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AEDC testing to validate redesigned components of the TF33 Pratt & Whitney engine

By Deidre Ortiz
AEDC Public Affairs

Testing of the TF33 Pratt & Whitney engine is being conducted at AEDC to verify and validate newly redesigned components of the engine.

The TF33 has powered several different military airframes, including the Boeing KC-135 Stratotanker, E-3 Sentry Airborne Warning and Control System and the E-8 Joint Surveillance Target Attack Radar System.

Second Lt. Karlie Madden, AEDC project manager for the test, stated that the engine currently being tested is a 17,000-pound thrust variant used aboard the B-52H Stratofortress airframe.

"The testing at AEDC is to verify and validate the structural integrity and durability of a redesigned inlet case and turbine exhaust case," she said. "The test also includes accelerated mission testing which simulates approximately one-half of an overhaul cycle of testing on the engine, running approximately 690 sea-level operating hours. Multiple performance calibrations have been performed to determine if there are any new performance standards that stem from the redesigned components."

The testing took place in one of the AEDC Engine Test Facility sea level test cells during the summer and wrapped up in November. The test was requested by the TF33 Systems Program Office of the Air Force Life Cycle Management Center Propulsion Directorate (AFLCMC/LPS) at Tinker Air Force Base.

See **REDESIGNED**, page 3

The TF33 Pratt & Whitney engine undergoes testing in an AEDC sea level test cell, to verify and validate newly redesigned components of the engine. The TF33 has powered several different military airframes, including the Boeing KC-135 Stratotanker, E-3 Sentry Airborne Warning and Control System and the E-8 Joint Surveillance Target Attack Radar System. *(U.S. Air Force photo/Rick Goodfriend)*

New partners, new missions

The 704th Test Group

By AEDC Public Affairs

Editorial Note: This is the first in a series of articles to provide information about new units and missions under the Air Force Test Center realignment for AEDC.

The 704th Test Group's (TG) mission is to operate world-class test facilities for high speed sled track testing, navigation and guidance system testing, radar signature measurements, weapon systems flight testing, and act as the Air Force Liaison for all Air Force programs tested at White Sands Missile Range. The 704th is instrumental for testing advanced avionics, weapons development, multiple Global Positioning System integration, landing gear and high-velocity impact.

The Squadrons that conduct the various tests of the 704th are the 586th Flight Test Squadron, the 746th Test Squadron-Guidance/Navigational Test and the 846th Test Squadron-Rocket Sled Tests.

The 704th Test Support Squadron oversees operational support to the 704th TG missions.

Additionally, the 704th TG has two geographically separated units: Operating Location (OL)-AA, located at Kirtland Air Force Base, N.M., and OL-AC, located at Wright-Patterson Air Force Base, Ohio. OL-AA is responsible for directed energy and high energy laser testing, whereas OL-AC performs landing-gear and aircraft survivability tests.

Brumley 'home for the holidays' after deployment and retirement

By Raquel March
AEDC Public Affairs

After a final deployment in Qatar, which ended Nov. 5, AEDC outside machinist Eric Brumley will spend more holidays with his family for years to come.

"It is a blessing to be home for the holidays," he said. "The best part is I will always be home for the holidays from now on."

Brumley is a technical sergeant with the 134th Air Refueling Wing Air National Guard, Knoxville, who has been deployed to the Middle East in four job positions in a 20-year military career. He will retire Jan. 4, 2017.

In Qatar, from Aug. 5 to November, Brumley and his crew maintained all General Electric F108 engines on the fleet of KC-135 refueling aircraft as a 340th Aircraft Maintenance Unit Propulsion Element Lead.

See **RETIREMENT**, page 4

AEDC outside machinist Eric Brumley, pictured in front of the AEDC main gate entrance, will retire from the Air National Guard Jan. 4, 2017. *(U.S. Air Force photo/Jacqueline Cowan)*

AEDC outside machinist Eric Brumley (center) documents his last engine change of his Air National Guard career with his crew who maintain the General Electric F108 engines on a fleet of KC-135 refueling aircraft. Brumley is a technical sergeant with the 134th Air Refueling Wing ANG, Knoxville, who returned from deployment in Qatar Nov. 5. Pictured with Brumley, left to right, is Senior Airman Jason Belcher, Airman 1st Class Kyle Featherston, Senior Airman Tanner Mutlu and Senior Airman Chance Vanausdall. Crew member Airman 1st Class Thomas Beck isn't shown. *(Courtesy photo)*

In This Issue....

Ray McCoy pens book to share experiences of local WWII veteran

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HIGH MACH

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"NAS will be integral to the success of AEDC, the U. S. Air Force's premier aerospace testing facilities, while applying the highest standards of ethics, innovation, safety, security, and quality to daily operations."

Values

- Ethics. We are uncompromising in our integrity, honesty, and fairness.
- Safety & Health. We are relentless in keeping people safe from harm, and we provide a safe and healthy work environment.
- Excellence. We thrive on challenge, accomplishment, and mission success.
- Quality. We are passionate about doing our work right the first time.
- People. We have a mission-focused, inclusive workforce who have a diverse skill set, are committed to success, demonstrate innovation and have a can do attitude.
- Culture. Our team is proud of our diversity, inclusiveness, and collaborative work environment. We are proud of what we do and how we do it.
- Relationships. We build positive, long-term business relationships through trust, respect, and collaboration.
- Innovation. We overcome challenges through creativity, perseverance, technology, and flexibility. We actively seek to continually improve.
- Sustainability. We plan and act for the long term benefit of our communities and our environment.

Moments in History: Kindel in AEDC history

By AFTC History Office

Capt. James C. Kindel from East Aurora, N.Y. joined the Air Force in 1955 and initially trained to fly B-47 Jet Bombers.

He was also a mechanical engineer and served at AEDC from 1961 - 1964 in the then Development Division/Plans and Technology Section.

While at AEDC Kindel received a call to retrain as a Cessna O-1E Birddog pilot followed by an assignment to Vietnam where he flew with a forward air controller in the 21st Tactical Air Support Squadron, directing friendly fire onto hostile targets and pointing out enemy locations to U.S. ground forces.

