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Vol. 61, No. 16 | Arnold AFB, Tenn. | August 25, 2014

AEDC and AFRL collaborate to make advances in hypersonic technology

By Deidre Ortiz
ATA Public Affairs

A highly successful integrated aerodynamic and aerothermal test and analysis of a twin scramjet-powered hypersonic cruise vehicle was completed in the AEDC Hypervelocity Wind Tunnel 9 facility in White Oak, Md.

Researchers and engineers from AEDC and the U.S. Air Force Research Laboratory (AFRL) conducted the testing at Tunnel 9 as part of a scientific research effort program called Hypersonic International Flight Experimentation (HIFEX).

HIFEX is a joint effort of AFRL and the German Aerospace Centre (DLR) to advance the maturity of enabling technologies for the realization of a next generation hypersonic aerospace system.

Douglas Dolvin, AFRL program manager of HIFEX, said the vehicle design tested in Tunnel 9 was unique because it was one that "had never been explored before."

As part of the HIFEX test, the effects of engine unstart on stability and aerodynamic heating of a complex hypersonic vehicle design were evaluated during the wind tunnel test prior to flight experimentation.

The HIFEX program was created to advance the maturity of technologies deemed enabling to the realization of a next generation hypersonic aerospace systems. The program's goal was to investigate fundamental hypersonic phenomena and characterize the effectiveness of key technologies in a relevant hypersonic environment.

Dolvin explained hypersonic aerospace systems may enable a full spectrum aerospace force

See **ADVANCES**, page 3

Active Shooter Exercise in progress

AEDC Commander Col. Raymond Toth, left, speaks with Cody Engdahl, photojournalist from Channel 4 News, after the mock press conference held as part of the active shooter drill that took place at Arnold Air Force Base on Aug. 4. Pictured center is Jason Austin, chief of AEDC Public Affairs. *(Photo by Jacqueline Cowan)*

See page 5 for a complete story.

(WSMV, Channel 4 image)

Minuteman III rocket motor aging surveillance test completed at AEDC

By Raquel March
ATA Public Affairs

AEDC personnel completed testing of a Minuteman III Stage II motor in the Complex's J-6 Large Rocket Test Facility for aging surveillance of the 48-year-old defense program.

"The Stage II motor is part of the Minuteman III Aging and Surveillance test program to obtain motor performance data that is used to identify and quantify age-related degradation," said Richard Kirkpatrick, an AEDC test manager and engineer in the Space and Missile Test Branch. "In addition, the motor is inspected post-test for any emerging critical failure modes."

Since these motors are located in different operational locations for varying lengths of time, aging surveillance testing may uncover critical information that is valuable to the Department of Defense.

"Motors such as this Stage II, are pulled from the field and sent to us to test," said Brandon Dorman, a J-6 test engineer. "The motor's age and storage conditions are tracked and documented for the test. It is fired at the J-6 facility and various performance parameters are collected and analyzed to determine the motor's overall performance. This information is then compared to build specifications, as well as previous firings, to assist in early detection of trends that could threaten the readiness of our nation's ICBM [Inter-Continental Ballistic Missile] fleet."

Preparation for the test involves coordination from different support areas at the Complex.

"We support buildup of the rocket motor and facility by translating the test requirements into information that the AEDC [test] team will use to prepare for the firing," said Paul Ritter,

See **TEST**, page 2

Dr. Baker recalls 50 years at AEDC as *'icing on the cake'*

By Raquel March
ATA Public Affairs

Col. Timothy West, the chief of the AEDC Test Operations Division, presents a 50-year service recognition plaque to Dr. Bill Baker, an AEDC Fellow and branch chief in the AEDC Test Operations Division Analysis and Evaluation Branch, at a recent celebration in honor of Baker. *(Photo by Rick Goodfriend)*

Dr. Bill Baker, a 2004 AEDC Fellow and branch chief in the AEDC Test Operations Division Analysis and Evaluation Branch, recalls his hire date of Aug. 13, 1964 with an emerging aerospace ground, flight testing facility as "icing on the cake."

"My first two weeks at AEDC were dominated by the fact that we had driven all the way across the country with my wife [who was] eight-and-a-half months pregnant and we had to have a place to live and find an OB-GYN doctor for the imminent delivery of our first child," Baker said. "Meeting my new coworkers and learning how things were done at AEDC was the icing on the cake."

As an aerospace engineering student at Mississippi State University, Baker participated in university trips to AEDC. After completing his master's degree in 1963, he received an employment offer with the Arnold Research Organization (ARO), Inc. but he had already accepted a job.

Baker said, "When I told Mr. Warren [with the ARO, Inc. personnel office] that I had accepted a job with North American Aviation, Inc. in Los Angeles, he said, 'Bill, when you get California out of your system, give me a call and come on home.' In July of 1964 I called Mr. Warren and on August 13, 1964, I drove in the front gate of AEDC as an employee of ARO."

Baker said that he was fortunate to be assigned to the Propulsion Wind Tunnel Facility (PWT) when he first arrived at AEDC.

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In This Issue....

HIGH MACH

Arnold Engineering Development Complex
An Air Force Materiel Command Test Complex

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Commander

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The *High Mach* office is located at 100 Kindel Drive, Suite B212, Arnold AFB, Tenn. 37389-2212. Editorial content is edited and prepared by AEDC support contractor ATA. Deadline for copy is Wednesday at close of business the week before publication.

This commercial enterprise newspaper is an allowable ATA contractor publication for personnel at AEDC.

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Absentee Voting Week committee reminds everyone to ensure their voice is heard

By 2nd Lt. Andrew Spurgeon
AEDC Contributing Writer

As members of the armed forces we are asked to make many sacrifices, one of which is serving outside of our state of residency. This creates unique challenges in exercising our right to vote in local, state and national elections.

Absentee Voting Week is an opportunity to ensure that everyone is properly prepared to exercise their right to vote. This week is devoted to ensuring that all military personnel and their family members are able to file their absentee ballots on time. This year Absentee Voting Week is Sept. 29 through Oct. 6.

This November we have the opportunity to elect, or re-elect, 435 members of the House of Representatives, 36 members of the Senate, and 36 State Governors. Additionally, there will be numerous other state and local officials elected just over a month from now. Voting is one of the fundamental rights that we protect every day and it is important that we exercise that right this fall. November elections are the time to speak your mind and have a say in the future of our great nation.

2nd Lt. Andrew Spurgeon

Your installation voting assistance officers are here to assist you with the voting process and the absentee voting system. Our goal is to educate voters about the voting process, not to guide anyone towards a particular candidate or party.

If you have any questions, please do not hesitate to contact us. We can be reached by email at ***arnold.vote@us.af.mil***; by phone at 454-5932 for 2nd Lt. Andrew Spurgeon or 454-7809 for 2nd Lt. Roy Fisher.

