

Team members' innovative methods advance test operations for AEDC hypersonic propulsion facility

By Deidre Ortiz
AEDC Public Affairs

Improvements by team members of the AEDC Aerodynamics and Propulsion Test Unit (APTU) at Arnold Air Force Base have prevented unscheduled downtime and avoided equipment damage at the facility.

Adam Webb, an electrical engineer for the Test Operations and Sustainment (TOS) contractor, National Aerospace Solutions, improved upon software for the rectifiers by enabling it to detect an unsafe condition and restore the rectifier to normal operations, preventing damage to expensive equipment. A rectifier is an electrical device that converts alternating current to direct current.

The software was successful during a recent APTU test, when one of the rectifiers went into an un-commanded runaway.

"A runaway is when the output current increases significantly above the set point value," Webb said. "If left unchecked, it can cause the APTU Facility Control System to trip the heated fuel system offline. This results in an unplanned early test termination, possible damage to the Heated Fuel System and a required repeat of the test conditions. A repeat test at APTU can be expensive and could cause additional degradation to the test article."



Electricians Lon Britt, left, and Robert Campbell, right, along with electrical engineer Adam Webb look at a rectifier, like one that was responsible for an un-commanded "runaway" condition, outside the AEDC Aerodynamic and Propulsion Test Unit at Arnold Air Force base. Webb improved the logic used in the Programmable Logic Controllers on the units to handle un-commanded "runaways," which allowed him to identify the part at fault. (U.S. Air Force photo by Jill Pickett) (This image has been altered by obscuring items for security reasons.)

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AEDC testing cost-, time-saving water line repair method



Dusty Pickens, from left, 2nd Lt. Adam Doyle and Andy Crum look on as Maj. Michael Knauf exits a 30-inch pipe in the raw water pipe system at Arnold Air Force Base. The group conducted an inspection of pipes recently lined with a fiber-reinforced polymer, Sept. 23. (U.S. Air Force photo by Bradley Hicks)

By Jill Pickett
AEDC Public Affairs

When it's possible to increase operational reliability while minimizing the cost and disruption caused by maintenance, it's a win-win.

Arnold Engineering Development Complex team members are implementing a trial run of such a solution to the problem of leaks in raw water pipes at Arnold Air Force Base. Raw water is used in the cooling systems of the test cells on base.

According to Jeff Quattlebaum, cooling water system engineer at Arnold, the leaks are a result of corrosion causing holes in the steel pipe. The flooding caused when a leak becomes significant impacts pits, manholes and structure foundations; and it causes a safety issue in freezing temperatures.

"The cost of total replacement is roughly 10 times the cost of this repair project," Quattlebaum said.

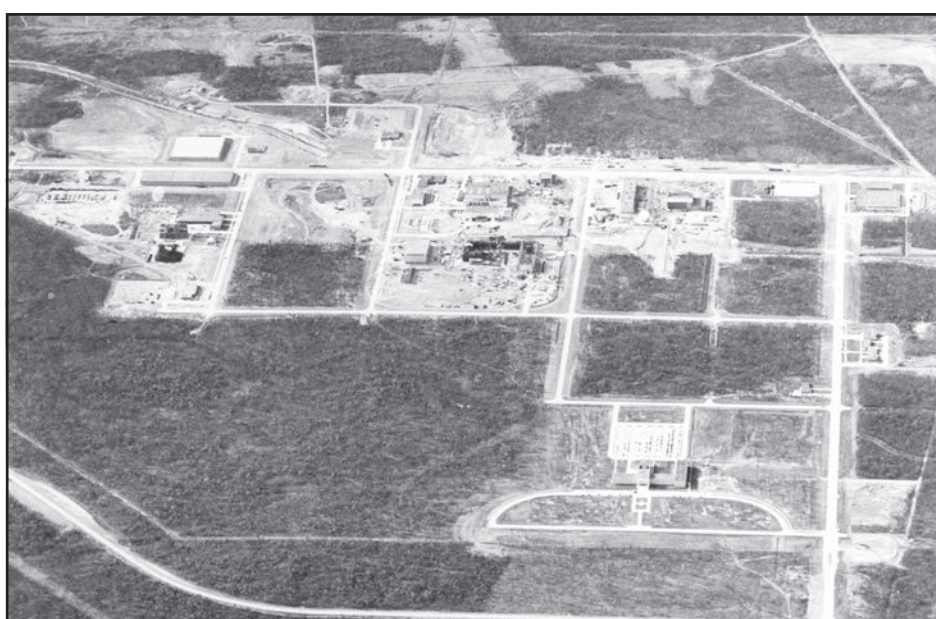
Congestion in the underground space with ducting, other utilities and equipment foundations complicates repairs by limiting access to excavate, explained Quattlebaum. This often requires holes to be repaired from inside the pipe and forces base-wide raw water outages of four to six days for each outage.

Outages are costly both financially and in terms of testing time.

"Each outage costs the base tens of thousands of dollars in effort, requires personnel to crawl into awfully long, tight spaces, and AEDC loses significant amounts of potential test time," said Maj. Michael Knauf, Aeropropulsion operations officer.

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Laws allowing establishment of AEDC turn 70



This photo shows Arnold Air Force Base as it appeared during its construction in the 1950s. During the month of October, 70 years ago, President Harry Truman signed into law the bills that allowed for the establishment of what would become Arnold Engineering Development Center, now Arnold Engineering Development Complex. (U.S. Air Force photo)

By Bradley Hicks
AEDC Public Affairs

It was 70 years ago this month that President Harry S. Truman signed legislation that paved the way for the establishment of Arnold Engineering Development Complex (AEDC).

On Oct. 27 and 28, 1949, Truman signed the Unitary Wind Tunnel Plan Act and the Air Engineering Development Center Act of 1949. The first bill authorized a unitary plan for the construction of transonic and supersonic wind tunnel facilities in an effort to bolster national defense. The second bill, signed the following day, authorized the \$100 million appropriated by Congress for the construction of the Air Engineering Development Center, the site that would soon become known as the Arnold Engineering Development Center and eventually the Arnold Engineering Development Complex.

Work to bring AEDC to fruition began

years before the passage of these laws. This work was precipitated by the foresight of eventual General of the Air Force Henry "Hap" Arnold.

It was during a visit to England in the spring of 1941 that Arnold, who was commanding general of the Army Air Forces during World War II, observed a British plane flying without a propeller. He wanted to bring this type of capability to the U.S. military.

Realizing that developing new equipment would require the establishment of research and development organizations and better testing facilities, Arnold met with renowned mathematician, engineer and physicist Dr. Theodore von Kármán in New York in 1944 to discuss the future defense needs of the nation.

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HIGH MACH Arnold Air Force Base



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

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

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VKF named in honor of von Kármán 60 years ago

By Bradley Hicks
AEDC Public Affairs

Sixty years ago, a test facility at Arnold Air Force Base was re-named in honor of the man who helped provide the blueprint that led to the construction of the now Arnold Engineering Development Complex headquartered at Arnold AFB.

During an Oct. 30, 1959, ceremony, the Gas Dynamics Facility was dedicated as the von Kármán Gas Dynamics Facility, a hypersonic wind tunnel testing facility, in honor of mathematician, physicist and engineer Dr. Theodore von Kármán.

The event marked the first time that the Air Force had named a major facility after a living person. Von Kármán addressed the crowd gathered for the ceremony.

"There is no doubt in my mind that this is the greatest honor that I have ever experienced," von Kármán said. "But I would have thought the Air Force would have waited a few years until I had the occasion to look back at this from beyond infinity. I think that is really the tradition, that the scientist, if he gets something dedicated in his name, should already be dead. But I am glad the Air Force managed an exception and gave me the opportunity to accept this honor."

Von Kármán, a native Jewish Hungarian, was born May 11, 1881. His mathematical prowess was evident from an early age. By the time he was 6 years old, von Kármán could reportedly multiply six-digit numbers in his head with the speed of a calculator. When he was 16, he was awarded the Eotvos Prize as the finest mathematics and science student in all of Hungary.

Von Kármán began his career studying fluid mechanics at the Göttingen Mathematical Institute in Germany, but he became interested in aeronautics after attending an aerial demonstration. He relocated to Aachen, Germany, to pursue his interest in aerodynamics. In 1912, he accepted the position of director of the Aachen Aeronautical Institute.

During World War I, von Kármán took on the role of director of research of the Austro-Hungarian Aviation Corps. Also an Austrian lieutenant during the war, von Kármán worked on helicopters, machine gun and propeller synchronization and fuel tank penetration while getting an up-close look at advancements in aerial warfare.

