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AEDC celebrates successful launch of NASA Orion

By Deidre Ortiz
ATA Public Affairs

NASA achieved a major milestone in completing the Orion spacecraft's first voyage to space recently.

Having had a hand in testing the Orion Multi-Purpose Crew Vehicle, AEDC is also celebrating this accomplishment.

Mounted atop the United Launch Alliance Delta IV Heavy rocket, Orion launched from Cape Canaveral Air Force Station's Space Launch Complex 37 at 7:05 a.m. EST on Dec. 5.

AEDC project engineer Nathan Payne, who coordinated the testing for Orion in support of NASA Exploration Flight Test-1 (EFT-1), stated he's pleased the flight went smoothly because even with the amount of testing that went into prepping the spacecraft, these events are unpredictable.

"Space flight is still risky, so to have a successful first launch was a relief," he said. "There are a lot of people looking over data we took here and doing checks to ensure data quality, but stuff still happens."

Payne's sentiments of the flight were similar to those of Mark Geyer, Orion program manager.

"We had the models and we have the best people on the planet, but until you fly it, you don't know," Geyer said.

A 5.9 percent scale model of the Orion crew capsule mounted on the Delta IV booster was tested in the 16-foot transonic wind tunnel at AEDC in preparation for the spacecraft's initial flight. The AEDC test team, along with a United Launch Alliance (ULA) team led by Mike

See **ORION**, page 3

The United Launch Alliance Delta IV Heavy rocket, with NASA's Orion spacecraft mounted atop, lifts off from Cape Canaveral Air Force Station's Space Launch Complex 37 on Dec. 5, in Florida. AEDC test teams supported Exploration Flight Test-1 by assisting in testing several key components for the aircraft. ***(Photo by Bill Ingalls, NASA)***

Sipe family visits AEDC memorial

The family of John Sipe recently visited the base to view the AEDC memorial, located outside of the A&E building in honor of those who were serving out the Complex's mission when an explosion occurred in the test cell on Nov. 27, 1982. John Sipe was one of the crew members killed in the incident. Jennifer Sipe, the daughter-in-law of Faye Mays of Manchester, John's widow, made arrangements for the family to visit the Memorial, since she and several others in the family had never viewed it. Col. Raymond Toth, AEDC commander, and Steve Pearson, ATA general manager, met and spoke to the family during their visit. Pictured left to right: Col. Raymond Toth; Paul Sipe, son; Jennifer Sipe, daughter-in-law; Jonathan Sipe, son; Lonnie and Debbie Lance, brother-in-law and sister-in-law; Sherman Mays, husband of Faye Sipe Mays; Faye Mays, widow; Bill Sipe, son; Tina Sipe, daughter-in-law; Nikki Sipe Anderson, granddaughter; Steven Sipe, grandson; Cara Gray holding Hannah Anderson, great-granddaughter; and ATA General Manager Steve Pearson. In front are Jacob and Lily Anderson, great-grandchildren. ***(Photo by Rick Goodfriend)***

Milhoan named ATA Engineer of the Year:

Thankful for his team, AEDC family, health

By Deidre Ortiz
ATA Public Affairs

Spend any time talking to Al Milhoan, ATA control system architect, and one will notice within a few minutes that he's an intelligent guy but also someone who is sincere and humble.

Milhoan, an Estill Springs resident who recently received the ATA Engineer of the Year award for 2014, thanked his colleagues for their contributions, which he says allowed him the opportunity to be presented with this prestigious honor.

"It's not one individual," he said. "It's always a team effort to get a problem solved."

He explained that his job duties entail resolving issues for the control systems on base, and often times it takes a group of people putting their heads together to come up with the right solution.

His support and willingness to be part of a team has not gone unnoticed. According to Chris Layne, branch manager of Instrumentation and Control Services, Milhoan "is truly an 'engineer's engineer.'"

"He is able to take even the most complex technical problem back to the first principles of physics and calculus in order to find the optimum solution," Layne said. "The result is always a fundamentally sound solution that works the first time. Additionally, Al is able to effectively communicate on broad range of technical topics to everyone from engineering interns to AEDC's senior leaders to our test customers. Al has a great depth of knowledge and freely shares it with the rest of us. He is truly worthy of being ATA's Engineer of the Year for 2014."

Milhoan began working at the base in 1982 and was hired originally to make printed circuits but that later changed.

"I started working with Jim Cunningham, who was

See **MILHOAN**, page 7

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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Chief, Public Affairs

ATA Aerospace Testing Alliance

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• Demonstrate the highest integrity and ethical standards
• Communicate clearly and openly
• Deliver professional and technical excellence
• Nurture, enable and treat people fairly
• Align with customer goals and objectives
• Use disciplined and innovative processes
• Continually improve in all that we do

AEDC ready to participate in Relay For Life

By Dee Wolfe
AEDC Personnel Division

This year's Coffee County Relay For Life is April 24 in Manchester. AEDC employees are encouraged to participate in the 2015 fundraiser for the American Cancer Society.

Relay For Life is not a race, it is an event to raise money and awareness for cancer research. A new twist to Relay For Life this year is that it starts at 6 p.m. Friday and ends at midnight Friday night – so it is just a six-hour event rather than an all-night event.

I am a two-time cancer survivor and my husband Shawn and I, both AEDC DOD employees, coordinate the base's involvement in the event. We have participated in the event since 2009 and have been captains of team REMEMBER since 2011. Since 2009, AEDC teams have raised more than $35,000 for cancer research.

Cancer has affected just about everyone at AEDC in one way or another. Almost everyone knows someone who is currently battling cancer, who has gone through it or who hasn't survived it, which is why events like Relay For Life are so important.

Prior to the event, Team REMEMBER will hold a bake sale for donations and the Coffee County organization will present "Dancing with the Manchester Stars" on Jan. 24. Both fundraisers are still in the planning stages with more information to come.

If you would like more information about Relay For Life, joining team REMEMBER, starting a new team or would like to make a donation, please call 454-4313. Individuals can also register online at ***www.relayforlife.org/coffeetn***.

Pictured left to right at the 2014 Relay For Life are AEDC employees Dee and Shawn Wolfe, and their daughter Amber. *(Photo provided)*

Amber Wolfe, the daughter of AEDC employee Dee and Shawn Wolfe, prepares to smash cancer by damaging a car that represents cancer at the 2014 Relay For Life in Manchester. The "Smashing Car" is a fundraiser event for team REMEMBER at the relay. *(Photo provided)*

Raise Cervical Cancer Awareness this January

By TRICARE Communications

According to the Centers for Disease Control and Prevention (CDC), cervical cancer was the leading cause of death by cancer for women in the United States. Over the last 40 years, the number of cervical cancer cases and deaths has dramatically decreased thanks to cervical cancer awareness. This January, we urge TRICARE beneficiaries to raise their own awareness about this disease and take preventive measures to safeguard against cervical cancer.

The first step in protecting yourself from cervical cancer is to schedule your well-woman visit. Cervical cancer is highly curable when detected and treated in the early stages. Cervical cancer usually doesn't show signs or symptoms in the early stages but, as the cancer advances, some women may notice abnormal symptoms. If you experience any discomfort, it is important to visit your doctor. TRICARE covers pelvic exams and Pap smear testing for women 18 years of age or older (or younger if sexually active).