Foster speaks 'Equality'

Amy Foster (left at table), the director of the AEDC Contracting Execution Division, speaks to AEDC Commander Raymond Toth (right at table) at the Women's Equality Day Luncheon on Aug. 6, about the women who were part of "The First" list that was available at each luncheon table. The list contained names of women who achieved first accomplishments in the nation's history. Foster, who was listed among "The First" women, also addressed the luncheon attendees with a speech titled "Be the One." Foster is the first Air Force female civilian at AEDC to be appointed as a two-letter director. *(Photo by Jacqueline Cowan)*

'Danger Zone' presents hazards in the office

AEDC Safety, Health and Environmental

Compared to an industrial work environment, an office can seem like a safe place to work. However, many serious accidents and injuries occur on a regular basis in offices everywhere. Slips, trips and falls are the most common whether in the industrial area or in the office.

Office workers are injured by falls, fires and electric shock. They receive cuts and bruises from office tools and furniture, and they develop long-term injuries from repetitive work such as keyboarding. The tips below apply to offices and other areas – even to our homes.

As you go through your day, use these safe work practices:

- Watch for obstructions which can cause tripping accidents. Cords and cables should not be placed across traffic areas. Even cords going to a power strip located next to a work station can trip a person getting up from the desk.
- Store materials in designated storage areas, not in boxes on the floor.
- Keep desk drawers and cabinets closed.
- Clean spills right away. If a spill cannot be taken care of immediately, use something to barricade the spill and place a sign to warn people.

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a J-6 project engineer.

Ritter and David Schwer, also a J-6 project engineer, share responsibility for assessing motor performance through data analysis and technical reporting.

"We are able to determine, and relate to the customer, whether or not the motor has been able to maintain its required ballistic performance," Ritter said.

In addition to validating current motor performance, acquired data from these aging surveillance tests may be useful in updating current requirements and developing requirements for future motors.

Smoking Policy

1. The following revised AEDC smoking policy is effective immediately. Smoking is permitted solely in designated areas identified by a plastic "smoke genie." This receptacle is for the sole purpose of cigarette butt disposal. If there is no receptacle, smoking is not permitted in that area. It is the responsibility of all smokers to clean up the area surrounding the receptacles for any cigarette butts on the ground. Smoking in government-owned vehicles is strictly prohibited. Personnel are allowed to smoke in their personal vehicles at any time. Smoking areas will be held to the absolute minimum and will be located in low traffic, low visibility areas away from points of building ingress/egress and air intakes. A map of all authorized smoking areas is available on the AEDC web portal at ***https://papro.arnold.af.mil/PORTAL/images/Smoking_area_map.pdf***. Smoking near a facility in an area not designated on the map is prohibited and any smoking receptacles located in areas not shown on the map will be removed. All "smoking permitted" and "no smoking" signs will be removed unless specifically required by OSHA.

The fact a person smokes has no bearing on the number of breaks they may take. Breaks should be taken in accordance with the company/agency personnel policies that apply to all employees.

Smoking, including the use of electronic cigarettes and smokeless tobacco, is prohibited in any area, at times when official business is being conducted with government clients, test customers, outside visitors and dignitaries, and where official business is being conducted including conference rooms, auditorium settings, business meetings, or in any other area where Air Force regulations specifically prohibit use. Containers of tobacco waste product, including selaed containers, must not be left unattended or disposed of in trash receptacles. Users of smokeless tobacco must flush tobacco waste down the toilet. Due to the nature, appearance, and safety concerns of electronic cigarettes (also known as "e-cigs"), the use of said products will abide by the same rules for tobacco products stated above and governed by AFI 40-102, *Tobacco Use in the Air Force*.

2. Supervisors at every level will ensure this policy is followed. Disciplinary action is appropriate for repeated violations.

3. Updates to this policy will be made in the future to further align with Air Force guidelines.

4. This policy remains effective until rescinded. (This policy is dated December 20, 2013)

Action Line

Team AEDC

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

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

Col. Raymond Toth
AEDC Commander

AEDC teams receive recognition for aerospace testing support

The AEDC DebriSat Team received the Team Excellence recognition from AEDC Chief Technologist Dr. Edward Kraft (far left) and AEDC Commander Col. Raymond Toth (fifth from left) for their support of satellite collision testing. Team members shown here, left to right are Brian Roebuck, 1st Lt. Benjamin Hoff, Randy Hartman, Mark Carson, Marshall Polk, John VanScoten, Mitch Nolen, Richard Howard, Jerry Smith, Ed Erickson, Wayne Whittington and David Woods. Members that were not present include Johnny Bonee, Bing Bragg, Larry Campbell, Bryan Hall, Larry Phipps, Donald Rotach, Charles Trussell and Jason Waller. ***(Photo by Rick Goodfriend)***

The AEDC F100-FX231-25 Accelerated Mission Test Team received the General Gossick Team Excellence recognition from AEDC Chief Technologist Dr. Edward Kraft (far right) and AEDC Commander Col. Raymond Toth (far left) for their support of accelerated mission testing for the F100 engine. Team members shown here are 1st Lt. Stuart Coston, Gene Klingensmith, Don Blaylock, Tom Schmidt, Steve Posey, Thomas Knell, Paul Kelly, Dale Crabtree, Dan Flanigan, Rick Millen, Ray Joellenbeck, Mike Murphy, Tim Holland, Wendell Duncan, Coy Hargis, Jim Towry, Scott Slabaugh, Mike Price and Jeremy Morris. Members that were not present include Joshua Hartman, Ray Joellenbeck, Bernard Williamson III, Brandon Dorman, Brandon Johnson, Nathan Campbell, Kenneth Acuff, James Allen, Matthew Duran, Kenneth Maxwell II and Will Perkins III. ***(Photo by Rick Goodfriend)***

By Raquel March
ATA Public Affairs

Members of the DebriSat Team and the F100-FX231-25 Accelerated Mission Test Team at AEDC were recognized for their support with testing.

The DebriSat Team received the Team Excellence Recognition with the nomination citing their originality, creativity and innovation in designing and executing a satellite collision test.

The group includes team leaders 1st Lt. Benjamin Hoff and Mitch Nolen; team members: Brian Roebuck, Larry Campbell, Marshall Polk, Ed Erickson, Johnny Bonee, David Woods, Mark Carson, Jason Waller, Randy Hartman, Jerry Smith, Wayne Whittington, Rick Howard, Don Rotach, John VanScoten, Larry Phipps, Charles Trussell, Brian Hall and Bing Bragg.

The F100-FX231-25 Accelerated Mission Test Team received the General Gossick Team Excellence Recognition for customer focus and outstanding contributions made to demonstrate engine test hardware durability by exposing the F100 engine to 5,000 combined cycles. The testing provided data that would extend the life of the engine from eight to 10 years.

The group includes team leaders 1st Lt. Stuart Coston and Thomas Schmidt; team members: Eugene Klingensmith, Joshua Hartman, Jeremy Morris, Paul Kelly, Ray Joellenbeck, Bernard Williamson III, Brandon Dorman, Dan Flanigan, Brandon Johnson, Nathan Campbell, Steve Posey, Kenneth Acuff, Mike Murphy, James Allen, Matthew Duran, Dale Crabtree, Kenneth Maxwell II, Robert Russ, Will Perkins III, Ben Loveless, Forrest McCullough, Dan Blaylock, Tom Schmidt, Thomas Knell, Rick Millen, Tim Holland, Wendell Duncan, Coy Hargis, Jim Towry, Scott Slaubaugh and Mike Price.