After the war, von Kármán resumed his position at the Aachen Aeronautical Institute and once again focused on aerodynamics research.

In the late 1920s, the California Institute of Technology, also known as Caltech, hired von Kármán to serve as a consultant for a new wind tunnel. By 1930, Caltech had added von Kármán to their staff as full-time director of the Guggenheim Aeronautical Laboratory of the California Institute of Technology. It was there that he made significant contributions to fluid mechanics, turbulence theory, supersonic flight, mathematics in engineer-



Dr. Theodore von Kármán speaks during the Oct. 30, 1959, ceremony to dedicate the Gas Dynamics Facility at Arnold Air Force Base in his honor. Von Kármán helped provide the blueprint that led to the construction of Arnold Engineering Development Complex at Arnold AFB. Seated behind von Kármán is Gen. Bernard Schriever, then-commander of Air Force Systems. (U.S. Air Force photo)

ing, aircraft structures and wind erosion of soil.

Von Kármán's work caught the attention of Henry "Hap" Arnold, the man who would later become General of the Air Force. The two had several meetings to discuss the future of air research, and von Kármán began working with Arnold to advance the United States' air force.

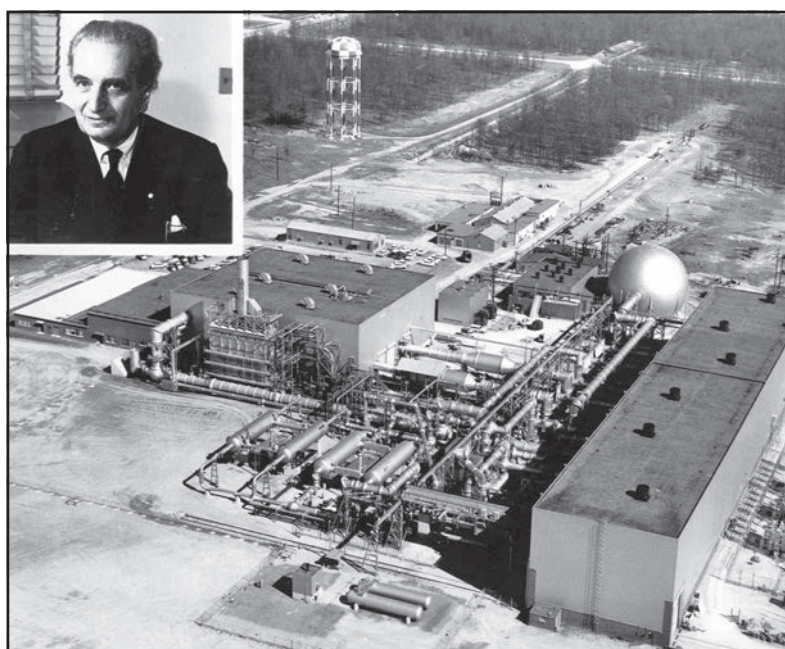
In 1939, Arnold asked von Kármán to design a 20-foot wind tunnel for Wright Field in Ohio. Toward the end of World War II, Arnold again sought von Kármán's help. This time, Arnold asked him to establish a scientific advisory group to develop a blueprint for future air research.

In spring 1945, von Kármán and a group of scientists traveled to Europe and questioned German engineers about their progress in aviation during the war. The group also visited several facilities, including the Tyrolian Alps, where the world's most powerful wind tunnel was then under construction.

In a 1945 letter to Arnold, von Kármán recommended the creation of new facilities that could help meet the objective of developing supersonic and pilotless aircraft.

That December, the group presented its findings in a report entitled *Toward New Horizons*. In it, they called for the creation of a research and development facility that could be used for the study and development of jet propulsion, supersonic aircraft and ballistic missiles.

"The Center for Supersonic and Pilotless Aircraft Development should be equipped with adequate wind tunnel facilities to attain speeds up to three times the velocity of sound, with large enough test sections to accommodate models of reasonable size, including jet propulsion units, and one ultrasonic wind tunnel for exploration of the upper frontier of the supersonic speed range," the report states. "Ample facilities for the study of combustion and other characteristics of propulsion systems at very high altitudes should be provided."



The Gas Dynamics Facility at Arnold Air Force Base was dedicated in honor of Dr. Theodore von Kármán on Oct. 30, 1959. (U.S. Air Force photo)

Construction on this facility, today known as Arnold Engineering Development Complex, would begin less than five years later.

Then-Air Force Chief of Staff Gen. Thomas White provided a message to then-AEDC Commander Maj. Gen. Troup Miller Jr. for the Oct. 30, 1959, ceremony.

"There can be no doubt in anyone's mind that our survival as an independent country in a free world may well depend upon our technological preeminence and the extent of the support behind it," White wrote. "The combined vision and collaborative effort of General Arnold, the military man, and Dr. von Kármán, the distinguished scientist, recognized this fact many years ago. Together, they did something about it. For this, our country should be eternally grateful."

"In naming the Gas Dynamics Facility in honor of Dr. von Kármán, the Air Force is dedicating a facility which already has proved of untold value in our national research and development programs, a facility which has the capacity to grow in importance and usefulness in step with technical advances as they occur. This is true because one man's intuitive and crystal clear thinking has opened the door to greater successes in

the future. That man is Doctor Theodore von Kármán."

Von Kármán would make further contributions to the field of aerodynamics, including his involvement in the development of supersonic aircraft and intercontinental ballistic missiles, developed theories and co-founded the NASA Jet Propulsion Laboratory in California. He was also a founder of the Aerojet Corporation.

He also received approval from the North Atlantic Treaty Organization, more commonly referred to as NATO, to launch the NATO Advisory Group for Aeronautical Research and Development. Von Kármán chaired that group until his death in May 1963.

Von Kármán was posthumously recognized as an Honorary AEDC Fellow in 2002.

The VKF at Arnold is comprised of several wind tunnels used to obtain large aerodynamic and aerothermodynamic databases to develop supersonic and hypersonic flight vehicles. Customers use these facilities to conduct testing for static stability, pressure loads, jet interaction, store separation and vehicle staging, heat transfer, inlet integration, material sampling, thermal mapping, and dynamic stability, including forced and free oscillation.

Smoking Policy

- The following revised Arnold AFB smoking policy is effective immediately and applies to all individuals on Arnold AFB.
- Traditional Tobacco products (e.g. cigars and cigarettes):**
 - Smoking is permitted solely in Designated Tobacco Areas (DTAs) identified by designated signage. If no signage exists, smoking is not permitted in that area. It is the responsibility of all smokers to keep DTAs clean of cigarette butts.
 - Tobacco use on the Arnold AFB Golf Course is permitted, but discouraged based on the health hazards of tobacco use and secondhand smoke. No smoking is permitted within 50 feet of golf course buildings except in the approved DTA.
 - Smoking in government-owned/leased vehicles is strictly prohibited. Personnel are allowed to smoke in their personal vehicles at any time; however, at no time will personnel discard cigarette butts outside their vehicle.
 - For government employees, the fact that a person smokes has no bearing on the number of breaks they may take. Breaks should be taken in accordance with the current supervisory and personnel policies that afford all employees the same break opportunities consistent with good work practices and accomplishment of the mission.
- Smokeless Tobacco products (e.g. snuff and dip):** Smokeless tobacco products are not permitted to DTAs. Smokeless tobacco use will be permitted in all workplace areas (inside and out) subject to reasonable safety and sanitary conditions. Specifically, containers of tobacco waste product, including sealed containers, must not be left unattended or disposed of in trash receptacles. Users of smokeless tobacco must flush tobacco waste down the toilet.
- Electronic Cigarettes (also known as "e-cigs"):** Pursuant to Air Force Instruction (AFI) 40-102, Tobacco Free Living, e-cigs are considered to be equivalent to tobacco products; however, e-cigs are not restricted to DTAs and are allowed to be used outdoors at a minimum distance of 25 feet from building entry/egress points. (This policy is dated July 27, 2016)

Action Line

Team AEDC,

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

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

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

**Col. Jeffrey Geraghty
AEDC Commander**

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Webb explained that the software modifications also allowed him to isolate the cause of the uncommanded runaway.

"When the software detected a runaway, it swapped control modes," he said. "This enabled us to continue normal operations and provided the run data we needed to better understand what was really going on. With this new information we were able to determine that a poorly-designed component connection by the manufacturer, along with high vibration during testing, was causing the issue. We developed a new connection method which eliminates the potential for this to occur in the future."

Sharon Rigney, APTU group manager for TOS at Arnold, commended Webb for his work improving upon the rectifier software.