The slow moving, low flying, unarmored Cessnas faced particular risk as they purposely flew over enemy positions.

During a mission near Tuyen Duc, South Vietnam, on Dec. 14, 1965, small arms fire from an enemy patrol caused his plane to crash, killing him instantly. He was the only officer from AEDC killed in action during the Vietnam War and in honor of his sacrifice to our nation, then AEDC Commander Brig. Gen. Lee V. Gossick dedicated the circular drive in front of the AEDC headquarters as Kindel Drive on June 8, 1966.

Capt. James C. Kindel *(Courtesy photo)*

Capt. James C. Kindel Memorial at AEDC. *(Courtesy photo)*

Gesundheit! Catch that sneeze, please!

By AEDC Safety

With winter and flu season fast approaching, we each need to do our part to avoid exposure to the disease.

Prevention starts with an understanding of how flu is spread. That makes coughing or sneezing a prime culprit in spreading the flu.

When the inside of your nose gets a tickle, a message is sent to your brain's "sneeze center" which sends a message to the muscles that work together to create the sneeze.

These include the abdominal and chest muscles, diaphragm, muscles that control your vocal cords, those in the back of your throat, and your eye-lid muscles: It's impossible to keep your eyes open when you sneeze.

The sneeze center makes all these muscles work in just the right order, to send that irritating particle out of your nose at speeds up to 100 mph.

So how far does a sneeze travel?

Since they are very small in size, sneeze droplets soon reach terminal velocity and start drifting in air, just like cloud. Hence, they can travel any distance depending on air current. When they encounter some substance, maybe a coworker, they settle down to transfer the infection.

These tips can help you avoid coughs, colds, and flu:

Practice good respiratory hygiene: Cover your mouth and nose by coughing or sneezing into a tissue, not into your hand or into the air. If you don't have a tissue handy, your upper sleeve will do.

Keep your hands clean: Wash your hands with antibacterial soap and warm water for 15-20 seconds several times a day. Use alcohol-based hand wipes or gel sanitizers if soap isn't available.

Don't touch: The most common way to catch the flu is to touch your own eyes, nose or mouth with germy hands. So keep your hands clean and away from your face.

Eat, drink and be healthy: Eat a well-balanced diet and drink plenty of fluids, especially water. Increase your vitamin C intake.

Don't stress out: Get plenty of sleep and exercise regularly. We are more prone to becoming ill when stressed out. Get some fresh air or a change of scenery during work breaks for a calming effect.

Learn to recognize flu symptoms: These include a high fever, head and muscle aches, extreme fatigue, sore throat, dry cough, runny or stuffy nose and stomach symptoms.

Don't share: Keep your distance if you are sick or around someone else who is sick. If you get the flu, don't come to work where there's a good chance you'll spread it to coworkers. Stay in bed for a couple of days.

Get a flu shot: Check with your health care provider or pharmacist. Many pharmacies offer the vaccine without an appointment. Most insurance policies cover most or all of the cost.

Smoking Policy

1. The following revised Arnold AFB smoking policy is effective immediately and applies to all individuals on Arnold AFB.
2. Traditional Tobacco products (e.g. cigars and cigarettes):
   a. Smoking is permitted solely in Designated Tobacco Areas (DTAs) identified by designated signage. If no signage exists, smoking is not permitted in that area. It is the responsibility of all smokers to keep DTAs clean of cigarette butts.
   b. Tobacco use on the Arnold AFB Golf Course is permitted, but discouraged based on the health hazards of tobacco use and secondhand smoke. No smoking is permitted within 50 feet of golf course buildings except in the approved DTA.
   c. Smoking in government-owned/leased vehicles is strictly prohibited. Personnel are allowed to smoke in their personal vehicles at any time; however, at no time will personnel discard cigarette butts outside their vehicle.
   d. For government employees, the fact that a person smokes has no bearing on the number of breaks they may take. Breaks should be taken in accordance with the current supervisory and personnel policies that afford all employees the same break opportunities consistent with good work practices and accomplishment of the mission.
3. Smokeless Tobacco products (e.g. snuff and dip):
   Smokeless tobacco products are not to be restricted to DTAs. Smokeless tobacco use will be permitted in all workplace areas (inside and out) subject to reasonable safety and sanitary conditions. Specifically, containers of tobacco waste product, including sealed containers, must not be left unattended or disposed of in trash receptacles. Users of smokeless tobacco must flush tobacco waste down the toilet.
4. Electronic Cigarettes (also known as "e-cigs"):
   Pursuant to Air Force Instruction (AFI) 40-102, Tobacco Free Living, e-cigs are considered to be equivalent to tobacco products; however, e-cigs are not restricted to DTAs and are allowed to be used outdoors at a minimum distance of 25 feet from building entry/egress points. (This policy is dated July 27, 2016)

Action Line

Team AEDC

I believe in free and open communications with our Team AEDC employees, and that's why we have the Action Line available. People can use the Action Line to clear up rumors, ask questions, suggest ideas on improvements, enter complaints or get other issues off their chests. They can access the Action Line via the AEDC intranet home page and by calling 454-6000.

Although the Action Line is always available, the best and fastest way to get things resolved is by using your chain of command or by contacting the organization directly involved. I encourage everyone to go that route first, then if the situation isn't made right, give us a chance.

Col. Rodney Todaro
AEDC Commander

Ray McCoy pens book to share experiences of local WWII veteran

By Deidre Ortiz
AEDC Public Affairs

After hearing that the Japanese had attacked Pearl Harbor, Del Garforth, who was only 17 years old, begged his mother's permission to sign for him to join the Navy.

Garforth's mother gave in to the request, and not only did he survive the war, but he is still alive today to tell of his experiences during World War II. His stories are ones which Ray McCoy, who works in Workforce Qualifications at AEDC, spent years writing down so he could then share them with other history-enthusiasts.

Details of these events culminated into a book called *General Quarters! Memoirs of a World War II veteran aboard the LSM-143*. Written and self-published by McCoy, the book recounts Garforth's time spent as a lead signalman on the LSM-143, or Landing Ship Medium as part of the Pacific Asian Theatre.

