer Association (LOA) will host its annual Logistics Symposium & University from 14-17 November 2017 at the Gaylord National Resort and Convention Center in National Harbor, Maryland. As the Logistics Officer Association celebrates its 35th Anniversary, the Symposium is the year’s premier event dedicated to enabling interactive exchanges among Logistics, Acquisition, and Technology professionals across the Department of Defense, industry and academia.

LOA is a non-profit organization comprised of over 4,000 military officers and civilians in the Logistics, Acquisition, and Technology career fields around the globe. The purpose of LOA is to enhance the mission of the United States Air Force and the Department of Defense (DoD) through concerted efforts to promote quality Logistics, and professional development of logistics, acquisition and technology officers. Every year we have professionals from across the Department of Defense, industry and academia to join us in the LOA experience to listen to and interact with our speakers.

Previous speakers include:
- Secretary of the Air Force
- Chief of Staff of the Air Force
- Commander Air Force Materiel Command
- Commander U.S. Transportation Command
- Commander U.S. Southern Command
- Assistant Secretary of Defense for Logistics and Materiel Readiness
- Combatant Commander J4s
- Commander of Aeronautical Systems Center
- Commander of Defense Logistics Agency
- Commander of Air Force Sustainment Center
- Commander of Air Force Life Cycle Management Center

**Diversified Scope**

With a continued focus on Leadership, Innovation, Velocity, Excellence (L.I.V.E.), the 2017 LOA Symposium will offer a forum where professionals at all levels of leadership can collaborate to discuss challenges of operating in a dynamic global defense environment and brainstorm solutions to overcome them. You get an opportunity to showcase your capabilities, meet leaders and decision makers, and learn about Air Force needs.

- Attend breakout sessions that target specific topics and offer insightful perspectives on government challenges, leadership and professional development.

**Small Business Opportunity**

Connected Alliances and LOA have joined together to create the Small Business Innovation Pavilion experience and Call for Innovation Paper program. LOA2017 will be highlighting innovative solutions with a Small Business Innovation Pavilion to offer a unique opportunity for innovative Small Businesses to participate and exhibit. The Small Business Innovation Pavilion will showcase how small businesses are innovating to solve DOD problems and exhibitors receive a 20% discount.

In the Small Business Innovation Pavilion, you can join a team to learn how to innovate and solve a DOD problem, participate in product demonstrations, listen to product presentations on the Innovation Stage, and watch as small businesses combine experiences and technologies to solve a DOD problem in the Innovation Lab.

Additionally, certified small businesses will be able to participate in the “Call for Innovation Papers” program. The government problem statements will be in the following categories: Cyber Security, Big Data, Supply Chain, Innovation, and Maintenance, Repair, and Overhaul (MRO). The top two papers in each category will be selected to present their innovative solution to the Executive Advisory Panel comprised of general officers and senior executives during the Symposium.

**Broad Organizational Support**


For more info: atloa.org | logisticsymposium.org

**Editor’s Note:**
Jondavid DuVall, Lt Col, USAF (Ret), Logistics Officer Association (LOA), www.atloa.org. Chief Operating Officer, retired from the US Air Force in 2013 as a Logistics Readiness Officer. JD has worked as a Program Manager and as a subcontractor in the aviation field.
EVOLUTION IN FUELING TO MEET FORCE NEED

Armor & Mobility spoke recently with Lt. Col. Vince Zabala, Fuel Efficiency Program Manager, U.S. Air Mobility Command (AMC), regarding current Air Force challenges and initiatives relating to overall and platform-specific operational fuel usage and ways the Service is maximizing availability while minimizing cost.

A&M: As the Air Force and DoD’s primary user of transportation fuel, what are some of Air Mobility Command’s key efforts in bringing Air Force fuel efficiency forward?