ADVANCES *from page 1*

with the capability to perform seamless operations that transcend the continuum of air and space domains. Transformational missions currently envisioned include prompt call up and global reach, responsive precision strike and flexible maneuver through anti-access aerial denied regions.

"The research efforts also seek to advance the state-of-the-art in measurements and diagnostic instrumentation," he said. "This has culminated with the [recent] aerodynamic testing of the twin scramjet powered hypersonic cruise vehicle in the Tunnel 9 facility."

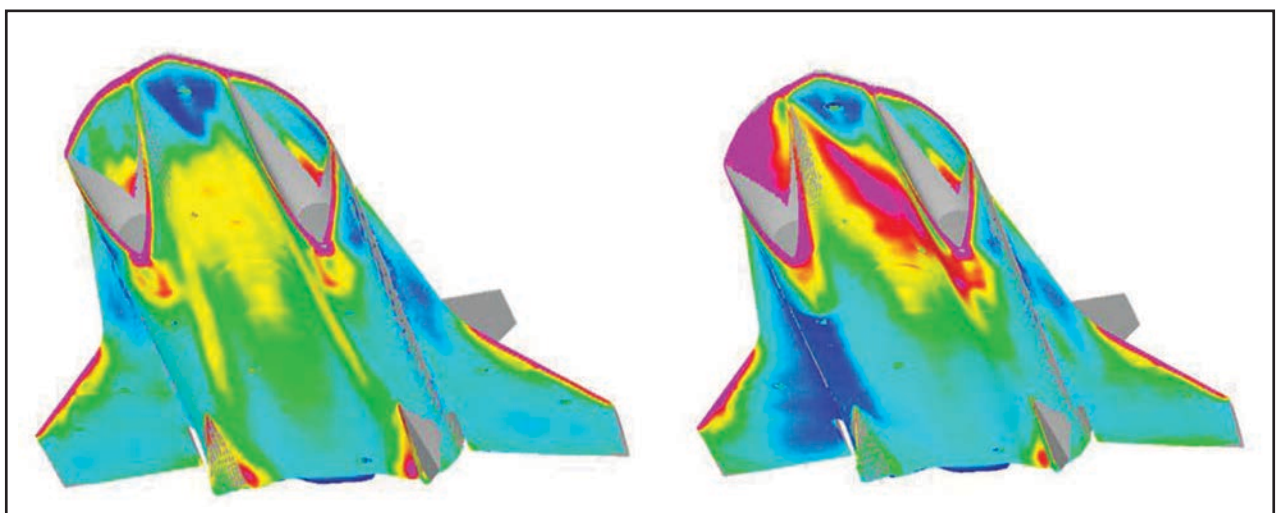
AEDC staff was commended for playing an integral role in the testing process, from beginning to end.

"The scientific and test communities worked hand-in-glove like a highly synchronized team," Dolvin said. "The AEDC test component was fully engaged with our HIFEX science component from the early conceptual level definition of the flight vehicle configuration through the development and test of the research model.

"The test director communicated often and effectively with AFRL's principal investigator. Together they formulated a test manifest which was comprehensive enough to capture the most critical aerodynamic phenomena yet responsive to constraints on time and costs."

Dolvin added AEDC's team provided critical support, especially whenever challenges arose.

"They were receptive to inputs from our scientific leads and responsive of the concerns of our on-site representatives," he said. "The knowledge base and experience of the AEDC team was extensive and evident. The high quality optical instruments and the measurements technologies employed, including extensive use of temperature sensitive paints, proved to be instrumental in capturing unsteady aerodynamic phenomena that have never been characterized before and formulating an understanding of complex interactions."



The first image shows the global heating data acquired on the windward surface of the vehicle during a continuous pitch sweep with both inlets started. In the second image the color changes represent the global heating data acquired on the windward surface of the vehicle during a continuous pitch sweep with the starboard inlet unstarted. ***(AEDC graphic)***

AEDC Commander Col. Raymond Toth received a letter of appreciation from leadership with the AFRL High Speed Systems Division, thanking test engineers Joseph Coblish, U.S. Air Force, and Inna Kurits, with ATA, for their assistance and dedication during the Tunnel 9 test.

"Bottom line is the HIFEX test experience at AEDC White Oak was exceptional," Dolvin said. "The AEDC [Tunnel 9] team has a lot to be proud of out there and I consider myself to be truly blessed to be able to tap into an asset of such significant value to the nation."

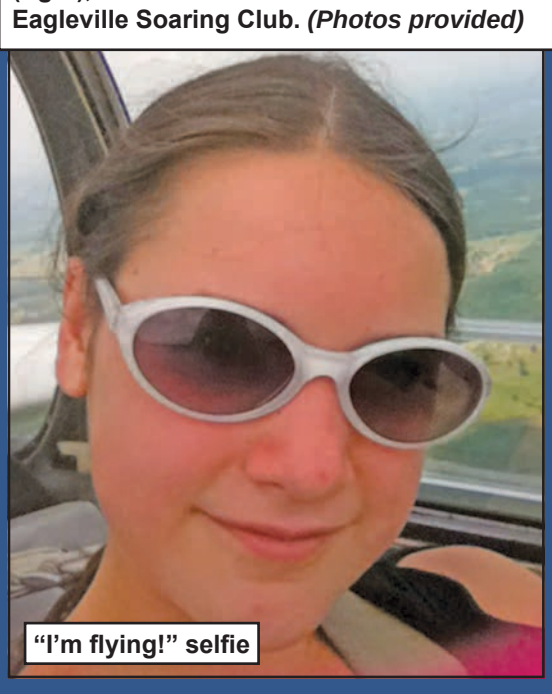
John Lafferty, technical director for Tunnel 9, stated he too is pleased with how AEDC and AFRL teams worked together in completing this test and expects the partnership will lead to the success of future tests.

"The collaboration between AFRL and Tunnel 9 is a two-way street," he said. "Becoming aware of the issues and testing needs related to scramjet vehicle testing has allowed us to advance our measurements for this and future tests of its kind. Hopefully this collaboration will continue."

In addition to HIFEX, AEDC has partnered with AFRL to identify, develop and execute several advanced technology programs, such as the Assymetric Scramjet Engine Test (ASET) and Hypersonic International Flight Research Experimentation (HIFiRE) programs. AEDC will also be continuing its hypersonic research and test future with AFRL through its hypersonic branch now on site at AEDC.

STEM Aviation graduates spread their wings

Twenty-seven Graduates of the AEDC Science, Technology, Engineering and Mathematics (STEM) Aviation Program participated in graduation glider flights during the summer, school break. Graduates who participated were from North Middle School, Winchester; East Middle School and West Middle School, Tullahoma; and Westwood Middle School, Manchester. In the program, students fly virtual aircraft to study science concepts such as energy/forces and modify existing aircraft designs to improve aircraft performance and learn the engineering process. STEM Aviation Program graduate Madelyn Parker (center), from West Middle School, was able to participate in one of the glider flight sessions, and snapped a selfie in flight, under the supervision of Gary Davis (right), a Federal Aviation Administration certified glider flight instructor for the Eagleville Soaring Club. *(Photos provided)*



"I'm flying!" selfie

Getting into position

Prepared for the unthinkable

By Deidre Ortiz
ATA Public Affairs

An active shooter drill was recently held base wide at Arnold Air Force Base to ensure AEDC's first responders, as well as general personnel, are prepared in the event of a real-life incident.