"An LSM was the smallest of the ocean-going ships. It didn't have to be hauled to its destination like a DUKW, manufacturer's code for a type of military wheeled amphibious landing-craft, or a Higgins boat," McCoy said. "The LSM-143 was in charge of delivering tanks, various other equipment and Marines to shore. As lead signalman, Del's post on the conning tower was the highest point, and so he served as the 'eyes' of the ship. He was able to witness everything that happened."

According to McCoy, one of the events detailed in the book is during Garforth's time in Iwo Jima, when on one overcast February day, his LSM was on the way to shore to deliver tanks when they were bombarded by Japanese kamikaze planes.

"Del describes the planes diving on the group of ships heading to shore, and one plane hit the ship to the left and another barely missed the tower of the LSM-143 before hitting the water and exploding," he said.

McCoy mentioned this wasn't the only time in the war that Garforth barely escaped death.

"He also ended up surviving a high level bombing raid."

Another of his war stories that sticks out to McCoy as being particularly interesting is about "suicide swimmers" used by the Japanese during WWII.

"One night Del heard something and saw swimmers, Japanese he thought were 'friendlies,' but just in case Del sounded the General Quarters button that alerts the gunners to get to their station," he said. "Sure enough they were pushing a raft that exploded when fired upon."

McCoy, who met Garforth at church, always had an interest in WWII because his dad's oldest brother served in the Army at 19 years old and was killed in Italy. In addition to Garforth, now a 90-year old resident of McMinnville, McCoy has interviewed other veterans, including two men who knew his late uncle in the Army.

"At first, my book was going to be a collection of stories of these four veterans," he said. "But Del's story continued to grow as I talked to him, and eventually I determined I would separate these stories."

Fortunately enough, McCoy was able to locate the log book of the LSM-143, which enabled him to put Garforth's stories in chronological order for the book.

"I just feel that these are stories that need to be told," he said. "A lot of these stories are dying with these veterans."

Garforth celebrated his 90th birthday on Aug. 21, and McCoy finished the book just in time to release it on his birthday.

For more information call 454-7781.

During a trip to Chattanooga, Ray McCoy, left, and Del Garforth, right, have the chance to tour the LST-325, or Landing Ship Tank, used by the U.S. Navy during World War II. Garforth, who was in the Navy and is a veteran of WWII, shared his experiences from the war with McCoy, who works at AEDC. McCoy penned these stories into a book, called *General Quarters! Memoirs of a World War II veteran aboard the LSM-143*. *(Courtesy photo)*

Del Garforth signals from his post aboard the LSM-143, or Landing Ship Medium, on which he served during WWII. Ray McCoy, who works at AEDC, recently wrote a book, *General Quarters!*, recounting Garforth's time in the U.S. Navy as a lead signalman on the LSM-143. *(Courtesy photo)*

Ray McCoy, who works at AEDC, attends church with Del Garforth and became intrigued by Garforth's experiences in the U.S. Navy during WWII. So much so that he decided to compile these stories into a book. The book, *General Quarters! Memoirs of a World War II veteran aboard the LSM-143*, was released Aug. 21, 2016; the same day as Garforth's 90th birthday. *(Courtesy image)*

REDESIGNED *from page 1*

Though tested at AEDC before, it was the first installation of the TF33 in this sea level test cell.

The last TF33 test was conducted in the ETF C-2 test cell in 1995, during which AEDC characterized cold weather starting techniques between JP4 and JP8 jet fuel.

Of the most recent test, James Burt, TF33 equipment specialist with the AFLCMC/LPS, commented that working with AEDC on the TF33 accelerated mission testing proved to be an "outstanding experience."

"We have had no engine issues and all test cell issues were worked and resolved very quickly with little to no test down time," he said. "This has resulted in the smoothest TF33 AMT test to date and allowed the test to complete ahead of schedule."

Testing was also completed early and 55 successful air periods were performed in 61 days, making the project successful both technically and financially.

Madden added that the test was largely a success due to the hard work of the dedicated test team.

"The test would not have been as successful as it was without the professional and efficient work of the test operations team, which was led by Michael Eppinger, test operations engineer."

AEDC Junior Force Council prepare Thanksgiving trimmings

Arnold Junior Force Council members Adam Moon, left, and Brandon Hoffman, president, prepare food items at AEDC Nov. 16 for the Thanksgiving Food Basket Program, which is part of the Coffee County Backpack Program. The JFC delivered 19 food baskets with help from AEDC team members and their food donations. *(U.S. Air Force photo/Jacqueline Cowan)*

45th SW supports successful Atlas V GOES-R launch

By 45th Space Wing Public Affairs

CAPE CANAVERAL AIR FORCE STATION, Fla. (AFNS) – The 45th Space Wing supported NASA's successful launch of the Geostationary Operational Environmental Satellite-R spacecraft aboard a United Launch Alliance Atlas V rocket from Space Launch Complex 41 Nov. 19.

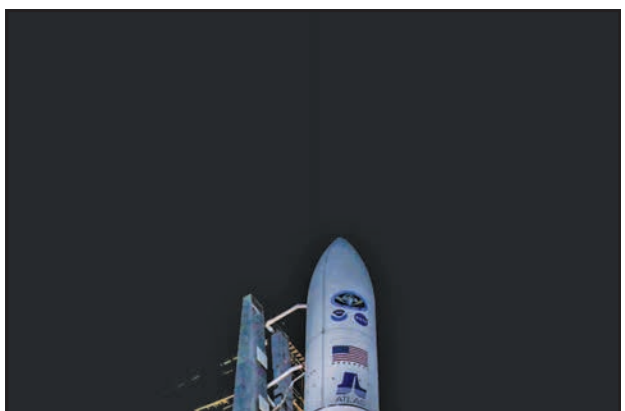
AEDC tested the GOES-M satellite in the the Complex Mark I Space Simulation Chamber

Once in geostationary orbit, the National Oceanic and Atmospheric Administration's GOES-R weather and environmental satellite will provide National Weather Service forecasters the meteorological equivalent of going from black and white to ultra, high-definition color TV, according to a NASA release.

The new satellite can deliver vivid images of severe weather as often as every 30 seconds, scanning the Earth five times faster, with four times greater image resolution and using triple the number of spectral channels compared with today's other GOES spacecraft.