Lt. Col. Zabala: Energy costs for the Air Force are upward of $8 billion, with about 86 percent of that cost spent on aviation fuel. Air Mobility Command (AMC) consumes the majority of that fuel bill, approximately 56 percent, more than all other MAJCOMS combined. As a result, since 2008, there has been an imperative to increase fuel efficiency across the Mobility Air Forces. In April 2013, the AMC’s fuel efficiency office evolved into the fuel efficiency division (AMC/A3F), falling under the directorate of operations (AMC/A3). That evolution has allowed us to better affect culture change and to align significant fuel efficiency efforts with operational mission effectiveness.

Several initiatives have the potential to greatly enhance fuel efficiency. One example that just began is a grassroots-level analysis of flying operations called Line Operations Energy Analysis (LOEA). This program is a collaboration with our primary partner at the Air Staff, SAF/IEN, where AMC aircrews are interviewed for feedback, best practices and ideas to improve fuel efficiency. AMC’s first visit was
with C-5 aircrews at Travis Air Force Base, California. These aircrews provided valuable insight into efficient flying operations that will be added to a final report later, after we complete visits to other C-5 bases in the summer and fall timeframe.

Another noteworthy effort is the help of Dover AFB C-17 aircrews to evaluate a fuel efficiency application on the Electronic Flight Bag. The EFB is an electronic tablet used by aircrews. This aircrew tool provides quick and easy access to flying regulations, policies and instructions, as well as applications that can be used in flight to improve fuel efficiency. Dover C-17 aircrews have completed a 90-day user evaluation for an application that calculates the optimal altitude and airspeed to fly, based on atmospheric conditions. It is called Pilots Performance Advisory System (PPAS). This application has the potential to improve fuel efficiency on many missions worldwide, and the results of their evaluation will assist AMC in determining whether to field the app for the entire fleet. Top-down and bottom-up support of these initiatives is key to further progressing the importance of fuel efficiency in enhancing effectiveness.

A&M: Please discuss AMC's current efforts regarding KC-135 compressor upgrades and specific enhancements directly targeting fuel efficiency goals.

Lt. Col. Zabala: The KC-135 C-PUP program is an engine sustainability program that updates the 1970s-era engine compressor and turbine technology with parts used in current commercial airline engines, resulting in significant operational energy, fuel efficiency and sustainment cost improvements.

The program upgrades the F-108 engine core, boosting efficiency and increasing reliability by installing new high-pressure turbines, nozzles, shrouds, compressor blades and vanes. The KC-135 Program Office testing of the modified engine against baseline configuration confirmed 1.5 percent increase in fuel efficiency, along with tremendous savings in depot maintenance costs. This new technology eliminates 578 future engine overhauls, which helps avoid $1.3 billion in maintenance costs. As of May 1, 2017, 348 of 1,548 necessary C-PUP engine upgrades have been completed. The current plan is to finish all modification by 2028.

A&M: In terms of fuel efficiency savings, please share some of AMC's efforts to coordinate usage of pre-airborne assets to handle aerial refueling requests rather than by additional asset launches.

Lt. Col. Zabala: The AMC Air Refueling Liaison Office (ARLO) matches refueling requests with available tanker assets. The office specializes in generating increased efficiencies from collating multiple requests with available tankers and has real-time capability to pair receivers and tankers in the event of maintenance, weather or other cancelations. ARLO's efforts often leverage tankers that are already airborne to fill requests rather than launching a sortie specifically to fill that request. As of July 22, 2017, fuel cost avoidance since the program's inception in March 2010 is $30 million.

A&M: How does AMC monitor fuel efficiency efforts?

Lt. Col. Zabala: Overall, the efforts of our Total Force team saves approximately $305K every day. These savings are tracked and analyzed within AMC using Fuel Tracker, an online tool that aircrews use to enter fuel data on their mission. This data is critical in providing accurate and timely updates to AMC leadership. In the past, fuel efficiency was primarily focused on saving money. While every dollar saved from Air Force fuel costs can be directed to readiness or recapitalization needs and cost savings will always be a priority, an equally important aspect of fuel efficiency is that it also improves operational capability.

As the U.S. transitions from the CENTCOM area of responsibility and its stores of aviation fuel, efficiency of U.S. aircraft will play a significant role in other areas of the globe.

