

APTU supports first direct-connect hypersonic engine test program

By Deidre Ortiz
ATA Public Affairs

AEDC is modifying its Aerodynamic and Propulsion Test Unit (APTU) in preparation for the first ever direct-connect tests of larger scale scramjet engines.

"Ground tests of scramjet engines at this scale have not been conducted at APTU or any other facility," said Kevin Holst, a propulsion analysis engineer.

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.

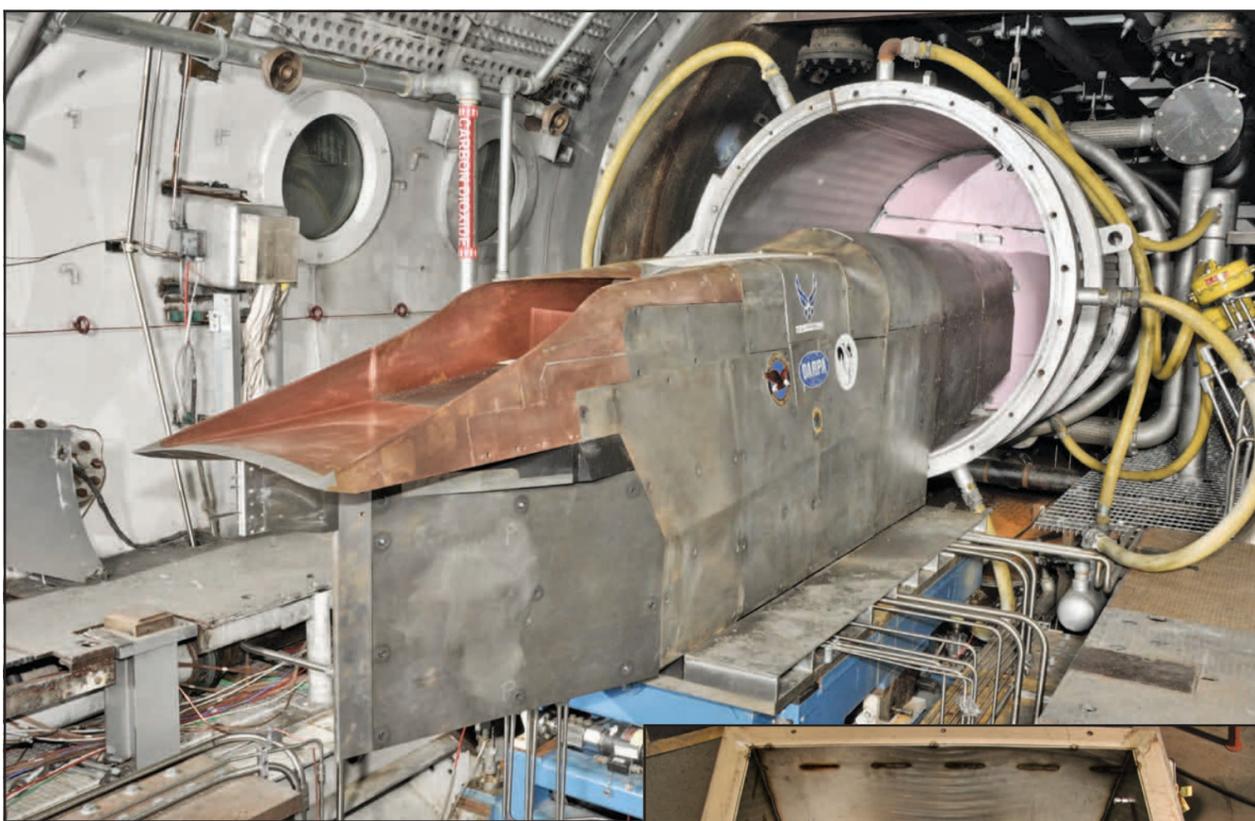
Sean Smith, an AEDC Air Force project manager, stated the engines tested will have 10-times the airflow rate of an X-51A Waverider.

"The goals of the MSCC program are to improve performance, operability and thermal management, enhance the understanding of governing physics and evaluate design and analysis tools," he said.

The upgrades to APTU, AEDC's hypersonic blowdown freejet test facility, will include a new fuel heater, three direct-connect nozzles and enhancements to the facility control system.

The new fuel heater will have automated temperature control rather than manual. Other features of the new heater will be its dedicated 12 megawatt power supply and improved surface temperature measurements.

Brett Boylston, a facility



Test articles such as the Defense Advanced Research Projects Agency (DARPA) Falcon Combined Cycle Engine Test (FaCET) have been successfully ground tested in the Aerodynamic and Propulsion Test Unit (APTU). However, modifications are now taking place at APTU in preparation for the first direct-connect tests of larger scale scramjet engines. (Photo by Rick Goodfriend)

analysis engineer, explained that in hypersonic vehicles, the fuel serves as a dual-purpose coolant.

"Due to the extreme stagnation temperatures experienced by the vehicle in flight, active cooling is required by not only the avionics and electrical systems, but also the vehicle's airframe," he said. "The fuel is

circulated through the vehicle as part of the thermal management system before going to the engine's combustor. The endothermic fuel may undergo cracking as heat is absorbed. The reaction caused by cracking the fuel provides an additional heat sink due

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Coils, such as this, are an integral part of the new Heated Fuel System (HFS) in the Aerodynamic and Propulsion Test Unit (APTU). The new HFS has been designed and built at AEDC in support of the AFRL Medium Scale Critical Components (MSCC) program. (AEDC file photo)

AF Research Lab Junior Force Council visits



Members of the Air Force Research Laboratory (AFRL) Junior Force Council pictured here listen to Marshall Polk (far left), an engineer with the AEDC Space and Missiles Sustainment Branch, during a tour on Aug. 29. Polk describes the function of the Hypervelocity Ballistic Range G test facility while viewing one of the impact tanks. AFRL, in partnership with AEDC, recently established a new hypersonic research branch at AEDC known as the High Speed Experimentation Branch. (Photo by Jacqueline Cowan)

PMEL advances turbine flow meter calibration

By James Winchester
AEDC Contributing Writer

The AEDC Precision Measurement Equipment Laboratory (PMEL) pioneered the use of propylene glycol and water blend as a surrogate calibration fluid and the National Institute of Standards and Technology (NIST) recently adapted the use of the blend.

The calibration fluid is used for turbine flow meters which measure aviation fuel flow rate.

Outside customers have also requested help from AEDC in evaluating the use of propylene glycol and water as surrogate calibration fluid for their hydrocarbon flow meter calibrations.

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HIGH MACH

Arnold Engineering Development Complex
An Air Force Materiel Command Test Complex

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Core Values

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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

Arnold AFB holds Prescription Medication Take-Back event

By Michael Crowder
AEDC Contributing Writer

The Air Force Office of Special Investigations (AFO-SI) Detachment 106 will provide Arnold Air Force Base personnel with an opportunity to prevent pill abuse and theft by ridding their homes of potentially dangerous, expired, unused and unwanted prescription drugs through a Prescription Medication Take-Back event.

On Sept. 26 please bring your medications for disposal to Café 100 located at building 100 on Kindel Ave. and on Sept. 27 to the Base Exchange and Commissary from 10 a.m. to 2 p.m. each day.

The AFOSI cannot accept liquids, needles or sharps, only pills or patches.

This service is free and anonymous. Agents must be present at the collection site, but no questions will be asked regarding the medication you are leaving other than to ensure there are no needles or sharps.

