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Vol. 65, No. 16

Arnold AFB, Tenn.

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August 20, 2018

Pawlikowski tenure marked by effectiveness, Air Force readiness

By Marisa Alia-Novobilski
Air Force Materiel Command

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – It's the little things that our command does every day that enable the Air Force to be effective, and it's so important that our Airmen fully appreciate their impact, said Air Force Gen. Ellen M. Pawlikowski, as she reflected on her three years at the helm of Air Force Materiel Command and readies to retire from 40 years of Air Force service this September.

"We don't fly airplanes, and we don't drop the bombs, but we make sure the airplanes can fly, and that the bombs are reliable, and their radars work," she said. "AFMC Airmen need to understand that what they do is important. They literally hold in their hands the health and the safety of our Airmen."

Pawlikowski took command of AFMC in 2015 during a time when the Air Force was highly focused on efficiency and cost consciousness, punctuating years of sequestration and resource reduction across the military fiscal domain. The command had just experienced a 33 percent reduction in headquarters staff, and across the board, said Pawlikowski, everything drove toward maintaining the bottom line.



Gen. Ellen M. Pawlikowski, Air Force Materiel Command commander, greets well-wishers, Aug. 7 on the Wright-Patterson Air Force Base, Ohio, flight line following her fini flight. Pawlikowski relinquished command Aug. 8 prior to her retirement this September. (U.S. Air Force photo by R.J. Oriez)

See PAWLIKOWSKI, page 2

Roessig quickly adjusting to role as AEDC Test Operations Division chief

By Bradley Hicks
AEDC Public Affairs

Col. Keith Roessig admits he is still settling in and finding his bearings, but the new chief of the AEDC Test Operations Division is impressed by what he has seen of Arnold Air Force Base thus far.

"It's an exciting place to be, with the history and the mission that goes on here, and an exciting time in things that the nation is prioritizing, Arnold is going to play a key role in terms of space tests and hypersonics, nuclear deterrents, and modernization programs," he said. "Arnold will have a key role in shaping all of that."

Roessig officially assumed his role as chief of the Test Operations Division at Arnold AFB during a July 12 Change of Leadership ceremony. In this capacity, Roessig is responsible for the orchestration of test operations across AEDC, including the more than 40 aerospace test facilities located at Arnold, the Hypervelocity Wind Tunnel 9 located in White Oak, Maryland, the National Full-Scale Aerodynamics Complex at Moffett Field, California, the McKinley Climatic Laboratory at Eglin Air Force Base in Florida, and the Intercontinental Ballistic Missile Combined Test Force, or ICBM CTF, recently stood up at Hill Air Force Base, Utah.

He is also the program manager for the Test Operations and Sustainment contract for AEDC.

Roessig grew up primarily on the West Coast, attending grade school and college in California and junior high and high school in Oregon. Roessig's father was a pilot in the U.S. Navy, so he grew up with an affinity for aircraft. This, coupled with a lifelong interest in math and science, led Roessig to pursue a degree in aeronautical engineering from the University of Cali-



Col. Keith M. Roessig, center, becomes chief of the AEDC Test Operations Division during a Change of Leadership Ceremony July 12 in the J-6 Large Rocket Motor Test Facility at Arnold Air Force Base. AEDC Commander Col. Scott Cain (left) passes the Test Operations Division guidon to Roessig as Senior Master Sgt. Michael D. Roberts looks on. (U.S. Air Force photo by Rick Goodfriend)

fornia, Davis.

"I've just always been interested in math and science, so engineering was kind of a nice fit," he said. "I never really questioned it, and I've always been interested in aircraft."

Roessig participated in the ROTC program at the university and entered the Air Force after receiving his

bachelor's degree in 1993. He completed an educational delay program to earn his master's in aeronautical engineering from the University of Notre Dame in 1997 and doctorate in the same area the following year.

Afterwards, Roessig was given his first Air Force

See ROESSIG, page 2

Ground Test University bridging the knowledge gap for AEDC personnel

By Bradley Hicks
AEDC Public Affairs

AEDC Ground Test University has been back in session at Arnold Air Force Base for the better part of a year, and the hopes are that newer members of the workforce and their more experienced colleagues who have taken on new roles will reap the benefits of the

coursework.

Julius Lockett, a systems engineer in the Engine Test Facility who has been a GTU instructor since the inception of its current configuration, said "GTU is all about the sharing of knowledge."

"More and more, people are leaving the workforce, often taking the knowledge they have gained through their experience with them," Lockett said. "GTU is

seen as a way to ensure this knowledge is not lost, but rather imparted upon younger, less experienced employees. Ground Test University was set up to basically be a knowledge swap. As you know, you have an aging workforce here at Arnold Air Force Base. Through

See AEDC PERSONNEL, page 3

In This Issue....

Arnold personnel now able to charge electronics at Technical Library charging station

...Page 3

"Area students take flight after completing Fly to Learn Program

...Page 4



HIGH MACH

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

PAWLIKOWSKI from page 1

"It was a time of dramatic change in a command that was truly feeling the impact of things going on in the Air Force. Everything we did was focused on efficiency, and while we developed some great processes during that time, they were all focused on how much could be squeezed out of each dollar," said Pawlikowski. "We needed to focus on effectiveness, because we had become slaves of the process."

