

Innovative approach by Arnold craftsman makes task faster, less strenous

By Bradley Hicks AEDC Public Affairs

It doesn't slice. It doesn't dice.

It doesn't have stain-fighting power to make your whites whiter and your brights brighter. It won't make you look 10 years younger or give you six-pack abs.

It won't keep your boat with the screen door bottom from sinking.

But, James "Trapper" Landon's recent invention has been deemed an overwhelming success, as the innovative approach has transformed an important, yet laborious, task assigned to several machinists in the Arnold Air Force Base Model and Machine Shop. The device has simultaneously boosted efficiency and reduced injury risk. An arduous job that once had to be performed manually can now be completed almost entirely with the press of a switch.

According to those in the shop, the lapping process at Arnold has never been faster or safer thanks to the Trapper Lapper 5000.

The Trapper Lapper 5000 has been in use for several weeks in the Model and Machine Shop. When the mechanism was first implemented, Landon, an inside ma-

See CRAFTSMEN, page 4



James "Trapper" Landon, an inside machinist in the Arnold Air Force Base Model and Machine Shop, center, watches as Outside Machinist Joel Sizemore, left, and Inside Machinist Ronnie Matlock put the Trapper Lapper 5000 to use. Landon, with the help of fellow machinists, developed the device to increase the speed and lessen the strain of the lapping process. (U.S. Air Force photo by Bradley Hicks) (This image has been altered by obscuring badges for security purposes.)

AEDC PWT facility in 30th year as international historical landmark

A Titan III with a Manned Orbiting Laboratory for the Gemini is readied for testing in the 16-foot supersonic wind tunnel at Arnold Air Force Base. The tunnel is one of the three wind tunnels that make up the Propulsion Wind Tunnel. In 1989, PWT was designated an International Historical Landmark Engineering by the American Society of Mechanical Engineers. (U.S. Air Force photo)



By Deidre Ortiz AEDC Public Affairs

In 1989, the American Society of Mechanical Engineers designated the AEDC Propulsion Wind Tunnel facility at Arnold Air Force Base an International Historical Mechanical Engineering Landmark.

three wind tunnels, the 16-foot transonic 16T, 16-foot supersonic 16S and the aerodynamic 4-foot transonic 4T.

It is devoted to aerodynamic and propulsion integration testing of largescale aircraft models. Basically, PWT provides AEDC customers with complete testing and analysis capabilities.

General Henry H. "Hap" Arnold,

casion, a ceremony was held in Novem- the building of PWT. He asked Theober of 1989, and AEDC retirees who dore von Kármán, a renowned aeronauhad once worked at PWT were invited tical scientist, to survey German aircraft to attend the event.

wind tunnel facility for testing full-size in a recommendation that a flight test and large-scale models of aerospace facility be built. hardware. The facility is made up of

In recognition of the momentous oc- AEDC's namesake, was instrumental in development facilities as soon as World PWT was the United States' first War II was over. That survey resulted

See TUNNEL, page 5

New group providing new hires with networking, development opportunities

By Bradley Hicks

AEDC Public Affairs

New hires may often be unsure of who to turn to for help on a project, have questions about the structure of the organization they work for, or want more information on what they can do to help their company prosper.

A group was recently formed to provide new hires with the Test Operations and Sustainment contractor at Arnold Air Force Base, National Aerospace Solutions, and its subcontractors with an environment for quality networking, career development and stewardship.

kicked off with a general interest meeting March 29. Future plans

for the group and ways in which NextGen can bolster professional development among its members were discussed during the gathering.

Although open to all NAS employees and its subcontractors, the target audience for NextGen is new employees, early career employees, recent graduates and those in their first five years at Arnold.

Tyler May, a modeling and simulation engineer who serves as president of the NextGen Board of Officers, spearheaded the establishment of the NextGen group.

"The goal of NextGen is to That group, dubbed NextGen, provide a place where new hires can network, get to know each other, See **HIRES**, page 6



National Aerospace Solutions General Manager Dr. Richard Tighe, right, speaks to those who attended the March 29 NextGen kickoff meeting. The group was formed to provide networking and professional development opportunities to new NAS employees. (U.S. Air Force photo by Bradley Hicks) (This image has been altered by obscuring the screen and badges for security purposes.)



Special Olympics volunteers needed HIGH MACH Arnold **Air Force** Base **AEDC Public Affairs** To volunteer, register at the link located on the Volunteers are needed AEDC Team site under for the Area 13 Special the announcement titled, Olympics scheduled for "Special Olympics - 2 May 2, 8:30 a.m. to 2 May 19." Select the "Sign p.m. at Tullahoma High up to Volunteer" link lo-GINEERING OFVELOPMENT School. cated in the announce-The rain date is set for ment. May 7. When the registration Col. Scott Cain Volunteers will aspage opens, insert your Commander sist in chaperoning the name and other informa-Jason Austin Olympians, scorekeeping, tion in the bullets that Chief, award presentation and apply. Once the form is **Public Affairs** Special Olympics other activities. This is complete, click on the an opportunity to demon-"Save" button. strate AEDC support in lo-

Richard Tighe General Manager, National Aerospace Solutions **High Mach Staff:**

Kathy Gattis, NAS Executive Editor

Jill Pickett NAS Editor

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For more information, call 931-454-4311.

Arnold Legal Office commemorates National Crime Victims' Rights Week, April 7-13

By Leslie McGowan Arnold AFB Legal Office

cal community activities.

The Arnold Legal Office, in commemoration of National Crime Victims' Rights Week, April 7-13, is raising awareness about crime victims' issues and rights and introducing the community to the important resources and services available.

According to the most recent Bureau of Justice Statistics' National Crime Victimization Survey, U.S. residents age 12 Hope for the Future. - encourlion violent victimizations and and respect toward the crime U.S. households experienced an victim advocates, allied profescrimes in 2017.

and services.

The Office for Victims of survivors. Crime, or OVC, leads communities throughout the country in their annual observances of NCVRW by promoting victims' rights and honoring crime victims and those who advocate on their behalf. This year's theme – Honoring Our Past. Creating

NCVRW is an annual ob- for increased rights for crime and highlight issues surroundservance to bring communities victims. The theme also invites ing victimization on April 12 together and educate the public us to look toward a future of in- at 1 p.m. in the Administration about victims' rights, protections clusive, accessible, and innova- & Engineering building, room tive resources and services for B120. Anyone interested is in-

The OVC and the Arnold Legal Office encourage widespread participation in this week's events and in other victim-related observances throughout the year. OVC will host the annual National Crime Victims' Service Awards Ceremony in Washington, D.C., to honor outstanding or older experienced 3.1 mil- ages commemoration, honor, individuals and programs that serve victims of crime.

vited to honor champions in advocating for expanded support and services to communities affected by crime and to become familiar with our local agencies and resources available.

For additional information about this year's NCVRW and how to assist victims in your community, contact the Victim Witness Assistance Program coordinator at 931-454-4657. The Arnold AFB Legal Of- For additional ideas on how to estimated 13.3 million property sionals, and selfless volunteers fice will commemorate the ad- support victims of crime, visit who have courageously worked vancement of victims' rights the OVC website, www.ovc.gov.

Free tax help available

By Leslie McGowan Arnold AFB Legal Office

approaching and the Arnold call the Arnold AFB Legal

will continue until the yearly at The 2018 tax deadline is 15. Eligible personnel may for their appointment. continues to offer free Vol- schedule an appointment.

tax filing deadline of April *mypay.aspx* before arriving sultant at 1-800-242-9647.

Air Force Base legal office Office at 931-454-4657 to self" tax returns, Military the paper forms, these forms One Source has a free fed- are now available online for

pointments are available and from the MyPay website cost by speaking to a trained https://mypay.dfas.mil/ Military OneSource tax con-

If you prefer to file your If you prefer "do-it-your- federal and state taxes using

Department of the Air Force, Arnold AFB, AEDC, NAS or Lakeway Publishers, Inc. For general information about High Mach, call (931) 454-5655 or visit www. arnold.af.mil.