Last October, Americans turned in 324 tons, more than 647,000 pounds, of prescription drugs at more than 5,600 sites operated by the Drug Enforcement Administration (DEA) and its thousands of state and local law enforcement partners. This was the second-largest collection of medications in the history of the Take-Back program.

When the results of all the Take-Back events to date are combined, the DEA and its state, local, tribal law-enforcement and community partners have removed over 4.1 million pounds (2,100 tons) of pills from circulation.

This initiative addresses a vital public safety and public health issue. Medicines that languish in home cabinets are highly susceptible to diversion, misuse and abuse. Rates of prescription drug abuse in the U.S. are alarmingly high, as are the number of accidental poisonings and overdoses due to these drugs.

More Americans (6.8 million) currently abuse prescription drugs than the number of

those using cocaine, heroin, hallucinogens like LSD, and inhalants (sniffed household products) combined, according to the 2012 National Survey on Drug Use and Health. Studies show that a majority of abused prescription drugs are obtained from family and friends, including from the home medicine cabinet. In addition, Americans are now advised that their usual methods for disposing of unused medicines – flushing them down the toilet or throwing them in the trash – both pose potential safety and health hazards.

Questions concerning this event may be directed to 454-4073.

The following options are available for you to dispose of your potentially dangerous, expired, unused, and unwanted prescription drugs:

Sept. 26
Café 100
(10 A.M. – 2 P.M.)

Sept. 27
Base Exchange/
Commissary
(10 A.M. – 2 P.M.)

Arnold Police remind motorists about the dangers of tailgating

Arnold Police

We're all aware of a multitude of safety issues on Wattendorf Highway – from wildlife to wild drivers, and an occasional biker, jogger, or work crew. But when it comes to dangerous drivers, most of us think of speeding vehicles, whizzing by when there's really no room to pass.

How about the 3-, 5-, 10-, and 20-car tailgating driver "mule trains" traveling Wattendorf each day? They often drive below the speed limit, rarely leaving enough room between cars for safe driving or for safe passing. And they are dangerous.

Following too closely behind another motorist – tailgating – is a form of aggressive driving. It's a violation of the Tennessee Code Annotated (TCA), and it's a Class C misdemeanor. You could be ticketed for it or worse: You may not have enough time to react to a sudden move by the vehicle in front of you. You could even wreck your car or hurt yourself or someone else.

How close is too close?

TCA 55-8-124 prohibits drivers from following another vehicle "more closely than is reasonable and prudent having due regard for the speed of the vehicles and the traffic upon and the condition of the highway." The Tennessee Driver Handbook explains it this way: "When another driver makes a mistake, you need time to react. Give yourself this time by keeping a "space cushion" around your vehicle." To do this, they recommend maintaining a following distance of two to four seconds, depending on road conditions.



(NHTSA logo)

PMEL from page 1

When the U.S. Army Metrology Program needed a benign, non-flammable and non-hazardous fluid for calibration of turbine flow meters employed for hydrocarbon lubricants and hydraulic fluids, along with aviation fuel, AEDC was contracted to

perform the research and development (R&D). AEDC engineers assisted in determining the effectiveness of using propylene glycol and water blends over a range of kinematic viscosity for the Army's assortment of turbine flow meters in use.

Lower kinematic viscosity fluid of 1.3 and 5 centistokes (cStks) proved to produce turbine flow meter response with excellent agreement between the aqueous based fluid and the hydrocarbon fluid for all turbine flow meters tested.

Larger turbine flow meters of 1-inch diameter and above also produced excellent response agreement for higher kinematic viscosity fluids of 17 and 54 cStks. Smaller flow meters, 3/8 inch diameter, produced as much as 2 percent response differ-

ence between fluid types at 54 cStks kinematic viscosity and 1 percent for 17 cStks.

Modeling via computational fluid dynamics (CFD) and numerical computation is being conducted to better understand these response phenomena.

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 sealed 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

ATA donates to area LEGO League teams

By Deidre Ortiz
ATA Public Affairs

As a partner to the Tullahoma Chapter of the Tennessee Society of Professional Engineers (TSPE), ATA employee and community activity committee (ETAC) recently provided a \$3,300 donation for the purchase of robot kits for local FIRST® LEGO® League (FLL) teams.

FLL, which has been sponsored by TSPE since 2006, is a program designed to engage middle school youth in Science, Technology, Engineering and Math (STEM) related activities.

Harry Clark, TSPE Tullahoma Chapter president, stated ATA leadership has always been very supportive of the youth programs that TSPE sponsors. "This recent gift is just another example of ATA's commitment to STEM in our local area," he said.

According to the program's website, FLL is meant to introduce younger students to real-world engineering challenges by building LEGO-based robots to complete tasks on a thematic playing surface. As part of the program, FLL teams discover teamwork and exciting career possibilities.

With the help of adult

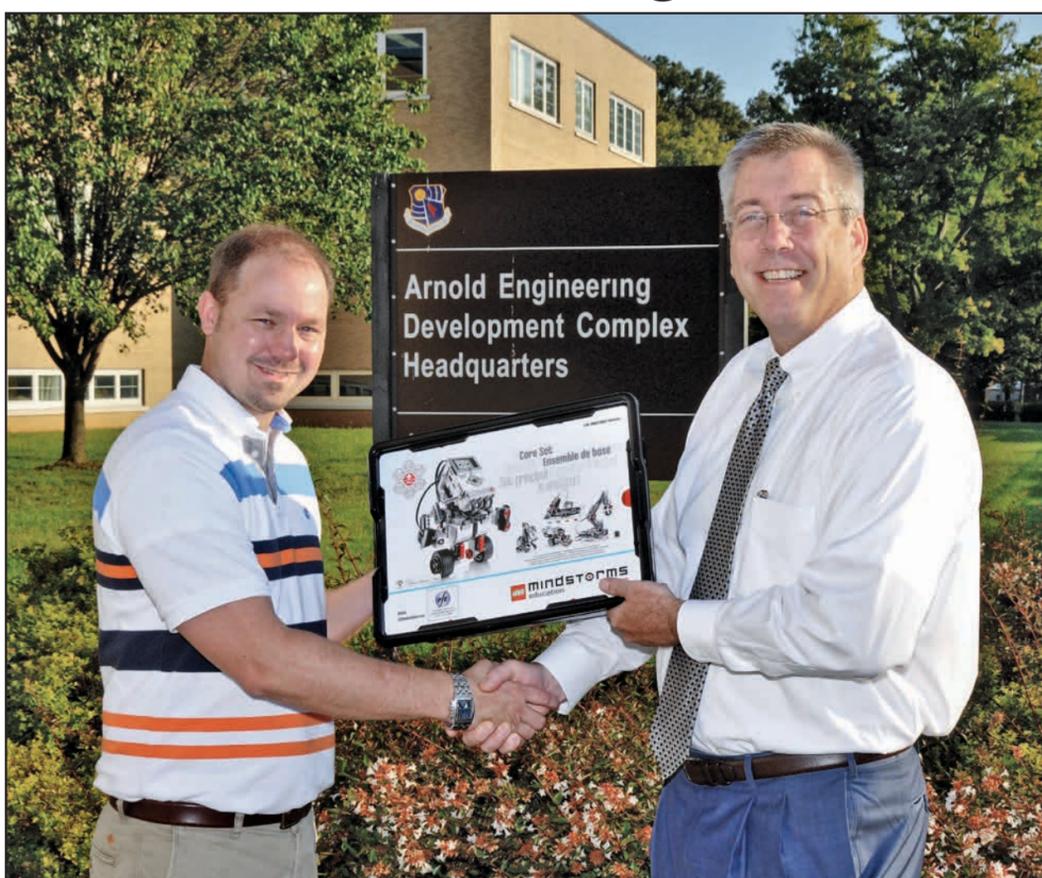
guidance, elementary and middle-school students get to: design, build, program and test robots using LEGO MINDSTORMS® technology; apply real-world math and science concepts; research challenges facing today's scientists; learn critical thinking, team-building and presentation skills; and participate in tournaments and celebrations.