"Innovative ideas and forward thinking in anticipation of possible failure modes and problems greatly improves the performance of our Instrumentation, Data and Controls systems," she said. "Adam is to be commended for his proactive approach towards possible failure modes and correction actions."

Efforts by Gareth Penfold, an instrumentation data and controls engineer, have also benefited APTU. Penfold moved to fill an immediate need in APTU for improved tracking of the test, measurement and diagnostic equipment (TMDE) due for calibrations.

"Gareth leveraged a previous

spreadsheet method of tracking instruments into a fully-functional computer database format," Rigney said.

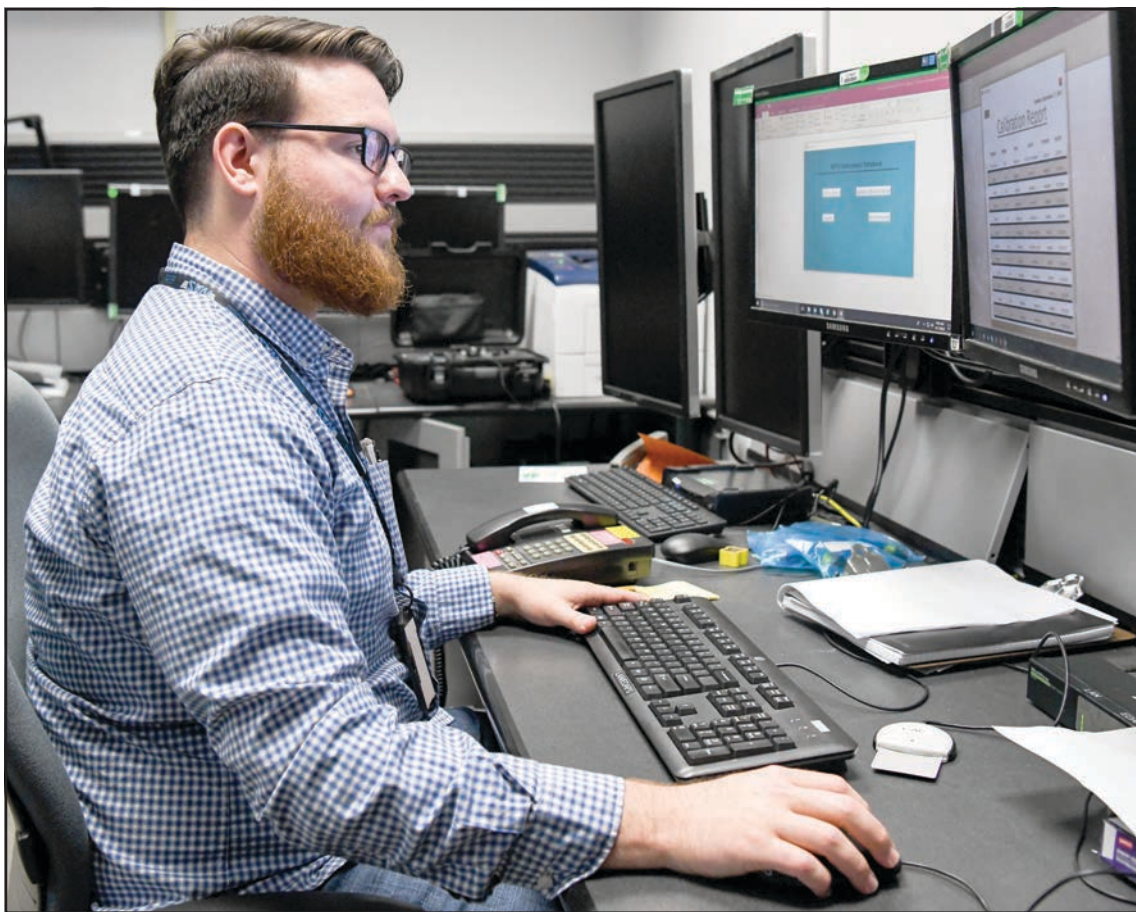
This database format allows instrument technicians, ID&C engineers like Penfold, and other APTU team members to know what equipment is due for calibration at any given time, and it includes an inventory of spare instruments available substitutions of failed items or items needing calibration. Additionally, the new database keeps track of warranty dates and time-sensitive information required for engineering decision making.

"We were previously working off a giant spreadsheet that was hard to interpret and update," Penfold said. "To make the process easier, I turned it into a Microsoft Access Database system that allows us to look ahead and pull up reports on testing and maintenance. Now we can know when it is best to calibrate so that we can meet the Air Force requirements for calibrations."

He added that previously it was hard to determine where different instruments were located.

"We can now see where those instruments are, and we're also more prepared if an issue comes up, which helps to prevent lost test time," he said.

Penfold has only been working as an ID&C engineer at Arnold for two years, but management is already taking notice of his hard work.



Gareth Penfold, an instrumentation, data and control engineer, views the digital database he created to track calibration requirements for test, measurement and diagnostic equipment used in the AEDC Aerodynamic and Propulsion Test Unit at Arnold Air Force Base. The calibration records were previously kept in binders, then moved to a spreadsheet and now are tracked via the database created by Penfold. (U.S. Air Force photo by Jill Pickett) (This image has been altered by obscuring badges for security purposes.)

"Gareth's ingenuity and attentiveness has produced a tool that will reduce the need for emergency calibrations or waivers, which recently has been a focus area for the Air Force," Rigney said.

NAS management has recognized both Penfold and Webb with Significant Contributor Awards for their efforts.

About APTU

APTU is a blowdown wind tunnel designed for aerodynamic testing of supersonic and hypersonic systems and hardware at true flight conditions. Given its versatile design, APTU can support a myriad of test setups: propulsion, material, structures, store separation, and directed

energy lethality. The facility can produce test conditions from Mach 3.1 to Mach 7.2.

Most recently at APTU, Air Force Research Laboratory and Air Force Test Center ground test teams set a record for the highest thrust produced by an air-breathing hypersonic engine in Air Force history.

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Underground congestion also restricts the location of new water lines. The lines being repaired are 72-inches in diameter and 30-inches in diameter.

Above-ground installation poses other problems.

"Installing the pipe above grade would block access to the other systems and equipment in the area," Quattlebaum said. "Water piping as large as 72-inch diameter requires significant support structures if installed above grade."

These difficulties in locating a new line contribute to the high cost of replacement when compared to repair.

The solution – have a subcontractor line the interior of the pipes with a fiber-reinforced polymer, an option that is both faster and cost-saving.

"Part of my job as a servant to this great nation is to find the most efficient and cost effective method to fix any problem that the U.S. Air Force has," said 2nd Lt. Adam Doyle, a project manager with the Test Systems Sustainment Division. "I believe this project is a step in that direction."

Using this method, a repair of approximately 450 feet total between the two sizes of pipe was recently completed in about three weeks – a considerable time-savings when compared to the several months needed for replacement.

"Replacing the underground pipes would have significantly impacted testing, because it would have required a raw water outage for six months to one year," said Corey Jenkins, a Test Operations and Sustainment contractor capital project manager.

The repair location offered an opportunity to make a base-wide impact with success, but minimize impact if there are any failures of the lining.

"This location was a lower risk candidate than most other locations on base," Quattlebaum said. "We were experiencing fre-



Maj. Michael Knauf looks on as Dusty Pickens sweeps water in raw water pipes near the Engine Test Facility J-3 test cell at Arnold Air Force Base during a Sept. 23 inspection of pipes recently lined with a fiber-reinforced polymer. (U.S. Air Force photo by Bradley Hicks)

quent leaks that had a base-wide impact to repair. This line only serves two (Engine Test Facility) test cells, J-1 and J-2, so if the lining does not perform as advertised and comes loose, only J-1 and J-2 testing would be impacted."

With the repair complete, the sections should be leak free and able to handle full pressure.

"This composite pipe will be as strong as a new steel pipe on its own, having the strength required to withstand the full 150 psi of water pressure, even if the entire steel pipe erodes away," Knauf said.

It is anticipated the lining will have a 50-plus year lifespan.

"Many people on base are eyeing this project to see what AEDC can take away from this new method," Doyle said. "This project has the potential to change the way Arnold AFB conducts all its pipe repairs in the future by giving a drastically cheaper and time-effective method."



Maj. Michael Knauf, from left, Dusty Pickens and 2nd Lt. Adam Doyle conduct an inspection of raw water pipes that were recently lined with a fiber-reinforced polymer, Sept. 23 at Arnold Air Force Base. (U.S. Air Force photo by Bradley Hicks)

AEDC from page 1

Arnold asked von Kármán to form an advisory group tasked with providing recommendations on the direction of future aviation research. At Arnold's request, members of this group visited Germany in May 1945 to view test and research facilities captured during the Second World War. They found facilities, aircraft, engines and rockets more advanced than the Allied nations had imagined.