GOES-R's advanced imagery and higher resolution will also enable improvements to NOAA's hurricane tracking and intensity forecasts, as well as the forecasting of severe weather including tornadoes, thunderstorms and flooding.

"Congratulations to ULA, NASA, NOAA and the entire integrated team who ensured the success of this launch," said Col. Walt Jackim, the 45th SW vice commander and mission launch decision authority. "This successful launch, the first since Hurricane Matthew tore through the space coast, is a testament to our dedication, resiliency and perseverance. It's my honor to be a part of this tremendous space team supporting the space industry. Assured access to space is a team sport and here on the Eastern Range, no matter what Mother Nature may throw our way, we continue to prove we are the 'world's premier gateway to space.'"



The 45th Space Wing supported NASA's successful launch of the Geostationary Operational Environmental Satellite-R spacecraft aboard a United Launch Alliance Atlas V rocket from Space Launch Complex 41 at Cape Canaveral Air Force Station, Fla., Nov. 19. *(Courtesy photo/United Launch Alliance)*

AEDC Briefs

AEDC Visitor's Center announces holiday closings

Arnold Protective Services

The Visitor's Center at AEDC will be closed in observance of the upcoming holidays:

Christmas, Dec. 26; and New Year's, Jan. 2, 2016.

The AEDC Visitor's Center provides services such as processing visitors and issuing military ID's, badges and Common Access Cards. For questions or further information, call 454-5453.

Toys for Tots donations ongoing

The Toys for Tots Campaign is currently ongoing at AEDC.

AEDC team members may donate any new, unwrapped toy. Please drop off items in the bin outside of Café 100 or in the lobby of bldg. 1099 prior to Dec. 15.

AEDC Fitness Trail closed for weekend, holiday hunting

By AEDC Natural Resources

The AEDC Fitness Trail will be closed for deer hunting Saturday – Sunday, now through Jan. 15, 2017.

The trail will also be closed during the holidays which dates include Dec. 26 and Jan 2, 2017.

Small game, waterfowl, turkey and deer hunting will also take place on AEDC Wildlife Management Area (WMA), which is on much of the remaining 32,000 acres of Arnold AFB, through Jan. 15, 2017.

The WMA is managed by Tennessee Wildlife Resources Agency and more information about hunting opportunities, hunting regulations and bag limits can be found at ***https://www.tn.gov/twra/article/region-2-wmas***.

Angel Tree Program seeking sponsors

It's that time of year again and there are many less fortunate children in need during this Holiday Season.

Please consider sponsoring a child this year through the AEDC Angel Tree Program. You will make a big difference this holiday season by helping a child in need.

There are 33 Angels in need of a sponsor. The last day to drop-off gifts has been extended to Dec. 12. If you would like to sponsor an Angel use the sign-up sheet on the Team AEDC Website.

Deliver gifts unwrapped and bagged together with the Angel tag number. Larger items do not have to be bagged but please identify with the Angel tag number.

In addition, this year if you would like to supplement the new gift items with gently used clothes or toys, please bring those as well.

Please assemble all bikes, wagons, etc. before dropping off. Drop off items Dec. 6, 7 and 12 during the hours of 7:30-8:30 a.m., 10 a.m.-12 p.m., or 2:30-3:30 p.m. at the AEDC Main Auditorium behind the Ascend Federal Credit Union on base.

RETIREMENT *from page 1*

AEDC outside machinist and Tech. Sgt. Eric Brumley pauses for a photo with his son, Seaman Trevor Brumley, after Trevor's basic training graduation in 2015. Eric returned from deployment in Qatar Nov. 5 and will retire from the Air National Guard Jan. 4, 2017. *(Courtesy photo)*

Eric Brumley, an AEDC outside machinist and technical sergeant with the 134th Air Refueling Wing Air National Guard, Knoxville, is a newlywed. He is pictured here with his wife Marti and their children, Isaac and Jianna Bare after Marti's graduation from Nossi College of Art June 5. Brumley works in the Aeropropulsion Systems Test Facility. He will retire from the ANG Jan. 4, 2017. *(Courtesy photo)*

Brumley admits that being deployed can have its ups and downs.

"The time you miss at home you can never get back," he said. "Each X put on a calendar is one less X on this earth – the holiday, the birthday, the special moment is missed. But hopefully what you did in the big picture was worth it for all of us.

"The best thing about a deployment would be the time you have to reflect on your life, remember what you've forgotten and work on yourself to be a better person."

Brumley has many memories of his deployments but recalls nature being an unforgettable showing at the second highest mountain in the world.

"In my 20 years, the most memorable moment was when I was a C-130 flight engineer with the 118th Airlift Wing in Nashville for half of my career," he said. "In 2006 I deployed to Afghanistan as a C-130 flight engineer to fly combat missions. We flew by K2, also known as Mount Godwin-Austen which is 28,251 feet above sea level, early one morning with the sun breaking over the peak of this massive mountain as we were flying at about 20,000 feet. This was a moment that time stood still, for all of us on the crew."

Brumley has worked at AEDC for 12 years and currently works in the Aeropropulsion Systems Test Facility.

AFRL program turns junior workforce into rapid innovators

By Holly Jordan
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFNS) – Junior force personnel within the Air Force Research Laboratory's Materials and Manufacturing Directorate are making the most of their opportunity to showcase innovation and leadership skills through the Junior Force Warfighters Operations in RX, or JFWORX, program.

JFWORX, initiated in 2014, arose from the directorate's Company Grade Officer Initiative Program, which gave junior military officers the opportunity to grow their expertise through leading and executing mission-specific projects for the immediate benefit of the warfighter. The establishment of JFWORX expanded the program to encompass the entire Materials and Manufacturing Directorate junior workforce, including civilian members.

This program provides engineers, scientists and others program management experience early in their career through the opportunity to direct a program from start to finish; which in turn helps build an understanding and appreciation of the entire process. JFWORX projects provide direct support to the warfighter in the field, and project managers acquire valuable experience in accurately meeting warfighter needs.