Whether those operations are in the contested environment or not, there are many places where energy supply may not be as assured as it is in present day operations. That is why it is imperative for the Air Force to continue to innovate and improve when it comes to fuel efficiency.
PARTNERING FOR
THREAT MITIGATION AND
REGIONAL STABILIZATION

Armor & Mobility had the opportunity to speak with General Joseph L. Votel, Commander, U.S. Central Command (USCENTCOM), on issues relating to CENTCOM’s critical relationship with various regional partners and ongoing efforts to maintain a balance of power within the Middle East.

A&M: With the 2016 reaffirmation of security partnering between CENTCOM and Saudi Arabia, including efforts to check Iranian destabilizing activities in the region and counter violent extremism, how is CENTCOM leadership working to ensure effective execution of these efforts from a team perspective?

GEN Votel: First, I want to say that the soldiers, sailors, airmen, Marines, Coast Guardsmen and civilians that make up the command are world-class and truly the very best at what they do. Our strategic intent for CENTCOM is very straightforward: prepare, pursue, and prevail. We must prepare the environment to ensure an effective posture and strong relationships across the region. We pursue opportunities to strengthen relationships and support our interests. And when our forces are put into action, we prevail in our assigned missions.

With our coalition partners, we’ve adopted a “by, with and through” approach that places a heavy reliance on indigenous forces. We place trust in our leaders in these forward locations to make decisions in time-compressed situations. We are seeing consistent success with this approach, despite some challenges, and it is likely to pay significant dividends going forward. From our train and assist program with the Iraqi security forces to supporting the Syrian Democratic Forces and Syrian Arab Coalition, our armed forces and coalition partners are executing campaigns in the central region with significantly fewer U.S. forces on the ground than in previous years.

A&M: What are CENTCOM’s primary focal areas to achieve its strategic goals in the region?

GEN Votel: I’ve identified three focus areas that I believe we must accomplish in order to successfully execute our strategy:

First, we must restore trust with our partners in the region while at the same time maintaining the trust of our leadership in Washington. The fact is we cannot surge trust in times of crisis so we must do what is necessary now to assure our partners of our commitment and staying power.

Second, we must link our military objectives and campaigns as closely as possible to policy objectives and into our other instruments of national power. In other words, we must align our military objectives and soft power capabilities with desired national and regional strategic end states, recognizing that if we don’t do this, we risk creating space for our adversaries to achieve their strategic aims.

Finally, we must make sure that we are postured for purpose in this region. We must have a credible, ready, and present force coupled with foreign military sales and foreign military financing programs that serve to build and shape partner nation capability in a timely and effective fashion. Ours is a challenging and very important mission.

Our U.S. Special Forces continue to train, advise, assist and accompany indigenous forces in various areas within our region to progress towards a status quo where those forces are able to mitigate threats and maintain stability on their own. For example, we continued to have SOF supporting the Manbij Military Council forces even after Manbij’s liberation from ISIS in August. The MMC provide security to Manbij as local governance works to revitalize their city.

We work in close coordination with partner forces and our allies to remain focused in delivering a lasting defeat to our common enemy, ISIS. We also are already thinking past ISIS occupation cities, and how
to transition back to liberation. I visited Mosul once again in early July—just after its liberation was announced. Displacing ISIS from Mosul represents a significant achievement for Iraq, and our Coalition played a key part in that success. Our Coalition partners continue to support the Iraqi Security Forces and stand ready to assist in the effort to rebuild towards self-governance, which will require significant aid from non-governmental organizations and the UN, especially in West Mosul.

A&M: From an integrated air and missile defense systems perspective, how have capabilities improved over the past year in addressing increasing adversarial threats?

