TEST BEFORE FLIGHT
ARNOLD AIR FORCE BASE, TENN.

HIGH MACH

Serving the World's Premier Flight Simulation Test Complex

HAP ARNOLD'S LEGACY
AN AIR FORCE SECOND TO NONE

PRSRT STD
US POSTAGE PAID
TULLAHOMA TN
PERMIT NO. 29

Vol. 67, No. 16 | Arnold AFB, Tenn. | August 17, 2020

Vice Chief of Staff of the Air Force visits Arnold AFB

Lt. Col. Adam Quick, left, director of the Arnold Engineering Development Complex (AEDC) Space and Missile Branch, briefs Vice Chief of Staff of the Air Force Gen. Stephen Wilson as they walk through part of the arc heater facility Aug. 11 at Arnold Air Force Base. Arc heaters allow for the testing of thermal protection systems in simulated environments representative of hypersonic flight. *(U.S. Air Force photo by Jill Pickett)*

Vice Chief of Staff of the Air Force Gen. Stephen Wilson looks at materials tested in the Space Threat Assessment Testbed at Arnold Air Force Base as Kellye Burns, an Arnold Engineering Development Complex space test engineer briefs him Aug. 11. Wilson visited STAT, arc heaters, the 16-foot Transonic Wind Tunnel and the C-2 engine test cell while at Arnold AFB. *(U.S. Air Force photo by Jill Pickett)*

Air Force conducts latest hypersonic weapon flight test

By Giancarlo Casem
412th Test Wing Public Affairs

EDWARDS AIR FORCE BASE, Calif. – The Air Force took another step towards fielding a hypersonic weapon following its final captive-carry test of the AGM-183A Air-launched Rapid Response Weapon under a wing of a B-52 Stratofortress off the Southern California coast, Aug 8.

The flight resulted in the successful transmission of telemetry and GPS data from the AGM-183A IMV-2 (Instrumented Measurement Vehicle) to Point Mugu Sea Range ground stations. The test verified system integration with the B-52 launch platform and telemetry while practicing concepts of operations that will be utilized during its first Booster Test Flight later this year.

"This is a major milestone for the program, the team and our Air Force," said Brig. Gen. Heath Collins, Air Force Program Executive Officer for Weapons. "ARRW is the first step in bringing game-changing hypersonic capabilities to our Warfighters."

The ARRW program is a rapid prototyping

See **HYPERSONIC**, page 6

Staff Sgt. Jacob Puente, 912th Aircraft Maintenance Squadron, helps line up the AGM-183A Air-launched Rapid Response Weapon Instrumented Measurement Vehicle 2 as it is loaded under the wing of a B-52H Stratofortress at Edwards Air Force Base, Calif., Aug. 6. The ARRW IMV-2 successfully completed a captive carry test off the Southern California coast, Aug. 8. *(Air Force photo by Giancarlo Casem)*

2020 AEDC Fellows announced

By AEDC Fellows Committee

COFFEE COUNTY, Tenn. – The Arnold Community Council AEDC Fellows Committee, chaired by AEDC Fellow retired Maj. Gen. Mike Wiedemer, is proud to announce four new AEDC fellows to be inducted later this year.

They are: retired Maj. Gen. Franklin O. Carroll, AEDC's first commander, as an Honorary Fellow; Dr. Greg Power as a Technical Fellow; Daniel R. Catalano as a Craft Fellow; and Ramesh Chandra Gulati as a Lifetime Achievement Fellow.

They join 103 AEDC Fellows elected for this honor since the Fellows program began in 1989.

The COVID-19 pandemic postponed the announcement and the induction banquet, normally held on June 25 each year. June 25 is the birthday of General of the Air Force Henry "Hap" Arnold, the only Airman to hold five-star rank, and the anniversary of the dedication of AEDC by President Harry S. Truman in 1951.

The Fellows committee hopes to hold the 2020 AEDC Fellows induction banquet on Aug. 25, if conditions allow. Attendance will be limited.

Maj. Gen. Franklin O. Carroll

Maj. Gen. Franklin Otis Carroll was a visionary leader who made significant contributions to aviation and to the American war effort in World War II and served as AEDC's

Maj. Gen. Franklin O. Carroll

first commander. His career spanned nearly the first half-century of military aeronautics.

He witnessed a revolution in aircraft design, materials, performance and manufacturing and was instrumental in guiding the U.S. Air Force's transition from reciprocating engines to jet propulsion. As the director of Wright Field's experimental engineering operations, he skillfully balanced the desires of dreamers, designers and operators.

Carroll was born in 1893 in Washington, Indiana. He received a Bachelor of Science degree from the University of Illinois in 1916 and began his military career the same year with the Illinois National Guard Horse Cavalry. He completed flight training at Kelly Field, Texas, in 1917 and was assigned there as a flight instructor.

In 1939, he was assigned to Wright Field, Ohio, as chief of the experimental engineering section's research and development branch. After a short stint as assistant military attaché in London in 1940, he returned to Wright Field as the chief of the experimental engineering section and remained in that job until the end of World War II. He was at the center of every major experiment and engineering project there during the war.

Carroll oversaw the creation of the world's most advanced wind tunnels and laboratories for aeromedical research, communications, navigation and radar, which later became the Air Force Institute for Technology. He also oversaw the introduction of the first jet engine at Wright Field.

He made the tough engineering decisions that translated

See **FELLOWS**, page 5

In This Issue....

AEDC Fellow Glen Lazalier retires after 55 years ...Page 2

Arnold AFB Combating Trafficking in Persons program manager urges awareness ...Page 3

Airman delays retirement, helps AEDC meet COVID-19 challenge ...Page 4

HIGH MACH
Arnold Air Force Base

Col. Jeffrey Geraghty
Commander

Jason Austin
Chief,
Public Affairs

Richard Tighe
General Manager,
National Aerospace Solutions

High Mach Staff:

Kathy Jacobsen,
NAS Executive Editor

Jill Pickett
NAS Editor

High Mach is published by Lakeway Publishers, Inc. a private firm in no way connected with the U.S. Air Force, Arnold Air Force Base, Arnold Engineering Development Complex (AEDC) or National Aerospace Solutions (NAS), under exclusive written contract with NAS at Arnold AFB, Tenn., 37389.

Everything advertised in this publication will be made available for purchase, use or patronage without regard to race, color, religion, sex, national origin, age, marital status, physical handicap, political affiliation or any other non-merit factor of the purchaser, user or patron.

The *High Mach* office is located at 100 Kindel Drive, Suite A236, Arnold AFB, Tenn. 37389-1236. Editorial content is edited and prepared by NAS. Deadline for copy is Wednesday at close of business one week before publication.

This commercial enterprise newspaper is an allowable NAS contractor publication for personnel at Arnold AFB.

The content of *High Mach* does not necessarily reflect the views of the Air Force, Arnold AFB, AEDC or NAS. The appearance of advertising in this publication does not constitute endorsement of the products or services advertised by the Department of Defense, the Department of the Air Force, Arnold AFB, AEDC, NAS or Lakeway Publishers, Inc.

For general information about *High Mach*, call (931) 454-5655 or visit *www.arnold.af.mil*.

Use High Mach to market your products and services. Contact Joe at 931-455-4545 or *jmartin@tullahomanews.com*

AEDC Fellow Glen Lazalier retires after 55 years

By Deidre Moon
AEDC Public Affairs

Though he has dabbled in retirement once before, leaving Arnold Air Force Base for a short period in 2004, Glen Lazalier is now officially retired from Arnold Engineering Development Complex.

Lazalier, an AEDC Fellow, departed his latest role as a technical subject matter expert at Arnold AFB on July 31, after a career spanning just over 55 years.

Lazalier began as an analysis engineer in Aeropropulsion in June 1965, working to pilot a liquid air injection methodology to extend the cold temperature range of turbine engine test cells. The methodology developed was used routinely in the Engine Test Facility test cells until the tie line to the Aeropropulsion Systems Test Facility air supply plant with local expansion turbines eliminated the need.

This is only one of several areas where Lazalier worked during his time at Arnold.

"In the early 1970s, I went to the technology group and worked in technology development, and then in 1991 to 2004, I worked as chief engineer for the operating contractor," he said. "I have worked at every facility at Arnold except for the space chambers."

Lazalier received both his bachelor's and master's degrees in mechanical engineering from Oklahoma State University and received a second master's degree from the University of Tennessee in 1973. He has also received many accolades supporting the AEDC mission for his technical leadership and scientific and engineering contributions to advancing the state-of-the-art of test and evaluation of propulsion systems.

In 1995, Lazalier was named AEDC Fellow in part for his work pioneering the development and application of a number of air-breathing and rocket propulsion system altitude test and evaluation methodologies. He was also recognized for leading a two-pronged effort to establish an interim fix to an unacceptable noise problem restricting the test capability for the YF119, developing and demonstrating the country's first exhaust gas handling system for vectoring turbine engine operation in altitude cells, as well as developing changes to plant operation and maintenance procedures in the AEDC Aeropropulsion Systems Test Facility (ASTF).

Lazalier has been part of and witness to many successful projects over the years.

"Early in my career (1966), AEDC tested the boilerplate for the second stage of the Apollo vehicle that placed the first man on the moon," Lazalier said. "The J-4 rocket test cell was the premier rocket test cell in the world and made absolutely essential contributions to the knowledge base needed to get to the moon."

In the late 1960s and the early 1970s, Lazalier was around when what was then known as the Rocket Test Facility morphed into the Engine Test Facility.

"I was extremely fortunate to play a role in the development of standardized test, analysis and evaluation methodologies for turbine engine compression stability," he said in an article he wrote in 2011 for AEDC's 60th anniversary. "These methodologies are still in use in the development of every new turbine engine that the U.S. Air Force and the U.S. Navy will be using for decades to come."