On Aug. 4, Arnold Police, Fire and Emergency Services personnel responded as if an armed individual had actually been on the base and injured AEDC employees.

A mock press conference was held, during which reporters from WSMV Channel 4 from Nashville, The Tullahoma News and LightTube/Channel 6 were on hand, in addition to AEDC Media and Public Affairs staff who posed as journalists. The reporters were given the opportunity to ask AEDC Commander Col. Raymond Toth questions about the nature of the exercise and its purpose.

Air Force Instructions require all installations to conduct exercises covering a range of crisis situations, one of them being an active shooter event.

Dan Johnson, the installation exercise program manager at AEDC, led the active shooter drill and later commented the primary goal during an active shooter incident is to mitigate the threat and minimize the loss of life.

"The active shooter exercise was designed to give the first responders and the base populace an opportunity to practice their procedures and identify areas for improvement. It is important for everyone on base to know what to do because each individual has to protect themselves until the first responders arrive and eliminate the threat," he said.

Rick Trull, emergency services manager at AEDC, stated that training and preparing for an active shooter situation is no different than preparing for any other catastrophe.

"Except for the fact that each of us can provide for our own safety in an active shooter situation to a degree by following the advice and training we have received," Trull said. "That advice and training is two-fold.

"First, if you are in the immediate vicinity of an active shooter event, run, hide or fight will be your options. These options are presented in logical order of sequence slanted toward the safety of the potential victims. If you are on base, but not in the immediate vicinity of the active shooter event, lock yourself in your facility and wait for further instructions."

Trull also advises it's important for base personnel to be prepared before an event occurs, by establishing various escape routes from their work stations or areas.

"Don't wait until an event occurs; it will be too late," he said. "Prepare a plan and practice it. Practice it to the point that you can find your way through your various escape routes, even in the dark. The best tool our base populace can have to deal with an active shooter event is prior planning and practice. That's why we conduct these exercises regularly. We can't afford to be ill-prepared; not as an installation, not as an organization and not as an individual."

Code change: Securing critical assets

By Airman 1st Class Apryl Hall
Minot Air Force Base Public Affairs

MINOT AIR FORCE BASE, N.D. (AFNS) – Once a year, the codes used to launch Minot Air Force Base's intercontinental ballistic missiles need to be updated.

The manual process requires hundreds of Airmen work around-the-clock, for three weeks straight to ensure all launch facilities are accessed and the missile code change is a success.

"We change the codes every year to make sure those launch codes are as secure as they can possibly be," said 1st Lt. Paul Wolfe, a 740th Missile Squadron missile combat crew commander. "It's a way to make sure we have control of the missile at all times."

Throughout the three-week process, all three 91st Missile Wing groups come together as a team to complete the mission. Missile squadron members stay on alert at surrounding Missile Alert Facilities, or MAFs, ensuring communication is clear and constant throughout the change.

Security forces defenders guard the launch facilities during the change to ensure maximum security is in place. Missile maintenance crews are responsible for the actual change, from opening the site to physically changing the codes.

"We open the site and we're the last ones to leave," said Staff Sgt. Michael Swain, the 91st Missile Operations Squadron facility maintenance team instructor and penetration team member. "We could be out there for over 20 hours, but I love it! It really puts us in the mindset that what we're doing is significant."

Not only do the different groups work together in the field, but they also embrace the extra company at the MAFs. With the maintenance teams and the extra defenders, the number of people staying at the MAFs increases drastically during code change.

"I've been getting to know enlisted members, and it's been awesome," said 2nd Lt. Chris Collins, the 740th Missile Squadron deputy missile combat crew commander. "This opportunity isn't afforded but once a year, and it's great for missileers like me who really like that interaction."

Despite being substantially busier during the code change, the Airmen working around the clock still view the change as crucial in more than one way.

"It's a busy alert load, but it does build camaraderie," said Collins, a first time participant in code changing. "Also, by changing the codes it makes it more difficult for any adversary to know what we're doing and how we're doing it. I think it increases the importance of our mission."

Airmen involved in the code change completed in just three weeks what they practice for nearly four months. Whether they were at a site working on a missile or behind the scenes ensuring the safety of our nation's assets, the team worked together to accomplish one of the Air Force's biggest peacetime missions.

"It represents our nation's sovereignty," Collins said. "It says, 'Hey, the United States is the real deal.'"

AEDC Commander and wife host Woman's Club meeting

By Barbara McGuire
AEDC Woman's Club

The August board meeting of the AEDC Woman's Club (AWC) was held at the home of the AEDC Commander Col. Raymond Toth and his wife, Theresa, on Aug. 5.

The board had a wonderful time planning programs, luncheons and get-togethers. The food, which was prepared by Theresa, was outstanding.

The AWC President Sande Hayes led the meeting with Anne Wonder, second vice president, presenting program ideas.

The next meeting will be on Sept. 2 at the Lakeside Center.

The program will be presented by Lynne Tolley from Lynchburg who is Jack Daniel's great-great niece and the former proprietress of Miss Mary Bobo's Boarding House and Restaurant. She currently travels the world as a renowned culinary expert, cookbook author, and member of the Master Taster Panel at the distillery which her great-great uncle founded.

The presentation will include a statue of Jack Daniels which will certainly help with the thoughts of Jack Daniels Whiskey and the fun of Lynchburg and Miss Bobo's.

Table donations will go to one of Lynne's favorite charities - The Motlow Ladies Philanthropic Society.

The main focus of this group is to provide scholarships for women age 23 and older. These women do not qualify for the Tennessee Lottery HOPE Scholarships and often do not meet the requirements to receive financial aid. Yet, they often find themselves as single parents desiring to become qualified for better jobs.

The women of the AEDC Woman's Club invite you to visit the Arnold Lakeside Center to get to know the wonderful AWC ladies and be involved with AWC programs. You do not need to have military connections or be involved with Arnold Air Force Base to visit and become a member.

For information about the AWC contact Susan Harris, the AWC membership chairman, at 455-3569.

The social hour of the meeting starts at 9:30 a.m. at the Lakeside Center, with the business meeting and program beginning at 10 a.m.

Reservations and cancellations for the Sept. 2 meeting must be made no later than noon, Aug. 26. You may make reservations or cancellations by contacting Liz Jolliffe at 393-2552 or ***jajolliffe@aol.com***; or Jane Ricci at 931-636-4152 or ***dickandjane@comcast.net***.

Disclaimer: This is a private organization which is not part of the Department of Defense or any of its components and has no governmental status.