GEN Votel: Our Integrated Air and Missile Defense systems represent critical capabilities given the expanding range of threats present today in the Central Region and elsewhere around the globe. We are working towards the deployment of additional advanced systems, including Patriot and THAAD, and continue to work closely with our regional partners through our foreign military sales and foreign military financing and training and exercise programs to help them build the additional needed capability to defend their sovereign spaces and the region writ large. Generally, each year the U.S. military participates in more than 50 exercises with partner nations in the U.S. Central Command area of responsibility. For example, our Air and Missile Defense Exercise, completed earlier this year, is a U.S.-led exercise that develops and exercises tactics, techniques, and procedures against simulated air and missile threats. U.S. participation in these exercises reassures our coalition and regional partners and allies of our commitment to the security and stability of this region.

A&M: On the maritime front, how is CENTCOM working to strengthen security along coastal zones for increased traffic identification and situational awareness?

GEN Votel: Maritime security is certainly a concern, and the potential for destabilization presents some long-term challenges. We remain steadfast in our commitment to protecting the free flow of commerce through these key maritime sea lanes – as nearly 30 percent of commerce vital to the world’s economy passes through the three main chokepoints in the area (the Suez Canal, the Strait of Hormuz, and the Bab al Mandeb Strait). We are also concerned about Iranian malign influence. Our focus is for stability for all nations and people in the region. We work to encourage all involved nations to first fight ISIS and counter the terrorism that has taken root in the area. Those parties who are working to frustrate those goals are only complicating things for the people in the region, and those who oppose terror across the globe. I am confident that with the new agreement deal we recently signed with Saudi Arabia, we can implement more advanced systems, such as Multi-Mission Surface Combatant ships, helicopters, patrol boats, and associated weapons systems. We’re always looking for ways to balance out what our requirements are, what the whole joint and combined force brings, and what’s available to us—all capabilities that will enable partner nations to help protect freedom of navigation and deter and defend against maritime attacks or incursions. Together with our partner nations, we will bolster our capabilities and readiness, which is vital to security in the region, and essential to political stability and economic prosperity.
U.S. Army Yuma Proving Ground (YPG) is well known for testing virtually every piece of equipment in the ground combat arsenal. The fruits of this testing include better and longer lasting equipment, as well as the ability to multiply a ground force more rapidly.

Prior to the first Gulf War in the early 1990’s, the life-expectancy of the tracks used to propel an M1 Abrams Main Battle Tank along the ground was measured in the hundreds of miles. After extensive testing at U.S. Army Yuma Proving Ground, today’s tank treads last for thousands of miles.

Mitigating the Turbulence to Chute Threat

A more recent example of this high-impact, long-term testing is studies the proving ground’s Air Combat Systems Test Directorate have conducted on the C-17 Globemaster to determine the heaviest weight the aircraft can safely carry. A follow-on study has looked at the amount of time and distance necessary between each element of a multi-element insertion of combat parachutists, known tactically as a mass exit insertion of the Global Response Force (GRF).

As air behaves like a fluid, the air disturbance left by massive cargo aircraft speeding through the sky is extremely turbulent and fast. The shedding of high and low pressures required for lift rolls up near the aircraft wing tips, result in powerful vortices that can remain over the drop zone for several minutes.

“It is very violent,” said Keith Allen, team lead in the Aviation Systems and Electronic Test Division. “We’re talking 150 to 200 feet per second in tangential velocity. It would definitely collapse a parachute if you got caught up in it.”

The wings of military cargo planes are equipped with specially shaped finlets to help dissipate this vortex, but the extreme turbulence is still invisible and not able to be completely eliminated. As a result, formations of C-17s carrying jumpers are required to keep a minimum distance from each other: if this distance could be safely shortened, more airborne Soldiers could reach the ground and enter a battle faster.

“The current spacing is based on a very conservative approach to ensure, in all conditions, that the vortices are dissipated or have moved off the drop zone in time for the next element of jumpers,” said
Allen. “The user community asked us to examine conditions where the distance between elements could be shortened.”

In 2014, YPG testers undertook an ambitious two-week study of the life cycle of these vortices, using a small Twin Otter aircraft equipped with Light Detection and Ranging (LIDAR), a surveying technology that measures reflections of particulates in the air by illuminating an area of regard with eye safe laser light. The Twin Otter was used to fly above a massive C-17, scanning the wake it left behind. The testers flew missions across all hours of the day and night, during different weather conditions and over different terrain features.