In 1980, in work done for the Sverdrup Corporation, Lazalier patented two combustors used in the metal smelting industry. One was designed to burn petroleum coke at temperatures up to 3,000 degrees Fahrenheit at extremely rich fuel to oxidizer ratios and is used to recover metals from steel furnace dust. This combustor employs and controls a complex vortex recirculation path that is found in aerospace technology. The other is a natural gas combustor with a very short combustion length. Both of these were tested at the University of Tennessee Space Institute.

Glen Lazalier, then-subject matter expert at Arnold Air Force Base, poses for a photo at Arnold July 27. Lazalier retired July 31 from Arnold after close to 55 years with AEDC. *(U.S. Air Force photo by Deidre Moon) (This image has been altered by obscuring a badge for security purposes.)*

Lazalier also helped bring ASTF online in the fall of 1984. Not long after, he led the analysis team for the Product Verification Test of the General Electric F101 engine for the B-1 strategic bomber at the facility.

"I remember we were on a very tight schedule, and thanks to the devoted efforts of all our folks, we made it," he said. "During the last week before we briefed the folks at

Wright Patterson (Air Force Base), my own schedule involved six consecutive 16-plus hour days from Monday through Saturday plus 10 hours on Sunday."

Lazalier has worked a lot of long shifts and late nights on countless projects with hundreds of people over the years. It only makes sense that he has not one, but many memorable moments that will stick with him.

"I really can't select a single time, event or action inside or outside the fence that constitutes the 'most memorable moment,'" he said. "Rather, it's the aggregation of all those times, events and actions that together are the very important consequences of working at AEDC. All of them were and are important to this country."

Lazalier added that this was the primary reason he returned to AEDC after his first retirement.

"A lot of people may not realize the importance of what we do out here every day," he said. "But, what we do brings our kids, our warfighters, back home on their feet."

What he will miss most about coming to work at Arnold is the "technical involvement and contributing to the defense effort."

However, he isn't completely leaving AEDC behind and mentioned he plans to still serve in an advisory capacity when needed.

Lazalier added he believes the Complex is in good hands and thinks very highly of the current AEDC Commander, Col. Jeffrey Geraghty.

"Col. Geraghty is one of the best commanders we've had in a long time," Lazalier said. "He's smart, good, listens and does. He's definitely in the top echelon of commanders I've seen here in my 55 years."

Lazalier said his biggest accomplishments outside of AEDC are his children, of whom he is immensely proud. He and his wife, Jessie, have two daughters, Michelle and Nicole, and one son, Michael. All, he noted, are very successful in their own rights. Michelle is the chief purchasing agent for a large company, Nicole is a veterinarian, and Michael is the current chief engineer of Test Systems for AEDC.

Of his wife, Lazalier remarked, "I cannot tell you just how grateful I am to Jessie for her support and help over the years. She has been my mainstay."

Now that his career is coming to a close, Lazalier plans to spend more time on his hobbies, which include writing, wood chip carving, teaching his Sunday school class at the Manchester First Presbyterian Church and spending time with his family.

Air Force improves assignment process for co-parents, considers custody agreements

By Secretary of the Air Force Public Affairs

ARLINGTON, Va. (AFNS) – The Department of the Air Force recently announced great news for parents – the ability to defer an assignment or be stationed near their children with a court-ordered child custody decree.

Assignment authorities will now be able to consider requests for an assignment or deferment to a location near their children, even if the co-parents are not married.

"We recognize family dynamics don't always look the same and there is not a one-size-fits-all solution to managing people's careers and assignments," said Lt. Gen. Brian T. Kelly, deputy chief of staff for Manpower, Personnel and Services. "We ask our people to move frequently and we know that can cause additional stress and sacrifices for their families. This change gives us the flexibility needed to better take care of them."

Service members are still required to fill valid manning requirements, perform the duties in which they are trained, and meet all PCS eligibility requirements without waivers.

"This is one we've been working on for a while, and I'm glad we could get it across the finish line," said Chief Master Sgt. of the Air Force Kaleth O. Wright. "You know, this Air Force life is a family business. As such, we owe it to our teammates to make sure they have every opportunity to keep their family together whenever possible."

Service members who are named as a parent, either biological or adopted, and have a court-ordered child custody agreement are eligible to apply. Assignment matches will be made when possible, and must meet the best needs of the Department of the Air Force.

Criteria for court-ordered child custody assignments and deferments vary, so consult the new Air Force Guidance Memorandum AFI 36-2110 for details.

In order to apply, Airmen can submit their application through myPers beginning Aug.17. Instructions are outlined in the PSD Guide, Voluntary Assignments: CCCA/CCCD.

Core Values

- *Integrity first*
- *Service before self*
- *Excellence in all we do*

Vision

"NAS delivers the best aerospace testing capabilities today and in the future."

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.
- Security. We are disciplined and vigilant in protecting sensitive AEDC information and ensuring system integrity to support national security and our customers.
- 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.

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,

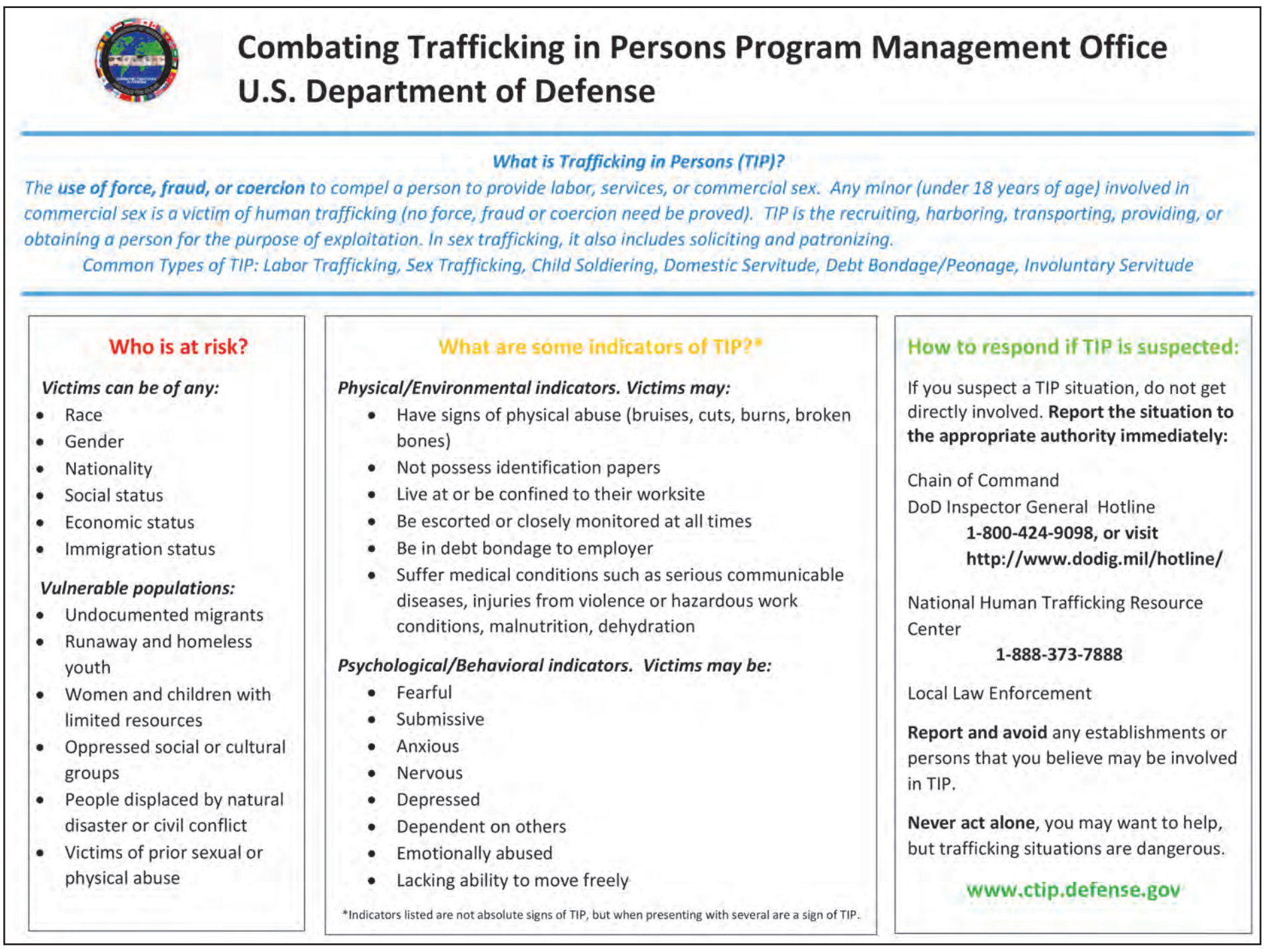
I believe in free and open communications with our Team AEDC employees, and that's why we have the Action Line available. People can use the Action Line to clear up rumors, ask questions, suggest ideas on improvements, enter complaints or get other issues off their chests.

The Action Line has been expanded to include an option for your ideas, comments, or suggestions on the AcqDemo personnel system. Simply call the normal x6000 commander's action line. You will then be prompted to select option 1 for the Commander's Action Line or Option 2 for the AcqDemo line. They can access the Action Line via the AEDC intranet home page and by calling 931-454-6000.

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. Jeffrey Geraghty
AEDC Commander

Arnold AFB Combating Trafficking in Persons program manager urges awareness



Trafficking in Persons Indicators. ***(DOD graphic)***

By Jill Pickett
AEDC Public Affairs

Trafficking in persons, or TIP, is the second largest criminal activity in the world, according to the Arnold Air Force Base Installation Policy on TIP.

TIP is defined on the DOD Combating Trafficking in Persons website as: "The use of force, fraud or coercion to compel persons to provide labor or services or commercial sex. TIP involves exploitation of all types. TIP can include elements of recruiting, harboring, transporting, providing or obtaining a person for the purpose of exploitation."

TIP occurs around the world, including the United States, and the Air Force has established zero tolerance for this violation of human rights.