The Tullahoma Chapter of the TSPE has several FLL teams in the region that it sponsors and supplies with the materials needed to compete. The robot kits purchased with the help of an ATA donation will be given to new teams or existing ones needing updated kits for the FLL World Class competition.

Together, TSPE and ATA have assisted in hosting many FLL events such as the regional qualifying tournament held annually at Tullahoma High School.

While FLL is one of the more well-known programs, Clark explained LEGO League is only one of several educational outreach efforts TSPE supports.

"The Tullahoma Chapter of the TSPE has a long history of engaging in educational outreach activities that are today referred to as



The ATA employee and community activity committee recently made a \$3,300 donation to the Tullahoma Chapter of the Tennessee Society of Professional Engineers (TSPE), benefitting the local FIRST® LEGO® League (FLL) teams. Pictured at left is John McInturff, past president of the TSPE Tullahoma Chapter, accepting one of the robot kits for the FLL teams from Jeff Haars, ATA deputy general manager. (Photo by Rick Goodfriend)

STEM outreach," he said. "For more than 25 years we have hosted the local MathCounts® competition for middle school students, which is the first step along the way to competing in the National MathCounts com-

petition. Since 1971 we have included Engineer for a Day, an opportunity for local high school seniors to spend a day at work with a practicing engineer, in our National Engineers Week activities. We have also

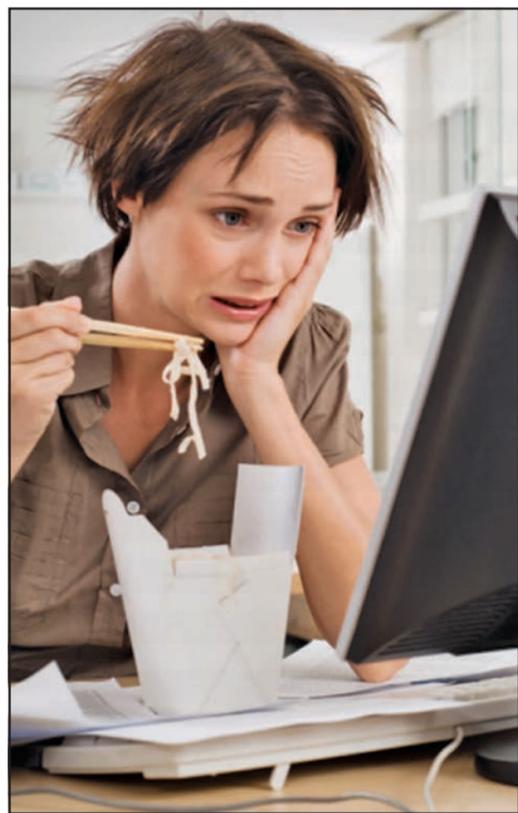
sponsored a Student Design Competition for high school juniors and seniors for over 15 years."

Clark again thanked ATA for its involvement in the community and helping to spark students' interest

in the subjects of science and math.

"The Tullahoma Chapter of TSPE is proud to be able to partner with ATA and the Air Force in these many STEM efforts," he said.

Online risk assessment offers ways to evaluate, improve health



AFMC Wellness Support Center

WRIGHT-PATERSON AIR FORCE BASE, Ohio – How well do you know yourself? Poor health is not always obvious. Even people who appear healthy can be at risk for medical conditions such as high blood pressure and diabetes. The AFMC Health Risk Assessment is a multi-faceted interactive tool offered online at www.afmcwellness.com.

Below are some frequently asked questions about the HRA.

What is an HRA?

- The HRA is a health questionnaire that you complete on the website www.afmcwellness.com. You answer questions about your health - such as diet, exercise, and stress - and then a wellness profile report is created just for you with ideas for ways to be healthier. The wellness profile is yours to print and keep.
- You should take your HRA once each fiscal year.

Why should I take an HRA?

- To have a better understanding of

your personal health risks, such as high stress levels.

- To learn about lifestyle behavior change, like becoming more physically active.
- To track how your health changes over time, like comparing previous years to this year.
- To unlock special features of the AFMC wellness website, such as articles on health topics.
- A current HRA allows you to participate in AFMC wellness challenges, such as 'Freeze the Gain' or 'Spring Into Shape.'

How is my personal HRA information used?

- Your individual HRA information is not shared.
- Your HRA information is grouped with other civilians' HRA information, and the grouped data is used to:
 - Guide program planning so AFMC knows which health topics to address.
 - Help CHPS know which health education classes to offer to dif-

ferent units.

- Assess if Defense Department civilian health, as a group, is improving.

Is my HRA information protected?

- Your HRA data is protected under the Federal Privacy Act, as well as layers of strict access controls and security safeguards.
- A third-party company prepares the Personal Wellness Profile that you get after you take your HRA. The Headquarters AFMC Surgeon General only receives a report with aggregated group data which does not include individual names.

Complete your personal Health Risk Assessment at www.afmcwellness.com. When you are done, print your HRA Wellness Profile certificate and bring it to your local Civilian Health Promotions Services office to claim your completion award.

For more information, contact your local CHPS team or visit www.afmcwellness.com.

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to the endothermic nature of the fluid."

Boylston added that cracked products also provide a more reactive fuel for the combustor relative to the base fuel.

"During ground testing, a fuel heater is required to simulate the heat loads of the vehicle and engine before the fuel is delivered to the combustor," he said. "Its original four-coil heater used manual control to adjust power to each heater to modulate temperature."

The new control system will be fully automated and provide stable and consistent flow through each coil with multiple coils active. This new system will also provide repeatable flow rates and temperatures, minimize startup time and allow for selectable residence times.

A real-time computer simulation of the fuel heater has been developed that supports the

control system development. The model consists of modular blocks, or subsystems, that simulate the dynamics of the flow of fuel through the fuel heater. This model will also be used with a larger existing APTU facility simulation before each test to ensure that control system inputs are correct for the planned test and that the facility hardware is configured correctly.

"Individual components models such as pipelines, valves, sources and sinks were developed," Boylston said. "The components can be combined in a modular way so that any system can be modeled and is not specific to the APTU fuel heater."

The control strategy developed will ensure safe operation and rapid follow and temperature transients with minimal overshoot.

In determining the requirements for the new

direct connect nozzles for APTU, multiple computational fluid dynamics (CFD) tools were used and previous AEDC high temperature nozzle designs were examined. Three new direct-connect nozzles are required to support the MSCC test program. The nozzles, with an air-injection distortion generator (DG), are designed to provide flow to an isolator representative of the flow seen in flight.

These nozzles, in conjunction with a flow distortion generator, will provide flow directly to the isolator throat, replacing the engine inlet.

"Direct-connect testing is atypical at APTU," Holst said. "Tests are normally conducted using freejet nozzles, which provide flow into the test cell at desired conditions. Direct-connect testing was selected for the MSCC program as a more efficient method to gain

knowledge regarding medium scale scramjets."