To ensure the Air Force would be ready and prepared for the near peer adversaries of 2030 and today, Pawlikowski asked AFMC staff to find ways to be more responsive to Air Force needs and to not be a source of slowing the Air Force down.

"The overall objective I gave the command was that first we had to improve agility. Second, we needed to provide cost-conscious, agile, war-winning capabilities to the Air Force. But, third, we had to be more innovative and proactive in how we went about doing that," she said.

It was this forward-leaning focus that enabled the command to achieve a marked number of successes during Pawlikowski's tenure.

More than 12,500 AFMC civilian employees transitioned to the Acquisition Workforce Demonstration Project personnel system in 2016, directly impacting talent retention through expanded opportunities for leadership and development, and increasing a focus on performance based on direct contributions to mission. New hir-

ing incentives were established to recruit the next generation of Air Force scientists, engineers and acquisition professionals, ensuring the Air Force has the depth of talent required to meet warfighter demand needs for years to come.

The drive toward agility during Pawlikowski's command is evidenced by AFMC-led innovation practices across the Air Force. Leveraging emerging technologies such as additive manufacturing, hypersonics, directed energy, artificial intelligence and agile software development, and by establishing technology innovation centers near Air Logistics Centers, broad expertise from across the enterprise can be exploited to meet current and future Air Force sustainment needs.

"To support the full spectrum readiness our Air Force needs, AFMC has to be out in front when it comes to adapting and fielding new technologies. We need to find ways to change things in our existing weapons systems so that they are integrated and overcome the stovepipes that exist to make this happen," she said.

During Pawlikowski's tenure, AFMC held its first command-wide readiness exercise in January 2018— Agile Warrior— where agility and preparedness were put to the test, highlighting the command's ability to support a full spectrum operation. It exemplified the deep technical skill and expertise inherent in the command.

"This was an extremely important time for our

command. We were asking our centers, who had spent years monitoring costs and activity to address immediate needs, to surge and rapidly develop new capabilities much faster to support full spectrum operations. Our Airmen were able to practice deploying while our centers demonstrated their ability to surge in everything they do, from accelerating new technology at the research lab to fielding new airfield damage repair parts. I was extremely proud of our successes during this event," she said.

AFMC reorganization also helped to enhance the cost effectiveness and support provided to the Air Force during Pawlikowski's command. In addition to a number of internal departmental consolidations at the headquarters level, organizational change occurred across the field.

The Air Force Installation and Mission Support Center became fully operational, providing the Air Force with centralized management, resourcing and combat support capabilities for 77 installations, nine major commands and two direct reporting units located across the globe.

The Air Force Nuclear Weapons Center was established as the nuclear materiel manager for the Air Force nuclear enterprise.

The creation of the Strategic Development Planning and Experimentation Office has helped refine the command's acquisition focus to be optimized for speed, adaptation and continued change. Through all of these

successes, AFMC also surpassed the \$2 billion a year cost savings and avoidance goal outlined in the command strategic plan under Pawlikowski's direction. Meeting this goal demonstrated the command's ability to focus on readiness and lethality, while driving cost consciousness into each capability it provides.

As Pawlikowski completes a successful tenure at AFMC, she is also culminating a 40-year Air Force career.

She entered the Air Force in 1978 through the Reserve Officers' Training Corps program at the New Jersey Institute of Technology, where she graduated with a degree in chemical engineering. Pawlikowski earned her doctoral degree in the discipline from the University of California at Berkeley before entering active duty at McClellan Air Force Base, California, in April 1982.

Pawlikowski has served in a number of science and technology leadership positions across the Air Force, including positions such as Program Director of the Airborne Laser Program; Air Force Research Laboratory commander; and Space and Missile Systems Center commander; among others.

As only the third female to become a four-star general in the Air Force and a trailblazer for women in the science and engineering field, it is fitting that her final leadership position brought her back to a command where science and engineering play such a strong role in the day-to-

day missions.

In fact, Pawlikowski considers her greatest personal career accomplishment the demonstration of "First Light" on the Airborne High Energy Laser, which required overcoming numerous technological, financial and political challenges, similar to those faced by AFMC engineers and researchers today.

"This was the stuff of science fiction, but it also taught me leadership lessons that I carried through my career and the long-term implications of decision-making," she said. "I also learned the value of and gained a strong appreciation for our civilian Airmen and how important they are to the long-term viability of the Air Force."

As Pawlikowski brings a lifetime of service to a close, she takes with her a plethora of memories of the people and missions in which she feels privileged to take part. Though she plans to shift focus to her family, she also plans to continue her professional career in some capacity, because, as she says, "I have a brain that doesn't stop."

As for advice to the next generation of Airmen, she circles back to that same advice given to her by her mother on the first day of kindergarten.

"Just do the best job you can, no matter what the job is. At the end of the day, if nothing goes right, you can at least look in the mirror and say, 'I did the best I could,'" she stated. "You can never fully appreciate the impact of what you do today in years to come."