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Values

· Ethics. We are uncompromising in our integrity, honesty, and fairness. · Safety & Health. We are relentless in keeping people safe from harm, and we provide a safe and healthy work environment.

 Security. We are disciplined and vigilant in protecting sensitive AEDC information and ensuring system integrity to support national security and our customers. · Excellence. We thrive on challenge, accomplishment, and mission success Quality. We are passionate about doing

our work right the first time. · People. We have a mission-focused, inclusive workforce who have a diverse skill set, are committed to success, demonstrate innovation and have a can do attitude.

· Culture. Our team is proud of our diversity, inclusiveness, and collaborative work environment. We are proud of what we do and how we do it.

· Relationships. We build positive, longterm business relationships through trust, respect, and collaboration.

· Innovation. We overcome challenges through creativity, perseverance, technol-ogy, and flexibility. We actively seek to continually improve.

4

· Sustainability. We plan and act for the long term benefit of our communities and our environment.

unteer Income Tax Assistance, or VITA, for eligible vide tax preparation up to forms tax preparation and an www.irs.gov or through the personnel.

members, retirees and their rental properties and Sched- dependents through their program, Free File, at www. dependents are eligible to ule A itemizations. However, website at www.militaryo- irs.gov where individuals receive these free services. taxpayers filing taxes that *nesource.com*. The website who makes less than \$64,000 This year, the legal office are beyond the VITA scope allows tax filers to utilize a can also e-file for free. For will be able to provide tax of training and certification, free online version of H&R more information, call the services to other categories with complicated returns Block. The software is a sim- legal office at 931-454-4657. of filers including DOD ci- such as non-deductible IRAs, ple question and answer provilians whose total income is businesses involving em- gram that is a quick and easy military tax assistance proless than \$55,000.

assist tax filers in prepar- and losses, will need assis- program also allows military IRS Information VITA line at ing, reviewing and electroni- tance from a paid profes- members the option to e-file 1-800-829-1040. If you are cally filing their income tax sional preparer for tax assis- their state returns for a small interested in assisting taxreturns. Most customers re- tance. ceive their refund within two

weeks. Tax assistance ap- access and print their W-2s garding tax questions at no call 931-454-4657.

VITA volunteers can pro- eral and up to three state tax download and printing at Advanced and Military certi- e-filing program available to individual state tax websites. All active-duty service fication levels, which include military members and their The IRS also offers a free tax

Those not eligible for the ployees and inventory, and way to complete and e-file gram may locate their near-Trained IRS volunteers complicated capital gains your federal tax returns. The est VITA site by calling the fee. You can also receive payers with tax preparation at Military members should military specific advice re- the Arnold AFB Legal Office,



- 1. The following revised Arnold AFB smoking policy is effective immediately and applies to all individuals on Arnold AFB.
- 2. Traditional Tobacco products (e.g. cigars and cigarettes):
 - a. 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.
 - b. 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.
 - c. 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.
 - d. 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.
- 3 Smokeless Tobacco products (e.g. snuff and dip):

Smokeless tobacco products are not to be restricted 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)

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. Scott Cain **AEDC Commander**

Arnold Fire and Emergency Services team members recognized



Rich Tighe, left, general manager for the AEDC Test Operations and Sustainment contract, recognizes Arnold Air Force Base Fire and Emergency Services team members March 8 for their response to a recent sandblasting incident when a TOS team member sustained an injury. Tighe presented certificates thanking the team for their "responsiveness and decision-making" which "made a major difference in the life of one of our employees." Also pictured from left. are Facility Support Services contract FE Services team members: Firefighter Crew Chief Kip Luttrell, Paramedic/Firefighter Cory Friend, Driver/Operator Ken Locker, Assistant Chief for Operations Gary Horn, Firefighter Justin Wiser, Firefighter T.A. King, Driver/Operator Brandon Gunn, and not pictured Driver/Operator Roger Whitton, Paramedic/Firefighter Brian Taylor and Driver/Operator Lonnie Brown. (U.S. Air Force photo by Jill Pickett)

Water update: Arnold Air Force Base water is safe to drink

By AEDC Bioenvironmental Engineering

During routine potable water sampling on base in June 2017, AEDC discovered drinking water sources which had elevated levels of lead in the potable drinking water. The EPA action level is any detection above 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). These sources have been labeled, the water fountains have been disconnectbeen notified of this issue.

Any detectable level of lead in the water is of concern, but the limits that were water provider or visit EPA's website at ently. detected, do not pose an immediate health *www.epa.gov/lead* to find out how to have risk to the base population. Rest assured it tested for lead. that our bioenvironmental engineering team's priority is to do everything we can water, installation of equipment for corroto make sure your health and safety are sion control treatment is complete. Optiprotected.

lyze drinking water. Immediately following the high results, a technical team sam- the TDEC. pled 100 percent of all drinking fountains, for lead. Sources with high lead rates were Engineering at 454-5351. immediately removed from service. Additionally, water coolers identified for having For Your Information lead components and those in industrial areas were removed from service. All of the sources at your home, contact your local

mal Corrosion Control Treatment includes to infants, young children, and pregnant pH adjustment and the addition of corroinsoluble scales to prevent lead and copper dren. from leaching from pipes into the drinking water. We expect to see results of this treat- blood pressure can be affected by low levment in future lead testing. The Tennessee Department of Environevery six months until Arnold AFB can bones, which may affect brain develop-It is common for facilities built before demonstrate repeatable results below the ment. established action levels. Bi-weekly water

cause they are more likely to have been quality parameter samples (pH, alkalinity, to lead in drinking water by the following: built using lead pipes. The Arnold AFB calcium, conductivity, temperature, and in water chemistry lab is EPA certified to ana- the future corrosion inhibitors) continue seconds to flush out the water in the fauevery two weeks. Results are submitted to cet body and home plumbing. This is the

For more information call the water from a home tap. ice machines and food preparation sinks utility at 454-6066 or Bioenvironmental

According to the EPA, lead can cause sources, and will affect individuals differ-

For further protection of our drinking tion of red blood cells that carry oxygen to plated brass faucets and fixtures with lead all parts of your body.

(I) Run the cold water 15 to 30 source of lead in almost all drinking water

(II) Drink and cook with cold water only, do not use hot water for preparing baby formula.

(III) Please note that boiling water does not reduce lead levels.

Lead is a common metal found in the ed and personnel in those buildings have replacement coolers have been installed. serious health problems if too much enters environment. Lead can also enter drink-If you are concerned about lead in water your body from drinking water or other ing water when service pipes that contain lead corrode, especially where the water has high acidity or low mineral content Lead can cause damage to the brain and that corrodes pipes and fixtures. The most kidneys, and can interfere with the produc- common problem is with brass or chromesolder, from which significant amounts of The greatest risk of lead exposure is lead can enter into the water, especially hot water. The MCLG, or maximum contaminant sion inhibitors to promote the formation of of lead on the brain with lowered IQ in chil- level goal for lead is zero mg/L. It is the level of a contaminant in drinking water Adults with kidney problems and high below which there is no known or expected risk to health. MCLGs allow for a margin of safety. The action level for lead Lead is stored in the bones, and it can is 0.015 mg/L. It is the concentration of a ment and Conservation has assigned 20 be released later in life. During pregnancy, contaminant which, if exceeded, triggers specific sampling sites which will be tested the child receives lead from the mother's treatment or other requirements which a water system must follow.

This plan includes:

1. Installation of an optimized corrosion control treatment system (treating the water to make it less likely that lead will dissolve into the water.)

2. Evaluation of source water treatment (ensuring that lead concentration in Arnold AFB drinking water is below the EPA action level.)

3. Institute a public education program. 1986 to have detectable levels of lead bewomen. Scientists have linked the effects

els of lead more than healthy adults.