The AEDC APTU project team has performed facility checkout test runs to calibrate multiple venturi tube installations in the APTU high pressure air, isobutane and liquid oxygen systems.

The objective of the checkout runs for the venturi tube calibrations was to determine the venturi tube flow coefficients, characterize line pressure and temperature effects, and characterize system measurement uncertainties.

Dr. Doug Garrard, the lead analysis engineer for APTU, stated that because all of the flow will be entering the scramjet propulsion system under test, the exact total mass flow rate must be known.

"Because of the in-place calibration tests, mass flow rates into the MSCC propulsion system under test will be defined

accurately and precisely with a stated uncertainty," Garrard said.

The heated fuel system (HFS) will be activated and calibrated by executing specific cold-flow and hot-flow tests. Cold-flow tests will characterize valves and control systems, while hot-flow tests will mimic conditions required during MSCC testing.

Once this plan is completed, Holst said the HFS operations will be well understood.

"The flow and temperature controls will be tuned, the chemical makeup of the fuel will be characterized and the fuel distribution flow measurement venturis will be calibrated," Holst said.

During the checkout of the direct connect nozzles the total pressure and total temperature at the isolator entrance will be determined and the combustion air heater ignition process for each nozzle

will be refined.

"The Design of Experiments approach will be used to illustrate the operational envelopes [of the MSCC program]," Smith said.

This approach deals with planning, conducting, analyzing and interpreting controlled tests to evaluate the factors that control the value of a parameter or group of parameters.

AFRL started its Robust Scramjet Program in 2003 to improve scramjet propulsion system capability in the areas of scaling, operability and durability. The program mission was to guide critical technologies toward a hypersonic propulsion system capable of speeds from Mach 3.5 up to Mach 8.

In 2011, AFRL began working on its MSCC program exploring first generation larger scale scramjet engine characteristics.

UTSI beginnings remembered after 50 years



Deed to land for space institute is discussed by, from left, R.M. Williams, president of ARO, Inc., contract operator of the USAI1 AEDC; Gov. Frank Clement; Maj. Gen. William L. Rogers, AEDC Commander, and Capt. Richard Lyle, regional director of U.S. Department of Health, Education and Welfare. Lyle presented the deed to Clement, who was acting in his capacity as Chairman of the University of Tennessee Board of Trustees, at the ceremonies on Jan. 29, 1964 at Arnold Air Force Base. The university will operate the Institute. The 365-acre tract on the shores of Woods Reservoir was declared surplus by the Air Force to permit construction of the Institute near AEDC. Many of the Complex facilities were to be made available to the students and the faculty in their research projects. (AEDC file photo)



Fourteen members of the University of Tennessee Space Institute's newly-organized Industry Advisory Group checked construction progress of the Institute on August 11, 1965 as part of their first meeting at the Air Force's AEDC. Col. Harrie Richardson (USAF-Ret.), assistant to the director of the Institute, is at far left and Dr. Robert Young, deputy director for education is fifth from left. The advisory group was made up of high-ranking engineering executives from leading units of aerospace industry, including ARO, Inc., operating contractor for the Complex. (AEDC file photo)

The University of Tennessee Space Institute (UTSI) was established in 1964 and September 2014 marks the 50th anniversary of the institute. See photos below documenting some of the beginnings of UTSI.



General Bernard A. Schriever (at podium), the 1964 Commander of the Air Force Systems Command, addresses the first convocation of the University of Tennessee Space Institute in Sept 1964 at AEDC. He told the convocation that the Institute "represents a unique educational institution because it does not attempt to imitate the conventional university set-up." He said that because of its close association with the Air Force, the University of Tennessee and the students benefit. "The Air Force gains the assistance of academic people...the University gains the use of unique laboratories... and the students not only study advanced subjects but also have the opportunity to work on actual problems of interest to the Air Force," Schriever said. (AEDC file photo)



Photographed with the copper box which will be placed beneath the cornerstone of the Governor Frank G. Clement building of the University of Tennessee Space Institute are Commander of the Arnold Center, Brig. Gen. Lee V. Gossick; then Commander of the Air Force Systems Command, General Bernard A. Schriever; U.T. President, Dr. Andrew D. Holt; Lt. Gov. James Bomar; Chairman of the U.T. Building Commission, Dr. Jerome Taylor; and Director of the Space Institute, Dr. Bernhard H. Goethert. The group presided at the U.T. Space Institute Cornerstone Ceremonies held in the Tullahoma National Guard Armory in Sept. 1964. Approximately 400 civic, educational and military leaders attended. Various photographs and documents concerning the institute and its sponsors were sealed in the box. (AEDC file photo)

Officials expand space-tracking website

By Amaani Lyle
Defense Media Activity

WASHINGTON (AFNS) – Defense Department officials announced additions to its space situational awareness program’s Space-Track.org website.

In a recent telephone interview with DOD News, Maj. Gen. David D. Thompson, U.S. Strategic Command’s director of plans and policy at Offutt Air Force Base, Nebraska, said the release of new high-quality positional information on space debris of an unknown origin will help owner-operators better protect their satellites from objects and ultimately create less space debris.

“We run a predictive program that shows where the objects are, where they will be in the future, and the potential for these objects to run into each other,” Thompson said.

Thompson explained that most of the debris that is considered “objects of unknown origin” resulted from launches or space collisions, but has not been definitively identified by source.

Thousands of space objects

The Joint Functional Component Command for Space at Vandenberg AFB, California currently tracks more than 17,000 objects in space on a continuous basis, Thompson said. Among those objects, he said, about 1,100 are active satellites currently conducting operations.

The average person has a lot more invested in space than he or she may realize, Thompson said.

“We have more than 30 GPS satellites on orbit today providing global navigation and positioning for the world,” the general said.

With modern smart phones offering so many diverse functions, the loss of connectivity and functionality could cripple a fair amount of consumers in the U.S. and abroad.

“Networks that run those and the timing required to keep them all in sync is enabled through the global positioning system that every U.S. citizen and just about every advanced global citizen depends on,” Thompson said.

Yet it is the other approximately 16,000 ob-

jects -- the ones not active and/or of unknown origin in space – that JFCC Space and STRATCOM are most concerned with.

Objects present collision threat

Many objects, ranging from at least the size of the human fist to as large as the international space station, which is slightly larger than a full-sized soccer field, continue to pose a collision threat in space, Thompson said.

“There is also a high volume of debris smaller than the average fist that (JFCC Space) cannot track that are also on orbit today,” he said.

With old satellites and debris orbiting at thousands of miles per hour, the probability of a collision poses a threat to the continuing mission of operational satellites.

Exchange of space information

While some active satellites are not maneuverable, JFCC Space officials said they try to inform the owners of all satellites that they may want to take action to reduce the likelihood of collision.

“Exchanging information allows spacefaring organizations to take action to reduce the risk of a collision that could generate hundreds of thousands of pieces of additional space debris,” said Lt. Gen. John W. Raymond, the JFCC Space commander. “JFCC Space shares information globally because it is in everyone’s best interest to ensure the safety of the space domain.”

An example of space cluttering occurred in 2007, Thompson said, when the Chinese conducted an anti-satellite weapons test and almost immediately created 1,500 new objects that pose a risk to satellites in orbit.

STRATCOM tracks space objects

And after the collision of an inoperable space-craft with a commercial communications satellite in 2009, STRATCOM took on the role for the world in keeping track of such objects and providing that warning to others to prevent the situation from worsening, Thompson said.