"Human trafficking does not just happen in the movies; it's a reality that we all must be aware of," said Stacy Jones, Arnold Air Force Base Combatting Trafficking in Persons (CTIP) program manager.

Jones is tasked with ensuring the workforce is educated about TIP using different tools such as emails, posters and mandated training modules. This education includes informing team members of the signs that someone may exhibit if they are a victim of trafficking and to be aware of their surroundings to notice those signs when present.

"When you leave the comfort of your home, be aware of what is going on around you and take notice of anything that looks out of place; rely on your gut instincts and the training that you have taken," Jones said. "You yourself could be a victim of human trafficking. Bottom line - if you see any of the signs of trafficking, bring it to the attention of the authorities. Do not intervene. You may want to help, but these situations are very dangerous."

If you observe what you believe to be signs of TIP, you should report it via one of the following channels:

- Chain of command
- DOD Inspector General Hotline – 1-800-424-9098 or online at ***www.dodig.mil/hotline***
- National Human Trafficking Resource Center – 1-888-373-7888
- Local military or civilian law enforcement

More information is available at ***ctip.defense.gov***.

Air Force removes administrative burden, allows pregnant, postpartum women to attend PME

By Secretary of the Air Force Public Affairs

WASHINGTON (AFNS) – Pregnant and postpartum members may now attend professional military education without an exception to policy, and are also exempt from the requirement to have a passing fitness assessment prior to attending.

Previous policy prevented pregnant women and women within their one-year postpartum deferment period from attending PME, creating an unintended barrier to their developmental milestones.

"Empowering women to make a decision about the right time to attend PME, especially during or after pregnancy, is the right thing to do," said Gwendolyn DeFilippi, assistant deputy director of Air Force manpower, personnel and services and strategic director of the Department of the Air Force Barrier Analysis Working Group. "These type of policy changes provide women flexibility to balance family planning and career progression; they help level the playing field. We're committed to improving diversity, inclusion and belonging across the Department of the Air Force, and sometimes it's hard to know what to do. Thanks to the Women's Initiative Team and the work of the Diversity Task Force, we are able to implement meaningful changes that will help retain women in our ranks."

Lt. Col. Hallie Herrera salutes during her change of command ceremony at Fort George G. Meade, Maryland, June 16. Hererra, who was eight months pregnant at the time, took command of the 22nd Intelligence Squadron. ***(U.S. Air Force courtesy photo by Felix Herrera)***

This change, in collaboration with Col. Ricky Mills, Squadron Officer School commandant at Maxwell Air Force Base, Alabama, was introduced through the Women's Initiative Team. The WIT, which is one of six teams in the DAFBAWG, was specifically created to address barriers for women in the Department of the Air Force and has championed numerous policy changes to benefit women.

"We found some people wanted to attend PME during pregnancy, but were facing obstacles to attend," said Maj. Alea Nadeem, Women's Initiatives Team chief. "The WIT advocated for pregnant women to work directly with their primary care manager or obstetrician to empower them to make a well-informed decision. We keep an ear to the ground and listen to what our teammates are saying. Thanks to the Air and Space Professionals who came forward and identified this as a barrier, and also for the support of Col. Mills and his team who assisted the WIT in making this important change."

Air Force Instruction 23-2670, Total Force Development, outlines the exemption for pregnant and postpartum members. Routine obstetric care may not be available at the PME location, so members should work with their primary care manager or obstetrician to obtain medical clearance and any required paperwork.

Whether or not a member attends PME while pregnant or within the one-year postpartum period is left up to the individual and her medical team. For those who elect to attend PME while pregnant or within their postpartum period, there is no expectation to perform a physical event or activity with which they are uncomfortable.

For more information, members should contact their chains of command or refer to AFI 36-2670, Total Force Development.

Airman delays retirement, helps AEDC meet COVID-19 challenge

By Jill Pickett
AEDC Public Affairs

Master Sgt. Joshua Suggs was nearing the end of his military career, with terminal leave planned to begin May 1 and retirement Sept. 1.

That was before COVID-19.

With the pandemic surging in the United States, Suggs demonstrated the Air Force core value of "service before self," delaying his retirement to help team members at Arnold Engineering Development Complex meet this new threat to personnel and the mission.

Suggs is the branch chief of the Arnold Air Force Base Medical Aid Station.

It was a very busy time for the unit – writing base policies, drafting return-to-full-capacity plans, providing daily briefings for AEDC Commander Col. Jeffrey Geraghty, tracking COVID-19 data for 100 counties across four states and working with local, state and Air Force public health, among other tasks.

The unit was also losing a "vital team member" to a permanent change of station.

"I couldn't with a clear conscience just walk away from the team during these times," Suggs said. "Not only would they lose the manpower, they would lose their leader during a pandemic. So, I talked with my wife to make sure she was onboard with the decision and, she was all for it."

The expertise of the Medical Aid Station team was, and still is, in high demand.

"It went from normal operations of making decisions that affect my work center, to being part of the team that makes recommendations to the Wing Commander to keep the wing's populace safe from a deadly virus," Suggs said. "Being the medical SMEs (subject matter experts), we had to quickly become COVID-19 experts. This was the hardest part of the task because the guidance was and still is constantly changing."

The team, like many, shifted to a telework status, and continues to work modified schedules to maintain social distancing to minimize risk.

Master Sgt. Joshua Suggs is the branch chief for the Medical Aid Station at Arnold Air Force Base. He delayed his retirement when the COVID-19 pandemic increased the unit's workload. *(U.S. Air Force photo by Jill Pickett)*

"We still have a lot of ground to cover, but it is much more manageable at this point," Suggs said.

He added he is grateful for his team and proud of their efforts.

"These have been very trying times during this pandemic and there were some very long and stressful days, but you learn a lot during these types of situations," Suggs said. "All the hurdles that we had to overcome because of the changing work dynamic, I learned that I have a strong team, a team that's not afraid of adversity, a team that doesn't complain because of a heavy workload, a team that can overcome ever-evolving conditions and not just make it work, but excel.

"No one wants to be in the middle of a pandemic, but I'm glad I got to go through it with this team. I feel like even though we have to stay further apart, this experience has brought us closer together as a team."

Suggs now plans to begin terminal leave in January 2021 and retire in May 2021.

Tinker AFB units produce first 3D printed engine component

By 2nd Lt. Danny Rangell
72nd Air Base Wing Public Affairs

TINKER AIR FORCE BASE, Okla. (AFNS) – Members of the Oklahoma City Air Logistics Complex, an Air Force Sustainment Center wing, have produced the first additively manufactured metal component successfully tested on a U.S. Air Force aircraft engine, a significant milestone for future sustainment of aircraft like the E-3 Airborne Warning and Control System and the B-52 Stratofortress.

The OC-ALC used additive manufacturing, also known as 3D printing, to create a component for the TF33-P103 engine, an innovation meant to save time and improve efficiency. A collaboration between the 76th Propulsion Maintenance Group, the Reverse Engineering and Critical Tooling Lab, and the Air Force Life Cycle Management Center Propulsion Sustainment Division produced a 3D printed anti-ice gasket. The gasket is a critical part of safe and efficient operation of the TF33 engine, which powers the E-3, the B-52 and the E-8 Joint Surveillance Target Attack Radar System.

"This accomplishment is truly a historical first," said Johnny Tsiao, AFLCMC propulsion structural competency lead. "This is a digitally designed and digitally engineered component that represents a substantial milestone in Air Force sustainment. Although it is a basic component, the technology our OC-ALC team has developed will help resolve supply chain issues and help bring further capacities to support the warfighter."

The project stemmed from a supply shortage of anti-ice gaskets. Historically, maintenance workers visually inspected and reused the gasket component. Recently, OC-ALC personnel noticed that the published guidance directed maintenance personnel to discard the gaskets, significantly increasing demand for the component and subsequently causing a supply shortage.

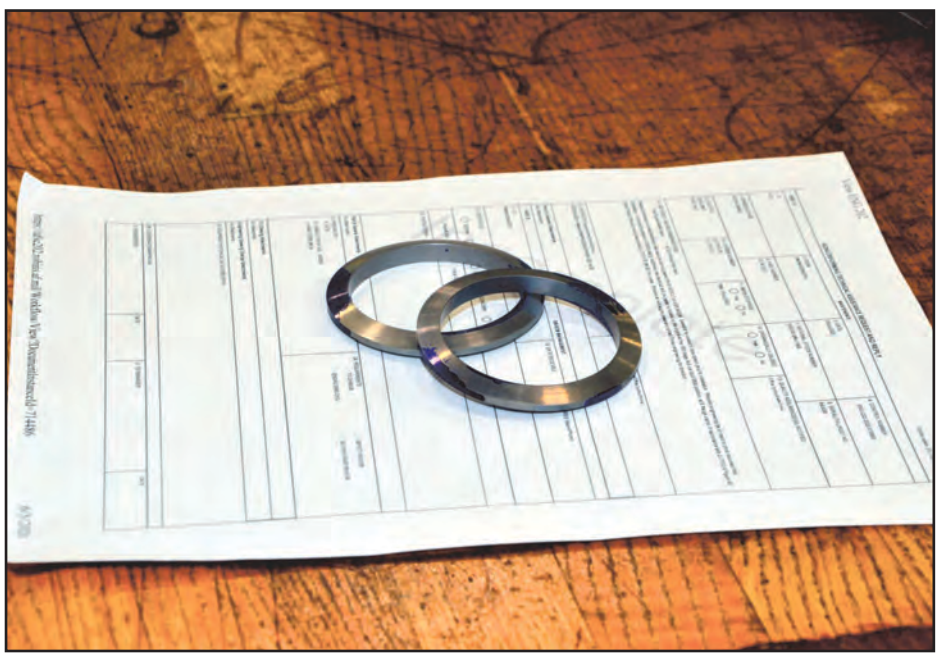
"One of the things we found in this collaboration is that we could potentially solve the supply shortage by reengineering and printing something and prove it was safe to fly," said Richard Banks, 76th PMXG delegated engineering authority engineer. "This type of engineering makes it easier to source materials, greatly reduces lead time and ultimately helps to reduce logistical and supply issues."