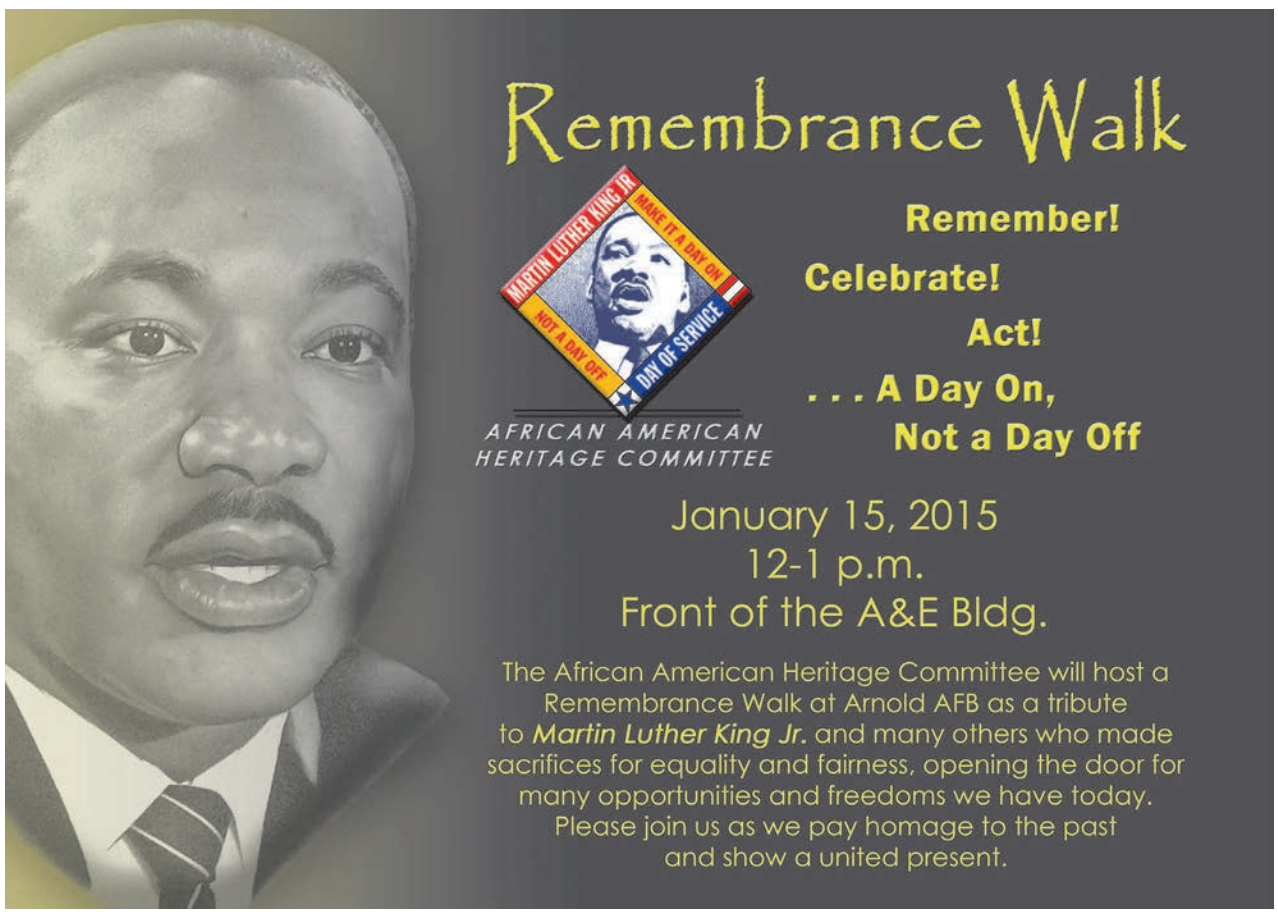
Cervical Health Awareness Month is also a chance to raise awareness about how women can protect themselves from the human papillomavirus (HPV). HPV is the most common sexually transmitted disease, and according to the CDC, the cause of most cervical cancers. HPV is a common virus than can be passed from one person to another during sex.

There are numerous types of HPV, but certain types can cause changes in the cervix that may lead to cervical cancer. TRICARE covers two HPV vaccines, Gardasil and Cervarix, to protect against the types of HPV that can cause cervical cancer. HPV vaccines are given in a series of three shots. The CDC recommends the series begin between the ages of 11 and 12 for females. Females who did not receive the vaccine at the recommended age can still get the vaccine up until the age of 26. While HPV is one of the most common causes of cervical cancer, other risk factors can cause this type of cancer.

In addition to having HPV, the CDC says the following risk factors are associated with cervical cancer:

- Smoking
- Having HIV (the virus that causes AIDS) or another condition that makes it hard for the body to fight off health problems
- Using birth control pills for a long time (five or more years)
- Giving birth to three or more children

TRICARE covers HPV testing as a cervical cancer screening when performed in conjunction with a Pap smear for women aged 30 and older. To learn more about cervical cancer facts, symptoms and preventive measures, visit the CDC's ***http://www.cdc.gov/cancer/cervical/index.htm***. For more information on TRICARE's coverage of the Pap test and HPV vaccines, visit our ***http://www.tricare.mil/CoveredServices/IsItCovered.aspx***.



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 two ways: via the AEDC intranet home page, and by calling 454-6000.

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

Col. Raymond Toth
AEDC Commander

Col. Tom retires from Air Force after 25 years of service

Col. Patrick Tom is retiring from the U.S. Air Force after 25 years of service. A Chief of Staff of the Air Force-designated Senior Materiel Leader, Col. Tom has served as the Chief of the Test Operations Division at AEDC prior to his deployment in March 2014. To recognize his many achievements, family, friends and coworkers recently gathered at a luncheon and ceremony in his honor. The presiding official for the ceremony was Major General Arnold W. Bunch Jr., Commander of the Air Force Test Center. Tom's family in attendance included his wife Roberta and brother Donald. His mother Nancy was also able to watch the ceremony from Honolulu, Hawaii, via Skype. Pictured is Col. Tom, right, accepting the Legion of Merit Medal from Maj. Gen. Bunch. *(Photo by Jacqueline Cowan)*

Allen retires from Air Force after 24 years of service

Master Sgt. George Allen, right, receives a Certificate of Retirement from the United States Air Force for 24 years of service during a retirement ceremony at AEDC on Dec. 19. Allen was assigned to AEDC for more than four years where he was the Superintendent of Fuels Management with the AEDC Test Support Division. He was accompanied by his wife Angel and sons Grant and Gage during the ceremony. Allen is shown accepting his retirement certificate from AEDC Commander Col. Raymond Toth. He also received the Meritorious Service Medal 2nd Oak Leaf Cluster Award and a Certificate of Appreciation from President Barack Obama. *(Photo by Jacqueline Cowan)*

Lamb retires after 41 years of service at AEDC

Bill Lamb, right, receives a Certificate of Service from the United States Air Force for 41 years of federal civilian service during his retirement ceremony at AEDC on Dec. 16. Lamb retired as the deputy director of the Air Force Test Center Contracting Division (AFTC/PZ) at Arnold Air Force Base. Immediate family members in attendance include Lamb's wife Deborah, sons Shane and Brandon, and daughters Tiffany and Chelsea. Amy Foster, the director of the Arnold AFTC/PZ, is shown presenting the Certificate of Service to Lamb. *(Photo by Rick Goodfriend)*

Duesterhaus retires after 33 years of service to Air Force

Dave Duesterhaus, right, receives a Certificate of Service from the United States Air Force for 33 years of federal civilian service during his retirement ceremony at AEDC on Dec. 17. Duesterhaus's career at AEDC spans 42 years as a contract and civilian employee. While at AEDC he served as the first U.S. Air Force director for the National Full-Scale Aerodynamic Complex (NFAC) at the NASA Ames Research Center, Moffett Field, Calif. He retires as the chief of the Test Technology Branch with the AEDC Test Operations Division. Immediate family members in attendance include Duesterhaus's wife Debra, sons Scott Duesterhaus and Trenton Bussell, and daughter Angela Byford. Pictured with Duesterhaus is Col. Timothy West, the AEDC Test Operations Division director, who served as the retiring official. *(Photo by Jacqueline Cowan)*

Couple retires together after combined 51 years of service at AEDC

A retirement party was held for ATA employees Peggy and Scott Glass, allowing coworkers and friends to congratulate the couple and say their farewells. Peggy served as the business manager for investment projects and worked at AEDC almost 22 years. Scott served ATA as an enterprise IT system architect. He worked at the base for 29 years. They are from Tullahoma. Peggy and Scott are pictured cutting the cake at the retirement celebration. *(Photo by Rick Goodfriend)*

ORION *from page 1*

Schoonmaker, gathered dynamic pressure and steady state pressure data from the model.