ROESSIG from page 1

assignment in the Air Force Research Laboratory Munitions Directorate at Eglin AFB. He subsequently served as an exchange officer in Germany before being competitively selected for the Air Force Test Pilot School at Edwards Air Force Base, California. After becoming a test flight engineer, Roessig was assigned to the 46th Test Squadron at Eglin AFB. He was later competitively selected to become a political affairs strategist and attended the Naval Postgraduate School in Monterey, California.

Following his graduation, Roessig became director of test operations for the F-35 Integrated Test Force at Edwards AFB where he led a team of more than 100 members in conducting development flight test for the Joint Strike Fighter. In June 2012, Roessig took over as commander of the 846th Test Squadron at Holloman Air Force Base, New Mexico.

Upon completing Senior Development Training as an Air Force Fellow in the

Massachusetts Institute of Technology System Design & Management program, Roessig returned to the Joint Strike Fighter program in August 2015 as the International Airworthiness Lead at the F-35 Joint Program Office in Arlington, Virginia. While there, he deployed to Afghanistan in support of Operation Resolute Support.

Roessig's position prior to coming to Arnold was deputy director for engineering for the Air Force Life Cycle Management Center.

Roessig's education and experience has taken him all over the country and the world, but a visit the month before the Change of Leadership ceremony marked his first visit to Arnold. While he said he is not one to make changes immediately upon arrival, Roessig has developed some goals in his short time at Arnold.

"There's obviously some infrastructure upgrades that need to happen, and I think there's a lot of modernization that can happen as the Air Force is being pushed to go faster, prototype, get

things out more quickly to the warfighter," he said. "There's a number of ways that can go and how it affects Arnold, but I think our role will become much more important to get as much data as we can to make the right programmatic decisions."

Roessig added that AEDC must also look to increase flexibility and adapt test methods to acquire information that helps programs make the best possible decisions as the Air Force contin-

ues to place an emphasis on greater speeds.

"Whether that's using more modeling and simulation to reduce the actual test time, whether it be in a wind tunnel or space facilities, it will be important for us to do is to be able to adapt to the pressures that the program offices are under while still maintaining our technical adequacy and competence in the data that we generate so that it's something that we have trust in," he said.

Roessig said AEDC must also take advantage of potential growth in several areas, including hypersonics, space and the ICBM CTF.

"There are opportunities to really make a huge impact on where the Air Force needs to go to complete its mission, so those are going to be the focus, expanding those new areas while modernizing the aging infrastructure we do have," Roessig said. "Those will be the critical things to balance moving forward."



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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 personnel now able to charge electronics at Technical Library charging station

By Deidre Ortiz
AEDC Public Affairs

The AEDC Technical Library at Arnold Air Force Base has a new charging station provided by Air Force Libraries featuring 10 lockers, which will enable AEDC team members to securely charge their electronic devices.

Each of the lockers has three cords that are compatible with most Apple or Android phones or tablets. There is also an outlet in the lockers for charging laptops.

Those who take advantage of the charging station can also do so without fear that someone will take their device. By following the instructions found on the charging station, a code can be set to lock the stall until the owner of the device returns to retrieve it.

Jean Frantz, librarian at the AEDC Technical Library, located in the Administrative and Engineering Building, Building 100, invites anyone interested in using the charging station to come to the library for a demonstration.

"Your device doesn't have to be government or company-issued," she said. "People can feel free to charge their personal devices. Every Air Force library is getting one of these and I hope we get a lot of use of the charging station at Arnold."



Andrea Hanna follows the instructions provided on the charging station regarding how to lock a stall to secure a device while charging. The charging station was recently made available at the AEDC Technical Library through funding from the Air Force Libraries. The AEDC Technical Library is located in Building 100, at Arnold Air Force Base. (U.S. Air Force photo by Deidre Ortiz)

AEDC PERSONNEL from page 1

GTU, we're basically transferring a lot of the information that the younger engineers are going to require."

GTU was started several years ago to provide accelerated training to new hires and technical staff. The program was resurrected in an effort to ensure the continued sharing of information and know-how.

The program is not just open to engineers. Systems and Plant Operations personnel, planners and schedulers and craft supervisors are among those who also take part in the courses.

There are some non-engineering new hires currently participating in GTU, but the classes are typically made up of a combination of employees who have been at Arnold AFB for fewer than two years and more-tenured employees who may have changed mission areas and have worked in their current posts for only a short time.

GTU participants are brought up to speed on how to utilize systems and software with which they regularly interact, such as the Computerized Maintenance Management System, and are provided more detailed information on how to execute the processes they are expected to complete.

"I think the end goal is to eventually have the program in such a way that anybody can teach it and take it as they see fit," Lockett said.

"If somebody needs a refresher in how to access or operate the drawing system or look at Matrix or look at Synergen or look at basic plant equipment or test cell equipment, they will be able to pull up the presentation at their desk and view it at their own pace," said Bernie Williamson, a test operations engineer who leads GTU courses alongside Lockett.

Williamson added "GTU is not designed to serve as in-depth training, job-specific training or to replace Qualls."

"Basically we're formalizing the on-the-job training that we were already doing," he said. "We're just formalizing it to fit it into a standardized format."