So far, the REACT lab has digitally engineered and printed 30 anti-ice gaskets. Members of the 76th PMXG performed a successful engine acceptance test run earlier this month. Compared to the original component sourcing method, the new anti-ice gasket manufacturing process reduces administrative lead time —the amount of time between an initial contract and actual component manufacture— from 120-136 days to 14-21 days.

OC-ALC engineers say they are optimistic about the future of 3D printing and its use in improving the Air Force sustainment process.

"We've implemented a crawl, walk and run approach when it comes to additive manufacturing," Tsiao said. "We haven't had a 3D printed metal component in Air Force engines before, but in the next 12-24 months, this technology will open the door to more complex and critical components that help to improve our sustainment efforts moving forward."

Air Force Materiel Command continues to encourage Airmen to be innovative and find new ways to streamline processes and save resources. AFMC military or civilian Airmen with innovative ideas can visit the U.S. Air Force Ideation platform at ***https://usaf.ideascalegov.com/*** for more information on innovation submission opportunities.



Members of the Oklahoma City Air Logistics Complex have produced the first additively manufactured metal jet engine part successfully installed and tested on a U.S. Air Force aircraft engine, a significant milestone for future sustainment efforts of aircraft like the E-3 Airborne Warning and Control System, E-8 Joint Surveillance Target Attack Radar System and the B-52 Stratofortress. *(Photo courtesy of Oklahoma City Air Logistics Complex)*

FELLOWS *from page 1*

proposals and requirements into airplanes – some of the best airplanes in the world.

While at the Pentagon, Carroll was responsible for coordinating all Department of Defense policy, funding and contracting for the establishment and building of AEDC. He assumed command of the Air Engineering Development Division of Air Material Command in 1949. In November 1950, he moved the Air Engineering Development Division to Tullahoma. It was re-designated as the Arnold Engineering Development Center by President Harry S. Truman on June 25, 1951.

Dr. Greg Power

Dr. Greg Power serves as the subject matter expert for Computational Fluid Dynamics (CFD) and Modeling and Simulation (M&S) for National Aerospace Solutions, LLC (NAS), the Test Operations and Sustainment contractor for AEDC.

Power has significantly advanced the state-of-the-art in physics-based mathematical modeling of flows in ground test facilities. This modeling and simulation capability is valuable in progressing both test facility capability developments and test article experimental capabilities.

Enabling the use of physics-based simulations with accurate models, validation of a wide range of conditions is a significant time and cost saving capability. The inability to have accurate modeling capability would require that actual experiments be conducted in small-scale or full-scale facilities for proof of concept in design and modifications.

These activities often can be done with the time- and dollar-efficient modeling. Multiple approaches can be analyzed, alternate approaches evaluated and influential aspects of the design can be analyzed and predicted.

These advances have been in development since the early days of analog modeling. The advent of the digital computer age has enabled but not advanced the capability.

Technical experts developing algorithms and tools to use the available computation power are required to advance the physic-based models and simulation. This necessitates developing modeling algorithms and approaches to solutions that accurately enough predict the flow fields.

Power has been involved in such advances since he began his career in the early 1980s at the United Technologies Research Center where he was responsible for development of and application of Naiver-Stokes (and derivative fluid flow) equations. Navier-Stokes equations are the highest level of computational flow modeling.

His early work focused on supersonic flow through engines, high-speed civil-transport aircraft, and hypersonic engine computational analysis tools. This work helped build a strong foundation upon which he has been building throughout his career.

In 1992, Power moved to AEDC where he has continued his modeling and simulation work. He has progressed to increasingly more complex flow solvers and held higher responsibility positions in development of practical application tools, becoming the technical lead for six-degree-of-freedom (all directions) environments within the high-performance computing environment in the early days of "supercomputers." He led developments of moving body and multidisciplinary (multi-flow regime) simulations.

Power has assumed technical lead roles for AEDC in joint AEDC-NASA Glenn Research Center fluid field code developments. He has led further developments within the Department of Defense High Performance Computing Modernization Office.

From this work, Power moved into the CREATE framework of DOD. In 2006, the DOD launched the Computational Research and Engineering Acquisition Tools and Environments (CREATE) Program to enable innovation in the acquisition of major defense systems and reduce their cost, time and risks.

The CREATE goal is to develop and deploy physics-based high-performance computing software applications for design and analysis for the military. AEDC plays a vital role in CREATE efforts, and Power is a key contributor to the development of modeling and simulation tools within this framework.

Test applications include scramjet (supersonic combustion ramjets), arc jet-heated facilities (reentry, combustor materials developments), light gas guns design (hypervelocity impact facilities) and AEDC facility bell mouth and diffuser design analyses.

This work includes tremendous advances in applications of these models to support the development of next-generation high-pressure, arc jet-heated facilities for hypersonic testing currently being built at AEDC, including simulations of diffusers, ejectors and facility heat loads and cooling techniques where real gas multiphase simulations are required. Power's work has had a major, positive influence on aerospace ground testing at DOD, NASA and industry facilities around the world.

Through this work, Power has developed technical leadership skills using his knowledge and experience for technical efforts and personnel management. He is an excellent teacher and mentor for junior and senior engineers, helping transfer his expertise to others and motivating them to seek innovative solutions to problems.

Power continues to advise and assist in furthering developments in execution of modeling and simulations technology developments. His knowledge and skill as an aerodynamicist and computational methods development specialist has provided significant furthering of the state-of-the-art in test design and design analysis capabilities.

Power has published 37 Technical papers related to AEDC testing.

These advances continue to help AEDC develop needed test capabilities at lower cost and faster acquisition cycles by expert use of computational models and flow field simulations.

Daniel Catalano

Daniel "Dan" Catalano's extensive skills and knowledge have contributed to the success of testing and design at AEDC since his career began as a machinist for ARO in 1979 and as he has continued to serve AEDC in an engineering role for Hypersonics with Quantitech since 2018.

He has received multiple awards and recognitions at AEDC, the first being a Technical Achievement Award received in 1995 for his expertise as a machinist for his contributions to the Icing and CFD Technology Development Team.

Since that time, his Technical Achievement Awards have been mostly for his proficiency and knowledge in designing new periscopes, rakes and probes that can endure high temperature afterburning augmentor exhausts of the latest modern military jet engines.

In 2002, he received a Technical Achievement Award from the International Test and Evaluation Association for a newly designed high-temperature periscope used in and behind engine augmentors

Again in 2004, Catalano was recognized for his work on a Continuous Sweep Emissions Team with his development and implementation of a cost effective method that was used in measuring turbine engine exhaust emissions.

He began his career at AEDC in the Turbine Engine T-Cells where he excelled in plumbing, system hookup, engine installs and running pre-op and post-op procedures. His contributions included operating engines in the control room with the mechanical instrumentation from the throttle to the engine.

In 1980, he worked at the hypersonic Aeropropulsion Test Unit for the buildup of fuel systems where he was focused on plumbing all fuel systems from the supply bottles outside the building to the test article in the cell.

He was transferred to maintenance for the Engine Test Facility (ETF) shop where he spent several years working on valves, hydraulic, pneumatic and electromechanical operators throughout the ETF. Again, his extensive troubleshooting and repairs using milling machines, lathes, drill presses and metal cutting saws were invaluable.

He has repaired air supply and exhauster systems from the smallest to largest compressors at AEDC. He honed shafts, cut bearings and removed and repaired compressor blades. He installed, set, aligned and coupled compressors to motor drives.

He worked a brief stint employed by Calspan Corp. when there was a contract split in 1980, maintaining mechanical systems for the hypersonic von Kármán Gas Dynamics Facility and Mark 1 Space Chamber on compressors, pumps (hi-lo) pressure and vacuum systems.

Catalano accepted an offer in Research (Technology) with Sverdrup, where he was asked to buildup rakes and probes, operate and test all ETF R cells in T-Side. He was skilled at operating milling machines, lathes and other machinist equipment, as well as sketching optical, mechanical and electronic support hardware of engineers.

Combining his expertise with mechanical repair and troubleshooting and his interest in drafting and welding, he expedited hardware repair for several years, including a year in the AEDC Model Shop in 1996. He then returned to Technology in 1998 as a Senior Associate Engineer to help design advanced high temperature rakes, probes and periscopes. He has designed, and helped design and draw, hundreds of complex models for Technology over the years with a high percentage success rate.

In 2007, Catalano was asked to lead the design and development of the "first ever" fully-conformed cooling system of a large rake that was outfitted with cooled probes using a new procedure called electroforming. The nickel electroform material was used in the closeout of the cooling channels.

The assembly of a very large rake was built at the AEDC Model Shop and his leadership walked the machinists through the process, piece by piece, as it was being built. The rake provided the Secretary of the Air Force a method to meet gas sampling needs on the new FT-Fuels for the air fleet. It was tested and successful for that test series and went on to be used in other programs.

As an employee for Aerospace Testing Alliance, in 2013, he was asked to create a method for Machine Shop reports and job coordination for several re-

Photo not available: Ramesh Chandra Gulati

Dr. Greg Power

Daniel Catalano

source levels and work phases included in Model Shop requirements. His knowledge of AEDC and the work involved in past machining, design and leadership proved again to be an asset. He was awarded an Achievement Award for creating spreadsheets to assist the management and machinist in their efforts. This system was invaluable for scheduling and production.

Catalano has had a disproportionately positive impact on AEDC facility modifications and upgrades. As a result he has co-authored six AIAA technical papers

Catalano's long career span at AEDC, along with his attention to detail and efficiency, has been core to his success. His talents are widely known at AEDC and have been used to further the capabilities of the AEDC testing arena. His engineering skills and interest outside and inside the gate of AEDC shows his strong commitment to Arnold AFB.