In addition to flight testing, AEDC Tunnel 9 test facility in White Oak, Md., was used in early 2007 during a NASA-sponsored aerothermal test on a scale model to obtain heating data over the model's surface. That same year NASA once again teamed up with AEDC engineers to test possible materials for Orion's heat shield at the Complex's High Enthalpy Aerothermal Test H2 facility.

During the Dec. 5 flight, Orion orbited Earth twice and traveled a distance of 3,600 miles into space, farther than any spacecraft designed for astronauts has been in more than 40 years. This is 15 times higher than the International Space Station. Video taken from the windows of the spacecraft captured images of what Earth looks like from that height.

On its voyage, the spacecraft also flew through high radiation in the Van Allen belts twice, but its systems held up fine. Four-and-a-half hours later, Orion splashed down in the Pacific Ocean approximately 600 miles southwest of San Diego.

NASA, the U.S. Navy, and Orion prime contractor Lockheed Martin worked to recover Orion and return it to shore. The spacecraft was then transported to NASA's Kennedy Space Center in Florida where engineers received more information about its performance.

Though unmanned for this trip, the flight tested many of the vital elements for human spaceflight such as key separation events, parachutes and the heatshield. During re-entry into Earth's atmosphere, Orion endured speeds of 20,000 mph and temperatures near 4,000 degrees Fahrenheit. Data from the flight test will be used to improve Orion's design and reduce risks to future mission crews.

"[The] flight test of Orion is a huge step for NASA and a really critical part of our work to pioneer deep space on our Journey to Mars," said NASA Administrator Charles Bolden. "The teams did a tremendous job putting Orion through its paces in the real environment it will endure as we push the boundary of human exploration in the coming years."

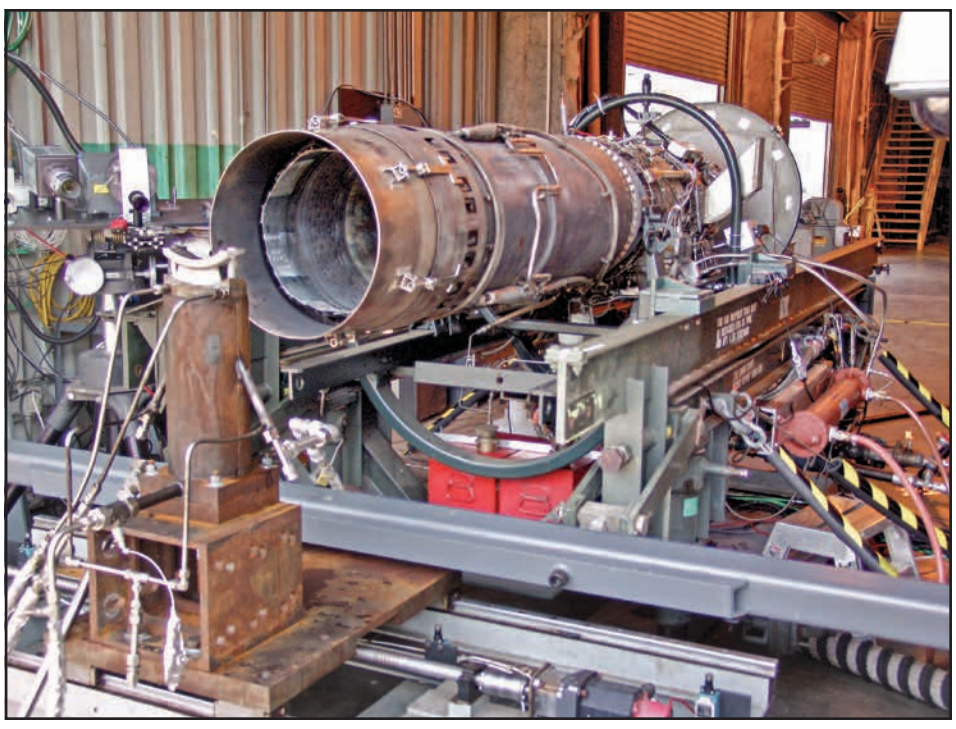
If further testing on Orion is needed, Payne said he and his team are ready to assist.

"I am really glad for ULA and Orion, and I look forward to any future test they will have here at AEDC," he said.

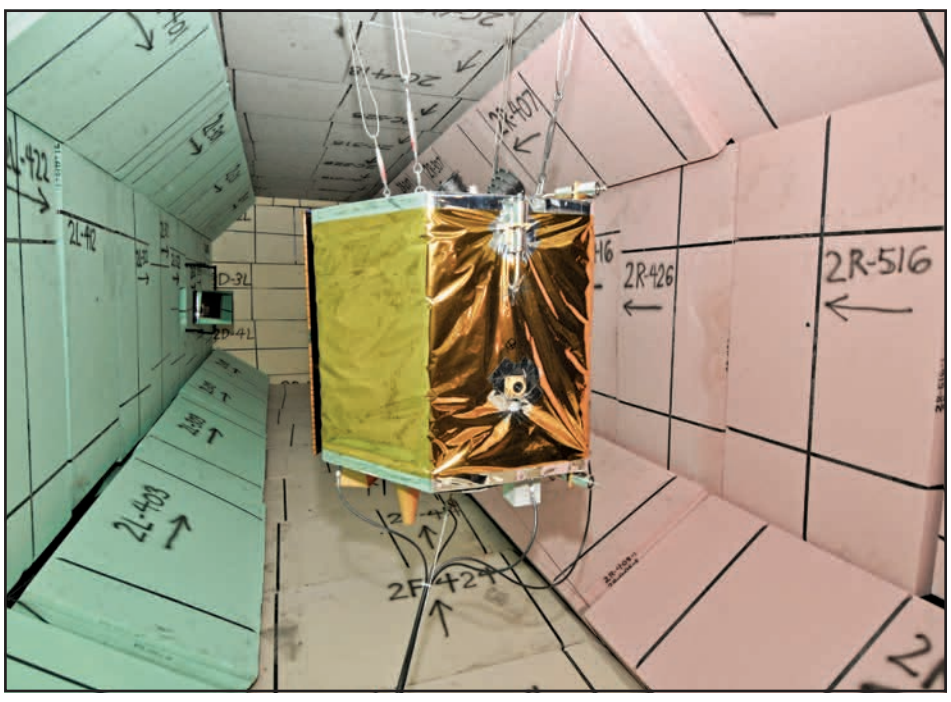
Recovery team members in rigid-hulled inflatable boats approach NASA's Orion spacecraft following its splashdown in the Pacific Ocean. *(U.S. Navy Photo)*

AEDC 2014 Year in Review

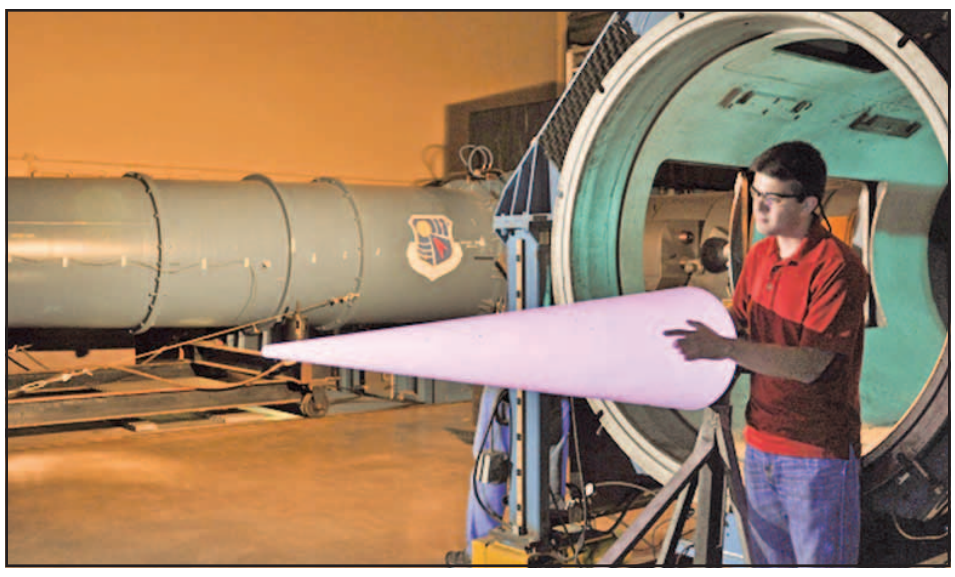
TESTS AND SUPPORT...