The AEDC Woman's Club held a board meeting Aug. 5 hosted by the AEDC Commander Raymond Toth and his wife, Theresa at their home. Pictured left to right on the back row is Toth, Suzanne Rutley, Patti Mathis, Theresa Toth, Sande Hayes, Olga Brindley, Cecilia Schlagheck and Suzette McCrorey; (front row, l-r) Barb McGuire, Beverly Pratt, Susan Harris, Anne Wonder, Liz Jolliffee, Kate Canady and Sandie Simms. *(Photo provided)*

BAKER *from page 1*

"When I came to work, I was assigned to the PWT and Hugh DuBose was my supervisor," he said. "He led a section that was dual functioned in that it was the Dynamics Section as well as the Research Section. That was a great opportunity for me because it gave me the ability to work on both test projects as well as research projects. I was able to participate in testing and technology projects that were led by most of the people in the section during the first few years that I worked in PWT.

"I was assigned to work closely with Dick Lowndes as my mentor and the first project that I worked on with him was the measurement of the dynamic stability of the Apollo Escape Module. The escape module consisted of only the Apollo crew capsule, the escape rocket and the structure that attached the rocket to the capsule.

"The purpose of the test was to ensure that, if the Apollo crew had to abort the mission and escape from the Saturn Booster, the escape module would fly correctly and not tumble out of control because it was not dynamically stable."

Memorable projects through the decades

Baker recalls memorable aerospace projects in aerodynamics, space and hypersonics that he considered key to his professional growth, such as arc heater testing for re-entry nose cone materials and the leading edges of hypersonic vehicles.

Baker said, "There was a need to develop diagnostic instrumentation for the measurement of flow properties in these high temperature flows. To fill this need, Harry Kaupp and I developed the Research Arc Heater to better understand the performance of arc heaters and to develop high-temperature diagnostics for pressure, temperature and enthalpy in the arc heated flow."

Baker admits that multiple memorable projects followed the arc heater development but he remarks that one project most important to his career in the late 1960s and early 1970s was the Bomber Defense Missile.

"This program considered carrying missiles in the bomb bay and performing a maneuver where they pivoted around in mid-air and flew to the rear of the bomber to defeat aircraft attacking from the rear," he said. "To perform this maneuver, the missile would have to turn around in the air exposing the missile to angles of attack from zero to 180 degrees (i.e. flying backwards). There was not a missile aerodynamic coefficient prediction technique available to make these computations. For my Ph.D. dissertation, I developed the High Angle of Attack Missile Aerodynamics Prediction Code."

Data was needed to develop the prediction code and Baker planned the testing, guided the design of the models, worked as a project engineer for the testing and built the transonic and supersonic database for missile-specific parameters.

Other memorable projects Baker worked on, with other analysis team members, included multiple opportunities for store separation testing and analysis for the Air Force Seek Eagle Program Office and the F-22 program.

Baker was employed by five contractors at AEDC before retiring with ATA in 2004. However, he continued to work with ATA on a part-time basis until 2010 when he accepted his current position with the Air Force at AEDC.

Dr. Donald Malloy, an AEDC lead aerodynamics analysis engineer in the AEDC Analysis and Evaluation Branch, worked closely with Baker before his retirement and consulted him after his retirement on a project.

"My most memorable work experience with Dr. Baker occurred during his semi-retirement years when I was leading an AEDC team supporting flight testing of a legacy aircraft," Malloy said. "My biggest challenge was convincing AEDC leadership that I needed more of Dr. Baker's support as a retiree (reserve core team member) to lead a study to estimate thrust and drag increments for a proposed configuration to increase flow through the engine bay and ejector nozzle to mitigate engine bay overheating problems when there was a high level of uncertainty in the workload at AEDC."

AEDC changes and the future

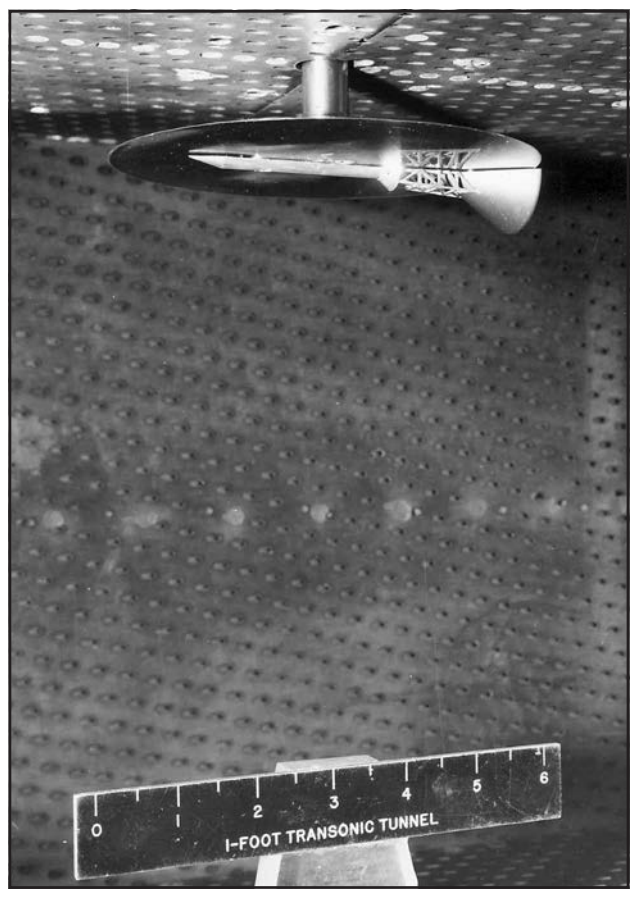
Baker said one significant change he has recognized over the years is how the government has become more involved in the testing and evaluation processes at AEDC and he sees a bright future for the Complex.

"I see a very bright future for AEDC and its increasingly important role in the development of new weapon systems," Baker said. "A significant part of the cost of a new weapon system occurs in the technology development and engineering and manufacturing development phases of the system. AEDC plays a very important role in both of those phases of development. As AEDC works to reduce the cycle time that a program spends in these two phases, we will be able to help reduce the total cost of the system.

"A significant challenge will occur with the total change in the way that AEDC is managed for the next contract and the increase in the technical role of the government in the operation of the test and evaluation mission of the Complex. I think that there will be growing pains but the end result will be in the best interest of AEDC."

Baker, who is a resident of Rutherford County, plans to continue his service at AEDC.

"I still look forward to coming to work every day and I very much enjoy my job," he said. "I am excited about the revival of analysis and evaluation at AEDC and I want to participate in it for as long as I can."



Dr. Bill Baker, the director of the AEDC Analysis and Evaluation Branch, participated in testing the Apollo Escape Module in the AEDC 1-foot transonic wind tunnel (1T) in the 1960s. *(AEDC file photo)*

Demolition of final 'Deuce' squadron missile launcher is a New START milestone

By John Turner
341st Missile Wing Public Affairs

MALMSTROM AIR FORCE BASE, Mont. – The last of 50 deactivated Minuteman III intercontinental ballistic missile launch facilities once operated by the 564th Missile Squadron was demolished Aug. 5, closing an important chapter in the 341st Missile Wing's history. The event also marks a significant milestone toward U.S. compliance of the New Strategic Arms Reduction Treaty signed with Russia in 2011.