Both Williamson and Lockett said GTU acts to "bridge the gap" between job-specific training and the knowledge of processes and systems obtained through experience.

"A guy walks in off the street, he's not familiar with our processes. This is to help that guy get caught up on our processes," Lockett said.

Williamson added it is easy for employees to become



Julius Lockett, a systems engineer in the Engine Test Facility, leads a recent Ground Test University class. The purpose of GTU is to provide younger members of the AEDC workforce and their more-tenured counterparts in new positions with knowledge and information to help them more effectively complete job tasks. (U.S. Air Force photo by Bradley Hicks) (This image was manipulated by obscuring badges for security purposes)

"compartmentalized" after long stints in one position or in one area. He and Lockett also agreed that GTU helps prevent "tunnel vision" among employees by learning other ways of carrying out their duties.

"We want to just basically have a place for those people to come so they'll not just be meandering out there trying to learn on their own and pick up stuff," Lockett said.

The approximately one-hour GTU classes are held each Monday afternoon.

"It sounds slow, but with the work schedule everybody has, getting together on one day is a pretty big achievement," Williamson said.

Lockett said GTU curriculum is broken up into several categories, including Aeropropulsion, Flight, Space and Missiles. Lockett and Williamson work with management in different areas to identify those who may benefit from the training.

"Once those people are identified, we just basically

invite those people to our session," Lockett said.

Class sizes are small, usually averaging 10 to 12 participants. GTU is held in the computer training rooms on the first floor of the Administration & Engineering Building.

GTU participant Eric Sullivan, a mechanical engineer who has been with AEDC for less than a year, said the information he has thus far gleaned from the classes has been valuable.

"I do think this is very helpful to get you familiar with the software and systems we interact with on a daily basis," he said. "I wish they would do this as part of new hire training."

Providing participants with knowledge that they can then pass on to others is the ultimate objective of GTU, Lockett said.

"We want people to take away something from the process and actually learn it and, hopefully, it's useful to the people who are going to take part in it," Lockett said.



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Area students take flight after completing Fly to Learn Program

By Deidre Ortiz
AEDC Public Affairs

A group of Middle Tennessee middle-school students participating in a Science, Technology, Engineering and Mathematics Aviation Program, sponsored by Arnold Air Force STEM, recently put what they learned into action by flying with the Eagleville Soaring Club.

Before taking to the skies, 10 students from East Middle, South Middle and West Middle schools completed the Fly to Learn software, which is a 10-lesson curriculum using virtual airplanes to simulate flight. As graduates of the aviation program, these students were then able to participate in the glider flights arranged by the ESC.

The students fly in a two-seat glider under the direct supervision of an instructor pilot. They are taken by a tow plane up to 2,000 feet above the ground and released for a 15-20 minute flight in the beautiful sky over Eagleville, Tennessee.

Students who have completed the

Aviation Program over the years include middle and high school students from East and West Middle School, Tullahoma; North and South Middle School, Franklin County; and Westwood and Coffee County Middle School, Manchester. The program has also expanded to Murfreesboro schools in recent years.

Eagleville Soaring is a Soaring Society of America (SSA) Chapter Club operation located at Puckett Gliderport. The facility has operated gliders since the 1950s when Garland Pack purchased Army surplus training gliders, or TG-3s, for \$15 each and began operations. Numerous pilots have enjoyed learning to soar, including many nationally ranked pilots and a five-time National Open Class Champion. The club caters to those interested in soaring for recreation and specializes in advanced cross-country training for competition-minded pilots. It especially welcomes junior students -- anyone under 30 years old -- and offers special rates for juniors and seniors. Operations include lessons and rides.



Middle school student Christian Davis, right, had the chance to fly recently with the Eagleville Soar Club after completing the Fly to Learn course, which is a 10-lesson curriculum using virtual airplanes to simulate flight. Pictured with Davis is his instructor pilot Jere Matty. The Fly to Learn Aviation Program is sponsored by Arnold Air Force Science, Technology, Engineering and Mathematics Program. (Courtesy photo)

Hill AFB Airmen, aircraft progress together as F-35A program matures

By Michah Garbarino
388th Fighter Wing Public Affairs

HILL AIR FORCE BASE, Utah, (AFNS) - Two years after the Air Force declared initial operational capability for the F-35A Lightning II, pilots and maintainers at Hill Air Force Base's active duty 388th and reserve 419th Fighter Wings are steadily erasing the word "initial" from in front of "operational capability."

Since the IOC announcement Aug. 2, 2016, Airmen and the jet have grown together during deployments to Europe and Asia, several combat exercises, weapons evaluations and daily operations.

"We've seen an exponential increase in capability," said Lt. Col. Yosef Morris, 4th Fighter Squadron commander and former director of operations for 34th FS, the first operational F-35 unit. "At IOC, the jet was very capable doing a very limited mission set. Now we have our full inventory of weapons, and we routinely train against high-end threats."

Similar to a consumer with a new product, at IOC the 388th and 419th were exploring and developing just how to use the aircraft, "now we're really codifying and establishing exactly what we can do," Morris said.