Ramesh Chandra Gulati

Ramesh Gulati is the modern maintenance practices implementation pioneer and champion for AEDC. His influences inculcated the AEDC workforce with an understanding of best practices though all phases of work. Gulati is possibly best known for his well-deserved reputation of encouraging and continually engaging the total workforce.

When he arrived at AEDC, Gulati immediately became a force of improvement in the execution of maintenance practices, moving AEDC toward maintenance and reliability best practices before industry widely adopted this concept.

He spoke of preventive maintenance above corrective, and proactive above reactive, laying a technical and business foundation as a basis for continual improvement in practices. He was and remains a constant voice of innovation in practices based on improved overall fiscal results and increased throughput. His work laid the foundation for AEDC currently being able to reinvest maintenance savings to continually expand the best practices in a technically rigorous way. The result has been reduced outage downtimes and improved facility throughput.

Gulati advocated for the role of a properly designed maintenance program in achieving AEDC's focus on excellence in test and data quality through the reliability and total life cycle cost concerns of maintaining the Complex's high-dollar value, one-of-a-kind, aging facilities across the test, plant, utility and support infrastructure.

He continued to engage maintenance industry leaders to stay current in relevant best practices and advocate for their use at AEDC. His national reputation enabled him to bring maintenance leaders from all industries across the nation to come to the AEDC area and engage in benchmarking and make technical seminars and presentations available to the AEDC workforce. These experts addressed practical applications of maintenance best practices especially as related to design for reliability and maintainability supporting major maintenance and capital improvement efforts.

As the size of budgets and the workforce decreased, initiatives were sought by AEDC leaders to reduce the cost of testing. One of the most positive impacts was to improve the reliability of the test cells (increase productive test time) through maintenance process improvements.

Some examples of Gulati's influence include, the scheduling of outages for maintenance and the collection and analysis of maintenance data to better manage the overall maintenance program. As a result, the frequency of facility downtime did not increase with the increasing age of the infrastructure.

Gulati's influence across the complex was known by everyone from the seasoned maintenance and operations veterans to the newest systems engineer to the financial managers, all speaking the same language when it comes to maintenance. During his time at AEDC, enough AEDC employees (Air Force and contractors) earned the qualification of Certified Maintenance and Reliability Professionals (CMRP) to make AEDC the holder of the largest number of CMRPs at one site in the world, leading to AEDC being recognized as a world leader in Reliability and Maintenance.

Based on AEDC practices, largely influenced by Gulati's technical excellence and his influence on a large portion of the AEDC workforce, AEDC was awarded the Predictive Maintenance Overall Program of the Year in 2008 and 2010 and the Infrared Program of the Year in 2007 by Uptime Magazine, a leading international publication in the asset management and maintenance and reliability industry.

During his career at AEDC, Gulati has served in many maintenance-related leadership roles including Asset Management and Reliability Planning Manager, Reliability Engineering Manager, Industrial Engineering Manager, Maintenance Analysis Supervisor, and Chief Engineer for Reliability and Maintenance.

He has enhanced AEDC's reputation for technical excellence through his active involvement and contributions through numerous national and international organizations.

Gulati has published more than 100 technical papers and is the author of several books on Maintenance and Reliability Best Practices

Gulati has had a significant, positive impact on the ability of AEDC to support the nation's DOD ground test needs with improved Maintenance and Reliability best practices helping AEDC to accomplish its mission successfully. Gulati's expertise has created a culture of reliability at AEDC and is well recognized across multiple DOD, NASA and other government agency organizations as well as the M&R industry, enhancing AEDC's reputation as a valued contributor to the nation's aerospace infrastructure.

HYPERSONIC *from page 1*

A B-52H Stratofortress assigned to the 419th Flight Test Squadron is undergoes pre-flight procedures at Edwards Air Force Base, Calif., Aug. 8. The aircraft conducted a captive-carry flight test of the AGM-183A Air-launched Rapid Response Weapon Instrumented Measurement Vehicle 2 at the Point Mugu Sea Range off the Southern California coast. ***(Air Force photo by Giancarlo Casem)***

project aimed at delivering a conventional hypersonic weapons capability to the Warfighter in the early 2020s. The weapon system is designed to provide combatant commanders the capability to destroy high-value, time-sensitive targets.

ARRW will also expand precision-strike weapon systems' capabilities by enabling rapid response strikes against heavily defended land targets.

"The event this week demonstrated the ability to communicate with the prototype weapon; the entire team is excited to take the next step and begin energetic flight test of our first air-launched hypersonic weapons," said Lt. Col. Michael Jungquist, 419th Flight Test Squadron Commander and Global Power Bomber Combined Test Force Director. "These weapons will enable application of conventional firepower anywhere in the world at eye-watering speed."

The 419th FLTS and Global Power Bomber CTF conduct flight test missions utilizing the Air Force's inventory of bomber aircraft.

"We are in a competition and must remain diligent in our efforts to stay ahead of our adversaries who are vigorously pursuing similar weapon systems," said Gen. Arnold. W. Bunch, Jr., Air Force Materiel Command commander. "Across the enterprise, our research, acquisition and test communities are well-coordinated to deliver critical hypersonic capabilities for the nation."

The ARRW program development began with the Defense Advanced Research Projects Agency's Tactical Boost Glide demonstration system, which will be integrated into the ARRW payload. It has successfully completed two prior captive-carry tests.

"I am very pleased with the work on the Air-Launched Rapid Response Weapon and what this means for global precision-fires," said Gen. Tim Ray, Air Force Global Strike Command commander. "This capability will directly support our warfighters. Hypersonic weapons further enable the U.S. to hold any target at risk in any environment anywhere."

This test of the AGM-183A IMV-2 was the culmination of efforts from across the Air Force Test Center enterprise, the Naval Air Warfare Center Weapons Division at Point Mugu, the ARRW Program Office and Lockheed Martin.

"This test program presents an opportunity for the U.S. to showcase rapid warfighting innovation in the game-changing field of hypersonic research," Jungquist said. "The Global Power Bomber and Hypersonic CTFs are privileged to work with the ARRW system program office and Lockheed Martin to bring this capability to fruition."

Staying safe in the heat

By AEDC Safety
AEDC Public Affairs

Summer time. Whether at work, home or play, we are in the hottest time of the year so let's be prepared to avoid heat-related illnesses.

Even with today's knowledge and resources there are still around 618 people that die because of heat related issues in the United States each year. Let's review what to look for and what to do to stay safe working and playing all summer long.

What is extreme heat? The Red Cross suggests that temperatures "greater than 100 degrees Fahrenheit or 38 degrees Celsius" would qualify.

Heat-related illnesses happen when your body is unable to maintain a safe internal temperature. Your body normally cools itself by sweating, but sometimes that isn't enough. When the body cannot cool itself well enough a person's body temperature rises rapidly. Very high body temperatures may damage the brain or other vital organs. Here are several factors affect the body's ability to cool itself and increase your heat related illness risk:

- Old age
- Sunburn
- Children less than 4-years-old
- Dehydration
- Heart Disease
- High Humidity
- Illness or fever
- Drinking Alcohol
- Being over weight
- Poor overall health
- Some prescription drugs

Tips to stay safe

Schedule outdoor activities during cooler times: Morning and even-ing hours are usually best. Recover best by resting often in shady areas with a fan or breeze.

Wear appropriate clothing: Lightweight, light-colored, loose-fitting, sun-glasses, and wide brim hat

Wear sunscreen: Sunburn interferes with your body's ability to cool down and can make you dehydrated. Put on broad spectrum UVA/UVB protecting sunscreen of SPF 15 or higher 30 minutes prior to going out and reapply as instructed.

Drink plenty of fluids: Be proactive and drink even before you are thirsty. Choose drinks that will replace electrolytes and carbohydrates, such as sports drinks, coconut milk or milk. Water helps hydrate but does not replenish electrolytes. Room temperature or cool drinks are better than cold drinks. Avoid very cold drinks because they can cause stomach cramps. Avoid sugary or alcoholic drinks because these cause you to lose more body fluid.

Know the signs: Never work alone in extreme weather and monitor each other. Heat-related illness can cause confusion and loss of consciousness. Check on each other frequently. If you are under a doctor's care be sure you follow your doctor's instruction.

Stages of heat-related illness

Heat cramps are painful muscle spasms, usually in the legs and abdomen caused by loss of fluids and electrolytes when sweating. Often, these are the first sign that the body is having trouble regulating body temperature. Without appropriate care this can escalate to heat exhaustion.

Care for heat cramps: If medical attention is not necessary, take the following steps:

- Stop all activity and sit quietly in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous activity too soon for fear of relapse.
- Seek medical attention for heat cramps if they last more than one hour.

Heat exhaustion occurs if a person does not take in enough fluids and the body overheats. Heat exhaustion is often accompanied by dehydration. The warning signs of heat exhaustion include the following:

The pulse rate will be fast and weak, and breathing will be fast and shallow. The skin will be cool and moist, and pale, ashen or flushed. Other symptoms include Headache, nausea, dizziness and weakness. If heat exhaustion is untreated, it may progress to heat stroke.

Care for heat exhaustion:

- Rest.
- Seek an air conditioned environment.
- Take a cool shower, bath or sponge bath.
- Drink sips of a cool sports drink, coconut milk or nonalcoholic beverages.
- See medical attention if symptoms worsen or last longer than one hour.

Heat stroke is the most serious heat-related illness. The body's temperature rises rapidly, the sweating mechanism fails and the body is unable to cool down. Body temperature may rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not provided. Warning signs of heat stroke vary but may include the following: An extremely high body temperature (above 103 degrees Fahrenheit); red, hot and dry skin (no sweating); rapid, strong pulse; throbbing headache; dizziness; nausea, confusion; and unconsciousness.