Among those who made the trip to Germany was American scientist Dr. Frank Wattendorf. After the survey of the superior German ground testing facilities had been completed, Wattendorf penned a report known as the Trans-Atlantic Memo. This June 1945 report would become the baseline for establishing "a new Air Forces development center."

The Trans-Atlantic Memo was provided to Brig. Gen. Franklin O. Carroll, who was then commander of the engineering division at Wright Field, which was later combined with the nearby Patterson Field to form Wright-Patterson Air Force Base in Ohio. Using information from the report, Carroll delivered a presentation to Arnold's Air Staff. Carroll discussed the advancements the Germans had made in ground testing while noting the deficiencies in American wind tunnels.

Carroll, who would later go on to become the first AEDC commander, requested the Air Technical Service Command conduct a preliminary study "for the establishment of a new Army Air Force's Applied Research and Development Center for Fluid Dynamics."

A committee was formed to complete this study. The group's report was released on Dec. 18, 1945, less than a week before *Toward New Horizons* was published. The latter was a report from von Kármán's group that visited Germany in which they proposed a facility for

the study and development of jet propulsion, supersonic aircraft and ballistic missiles. The envisioned facility was brought to life with the eventual construction of the Air Engineering Development Center.

Both reports recommended the use of captured German test facilities in a new installation in order to save time of facility design and construction. It was also recommended that the installation be located near large sources of water and electric power.

After a report titled "Proposed Air Engineering Development Center" was presented to the Air Staff in January 1946, a \$1.5 million Army Air Forces contract was awarded to Sverdrup & Parcel Inc., an engineering firm based out of St. Louis, Missouri, to conduct further planning for the proposed center.

Sverdrup & Parcel Inc. recommended several possible sites for the new center, including Moses Lake in Washington, Grand Wash Cliffs in Arizona and the Tennessee Valley area.

The Moses Lake site was considered too vulnerable to attack, and a water dispute between Arizona and California essentially disqualified the Grand Wash Cliffs site from consideration.

Huntsville, Alabama became the preferred site. The Army was preparing to deactivate the Redstone Arsenal, and the use of this site could save time in the construction of housing and offices for the Air Engineering Development Center. However, the Army changed course on the Redstone closure after the Air Force began to take interest in it.

U.S. Sen. Kenneth McKellar of Tennessee stepped in with an offer. He said the state could donate Camp Forrest to the Air Force for the center.

Camp Forrest was an active Army post located in southern middle Tennessee. The camp was active between 1941 and 1946 and was initially



Arnold Air Force Base is shown in this photo from the 1990s. It was 70 years ago this month that President Harry Truman signed into law the bills that allowed for the establishment of what would become Arnold Engineering Development Center. (U.S. Air Force photo)

used as a training center for infantry, artillery, engineering and signal units. Camp Forrest became a Prisoner of War camp in May 1942. After the end of World War II, the camp was closed. It was declared surplus in 1946 and dismantled.

Along with the Camp Forrest site, McKellar offered to help push necessary legislation through Congress.

The Air Force accepted.

On April 28, 1948, the year after the Air Force officially separated from the Army to become its own branch of the military, Camp Forrest was named as the site for the new Air Force Engineering Development Center.

In early March 1950, the year after Congress authorized \$100 million for the construction of the Air Engineering Development Center and less than 5 months after the signing of Unitary Wind Tunnel Plan Act and Air Engineering Development Center Act of 1949, the Secretary of the Defense approved the construction of the center. That June, the Army



During a June 25, 1951, ceremony at Arnold Air Force Base, President Harry Truman draws aside the curtain to reveal a dedicatory plaque mounted to a granite rock. The ceremony was held to dedicate the Air Engineering Development Center as the Arnold Engineering Development Center in honor of Gen. Henry H. "Hap" Arnold, who had passed away before the ceremony and whose vision was instrumental in bringing the center to fruition. Pictured with Truman is Arnold's widow, Bee. (U.S. Air Force photo)

Corps of Engineers began construction on a perimeter fence and access road. Later that month, work began on a dam on the Elk River to create what would become known as Woods Reservoir to provide cooling water for testing facilities.

It was directed that the new center would be operated by a corporation under contract to the Air Force. On June 29, 1950, the Arnold Research Organization, or ARO, the corporation established to manage and operate the center, was awarded a contract from the Air Force to cover the first 15 months of operation.

Gen. Arnold died in January 1950. On June 25 of the following year, Truman visited the center in Tennessee that Arnold helped bring to life and dedicated the site in Arnold's honor, naming it the Arnold Engineering



A model of the Boeing Dyna-Soar is tested in a transonic wind tunnel at then-Arnold Engineering Development Center in 1959. It was 70 years ago this month that President Harry Truman signed into law the bills that allowed for the establishment of what would become Arnold Engineering Development Complex. (U.S. Air Force photo)

Development Center. Falcon air-to-air missile would be performed in what would come to be known as the von Kármán Gas Dynamics Facility.

The Arnold Engineering Development Center was re-designated as Arnold Engineering Development Complex in July 2012.

Attention

AEDC Policy Notice

Applies to all AEDC personnel
(Military, DoD Civilians, Contractors, Visitors)

Smoking is permitted solely in
Designated Tobacco Areas (DTAs).
If no signage exists, smoking is
NOT
permitted in that area.

It is the responsibility of all smokers to
keep DTAs clean of cigarette butts.

Smoking
Allowed
in
(DTAs)
Areas

Take steps to prevent illness during cold and flu season

By AEDC Safety

The 2019-2020 flu season is upon us. Flu viruses, also known as influenza, can occur year-round.

Seasonal flu activity often begins in October and November and continues into late May, with the peak months occurring between December and February.

Flu is one of the most common infectious diseases that can affect anyone regardless of age. The group of people most vulnerable to complications from the flu are young children, older adults, pregnant women, and those with chronic conditions. Per the World Health Organization the flu results in 3 to 5 million cases of severe illnesses and about 290,000 to

650,000 respiratory related deaths each year.

Getting a flu vaccination is one of the most effective ways to protect a person against flu viruses. Studies have shown that the flu vaccine can decrease the chance of coming down with the flu by as much as 70 to 90 percent.

Unfortunately, the flu vaccine cannot completely prevent a person from getting the flu; however, it can lessen the severity and duration of symptoms. Getting vaccinated not only helps protect the vaccinated person, but also helps protect those around that individual by lessening the amount of flu in the work area, home and communities.

The CDC recommends flu vaccinations for everyone 6

months of age and older. You should get the vaccination early in the flu season; it takes at least two weeks for your body to develop disease-fighting antibodies to protect you.

According to the CDC, the following are the best ways to prevent seasonal flu:

1. **Avoid close contact.** Avoid close contact with people who are sick. When you are sick, keep your distance from others to protect them from getting sick too.
2. **Stay home when you are sick.** If possible, stay home from work, school and errands when you are sick. This will help prevent spreading your illness to others.

3. **Cover your mouth and nose.** Cover your mouth and nose with a tissue when coughing or sneezing. It may prevent those around you from getting sick. Flu and other serious respiratory illnesses, like respiratory syncytial virus (RSV), whooping cough, and severe acute respiratory syndrome (SARS), are spread by cough, sneezing, or unclean hands.
4. **Clean your hands.** Washing your hands often will help protect you from germs. If soap and water are not available, use an alcohol-based hand rub.
5. **Avoid touching your**

eyes, nose or mouth. Germs are often spread when a person touches something that is contaminated with germs and then touches his or her eyes, nose, or mouth.

6. **Practice other good health habits.** Clean and disinfect frequently touched surfaces at home, work or school, especially when someone is ill. Get plenty of sleep, be physically active, manage your stress, drink plenty of fluids, and eat nutritious food.

For other helpful tips, visit the following link: <https://www.cdc.gov/flu/prevent/actions-prevent-flu.htm>.

Ascension Island's hydroponics lab is revitalizing life on the volcanic island

By Airman 1st Class Zoe Thacker
45th Space Wing Public Affairs

ASCENSION ISLAND AUXILIARY AIRFIELD (AFNS) – Space has been the center of conversation in the news and entertainment. There was even a movie about future human inhabitants on Mars! But how would that happen? How would we be able to sustain growing food? Mars, a dry and dusty planet, would not be able to support human life organically.

And just like the case would be on Mars, the food choices on Ascension are very limited and depend completely on what supplies are flown to the island.