The release of new software in February, known as "3F," drove much of the increase in capability. In addition to the software's weapons package; the flight envelope was expanded to 9 Gs; and targeting, mapping, and the fusion of all those systems was improved.

The F-35 is now more fully multi-role, Morris said. Stealth capabilities allow pilots to fly into "contested" airspace undetected, take out advanced surface to air threats and secure the area. Then they can load weapons externally, taking out

ground targets as they operate freely and support troops in combat.

"I spent nine years flying the F-15 Strike Eagle. That is a very, very capable aircraft. I've taken it to combat and it brought me back," said Lt. Col. Michael Albrecht, 388th FW director of staff and an F-35 pilot since 2011. "I would rather have flown the F-15 than the F-35 prior to IOC. After IOC, if I had to go to combat, I would want the F-35. Today, there's absolutely no question."

Albrecht, who spent time in an advisory role at Air Combat Command during the F-35's development, said that lethality and survivability are only going to increase as technology and tactics continue to advance.

"When the Air Force developed their requirements for the F-35, they 'bet the ragged edge' of technology," Albrecht said. "That extremely advanced technology may not have been fully realized back then, which led to a lot of the bad press that has been regurgitated. Now that the technology is coming to fruition and is fully realized, the bet is paying off."

Another boost to the program has been fresh blood and new eyes. Current technology meshes well with young pilots and maintainers, Albrecht said. A group of pilots who haven't flown anything but the F-35, have been flying at Hill AFB for nearly a year.

"It's like handing my kids an iPhone and they use it and show me all kinds of things I didn't know I could do," Albrecht said. "It's so intuitive for these young pilots because they've grown up with technology. They are going to be able to get the most out of the jet."

With the F-35, maintenance has also moved into the digital age.

"The fifth-gen technology really fits with the new crop of maintainers. They



An F-35A Lightning II aircraft from Hill Air Force Base, Utah, takes off from Nellis AFB, Nevada, Feb. 2. Airmen from the 388th and 419th Fighter Wings at Hill are participating in Red Flag 17-01. Red Flag is the U.S. Air Force's premier air-to-air combat training exercise. This is the first F-35A deployment to Red Flag since the Air Force declared the jet combat ready in August 2016. (U.S. Air Force photo by R. Nial Bradshaw)

are able to grasp concepts and they're very technically proficient. The aircraft is growing up with young Airmen who have grown up in a digital age," said Chief Master Sgt. Eric Engel, 466th Aircraft Maintenance Unit superintendent, and a reservist who works with the 34th Aircraft Maintenance Unit.

Maintainers are working hard to push the boundaries. They have practiced rapidly deploying, refueling and rearming the F-35 at remote airfields with a small support "footprint." They have trained with the Marines to launch F-35B sorties while the Marines launched F-35A sorties. These are just two of more than a dozen initiatives Airmen are using to expand the F-35's combat capability.

"Our leadership is very aware that we're the first and in large part, how we do things will be the blueprint for everyone who follows. We're pushing ourselves and the jet," Engel said. "Deployments and exercises reinforce what we think. Until you take it some-



Airmen assigned to the 388th Aircraft Maintenance Squadron prepare F-35A Lightning II aircraft for flight at Hill Air Force Base, Aug. 7. The Airmen and aircraft participated in Combat Hammer, a multi-day air-to-ground weapons evaluation which takes place over the Utah Test and Training Range. (U.S. Air Force photo by R. Nial Bradshaw)

where and prove it, it's just a thought."

This week, maintainers will launch forty sorties a day for four days straight without building any downtime into the flying schedule. Historically, on legacy aircraft and the F-35, maintenance losses are built into the schedule to account for any issues.

"We haven't done this before and we wouldn't even be trying it if we didn't have the confidence in the

jet. The data we have backs us up," Engel said.

Looking back over the advances of the past two years, has Airmen interested to see what the future holds for the F-35 and Airmen.

"In the time that they snapped the chalk line on the F-35 to the time it was delivered, new technology and updates have happened inside and outside of the F-35 world," said Albrecht. "We're going to continue to see those advances come

into the F-35 in addition to the planned upgrades."

Hill AFB is slated to be home to three operational F-35A fighter squadrons with a total of 78 aircraft by the end of 2019. The first operational F-35As arrived at Hill in September 2015. The active duty 388th FW and Air Force Reserve 419th FW will fly and maintain the jet in a Total Force partnership, which capitalizes on the strength of both components.

Preventing eye injuries in the workplace

By AEDC Safety

Don't lose sight of safety!
 In the last few months, a number of employees have experienced eye injuries, some of which could have been very serious.
 Some of these injuries personnel have experienced include metal shavings being embedded, wood splinters in the eye, or oil spray in the eye. In each of these instances, the employees were wearing proper Personal Protective Equipment or PPE.
 Remember to always choose the correct PPE for

the hazard, even if this means changing PPE during the work. When grinding, sanding, using pressured air or spraying, use a face shield.

If the proper PPE is not available, do not perform the task.

When grinding any metal attracted by magnet, use magnet tape on the bill of your hard hat. Or when moving or removing hoods or face shields, lean forward so that trapped material will fall away from your face.