Lt. Gen. Stephen Wilson, Air Force Global Strike Command commander, and Col. Tom Wilcox, 341st MW commander, watched as Launch Facility T-49, located approximately 25 miles west of Conrad, Montana, was demolished. At around 9:30 a.m., contractors used heavy machinery to bury the site's 110-ton launcher closure door and fill the launch tube with dirt, making it forever unusable as a missile launch site.

"This marks an important day in Wing One's history and brings closure to another yearlong effort that brings us one step closer to New START Treaty compliance," said Wilcox.

The 341st MW currently has 150 Minuteman III missiles on alert.

"Back in June, we finished reconfiguring each of our Minuteman ICBMs to a single warhead, and at this milestone we remove 50 launchers, bringing us closer to our maximum treaty authorization," said Wilcox. "Both of these missions were long-term operations conducted by the ICBM force in a safe, secure, and effective manner and required precision through all facets of execution. I'm extremely proud of our team!"

This completes Phase I for the permanent elimination of 50 unused launch sites at Malmstrom Air Force Base, Montana, that have been in caretaker status with the 341st Civil Engineer Squadron since 2008. All of the sites are located in the former 564th MS complex northwest of Great Falls, Montana, in Choteau, Pondera, Teton and Toole counties. Demolition began in February and progressed as contracts were awarded.

The final 10 silos recently demolished have entered a 60-day observation period that allows Russia to verify that the launch facilities have been eliminated in accordance with New START. Each site must remain undisturbed until formally removed from the Air Force's accountability for treaty purposes. Russia may choose within 30 days to expedite the process by sending a team to visually inspect the sites.

The limits set by New START require the U.S. to eliminate 103 deactivated ICBM silos by February 2018. The demolition of Malmstrom's 50 deactivated silos fulfills almost half of this commitment. Additionally, 50 launch facilities have already been eliminated at F.E. Warren AFB, Wyoming, and three test silos will be eliminated at Vandenberg AFB, California.

Phase II work began July 21 to pour concrete caps over the first 40 launchers completed at Malmstrom under Phase I, said Rick Bialczak, 341st MW treaty compliance office chief.

The completion of all Phase II work will take several months, said Mark Coleman, 341st CES base real property officer. The sites will remain in caretaker status by 341st CES until the final disposition of the properties is determined.

Col. Tom Wilcox, 341st Missile Wing commander, photographs Launch Facility T-49's dismantled launcher closure door Aug. 5. The site is the last of 50 Minuteman III missile launch silos once operated by the 564th Missile Squadron that are being eliminated from Malmstrom Air Force Base, Mont., in compliance with the New Strategic Arms Reduction Treaty. (Air Force photo/Senior Airman Katrina Heikkinen)

At its peak, the 341st MW had four missile squadrons at Malmstrom and maintained and operated 200 active Minuteman III launch facilities. Its first three squadrons--then known as the 10th Strategic Missile Squadron, 12th SMS and 490th SMS--were built as Minuteman I sites and were activated in November 1961 through May 1962; all three were fully operational by July 3, 1963. In 1964, the 564th SMS--an Atlas D unit and Strategic Air Command's very first operational ICBM squadron--was inactivated at F.E. Warren and reactivated at Malmstrom in 1965 to become the 341st Strategic Missile Wing's fourth Minuteman squadron.

The 564th SMS was unique here because its sites were built for the Minuteman II weapon system, the Air Force's next generation of solid fuel ICBMs. For this reason, the 564th proudly carried the nickname 'Deuce' squadron.

The 564th SMS was declared fully operational on May 5, 1967, after accepting the Air Force's 1,000th (and last) Minuteman silo. The completion of the Tango Flight launch facilities, in addition to the squadron's Papa, Quebec, Romeo and Sierra flights operating 10 silos each, put the Deuce squadron on full alert.

Retired Master Sgt. Steve Vielleux, who was at launch site T-49 to witness the final demolition, remembers that the 564th SMS had a less official nickname amongst his fellow missile maintainers--'the Odd Squad.'

Vielleux arrived at Malmstrom in 1970 and was a maintainer until he retired in 1992. In 1975, he trained at Grand Forks AFB, North Dakota, to reposture the 564th SMS to the Minuteman III system. He remembers that the Minuteman III required less maintenance to keep them on alert than the previous generation of missiles.

"We fought every day with the Minuteman IIs to keep them on alert," said Vielleux. "When we first got the Minuteman IIIs in there, everybody liked them because even though it was a different system and you had to do a lot of things that were unique to that system, they were much more reliable."

The squadron was officially redesignated as the 564th MS on September 1, 1991.

The 564th MS received continuous modernizations. The squadron transitioned to the REACT-B (Rapid Execution and Combat Targeting) system during the 1990s while the other three squadrons at Malmstrom upgraded to the REACT-A system.

This difference in targeting systems eventually sealed the 564th MS's fate. In 2006, the 564th MS was the only squadron in the U.S. still operating that weapon system configuration. By then, the Minuteman force across the nation had been reduced to 500 ICBMs at three bases.

The decision to deactivate the 564th MS was made by the nation's defense leaders in accordance with the 2006 Quadrennial Defense Review, which stated, "To achieve the characteristics of the future joint force and build upon progress to date, the Department of Defense will reduce the number of deployed Minuteman III ballistic missiles from 500 to 450 beginning in FY07."

Malmstrom received formal direction from then Air Force Chief of Staff Gen. T. Michael Mosely, dated June 29, 2007, to begin deactivation of the 564th MS. The squadron's final weapon system component was removed from launch facility T-41 on July 28, 2008. The 564th MS was ceremoniously deactivated on August 15, 2008.

Vielleux was also present as the last Minuteman component was removed from T-41 six years ago.

"It was kind of bittersweet to stand out there and know that all these birds that we kept on alert all those years, they're not there anymore," said Vielleux. "It's a finality to the whole thing."

IOSS
Interagency OPSEC Support Staff
HOT TIPS

Don't Connect Personal USB Devices to Government Computers

But I'm just using a little power, what's the harm?

Anything that plugs into USB can not only draw power, but can also transfer data. USB provides both capabilities.

But I turned it off. So I'm ok right?

NO. USB supplies power; so, it's not necessary for the device to be on for data transfer to occur.

But it's not a thumb drive so what's the issue?

Even if it were as simple as a USB light or game controller, how do you know it doesn't have memory? All hard drives, mp3 players, phones, etc. definitely DO have storage and, in many cases, also include wireless capability which makes them a much greater vulnerability than a USB thumb drive. The introduction of these devices into US Government systems allows for the creation of an infection vector across classification boundaries.

But I don't transfer data back and forth. I would never load my data onto a work computer.

Within seconds of plugging in a USB cable, the computer and device start exchanging information. It's during this "handshake" period that a virus or malware can begin its work and infect any computer you plug into. This data transfer may introduce a cross-domain violation or the introduction of malicious data onto a US Government network.

But where would my portable device get a virus?

The Internet, Bluetooth vulnerabilities, infected media, other USB charging locations… the list is nearly endless. Not only is your device at risk of getting a virus, so are the government systems to which you are connecting.