“Our intention was to go into the field to capture vortex data in operationally representative scenarios,” said Allen. “We had to first understand the mechanics of the vortices and how they behaved in the field.”

The LIDAR used to scan the air disturbances caused by the vortices is sensitive enough to pick up everything within the scanned area, including wind, thermals, and ground effects unrelated to the C-17 passing through the area. To be useful, this data had to be separated out from the effects of the C-17 in time and space, which was quite a challenge.

“We had to develop a mathematical algorithm that not only detected the vortex within all the rest of this noise, but separated it out,” explained Allen. “That took several months: we then had to decide which factors about the vortex were most important.”

Moving Data Implementation Forward

Once the testers accomplished this feat, they compared the real-world data with predictions that had been made in computer simulations prior to testing. Going forward, YPG testers hope to conduct similar testing in different natural environments. Allen says the information learned in this testing is beneficial to other air drop activities, both at YPG and elsewhere.

“It gives YPG a lot of new capabilities as far as modeling, simulation as well as test methodology and new procedures for collecting wing tip vortices,” said Allen. “The results of these studies are relevant to the entire aviation industry: there are LIDAR systems at large airports that look at the dissipation of vortices to govern their takeoff times for aircraft.”

Data collection techniques developed for this study may have far reaching impacts on how wing tip vortices of both military and commercial aircraft may be studied in the future.
Pentagon Acquisition, Technology and Logistics Reorg

The U.S. Department of Defense announced it is reorganizing its Acquisition, Technology and Logistics office. The reorganization is designed for the acquisition of new weapons and systems more efficiently, encourage partnerships within the Pentagon and with allied nations, and to ensure acquisition processes fulfill the needs of service members now and in the future, Deputy Defense Secretary Pat Shanahan noted.

The reorganization breaks the office into two entities, each headed by an undersecretary. "One is the undersecretary of defense for research and engineering and the other is the undersecretary for acquisition and sustainment," the Pentagon said.

Another major portion of the report upgrades the Pentagon's chief management officer.

"The Department of Defense research, engineering, acquisition and sustainment organizations and processes must be sources of competitive advantage that ensure the warfighting superiority of U.S. forces around the globe," the report said.

The acquisition process involves making it easier for companies to do business with the Pentagon, as well as how to help contractors and suppliers do more for less.

More info: defense.gov

Joint Surveillance Radar Upgrade

The U.S. Air Force has awarded Northrop Grumman Corporation a contract to upgrade existing radio terminals aboard the E-8C Joint Surveillance Target Attack Radar System (Joint STARS) fleet and replace them with Air Force Tactical Receive System-Ruggedized (AFTRS-R) terminals. AFTRS-R assures capability for the Joint STARS fleet and those interacting with the weapon system to receive intelligence reports, including threat warnings in hostile environments, ensuring undiminished battle management in support of warfighters in the air, on the ground and at sea.

AFTRS-R provides data feeds from airborne and overhead electronics intelligence collectors and allows Joint STARS to detect and track a host of mobile threats, including enemy air defense and theater ballistic missile assets. The AFTRS-R capability will modernize the Integrated Broadcast Service by replacing the current Commander's Tactical Terminal/Hybrid-Receive Only (CTT/H-R) radio. The modification also addresses cryptographic modernization and diminishing manufacturing source (DMS) issues with the CTT/H-R radio.

"One of the benefits of our 32-year partnership with the United States Air Force on Joint STARS is that we have an in-depth understanding of the E-8C fleet and its mission in support of combatant commanders globally," said Bryan Lima, director, manned C2ISR programs, Northrop Grumman Aerospace Systems.

"The AFTRS-R modification is another demonstration of our joint commitment to fleet sustainment while providing uninterrupted mission support to the warfighter until the recapitalized fleet is fielded."