For media-related questions contact The consumer can reduce their exposure AEDC Public Affairs at 931-454-4204.

Officials warn about impact of distracted driving at Arnold AFB

By Kathy Gattis

AEDC Public Affairs

April is Distracted Driving Awareness Month and members of the Arnold Engineering Development Complex Security and Safety offices at Arnold Air Force Base are asking drivers to pay attention and stay focused when behind the wheel.

AEDC Chief of Integrated Defense Keith Davis says there are a number of ways officers can assess driving and pull someone over for suspected distracted driving.

"A driver looking down or not at the roadway ahead of them; vehicle drifting; erratic braking and speed that doesn't coincide with current traffic flow are just a few of the ways we can determine if someone is distracted," Davis said.

"Arnold Department of Air Force detectives and Security Services contractors can stop anyone on government property for distracted driving. Depending on the seriousness of the circumstances of the violation, we may contact the Tennessee Highway Patrol, the Coffee County Sheriff or Franklin County Sheriff's offices as well as issue an Armed Forces Traffic Ticket or Arnold AFB." a DD Form 1408."

tor, receives multiple DD 1408s, they can (I). When two or more violations are com- all government-owned property - Watlose driving privileges at AEDC for a specified period of time or permanently dependent upon the seriousness of the infraction or number of tickets received over a given time frame.

The AEDC commander sees all of the 1408s. According to regulation, the installation commander has the authority to issue, suspend, revoke, deny or reinstate installation driving privileges.

Separate and apart from the Commander's authority, a traffic points system is used to determine the status of driving privileges. It's in accordance with the Arnold AFB Integrated Defense Plan, Appendix 4 to Annex C, 6 Nov 18 t. (U) Traffic Point System, Traffic Plan.

"The traffic point system provides a uniform administrative device to impartially judge driving performance," Davis said. "This system is not a disciplinary measure or a substitute for punitive action. It applies to all drivers within the jurisdictional limits of Arnold AFB, drivers of government or contractor vehicles both on and off Arnold AFB, and military personnel operating privately owned vehicles both on and off

Points are assessed for each violation If an employee, government or contrac- (IAW AFMAN 31-116 and AFI 31-218

mitted on a single occasion, points can be tendorf Highway, military housing, the assessed for each violation. If a driver accumulates six or more points within six months, a letter is addressed to the appropriate commander, division or branch chief or management representative. The person ery day and 100 more are injured because is counseled on driving habits and the consequences, including revocation or suspension of installation driving privileges for 12 months.

Safety manager, knows distracted driving is a concern, so his team is developing safety campaigns to focus on it.

"I have seen workers being in a hurry to get on the road to head home and checking their phones," he said. "I understand that some people who work in restricted areas or have poor reception in work areas want to catch up with what they have missed during the day, however, they are taking an unnecessary risk while driving distracted and endangering others. Not to mention that holding the phone in your hand while driving is prohibited."

Wolfe is correct. The AEDC Commander's Policy requires drivers to use hands-free technology when driving and talking on a cell phone. This applies not only for the industrial complex, but on

Wingo Inn and the Arnold Lakeside Center. The policy applies to government and contractors.

Nationwide nine people are killed evof distracted driving according to statistics provided by the National Highway Transportation Safety Board.

Wolfe remembers working with some-Chris Wolfe, AEDC Occupational one who lost his teenage daughter due to distracted driving.

> "Shortly after merging into a four-lane road, she continued in the far right hand lane and began texting her friend. The friend she was texting was actually where she was driving to and only a few minutes away. While she was chatting in the text, she failed to notice a large truck that was stopped in the slow, far right lane ahead of her. She ended up driving into the back of the truck at full speed and was instantly killed. While telling the story, her father mentioned that the phone was still in her hand when he arrived at the scene."

> If you see someone who appears to be distracted while they are driving at Arnold AFB, pull over to the side of the road and call Arnold Protective Services at 931-454-5662

CRAFTSMEN from page 1

chinist who has worked of contact between the in my sleep." at Arnold for 14 years, said word of his creation spread quickly, prompting fellow craftsmen in the shop to stop by and get a look at the Trapper Lapper 5000 in action.

bunch of people to come old-fashioned out here and say, 'We've Lapper," he said.

The development of the Trapper Lapper 5000 began with an assignment. Landon, fellow Inside Machinist Ronnie Matlock and Outside Machinist Joel Sizemore used by a test facility at Landon said. Arnold. It would be the responsibility of the trio to individually lap the numerous sockets found on the cylindrical rotor.

Lapping is done to ensure the blades seen on the outside of the romaintain optimal contact with the rotor itself. Before a blade is bolted to the rotor, the sides of each socket must be formed so that they match up with the blade stub shaft, which is the portion inserted into the socket.

To accomplish this, the stub shaft of each blade is placed in its assigned socket. A brace is placed over top of the blade and the blade is then slowly turned. Through this process, the blade stub shaft will gradually resurface the sides of each socket allowing the blade to fit Landon's subconscious. snugly within.

blades and rotor is required to eliminate any "You run into a problem, vibration. The goal is for and you're either stuck each blade to maintain a in the mud or you've got minimum of 90 percent to do something." It was contact.

Initially, the machin-"There has been a ists relied upon good, grease to complete the tendent Bob Williams heard about the Trapper lapping. A small metal crank was placed over the blade and atop the brace, and the crank was turned by hand.

> Landon early on that the lapping would be no easy feat.

were tasked with assist- hole I worked on, I know ing in the rebuild of a I turned it 900 times and large compressor rotor I wasn't even close,"

> continued to turn. And turn. And turn.

all that turning began to the device. The two diftake its toll. Sizemore fer in that drilling is done sought ways to alleviate backaches. Landon said he started experiencing tapping is used to create "heavy arms" and pain threads along the sides of underneath his shoulder the hole. blades.

ing, and I said, 'There's on moved on to the next got to be a better way," Landon said. "So I was process - the construcsitting there looking at tion of a fixture that the compressor, and I could be attached to the thought, 'If there was rotating portion of the only a way I could reach down in there and turn that right there where it needs to be, just like the "cage" to go over top of manual thing, but with a the blade and sit atop the drill or something.""

the lapping process easier even found their way into blade mirrored the design

"I actually had a Because the compres- dream about this crazy take full credit for the sor rotor operates at sev- thing," he said. "A dream Trapper Lapper 5000, as eral thousand rotations doesn't last 5 seconds, the input of his fellow per minute, a high level but it just kept recurring machinists helped bring

But, as Landon said: time for action.

Landon was given permission by Precision elbow Machine Shop Superinto work on his idea. He found within the Model and Machine Shop just what he needed to get started on the Trapper discovered Lapper 5000 – a flex-arm tapping machine.

"One day I walked "I noticed that the first by that dang tapping thing and went, 'That'll work," Landon said.

A tapping machine is similar to a drill. Both Yet the machinists are used to bore holes into materials such as wood and metal via bits It wasn't long before attached to and spun by when a hole with smooth sides is wanted, whereas

After borrowing the "That started happen- tapping machine, Landstep of the development tapping machine while holding the rotor blade in place. He crafted a metal brace over the socket. Thoughts of making The portion of the attachment used to hold the of the manual crank.

Landon said he can't



Arnold Air Force Base Outside Machinist Joel Sizemore demonstrates the manual manner in which machinists had to perform the lapping process prior to the advent of the Trapper Lapper 5000. (U.S. Air Force photo by Bradley Hicks)



James "Trapper" Landon, an inside machinist in the Arnold Air Force Base Model and Machine Shop, left, shows one of the cages he constructed for the Trapper Lapper 5000, a device developed to speed the lapping process. In the background, Outside Machinist Joel Sizemore puts the Trapper Lapper 5000 to work. The device allows for the automation of a process that previously had to be performed manually. This image has been altered by obscuring badges for security purposes.

the device to fruition.

we've all had good ideas son so that two systems on it," Landon said. "Ev- can be used at the same erybody played a big part time. in it."

design didn't work as machinists are currently type – changing the shape the daily completion of of the cage from a "halfmoon" to a full circle. was solved.