“We have the assigned responsibility for

planning and conducting space operations,” said Navy Adm. Cecil D. Haney, the STRATCOM commander.

“By sharing previously unavailable information on space objects, we’re helping nations that operate in space to do so safely and effectively,” Haney added. “It is one way we fulfill our assigned space mission for the U.S. and its allies, while also protecting capabilities important to citizens around the world.”

Yet it is a mission that extends beyond the average civilian.

Warfighters depend on satellites

Joint warfighters depend on advanced warning such as missile launch or intelligence, surveillance and reconnaissance from satellite systems, Thompson said.

“It’s understanding what’s there (in space), what (the object) is doing, and how it poses a threat to our military mission, to our ability to support joint forces and contribute to the global good,” the Thompson said. “While space is a very big place, there are

a lot of things up there.” As such, for several years, JFCC Space has been responsible for monitoring, coordinating and synchronizing space operations for DOD.

“We are the single point of contact for U.S. military space operational matters,” Raymond said. “We are not, however, the only ones who operate in that environment.”

Many organizations in space

Many public, private, commercial and other governmental organizations conduct space operations.

“Space is not owned by anyone, it is used by all and we strongly support responsible and safe use of space and transparency of operations that go on in space,” Thompson said.

Reversing congestion and pollution in space, he said, is a complex task.

“We are talking decades or centuries before the environment will clean itself naturally so we have to share and act responsibly with this precious resource because it’s important to all of us,” Thompson said.

Nuclear deterrence: The silent sentinel

By Staff Sgt. Torri Ingalsbe
Air Force Public Affairs Agency

WASHINGTON (AFNS) – Global conflict and instability have always been a part of human history, and America’s nuclear forces serve as the nation’s ultimate form of deterrence in a world where global engagements are becoming increasingly complex.

It has been almost 70 years since the last nuclear weapon was detonated during conflict. According to the doctrine of Mutually Assured Destruction, a full-scale use of high-yield weapons of mass destruction by two or more opposing sides would cause the complete annihilation of both the attacker and the defender.

“Nuclear weapons remain the gravest threat to the U.S. and our allies because of their extraordinary destructive power, a fact that’s unlikely to change in the decades to come,” said Maj. Gen. Garret Harencak, the Air Force assistant chief of staff for strategic deterrence and nuclear integration. “As long as these weapons exist, it’s imperative the U.S. maintain a robust and credible deterrent.”

With eight known countries in possession of nuclear weapons and others trying to acquire them it’s imperative the U.S. maintains a safe, secure and effective nuclear capability. In other words, the U.S. nuclear deterrence mission is here to stay.

Harencak explained although the threat of an all-out nuclear war has significantly declined throughout the last couple of decades, there are an increasing number of nuclear-capable entities around the world.

“There’s no doubt that today’s multipolar, proliferated environment creates new and complex challenges,” Harencak said. “The threat of nuclear terrorism and nuclear proliferation has increased. Not only has the world seen a rise in the number of nuclear weapons states since the Cold War, but established nuclear powers like China and Russia are investing billions in modernization of their stockpiles and delivery



A B-2 Spirit from Whiteman Air Force Base, Mo., performed air refueling with a KC-135 Stratotanker from Royal Air Force Mildenhall June 11, over Cornwall, England. Whiteman AFB is participating in familiarization training operations while deployed to RAF Fairford. (U.S. Air Force Senior Airman/Christine Griffiths)

systems. In light of these developments, the strategic stability provided by the Air Force’s nuclear deterrence forces is vital to ensuring an aggressor can’t coerce the U.S. or escalate their way out of conflict.”

Airmen stationed within Air Force Global Strike Command operate and maintain two-thirds of the nation’s nuclear triad, including intercontinental ballistic missiles and nuclear-capable bombers.

“With its diverse, flexible, responsive and survivable mix of capabilities, the triad provides the best hedge against future uncertainty,” Harencak said. “Those unique attributes become even more important as

the U.S. reduces its number of deployed nuclear weapons to meet treaty obligations.”

He said the Air Force plays a crucial role in the equation.

“ICBMs are valued most for the stability they produce and their high level of responsiveness,” he explained. “Their dispersed basing and alert posture creates an extraordinarily high threshold for adversary attack against the homeland. Nuclear-capable bombers are highly flexible and resilient and can be deployed worldwide to signal resolve and intent. They’re integral to extending deterrence globally and assur-

ing our allies and partners. Dual-capable fighters perform an important role in assuring our NATO allies.”

The Air Force’s execution of its nuclear deterrence mission is not something that is changing anytime soon.

“For more than 50 years, our nation’s nuclear forces have provided the U.S. with the ultimate guarantee against its only existential threat,” Harencak said. “Every day, Air Force ICBMs, nuclear-capable bombers and fighters, and the Airmen who operate and maintain them help preserve the strategic stability that is foundational to that guarantee.”

B-2 Spirits depart Andersen following routine deployment

By Senior Airman
Cierra Presentado
36th Wing Public Affairs

ANDERSEN AIR FORCE BASE, Guam (AFNS) – Three B-2 Spirits redeployed to the continental U.S. following a deployment here as part of U.S. Pacific Command’s continuous bomber presence in the Indo-Asia-Pacific Region.

The bombers, and approximately 200 support Airmen, assigned to

the 509th Bomb Wing at Whiteman Air Force Base, Missouri deployed here, Aug. 6, to improve combat readiness and ensure regional stability. Bomber deployments help maintain stability and security in the region, while allowing units to become familiar with operating in the theater according to PACOM.

The team included maintainers, medical and communications Airmen who deployed with

the B-2s to help maintain Air Force operational and support capabilities and evaluated the readiness of the assets through routine training sorties throughout the Pacific region. The deployment also offered aircrews the opportunity to hone skills in several key areas.

“This is an invaluable opportunity that allows us to train and integrate with U.S. Pacific Command,” said Maj. Aaron Hager, the 509th Aircraft

Maintenance Squadron commander. “The training conducted during this deployment ensures our crews stay proficient in crucial skill sets such as command and control, air refueling and weapon load training.”

Tech. Sgt. Daniel Youman, the 509th AMXS quality assurance inspector, has deployed to Andersen AFB four times.

“Each time I’ve been here, I’ve always performed the same specialty,

(but) this is my first time being able to use the hot-refueling method on the aircraft,” Youman said. “Basically, we are able to refuel the B-2 while it is running.”

The hot-refueling capability ensures the B-2’s combination of stealth, long range, large payload and precision weaponry can return to the fight more rapidly, providing decision makers with the ability to project power and deliver decisive effects.

From the crew chiefs to the weapons loaders, each specialty is needed for the B-2s to maintain a forward presence and remain a reliable regional partner.

“Each of us has an important role out here,” said Staff Sgt. Daniel Jensen, the 509th AMXS weapons loader team chief. “Our main goal and mission is to show the world that the

B-2 is able to perform and provide global capabilities.”

PACOM has maintained a deployed strategic bomber presence in the region for more than a decade, but the last extended deployment for the B-2 to Guam took place January 2012. The most recent deployment allowed Andersen AFB Airmen to exercise B-2 specific support while familiarizing the Whiteman AFB Airmen with the region.

The B-2 is a multi-role bomber capable of delivering both conventional and nuclear munitions. A dramatic leap forward in technology, the aircraft represents a major milestone in the U.S. bomber modernization program; it brings massive firepower, in a short time, anywhere on the globe through previously impenetrable defenses.

