Col. Jeffrey Geraghty takes command of AEDC

By Deidre Ortiz

**AEDC Public Affairs**

Col. Jeffrey T. Geraghty assumed command of the Arnold Engineering Development Complex as the 31st commander during a Change of Command ceremony on June 18. Brig. Gen. Christopher A. Zano, Air Force Test Center Commander, presided over the ceremony. The ceremony was also attended by the commander’s guests, local dignitaries and AEDC personnel inside J-6, the AEDC Large Rocket Motor Test Facility at Arnold Air Force Base, Tenn.

Geraghty comes to Arnold from Wright-Patterson Air Force Base, Ohio, where he was Commander of the 460th Aeronautical Systems Group, also known as Big Safari. As commander he was responsible for sustaining, upgrading, modernizing, depot, supply and flight test activities for all programs and facilities at Big Safari. Prior to this assignment, Geraghty was a Secretary of Defense Corporate Fellow at Space Exploration Technologies (SpaceX) in Hawthorne, California.

He has served as an F-15E pilot in Operations Northern Watch, Enduring Freedom and Iraqi Freedom, an F-15/F-16 test pilot, a staff officer in numerous agencies, and a program manager. After the passing of the guidon during the Change of Command ceremony, Geraghty commented that he’s excited about his new role as AEDC commander as he’s heard good things about Arnold and the community.

“We already know that we are surrounded by an astounding capable workforce, generous families, supportive community and a rich, rich history of excellence here at Arnold Engineering Development Complex,” he said. “Everyone I talk to about this assignment tells me, ‘Oh wow, you got to go work with the brain trust.’ That’s what they call you…”

“Nora (Mrs. Geraghty) and I have a saying that we’ve been using for the past 20 years between us. When things are going well or things are going great, we say ‘Bless your luck.’ But we know it’s not just luck. It’s the support of everybody who has helped us get to where we are, everybody who has helped us along the way, and I’m confident that our luck will continue thanks to your support and dedication because of all you do for this team and this mission. I want to say thank you to each and every single one of you sitting out there today.”

Geraghty also thanked outgoing commander, Col. Scott Cuts, who is assuming command of the 46th Test Wing at Eglin Air Force Base, Florida.

“Thanks for leaving AEDC in such good shape,” he said. “You’re going to be a tough act to follow and we wouldn’t have it any other way. Just our luck.”

As AEDC commander, Geraghty leads an advanced complex of flight simulation test facilities. AEDC is one of three installations which are part of the Air Force Test Center (AFTC) enterprise, one of the six sub-agencies of the Air Force’s Materiel Command.

AEDC personnel inside J-6, also known as Big Safari, for an observation flight as part of the Open Skies Treaty.

The Boeing OC-135B is the certified aircraft used by the United States for observation flights as part of the Open Skies Treaty. (U.S. Air Force photo)

Hypervelocity capabilities advance to new highs at AEDC Tunnel 9

By Bradley Hicks

AEDC Hypervelocity Wind Tunnel 9 in White Oak, Maryland, is on the verge of delivering an unprecedented capability.

In late April, the team at Tunnel 9 completed an initial shakeout of the Mach 18 system and, later this year, facility engineers are set to begin full calibrations on Mach 18. If successful, this would allow for testing at Mach Numbers never before realized in a wind tunnel in the United States.

“Four years, important programs have asked for a validated capability in this Mach range to reduce risk in vehicle designs,” said Tunnel 9 Site Director Dan Maran. “With this accomplishment, the team has added something new to the fight and quite possibly created continuous deterrence capability which the USA has never seen. It’s the support of everyone who has helped to get us to where we are, everybody who has helped us along the way, and I’m confident that our luck will continue thanks to your support and dedication because of all you do for this team and this mission. I want to say thank you to each and every single one of you sitting out there today.”

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AEDC leaders recognize graduates of first Flight Commander Leadership Course

By Bradley Hicks  
AEDC Public Affairs

Graduates of the inaugural Flight Commander Leadership Course were recognized June 12 at the Arnold Lakeside Center.

The new course is designed to prepare participants for leadership responsibilities at the squadron commander level. The course is offered through Col. Scott Garrett, AEDC’s Deputy Director for Operations and Sustainment, at Arnold Air Force Base.

The course is comprised of mandatory blocks offered by Air University as well as elective blocks taken by the AEDC Superintendents Chief Master Sergeant and Commanders.

Thirteen participants made up the first class of civilians and contrato...
command and control structure. Specifically, the objectives under review are:

- Unify of command and effort, including major command and program office structure and authorities.

- Command processes and the ability to support aging weapon systems.