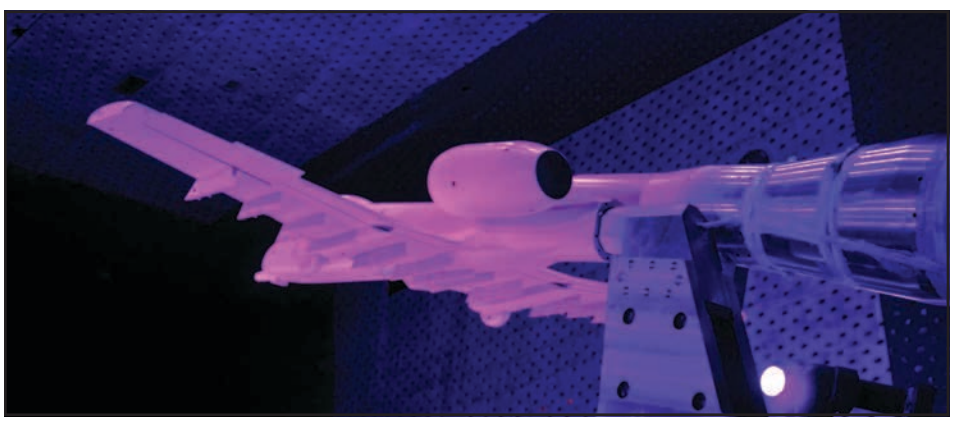
A method for measuring the surface temperature of blades and vanes in the hot section of turbine engines using a thermographic phosphor (TGP) technique was developed by NASA Glenn Research Center in collaboration with AEDC and the Propulsion Instrumentation Working Group (PIWG). The technique requires coating the blade and vane surfaces with a phosphor material appropriate for the targeted temperature range. The phosphor material is excited by a pulsed laser beam and the temperature determined from the time-rate-of-decay of the luminescence signal. Thermographic phosphor techniques were demonstrated in the exhaust flow of an AEDC J85 afterburning engine at the University of Tennessee Space Institute Propulsion Research Facility. This photo shows the test article mounted behind the J85 engine. ***(Photo provided)***



AEDC teamed with NASA, The U.S. Air Force Space and Missile Systems Center (SMC), the University of Florida and The Aerospace Corporation to perform a hypervelocity destructive impact test of a modern satellite to help scientists better understand the effects of space collisions. The satellite, called the DebriSat, was a non-functional full-scale representation of a modern satellite. It was designed and fabricated by the University of Florida and supplied to AEDC for destruction. The test utilized AEDC's Range G light gas launcher, which is capable of firing projectiles over one pound at speeds of more than 15,500 mph. The DebriSat is shown here in the Range G target tank surrounded by "Soft Catch." ***(Photo by Jacqueline Cowan)***

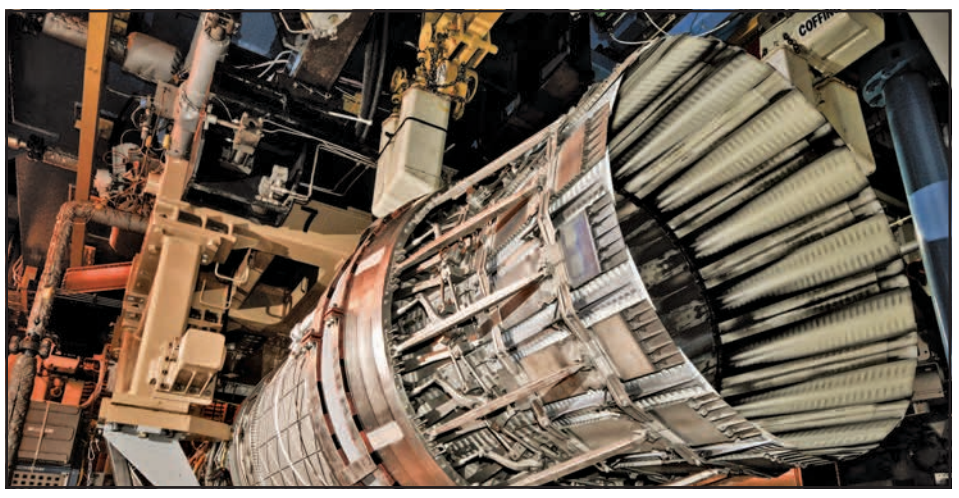


Engineers at AEDC Hypervelocity Wind Tunnel 9 perform experiments on a large 7-degree cone test article at Mach 10 to improve the understanding of hypersonic boundary layer transition in testing and evaluation (T&E) facilities. Testing was made possible under the Test Resource Management Center (TRMC) and the Air Force office of Scientific Research (AFOSR) funded Hypersonic Center of Testing Excellence (CoTE). Pictured is AEDC project engineer George Moraru examining the illuminated temperature sensitive paint (TSP) coating on the cone prior to testing. ***(Photo by Michael Smith)***



A model of an A-10 Thunderbolt II underwent a pressure-sensitive paint (PSP) test in the 16-foot transonic wind tunnel (16T) at AEDC. PSP was used to obtain surface pressure data on the model. The photo above shows a rear view of the A-10 model during testing in 16T. The A-10 is the only U.S. Air Force aircraft designed to be specifically used for close air support. The aircraft is notorious for its maneuverability at low speeds and low altitudes and its accurate weapons delivery. ***(AEDC Photo)***

Novel airframe/engine integration combined with advanced test and evaluation techniques in a world-unique test environment to gain the very first data sets for this international US-German cooperative program as scientists and engineers look to the future of space access. AEDC test engineer Inna Kurits, pictured, checks the Air Force HiFEX vehicle geometry for final readiness before being tested in the AEDC Hypervelocity Wind Tunnel 9. (Photo by Arnold Collier)

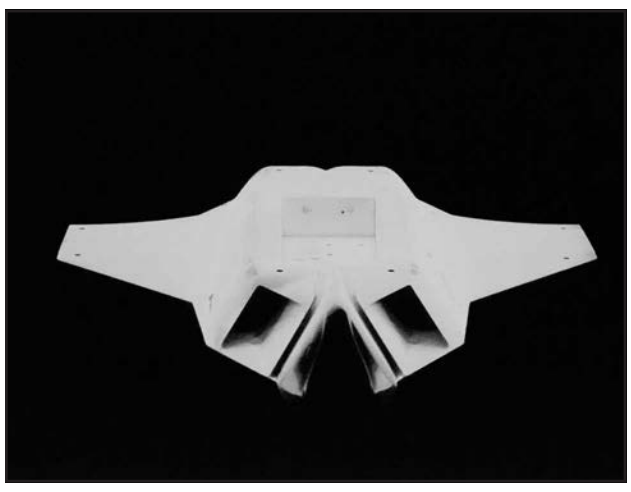


Project engineers at AEDC led a significant effort in accelerating mission testing (AMT) that will ultimately result in a large payoff for the Air Force. A 15-month AMT of Pratt & Whitney's F100-PW-220 engine, which powers the Air Force fleet of F-16 Fighting Falcons and the F-15 Strike Eagles, was conducted in AEDC's Sea Level 3 (SL-3) test cell. The test, part of a $17.5 million program, which ran from January 2013 until spring of this year, is one of the longest running jet engine tests in AEDC history. This successful test has extended the life of the F100-PW-220 by two years, from 8 years to 10. ***(Photo by Rick Goodfriend)***