Luke AFB celebrates 100th F-35 flight

56th Fighter Wing Public Affairs

LUKE AIR FORCE BASE, Ariz. – Luke Air Force Base launched its 100th F-35A sortie at approximately noon on Aug. 26.

“Flying the 100th F-35A sortie at Luke is a tremendous accomplishment,” said Maj. William Andreotta, 61st Fighter Squadron chief of standardization and evaluations. “It is also a tribute to all the hard work and dedication put forth by the men and women of the 61st FS and 61st Aircraft Maintenance Unit.”

The 61st AMU has been dedicated to keeping the new fighter technology in flying condition.

“With every new weapon system comes a learning curve, and our

maintenance team has done an exceptional job maximizing the balance between training opportunities and keeping pace with flying operations,” said Lt. Col. Benjamin Smith, 56th Maintenance Group deputy commander.

Luke recently welcomed its seventh F-35 jet on Aug. 20, bringing the F-35 program into full swing.

“Being a part of Luke’s transition from F-16s to F-35As has been an incredible and rewarding experience,” said Andreotta. “Every day we fly we are paving the way for a new era at Luke AFB.”

For more information, contact 2nd Lieutenant Tanya Wren, 56th Fighter Wing public affairs, at (623) 856-6011.



An F-35 lands Aug. 26, at Luke Air Force Base. The fighter jet had completed its historic 100th sortie at Luke. (U.S. Air Force photo by Senior Airman Marcy Copeland)

Suicide prevention more than a month-long campaign

By Jonathan Stock

Air Force Surgeon General Public Affairs

WASHINGTON (AFNS) – All Airmen have a responsibility that last much longer than a one-month campaign. This responsibility extends beyond ourselves and includes our work environment, our families, friends, fellow Airmen and our communities.

While Suicide Prevention Month is observed across the United States in September, the month-long event is a reminder of everyone’s 24/7, 365-day responsibility to be a true Wingman. That means knowing our fellow Airmen, family members, coworkers and what is happening in their lives, as well as being willing and able to support them when they are facing challenges that test their resilience.

The Air Force has undertaken several initiatives to improve resilience for individuals and our communities. These efforts can be found under the umbrella of Comprehensive Airmen Fitness (CAF) which focuses on maintaining a balanced and healthy lifestyle across physical, mental, social and spiritual domains. Individuals practicing comprehensive fitness are more likely to seek help when needed and be able to identify risk factors and warning signs when an individual is off balance.

“Prevention begins with each individual working to strengthen and maintain their overall well-being across all CAF domains, as well as being able to identify when they need help. A good Wingman offers help knowing what resources are available, and follows up to stand by their side throughout a challenge,” said Lt. Col. Kathleen Crimmins, Air Force Suicide Prevention manager. “Assisting Airmen to get help... whether peer or professional, is what a Wingman does.”

A number of resources are available to include the Air Force Suicide Prevention website at www.airforce-medicine.af.mil/suicideprevention, the Airman’s Guide for Assisting Personnel in Distress website at www.airforcemedicine.af.mil/airmansguide, the Military Crisis Line by calling 1-800-273-8255, press 1,

text 838255, or go online to chat at www.militarycrisisline.net, with access to peer counselors in person and through online chats and text messaging.

You can also find help by contacting your local agencies who make up the installation Integrated Delivery System.

In addition to the crisis phone line, help is also available through the Vets4Warriors peer support chat line at 855-838-8255 or online at www.vets4warriors.com. This line will connect an individual with veteran peers who understand the unique challenges of military life and assist with problem solving and resolution.

Family members, retirees, and veterans can also use these resources for themselves if they feel the need to speak with someone.

According to Crimmins, Air Force mental health clinics reported an increase in the number of visits annually over the last few years which

are positive results of the Air Force’s effort to remove the perceived stigma of seeking help. Leaders at all levels must continue to promote and encourage individuals to seek support agencies and clinician services as a normal step in maintaining a good work and life balance.

Early resolution of stress helps Airmen maintain a balanced lifestyle, which in turn allows them to withstand, recover and grow in the face of adversity.

“We can all make a difference by helping our Wingmen understand they are not alone,” said Crimmins. “Sharing our stories and highlighting our own personal resilience and perseverance will let others know their Air Force family is behind them and those needing help are not alone.”

For more information and resources, visit the Air Force Suicide Prevention website at www.airforce-medicine.af.mil/suicideprevention.



AS AN AIR FORCE CIVILIAN, WHERE CAN I FIND HELP?

We all face challenges, but we don't have to face them alone.

IF YOU NEED HELP WITH...

TRY THESE AGENCIES & THEIR RESOURCES

ALL EMPLOYEES

Suicide prevention	National Suicide Prevention Lifeline	(800) 273-8255
	American Association of Poison Control Centers	(800) 222-1222
Mental health & substance abuse	Centerstone	(931) 461-1300
Unplanned pregnancy	Crisis Pregnancy Assistance Center	(931) 728-6440
Health and Safety Education	American Red Cross	(615) 893-4272

MILITARY

Virtual extension of installation services	Military One Source	www.militaryonesource.com
Health & wellness planning	AFMC Wellness Support Center	www.afmcwellness.com
	Health and Wellness Center	(931) 454-6440
Sexual assault & victim advocacy	Sexual Assault Response Coordinator	(931) 581-7494
Finances & work-life balance	Airman and Family Readiness Center	(931) 454-4574

DOD CIVILIAN

Health & wellness planning	AFMC Wellness Support Center	www.afmcwellness.com
	Civilian Health Promotion Services	(931) 454-6440
Work, personal or family issues	Employee Assistance Program	(800) 222-0364
		www.fob4you.com
Sexual assault & victim advocacy	Sexual Assault Response Coordinator	(931) 581-7494
Crime victim advocacy	Victim Witness Assistance Program	(931) 454-4567

ATA EMPLOYEES

Work, personal or family issues	Employee Assistance Program	(866) 828-6049
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Milestones

40 YEARS

Jere Matty, AF

35 YEARS

Lisa Bigham, ATA
Rebecca Combs, ATA
Pamela Rawn, ATA
Jonathan Seely, ATA
Danny Sells, ATA

30 YEARS

Jimmy Burrows Jr., ATA
Randy Hill, ATA

25 YEARS

Michael Eppinger, ATA
Jimmy Gustafson, ATA
Mark Layton, ATA
Robert Shanks Jr., ATA
Stanley Travis, ATA
Mitchell Vanhook, ATA
Ronald Wright, ATA

20 YEARS

Brant Seay, ATA
Mark Sissom, ATA
I. S. Welch Jr., ATA

15 YEARS

Billy Eady, Premiere
Bryan Hayes, ATA

Jere Matty

40 years, STEM Educational Outreach Specialist
AEDC Public Affairs

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

"Each of my assignments here at AEDC have been better than the last, and my present assignment helping kids learn about Science, Technology, Engineering and Math (STEM) has had many memorable moments. Especially the things the kids say to me like 'Did I know that I looked like an OLD Luke Skywalker!!' (really... old?)"



Lisa Bigham
35 years, Engineering Technician
ATA Integrated Test and Evaluation Department

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

"My most memorable moment has to be a combination of moments where I have been able to interact with so many wonderful people in my time here. They are people from all different backgrounds and walks of life, but we all worked at the same place and each enriched my work experience at AEDC."



Rebecca Combs
35 years
ATA Integrated Test and Evaluation Department

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

"My most memorable AEDC moment would be graduating from Cumberland University, with assistance from Jacobs/ATA and the WADP program, and obtaining my bachelor degree in business; all the while supporting testing at AEDC."