Care for heat stroke: If you see any of these signs, you may be dealing with a life-threatening emergency. Have someone call for immediate medical assistance while you begin cooling the victim. Do the following:

- Get the victim to a shady area.
- Cool the victim rapidly using whatever methods you can. For example, immerse the victim in a tub of cool water; place the person in a cool shower; spray the victim with cool water from a garden hose; sponge the person with cool water; or if the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.
- Monitor body temperature and continue cooling efforts until the body temperature drops to 101 to 102 degrees Fahrenheit.
- If emergency medical personnel are delayed, call the hospital emergency room for further instructions.
- Do not give the victim alcohol to drink.
- Get medical assistance as soon as possible.

If anything you are doing makes your heart pound and leaves you gasping for breath, stop all activity. Get into a cool area or into the shade, and rest and sip fluids, especially if you become lightheaded, confused, weak or faint. If you are under a doctor's care be sure you follow doctor's instruction.

If you observe an unsafe action or condition that needs immediate attention (i.e., one that creates immediate danger to life or health), call the AEDC Safety Hotline, 454-7233 (S-A-F-E). This number rings in the AEDC Safety Office on weekdays during business hours. The AEDC Operations Center answers calls at night, on weekends and after the fourth ring during regular duty hours.

Take care of each other.

Survivor harnesses resilience to overcome invisible wounds

(Air Force Wounded Warrior Program courtesy graphic)

By Air Force Wounded Warrior Program

JOINT BASE SAN ANTONIO-RANDOLPH, Texas (AFNS) – Reality hit when then Airman First Class Brittany Johnson of the 49th Logistics Readiness Squadron left the hospital in September 2010 after a week-long stay for sexual and physical assault.

"I didn't feel like myself," recalls Johnson, now a technical sergeant with the 36th Civil Engineering Squadron. "I couldn't find joy in activities anymore."

While at home on convalescent leave, Johnson found herself reliving memories of her assault. She couldn't move on from her traumatic experience and started having nightmares, flashbacks and panic attacks. Waking up in a dark room or coming across reminders of her attacker, like a similar last name, haircut or car model he drove, would trigger her symptoms.

Her symptoms had a large impact on her daily life. She became distrustful of people and withdrew from personal interactions, including her 19-month-old daughter. Johnson lost interest in activities she had enjoyed before, even those as simple as taking a walk.

"I wanted to sleep all day even though I couldn't fall asleep," recalls Johnson as she often was too tired to get out of bed.

Johnson felt her life slipping away from her control until a conversation with her mother made her pause.

"How can you take care of anyone else until you take care of yourself?" Johnson remembers her mother's words. "How can you pour from a cup that's empty?"

Those words stuck with Johnson. Having the support of her family gave Johnson the strength to reach out for help so she could take back power over her life.

In October, one month after leaving the hospital, Johnson made an appointment at the mental health clinic and talked to her supervisor, as a courtesy while still on convalescent leave, to let him know she was seeking treatment. The provider diagnosed her with PTSD, anxiety and depression and recommended a mix of therapy and medication.

"In the beginning, I was the roadblock," Johnson talks about her early days of treatment. "I was so shut down that I had a hard time opening up and talking about what happened."

But the providers were supportive and worked with Johnson to personalize her treatment, including helping Johnson open up by switching her to a different therapist with whom she felt a more personal connection.

As Johnson went back to work in December, she at first tried to hide her state of mind and "put on a happy face" to show she was OK. But after going home from work, she wouldn't eat and would feel sad and cry most days.

"I didn't know what normal or happy were anymore," Johnson said.

Then Johnson's leadership stepped in. They supported Johnson's desire to return to work, and also encouraged her to seek any additional help she needed. Unit support was important to Johnson, and it helped her overcome concerns about seeking various resources to help work through her experiences.

"My leadership would check in on me asking questions like, 'How has it been going?' or 'Is there anything I could do to help you?' And they really meant it," Johnson recalled. "My supervisor at the time really cared about my well-being."

Her supervisor also made sure she took the time to go to her mental health appointments and that she wasn't scheduled for any work tasks or meetings during those times.

"We have a great relationship and still talk to this day even though he's retired. He still checks in on me."

With trusted advocates behind her, Johnson turned her life around.

"Treatment helped me regain control over my life," Johnson said.

Seeking help gave her the tools to understand her feelings and how to manage her symptoms.

"I started to recognize my triggers," Johnson added. "I understood when my panic-attacks would begin, so I would pause to breathe and use coping techniques, like the 5-4-3-2-1, method to take back control over the situation."

As Johnson started to learn how to manage her invisible wounds, her weekly therapy sessions became biweekly, monthly, and finally, as needed. Within the first two years of treatment, Johnson completed medication and therapy, after which her therapist told Johnson she could still set up an appointment whenever she needed to talk.

"I still occasionally go to therapy to maintain my mental health and stay resilient," Johnson said.

"Seeking treatment definitely helped my career and made my life better overall. I'm better able to help myself and others. I've learned to listen and process my emotions and can now take a step back from a situation and process what's going on first before reacting."

Seeking treatment also helped Johnson create a more supportive culture for Airmen at work, especially as she continued to move up the ranks and took on more leadership responsibilities over the last decade. A lot of Airmen now come to her for advice.

"They're comfortable asking me for help or talking with me about personal hardships or challenges in their lives."

Johnson wishes more Airmen would ask for help to look after themselves.

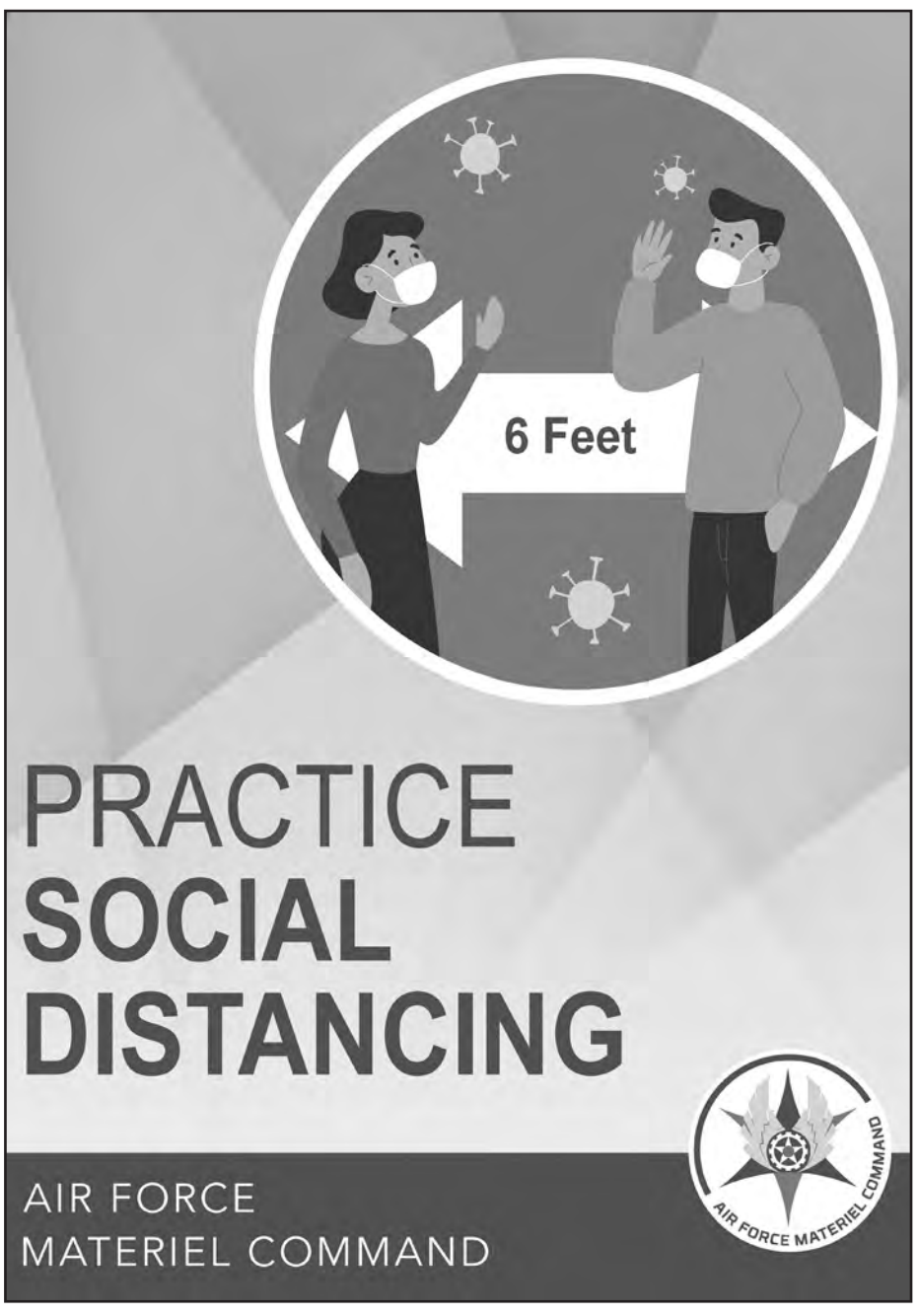
"You can't properly do your job if you're not 100 percent OK, especially if you're in a leadership position," Johnson said. "It's a snowball effect, everything starts with you."

Johnson has the following advice for Airmen, caregivers, and leaders:

"Airmen. Take care of yourself first. Never be ashamed of what you went through. Never be ashamed to speak out. Never be ashamed to get help.

"Caregivers. Be patient with your Airman. Encourage them to figure out what works for them, but they have to do the work themselves. Treatment won't be beneficial unless they are willing to do the work to get better.

"Leaders. Be empathetic towards your Airmen and be ready to have difficult conversations. Do whatever it takes to create a supportive culture for your Airmen, so they are comfortable and trust you enough to come forward and ask for help."