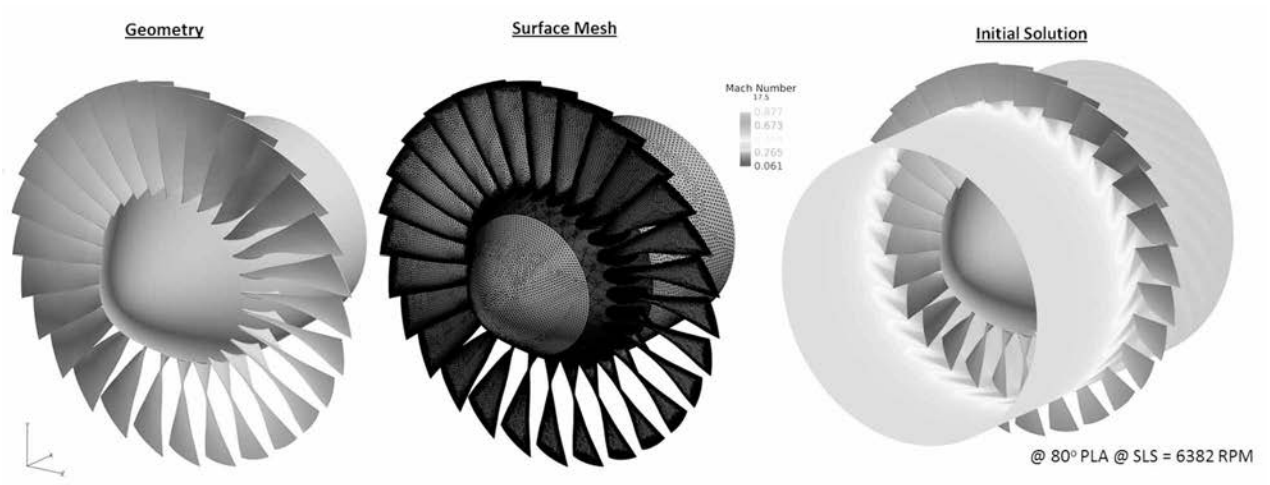
AEDC 2014 Year in Review

TESTS AND SUPPORT...

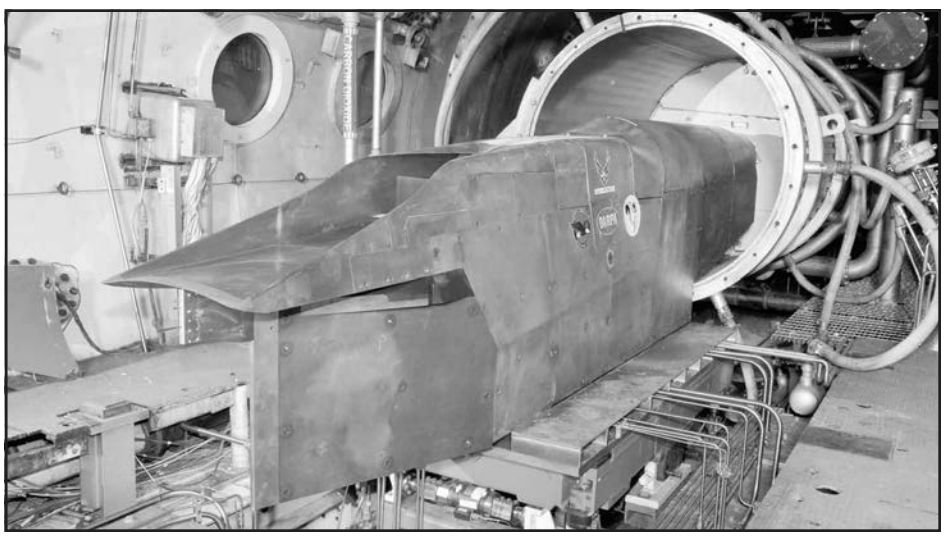
In light of the success of several joint projects, AFRL leadership decided to extend the organization's partnership with AEDC by establishing a new hypersonic research branch, to be known as the High Speed Experimentation Branch, at Arnold AFB. The branch is directed by the AFRL Aerospace Systems Directorate, the home office for which is located at Wright-Patterson AFB. Glenn Liston, AFRL High Speed Systems Science and Technology advisor, is heading the High Speed Experimentation Branch as branch chief. A ribbon-joining ceremony was held on Oct. 21 in celebration of a recent venture between AEDC and the U.S. Air Force Research Laboratory (AFRL). Pictured left to right are AEDC Commander Col. Raymond Toth, Air Force Test Center Commander Maj. Gen. Arnold Bunch Jr., Air Force Materiel Command Commander Gen. Janet Wolfenbarger, AFRL High Speed Systems Division Chief Lt. Col. Joel Luker and Liston. ***(Photo by Rick Goodfriend)***



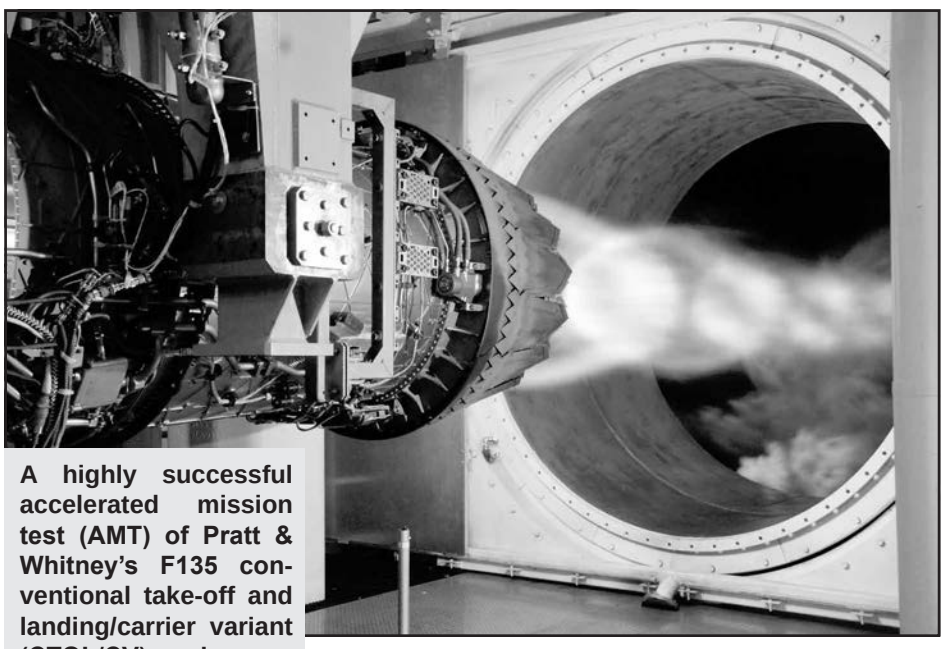
A test demonstrating Innovative Scientific Solution Incorporated's (ISSI) dynamic pressure sensitive paint (PSP) was conducted in the 16-foot transonic wind tunnel at AEDC. The effort was funded by the Air Force through a Rapid Innovation Funding grant for Air-Delivered Weapon Certification Cost Reduction. The goal is to provide a capability that can improve computational fluid dynamics (CFD) modeling simulation of store separation in order to reduce the need for wind tunnel and flight test drop testing during the certification process. ISSI researchers were joined by engineers from AEDC, Lockheed Martin and Euclidian Optics for the program. The dynamic PSP was used on the Lockheed Martin V7 model, a 1980s Advanced Tactical Fighter concept, to measure the acoustic pressure levels in the bay. The model glows bright red as a result of the fluorescent light emitted by the PSP. (AEDC Photo by Marvin Sellers)



New software is available to aid in providing acquisition support for Next Generation of Advanced Aircraft. The CREATE program (Computational Research and Engineering For Acquisition Tools and Environments), an initiative funded by the Office of Secretary of Defense High Performance Computing (HPC) Modernization, is being used to develop next generation computational engineering tool sets for acquisition program engineers. The tools allow program engineers to take advantage of the growth in supercomputer power. In the diagram, the first image is of a rotor fan surface geometry that was the result of the laser scan. The second image shows computational fluid dynamics (CFD) mesh that was generated from the surface and then used to produce the CFD results. The third image shows a portion of the CFD flowfield and the pressure of the air as it goes through the fan. (Image Provided)