"JFWORX is a fantastic program for developing well-rounded and experienced engineers and scientists," said Capt. David Walker, a JFWORX operations officer. "Not only does the member get to run a complete project as he or she feels fit, but there is quite often a near-term, significant positive impact to the user."

The primary technical focus of the JFWORX projects is the rapid development of customer-centric projects that will provide real-world solutions.

"We encourage innovative thinking that will challenge our researchers to explore the best solutions at the lowest cost to the Air Force, while still meeting urgent customer demands," Walker said.

One successful project from the JFWORX program is the Roco Atlas Casualty Carrier, a lightweight and low-cost tactical ladder that can also function as a bridge between structures as well as a stretcher to transport injured personnel. This durable ladder improved upon existing designs, typically made from titanium, by using a special type of aluminum that makes it light enough to carry in the field. The accordion design makes it compact to transport, and the cost is vastly more affordable than that of comparable titanium models. The ladder is now available as a commercial, off-the-shelf product for both military and commercial use.

Another JFWORX success is the development of tactical fast roping gloves. These gloves are used by crews while rapidly sliding down a thick rope from a helicopter or other elevated surface. Typical gloves used for this purpose are very bulky, so as to insulate the user from heat that is generated through sliding friction. This project is developing gloves that not only effectively protect the user's hands, but also provide significantly more dexterity than current models. The initial prototypes were very well-received during simulated operational environment testing. The operators/testers noted the lack of friction-induced heat, especially considering the thinness of the lined gloves.

Other projects being explored through JFWORX include the following:

- Tactical saw blade: This specially designed reciprocating saw blade improves over existing designs through the utilization of special coatings that increase wear resistance. Reducing the need for replacement saw blades helps eliminate excess bulk and weight for troops to carry in the field. The improved performance of the blade reduces cutting time, making field operations more efficient.
- Water-resistant fast rope: A fast rope, used for rapid extraction from helicopters, can absorb moisture during water recoveries, making them difficult to retrieve back into the vehicle. This project seeks to develop a rope that can resist water and perform equally well in a water- or land-based mission.
- Advanced body armor: This project involves the development of improved, form-fitting body armor to more effectively protect military troops in the field.
- Fire suppressant foam: This effort seeks to develop a fire-suppressing agent and accompanying delivery system capable of extinguishing fires from a vehicle wreck or aircraft crash, while providing the needed temperature lowering ability necessary to allow workers to access the affected area safely.
- Portable blood/medicine storage: This project involves the design of a cooler that can safely cool or freeze blood, pharmaceuticals or related solutions in remote or austere environments for transport back to a properly equipped storage environment.
- Assault zone lighting: This effort involves an urgent need to provide a tactical, portable airway lighting system for use in the field for emergency or semi-permanent battlefield runway use.
- Cargo aircraft wheel removal tool: This project aims to develop an improved tool to enable one-person operation for removal of wheels on large aircraft. The development of this product will save man hours and enhance safety.

"All of the JFWORX projects are managed entirely by the researchers in order to test their critical-thinking and acquisition skills," Walker said. "The unique ideas that have arisen out of the program so far have shown the talent of our junior force in terms of material design and customer responsiveness."

Walker said he envisions new and expanded opportunities for the JFWORX program in the future.

"We hope to continue to build the program to a larger customer base, as well as increase the number of junior force members involved. This is truly a fantastic opportunity to work on some great projects and it is program unique to the directorate," Walker said.

Base-level cyber squadron takes flight

By 482nd Communications Squadron

HOMESTEAD AIR RESERVE BASE, Fla. (AFNS) – It's commonly understood that Airmen operate now in a cyber contested environment. Cyberattacks and persistent malware have become so frequent, widespread, and advanced that they now pose a threat to Air Force core missions beyond what national level cyber protection teams can cover and defend against.

In April, communications squadrons across the Air Force were tasked by their respective major commands to be pathfinder units in what has become known as the "Cyber Squadron Initiative" construct. This is meant to be a transition effort toward a new cyber unit that integrates defensive cyber operations concepts toward protecting the five core Air Force missions at the base level.

The pathfinder units were met with the first achievements under the new concept.

A recent rash of malware struck bases across the Air Force in October, causing national level cyber protection teams to fan out to several bases in search of a root cause. One base they didn't need to visit was the 482nd Fighter Wing at Homestead Air Reserve Base, Florida, one of the pathfinder units.

"Our mission defense team took notice of the intel traffic happening at other bases, and used their new cyber skills to compare what was happening across the Air Force against our own systems here at Homestead," said Maj. Michael Wells, the 482nd Communications Squadron commander.

What they found was that similar malware was indeed infecting their systems and that it was coming dangerously close to the jets themselves. They employed the procedures taught by Air Force Cyber Command and used by cyber protection teams to contain the malware, while tightening procedures to prevent further infection. The corrective actions put in place by the base level team directly emulate the actions to be taken by a national level team.

Since the systems used to load data onto the jets are stand-alone computers, the traditional base communications squadron without a mission defense team would likely not be alerted to the issue. Only after repeated dangerous cyber incidents and a several cyber protection team visits would a long-term solution be implemented.

"A base level mission defense team can't do everything that a national cyber protection team can, but we have enough of their capabilities now to start being proactive in our mission defense," Wells said. "Our base has a team now that can network with other pathfinder units to determine where to put our emphasis and react quickly."

Through coordination with the Office of Information Dominance at Headquarters Air Force, pathfinder units are quickly gaining the skills, tools, and capabilities to deliver active cyber defense to their wings on an ongoing basis.

As pathfinder units continue to develop their capabilities, scarce resources used by the cyber protection team can be freed to focus on national level operations. If the Cyber Squadron Initiative pathfinder effort proves successful, then it is likely that traditional base communications squadrons across the Air Force will convert to cyber squadrons with the aim of providing mission assurance to their base.

Looking to a cloud to share data faster

By Patty Welsh
66th Air Base Group
Public Affairs

HANSCOM AIR FORCE BASE, Mass. (AFNS) – The Kill Chain Integration Branch here has begun an experimentation campaign to look at ways to provide warfighters data in the fastest and most efficient ways possible.