Do not use your potentially contaminated glove to wipe your eyes or forehead.
 If using compressed air, do not point the nozzle to-

ward your face or that of a coworker. If spraying liquids, do not spray directly overhead.

There are new and improved face shields available. Due to a previous incident of material getting into workers' eyes while using both face shields and safety glasses. So the Safety Office has found an improved model. It is now available through Fastenal with part number 1007940.

For those needing prescription safety glasses, the prescription safety eyewear vendor is on base the first and third Friday of each month from noon until 3 p.m. in the Safety Training Room, building 1103, third floor.

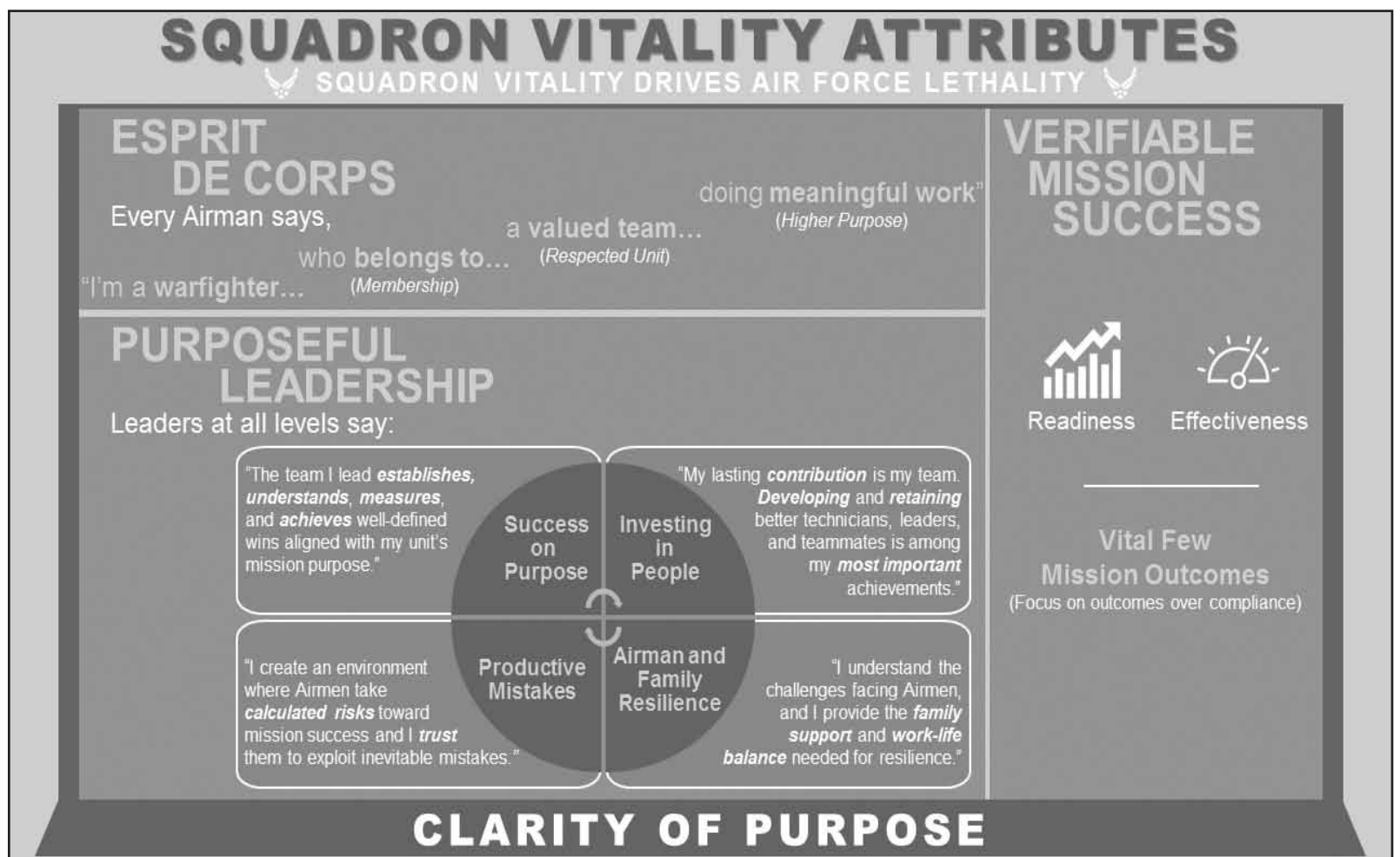
Revitalizing squadrons, Air Force outlines progress

By Tech. Sgt. Robert Barnett
 Secretary of the Air Force
 Public Affairs

WASHINGTON (AFNS) – Since Chief of Staff of the Air Force Gen. David L. Goldfein announced his initiative to revitalize squadrons, the assigned task force produced many visible changes and is moving forward with additional changes in an implementation plan.

"The squadron is the beating heart of the United States Air Force; our most essential team," Goldfein said in a letter to Airmen. "Our vision demands that 'squadrons be highly capable, expeditionary teams who can successfully defend our nation's interests in both today's and tomorrow's complex operating environments.'"