- Internal structure and organization.

- Agility to adapt to provide rapid capabilities and logistics for the future.

- Alignment among multiple emerging missions and strategies.

- Ability to anticipate needs and lead solutions.

The three-phase effort runs from June 24 through mid-August. A core team from AFMC headquarters is guiding the effort, augmented by personnel at all AFMC operating locations. Maj. Gen. Deidre Ortiz, acting AFMC director, AFMC History and Museums director, AFMC Deputy Commanding General, leads the initiative on behalf of AFMC leadership. Col. Pat McDowell, AFMC Chief of Staff, is the operational team lead and Yancy Mays, director, AFMC History and Museums, is the project lead, managing the task force teams activities. An independent contractor is supporting the internal team as well.

As the AFMC-wide effort continues to shape the workplace to lead the Air Force in innovation and improvement, there is an opportunity for us as a community to identify those practices that are preventing us from being the agile and responsive AFMC our Air Force needs.

Over the next few months, AFMC personnel should look for opportunities to participate in the initiative. Study updates will be communicated on the AFMC We Need webpage and through email, social media, and the All Connect mobility applications.

“We need everyone’s participation,” said Bunch. “This is an opportunity to shape our workplace to lead the Air Force in innovation and improvement for the sake of mission success. The AFMC We Need needs you.”

Col. Edwin W. Brown served as a vice commander of AFMC during the 1970s. He is the son of Jack Durand, a researcher at AEDC, who recently visited Arnold Air Force Base to learn more about the test facilities in which his stepfather and her father, Jack Durand, worked. (Courtesy photo)

Annette Freres looks at a test model of the X-15 Hypersonic Research Vehicle on display at Arnold Air Force Base during a tour for Bob Hyde, Annette Freres and Freres’ daughter Michelle Freres at Arnold Air Force Base. Annette’s father Jack Durand, worked in the von Kármán Gas Dynamics Facility and supported the testing and development of the X-15 at Arnold in the mid-1950s. (U.S. Air Force photo by Jill Pickett)

“Touching an X-15 model in the AEDC Lobby at Arnold Air Force Base, Annette Freres became emotional as she imagined her father doing the same decades earlier as an engineer working at AEDC.

Freres recently had the opportunity to visit Arnold AFB, along with her daughter Michelle and high school friend Bob Hyde.

Though she’s currently a resident of Round Rock, Texas, Freres grew up in Tullahoma, graduating from MTCS High School in 1968. Her father, an engineer, was one of the early engineers at AEDC, knowledge sharing and mentoring Acquisition and Engineering Development Center Durand, a graduate of Parks College of Engineering, Aviation and Technology at Saint Louis University, worked at Arnold in the von Kármán Gas Dynamics Facility (VDF).
ordinate commands of the Air Force Materiel Command organization, and an important national resource. The complex is comprised of more than 68 aerospace test facilities, which in addition to the headquarters at Arnold AFB include operating locations at the Federal Research Center at White Oak near Silver Spring, Maryland; at Ames Research Center in Mountain View and Edwards Air Force Base, California; Eglin AFB, Florida; Hill Air Force Base, Utah; Holloman Air Force Base and Kirtland Air Force Base, New Mexico; Peterson Air Force Base, Colorado; and Wright-Patterson AFB, Ohio. The test facilities simulate flight from subsonic to hypersonic speeds at altitudes from sea level to space. In addition all NASA manned spacecraft, every high performance aircraft and missile, as well as most space launch systems and military satellites in use by the Department of Defense today, have been tested in AEDC facilities.

Air Force Test Center Commander, Brig. Gen. Christopher Azzano, addresses the crowd gathered June 18 for the AEDC Change of Command Ceremony at the Large Rocket Motor Test Facility J-6 on Arnold Air Force Base. (U.S. Air Force photo by Jill Pickett)

Incoming AEDC Commander Col. Jeffrey Geraghty, right, joins in applauding outgoing AEDC Commander Col. Scott Cain during the AEDC Change of Command Ceremony June 18 at the Large Rocket Motor Test Facility J-6 on Arnold Air Force Base. Col. Cain is heading to Eglin Air Force Base where he will serve as commander of the 96th Test Wing. (U.S. Air Force photo by Jill Pickett)

Air Force Test Center Commander Brig. Gen. Christopher Azzano, left, commands the Change of Command Order be published during the AEDC Change of Command Ceremony June 18 at the Large Rocket Motor Test Facility J-6 on Arnold Air Force Base. Also pictured from left are AEDC Superintendent Chief Master Sgt. Robert Heckman, outgoing AEDC Commander Col. Scott Cain and incoming AEDC Commander Col. Jeffrey Geraghty. (U.S. Air Force photo by Jill Pickett)