"As we've gone along, Machinist Michael Simp-

Between the compres-Landon found his first sor rotor on which the well as he had planned. working and the rebuild The cage was "walk- of a backup rotor, there ing off" the center of the are more than 380 sockbrace as it rotated which ets that have to be indibe more egg-shaped than the advent of the Trapper the world's preeminent round, thus prohibiting Lapper 5000, the machinthe desired contact be- ists were able to complete tween the blades and ro- the lapping of around tor. Matlock suggested a four sockets each day. modification to the proto- Now, they are averaging around eight. "This is quiet. It's With that, the problem safe. It's efficient. It's ergonomic," Precision "The second one was Machinist Planner Danny Owens said of the Trapper Lapper 5000 method. And Owens knows all about the impact the The Trapper Lapper manual lapping process 5000 was able to quick- can have on the body. He previously worked as a machinist in the Model and Machine Shop and once performed the man-"Joel, he didn't even ual lapping of rotor sockets.

backup option by Inside erybody and improve efficiency," he said.

Innovation is important at Arnold and is a key focus in the U.S. Air Force Vision. From the start, the Air Force has innovated itself into a global projection of military power through air, space and cyberspace. The Air Force mainwould cause the socket to vidually lapped. Before tains its distinction as force in these three areas by maintaining its objective of global vigilance, reach and power and remaining true to its vision statement: "The World's Greatest Air Force -Powered by Airmen, Fueled by Innovation." "When it comes to innovation, we need to think big, start small and scale fast," Air Force Chief of Staff Gen. David L. Goldfein said, when offering his perspective on innovation to Air Force Materiel Command.". David Miller, Technology Development Group Manager for the Test Operations and Sustainment contractor at Arnold AFB, previously said innovative approaches occur across AEDC mission areas. "Innovations have run nical competencies and all have provided measurable and objective enhancements to mission accomplishment," he said. "Innovative approaches to logistics, test support, manufacturing, engineering solutions and information technologies have dramatically enhanced test efficiency and decreased mission risks." And Landon is open to improve the Trapper

the one that really took off," Landon said. "It started running true, and it's still running true."

ly win over its skeptics. Landon said Sizemore initially preferred the old way of doing the job.

want to fool with it," Landon said. "He said, 'I'm fine, I'm fine.'"

That mindset changed the first time Sizemore tried the Trapper Lapper 5000.

"Before I knew it, he started liking it and he just took off with it," Landon said. "He was left and right."

Sizemore even offered his own suggestions, such as joining Matlock in recommending the shape change and cutting in place.

was 6 inches tall and is used to "lap in" smaller for the larger blades.

With each rotor rebuild the shop has completed over the years, steps have been taken to make the process easier. Owens said the creation of the Trapper Lapper the entire gamut of tech-5000 was the next step in this evolution.

"It's been a progresjust knocking them out sion over a five-year period," he said.

Williams said that he relies upon the expertise and problem-solving ingenuity of the craftsmen in the Model and grooves into the brace to Machine Shop, adding allow powerful magnets ideas and suggestions to to more securely hold it improve processes are encouraged and they may Landon's first cage benefit Arnold AFB as a to suggestions on ways whole.

"That's one thing we Lapper 5000. rotor blades. He has since try to do here at the shop constructed a 9-inch cage is encourage everybody to come up with ideas A third Trapper Lap- and try to change things per 5000 was built as a to make it better for ev-

"I'm sure somebody will come along and say, 'Hey, I've got a better idea.' And that's fine," he said.

Air Force Profile: Capt. Jonathon Dias

By Deidre Ortiz

AEDC Public Affairs

This release is part of a series of profiles highlighting the contributions of our military and Department of Defense personnel at Arnold Air Force Base.

According to Capt. Jonathon Dias, being a test manager for the Aeropropulsion Combined Test Force at Arnold Air Force Base means wearing "a couple different hats."

"As test manager, I'm the government interface between the test customer and AEDC," he said. "I'm responsible for ensuring the overall planning and execution of the test gets done as seamlessly as possible. I track the cost, schedule and performance of the program and orchestrate communication between the various stakeholders of the program, which typically include the Test Operations and Sustainment contractor, the government and the customer."

In addition to this role, Dias serves as the Aeropropulsion Assistant Director of Operations, or ADO.

"As ADO I handle the overall schedule development and resource de-confliction for the entire CTF," he said. "The process of appropriately managing and allocating AEDC resources through the Test Integration Group is fairly involved, pulling in parties from resource areas and mission areas all across the base."

Dias gradually gained these responsibilities, starting three years ago as a test engineer at Arnold before stepping into the test manager position.

He enjoys what he does, stating that with responsibility comes opportunities for learning and experience.

sense of responsibility that comes with pulsion technology. Where else can you managing a high-dollar, high-visibility defense test program is incredibly em-



While standing in the Sea Level 2 test cell at Arnold Air Force Base. Capt. Jonathon Dias, test manager with the Aeropropulsion Combined Test Force at Arnold Air Force Base, speaks about the test capabilities of the cell. (U.S. Air Force photo by Jill Pickett)

powering, especially if you understand AEDC mission is not something that how your program fits in the overall National Defense Strategy," he said. "I'm only a tiny cog in the wheel, but it's an important wheel.

"Beyond that, I've gotten to see and "The personal ownership, pride and touch the latest and greatest in aero prodo that?"

one person accomplishes on his or her own but is a team effort.

"It's been a true pleasure to work with this team under the CTF construct," he said. "You've got this fairly complex organizational chart with government personnel and contractors from different functional areas across Dias added that performing the the base, not many of whom actually one again."

report to the same person, all coming together to get the job done.

"There is so much cooperation, knowledge sharing, and teamwork that goes on; regardless of who signs your paycheck, everyone works to get the mission done. Do we always do it perfectly? No, but at the end of the day everyone gives 100 percent to get the job done."

Born and raised in Indianapolis, Indiana, Dias initially had aspirations of one day joining the Air Force and becoming a pilot.

"I've always wanted to fly, but I was medically disqualified for issues with my vision," he said. "Though, as an engineer, it's rewarding to see a jet flying overhead and know that you were part of the team that put that magnificent machine in the air."

At the end of his work day, Dias goes home to his wife, Yekaterina, and their three daughters.

"They are so much fun," he said. "Playing and spending time with my girls is the best part of my life."

He also has many hobbies, one of which is music.

"I dabble as a barely passable musician at church on the weekends, playing either guitar, bass or the drums," Dias said. "I enjoy the occasional woodworking project, backpacking, hiking, running, boating wakeboarding, waterskiing and traveling to explore this amazing planet of ours."

In a month Dias will have a new area to explore as he is being assigned to another duty station.

"We are on our way out the door, heading to Wright-Patterson Air Force Base in May," he said. "I'll miss working here, I've immensely enjoyed the opportunity to spend some time at AEDC. There's no place quite like it, and I doubt I'll ever have a job like this

TUNNEL from page 1

ficial planning for PWT began multi-view pressure sensitive when the Air Force Research paint data acquisition system and Development Board on installed in 16T during 1999. Facilities met with representatives of aircraft propulsion funded Propulsion Wind Tuncompanies. During the meet- nel Sustainment Program proing, the group agreed that in- vided AEDC with \$80 million dustry needed a supersonic to upgrade PWT with the 21st PWT with a 15-foot-diameter century testing technology. test section. posal for design, construction, and operation of a scale model of PWT's transonic circuit was has contributed to practically approved by AEDC's commanding general in December 1951. Thus, the initial test fa- Some of the more well-known cility was a one-foot cross-section prototype transonic tunnel. uteman, In June 1953, AEDC conducted launched cruise missile, space PWT's first test on a 0.03-scale shuttle, the F-15, F-16, C-5A, model of the Bomarc missile X-29 and B-1 aircraft. Cusfor Boeing.