10 YEARS

Cody Bailey, ATA
Frankie Hill, ATA

5 YEARS

William Crawford, ATA
Peter Neal, ATA
Tiffany Puryear, ATA
James Rollins, ATA

RETIREMENTS

Capt. Nicholas Bauer, AF
Michael Cunningham, ATA

Donovan Hervig, ATA
Jimmie Horton, ATA
Larry Wilhite, ATA
Teresa Wilhite, ATA

NEW HIRES

Matthew Anderson, ATA
Charles Armstrong, ATA
Ronald Baucom, ATA
Michael Baxter, ATA
Sarah Caskey, AF
Charles Cook, AF
Rohan Dave, ATA
Zachary Eason, ATA
Robert Gipson, ATA
Jason Griffith, ATA



Pamela Rawn
35 years, Administrative Professional-Project Control Officer
ATA Information Technology and Systems Department

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

"Over this period of time I've had so many memorable moments both good and bad. One of the good ones is when a PC was delivered to my desk back in the 80s. I had no training but was very anxious to learn how to use it. I started playing with it and came across Lotus 1-2-3. At the time I was working for OAO and my accounting records were all manual. The first thing I did, using this new found equipment and software, was to automate the invoice that I had to prepare every two weeks. Prior to this small piece of automation, I would prepare the invoice on paper and have it typed by our secretary. Now in just a matter of seconds I could enter a couple of numbers and the rest would calculate the remainder of the invoice. What would we do today without our computers?"



Jonathan Seely
35 years, Program Manager
ATA Test Assets and Support Department

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

"I can't pin my most memorable AEDC moment down to an event, but can to the capable and caring work colleagues that I've had the pleasure on knowing these past 35 years. Memories I cherish that quickly come to mind

Seth Groover, ATA
Hogan Harrell, ATA
Wayne Hawkins, AF
Bradley Howard, ATA
Kevin Hubbard, ATA
Joshua Jernigan, ATA
Ray Kelly, AF
Samantha Lynner, ATA
Troy Morris, AF
Amy O'Steen, NAF
Marshall Polk, AF
James Richardson, ATA
Davy Ruehling, ATA
Rachel Seamonds, NAF
Nathan Schwenk, ATA
Joel Sizemore, ATA
Doug Smick, AF
Alex Smith, AF
Sandra Thomas, ATA
Cindicona Vincent, ATA
Dale White, ATA

PROMOTIONS

Terry Archey, ATA
2nd Lt. Carlin Lucente to first lieutenant
Tech. Sgt. Jason Nelson to master sergeant
Ronald Sparks, ATA
Morgan Underwood, ATA
Wayne Whittington, ATA

include the excitement of watching a real-time control room oscilloscope display during testing (it's really the small things...); successfully demonstrating a new test technique; the rocket test work of the 80s and the Rocket Technology/Analysis team's work in the late 80s and 90s; the 90-day Commander's challenge that was successfully met when upgrading the SL2 exhaust system; the SL3 upgrade project; APTU's HPTC project; and most recently the extremely well-done 4T Tunnel project."

Air Force funds small business participation in research and development programs

WRIGHT-PAT-TERSON AIR FORCE BASE, Ohio (AFNS) – The Air Force is searching for innovative, technology-based small businesses to compete for Small Business Innovation Research and Small Business Technology Transfer, or SBIR and STTR, research and development contracts.

"We're trying to foster innovative technology solutions for the warfighter and the U.S. Air Force SBIR and STTR programs (by providing) more than \$300 million in funding for research and development activities annually," said David Sikora, the Air Force SBIR/STTR program manager. "With this budget, the Air Force funds research from the

early stages of concept development until it transitions to military or commercial use."

During a September roadshow, Sikora will visit several western U.S. cities, meeting with small business owners and community leaders to discuss funding for high-risk projects that meet Air Force needs, intellectual property rights for the small business and Air Force assistance with transitioning or commercializing SBIR and STTR funded technology. The roadshow will take place September 22-26, visiting locations in Bozeman, Montana; Idaho Falls and Boise, Idaho; and Salt Lake City.

The Air Force SBIR and STTR programs are mission-oriented programs that integrate the needs and requirements

of the Air Force through research and development topics that have military and commercial potential. The SBIR program was established by Congress in 1982 to fund research and development, or R&D, through small businesses of 500 or fewer employees. The STTR program was established in 1992 to fund cooperative R&D projects with small businesses and nonprofit U.S. research institutions, such as universities.

For more information about the roadshow and the programs, including commercialization readiness assistance for existing contracts visit the program website at www.afsbirsttr.com.

(Information courtesy of an 88th Air Base Wing Public Affairs news release)

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(931) 581-7494
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 Visit: MyDuty.mil
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 Could be an Adversary's
 Treasure!**

Remember
OPSEC
 Operations Security

Museum to begin restoring massive Titan 4B rocket

By Sarah Swan
National Museum of the U.S.
Air Force

DAYTON, Ohio – It sits in gigantic pieces in a World War II era hangar at Wright-Patterson Air Force. Acquired in 2005 from Lockheed Martin, this important space artifact has been waiting in storage for restoration specialists to bring it back to life. Now, as the National Museum of the U.S. Air Force prepares for its new 224,000 square foot fourth building, the time has finally come to begin restoring the Titan 4B space launch vehicle.

“This is the largest artifact we have ever restored,” said Greg Hassler, a supervisor in the Restoration Division. “We have moved all the pieces into our restoration hangars, and now our staff is cataloging parts and planning the best way to tackle this massive project.”

The impressive Titan 4B, with roots going back to the early days of U.S. Air Force and civil space launch, is significant as the museum looks to share the story of USAF and USAF-enabled space operations.

“The Titan 4B and the exhibit space around it will be crucial

for telling the USAF space story,” said Dr. Doug Lantry, project manager for the new Space Gallery, which will be housed in the fourth building. “These exhibits are important because they illustrate what the USAF has done in space to defend our nation, how those jobs were and are done and by whom, and how the science, technology, engineering and mathematics of space work in the context of national defense history.”

The Titan rocket family formed a critical component of U.S. access to space for nearly 50 years, with the first launch in 1959 and the last in 2005. More than 350 Titans were launched overall. The Titan family included two models of intercontinental ballistic missiles (ICBMs), and several variously configured types of space launch vehicles.

Although the museum’s Restoration Division has worked on several missiles and space launch vehicles, including the Titan I and Titan II on display in the Missile Gallery, the Titan 4B will be a unique project. Standing more than 200 feet tall, the Titan 4B is nearly twice as tall as other similar vehicles in the museum’s collection.

“The Titan 4B is just a giant,” Hassler said. “Just one of its solid rocket motor units weighs 75,000 pounds, with a diameter of 10 and a half feet. One of the biggest challenges for our staff is going to be figuring out how to assemble and display it horizontally because it is too tall to stand up inside the gallery.”

The museum’s Research Division will assist the restoration staff with curatorial research to ensure the rocket is displayed accurately. They are looking for help from those who worked in the Titan 4B program. If you or someone you know can provide expert assistance with the project, please contact the Research Division at nationalmuseum.mua@us.af.mil.

In the meantime, the staff is looking forward to the eventual display of the launch vehicle.

“Titan-derived space launch vehicles boosted many important defense and civilian satellites and upper stage vehicles into orbit,” Lantry said. “The final exhibit, showcased in our newest building, is going to provide a great opportunity to talk about U.S. military space efforts and the story of USAF space launch.”