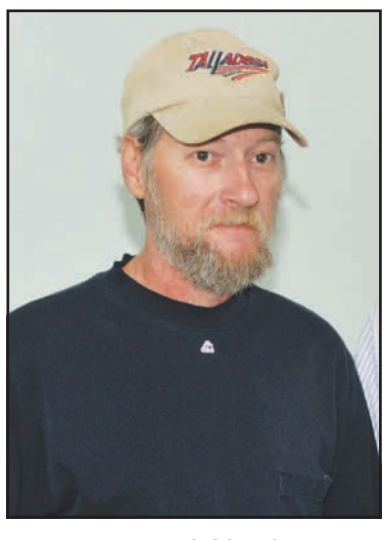
Bottom Line

Personal devices can be charged on personal computers or with commercially available (and inexpensive) USB wall or car chargers. Plugging these devices into US Government systems creates vulnerabilities which lead to significant risks to our networks and, ultimately, our information.

Don't put your information at risk. Keep personal devices off of government systems!

ATA personnel awarded for exceptional performance at AEDC

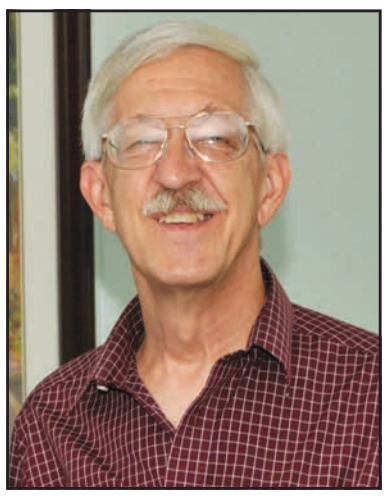
Gregory Crabtree
Craftsperson of the Quarter
Integrated Test and Evaluation Department



Danny Strickland Sr.
Craftsperson of the Quarter
Mission Support Department

Danna Pemberton
Technical Excellence in Engineering of the Quarter
Information Technology and Systems Department

Nathan Lister
Technical Excellence in Engineering of the Quarter
External Customer Service Excellence of the Quarter
Integrated Test and Evaluation Department



Ken Tatum
Technical Excellence in Engineering of the Quarter
Integrated Test and Evaluation Department

Vyrene Crowder
Administrative and Professional Support Services of the Quarter
Mission Support Department

Bill Sizemore
Administrative and Professional Support Services of the Quarter
Performance Management Department

Hunter Beavers
Operations and System Engineer of the Quarter
Test Assets and Support Department

Phillip Medley
Operations and System Engineer of the Quarter
Test Assets and Support Department

Carrie McInturff
Program Manager of the Quarter
Test Assets and Support Department

Tom Schmidt
Program Manager of the Quarter
Integrated Test and Evaluation Department

Kristi Farris
Internal Customer Service Excellence of the Quarter
Mission Support Department

Michael Turri
External Customer Service Excellence of the Quarter
Information Technology and Systems Department

Photos are not available for:

Floyd Gibbs
Craftsperson of the Quarter, Mission Support Department

Richard Gunn
Craftsperson of the Quarter, Mission Support Department

Howard Frederick
Technical Excellence in Engineering of the Quarter, Mission Support Department

Chris Broadrick
Administrative and Professional Support Services of the Quarter, Test Assets and Support Department

Chris Bird
Operations and System Engineer of the Quarter, Information Technology and Systems Department

B-52 aircrews hone long-range ISR capabilities

By Charles Ramey
Air Force Global Strike Command Public Affairs

Airmen from the 96th Bomb Squadron, prepare a B-52H Stratofortress for takeoff at Ellsworth Air Force Base, South Dakota, prior to a 15.5-hour sortie to the U.S. Southern Command area of operations Aug. 11. Assigned to the 2nd Bomb Wing, Barksdale Air Force Base, Louisiana, the aircraft and seven-person aircrew participated in PANAMAX 2014, an annual U.S. Southern Command-sponsored exercise designed to provide multinational interoperability training in complex operations. *(U.S. Air Force photo by Airman 1st Class Rebecca Imwalle)*

BARKSDALE AIR FORCE BASE, La. (AFNS) – Airmen from Air Force Global Strike Command recently took advantage of a multinational U.S. Southern Command-led exercise to hone their long-range reconnaissance capabilities.

The 2nd Bomb Wing, Barksdale Air Force Base, Louisiana, flew a B-52 Stratofortress bomber on a nonstop mission from the United States to the U.S. Southern Command area of operations Aug. 12 during PANAMAX 2014 - an annual U.S. Southern Command-sponsored exercise series that focuses on ensuring the defense of the Panama Canal.

An almost entirely simulated exercise, the 15.5-hour long-range B-52 sortie, which originated at Ellsworth Air Force Base, South Dakota, and ended at Barksdale Air Force Base, was the lone exception. Flown by the 96th Bomb Squadron, the seven-person aircrew exercised providing intelligence, surveillance and reconnaissance support to forces defending the Panama Canal from a myriad of threats.

"The Panama Canal is one of the most strategically and economically crucial pieces of infrastructure in the world," said Col. Gregory Julian, U.S. Southern Command spokesman. "The 17 partner nations participating in this exercise benefit from the collaborative efforts to ensure the safety and security of the Panama Canal and this exercise is designed to test their responsiveness, foster cooperation, and increase interoperability among them."

For Air Force Global Strike Command, PANAMAX is an opportunity to familiarize aircrews with the U.S. Southern Command region and train in a unique mission set not normally associated with bomber operations.

"The B-52 can be modified with additional equipment that allows it to be an especially valuable ISR platform because of its ability to conduct long-range surveillance flights," said Lt. Col. Robert Bender, chief of AFGSC's Current Operations Branch. "PANAMAX is an excellent opportunity for our aircrews to exercise these capabilities in an operational training environment."

For aircrews, the ability to work in an unfamiliar environment, hone ISR capabilities, and test aerial command and control capabilities during PANAMAX were invaluable.

"I had only worked in the SOUTHCOM AOR once before this exercise," said Capt. Jonathan Morse, one of two aircraft commanders on the mission. "[PANAMAX] allowed crew members that have not operated in a different area of operations to gain valuable experience and bring that back to the B-52 community. I believe it also made SOUTHCOM better aware of our capabilities and confident that they can call upon our B-52s when in need."

Morse's fellow aircraft commander during the mission, Capt. Michael Marchand, agreed the training was valuable. "Going down south, working with our partners and helping build the global reach of our platform is a great experience," he said. "It's great to work outside a familiar AOR, build upon our expertise and be able pass that on."

"In order to maintain the readiness of our forces, it is important to provide the opportunity for them to train and operate their capabilities in various geographical locations and environments," said Maj. Gen. Scott Vander Hamm, commander of 8th Air Force (Air Forces Strategic), located at Barksdale Air Force Base, and the Joint Functional Component Commander for Global Strike, U.S. Strategic Command, located at Offutt, Air Force Base, Nebraska. "Having a U.S. bomber presence and participation in a variety of multinational and joint exercises also demonstrates U.S. commitment and capability and contributes to security at home and abroad."