The campaign, Data-to-Decisions, is in its early stages but, according to officials, is already showing the potential to provide promising results.

"Currently, once data is gathered, it's sent back for data processing and analysis," said Capt. Elizabeth Simkus, the Data-to-Decisions lead engineer. "It could take a while before that information gets back to a warfighter; we're working to make that a more immediate result."

The projects under this campaign are all part of a larger effort referred to as "combat cloud," which aims to bridge the gap between different types of data and how that data is communicated across multiple platforms.

This model is different than the typical cloud models provided by commercial cloud vendors, Simkus explained. It is more of a hybrid approach, consisting of multiple models in which data is processed, stored and communicated in a dynamic, distributed environment.

"Our network model is very challenging to solve because it has to account for the ever-changing air and ground environment in order to be fully integrated and optimized for data correlation," she said.

However, it's putting that piece in place that will help drive results.

"This, in turn, will help to enable faster and more efficient decision making in a wartime environment," said Capt. Brenton Byrd-Fulbright, the Data-to-Decisions program manager. "One project the team is looking at is called the Tactical Cloud Reference Implementation, or TCRI."

TCRI is a software platform, which will provide a common framework to manage operational data while also performing analysis on this data through the use of automated, mathematical algorithms and analytics. Essentially, the concept is similar to how people utilize clouds to sync different data on their numerous smart devices such as tablets and smartphones. The difference is TCRI will largely function automatically, with little user input, and will only provide information that the user designates as relevant.

"It's basically putting the architecture (in place) for the combat cloud," Simkus said.

Simkus said that it will incorporate all commercially available, open source software. This provides myriad benefits including utilization of industry expertise and flexibility in design.

"This will also keep the Air Force on pace with industry innovation," Byrd-Fulbright said.

The TCRI program is a joint program being worked on by the Air Force, Army, Defense Threat Reduction Agency and the Navy. Although originally led by the Navy, the Air Force will be sharing the lead role as future development progresses. Simkus said the team here is constantly looking at and leveraging the versions that are being released by the other organizations.

This past July, the team used the Hanscom Collaboration and Innovation Center (HCIC) to conduct an experiment with TCRI. In the experiment, the team collaborated with a local company, Avwatch, to demonstrate a new proof of concept: the ability to use a cloud to share data from a plane to a processing node on the ground. The team utilized an airborne TCRI laptop to ingest imagery taken by the aircraft camera and passed the imagery down to the HCIC. Along with this, the TCRI laptop on the aircraft also ingested GPS data from the plane's location as it was taking images and passed this information as well.

Byrd-Fulbright said the result was a live update of the aircraft's current and historical position or "airtrack" as it took the images, along with the actual images overlaid on a visual interface.

"The importance of this is that this concept can be utilized to help optimize imagery collection and data dissemination on an airborne platform via the cloud's ability to sync data with other relevant information from other sources," he said.

The team is planning another experiment, using the HCIC, where they connect to multiple nodes, this time passing along not just information, but utilizing analytics to automatically identify specific objects, as well as anomalies that may be missed or hard to detect with the human eye.

Currently, the team is also looking to set up a software development and modeling and simulation environment at the HCIC.

"Our software engineers would like to use it to develop and write code," Simkus said. "And although we'd be the first users, once it's stood up and functional, the idea would be that it would be available to other programs for use as well."

In addition, she also mentioned the team is creating a new Hanscom initiative called the Hanscom Academic Cloud Team (HACT). This initiative will be a partnership between Hanscom, the Massachusetts Open Cloud consortium, and other non-local universities that would like to collaborate on research and development efforts towards cloud computing concepts, models and prototypes.

Officials say this initiative leverages the knowledge of students from top universities and industry partners. The HACT will also attempt to provide opportunities for Hanscom engineers to work side by side with some of the best software developers and engineers through internships and advanced academic degree programs in an effort to bring that expertise back into the military.

"We want to collaborate and see where military, academia and industry can help each other," Simkus said. "The research others are doing could help with military applications."

Combat controller continues Special Tactics legacy of valor

By Senior Airman Ryan Conry
24th Special Operations Wing Public Affairs

JOINT BASE LEWIS-MCCHORD, Wash. (AFNS) – Their mission was to return power to the people of Kabul. But what started as a peaceful venture ended in a 14-hour firefight, with one Airman using airpower to turn the tide of the battle.

Staff Sgt. Keaton Thiem, a combat controller with the 22nd Special Tactics Squadron, ventured out into enemy fire multiple times, controlled 22 aircraft delivering 3,000 pounds of munitions, rescued four joint-partner teammates from sniper fire...and now, he's receiving the Silver Star Medal.

During a ceremony Nov. 16, at Joint Base Lewis-McChord, Washington, Maj. Gen. Eugene Haase the Air Force Special Operations Command vice commander, presented the nation's third highest medal for gallantry against an armed enemy of the U.S. in combat to Thiem. Thiem's actions occurred when he was deployed with an Army Special Forces team in support of Operation Freedom Sentinel.

As a combat controller, Thiem is part of a highly trained special operations force who integrates air power into the special operations battlespace.

"Our special tactics heritage is long and distinguished," Haase said. "Gallantry is the epitome of our special tactics Airmen every day, along with courage, dedication and selflessness."

On Feb. 22 this year, Thiem and his SOF element, consisting of U.S. Army Special Forces and Afghan partnered forces, made their way to a town in Bagram Province, which was in chaos and on the verge of collapse to well-equipped fighters. Their mission – to return electricity to the locals – would bolster the local governance in the face of an overwhelming threat of oppression and violence.

"We pushed in through the mountains....it was cold and wet, and we walked for four or five hours until we hit our initial point of resistance," Thiem said. "The Taliban had intentionally flooded the fields, forcing us to take one specific route… so they knew we were coming and where we were coming from."

Staff Sgt. Keaton Thiem, a combat controller with the 22nd Special Tactics Squadron, controls aircraft during a drug/weapons cache clearing mission in Helmand province, Afghanistan. The Silver Star Medal was presented to Thiem for using air power to ensure the safety of his 100-plus man special operations forces element during a 14-hour firefight in Afghanistan. ***(Courtesy photo)***

Thiem's role began in earnest when two friendly elements were pinned down by withering machine-gun fire, impacting within inches of their position. This was the first of many times Thiem disregarded his own safety to step into enemy fire and relay coordinates to an F-16 Fighting Falcon, which dropped two 500-pound bombs within 35 and 80 meters of friendly positions in order to save his beleaguered teammates.