Then in January 1950, of- facilities. The center had a In 2005, the Air Force



cuit - 16-foot test section - un- Administration; the Federal derwent its first powered op- Aviation Administration; U.S. eration prior to calibration.

By January 1961, the entire PWT complex was completed and accepted by the Air tional institutions. Force. The entire project cost Some of the information in was \$78.7 million, which was this release was taken from spread out over 39 contracts.

ability and accuracy of its test High Mach.

Completion of these improve-After much work, a pro- ments fully automated the PWT facility.

Throughout the years PWT every one of the nation's top priority aerospace programs. include the Titan, Atlas, Min-Peacekeeper, air tomers have included the Na-In 1956, the transonic cir- tional Aeronautics and Space Air Force, Army and Navy; private industry; friendly foreign governments; and educa-

the article "PWT Is Histori-Over the years, AEDC has cal Landmark," which ran in worked hard to ensure the vi- the November 1989 edition of

A scale model of the Titan III booster system for the X-20 Dyna-Soar manned orbital glider is mounted for testing in the Propulsion Wind Tunnel's 16-foot supersonic wind tunnel (16S) in 1963. (U.S. Air Force photo)



A highly instrumented C-17 model, with 15 remote-controlled surfaces was tested in 16T at Arnold Air Force Base in 1983. (U.S. Air Force photo)

A 0.0175-percent scale model of NASA's space shuttle orbiter, solid rocket booster and external fuel tanks underwent aerodynamic testing in tunnel 16-foot Transonic wind tunnel at Arnold Air Force Base. (U.S. Air Force photo)

HIRES from page 1

and get familiar with everyone else's roles on the base" May said. "Across multi-disciplinary the teams at AEDC, who you know is incredibly important. Therefore, good communication and a solid network to fall back on can be a significant asset. For example, if I need data from a specific tunnel or test. I should be able to call someone who I met at a NextGen function expecting that they will point me in the right direction."

May, who has worked at Arnold since September 2017, said he was inspired to start NextGen after someone in his new hire training class commented that a similar group existed under a previous contractor but NAS did not have an organization dedicated to

working opportunities.

"I walked out of orientation thinking that I needed to get involved in some kind of initiative," May said.

rie Winton, an engineering RSVP for the March 29 knowledge specialist, to bring NextGen to fruition. Late last summer. Winton positive. sent an email looking for employees to serve on the much more interest than NextGen Board of Officers. Since the group's establishment, the NextGen officers have worked with the Office of the General Manager and others to get the organization off the Gen events are already in ground.

Along with May, those serving on the NextGen Board of Officers are: Garrick Muncie, treasurer; Kassandra Brexel, netproviding new hires working chair; and Sara

with information and net- Rhoades, secretary.

An email was recently sent to all employees under the TOS contract to notify them of the formation of NextGen and to give those meeting the May worked with Lau- target group a chance to kickoff meeting. May said the response was very

"We have received we expected," May said. "Almost every new hire that I've spoken to has expressed excitement over an organization like this."

May said future Nextthe works and announcements will soon be forthcoming. He encouraged new employees to strongly consider giving the group a look.



Tyler May, a modeling and simulation engineer with National Aerospace Solutions and president of the NextGen Board of Officers, responds to a question from an attendee of the March 29 NextGen kickoff meeting. Also pictured are Kassandra Brexel, NextGen networking chair, left, and Garrick Muncie, Next-Gen treasurer. (U.S. Air Force photo by Bradley Hicks) (This image has been altered by obscuring a screen and badges for security purposes.)

network and participate tage of this opportunity "This is going to be the ment in their upcoming for more announcements 6511.

have to meet each other, urge them to take advan- said. in professional develop- and to keep their eves out on NextGen, call 454-

biggest chance new hires time at NAS, and I would in the coming weeks," he

For more information

AFSPC hosts Space Futures Workshop

By 1st Lt. Noah Emerson Air Force Space Command

Public Affairs

PETERSON AIR FORCE BASE, Colo. (AFNS) – The Air Force Space Command (AF-SPC) Space Futures Workshop Academy, March 19-21, giving experts the chance to collaborate and predict what space will look like in the next 20 to 40 years.

vided by Maj. Gen. John Shaw, future. AFSPC deputy commander, and chief scientist.

Shaw pointed out how space becoming a contested warfighting domain has driven dramatic changes in U.S. government and

such as the workshop.

"That's how the most rapid change happens in human society... it's the presence of a threat," Shaw said. "The question is: how do you stay ahead of the threat and react quickly was held at the U.S. Air Force to threats before they get close to you. That's a big challenge we're facing."

Joseph summarized the importance of the workshop and Opening remarks were pro- of looking forward towards the

"We have to anticipate where Dr. Richard Joseph, Air Force things are going, where the adversary is going, where the adversary can go, and then be there before they get there," Joseph said.

is the impetus for collaborations for creative, new ideas that will further advance U.S. capabilities and its unfettered access to space.

> Over the course of three days, workshop participants worked to define possible strategic future space scenarios encompassing Social, Technological, Economic, Environmental and Political factors.

Dr. Joel Mozer, AFSPC chief scientist and organizer of the Space Futures Workshop, said the workshop is a message to U.S. agencies and their allies that they must come together in a collaborative effort for space future planning.

"We need to inform our short-term decisions with a long Joseph emphasized the need view in mind," Mozer said. "We

need to come together, work- and published in the coming ing across agencies and with months. industry partners to form a unified front to develop a long-term roadmap for the U.S. and its alplan that anticipates future scenarios."

NASA was among the agencies present at the collaborative workshop. Dr. Douglas Terrier, NASA's chief technologist, presented the space agency's Moon to Mars exploration plans within the context of the proposed fiscal year 2020 budget. Terrier and other NASA officials helped shape the long-term thinking for this government-wide endeavor.

Mozer said the workshop was not only meant to facilitate discussions, but to produce a space futures report to be developed by workshop attendees nation.

"The report will serve as a lies," Mozer said. "Forty years from now, I anticipate many of our predictions of the future of space to have come true. Space is ever expanding and so too must our ambition."

AFSPC is a major command, headquartered on Peterson Air Force Base in Colorado Springs, focused on providing militaryfocused space capabilities with a global perspective to the joint warfighting team. The command's mission is to provide resilient, defendable and affordable space capabilities for the Air Force, joint force and the

Air Force hub uncovers insider threats

By Lori A. Bultman

25th Air Force Public Affairs

JOINT BASE SAN AN-**TONIO-LACKLAND**, Texas (AFNS) - "If you make a mistake, it is better to acknowledge that one small mistake than let it snowball into something more significant." This, according to Jason Barron, Air Force Insider Threat Hub deputy director for operations, is the key to safeguarding important information and resources.

against insider threats, identifying indicators of potential risk is the hub's primary mission, but not all indicators they detect are symptoms of espionage or intentional wrongdoing. According to Barron, most indicators are unintended exposures, or the result of policy and training gaps.

speeding ticket, it does not necessarily mean they did something to indicate they are an insider threat; it all depends on the severity and quantity of unique indicators," Barron said. "We may look for other indicators that, when put together, could mean something more substantial – even then, the team does not act individually against indicators discovered."

According to Barron, personnel in the insider threat hub identify, aggregate, analyze and refer potential risk indicators. established the 25th Air Force The teams relay their findings to other agencies for review and possible action. Additionally, the hub has a lawyer on staff to ensure any referrals are

in accordance with established community. policies and laws.

"We provide information we find to authorities within the Air Force. When we identify something on an individual within the Air Force who might be a risk, whether intentional or otherwise, we provide that information to a decision maker in higher authority who is in place to determine whether an action needs to result," Barron said.

As the Air Force's defense threat information from other sources.