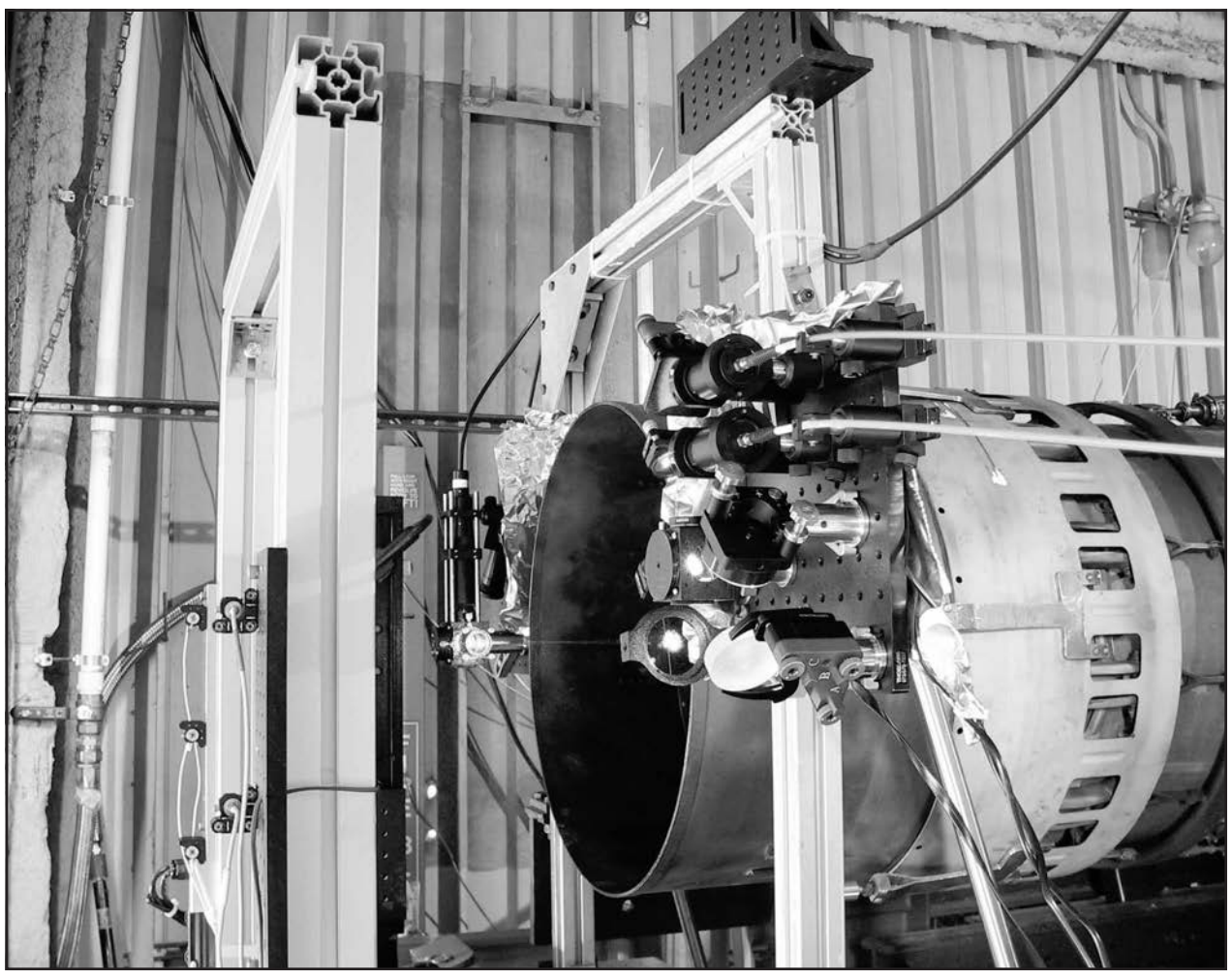
AEDC is modifying its Aerodynamic and Propulsion Test Unit (APTU) in preparation for the first ever direct-connect tests of larger scale scramjet engines. Once the upgrades are completed, the facility will be fully capable of supporting the Air Force Research Laboratory (AFRL) Medium Scale Critical Components (MSCC) direct-connect test program. Test articles such as the Defense Advanced Research Projects Agency (DARPA) Falcon Combined Cycle Engine Test (FaCET), pictured, have been successfully ground tested in the Aerodynamic and Propulsion Test Unit (APTU). (Photo by Rick Goodfriend)



A highly successful accelerated mission test (AMT) of Pratt & Whitney's F135 conventional take-off and landing/carrier variant (CTOL/CV) engine was recently completed in the Sea Level 3 test cell (SL-3) at AEDC. A Total Accumulated Cycle (TAC) count of 2,600, with record TAC accumulation of 80-90 per day was accomplished during the AMT of this F135 engine, found in versions of the F-35 Lightning II Joint Strike Fighter used by the U.S. Air Force and Navy. Pictured is a similar test of the F135 in the AEDC SL- 3 test cell. (Photo by Rick Goodfriend)

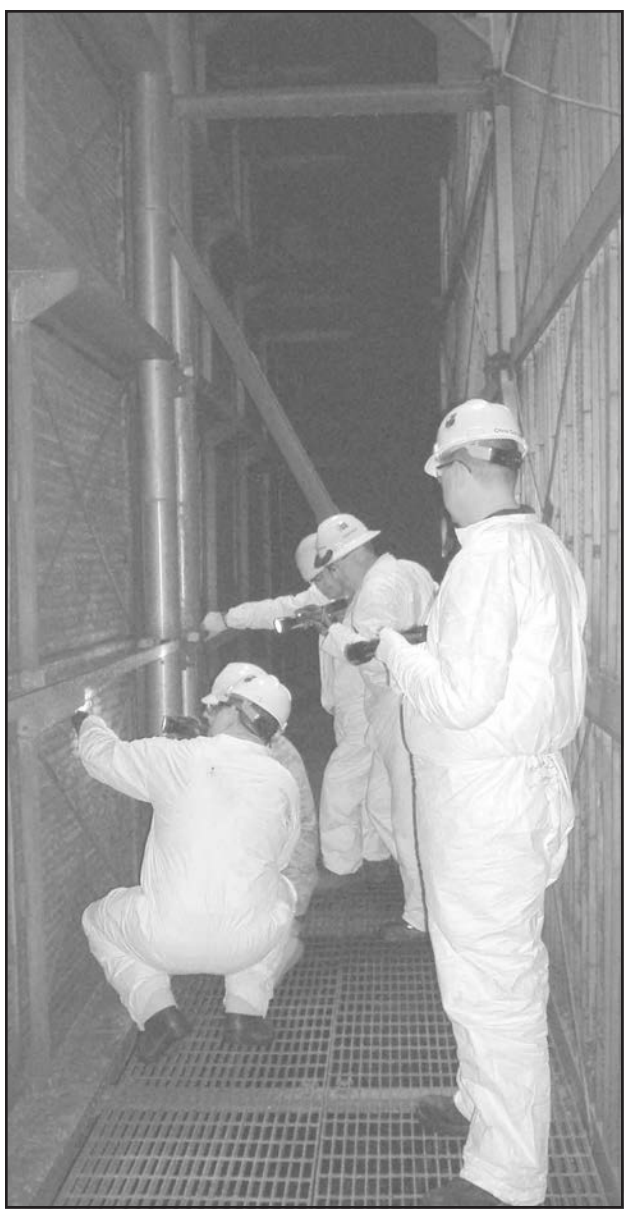
AEDC 2014 Year in Review

TESTS AND SUPPORT...