"Without exposing yourself [to enemy fire], there's really no way to see who is where or what is going on," Thiem said. "It's mass chaos and confusion on the battlefield, and the last thing you want is fratricide."

After eliminating those threats, friendly forces continued on the offensive until they couldn't advance any further. When preparing to leave, insurgents initiated another complex ambush from fortified positions, this time concentrating heavy fire toward the main friendly formation. Shrapnel and bullets tore through the force, resulting in eight critically wounded teammates.

"It's hard to say the fear goes away, because it's definitely nerve-wracking," Thiem said. "Having the weight of the situation on your shoulders, disregard for yourself takes over and you do what you have to do to make sure the rest of the team gets out of there."

In the midst of the chaotic ambush, Thiem led a recovery team into a hail of heavy enemy fire several times to rescue pinned-down Afghan commandos who were separated from the main force. Along with a small group, he made

At the first compound, the element's progress was slowed down by accurate and heavy small arms fire and rocket-propelled grenades. The U.S.-Afghan force intercepted communications indicating the enemy was in a fortified position and using night-vision devices to target them.

his way through a hail of gunfire in open terrain for 100 meters to locate and account for a separated friendly element before calling in additional airstrikes.

Thiem then controlled six F-16 shows of force, providing critical time and space for friendly forces to maneuver out of the immediate kill zone and scramble to relative safety. After accounting for all friendly forces, Thiem directed another danger-close air strike within 80 meters, which allowed his teammates to regroup.

As the SOF unit worked to gain accountability, four Afghan commando partners were identified as missing. While still receiving sniper fire, Thiem orchestrated air strikes while using intelligence, surveillance and reconnaissance aircraft to locate the missing commandos.

Once he located the wounded commandos, Thiem coordinated a U.S. Army AH-64 Apache escort and led a small recovery team 150 meters toward a prepared machine-gun position to recover the wounded commandos. While on the move, Thiem expertly targeted insurgents and controlled two additional 30mm gun runs to cover the team's movement.

The team was still under fire when Thiem helped carry wounded teammates on litters 200 meters to the main force, all the while continuing to control circling ISR aircraft and Apache gunships.

"There's definitely a huge trust in the aircraft overhead, not just the Apaches but all the strike aircraft," Thiem said. "It's just a sense that they know exactly what they're doing up there, and they know exactly what we're doing...and they're going to save us. The Apaches were taking rounds when we were carrying the litter…those guys are just as heroic as we were on the ground."

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AEDC Milestones

40 YEARS
Heard Lowry, NAS

35 YEARS
Ruth Garner, NAS
Joel Wood, nLogic

30 YEARS
Michael Scott, NAS
Richelene Yglesias, AF

25 YEARS
William Burt, NAS
Gary Cates, NAS

20 YEARS
Andrew Daniel, NAS
Stephen Salita, NAS

15 YEARS
James Brown, ASO
Ken Griffin, ASO

10 YEARS
Chris Robinson, NAS
Dustan Terlson, NAS
Doug Yurcik, AF

OUTBOUND MILITARY
Capt. Paul Malone, AF

Heard Lowry, NAS
40 years

Joel Wood, nLogic
35 years

RETIREMENTS
Moufid Aboulmouna, QuantiTech
Vickie Owens, QuantiTech

NEW HIRES
Stephen Atterton, NAS
Teresa Benedetti, NAS
Shelley Cunningham, AF
Carl Daughtery, NAS
Frederick Rone, AF
Charles Sebourn, NAS

CERTIFICATES
Jason Coffelt, ASO received his National Crime Information Center and Tennessee Information Enforcement System Certifications

Susan Drinnon, AF received her Amateur Radio License at the Technician Level

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Staff Sgt. Keaton Thiem, a combat controller and Silver Star Medal recipient with the 22nd Special Tactics Squadron, salutes Maj. Gen. Eugene Haase, the Air Force Special Operations Command vice commander, during a Silver Star Medal presentation ceremony at Joint Base Lewis-McChord, Wash., Nov. 16. Thiem used air power to ensure the safety of his 100-plus man special operations forces element during a 14-hour firefight with no regard for his own personal safety, while deployed with U.S. Army Special Operations Forces in Afghanistan. *(U.S. Air Force photo/Senior Airman Ryan Conroy)*

One commando was still unaccounted for so the recovery team ran back out into enemy fire, but were pinned down. Without hesitation, Thiem controlled two more 30mm gun runs and eight rockets to destroy the fortified sniper position, allowing his team to reach the fourth missing Afghan commando and return to the rally point.

Once the fighting started to die down, Thiem focused his efforts on coordinating medical evacuations for injured forces while continuing to de-conflict close air support fires on several other insurgent positions. In the end, Thiem's actions played a role in suppressing a well-prepared force, supporting local Afghan governance, and returning electricity to the Afghan people

"Our special tactics Airmen performed when it mattered the most, on the battlefield," said Lt. Col. Daniel Magruder, the 22nd STS commander. "Drawing on their training, they acted without regard for their own safety in order to protect their joint and coalition brothers in arms."

Three of Thiem's Army Special Forces teammates were also awarded Silver Star Medals for their valorous actions during the same battle.

"What means the most is when my teammates on the Army side reach out and congratulate me because they were there with me," Thiem said. "I don't even have words to explain what I feel when some of them tell me that I saved their lives … it's humbling."

In addition to the Silver Star Medal presentation, Haase also presented a Bronze Star with Valor and four AF Combat Action Medals to 22nd STS Airmen.

"To all of the men we honor today, you are even more exceptional because you do not seek recognition," Magruder said. "Many of you did not want this ceremony but you remain consummate special operations professionals nonetheless. It is an honor to serve as your commander and the nation owes you and your loved ones a debt of gratitude."

This was the 36th Silver Star Medal awarded to a special tactics Airman and only the second Silver Star Medal awarded to a Airman in support of Operation Freedom Sentinel.