AWACS upgrade achieves initial operational capability

By Darren D. Heusel
Tinker Air Force Base Public Affairs

TINKER AIR FORCE BASE, Okla. (AFNS) – The commander of Air Combat Command, Gen. Mike Hostage, recently declared initial operational capability for the 552nd Air Control Wing's E-3G Sentry, an Airborne Warning and Control System Block 40/45 aircraft here.

"This modification represents the most significant upgrade in the 35-plus year history of the E-3 AWACS and greatly enhances our crew members' ability to execute the command and control mission while providing a building block for future upgrades," said Col. Jay R. Bickley, the 552nd ACW commander.

Bickley said meeting this milestone is a testament to outstanding teamwork as evidenced with the great partnership enjoyed between the 552nd ACW, the AWACS system program office, ACC, Oklahoma City Air Logistics Complex, or ALC, and the wing's contracting partners.

Gordon Fitzgerald, the 552nd ACW's director for requirements, said six Block 40/45 modified aircraft have been delivered to the 552nd ACW and two of the E-3G models have been successfully deployed in support of counterdrug operations.

He also said the wing has Block 40/45 specific parts, support equipment and technical data on hand. The wing has completed initial training and initiated a structured plan for ongoing training.

"We are confident we can deploy and support this important weapon system worldwide," Fitzgerald said.

Brig. Gen. Gene Kirkland, the Oklahoma City ALC commander, said the complex workforce is proud to be part of an important operational milestone, but there is still much left to do to give the 552nd ACW more 40/45 capable platforms.

> The 552nd ACW has had a continuing presence in the Middle East, flying more than 14,000 sorties and logging more than 130,000 flying hours from 1980 to 2003.

Bickley praised the many members of the AWACS team who made the milestone possible, adding, "This is a great asset for U.S. command and control and a milestone we can all be proud to be a part of."

The 552nd ACW is home to the E-3, with a majority of its AWACS aircraft being housed here and the remaining aircraft split between Kadena Air Base, Japan, and Joint Base Elmendorf-Richardson, Alaska.

According to Fitzgerald, the entire fleet of E-3 aircraft will be upgraded by fiscal year 2020.

Known for its signature black-and-white rotating radar dome that sits on top of the aircraft, the E-3 provides all-weather surveillance, command, control and communications needed by commanders of U.S., NATO and other allied air defense forces.

In support of air-to-ground operations, the Sentry can provide direct information needed for interdiction, reconnaissance, airlift and close air support for friendly ground forces. It can also provide information for commanders of air operations to gain and maintain control of the air battle.

As an air defense system, E-3s can detect, identify and track airborne enemy forces far from the boundaries of the U.S. or NATO countries. It can direct fighter-interceptor aircraft to enemy targets. The E-3 Sentry is designed to respond quickly and effectively to a crisis and support worldwide military deployment operations.

The 552nd ACW has had a continuing presence in the Middle East, flying more than 14,000 sorties and logging more than 130,000 flying hours from 1980 to 2003. In 2003, the wing returned to Tinker AFB for a break in deployment. The break didn't last long. In early 2007, the wing returned and reestablished its presence in the region.

AEDC supports Tennessee High School Cycling League biking competition

By Juan Ramos
AEDC Contributing Writer

The Tennessee High School Cycling League (TNHSCL) held a mountain-biking competition Aug.10 at the Arnold Air Force Base biking trails where 80 students participated.

The league is one of the National Interscholastic Cycling Association's (NICA) three new project leagues, bringing the total number of state leagues to 10.

Junior-varsity boys and girls, and freshman and sophomore boys raced over a 12-mile course, while freshman and sophomore girls raced a six-mile loop.

Persons interested in helping to form a NICA school mountain biking program in their communities, and for more information, can visit the league website at ***www.tennesseemtb.org***.

The TNHSCL leadership thanked the Arnold Air Force Base Outdoor Recreation Services for the use of the venue facilities.

Participants at the Tennessee High School Cycling League mountain biking competition begin the race at the Arnold Air Force Base biking trail on Aug. 10. *(Photo by Juan Ramos)*

New Mexico maintainers keep the future of the Air Force in the sky

By Airman 1st Class Leah Ferrante
49th Wing Public Affairs

HOLLOMAN AIR FORCE BASE, N.M. (AFNS) – Recently, the mission here has transformed from projecting combat airpower to training the next generation of combat pilots and among its many aircraft, Holloman Air Force Base is the premier training base for the MQ-1B Predator and the MQ-9 Reaper.

The unmanned remotely piloted aircraft, or RPA, fill the skies of the Tularosa Basin daily, executing training missions. With more than 200 flying hours weekly, the importance of keeping the aircraft safe is a high priority, and no one understands that better than the Airmen of the 49th Aircraft Maintenance Squadron.

The Airmen thoroughly inspect each part of the aircraft before takeoff and after landing, looking for any discrepancies that could interfere with the proper operation and safety of the aircraft.

"We check every part of the aircraft, from the wings to the engines and tires. It's basically like taking your car for a tune-up," said Senior Airman Courtlyn Collier, a 49th AMXS crew chief. "Once a plane lands, you'll see a lot of crew chiefs, avionics and weapons (Airmen) starting inspections."

Inspections are performed based on different qualifying factors, including total hours flown and discrepancies noticed or reported during training sorties. Additional inspections are completed on various milestones including 200, 400, 800 and 2,000 hours of flight time. Each inspection is increasingly more in-depth as the flight hours rise.

"There's a lot of interval inspection on this aircraft," said Staff Sgt. Aldwin Del Rosario, a 49th AMXS avionics specialist. "There's a lot more to this aircraft than just removing a panel, and some nuts and bolts. Whatever you work on is being utilized to make the mission happen."

Up to nine people will work on an aircraft at one time, each responsible for different systems. When it comes down to the wire, teamwork is a critical.

"Teamwork plays a good role, when we work together we can knock out a 400 hour inspection in one shift, and have that aircraft ready to go again," Collier said.

A thorough knowledge of the Reaper is required in order to keep the aircraft flying. Holloman AFB has the important mission of preparing Airmen with the knowledge and skills necessary to deploy worldwide at a moment's notice, to effectively and efficiently perform their duties.

"They fly and perform numerous missions," Del Rosario said. "It's nice to see that what we're working on is being used for the bigger mission."

The Reaper is an armed, multi-mission, medium-altitude, long-endurance RPA that is used primarily as an intelligence-collection asset. Reapers also perform missions supporting close air support, combat search and rescue, convoy over watch, and target development. The MQ-9's capabilities make it uniquely qualified to conduct warfare operations in support of the deployed commander's objectives.

"The MQ-9 aircraft is definitely the future for the Air Force," Collier said.

MQ-9 Reaper crew chiefs perform a routine inspection on an MQ-9 remotely piloted aircraft Aug. 12 at Holloman Air Force Base, N.M. The 49th Aircraft Maintenance Squadron thoroughly inspects each part of the aircraft before takeoff and after landing, looking for any discrepancies that could interfere with the proper operation of the aircraft. Additional inspections are completed on several milestones including 200, 400, 800 and 2,000 hours of flight time. Each inspection is more in-depth as the flight hours increase. The crew chiefs are assigned to the 49th AMXS. *(U.S. Air Force photo/Airman 1st Class Leah Ferrante)*