The task force conducted an Air Force-wide review, driven by Airmen in the field, to promote best practices and identify improvements. Consisting of Total Force Airmen



(U.S. Air Force Graphic)

from diverse backgrounds, they reviewed survey data and gathered inputs from across the Air Force through on-line crowd

sourcing and face-to-face discussions with nearly 4,000 individuals, including spouses, from 25 different bases representing

all major commands, Reserve and National Guard.

Along the way, the Air Force implemented improvements to include authorizations to rebuild the command support staffs, while addressing the manning for superintendents. Additionally, enlisted professional military education has been improved, performance report requirements have been removed for the rank of airman first class, computer-based and ancillary training requirements have been reduced, all based on the feedback from Airmen.

"This is incredibly humbling and exciting to be a part of because if we can get this right, we can hopefully impact the lethality and effectiveness of the entire Air Force," said Col. Russell Williford, current director of the revitalizing squadrons task force. "We can also make Airmen's lives bet-

ter and more fulfilled."

The team further analyzed the feedback to develop a comprehensive model for squadron vitality.

According to the findings indicated in the implementation plan, Williford said there are three key attributes to a successful squadron: verifiable mission success, purposeful leadership and esprit de corps.

These key attributes are being implemented through three lines of effort: focus on the mission, strengthen leadership and culture, and taking care of Airmen and Families.

Focus on the mission

Verifiable mission success means aligning a clearly stated mission purpose from the command-level down to each task an Airman performs. Highly successful squadrons clearly define, understand, and communicate

their purpose, asking every member of the squadron, "why?" until the purpose behind every task is aligned to mission success.

While this may appear rather easy, the team found that many units struggled with clearly defining and communicating their purpose.

Verifiable mission success drives a culture described as "mission command" in which members of the unit clearly understand why their unit exists; therefore, their efforts are directly in-line with mission outcomes, which enables empowerment throughout the unit.

The plan also calls for better enabling squadron leaders to focus on their missions. For example, support staffs will work with commanders to push daily decision authority to the lowest practical level while scrubbing overly

See SQUADRONS, page 10

ATTENTION

Drivers must follow Air Force requirements when operating a vehicle on Arnold Air Force Base

SEATBELTS ARE REQUIRED TO BE WORN

ANYONE OPERATING OR RIDING IN A MOTOR VEHICLE ON A MILITARY INSTALLATION ARE REQUIRED USE SEAT BELTS OR THE PROPER RESTRAINT SYSTEMS

AIR FORCE INSTRUCTION 91-207

NO CELL PHONE USAGE ALLOWED WHEN DRIVING

OPERATORS OF MOTOR VEHICLES ON AN AIR FORCE INSTALLATION WILL NOT USE HAND-HELD ELECTRONIC DEVICES UNLESS THE VEHICLE IS SAFELY PARKED.

To view AFI 91-207 on The U.S. Air Force Traffic Safety Program in its entirety, visit <http://www.e-publishing.af.mil/> and view the Air Force publications under Safety.

2018 AUGUST

All month Buy 5 Sandwich Combos Get 6th FREE
 National Sandwich Month
CAFÉ 100

3 Arnold Lakeside Center CC
 First Friday
Jam Night
 6-10pm all ages

Arnold AFB SERVICES
 Combat Support & Community Service

11 Arnold Golf Course
2 Person Better Ball
 9am \$30
 Sign up by Aug 10
 + cart & green fee

6 Fitness Center
 Intramural Cross Country Running
COACHES MEETING
 4:30pm
 Teams of 4 All teams run
 Individual points based on finish
 Lowest overall combined score wins league
454-6440 MORE DETAILS TO BE DETERMINED AT MEETING

7 **ALC Family Movie**
READY PLAYER ONE CC
 6pm dining 5-7pm

Admin - 454-7779
 ALC - 454-3350
 Barber - 454-6987
 Café - 454-5885
 FC - 454-6440
 GC - 454-GOLF
 Mktg - 454-3128
 Mulligan's - 454-FOOD
 ODR/ITT - 454-6084
 RRRP - 454-6068
 Wingo Inn - 454-3051

Services is hiring! Visit NAFJobs.org

Tell us what you think!
ICE
 Interactive Customer Evaluation
 ice.disa.mil

Arnold AFB Services
 LIKE US

11 Whitewater Rafting
 5am - 5pm with ODR
\$30
 \$25 mbr lunch included
 Sign up deadline Aug 4
 age 12+ **454-6084**
 Military sign up NOW, retirees start Jul 26, all others Jul 31

WHEEL DEALS
 Come see us at Outdoor Rec
 Spin the Wheel and claim your Deal!
454-6084
 MON 2-6PM
 TUE/THU-SAT 10AM-8PM
 SUN 10AM-2PM

14 **ALC Family Movie**
RAMPAGE CC
 6pm dining 5-7pm

15 FITNESS CENTER
Battlefield Day
 11am-12pm track behind A&E
 4-person relay (1 lap ea)
 60 meter sprint
 Tire hammer & flip
 Tug of war
454-6440 1st 30 to sign up and complete get t-shirt