"As we recognize the heroic actions of these six men, we remember 135 special tactics personnel are in harm's way as I speak in 35 countries around the world," Haase said of the Air Force's ground special operations forces. "These six men represent them – and all of us well – as humble, competent and courageous Air Commandos."

New RQ-4 engine depot opens on Tinker AFB

By Jillian Coleman
72nd Air Base Wing Public Affairs

TINKER AIR FORCE BASE, Okla. (AFNS) – The Oklahoma City Air Logistics Complex (OC-ALC) recently stood up the overhaul and repair capability for a new workload in the F-137 engine.

This new workload is a partnership with Rolls-Royce, and the first venture of this kind with this engine manufacturer.

"The name is important," said Wade Wolfe, the OC-ALC vice director, at the recent opening of the F-137 engine line. "It defines who we are for everyone to know and remember, and it associates the qualities we wish to exemplify as we navigate the ever-complex, ever-changing business world."

Rolls-Royce is a Tier I-level supplier and was recently named an Air Force Superior Supplier for the third year in a row.

The F-137 (AE 3007H) engine is an 8,000-pound class high-bypass, two-spool turbofan engine. It powers the RQ-4 Global Hawk, an unmanned aerial surveillance platform. Based on a commercial Rolls-Royce design, the F-137 has a proven track record, providing world-class reliability and performance for this vital mission.

The mission is not new, Wolfe noted, further comparing the advancement in technology to its state during World War I, where Allies relied on binoculars and hot-air balloons to acquire aerial shots. Today, we rely on the Global Hawk for those aerial shots. The aircraft performs high-altitude; real-time; high-resolution; intelligence, surveillance and reconnaissance (ISR) collection. The F-137 engine allows for more than 30 hours of flight time at an altitude above 60,000 feet. It's an engine with powerful long-range capabilities that's dependable, keeping the drones operable and reliable 24/7. While the technology has advanced, the mission has remained.

Roughly 14,500 square feet of the OC-ALC will be home to the first Defense Department area to perform maintenance repair work on the F-137 engine. The demand for professional maintainers, programmers and schedulers has increased in order to meet the superior maintenance standard of this engine. As the workload transitions to Tinker Air Force Base, key personnel are being trained to maintain already established performance and reliability.

Phil Burkholder, the president of Defense North America, Rolls-Royce, called the new maintenance accomplishment "a win-win-win – a win for the Air Force, a win for Rolls-Royce, and a win for the state of Oklahoma."

Phil Burkholder, the president of Defense North America, Rolls-Royce, speaks on behalf of his company during the ribbon cutting ceremony for the new F137 engine maintenance line on Tinker Air Force Base, Okla., Nov. 15. *(U.S. Air Force photo/Kelly White)*

"Our first private-public partnership is in Oklahoma," Burkholder said. A global company, Rolls-Royce has chosen the OC-ALC to provide the best support possible for the engine, regardless of the global choices Rolls-Royce has previously established in their overhaul and maintenance portfolio.

"Rolls-Royce is proud to be a part of this program. We are performing engine management, services and logistics to support the Air Force and the OC-ALC," Burkholder said. "We strive constantly to provide quality, efficiency and cost-effective solutions for the customer. Our focus is to be your preferred provider, and I'm really pleased with the enduring, benefitting partnership we've found here."

Coalition intel cell breaks down boundaries

By Staff Sgt. R. Alex Durbin
U.S. Air Forces Central Command

AL UDEID AIR BASE, Qatar (AFNS) – At the Combined Air Operations Center, the Coalition Intelligence Fusion Cell, a multinational team of intelligence specialists, works side-by-side to provide intelligence to commanders for the fight to degrade and ultimately defeat the Islamic State of Iraq and the Levant.

CIFC is a diverse multinational team that plans, coordinates, develops and disseminates timely, relevant and accurate information among international partners and divisions within the CAOC. The team of international partners remains committed to facing ISIL on all fronts, dismantling its networks and countering its global ambitions – a goal set forth in September 2014.

"In the fight against (ISIL), every coalition nation brings valuable assets, personnel and perspective to the table," said Lt. Gen. Jeff Harrigian, the Combined Forces Air Component commander. "Only together will we secure the region and finally dismantle (ISIL). The Coalition Intelligence Fusion Cell is a shining example of what the combined forces of the coalition can accomplish."

The cell employs a multinational team of intelligence personnel, analysts and targeters to provide effective information to international leaders to promote interoperability across coalition nations. Leveraging this intelligence helps coalition decision makers develop targets to achieve campaign objectives, ultimately supporting the defense of the Middle East and the dismantling of ISIL.

The cell originally formed in 2014 with the U.S. and two European nations pioneering the mission. In the two years since its inception, the cell has grown to encompass personnel from 12 NATO and Middle Eastern nations. The growth allowed the team to provide more than 9,000 imagery products and 240 full-motion videos to international military leaders.

Unlike other sections within the CAOC where divisions are U.S.-led and include international augmentees, the CIFC takes a completely multinational approach to intelligence gathering and information sharing.

"The most amazing thing about the CIFC is the organization is almost entirely non-U.S. coalition nations," said Lt. Col. Michele, the CIFC director. "The CIFC shows the will and the effort of all the nations to provide their contribution to the coalition."

The CIFC director said this unique approach and diversity provides the team with a better ability to achieve its mission.

"[The cell] is effective because we are all different," he said. "We all provide our own perspective when we discuss intel, problem solving and the commitment to do something. It's powerful when so many people with the same mission can provide different and fresh ideas. In the end, the final idea will be the very best it can be."

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Leading up to the counter offensive to retake the city of Mosul, Iraq, from ISIL militants, the cell worked to gather intelligence on high-value targets to help the air coalition support Iraqi-led forces now closing in on the city.

Diversity within the CIFC will continue to provide impact.

"This cell is important because the U.S. alone has a lot of assets and capabilities, but when you have the opportunity to use all of the other countries' capabilities, you are stronger, not just at the military level," he said. "(If) terrorists see the commitment and the cohesion of so many countries against (them), they might think twice or three times before acting."