After being installed as Commander of AEDC, Col. Jeffrey Geraghty addresses the crowd gathered for the Change of Command Ceremony. (U.S. Air Force photo by Jill Pickett)

Members of Col. Jeffrey Geraghty’s family listen as he speaks in praise of them after taking command of AEDC during a Change of Command Ceremony June 18 at the Large Rocket Motor Test Facility J-6 on Arnold Air Force Base. (U.S. Air Force photo by Jill Pickett)

Nadia Cain, daughter of outgoing AEDC Commander, Col. Scott Cain, plays the national anthem during the AEDC Change of Command Ceremony June 18. (U.S. Air Force photo by Jill Pickett)
For the month of July, our Safety Campaign focus is Excavating and Trenching.

AEC Standard C6 on Excavations, Trenching and Shoveling describes the tasks and action that are required when excavations or trenching operations are to be performed at AEC.

A main concern or hazard of excavation work is possible death by suffocation or crushing when exposed to fall and buries the workers. Workers are also subjected to hazards of falling materials, tools, equipment, and excavation edges involving the digging into energized/pressurized underground utilities such as electrical, water, steam, fuel and natural gas lines. An additional concern is the potential for an oxygen-deficient atmosphere. Muddy conditions (common to excavations) increase dangers of slips and falls. Hazards of striking against or being struck by objects are increased by conversation of personnel, materials, and equipment.

Additionally, vibrations of heavy equipment near the excavation traffic can cause soil to become unstable and collapse.

Operators are expected to know the hazards associated with their work in and around excavations and ensure these hazards are properly addressed before training received.

Employees are not normally allowed in an excavation, in close proximity (closer than 10 feet) to heavy equipment, and must remain visible when operating the heavy equipment. When the digging is complete, the employee shall be protected by active protective systems and shall not be allowed outside of an excavation.

1. Contractor Safety and Health shall be present, and may approve the entry for AEC employees. This can be accomplished telephonically, in writing, or both.

2. No employee shall remain near a buried object, or when an unknown condition exists in and around excavations and ensure these hazards are properly addressed before training received.

Workers are also subjected to hazards involving the digging into energized/pressurized utility lines such as electrical, water, steam, fuel and natural gas lines. An additional concern is the potential for an oxygen-deficient atmosphere. Muddy conditions (common to excavations) increase dangers of slips and falls. Hazards of striking against or being struck by objects are increased by conversation of personnel, materials, and equipment.

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2. No employee shall remain near a buried object, or when an unknown condition exists in and around excavations and ensure these hazards are properly addressed before training received.
During the late 1980s and into the 1990s, the National Aerospace Plane Program was seeking data above Mach 14 and, believing the technology to be mature, was ready to provide some fund- ing for Tunnel 9 to develop Mach 18. However, the nozzle design methodology and the diagnostics that would be used to examine the physics of the nozzle flow were immature. The flow quality of the nozzle was non-repeatable, and the design was scrapped.

Around 30 years ago, Marion and current Tunnel 9 Technical Director John Lafferty were beginning their careers at Tunnel 9. What they were receiving on nozzle design was then what was known as Naval Surface Warfare Center Tunnel 9. The young engineers worked with Dr. Wayland Griffith from North Carolina State University, who was a visiting num- eric professor at Tunnel 9. The trio researched a phenomenon called “supercooling,” which they believed could be used to reduce the nozzle density to achieve the desired Mach number. The concept was deemed too immature. The flow quality of the nozzle was non-repeatable, and the design was scrapped.

In 2014, Tunnel 9 engineers received limited funding from the Small Business Innovation Research program to examine new throat materials and, based on the work that had recently been conducted by the High Mach Numbers team at Tunnel 9, they were set on developing a new nozzle design. In the mid-2000s, higher Mach Numbers hyperbolic nozzles once again became a priority. This was driven by the Defense Advanced Research Projects Agency (DARPA), the Office of Naval Research, and North Carolina State University. The goal was to achieve Mach 18 capability.

Meanwhile, Jeff Balla at Tunnel 9 had started working on advanced diagnostics, and with new funding from DARPA, Tunnel 9 had developed a diagnostics suite that included powerful tools. These tools combined with the advanced laser-based diagnostics that had been developed by the Science and Technology Directorate of the Defense Advanced Research Projects Agency

The Tunnel 9 team developed advanced diagnostic tools. Working with Ken Tatum and Derek Daniel, AEDC communicators, the team developed a diagnostics suite that included powerful tools. These tools combined with the advanced laser-based diagnostics that had been developed by the Science and Technology Directorate of the Defense Advanced Research Projects Agency. The goal was to achieve Mach 18 capability.