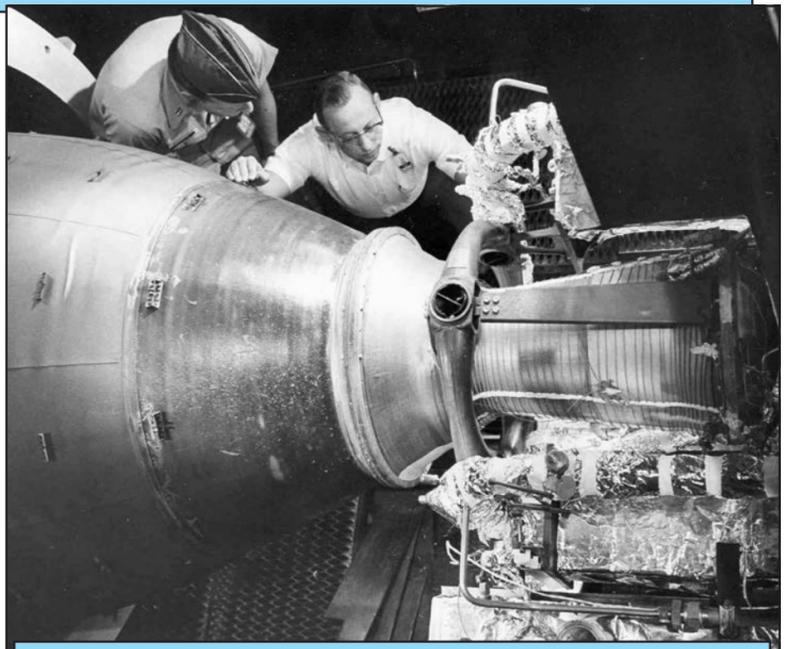


The Titan 4B space launch vehicle in the restoration hangar at the National Museum of the United States Air Force. This is Stage One. (U.S. Air Force photo)

AEDC support for Titan



A Titan IV second stage engine fires in AEDC’s J-4 Rocket Test Cell. By validating the integrity of the 105,000-pounds thrust engine, the Titan program’s launch schedule remained on track, enabling the continuation of launching critical satellites. The test concluded a successful test effort with a facility record of a 300 second firing. (AEDC file photo, 1996)



Captain E.C. Westwood, then assistant U.S. Air Force facility representative at AEDC, and Raymond E. Harper, project engineer for then AEDC contractor, ARO Inc., inspect a TITAN III Transtage rocket engine inside the high altitude rocket test cell T-4 in 1966. (AEDC file photo)



This “milestone test” helped develop the Air Force’s Titan IIIC space booster. A full-scale, 470,000-pound thrust liquid core engine ran for 92 seconds at a simulated altitude of about 100,000 feet. (AEDC file photo, 1964)

Flying Tigers



Cpts. Andrew Glowa, left, and William Piepenbring launch flares from two A-10C Thunderbolt IIs Aug. 18, over southern Georgia. Both pilots are with the 74th Fighter Squadron, Moody Air Force Base, Ga. Pilots, maintainers and support Airmen ensure Moody AFB's A-10s stay mission ready for daily training sorties and deployments downrange. (U.S. Air Force photo/Staff Sgt. Jamal D. Sutter)

ACC loans Global Hawk to Global Vigilance Combined Test Force

By Rebecca Amber

EDWARDS AIR FORCE BASE, Calif.

The 412th Test Wing's Global Vigilance Combined Test Force received a Global Hawk Block 40 Aug. 6, on loan from Air Combat Command. The aircraft, from Grand Forks Air Force Base, North Dakota, is joining the Block 20 and 40 aircraft at Edwards AFB to offer an additional platform for configuration-constrained testing, allowing the test force to balance their schedule.

The Block 40 aircraft will test upgrades for the diminishing manufacturing source, or DMS, - the loss or impending loss of manufacturers of items or suppliers of items or raw materials - and additional scope systems including Inmarsat and multi-platform mission control segment hardware and software integration. The Inmarsat I3 system will be upgraded with a more advanced Inmarsat I4 system.

The aircraft should be ready for use by the first week in September and is on loan through January. Though the Block 40 is not instrumented to collect telemetry data, it "fits perfectly" for testing the DMS upgrades.

"Air Combat Command was willing to loan us (the aircraft) to utilize a dedicated air vehicle due to configuration constraints incurred during Inmarsat testing," said Teresa Bennett, the GVCTF Global Hawk program manager. "The importance of Inmarsat testing is that in the end of calendar year 2016, if we don't make these modifications across the fleet, our fleet faces potential grounding."

The additional jet will allow GVCTF to press forward with current developmental testing as well as focusing on the new modifications that will support ACC in the long run. The modernization is part of an effort to prepare the Global Hawk as it enters a sustainment mode.

"The big picture is that we're finalizing our path to Initial Operational Test and Evaluation on the Block 40 air vehicle and sharing assets across the enterprise allows continuity of developmental test to ensure we provide improvements to the warfighter," Bennett said.

According to Bennett, the additional Block 40 will incur minimal costs for Edwards AFB because it will not increase the flight operations tempo. Instead, it will allow the jet to keep its configuration rather than having the maintainers swap back and forth between the various configurations.

Global Hawk is also being used as surrogate platforms to test software that the Air Force may not have purchased yet.

Currently, GVCTF is using its Block 40 Global Hawk to test maritime modes for NATO using targets from Naval Air Station Point Mugu, California. The newly loaned Block 40 will allow the NATO project to remain on schedule.

"There are a lot of projects using our current air vehicle, that's all the more reason why it's so valuable to have another air vehicle

to allow deconfliction," Bennett said.

Previously, the GVCTF had an Airborne Signals Intelligence Payload Block 30, but it was given to the ACC when the operational need was deemed more important than testing. In addition to the ASIP Global Hawk, GVCTF also relinquished a launch and recovery element for operational use.

"ACC is offering out their hand saying, 'We understand you have a need, here, take an air vehicle and test the capability we desperately need,'" Bennett said. "The Global Hawk Program Office is doing a great job of working with Air Combat Command and developmental test to share the assets to ensure the warfighter is getting what they need in the time they need it."

Bennett said they hope to receive a launch and recovery element from Northrop Grumman's U.S. Air Force Plant 42 site in Palmdale, California in fall 2014, that will offer a longer term solution to scheduling conflicts.

The Northrop Grumman-built Global Hawk is an unmanned aerial vehicle, or UAV, designed for reconnaissance and

surveillance. It was the first unmanned, powered aircraft to cross the Pacific Ocean in 2001, and holds the endurance record for a full-scale, operational unmanned aircraft with a 34.3 hour flight reaching altitudes up to 60,000 feet.

"We can fly at high altitudes so we're not as easily detected as some of the other platforms out there," Bennett said. "We can fly longer, up to 32

hours, without refueling.

It's a great asset to the Air Force; it helps give an essay to the troops on the ground.

The military is not the only organization that has benefitted from the real-time updates. In recent times, a Global Hawk UAV aided in a search for Nigerian girls who had been kidnapped as well as assisting firefighters during the San Diego wild-

fires.

"Global Hawk is one of the top rated surveillance remotely piloted aircraft right now," Bennett said. "There's a lot out there. We don't have the same weapons systems that the other platforms have. But we are the leading platform for endurance and surveillance, providing precise weapons targeting and better protection of friendly forces."