"If you've ever been to Ascension Island, or even looked at photos online, the island doesn't differ much from Mars," said Cathy Little, Ascension Island Auxiliary Airfield agricultural specialist.

Supplies, including food, are flown to the island because Ascension's water cycle, soil and topography make it very difficult for anything to grow on the island – what does grow, you cannot or would not want to eat, until recently.

Introducing Ascension Island's own personal 'garden', the hydroponics laboratory.

Hydroponics, or the process of growing plants in sand, gravel or liquid instead of soil, can be seen in the movie "The Martian." Though it seems like something only a screenwriter could come up with, the agricultural team on Ascension Island has taken the idea and run with it.

"The hydroponics lab

isn't a laboratory in the traditional sense," Little said. "Our facility is an 8,721 square foot greenhouse that has two vine crop bays and one leaf crop bay."

In the greenhouse, the team on Ascension uses two different systems to grow fresh produce on the volcanic island. For vining crops, like tomatoes and peppers, they use a nutrient injection system, bucket system and Perlite, which is a naturally occurring volcanic glass that has a relatively high water content. For leafy crops, like lettuce and herbs, they use a nutrient film technique, where a very shallow stream of nutrient-filled water is re-circulated past the bare roots of the plants.

Though the lab has grown over the years, hydroponics is not new to Ascension Island.

"During World War II, the shipping of fresh vegetables overseas was not practical and remote islands where troops were stationed were not a place where they could be grown in the soil," said Rick Simmons, hydroponics expert, in a 2008 article. "In 1945, the U.S. Air Force built one of the first large hydroponic farms on Ascension Island, using crushed volcanic rock as a growing medium."

"Growing conditions haven't changed since World War II; therefore, the need for hydroponics still exists," Little said. "Just as it was in 1945, shipping fresh vegetables to a remote island is not cost effective and with the lack of arable soil on the island. We face the same dilemma as our forebears—how to reduce costs and meet the nutritional needs of the troops and contractor personnel stationed here."



With the revitalization of the hydroponics lab, Little thinks a shift could be on the horizon for Ascension Island.

"In addition to having a virtually limitless supply of fresh produce and reducing the cost of transportation, morale is greatly improved knowing that produce, picked that very day, is awaiting everyone in the base dining hall," Little said. "Hydroponics allows us to meet demands, reduce costs and provide nutritional value for our personnel."

As the team continues to experiment with different crops, they hope to expand the size of the lab and the list of what they're able to grow.

"If we were to operate at a full greenhouse capacity, we could produce enough fresh produce to feed the entire population of Ascension Island," Little said. "That's about 700 people."

For the 45th Space Wing's Ascension Island Auxiliary Airfield, neither the sky, nor Mars, is the limit.



The 45th Space Wing's Ascension Island Auxiliary Airfield looks quite similar to Mars, per its physical characteristics. Food must be flown in because the topography of the island isn't able to grow food organically. However, a team from the 45th Mission Support Group Detachment 2 has revamped the hydroponics lab so that fresh vegetables can be grown and consumed by the 700 inhabitants of the volcanic island. (U.S. Air Force photo by Cathy Little)

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AFRL team enhances safety for survival specialists through wearable health monitoring technology

By Whitney Wetsig
Air Force Research Laboratory Corporate Communications Division

WRIGHT-PATERSON AIR FORCE BASE, Ohio – An Air Force Research Laboratory team recently delivered version 2.0 of the Survival Health Awareness Responders Kit, or SHARK, to U.S. Air Force instructors at Joint Base San Antonio-Lackland Camp Bullis, a 28,000-acre site in Texas, used to train Survival, Evasion, Resistance and Escape, or SERE, specialists.

With SHARK, sensors embedded in shirts transmit key metrics including heart rate and estimated core temperature from smartphones to a server. As students undergo physical endurance tests during extended periods of isolation, the system allows instructors to monitor this data in real-time, and issues alerts for heart rate spikes and significant increases in temperature. Since the device identifies the user's location, medical personnel can quickly respond to those in need of care.

2nd Lt. Matthew Dickinson, a biomechanical engineer within AFRL's 711th Human Performance Wing, says that SHARK 2.0 is user-friendly and more secure. He explains that instructors and students alike are pleased with the streamlined setup process and the new web interface.

The commander of De-

tachment 3, 66th Training Squadron, Maj. Toby Andrews, said he appreciates that SHARK "gives (instructors) real-time alerts on the health and well-being of students." The system "truly eases my mind as a commander," he said since it "allows us to provide preventative care (in cases) that could otherwise lead to serious medical situations."

Prior to SHARK, instructors checked on trainees at regular intervals to ensure their well-being. In certain cases, they administer ice baths to students with elevated body temperatures, said Tech. Sgt. John Garcia, a SERE instructor. However, since the introduction of this monitoring technology, zero ice baths have been required because the system alerts instructors before students reach what they call "the danger zone."

To develop version 2.0, the SHARK team enlisted the help of Cedarville University students majoring in computer science. Loren Baum, who now works full-time in 711HPW, improved the code for his senior design project. He optimized the software, added functionality, enhanced the security measures and streamlined the startup process.

Baum explains that the team moved SHARK from the mobile app arena to the web to make the system usable in a wider variety of scenarios. With the new approach, instructors simply log into a website from any computer to monitor students' health status instead of launching an application,

which requires installation and manual upgrades.

The team simplified the startup process with Quick Response, or QR, codes that automatically input students' information when scanned, Baum said. This measure reduced the total setup time from one hour to five minutes, and makes it easier for students and instructors to begin a new session.

In June 2019, the team traveled to Joint Base San Antonio-Lackland Camp Bullis and conducted initial tests with version 2.0. Once the team integrated additional software improvements, SERE instructors officially launched the upgrade in September.

The SHARK team continues to work with other squadron key leaders to address related needs. One such application involves using the included heart rate variability measurement to provide real-time feedback regarding students' reactions to various training stressors.

This data would enable instructors to evaluate the effectiveness of interrogation techniques and determine the extent to which they affect individuals, said 1st Lt. David Feibus, a former software team lead, who is now a student at the Air Force Institute of Technology.

While SHARK is useful in various situations, Air Force instructors currently rely on this tool to offer "strenuous exercises in the safest manner possible," said Ted Harmer, a 711HPW engineer who also leads a



U.S. Air Force Capt. Logan Hawke, a pilot assigned to the 16th Airlift Squadron, U.S. Air Force Master Sgt. William Davis and U.S. Air Force Staff Sgt. Randall Moss, loadmasters assigned to the 16th Airlift Squadron, communicate with rescue forces with a radio during a survival, evasion, resistance, and escape exercise Aug. 21 in North, South Carolina. SERE specialists assigned to the 437th Operations Support Squadron conducted this exercise in order to identify potential areas of improvement in both SERE training and equipment provided to aircrew in case of a potential isolating event. (U.S. Air Force photo by Airman 1st Class Duncan C. Bevan)

medical readiness personnel recovery training research team. When administering physical tests, instructors must achieve the purpose of the training and minimize negative impacts, whether they be physical or emotional, he explains.

SHARK technology was born when the U.S. Air Force Survival School at Fairchild Air Force Base opted to include more proactive safety measures in its training programs. Since AFRL had experience with wearable monitoring technology, leadership from 711 HPW offered to develop a solution for the SERE instructors during an immersion visit.

"Going in, we knew we

needed a broad range of skill sets," said Dr. James Christensen, a product line lead within the 711HPW. He explains that to produce an effective system, the team relied on expertise in wearable devices, electronics, software development, communications, human factors and physiology.

"We pulled together capabilities from several different parts of the organization to assemble the sensors, develop the software to pull sensor data together, and then build the communications capability to then send that data and be able to monitor it continuously and remotely."

Following the initial design and development, the

team arranged field tests with end-users. Several team members lived with Joint Base San Antonio-Lackland Camp Bullis instructors for one week to test SHARK 1.0 in 2018. Now, a year later, an upgraded system is in the field.

In the meantime, the SHARK team is also working with other groups who are interested in acquiring this technology including firefighters, NASA scientists and U.S. Army Special Forces. Members are currently exploring a version of the system that the Department of Defense Fire Academy can use under fire protection gear to prevent heat injuries.

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26-27 Coffee County INVITATIONAL

8:30 am

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See the November Services calendar on page 6.

Air Force observes National Cybersecurity Awareness Month

By Tech. Sgt. Armando A. Schwier-Morales
Secretary of the Air Force
Public Affairs

October is not all skeletons and jack-o-lanterns, there are also scary things that live in cyberspace. October is National Cybersecurity Awareness Month with this year's theme, "Be Cyber Smart."