AFMC virtual town hall addresses COVID-19, diversity, command future

By Marisa Alia-Novobilski
Air Force Materiel Command

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – Diversity and inclusion, the coronavirus pandemic and the strategic direction of the Air Force Materiel Command were among the many topics covered during a virtual town hall, July 29.

Gen. Arnold W. Bunch, Jr., AFMC Commander, and Chief Master Sgt. Stanley C. Cadell, AFMC Command Chief, addressed questions in front of a live, virtual audience during the event streamed live on the AFMC Facebook page.

"The most important thing I'm going to tell you today is just thank you for what you're doing. Each and every day you have fully embraced the mantra that I've used in the past: we execute our wartime mission each and every day," said Bunch during opening remarks.

The event began with a discussion on AFMC successes during coronavirus restrictions. Bunch lauded the teamwork, innovation and dedication of Airmen across the command in ensuring critical missions remained on task while also supporting the Department of Defense-wide response to the pandemic. He cited the ongoing work by the Air Force Research Laboratory's Epidemiology Lab in COVID-19 testing, efforts to create protective gear leveraging 3-D printing technology, the rapid embrace of telework in AFMC organizations and the creativity of Airmen in ensuring test missions remained on track, among others, as just some of the ways the command adapted to COVID-19.

"I am extremely proud of how you have continued to execute (our) mission in the face of the COVID-19 pandemic. In less than three months, we developed an entirely new system (Negatively Pressurized Conex) to be able to transport ill Airmen in C-17 and C-130s that took Airmen from the Life Cycle Management Center…working together with members of the Air Force Research Laboratory, members of Air Force Test Center and members of the Sustainment Center. We did all that in less than three months and put a new capability out in the field," said Bunch. "That's the power that we as the Air Force Materiel Command bring to the fight. And that's why you all are our most valuable resource."

As discussion continued on COVID-19, Bunch talked about the importance of following local and command guidelines, including the use of face coverings, good hygiene and maintaining social distancing, as individuals across AFMC begin to return to the workplace, which he expects will operate much differently in the future.

"We learned a lot of lessons out of this, and there are going to be a lot of things that we don't go back to ever again," said Bunch. "In many ways we had not been as embracing of telework… alternative work schedules and things like that, as we probably could have been. We're now working on how we open up telework to additional people. We're now looking at how we do our job advertisements for the future to include telework. We're looking…to see how we reconfigure facilities…those are just a few of the examples."

Gen. Arnold W. Bunch Jr., AFMC Commander, and Chief Master Sgt. Stanley C. Cadell, AFMC Command Chief, addressed questions in front of a live, virtual audience during a virtual town hall, July 29. *(U.S. Air Force photo by Richard Hoiles)*

Following a brief discussion on the importance of social connection and resiliency, the town hall focus transitioned to diversity and inclusion—two key topics impacting every Airman and civilian across the Air Force.

"Folks, we've got a problem. We've got to own it.," said Bunch. "We need to talk to Airmen, but what that really means is we need to listen. My expectations are that we in command create an environment where every Airman has the opportunity to serve and succeed to their full potential."

Adding to Bunch's sentiments, Cadell addressed the importance of education and learning in the culture change process.

"It's about dignity and respect for everyone we work with, so part of this is going out and learning," said Cadell. "It's finding out some of the barriers that have been out there for folks that maybe we don't even realize. There are some institutional things that are causing frustration for some of our Airmen. And so we, as leaders, are responsible for taking a look at those and trying to remove those barriers."

The town hall continued with a discussion of the importance of operational security in ensuring the Air Force maintains a competitive edge; and discussion on the strategic direction of the command, with an emphasis on the importance of education and training to ensure Airmen are prepared for future leadership roles across the service.

"We're going to drive to improve. We're going to drive to become more digital," said Bunch. "We're going to continue to do things like try to hire people faster, fill our needs faster, be more agile and get technology into the field at the speed of relevance."

Additional topics addressed during the town hall included upcoming uniform and leave policies, the importance of mental health and resilience, and the importance of taking care of Airmen and their families for mission success.

"We recruit Airmen, both military and civilian…but we retain families," said Cadell.

The event concluded with both leaders reiterating the importance of self-care and downtime to readiness and mission success.

"Anybody who tells me that they've got work, family, spiritual and fitness and health all aligned, perfectly balanced…I usually call those people liars," said Bunch. "We're all pulling and tugging and stressed with what we're trying to do. You've got to be deliberate about it (downtime). And you've got to communicate with the family that may be around you…we need you for the long term."

To view the full length version of the town hall, visit: ***www.dvidshub.net/video/761467/afmc-virtual-town-hall***

The full transcript of the event can be viewed at: ***www.afmc.af.mil/Portals/13/Town%20Hall%20Transcript%20FINAL.pdf***

New acquisition guidance leverages diverse talent pool for competitive edge

By Secretary of the Air Force Public Affairs

WASHINGTON (AFNS) – The Department of the Air Force issued a new guidance memorandum Aug. 4 that implements policy and standards for establishing anthropometric – or body size – design specifications for all acquisitions programs using current male and female recruitment population data.

Air Force Guidance Memorandum 2020-63-148 establishes that all program managers work with their lead commands to use the central 95 percent of the U.S. recruiting population body size when defining design specifications for aircrew flight equipment and new aircrew or operator station designs.

"With accelerating disruptive technologies – like artificial intelligence, ubiquitous sensing, and autonomy – rewriting Air Power for all nations, not just the U.S., continuing our rich tradition of operator advantage is paramount to overcome unprecedented battlefield challenges," Dr. Will Roper, assistant secretary of the Air Force for acquisition, technology and logistics, said in a memo distributed across the department. "Ensuring our maximum recruitment population can be that deciding factor nearly doubles our odds in what is already a stacked deck. The time to move out is now."

The guidance updates minimum size design specifications for DAF flight training that is presently based on a 1967 male pilot survey, which stands in stark contrast to current body size statistics according to the Center for Disease Control's National Health Statistic Report (December 2018), Mean Body Weight, Height, Waist Circumference, and Body Mass Index Among Adults: United States, 1999-2000 Through 2015-2016.

The 1967 study excludes 44% of the U.S. female population – including 74 percent of African Americans, 72 percent of Latino Americans and 61 percent of Asian Americans – unless they receive a waiver. Although waivers can be granted, the ability to pursue broad aircraft opportunities is limited. For example, the F-15 Eagle currently accommodates only 8.9 percent of women.

Roper said the guidance "reflects both the important diversity principle and practical necessity of leveraging our nation's entire talent pool" to address long-term military competition.

The guidance requires acquisitions policy language in contracts that will define a minimum accommodation level and encourage companies to suit the widest possible range of statutes as a competitive edge.

As an interim measure, the guidance includes an attachment with eight anthropometric cases to be used as the basis for current compliance. The Air Force Lifecycle Management Center will conduct a new representative survey to supersede the interim guidance and previous studies. AFLCMC's Airman's Accommodations Laboratory is scheduled to embark on a three-year study beginning this fall with career enlisted aviators, who currently do not have an anthropometric-based standard.

"This study will finally provide the opportunity to create a stronger, more capable force, utilizing the strengths of a diverse team representative of our great nation," said Chief Master Sgt. Chris Dawson, Air National Guard CEA career field manager.

The CEA anthropometric study will also provide the opportunity to re-accomplish studies for officer crew positions on the more than 30 CEA aircraft. CEAs make up nearly 35 percent of the Total Force aviator community and up until now have eliminated candidates based upon the 1967 standard.

Dawson and fellow Air Force Women's Initiatives Team members, Lt. Col. Jessica Ruttenber and Maj. Andrea Harrington, along with Dr. Jennifer Whitestone of the Airman's Accommodation Laboratory, were part of a team to elevate the matter to department leadership to initiate the new guidance.

"This policy is a great sign of forward progress and will be instrumental in changing the future," said Lt. Col. Cathyrine Armandie, Air Education and Training Command chief of rated diversity. "It's incredibly humbling to work with a team that is advancing opportunities for Airmen now and generations to come."

AEDC Unions agree to CBA extension with NAS

By NAS Public Affairs

National Aerospace Solutions, LLC (NAS) leadership was informed by the Air Engineering Metal Trades Council (AEMTC) July 14 that a 1-year extension to the existing Collective Bargaining Agreement (CBA) was ratified by its members for work at the Arnold Engineering Development Complex (AEDC). The AEMTC represents approximately 660 members through 11 local unions, who are vital to the mission at AEDC.

Negotiations led to an extension of the CBA that ensures mission continuity, provides stability to the workforce, and recognizes the AEMTC's important contributions to AEDC, NAS and the United States Air Force.

"The negotiating teams worked closely together to reach this agreement during an uncertain time," said Dr. Rich Tighe, NAS general manager. "I want to thank the AEMTC leadership for their professionalism during this process. This agreement will ensure the important work for our nation at AEDC will continue in the same outstanding manner as it has for decades."

Mike Hollowell, NAS chief spokesman for negotiations, and Operations and Maintenance manager, said it was important for both the company and the AEMTC to reach an agreement on the extension of the current CBA.

"The COVID-19 pandemic has been a challenge and caused us to enter into some unchartered territory," Hollowell said. "But communicating those issues to the Union and working together has been important in allowing us to continue supporting the vital mission that this workforce performs in support of the national defense of this great country."

AEMTC President Alvin Cleek expressed his gratitude for those who served on the negotiating teams.

"On behalf of the AEMTC, I offer my sincere thanks to those who served on both bargaining committees," Cleek said. "I appreciate their willingness to take on and successfully complete negotiations in today's difficult climate. I look forward to contract negotiations next year when hopefully the COVID-19 virus will be behind us."

NAS is the Test Operations and Sustainment Contractor at AEDC.