As gas-turbine and hypersonic propulsion systems advance, so must the diagnostic measurement systems used in testing them. The Coherent Anti-Stokes Raman Scattering (CARS) Spectroscopy System is a development of the Small Business Innovative Research (SBIR) program used to make point source temperature measurements in extreme environments, such as in the flowfield of an operating turbine engine. CARS simultaneously measures temperature and multiple gas concentrations with a high degree of accuracy. The CARS technique uses three laser beams, one red and two green, and focuses the three beams into one location within a gas flowfield. Pictured are two hollow-core fibers (pink-colored at right) providing remote CARS measurements at the exhaust plane of the J85 engine at UTSI. ***(Photo provided)***

The AEDC fuel farm is replacing JP-8 fuel, used by turbine engine testing customers in the Complex's aeropropulsion test facilities, with commercial grade Jet-A fuel. Jet-A is a kerosene-based aviation fuel that has a different freezing point characteristic. Robert Holley (left), from the AEDC Fuel Farm, and Carl McGee, with the AEDC Aeropropulsion Systems Test Facility, discuss a work instruction and a safe plan of action prior to bringing up fuel pressure for a fuel system leak check utilizing Jet-A fuel. (Photo by Jacqueline Cowan)



Military and commercial aircraft engine developers rely on simulated altitude testing conducted at AEDC's Engine Test Facility (ETF) for their research and development of engine capabilities. Because the condition of the test facility determines the quality of the test two of the intercoolers that aid in handling engine exhaust in the C-Plant Exhaust System were upgraded. The aging cooling coils and demister pads in the WC11 and WC12 Intercoolers located in the C-Plant Exhaust yard area were replaced. Pictured are AEDC workers inspecting the intercooler coils. (AEDC Photo)

Three local STEM teams participate in state CyberPatriot competition

By Raquel March
ATA Public Affairs

Round-2 for the CyberPatriot VII competition began with rapid scoring on Nov. 14 as three local High School CyberPatriot teams battled for tier placement amongst 1,200 teams.

The CyberPatriot teams, two from Coffee County Central High School in Manchester and a team from the Civil Air Patrol (CAP) Composite Squadron in Tullahoma, competed with the assistance of the AEDC Science, Technology, Engineering and Mathematics (STEM) program.

The result of the Round-2 competition led to the local teams competing in noteworthy tier placements in the State Round on Dec. 5-6.

Each team strategized during the competition to reach platinum, gold and silver tiers. The teams from Coffee County qualified and placed – one as a platinum team and the other as a gold team. The platinum team's placement nationally ranks the team in the top 30 percent of 1,200 CyberPatriot teams. They will have the opportunity to participate in the regional and national competition. The gold team also competed in a special category round.

The CAP team placed as a silver team and they competed in a special category round as well.

AEDC CyberPatriot mentor Michael Glennon remarked on the progress of the teams.

"The teams are doing great and enjoying the competition rounds," he said. "The skills they are learning are being utilized to make various operating systems more secure."

The competition places teams of high school and middle school students in the position of newly hired information technology (IT) professionals tasked with managing the network of a small company. In the rounds of competition, teams are given a set of virtual images that represent operating systems and are tasked with finding cybersecurity vulnerabilities within the images and hardening the system while maintaining critical services.

Regarding the Round-2 competition in the December issue of the Air Force Association CyberPatriot newsletter, The CyberSentinel, it is printed that, "Only three images and a networking quiz stood in the way of more than 1,200 teams meeting their goals. Most teams pushed through the medium difficulty Ubuntu and Vista images, but the most difficult test came with the Windows 8 image. It was the hardest image so far in the competition and was designed to break out the many high scoring teams into their tiers. The Cisco Networking Quiz challenged the team's time management skills as well as networking skills."

Top teams in the nation earn all-expenses paid trips to Washington, D.C. in March for the national finals competition where they can earn national recognition and scholarship money.

CyberPatriot was created to inspire high school students toward careers in cybersecurity or other STEM disciplines critical to our nation's future.

CyberPatriot was established by the Air Force Association. The Northrop Grumman Foundation is the presenting sponsor for CyberPatriot VII.

MILHOAN *from page 1*

teaching at UTSI, on the ATCS (Automatic Test Control System)" he said. "That's how I got into controls."

According to Milhoan, it was an especially exciting time in his career.

"I had the chance to speak with the space shuttle designers about what they had worked on," he said.

Milhoan says he still gets excited about coming to work, but one experience in particular has made him even more grateful for every day he wakes up and has a chance to drive through the gates at AEDC.

Three years ago Milhoan visited a specialist regarding a persistent pain in his ribs. Initially thinking it was a result of his waterskiing injuries, he was told the pain was something much worse.

"I was diagnosed with bone cancer and the doctors said I had three months to live," he said.

Taking this shocking information in stride, Milhoan went about getting his affairs in order, talking with ATA General Manager Steve Pearson and ATA Human Resources personnel about his options and making sure his wife, Jennifer, would be the beneficiary of his insurance policies.

Milhoan mentioned that all his friends at AEDC were upset to hear the news of his illness and wanted to do anything they could to help, going as far to research experimental programs being offered to treat his particular type of cancer.

"They found a trial program at Vanderbilt and I ended up being accepted to it," he said.

For months, he lived at an apartment close to the hospital in Nashville and went to daily treatments of chemo.

The diagnosis had been grim, but every Dec. 22 Milhoan now gets a "birthday" card from Vanderbilt celebrating the day he received a new immune system.

Since that time he's been gradually getting his strength back. But not long after receiving this good news, his wife has had her own health scare – breast cancer.

Fortunately, he and Jennifer are both in remission now and he knows it won't be long before they're once again enjoying their favorite hobbies of boating, racquetball and horseback riding.

Huge animal lovers, the couple can often be found doting on their Labradors and cats. They also have 10 horses, four full-size and six miniature horses.

When Milhoan isn't at work, he definitely has a lot to keep him busy, and in spite of all he's been through in recent years he continues to have a positive outlook on life and his career.

It took him by surprise when going about his normal daily routine, he found out he was named ATA Engineer of the Year. He said he was still at a loss for words when accepting the award from Dr. Rob McAmis, ATA Director of Test and Evaluation, at this year's awards banquet.

"Everything I've experienced out here just goes to show you that though we (ATA) take care of the business side and we're very good at that, we're also about taking care of people and figuring out what we can do to help," he said. "So, I'm very appreciative; it's a huge honor to receive his award."

Presenting the award, McAmis stated it couldn't go to a more deserving person.

Al Milhoan, ATA control system architect, was chosen as the recipient of the ATA Engineer of the Year Award for 2014. Milhoan was selected for this honor to recognize his contributions and dedication to his work at AEDC. Pictured is ATA director of Test and Evaluation Dr. Rob McAmis presenting Milhoan, right, with the award at the ATA Awards Banquet. *(Photo by Rick Goodfriend)*

"Al Milhoan is recognized as the ATA Engineer of the Year for his specific work in applying advanced control system design and implementation skills to develop the control for a complex fuel system heating and fractional distillation system for hypersonic propulsion test capability," he said. "This project has unique, never been done before dangerous, high energy systems that required the innovation in the control system to meet safety and operational needs.

"Mr. Milhoan worked directly with the Air Force Research Laboratory, used his unique insight into controls and communication theory, his and ability to work with others and their knowledge and experience in thermochemical properties and process system design and operation to solve difficult physics problems that have not previously been successfully automated.

"Al does these things every day, challenging what we think we know and continually improving to deliver systems previously thought to be un-doable."

ATA Chief Engineer Scott Bartlett reflects that Al has done these things throughout the country and the world and AEDC now benefits from his exceptional insights and his ability to work with others to make things happen.

Al Milhoan and his wife Jennifer with the three Labradors they adopted not long before Al was diagnosed with cancer. *(Photo provided)*

AEDC 2014 Year in Review----------

Twenty members of the Arnold Community Council (ACC) visited the U.S. Capitol to talk with lawmakers about AEDC and the vital role the Complex plays in national defense. The group also worked with Congressman Diane Black to promote the Congressional Range and Test Center Caucus (CRTCC). Congressman Diane Black (far left) talks to (l-r) ACC Past President Ben Craig, ACC member Mike Wiedemer and ACC President Jim Jolliffe at the annual breakfast the group sponsors at the Capitol. (Photo provided)

AEDC personnel and their families viewed muscle cars, cruisers and hotrods at the Complex's 2014 Cruise-In last month. The third annual display allowed personnel to showcase their cars as well as participate in demonstrations. *(Photos by Jacqueline Cowan)*

Dr. Mica Endsley (left), the U.S. Air Force Chief Scientist, visited AEDC during the 63rd anniversary of the Complex. She toured one-of-a-kind aerospace ground testing facilities and spoke with Wayne Hawkins (right), the AEDC Propulsion Wind Tunnel Test Branch Technical Director, about the hypersonic wind tunnel test capabilities of the von Kármán Gas Dynamics Test Facility (VKF). She also toured the AEDC Aerodynamic and Propulsion Test Unit for testing high speed propulsion systems and materials and the Propulsion Wind Tunnel 16-foot Supersonic Wind Tunnel, an aerodynamic testing facility. *(Photo by Jacqueline Cowan)*

Local and regional media visit AEDC during an active shooter drill. 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 on Aug. 4. Pictured center is Jason Austin, chief of AEDC Public Affairs. *(Photo by Jacqueline Cowan)*

SPECIAL EVENTS...