The awareness month is a collaborative effort between the Department of Defense, along with the Department of Homeland Security and its public and private partners. It is up to the total force to stay vigilant, keep learning and be ready for any potential cyber threat.

The Air Force Office of Information Dominance and chief information officer worked to develop themes that align with the DOD weekly themes. These weekly themes are meant to assist with changing the culture of cybersecurity throughout the Air Force:

- Week 1: Cybersecurity is everyone's responsibility
- Week 2: Defending the family – Cybersecurity practices at home
- Week 3: Privacy, PII and FOIA – Reducing mission cyber risks by protecting in-

formation

- Week 4: Phishing – Continuous training makes a difference

An already scary cyber world can be scarier when one common threat, identity theft, comes knocking, seeking a reward. However, like other threats, being cyber smart can help the Air Force family be prepared and resilient. There are eight common types of identity theft:

- Financial identity theft
- Driver's license identity theft
- Criminal identity theft
- Social security identity theft
- Medical identity theft
- Insurance identity theft
- Child identity theft
- Synthetic identity theft

The most well-known is financial identity theft, classified in one of two ways: when a thief maxes out credit, steals the victim's money or when thieves open new credit cards and loans in the victim's name.

Two more types of identity theft are driver's license and criminal identity theft. Driver's license theft is when a thief poses as the person, possibly damaging the victim's driving record. Criminal identity theft takes place when the victim's identity is used with police, resulting in a criminal re-

cord being created in the victim's name. When this occurs, the victim of criminal identity theft can have problems with law enforcement or be unable to gain employment.

Another form of identity theft involves social security numbers and benefits. Most government benefits require a social security number to obtain. Social security number thieves can falsify official documents when they have access to a victim's social security number.

Medical identity theft can be used to commit fraud involving health insurance and medical coverage. Related to medical identity theft is insurance identity theft. Thieves leave the victim with the problems after they use the victim's identity, including difficulties in settling payments, potentially higher insurance premiums and quite possibly trouble in acquiring medical coverage later on.

Even children fall victim to cyber threats and identity theft. A child's information can be used to defraud the government, create documents, commit crimes and apply for loans. Additionally, when thieves can't get a victim's complete information, they can still use parts of an identification to create a synthetic identity.



Thieves can create scary problems for potential victims. Knowing each common type is just the beginning of being cyber smart.

For tips, tricks and more information on identity theft, follow this year's theme, #BeCy-

berSmart. For events happening at a specific location, contact the local information protection office. Visit <https://www.safcio6.af.mil/Organizations/CISO-Homepage/NCSAM-2019/> for more information.

Air Force scientists discover unique stretchable conductor

By Donna Lindner
Air Force Research
Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – The Air Force Research Laboratory has developed liquid metal systems which autonomously change structure so that they become better conductors in response to strain.

Conductive materials change their proper-

ties as they are strained or stretched. Typically, electrical conductivity decreases and resistance increases with stretching.

The material recently developed by AFRL scientists, called Polymerized Liquid Metal Networks, does just the opposite. These liquid metal networks can be strained up to 700 percent, autonomously respond to that strain to keep the resistance between those two

states virtually the same, and still return to their original state. It is all due to the self-organized nanostructure within the material that performs these responses automatically.

"This response to stretching is the exact opposite of what you would expect," said Dr. Christopher Tabor, AFRL lead research scientist on the project. "Typically a material will increase in resistance as it is stretched

simply because the current has to pass through more material. Experimenting with these liquid metal systems and seeing the opposite response was completely unexpected and frankly unbelievable until we understood what was going on."

Wires maintaining their properties under these different kinds of mechanical conditions have many applications, such as next-generation wearable electronics. For instance, the material could be integrated into a long-sleeve garment and used for transferring power through the shirt and across the body in a way that bending an elbow or rotating a shoulder won't change the power transferred.

AFRL researchers also evaluated the material's heating properties in a form factor resembling a heated glove. They measured thermal response with sustained finger movement and retained a nearly constant temperature with a constant applied voltage, unlike current state-of-the-art stretchable heaters that lose substantial thermal power generation when strained due to the resistance changes. These properties and the material fabrication details are directly compared in the current issue of *Advanced Materials* at <https://doi.org/10.1002/adma.201903864>.

This project started

within the last year and was developed in AFRL with fundamental research dollars from the Air Force Office of Scientific Research. It is currently being explored for further development in partnership with both private companies and universities. Working with companies on cooperative research is beneficial because they take early systems that function well in the lab and optimize them for potential scale up. In this case, they will enable integration of these materials into textiles that can serve to monitor and augment human performance.

The researchers start with individual particles of liquid metal enclosed in a shell, which resemble water balloons. Each particle is then chemically tethered to the next one through a polymerization process, akin to adding links into a chain; in that way all of the particles are connected to each other.

As the connected liquid metal particles are strained, the particles tear open and liquid metal spills out. Connections form to give the system both conductivity and inherent stretchability. During each stretching cycle after the first, the conductivity increases and returns back to normal. To top it off, there is no detection of fatigue after 10,000 cycles.

"The discovery of Po-

lymerized Liquid Metal Networks is ideal for stretchable power delivery, sensing and circuitry," said Capt. Carl Thrasher, research chemist within the Materials and Manufacturing Directorate at AFRL and lead author on the *Journal Article*. "Human interfacing systems will be able to operate continuously, weigh less, and deliver more power with this technology."

"We think this is really exciting for a multitude of applications," he added. "This is something that isn't available on the market today so we are really excited to introduce this to the world and spread the word."

The Air Force Research Laboratory is the primary scientific research and development center for the Air Force. AFRL plays an integral role in leading the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace force. With a workforce of more than 11,000 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: www.afresearchlab.com.

Missile warning radars see modern equipment installed

By Benjamin Newell
66th Air Base Group Public Affairs

HANSCOM AIR FORCE BASE, Mass. – Program Executive Office Digital is upgrading the five radars that serve as the United States’ first warning of sudden missile attack.

Upgraded Early Warning Radars, or UEWR, arrayed throughout the Northern Hemisphere have the primary mission of missile warning and missile defense, and a secondary mission of tracking space-borne objects. They are all undergoing upgrades to their computer systems and will continue to provide accurate and timely data to combatant commanders.

These latest upgrades will focus on the processing equipment that builds information commanders and senior leaders use to make decisions and provide warning in case of attack, as well as support missile defense requirements for homeland defense.

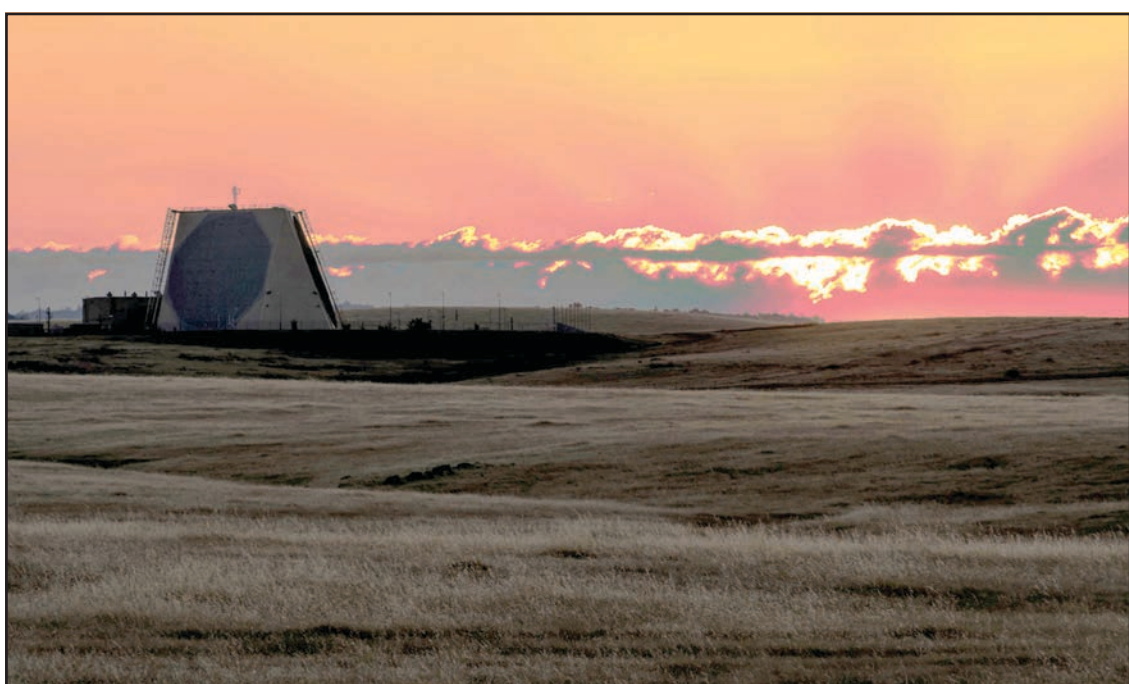
“The upgrades address several issues, but the biggest one is obsolescence and sustainability,” said Lt. Col. Yong Sim, PEO Digital’s program manager for the radar upgrades. “When the processing equipment reaches a certain

age, no one makes parts for it anymore. Things break and you run out of spares and then have to find workarounds. By upgrading the system with more modern and supportable equipment, we are extending the life of the radars.”