The first “miracle” was the advancement of nozzle design tools. Working with Ken Tatum and Derek Daniel, AEDC communicators, the team developed a diagnostics suite that included powerful tools. These tools combined with the advanced laser-based diagnostics that had been developed by the Science and Technology Directorate of the Defense Advanced Research Projects Agency. The goal was to achieve Mach 18 capability.

The second “miracle” was advancements in diagnostics.自信机的诊断和数据分析方法已大大改进,在数年的时间中,流物理测量的精度和可重复性得到了显著提高。为实现这一目标,开发了多种诊断技术，包括热成像、流速测量和密度测量。

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Area students participate in CyberPatriot Advanced CyberCamp

By Deidre Ortiz
AEDC Public Affairs

Air Force Association CyberPatriot Advanced CyberCamp was June 17-21 at the Hands-On Science Center in Tullahoma. The camp is sponsored by the Arnold Air Force Science, Technology, Engineering and Mathematics Program. Those participating in the camp were area middle school students ages 11-14. Many of them are members of their school’s CyberPatriot teams as well as Civil Air Patrol teams. Andrea Sherrill, who taught the camp, is the commander of her CyberPatriot team and an upcoming senator at Coffee County Central High School. She is also the Corps Commander of the JROTC program at the high school. Matthew McCullough, a sophomore at CCHS, assisted Sherrill in leading and teaching the students. McCullough is also on the CCHS CyberPatriot team and will be serving as commander of the team during the 2019-2020 school year.

To end the weeklong activities, the CyberPatriot Advanced Cybercamp students had a competition on their last day and put to use all the skills they learned during the week.

Area middle school students participate in the Air Force Association CyberPatriot Advanced CyberCamp June 17-21 at the Hands-On Science Center in Tullahoma. The camp is sponsored by the Arnold Air Force Science, Technology, Engineering and Mathematics Program. (Courtesy photos)

OPEN SKIES from page 1

parties are complying with arms control agreements.”

The 34 state parties who have signed and ratified the Open Skies Treaty are: Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine, the United Kingdom, and the United States. Kyrgyzstan has also signed, but not ratified the treaty.

Open Skies missions consist of Active Observation Missions, known as AOMs, which are the number of flights each party has the right to conduct, and Passive Observation Missions, which are the number of flights each party is obligated to accept. “Each state party has an annual quota of AOMs, with the majority being 12 or fewer,” Petty said. “However, the U.S. and the United State of Russia and Belarus each have a quota of 42 per year.”

She explained that a state party is notified before a flyover takes place in its territory. “When AEDC is notified of a pending mission, we notify and coordinate with multiple organizations and gather details of any local high value activities that could impose hazardous airspace and cannot be postponed or canceled,” Petty said. “Data may be used to negotiate a flight path that avoids the activity or may serve only as notification to proceed with caution in the area.”

In addition, there are do’s and don’ts concerning flyovers. The types of aircraft and aircraft sensors must be part of an approved list. “All aircraft sensors must meet Treaty criteria,” Petty said. The Open Skies criteria for observation flights are as follows: 1) Fly at certified heights (a height minimum above ground to achieve no better than 30 centimeter ground resolutions); 2) Provide for initial processing of imagery products; 3) Provide logistics support to host foreign aircraft and observation teams. When performing flyovers for the United States, the Air Force provides dedicated aircraft to fly observation missions in partner countries.

The certified aircraft vary for each state party and include the Boeing OC-135B Open Skies (U.S.), Lockheed C-130 Hercules (Canada and France), CASA CN-235 (Turkey), Antonov An-26 (Hungary), Saab 340O/B-100 (Sweden), Antonov An-30B (Belgium, Romania, Ukraine and Russia), and Tupolev Tu-154M/E/LK1 (Russia). Typically onlookers on the ground are unable to distinguish an Open Skies overflight aircraft from a civilian jetliner flying overhead at 30,000 feet. According to Petty, a newly certified Russian aircraft known as the Tupolev Tu-214ON has been the basis of much controversy in the past year.

“The U.S. refused to certify to the aircraft in September 2018,” she said. “However, it has since been certified and was the aircraft that recently completed a mission April 22-27, 2019, from Norway to the United States via Turkey and Russia. This aircraft has a foundation of much controversy in the past year.

Nick Edwards, with the AEDC Security Enterprise at Arnold, advises AEDC team members that these Open Skies flyovers are not a cause for concern to those on base, and Arnold Security is notified. However, if the activity seems suspicious, contact the Information Protection Office at 931-454-3290. If there are any questions regarding Open Skies, call 931-454-5681 or 931-454-4158.