> "We might have a point of contact in the field who relays risk concerns to us," Barron said. "The team in the hub can look into a reported concern and determine whether there is enough to consider it a viable sion in October 2018 to tranthreat."

Workplace violence is an-"If someone is issued a other insider threat concern for the team.

> "If someone commits a security violation but is cleared of espionage, that does not mean there is not a policy issue we could address," said J.T. Mendoza, Air Force Insider Threat Hub deputy director for strategy and integration. "While it is difficult to quantify the damage someone caused when documents or classified items are taken, an act of violence is often more damaging due to human life being involved.

> When Barron and his team Insider Threat Program in 2014, their goal was to stop technical related insider threats before they grew into major breaches for the Air Force intelligence

Within the program, a myriad of staff members from varying backgrounds sifted through data in an attempt to locate indicators of threats and vulnerabilities. In April 2017, Air Force officials had enough confidence in the program capabilities that it became the services interim hub until a permanent Air Force hub could be established.

"During the year we were Hub personnel also receive the interim hub, we put a lot of processes into place. We built a solid foundation from internal analysis, data integration, increases in manpower and capabilities and the implementation of reporting procedures," Barron said.

> The Air Force made a decisition the organization from being the interim hub to the permanent insider threat epicenter, while the team continued to prepare for the transition and acquire more space and personnel. Significant support and coordination from local 25th Air Force and Air Staff leadership was required to achieve this milestone.

> "Preparations for the transition also included establishing the policies and documentation required to run a cooperative matrix organization," Barron said. "We more than tripled the hub staff and added coordinating representatives within each major command."

> "One of the challenges we face is finding the right people and being able to train and develop them into what we believe is the right skill set," he said.



(U.S. Air Force courtesy photo illustration)

"There is no specialty code within the Air Force or department at large for what we do; we are creating most of our procedures as we go. We are where cyber was 10 to 15 years ago."

Another challenge for hub personnel is figuring out how to share data between multiple agencies who might help connect indicators.

"Sharing information between organizations that have different authorities or conduct different missions is difficult," Barron said. "The root of this mission is sharing risk information, just like commanders share information on the battlefield. It is a challenge across any mission set; how do I share the right information, at the right time, at the right level to make a decision?

"What we have done is partner within our matrix organization to put people from different agencies in the same place to allow ease and speed of sharing critical information," he before they become legitimate said. "Having that proximity to threats.

each other really helps speed up processes. If information is not documented and shared in an appropriate manner, you are going to have a hard time piecing dots together to look at information over time and mitigating threats."

Since its inception, the Air Force Insider Threat Program has experienced many successes, ranging from notifying organizations of security shortfalls and identifying indicators of suicide, to de-conflicting individuals' identities in reporting. Its next milestone will be reaching full operational capability status, expected in the next 12 months according to Barron.

The Air Force Insider Threat team encourages all Airmen, military, civilian and contractor, to contact their security office or appropriate chain of command to report potential insider threat incidents, including accidental or unintentional indicators; it could resolve potential incidents



FSS employees recognized for years of service

Managers present their employees with certificates recognizing them for their years of service to Arnold Air Force Base, at an event March 22 at the Arnold AFB Fire and Emergency Services building. Pictured from left is Matt Russell, Facility Support Services Safety, Health and Environmental manager; Steve Arnold, Ground Water Spill Response specialist; Marvin Greeson, firefighter; Jim Evans, assistant fire chief; and Daryle Lopes, fire chief. Arnold has worked at Arnold AFB for 25 years, Greeson for 10 years and Evans for five years. Others recognized, but not in attendance were Daniel Harris, a paramedic/firefighter, 15 years; Tom Lombard, assistant fire chief, 10 years; Roger Whitton, driver/operator, 10 years; James Curtis, paramedic/firefighter, five years; Ginger Dyer, Emergency Communication Center dispatcher, five years; and Brian Taylor, paramedic/firefighter, five years. (U.S. Air Force photo by Jill Pickett)

Stay safe: Know the Confined Space Entry procedures

By AEDC Safety

The 2019 Safety Campaign continues and bins, hoppers, Confined Space Entry.

spaces?

According information on Occupational Safety and Health Administration describe workplaces "confined spaces" because while they are contain not necessarily designed atmosphere; enough for occupancy.

include, but limited to. vessels, silos, the focus for April is on pits, manholes, tunnels, housings, hazards equipment What are confined ductwork and pipelines.

OSHA uses the "permit-required to term the confined space" (permit space) to a confined (OSHA) website, many space that has one or contain more of the following resulted from oxygen areas that are considered characteristics: contains or has the potential to to toxic atmospheres. hazardous а contains for people, they are large material that has the inside a confined space workers potential to engulf to enter and perform an entrant; has walls certain jobs. A confined that converge inward accidents. space also has limited or floors that slope or restricted means for downward and taper into of many confined spaces entry or exit and is not a smaller area which compounds the risks of designed for continuous could trap or asphyxiate exposure to atmospheric an entrant; or contains or

are not safety or health hazard, tanks, such as unguarded storage machinery, exposed live vaults, wires or heat stress.

> There are several unique to confined working in spaces, with asphyxiation being the leading cause of death. The asphyxiations that have occurred in permit spaces have generally deficiency or exposure

> Failure to deenergize equipment prior to employee entry is also a factor in many

The physical nature serious other spaces any other recognized hazards. The elements



Confined

An Arnold Firefighter crawls through a confined space to retrieve an injured worker as part of a rescue training exercise. (U.S. Air Force photo by Rick Goodfriend)

access, and airflow can result in hazardous arise in an workplace.

confined space is one of sewers, boilers in the space.

Through the of hazard analysis for confined the implementation of approved confined hazards of entrants are the main training. countermeasures

of confinement, limited and AEDC to prevent Environmental Standard restricted injury to personnel. All confined spaces conditions must be identified and that would not normally analyzed to ensure the open space is safe for entry. Confined spaces at follows:

Lack of knowledge AEDC may be test cells, • The cause of the of the hazards in the tanks, pits, manholes, and the leading factors for ducts. These locations people suffering injury can possess hazards and may be difficult to exit lockout, etc. use in an emergency.

space, enters a confined space, monitors others entering, • A Confined Space Work grants others approval to space entry procedures, enter or is responsible training and recognition for making a rescue, by must be current on their

developed by industry AEDC Safety, Health and

B5, Confined Spaces, which lists all of the requirements for entry into confined spaces and is summarized as

hazardous atmosphere must be eliminated, such as disconnecting lines, double block and bleed,

• The atmosphere must Any employee who be tested by trained personnel.

> Instruction or Permit has been documented for each active entry.

> • Adequate ventilation must be provided.

Regularly review the • Retrieval or rescue equipment must be available at the entry point during active permit required entries.

> A Hazard Analysis must be documented for each identified confined space.

• Attendants maintain continuous communications with entrants.

• Attendants are not assigned other duties during active entry.

For further information, refer to AEDC SHE Standard B5, which can be found on the Team AEDC SharePoint site.

F-35A maintainers, special ops team up for forward refueling

By 388th Fighter Wing Public (Fighting Falcon) and the A-10 Affairs

this week to provide more combat flexibility to the Air Force.

Airmen from the 26th Special Tactics Squadron and the 27th Special Operation Logistics Readiness Squadron at Cannon AFB, trained and carried out a Forward Air Refueling Point operation from the MC-130J Lightning II.

at a remote airfield secured and controllers. The C-130 crew, made up of loadmasters and fuels troops quickly set up equipment and fuel lines, then transfer fuel from the MC-130J to other aircraft landing behind them – in this case, an F-35A.

The training is a building block in adaptive basing develpower in highly-contested modern warfare. To succeed, Airmen from different platforms train to work together effectively, planners said.