The 17th Test Squadron based in Schriever Air Force Base, Colorado, completed the first operational test of the computer systems at Beale Air Force Base, California, May 7. After a 30-day trial period, Air Force Space Command operationally accepted the UEWR June 6, proving the systems effective and suitable for operations.

The program team here is fielding systems in various stages of deployment at four other sites: Fylingdales, United Kingdom; Clear Air Force Station, Alaska; Thule Air Base, Greenland; and Cape Cod Air Force Station, Massachusetts. The Air Force expects to complete the final upgrades by the end of 2020.

“With these upgrades to computer systems at the Early Warning Radar sites, they can now use algorithms and software to track missiles and potentially defend against them with more accuracy,” said Kevin Donoghue, a MITRE company engineer assigned to the program at Hanscom.



The sun sets behind the Upgraded Early Warning Radar at Beale Air Force Base, California. Program Executive Office Digital is upgrading the five radars that serve as the United States’ first warning of sudden missile attack. (Courtesy photo by Eddie W. Clark, InDyne)

“Airmen operators at all the UEWR sites, as a result of equipping them with modern, sustainable equipment, will be able to use these powerful tools to build a picture using the information these radars provide.”

The requirement for these upgrades dates back to 2009, and this current upgrade program began in 2012. The contract is worth \$329 million and has been challenged by the need to install significant amounts of equipment into radar sites that have a 24/7 mis-

sion. According to Sim, it is difficult to shut systems like the EWR down long enough to perform nonstop work. Contractors must build a switching system to facilitate rapid reconfiguration between the legacy and upgraded systems in order to minimize downtime.

“We’re going from 14 server racks with a 500 megahertz processing capacity to three servers with a two gigahertz processing speed,” said Sim. “That’s a four-fold processing improvement with a nearly

five-fold reduction in size.”

The Raytheon Co. is the primary contractor and it’s working with subcontractors to complete work on systems and infrastructure within the radar. Forty-eight PEO Digital and Missile Defense Agency employees at Hanscom and Peterson Air Force Base, Colorado, are working the project from the program management side, working closely with Airmen, civilians and contractors at the five radar sites who ensure work stays on schedule.

Air Force Recognizes Energy Action Month 2019

By Corrie Poland
Air Force Energy, SAF/IE

WASHINGTON, D.C. – October is Energy Action Month, an opportunity to highlight why energy is a critical enabler to combat capability for the U.S. Air Force and Department of Defense, and to encourage smarter energy use and management for installations, ground vehicles, and aircraft. Unveiled this year, the Air Force theme of “Energy Able, Mission Capable” educates Airmen about the importance of energy readiness and resilience for the global mission.

“By prioritizing energy management and resilience, we are building a strong foundation for the future warfighter and ensuring Airmen have energy when and where they need it,” said the Honorable John W. Henderson, Assistant Secretary of the Air Force for Installations, Environment, and Energy.



Every October, we recognize Energy Action Month to highlight the critical role energy plays in Air Force operations, and to encourage smart energy use and management for our installations, ground vehicles, and aircraft. This year, our new theme of “Energy Able – Mission Capable” will showcase how efficient energy use increases mission capability and readiness for our global mission. Whether we’re championing projects that optimize aviation fuel use, or encouraging Airmen to make smart energy decisions at individual installations, our goal is to foster a culture that prioritizes energy optimization and water management. (Courtesy graphic)

Every year the U.S. Air Force spends nearly \$6 billion on energy, with approximately 82 percent used for aviation fuel, 16 percent for facilities and installations, and

readily available can pose serious risks and challenges for troops. Powering aviation assets requires complex fuel planning and logistics, all the way from refinery and storage facilities to fuel convoys and transport to the end-user. As power projection platforms, installations depend on secure, reliable and quality power to ensure Air Force mission assurance.

The Air Force is focusing on energy resilience and optimization to sustain warfighting capabilities in the air and on the ground. For instance, upgraded aircraft aerodynamics increase range and limit the need for aerial refueling. Investments in modern software improve the effectiveness of tankers and streamline mission planning. Engine sustainment initiatives increase time on wing and prevent some maintenance issues. At the installation level, from new onsite generating capabilities to ensure energy resilient operations, to a record setting year of energy sav-

ings performance contracting, the Air Force is prepared to fly, fight and win from its installations under any conditions.

During Energy Action Month, the Air Force will emphasize the need for smart energy solutions and inform Airmen, Air Force senior leaders, policy makers, and aligned organizations about what they can do to effectively distribute, generate, and manage resilient and reliable energy across the enterprise.

To share the message, visit www.safie.hq.af.mil/EnergyActionMonth for resources and follow the hashtag #EnergyAbleMissionCapable at www.facebook.com/AirForceEnergy and www.twitter.com/AFEnergy.

Air Force Energy, comprised of Operational and Installation Energy, is led by the Assistant Secretary of the Air Force for Installations, Environment, and Energy and is located in the Pentagon.

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Zoologist to speak at AEDC Woman's Club November meeting

By Barbara McGuire
AEDC Woman's Club

The AEDC Woman's Club will hold its next meeting Nov. 7 at the Arnold Lakeside Center with David Withers, a zoologist with the National Heritage Inventory Program of the Tennessee Department of Environment and Conservation, as the

featured guest.

Withers has been with the program since 1993. A large part of his research is at the Sherwood Forest of the South Cumberland State Park.

Table donations will be going to the Blue Monarch.

During the Oct. 3 meeting, the club welcomed Leigh Gardner, a park ranger with Old

Stone Fort State Archaeological Park. She spoke of her time as a student at Middle Tennessee State University and then training to become a ranger. Table donations were given to The Shepherd's House of Tulsa.

The social hour of the Nov. 7 meeting starts at 9:30 a.m., with the business meeting and pro-

gram beginning at 10 a.m.

Reservations must be made no later than noon Oct. 31. Make reservations by calling 931-393-2552 or 931-434-5415.

The AEDCWC meetings are open to the public and provide the opportunity to meet the members and become a member. You don't need to have mil-

itary connections or be involved with Arnold Air Force Base to visit and become a member.

For information about the AEDCWC, call the membership chairman at 248-872-7923.

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



Leigh Gardner, a park ranger at Old Stone Fort State Archaeological Park, shares about being a park ranger during the October meeting of the AEDC Woman's Club at the Arnold Lakeside Center. (Courtesy photo)



Women of the AEDC Woman's Club pose for a photo in shirts representing their favorite colleges. (Courtesy photo)

Local VFW post under new management

By Dave Uselton
VFW Post 1893

Veterans of Foreign Wars Post 1893 is under new management.

The mission of the post, located on Woods Reservoir at 6190 AEDC Road, Estill Springs, TN 37330, is to serve veterans and local communities. The facility is also open to the public.

Available activities include a bowling machine, pool, and food and bev-

erages. The club is open from noon to midnight Thursday through Sunday. Karaoke is held every Thursday, Friday and Saturday from 8 p.m. to midnight.

The VFW is a congressionally chartered 501c3 nonprofit Veterans Service Organization.

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



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Highest total combined weight Hoodies- total lbs 1,000 men or 500 women T-shirt- first 20 to complete

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with beef, chicken, rice, beans, & more
\$8 mbr \$10 non \$5 age 6-12 (under 5 free)
Dinner optional; Free movie Buffet or limited menu available
Dining 5-8pm Movie 6pm

16 WATERFALLS HIKE
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9am-5pm
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Café 7am-12pm FC 8am-1pm GC 8am-2pm
Nov 28 All Activities Closed
except Wingo Inn front desk 8am-4pm
Nov 29 ALC, Barber, Café, Closed
FC 8am-1pm ODR 10am-2pm

Give Thanks
We're thankful for you!
We look forward to seeing you in Services.