AEDC personnel volunteer at the Area 13 Special Olympics on April 24 at the Tullahoma High School stadium where AEDC Commander Col. Raymond Toth (left) runs with torch runner Tim Sullenger of Moore County. AEDC volunteers cheer for many Olympic participators. *(Photos by Rick Goodfriend)*

Dr Heard Lowry

Michael Mills

Ross Roepke

John Sutton

AEDC leadership inducted new AEDC Fellows Dr. Heard Lowry III and Michael Mills and AEDC Lifetime Achievement Fellows Ross Roepke and John Sutton at the annual AEDC Fellows Banquet on June 25. *(Photos by Rick Goodfriend)*

It was announced that Dr. Mark Mehalic accepted the position of AEDC executive director. Mehalic made the transition to Arnold AFB from Kirtland AFB, N.M., where he was serving as director for Engineering and Technology Management at the base's Air Force Nuclear Weapons Center.

Jeff Haars, who has been serving as Jacobs Technology vice president, stepped into the role of ATA deputy general manager, formerly held by Phil Stich, on June 16.

Arnold Community Council (ACC) members and AEDC leadership gathered to hear Tennessee Governor Bill Haslam at the ACC annual dinner on Oct. 23 in Manchester. Arnold Community Council (ACC) 2015 President Jim Jolliffe (left) accepts the gavel from former ACC President Ben Craig symbolizing the change in the ACC leadership. The change took place at the ACC Annual Dinner. *(Photo by Rick Goodfriend)*

Milestones

Bob Lindeman
40 years, Engineer
ATA Test Assets and Support Department

What is your most memorable AEDC moment during your years of service?

"Back in 1978, AEDC held the first annual AEDC Microprocessor Application Symposium. Our instrumentation and controls engineers were at the forefront in using this new technology to solve difficult problems in support of wind tunnel, rocket, space and turbine engine testing. The organizer fell ill and I filled in as Chairman. This was a great opportunity to share technical solutions across the various facilities at AEDC and served as a springboard to participating in International Instrumentation Symposia. Unfortunately, this turned out to be a one and done event. Hopefully the new focus on technical rigor will reinvigorate events like this. In my time here I have been most impressed by the ability of the people at AEDC to consistently develop, maintain, upgrade and operate key ground test capabilities in the face of political and contractual perturbations."

Jonathan Mansfield
35 years, Craft Supervisor
ATA Integrated Test and Evaluation Department

What is your most memorable AEDC moment during your years of service?

"No particular moment stands out as the most memorable. I have many good memories from working at AEDC for the last 35 years. I had the good fortune to meet and work with so many fine people. I have worked in nearly every test facility on the base and I hope to continue this amazing journey for a few more years."

40 YEARS
Zeldra Jefferson, ATA
Robert Lindeman, ATA

35 YEARS
Ruth Clowers, ATA
Stanley Downs, ATA
Jonathan Mansfield, ATA
Michael Pepple, ATA

30 YEARS
Earnest Burks, ATA
Cinda Jernigan, ATA
Dan Marren, AF
Earl Pewitt, ATA
John Silva, ATA
G. V. Wilson, ATA

25 YEARS
Anthony Duke, ATA
William Epley, ATA
Melissa Miller, ATA
Phenillophie Miller, ATA
Drew Powell, ATA
Michael Rampy, ATA
Vernon Rogers, ATA

20 YEARS
Larry Davis, AF
Tiffany Hartwig, ATA
Mary Hawkersith, ATA
Barry Henderson, ATA
George Jenkins, ATA
Lori McIntosh, ATA
Loretta Smith, AF
Lisa Stevens, AF

15 YEARS
John Nunley, ATA
Stephanie Shetters, ATA
Jeffrey Stevenson, ATA
Deborah Wiser, ATA

10 YEARS
Ryan Allen, ATA
Ihsan Ansari, ATA
Dustin Boss, ATA
Kevin Boyce, ATA
Jason Bramblett, ATA
Eric Brumley, ATA
Melinda Burns, ATA
Valerie Davenport, ATA
Michael Dickey, ATA
Chanz Farmer, ATA
Marcus Golden, ATA
Zachary Grosch, ATA
Daniel Higdon Jr., ATA
Der'Ivan Kelly, ATA
Michael Kinslow, ATA
Carl McGee, ATA
Ronald Meadows, ATA
Jeff Moss, ATA
Michael Nelms, ATA
Carlos Nichols III, ATA
Jim Raabe, AF
Matt Reel, ATA
Carlton Rogers, ATA
Clarence Rogers, ATA
Charles Rose, ATA
Casey Schewe, ATA
Glenn Schmitz, ATA
Joe Simmons, ATA
Timothy Taylor, ATA
Jimmy Towry, ATA
Adam Webb, ATA
Dylan Welch, ATA
Bernard Williamson III, ATA
Stacey Wimberly, ATA
Jared Wrather, ATA

5 YEARS
Kevin Hill, ATA
Tyler McCamey, ATA
Michael Slack, ATA
Samuel Teat, ATA
Paul Wright, ATA

INBOUND MILITARY
Master Sgt. Matthew Krueger, AF
Tech. Sgt. Beverly Spademan, AF

RETIREMENTS
Timothy Clark, ATA
Dave Duesterhaus, AF
Floyd Gibbs, ATA
Ralph Jones III, ATA
William Lamb, AF
Larry Leathers, ATA
Timothy Mansfield, ATA
Sam McKelvey, ATA
Col. Patrick Tom, AF

NEW HIRES
Johnny Birchfield II, ATA
Derrick Derlien, NAF
John Frazier, NAF
Jim Hereford, ATA
Adam Marshall, ATA
Edward Murphy, ATA
Tony Sanders, Premiere
Rachael Seamonds, NAF
Robert Uselton, NAF
Conner Young, NAF

PROMOTIONS
Kimberly Jones, ATA
Tech. Sgt. Jason Nelson to master sergeant
Adam Plondke, ATA
Connie Rogers, ATA
Ryan Tatro, ATA
Tech. Sgt. Heather Yates to master sergeant

Jacobs Scholarship Award recipient announced

Mary Forde (second from left), a recipient of the Dr. Joseph J. Jacobs Global Scholarship, accepts her award from ATA General Manager Steve Pearson (second from right). Pictured with Mary are her parents, ATA employee Bob (far left) and Janet Forde. *(Photo by Jacqueline Cowan)*

By Deidre Ortiz
ATA Public Affairs

The Jacobs Engineering Foundation awards up to 20 academic scholarships of up to $3,000 annually to qualified, eligible family members of Jacobs employees.

Mary Forde, daughter of ATA employee Bob and Janet Forde of Tullahoma, was recently announced as a recipient of one of the academic scholarships for 2014. She is a senior attending Tennessee Technological University, where she is majoring in biomolecular chemical engineering.

"We're extremely proud of Mary's academic achievements," said Bob.

Mary mentioned she was unsure of her career choice when starting college and tried out a few majors before settling on biomolecular chemical engineering, which she is enjoying.

"I would like to do research and development," she said. "I have a professor currently doing biomedical research, and learning from her about what she does, I've become really interested in it."

She expressed thanks to the Jacobs Engineering Foundation for its recognition and support of her academic studies.

"I'm honored and greatly appreciate ATA and the Jacobs Engineering Foundation selecting me as a scholarship recipient."

Once Mary finishes her bachelor's degree in the spring of 2016, she plans to continue her education by attending graduate school at TTU.

The Jacobs Engineering Foundation created the scholarship program in 2009 as a tribute to Dr. Joseph J. Jacobs – the founder of Jacobs Engineering Group Inc. – for his commitment to higher education and his goal to make an education affordable to children.

The scholarship is made available to students majoring in any of the science and technology fields of study at an accredited four-year university worldwide.