"We're really experienced at FARP operations with fourth- interface with the refueling generation aircraft like the F-16 troops and special-ops guys,"

(Thunderbolt II) but this is the first time we've done it with CANNON AIR FORCE the F-35," said Maj. Meghan BASE, N.M. (AFNS) - Amer- O'Rourke, an MC-130J comica's most advanced aircraft in- bat systems officer with the 9th tegrated with a variant of one of Special Operations Squadron its oldest and truest airframes and one of the organizers of the exercise.

The 9th SOS has refueled For the first time, Airmen F-22 Raptors and is traditionalfrom the 388th Fighter Wing at ly a place where new operations Hill Air Force Base, Utah and are given a trial run, O'Rourke said.

> Expanding FARP operations with the F-35A will provide commanders more options in a near-pear fight where other support may be limited.

"Setting up a FARP gives us Commando II to the F-35A flexibility in planning because we now have the capability to During this forward refuel- land in a remote location, reing scenario, an MC-130J lands fuel, potentially re-arm and go take the fight to the enemy, and managed by Air Force combat the F-35 can bring a lot to the fight." said Lt. Col. Matthew Olsen, director of operations for the 421st Fighter Squadron and one of the F-35 pilots who flew small group of BOLT Airmen." to Cannon AFB.

> er pilots, maintainers, special ring brought three F-35 BOLTs operators and planners.

opment. Adaptive basing is a for the training was adaptive narios like FARP operations, key component to providing air too. A small group of Blended the BOLT program can reduce Operational Lightning Technicians from the 388th Maintenance Group traveled to Canand different specialties must non AFB to provide training ing this 'real-world,' we want and support to the special op- the smallest footprint we can erations airmen.



Two special tactics members observe as Airmen from the 27th Special Operations Logistics Readiness Squadron, Cannon Air Force Base, N.M., refuel an F-35A Lightning II from the 388th Fighter Wing, Hill AFB, Utah, Feb 27. This is the first time the F-35 has been refueled from an MC-130J Commando II during a Forward Air Refueling Point exercise. (U.S. Air Force photo by Micah Garbarino)

said Master Sgt. Dantorrie Herring, 388th MXG. "A lot of lessons learned and we demonstrated that we can do this with a

Instead of bringing a group The training brought togeth- of 12 F-35A maintainers, Herwho are trained in multiple as-The maintenance footprint pects of maintenance. In scemanpower by more than 65 percent.

"If you think about dohave," Herring said. "With "It's been very valuable to adaptive basing and BOLT you don't have to send the whole unit."



Lt. Col. Maxwell Cover, assigned to the 388th Fighter Wing at Hill Air Force Base, Utah, taxis during Forward Area Refueling Point training at Cannon Air Force Base, New Mexico. This was the first time FARP training was conducted by an MC-130J Commando II for the F-35A Lightning II aircraft as it expands its reach and capabilities. (U.S. Air Force photo by Staff Sgt. Luke Kitterman)

Skyborg program seeks industry input for artificial intelligence initiative

By Bryan Ripple

88th Air Base Wing Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFNS) – The Air Force office of Strategic Development Planning and Experimentation at the Air Force Research Laboratory is working on fielding a prototype Autonomous, Unmanned Combat Air Vehicle as an Early Operational Capability as early as 2023.

The program, known as Skyborg, and the SDPE office issued a request for information to industry March 15 to conduct market research and concept of operations analysis to learn what is commercially available now as high technology readiness level capabilities which can meet the requirements and timeline of the Skyborg program.

Skyborg officially stood up as a fiscal year 2019 funded pathfinder program through SDPE in October 2018, according to Ben Tran, Skyborg program manager.

"There was a lot of analysis that determined what was put into the CRFI," Tran said. "We've been given the overall objective to have an early operational capability prototype fielded by the end of calendar year 2023, so this is our first step in determining what the current state of the art is from a technology perspective and from a systems engineering perspective to provide that EOC capability in 2023."

Low cost, attritable, unmanned air vehicles are one way to bring mass to the fight when it comes to addressing potential near-peer engagements in the future, according to Tran.

"We also know there is heavy investment by our near-peer adversaries in artificial intelli-

autonomy and AI with systems like low-cost attritables, that can increase capability significantly and be a force multiplier for our Air Force and so the 2023 goal line is our attempt at bringing something to bear in a relatively quick time frame to show that we can bring that kind of capability to the fight."

Matt Duquette, an AFRL Aerospace Systems Directorate engineer, brings a background in UAV control, autonomy, and modeling and simulation of UAVs, especially teams of UAVs to the effort while assisting the Skyborg program with formulating its approach to the autonomy system and some of the behaviors that the UAVs will have.

"Skyborg is a vessel for AI technologies that could range level to see what type of assurfrom rather simple algorithms to fly the aircraft and control them in airspace to the introduction of more complicated levels of AI to accomplish certain tasks or subtasks of the mission," Duquette said.

This builds on much of the AFRL foundational work with AI shown with programs such as Have Raider and the Auto Ground and Air Collision Avoidance systems, which prove that levels of autonomy in high performance aircraft are not only possible, but also practical.

"Part of our autonomy development is building assurance into the system. You can either build assurance by using formal methods or approaches where at design time, as you develop these autonomous capabilities, you guarantee certain behaviors, scheduled for any particular or a more practical approach is to assess the capabilities of these behaviors at run time, meaning while they're running on the aircraft. So, those are the capabiligence and autonomy in general. ties that we're interested in look-



A Skyborg conceptual design for a low cost attritable Unmanned Combat Aerial Vehicle. (Air Force Research Laboratory artwork)

ance you need in the system so you can mix high and low criticality."

"We're looking at a range of vehicle performance parameters - mission analysis will help us determine what the final outcome is and the responses from the CRFI will help us understand what the performance is of currently available systems and whether those will meet the needs or not. Everything from keeping up with combat platforms to slower platforms for sensing. There will be a range of possibilities there," said Patrick Berry, from AFRL's Sensors Directorate, who is supporting the Skyborg program by conducting modeling, simulation and analysis.

Although Skyborg is not type of aircraft platform at this time, Tran said the CRFI emphasizes the importance of an open systems architecture, having modularity in the system, not only from a sensing capa-We know that when you couple ing at from the experimentation bilities standpoint, but overall

mission systems, as well as the autonomy associated with the mission capability for the platform.

"We've partnered with the 412th Test Wing at Edwards Air Force Base, California, and specifically an organization called the Emerging Technologies Combined Test Force and we're working with them beginning with small, fast-moving UAVs to test the current state of the art in AI and autonomy in those airplanes and the ability for them to autonomously team and collaborate in flight," Tran said.

Machine learning has progressed greatly over the last few years and we're very inspired by those results and excited by things that are going on in the gaming industry for instance," said Maj. Ryan Carr, from AFRL's Aerospace Systems Directorate.

"We expect that technology will continue to mature fairly rapidly. What we really need to understand is, 'How do you take that and do something like borg, the CRFI says.

bring it to the real world and fly with it for example?' The thing we're trying to get at early on is how to do that safely. We're talking about run-time assurance, working hand-in-hand with the flight test community who have a very long record of safe flight testing. That's really what we want to focus our attention on in this early period," Carr said.

"We want to do this in a way that builds trust in the system as you go along so that when you get to that EOC, you will have established a baseline of trust so that operational youth will believe what the system will do or believe it's safe. It's not just that end-state capability, it's the trust as you go along," he added.