Ergo techs, workers adapt mission to fit person, reduce injuries

Mike Hayes, center, Warner Robins Air Logistics Complex Ergonomics Program technician, and Staff Sgt. Dakota Hickey, right, with the 52nd Combat Communications Squadron, learn how to fit on an exoskeletal lift support system, as its fitted to Tech Sgt. Destin Maulding, with the 51st Combat Communications Squadron, at Robins Air Force Base, Georgia, Aug. 6. The WR-ALC Ergonomics Program is looking at the exoskeleton suit and other ideas to reduce workforce fatigue and decrease injuries among its workforce, and reduce the overall operating and sustainment costs to the Air Force. *(U.S. Air Force photo by Rodney Speed)*

By Holly Logan-Arrington
Robins Public Affairs

ROBINS AIR FORCE BASE, Ga. – Certified technicians at the Warner Robins Air Logistic Complex Ergonomics Program work with the mindset, "one size, does not fit all."

WR-ALC Ergonomics Program technicians work hand-in-hand with the complex's total workforce to reduce risk factors that could result in injuries.

Belinda Brown, WR-ALC Ergonomics Program manager, said her team works hard to position the base's workforce for success.

"This is the motto that fits what we do every day for the administrative and production employees," she said. "Ergonomics is about fitting the work to the individual as much as possible while reducing and eliminating the ergonomic risk associated tasks."

In fiscal year 2019, the ergonomics team completed more than 800 ergonomics assessments, and the team is on track to exceed that.

Brown said during the last year, her team had accomplished many ergonomic successes in lowering the risk factors contributing to Work-Related Muscular Skeletal Disorders.

"We have implemented several engineering solutions that have not only reduced WMSD's risk factors but also saved time and money," she said.

The ergonomics team worked with the 561st Aircraft Maintenance Squadron to create an adjustable run seat pad to make the unit's operational check more ergonomically sound.

Technicians sit on a temporary run seat put in place of the normal ejection seat in the F-15's cockpit to perform operational checks.

Mike Hayes, a certified ergonomics technician for WR-ALC Ergonomics Program, said the L-shaped pad the team designed, which included extensions attached to the back for height adjustments and lumbar support, gave F-15 technicians a way to make adjustments based on the worker's size.

Eric Fowler, a certified ergonomics work lead for ALC program, said the F-15 run seat pad, created through a local upholstery shop for about $300, reduces back and neck strain as the technicians perform their operational checks.

Because there's always room for improvement, the ergo team has produced other successes as well.

"One major project the ergonomics team is working on is introducing and evaluating the exoskeleton technology, specifically for upper body and arm support," Fowler said. "Currently, they are evaluating the technology within the 573rd Commodities Maintenance Squadron and have several other areas within 402nd Aircraft Maintenance Group and the 402nd Commodities Maintenance Group to test this new Human Assist Technology."

The wearable vest that supports the weight of one's arms extended forward and also when arms are extended overhead, creates a weightless environment, which reduces strains to the arms, shoulders and back, Fowler said.

Recently, the ergonomics team and Airmen from the 5th Combat Communications Group met up on base with AFWERKS, a think-tank group the Air Force works with to seek out new innovations, to get certified on fitting and deploying the of an exoskeleton unit that the ALC Ergonomics team and the 5th MOB are going to be evaluating.

"The manufacturer came out to demonstrate it to us and the 5th MOB and they certified us to be able to suit people up with these," Hayes said. "We're going to see how this will help people."

The assessment will help the team determine if the technology would be a good solution for other areas in the WR-ALC, Hayes said.

Another project currently in the works at the WR-ALC is the addition of a pneumatic accessory to the 35-ton jack used to perform the weight and balance measurements on C-130 aircraft.

Three jacks, which are used to get the measurements, are manually operated by six C-130 technicians, requiring an average of 150 strokes per lift.

"This accessory converts the operation from a manual operation to an air operation," Hayes said. "This reduces the manpower needed for the whole process, which in turn eliminates the risk for injury to the technicians."

Fowler said the ergonomics team and people who serve the WR-ALC mission have had a good working relationship for some time.

"People like to see us because they know the ergo program will take their ideas and turn them into a workable solution or process improvement," he said.

Since 2004, the ergonomics team has been tailoring the mission to fit the WR-ALC workforce's individual needs, a move that postures people for mission success.

"Our aim is always to reduce ergonomic risk factors," Fowler said. "This includes stresses and strains to the body. When we reduce the stresses and strains, that increases people's morale and production."

Brown formally installed as 22nd Air Force Chief of Staff

By Charles Pope
Secretary of the Air Force Public Affairs

Secretary of the Air Force Barbara M. Barrett administers the oath of office to incoming Air Force Chief of Staff Gen. Charles Q. Brown Jr. during the CSAF Transfer of Responsibility ceremony at Joint Base Andrews, Md., Aug. 6. Brown is the 22nd Chief of Staff of the Air Force. *(U.S. Air Force photo by Wayne Clark)*

JOINT BASE ANDREWS, Md. (AFNS) – Proclaiming himself "proud, yet humbled," Gen. Charles Q. Brown, Jr. was officially installed Aug. 6 as the Air Force's 22nd Chief of Staff, becoming the first African American in history to lead a military service as its highest ranking officer.

In remarks following the formal "Change of Responsibility" ceremony in which he took over from retiring Gen. David L. Goldfein, the 21st Chief of Staff, Brown acknowledged an array of people who influenced his life. Among them were his wife, Sharene, and his parents, as well as a list of Air Force colleagues, including Goldfein and other "extraordinary leaders."

Yet, cognizant of the moment in history, Brown also noted, "Today is possible due to the perseverance of those who went before me serving as an inspiration to me and many others.

"Those like the Tuskegee Airmen, Benjamin O. Davis Jr., Chappie James, African American leaders across our Air Force and military, past and present, to include today's special guest, Ed Dwight, America's first African American astronaut candidate," he said.

"It is due to their trials and tribulations in breaking barriers that I can address you today as the Air Force Chief of Staff."

Brown, who previously served as commander of Pacific Air Forces, was elevated to his new assignment during a solemn, socially distanced, 90-minute ceremony that focused on his achievements while also honoring Goldfein's 37-year service in the Air Force and his four years as chief of staff.

Among those paying tribute were Defense Secretary Mark Esper, Department of the Air Force Secretary Barbara Barrett, and Chairman of the Joint Chiefs of Staff Gen. Mark A. Milley. The ceremony also honored Goldfein as Esper presented him with the Defense Distinguished Service Medal.

Esper honored Dawn Goldfein as well, presenting her with the Department of Defense Distinguished Public Service Award.

"Gen. Goldfein, Dave, our Airmen thrive in today's environment because of your strong leadership and your steadfast commitment to upholding the core values of the Air Force – integrity, service, and excellence, each and every day," Esper said. "The United States of America is safer because of you. Thank you for your lifetime of service to our great nation."

Moments later in remarks to the new Chief of Staff, Esper said, "In returning to the Pentagon, Gen. Brown brings with him more than 35 years of service distinguished by a depth of expertise and experience that makes him exceptionally qualified to be our nation's next Air Force Chief of Staff.

"I am confident you will take the Air Force to greater heights and I'm excited to watch you lead."

In her remarks, Barrett offered similar praise for Goldfein's service and accomplishments. Like others she expressed confidence that Brown has the correct mix of experience and temperament to lead the Air Force to a bright and dominant future.

Brown, she said, "brings a wealth of joint leadership experiences and global perspectives to his new role as 22nd chief of staff of the Air Force. Embodying the Air Force core values of integrity, service before self, and excellence in all we do, General Brown has the right character, experience, and perspective to lead the United States Air Force."

Like Goldfein and those who came before, Brown as chief of staff is responsible for ensuring the Air Force is trained, ready and equipped to accomplish any mission at any time.

Yet he's also taking the reins of an Air Force in transition, one moving from a decades-long priority on combating and containing terrorism to a new era of Great Power Competition. As part of that new focus, the Air Force and entire U.S. military must be trained, ready and properly equipped to confront, deter and if necessary, defeat, challenges from Russia and China. It also comes at a time of heightened challenges from North Korea and other geopolitical shifts across Asia.

In his remarks, Brown said he would work to build on Goldfein's accomplishments while also adding his own imprint to assure that the Air Force remains the most advanced, professional and lethal in the world.

"I am committed to addressing today's challenges while preparing for the future so we can better compete, deter, and win," he said, surrounded by an unmistakable lineage of historic aircraft, including a gleaming chrome-plated P-51 Mustang, a fifth-generation F-35 Lightning II and a HH-60G Pave Hawk helicopter.

"To do so, we must no longer defer, but must accelerate the needed change and tough choices we've often discussed. We must develop and empower leaders and provide the quality service and quality of life where our Airmen and families can reach their full potential," he said.

Adding a dose of realism, Brown said, "No doubt there are challenges ahead that will be difficult, but not impossible. I look forward to working with the Joint Chiefs, providing our best military advice to address challenges the joint force faces today and will face in the future."

As he noted in March when he was nominated to be chief of staff, Brown said again that he will continue to be guided by what he described as his "four tenets" of leadership – execute at a high standard; be disciplined in execution; pay attention to the details; and have fun.

In his farewell remarks, Goldfein like Brown listed those who influenced and shaped his career. Among others, he singled out Chief Master Sergeant of the Air Force Kaleth O. Wright, calling him his "wingman."

"Of all the decisions I made as chief, the best by far was hiring Chief Wright," he said.

Goldfein also thanked his wife, Dawn, saying it was a "blessing" to have her "side by side" with him for his entire Air Force journey.

"For the past 37 years, she adjusted her dreams so I could follow mine," he said.

Then, to Brown, Goldfein said, "As I took the chiefs walk for the final time (on Aug. 5), I could not be prouder that a true warrior, leader and personal friend will be taking his first walk of the chief tomorrow as chief of staff of the Air Force.

"Congratulations to both of you," Goldfein said. "The future of our Air Force has never looked brighter!"