Services is hiring!
But, the application process is moving to a different website. NAFJobs.org will deactivate Nov 4 and USAJobs.gov will accept NAF applicants starting Dec 3. For questions during this transition, email AEDC.tsd.-svhworkflow@us.af.mil

Admin 454-7779	Café 454-5885	Mulligan's Grill 454-FOOD
ALC 454-3350	Fitness 454-6440	ODR/ITT 454-6084
Barber 454-6987	Golf 454-GOLF	Recycling 454-6068
	Marketing 454-3128	Wingo Inn 454-3051

sign up Nov 1-Dec 2 454-SNTA
On base sign up thru SharePoint

Children's Christmas Party
Arnold Lakeside Center
SATURDAY, Dec 7 11am-2pm
Free event open to ALL AEDC employees, reserve/guard, retirees, and immediate families
Goodies for age 12 & under, indoor/outdoor activities, food/snacks, petting zoo, AND SANTA!

Same team, different uniform: The story of an Iraqi translator who became an American Airman

By Senior Airman
Alyssa D. Van Hook
11th Wing Public Affairs

JOINT BASE ANDREWS, Md. (AFNS)

– In 2003, Airman 1st Class Saeed Shnawa was not Airman 1st Class Saeed Shnawa. He was a 21-year-old Iraqi student of technology at a university in Baghdad.

That's when American and coalition forces arrived to overthrow the Iraqi government, turning Baghdad into a war zone. Like many young men and women in Baghdad, Shnawa fled the city, bound for western Iraq, where his parents lived at the time. His life was upturned, his future uncertain.

Shnawa said Saddam Hussein's propaganda convinced much of the country that America was evil. But those notions were soon tested when he came face to face with American service members.

"I fled to West Iraq – where my parents lived around that time," Shnawa said. "Many villages, including that area, had been deprived of necessities by the regime. That's where we first met."

The first meeting happened when he noticed a crowd of people surrounding an American convoy. Curious, Shnawa approached the crowd and discovered the troops were having great difficulty communicating with the villagers.

"Where are the women and children in need?" he heard the uniformed troops ask, in a barely intelligible attempt at a local dialect. Because he attended college in the capital, Shnawa seemed to understand the communication better than the gathered Iraqis.

"I jumped in to help the elders, but was quickly kicked out of the crowd," he said. "But I was persistent, and instead of going to the elders again, I went directly to the Americans. When I broke through the crowd I said, 'I can take you to the women and children in need of supplies. I know where they are.'"

The troops immediately loaded Shnawa into their Humvee, and he directed them where to go.

"After we delivered all the supplies, the commander told me the location of their base, in case I wanted to help again," Shnawa said. "At that point, I was still very hesitant to join them on a regular basis. After accompanying them again to deliver aid to some families in need, though, I was convinced of their sincere motives to help my people. All of my preconceived notions about the Americans went out the window, and the rest was history."

It was those early interactions – right around the time the coalition was overthrowing the Hussein regime – that put him on the long winding path that ended with Shnawa becoming an Air Force Airman.

Now, 16 years later, he's an 811th Operations Support Squadron aircrew

flight equipment technician, stationed at Joint Base Andrews, Maryland.

From then on, Shnawa translated for the Americans frequently at various locations. They not only provided supplies and essential aid, but also removed rockets left by the regime from abandoned schools and medical clinics.

"I witnessed, time and time again, the good deeds of the U.S. and coalition forces in the Sunni and Shia regions of Iraq," Shnawa said.

Side by side, coalition troops trained new Iraqi forces, acquired contracts to rebuild schools and hospitals and empowered citizens with resources. Shnawa worked with both the U.S. Marine Corps and the U.S. Army, receiving letters of recognition and commemorative coins as tokens of gratitude from every unit rotation.

Shnawa said he loved the work he was doing and he developed an admiration for the different branches of service. Because of them, he felt he was able to help impact his nation on a large scale.

"But the great heroes of the U.S. forces did not get to see what I saw," he said. "While they were trading off for year-long deployments, I was observing. And I observed many accomplishments."

From 2003 through 2008, Shnawa said he watched as the nation grew and improved thanks to the military efforts. But even in all his pride, he said he found himself disappointed; he said he wished the troops who did the work could witness its long-term, positive impact.

To make matters worse, he said, news outlets across the world had turned on the U.S. and coalition forces. From his vantage point, the media coverage was focused too much on bullets and bombs and not enough on the progress.

According to Shnawa, less than 1 percent of the operations he observed were met with violence.

Soon, though, the calculus of danger changed for Shnawa himself. He'd spent years as one of the coalition forces' most trusted translators, but that also meant he was known by the enemy. Insurgent forces could recognize him, he said, and that's when he started to worry – especially thinking about his new bride, Inaam.

In an effort to protect her, Shnawa kept his job a secret from her, sometimes leaving for days at a time without communication.

"He told me he was a computer technician and translator with embassies," Inaam said. "I always knew he was covering something up, and I felt he was in danger."

A year after their marriage, 2008 brought the birth of their first child.

"I thought that because we had a child he was going to be home more often," Inaam said. "After she was born, though, my life was turned upside down."

In November 2009,



Airman 1st Class Saeed Shnawa, 811th Operations Support Squadron, aircrew flight equipment technician poses for a photo at Joint Base Andrews, Md., June 6. Shnawa is an Iraq native who served as a translator for coalition forces during Operation Iraqi Freedom and enlisted in the U.S. Air Force in 2017. (U.S. Air Force photo by Senior Airman Alyssa D. Van Hook)

Shnawa locked his phone and disappeared for longer than ever before.

"That was the worst seven months of my life," Inaam said.

In order to keep his family safe, Shnawa had decided to cut off all contact with his wife while gone working with coalition forces.

"When my baby came, I had to make a choice," Shnawa said. "I was living in paranoia and knew I was being watched."

Finally, he returned home to Inaam, but was unable to give her answers about where he had been or what he'd been doing. He only told her he was ok. Too soon after, he had to leave again. And again.

Something changed when Shnawa left for another mission in late 2010.

"This time it was different, I just knew it," Inaam said. "He sent me a message saying, 'I'm going to find a better life for us,' and turned off his phone. I cried frequently and did not know what to do. I just waited in fear for him to call me."

Shortly thereafter, Inaam remembers an individual from the village came to her brother and asked questions about Shnawa.

"He came forward questioning whether or not my husband was a translator for the American Forces," Inaam said. "I told him I was sure he was not, but I was still warned. He said, 'They know you are the wife of Saeed Shnawa. If you want your family to remain alive, then do not leave the safety of your home.'"

She complied. Finally, her husband broke the silence. One call turned into a few text messages, followed by daily email. Her fear began to give way to hope.

Inaam still didn't know where he was -- and she never would've guessed he had escaped to Jordan and sought asylum in the U.S.

"I knew if I stayed in Iraq, my family and I would not survive," Shnawa said.

It was 2011 when Inaam finally got the whole story. "He called me from America and finally told me everything," she said.



Airman 1st Class Saeed Shnawa, 811th Operations Support Squadron, aircrew flight equipment technician, displays his commemorative coin collection, at Joint Base Andrews, Md., June 6. Shnawa received coins and letters of commendation for his work with the U.S. and coalition forces during Operation Iraqi Freedom. (U.S. Air Force photo by Senior Airman Alyssa D. Van Hook)

Inaam said she spent much of the next two years being interviewed at the U.S. Embassy in Iraq. Whenever they could schedule it, they spoke on the phone.

"It was hard, but so much better than before," Inaam said. "I finally had assurance that he was alive."

In January of 2013, after more than two years apart, Inaam was finally reunited with her husband in the U.S. The disappearances, the hiding, the fear – it was over.

"When I arrived here, I felt a sense of peace," Inaam said. "We started a better life together."

Shnawa, however, said he still had a dream to fulfill.

"I hold a tremendous amount of honor toward those troops in Iraq," Shnawa said. "It's something I will never be able to describe. I used to wonder, 'Will I ever get the chance to do their job, in their uniform?' Before, I wrote it off as an impossible dream."

In 2017, Saeed came home with his citizenship papers and an idea his wife did not expect to hear.

"After all the dangerous things he had done, he still wanted to join the military!" Inaam said. "Of course, I said absolutely not."

"And I didn't blame her," Shnawa said. "No one in the world could blame her because of the torture I put her through."

After they spent time researching the different service branches, Inaam said she started to warm up to the idea.

"I realized it was different than his service in Iraq," Inaam said. "Together we made the decision he would enlist in the Air Force."

This time, the separation had an entirely different meaning.

"When Saeed left for Basic Military Training, he reminded me of all the bad things that happened to us and our country," Inaam said. "He said, 'Good people here in America saved our lives. I want to serve this country because of those heroes, and all they sacrificed for us.'"