Before operational AI innovation can occur, the Air Force must field an autonomous system that meets an immediate operational need and can serve as an iterative platform to facilitate complex AI development, prototyping, experimentation and fielding, and that system is Sky-

Arnold AFB Milestones

35 YEARS

Scott Bartlett, TOS Marty Gordon, TOS Arnold Grigsby, TOS Charles Kurtsinger, TOS Susan Loman, TOS Randy Sherrill, TOS

5 YEARS

Gary Anderson, TOS Chris Curnes, TMAS Ginger Dyer, FSS Marty Finney, TOS Patrick Grogan, TOS Bernard Kefauver, TOS James Mitchell, TOS Gregory Nieman, TOS Deidre Ortiz, TOS Zachary Russo, TOS Brian Taylor, FSS

INBOUND MILITARY Master Sgt. Jason Harlan, AF

OUTBOUND MILITARY Lt. Col. Eric Trad, AF

RETIREMENTS Brian Bennett, TOS Stephen Savelle, TOS Glenn Schmitz, TOS

NEW HIRES

Anotonio Avelino, TOS Joshua Brown, TOS Robert Caldwell, TOS Charles Calvert, TOS Brandon Champion, TOS 2nd Lt. Adam Doyle, AF Jennifer Freeman-Stancill, AF

Justin Fults, TOS Bradley Gill, TOS Matthew Henley, TOS Karen Hillstead, AF Dallas Hise, TOS Donald Howell, TOS Jason Hutchins, TOS Jon Jackson, TOS

Candace Jenkins, AF Cindy Jones, TOS Craig Jones, TOS Kevin Kelly, TOS Ivan Krstanovich, TOS Emilee Lopez, TOS Timothy Mullins, TOS Shea Pearson, AF Jill Pickett, TOS Jonathan Ragan, TOS Robert Robinson, TOS Jonathan Sanders, TOS Matthew Shores, TOS Bruce Stovall, TOS Mark Tucker, TOS Dennis Van Scoten, TOS Paula Wynn, TOS



Marty Gordon, TOS 35 Years Randy Sherrill, TOS 35 Years



Elephant walk

F-22 Raptors from the 3rd Wing and 477th Fighter Group participate in a close formation taxi, known as an Elephant walk, with an E-3 Sentry and a C-17 Globemaster III March 26, 2019, during a Polar Force exercise at Joint Base Elmendorf-Richardson, Alaska. This two-week exercise gives squadrons an opportunity to demonstrate their abilities to forward deploy and deliver overwhelming combat airpower. (U.S. Air Force photo by Justin Connaher)



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Heightened focus on the Arctic brings attention, challenges to the Air Force

By Charles Pope

Secretary of the Air Force Public Affairs

Arlington,

(AFNS) – There's no Sea Route by 2024. mystery - or surprise surrounding the Arctic's strategic importance, a commercial vast and foreboding ex- have migrated to the repanse where the United gion that now has more States has maintained a open shipping lanes that resolute and unblinking make its once unreachpresence for decades.

long-frozen in place, a locked Kazakhstan, for host of new and emerg- example, has expressed ing factors ranging from interest in using the Obclimate change to intensifying global commerce to a generation of advanced weapon systems is triggering fresh attention and tories of oil, minerals activity in the region.

feeling the shift more than the U.S. Air Force.

With installations scattered across Alaska, Canada and Greenland that include large air bases, training complexes, and a constellation of more than 50 radars, early warning and missile defense sta- were blunt in their analytions, the Air Force has sis for what that means the largest U.S. defense for the U.S. and its alpresence in a region that lies. "The rapidly changis a cornerstone of the ing environment in the country's defense.

Aerospace Defense Com- competitors, along with mand and U.S. Northern malign non-state actors Command's forward operational commander in interests in the region." Alaska, as well as an assortment of other senior rhetoric - are broadly responsibilities, Lt. Gen. based. "Both a northern Thomas A. Bussiere is approach to the United playing a central role States, as well as a critiin knitting the assorted cal location for projectefforts into a cohesive ing American power, its the region's increasingly is difficult to overstate," complicated security and Secretary of the Air Force geo-political realities. the clear, objective facts, people quickly realize the strategic importance of this region," he said. "It's why we are taking this challenge very seriously." Indeed, where once the Arctic was the providence any place on Earth. of a stable and identifiable set of countries and an interests, it is suddenly far more crowded. active in the region. Rus- ing from Thule Air Force sia, meanwhile, is moving forward with plans Alaska's two major Air to build a new generation of nuclear-powered icebreakers that are twice facilities operated by the as powerful as the current generation. If realized, the new icebreakers Range Complex, one of

would be a key part of plans to maintain yearround operations and ship 80 million tons of Va. cargo through the North

A collection of smaller nations and interests able natural resources While that reality is more accessible. Land-Irtysh river system to reach the Arctic port of Sabetta.

The Arctic's reposiand immense fish stocks No organization is are spurring "other nations seeking advantage of the diminishing ice environment," concluded senior military and government leaders who took part in an Arctic summit in January in Washington, D.C.

The senior leaders Arctic and the increased As North American presence of great power challenge U.S. security

The attention - and whole and navigating geo-strategic significance Heather Wilson and Air "Once you present Force Chief of Staff Gen. David L. Goldfein wrote in a January op-ed. Actions are also following the words. By 2022, for example, Alaska will be home to more advanced fighter jets than At the same time, increased emphasis on joint operations will be underway across Air China, for example, is Force installations rang-Base in Greenland to Force bases Elmendorf and Eielson as well as National Guard. Mixed in is the Joint Pacific Alaska



Air Force senior leaders hike on a glacier near Illulissat, Greenland, Sept. 12, 2017. The senior leaders were in Greenland, Canada and Alaska, as part of Operation Uggianaqtuq, an Arctic Security Expedition to better understand the challenges of working in the climate and to build relationships with allies and partners there. (U.S. Air Force photo by Tech. Sgt. Dan DeCook)

the largest instrumented air, ground and electronic combat training range in the world. That space is important for training pilots today, especially those flying 5th generation aircraft.

It means working more closely with Army and National Guard units that have expertise working in, and surviving, the Arctic's difficult conditions. It means locking arms and even participating in joint exercises with allies, especially allies from Nordic nations that have deep experience in the Arctic.

"The strategic value of the Arctic as our first line of defense has reemerged and USNORTHpotential threats in this experienced commander, curity challenges "posed mit. region," Gen. Terrence Bussiere understands on by adversaries operating O'Shaughnessy, recently told the Senate Armed Services Committee. He is the commander of NORAD and USNORTH-COM. combatant As the commander charged with homeland defense, O'Shaughnessy is seeing the front line of homeland defense shifting north, making it clear the Arctic can no longer be viewed as a buffer. In a recently published O'Shaughnessy stated, "The Arctic is a potential approach for our adversaries to conduct strikes on North America and is now the front line in our defense."



Lt. Gen. Tom Bussiere, 11th Air Force commander, discusses the strategic importance of Alaskan Command and the arctic during the Alaskan Command Arctic Senior Leader Summit Jan. 18, on Fort McNair, Washington, D.C. (U.S. Air Force photo by Tech. Sgt. Robert Barnett)

Bussiere carries a dis- joint operations." The re- all of us," Gen. Paul J. COM and NORAD are tinct perspective to the port requires a summary Selva, Joint Chiefs of taking active measures to job, which is a crucial part of U.S. national security Staff vice chairman, told ensure our ability to de- of the larger NORAD ef- interests in the Arctic, in- the international audience tect, to track, and defeat fort. A decorated pilot and cluding the threats and se- at January's Arctic sum-

in the Arctic region" especially Russia and China.

an intellectual level the Arctic's strategic importance in achieving his primary mission of defending the U.S. and Can- tivity is the updated unada, especially along the northern approaches. Like almost everybody who's served in the Air Force, he is familiar with Gen. Billy Mitchell's aging but still valid quip, "Whoever holds Alaska will hold the world."

Congress recognizes commentary, it too. The defense authorization signed into law last year requires the Secretary of Defense to submit "no later than June 1, 2019 ... a report on an updated Arctic strategy to improve and enhance

Driving all of the acderstanding about the Arctic's strategic value.

"When we think about the high north, we think about the value that the high north represents to

That value, he added, spans more than simply national security. The Arctic, he said, is "valuable" to environmental security, to expanding each country's economy and to serving as "the pathway to trade for the future. Stability and security in the high north benefits us all."