Russia uses the newly certified Tupolev Tu-214ON, pictured, for its Open Skies missions. This is the aircraft that recently flew over Arnold Air Force Base in May as part of the Open Skies Treaty, an agreement that was signed in 1992 by 34 participating nations. (Photo courtesy of JSC Tupolev)
Stay safe while working, playing in the heat

PREVENTING HEAT ILLNESS

Heat is one of the leading weather-related killers. The Centers for Disease Control and Prevention estimates that an average of 658 deaths are directly attributable to heat each year in the United States. Exposure to excessive heat can exacerbate many pre-existing health conditions, (e.g., cardiovascular, cerebral, and respiratory diseases), contributing to deaths from heart attacks, strokes, or respiratory ailments.

Certain population groups are at higher risk for heat-related illness. Infants and children up to four years of age are particularly vulnerable to heat-related illness, as their bodies are less able to adapt to heat than adults, and they must rely on others to help keep them safe.

Adults aged 65 years and older or have a higher risk of heat-related illness due to age-related changes to the skin, such as poor blood circulation and inefficient sweat glands. Carrying excess weight can affect your body’s ability to regulate its temperature and cause your body to retain more heat. However, even young and healthy individuals can succumb to heat if they participate in strenuous physical activities during hot weather. Other behaviors also put people at greater risk, such as drinking alcohol, and taking medications that impair the body’s ability to regulate its temperature or inhibit perceptions. Prevention is the best way to avoid heat-related illness. When it’s hot outside, remember to:

• Stay in air-conditioned buildings as much as possible. If a home is not air-conditioned, you can reduce your risk for heat-related illness by spending time in public facilities such as a shopping mall or public library that are air-conditioned.
• Wear loose-fitting, lightweight clothing. Wearing excess clothing or clothing that fits tightly won’t allow your body to cool properly.
• Drink plenty of fluids. Drinking alcoholic beverages can cause dehydration and increase the risk of heat-related illness.
• Protect against sunburn. Sunburn affects your body’s ability to cool itself. Use a broad-spectrum sunscreen with an SPF of at least 15.
• Take it easy during the hottest parts of the day. Try to schedule strenuous or physical labor for cooler parts of the day, such as morning or evening.
• Never leave people or pets in a parked car. Temperatures inside the car can rise up to 20 degrees Fahrenheit within the first 10 minutes, even with a window cracked open.
• Closely monitor those who are at greater risk including older adults, the very young, and people with chronic health conditions. Visit older adults and those with chronic illnesses regularly and observe them for heat-related illness. Infants and young children need frequent monitoring.

• Stay updated on local weather forecasts so you can plan outside activities safely when it’s hot outside.

Civilian Health Promotion Services will be offering educational briefings on summertime safety during June and July. For more information, visit AFMC-wellness.com, or contact your local CHPS team. Comprehensive information on surviving hot weather can be found on the Centers for Disease Control and Prevention website, www.cdc.gov/exercise/summerheat.
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**AFTC Civilian Hiring**

Effective May 6, 2019, the Air Force Test Center (AFTC) will use Direct Hiring Authorities (DHA) or Expedited Hiring Authorities (EHA) for all non-bargaining unit positions for both internal (existing Air Force employees) and external candidates. Various recruitment sources/methods ranging from by-name requests, email notifications to prospective candidates, resume repositories, online job boards, etc. are being utilized. Those interested in applying for future AFTC career opportunities are encouraged to create/update their resume on the AFTC Enterprise Recruitment site, a resource for selecting officials to identify viable candidates for current vacancies. The AFTC Directorate of Personnel, Programs Division, is responsible for this message, DSN 527-8172 and/or 527-8116.

I am truly grateful to be here at the National Museum of the United States Air Force. However, as he settles into the leadership position, Bunch, who firmly believes in servant leadership, wants all 80 thousand Airmen of AFMC to understand that as they continue to execute their critical missions to see him as a resource to overcome those obstacles they need to succeed.

“I believe the leadership pyramid is inverted. I work for all the Airmen so they can be successful,” said Bunch. “Commander is the most relevant title we give Air Force officers. You are responsible for the organization and the care and feeding of all of those people, and for ensuring they are successful by creating the right environment to make sure they are able to thrive.”

Just as the commander needs a team to succeed, he views the team commander a team effort made possible by the dedication and devotion of his wife and family. “I can’t put into words how happy Caroline and I are to be part of this team,” said Bunch. “It is truly an honor to be given this opportunity. We are 100 percent fully committed to make this success.

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