The AFTRS-R contract is a separate delivery order under the indefinite-delivery/indefinite-quantity Joint STARS Systems Improvement Program (JSSIP) III contract awarded by the U.S. Air Force to Northrop Grumman in October 2013. Other modifications under JSSIP III to maintain 21st-century mission readiness include the Global Imagery Server, which allows for the display of worldwide imagery data on all Joint STARS operator work stations, and the Automatic Identification System that will provide Joint STARS with a permanent, integrated solution for maritime identification of participating vessels.

More info: northropgrumman.com
747-8s to Serve as Future Air Force One

The U.S. Air Force awarded a Boeing contract modification Aug. 4, 2017, to purchase two commercial 747-8 aircraft for future modification to replace the two aging VC-25A Boeing 747-200 presidential support aircraft. This contract modification follows a set of awards in 2016 for risk reduction activities. The Air Force has already requested Boeing to provide proposals to design, modify, test and field two Presidential mission-ready aircraft. These efforts will be awarded via future contract modifications. The program expects to begin aircraft modifications in 2019 and reach initial operational capability in 2024.

“The award is a significant step toward ensuring an overall affordable program,” said Ms. Darlene Costello, the principal deputy assistant secretary of the Air Force for acquisition. “As we move forward, we will continue to seek and implement cost savings opportunities.”

These aircraft will start providing worldwide presidential airlift support in 2024, after a series of modifications and tests. Boeing will modify their Federal Aviation Administration-certified commercial 747-8 aircraft to meet presidential operational requirements to help ensure an affordable program.

In March 2017, following a series of requirements reviews, the White House reaffirmed the minimum set of requirements necessary to meet presidential mission needs. The modifications to the aircraft will include incorporating a mission communications system, electrical power upgrades, a medical facility, an executive interior, a self-defense system and autonomous ground operations capabilities.

“This award is a huge step toward replacing the aging VC-25As,” said Maj. Gen. Duke Richardson, the Presidential Airlift Recapitalization program executive officer. “This award keeps us on track to modify and test the aircraft to become presidential mission-ready by 2024.”

Since the aircraft were purchased through commercial contracting procedures, price and other related details are commercial-competition sensitive, meaning the negotiated price paid is not releasable. However, the price will be part of the overall program cost baseline once set and will be released in accordance with the contract publication requirements.

More info: boeing.com
Air Force Landing Gear

AAR has received the notice to proceed on a $909,394,297 fixed-price contract from the U.S. Air Force for the Landing Gear Performance-Based Logistics One program.

AAR will provide total supply chain management including purchasing, remanufacturing, distribution and inventory control to support all Air Force depot and field-level, foreign military sales, other services, and contractor requisitions received for all C-130, KC-135 and E-3 landing gear parts.

“We are excited to get started on this important contract for the Air Force,” said Nicholas Gross, Senior Vice President, Government Supply Chain Solutions. “Serving as the prime contractor, AAR will support these three fleets utilizing our Landing Gear Repair and Overhaul center in Miami, as well as our supply chain network across the country.”

Repair work will be done at AAR’s landing gear services facility in Miami and inventory supply and management will be handled via AAR offices and warehouses in Wood Dale, Illinois, and Ogden, Utah.

More info: aarcorp.com

Army Orders Additional JLTVs

Oshkosh Defense, LLC, an Oshkosh Corporation company, announced recently that the U.S. Army has placed another order for the Joint Light Tactical Vehicle (JLTV) program including 748 vehicles and 2,359 installed and packaged kits. The order valued at more than $195 million, is the fifth order for JLTVs since the contract was awarded in August 2015.

“Soldiers and Marines need a reliable, transportable, and protected mobility solution that balances payload, protection, and performance,” said Dave Diersen, Oshkosh Defense vice president and general manager of Joint Programs. “The Oshkosh JLTV is that solution.”

The JLTV program is currently in Low Rate Initial Production (LRIP) and remains on-schedule, on-budget and is completing reliability and performance test activities as well as logistics supportability evaluations around the country. The program anticipates a Full Rate Production decision in FY19, with the first Army unit equipped by mid-FY19 and both Army and Marine Corps Initial Operating Capability (IOC) in early FY20.

More info: oshkoshdefense.com

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