18
STAR WARS
 THE LAST JEDI
ODR FamCamp Movie
 for registered guests only

18 Arnold Golf Course
19 Coffee County INVITATIONAL
 8:30 am
 Individual play ~ Two day event
\$60 Sign up by Aug 16
 green fee & cart extra **454-GOLF**

28 FITNESS CENTER
ALPHA WARRIOR AIR FORCE TOUR
YOU GOT THIS.
THE ALPHA WARRIOR BATTLE RIG EVENT for ages 13+
 ALPHA WARRIOR PRO-ATHLETES FAMILIARIZATION DEMONSTRATION
 8:30-9am Battle Rig Demo with Alpha Warrior Athletes
 8:30-10:30am Registration for Battle Rig Challenge
 9-10am Battle Rig Warmup/Familiarization
 10-11am Battle Rig Timed Challenge
 11am-12pm Awards/Meet & Greet Athletes
 Check out the new Alpha Warrior Battle Station behind the A&E Building (next to running track)
 Special appearance by Alpha Warrior Athletes from the American Ninja Warrior show
 McKinley Prosoce
 Kluhn

21 **ALC Family Movie**
AVENGERS: INFINITY WAR CC
 6pm dining 5-7pm

ODR Watersport Classes
18 age 12+ Kayaking
25 age 10+ Stand Up Paddleboard
 \$15/\$12mbr includes 5hr use after lesson
 1-3pm

28 **SHOW DOGS** CC
 6pm dining 5-7pm
ALC Family Movie

30 **ALC Trivia Night**
BACK TO SCHOOL THEME
 6-8pm all ages CC

25 ODR Day Trip
Six Flags
 6am-10pm
\$65 \$60 members \$55 age 12 & under
 Spend all day enjoying the amusement park
 Sign up by Aug 11 **454-6084**

As of 7-12-18. Subject to change. Please call to verify. Services eligibility required except Golf-Open to Public. Contractors follow company policy when necessary. Visit www.arnold.af.mil/Home/Services/ for more details. See the September Services Calendar on page 10.

CyberPatriot Cybercamp teaches students about the importance of Cybersecurity

By Deidre Ortiz
AEDC Public Affairs

With guidance from Arnold Air Force Base Science, Technology, Engineering and Mathematics director Olga Oakley, members of the Coffee County High School CyberPatriot team led the Air Force Association CyberPatriot Cybercamp held at the Hands-On Science Center in Tullahoma.

CyberCamp was held at HOSC the week of July 16-20 for area students 11 to 16 years old. During the week, the campers learned about Cybersecurity, as well as Windows and Ubuntu software programs. At the end of the week, the campers then competed in teams and put their cyber networking skills to the test.

Leading the camp were Coffee County Central High School students Andrea Sherril and Dayjah Harrison. This year will be their third year on the Air Force Junior ROTC CyberPatriot team at CCHS.

CyberPatriot is a premiere national high school cyber defense competition created to inspire high school students toward careers in cybersecurity or other STEM disciplines. CyberPatriot is open to all high schools, Civil Air Patrol Units, JROTC Units, US Naval Sea Cadet Corps Units and accredited home school programs around



The Air Force Association CyberPatriot CyberCamp was held at the Hands-On Science Center in Tullahoma the week of July 16-20. The CyberCamp teaches area students, from 11 to 16 years old, about Cybersecurity and computer software programs. The camp was sponsored by Arnold Air Force Base Science, Technology, Engineering and Math Program, which is directed by Olga Oakley. (Photo provided)

the country.

During competitions students are provided one to three virtual machines. The machines contain several vulnerabilities that

students must identify and defend against. CyberPatriot was established by the Air Force Association. The Northrop Grumman Foundation is the pre-

sending sponsor for CyberPatriot. CyberPatriot's founding partners are Science Applications International Corp. and the Center for Infrastructure

Assurance & Security at the University of Texas-San Antonio.

AEDC STEM partners with the Women In Defense National Security

Organization to sponsor several Cyber Patriot Teams. For more information about the AFA CyberPatriot Program, visit www.uscyberpatriot.org.

Air Force scientists study artificial silk for body armor, parachutes

By Donna Lindner
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFNS) – Who doesn't like to feel warm in the winter and cool in the summer?

Inspired by the qualities of fibers found in nature, scientists at the Air Force Research Laboratory and Purdue University are experimenting to develop a functional fiber that can be woven into sizeable, flexible fabrics using existing textile manufacturing methods.

Researchers are studying the cooling and temperature regulation properties of natural silk in order to apply it to synthetic fibers, such as artificial spider silk, which is both stronger than the polymer known commercially as Kevlar and more flexible than nylon.

Silk exhibits passive radiative cooling, meaning that it radiates more heat than it absorbs when in direct sunlight. On hot summer days, silk drops 10-15 degrees Fahrenheit when compared to reflective materials.

The cooling fabric is of tremendous potential benefit to the warfighter wearing body armor.

Bulletproof vests and parachutes are two articles in line to be constructed with artificial spider silk. Current vests are burdensome due to the heavy weight and non-breathing material they are fabricated with. Parachutes constructed of the new material will be stronger and able to carry larger payloads.

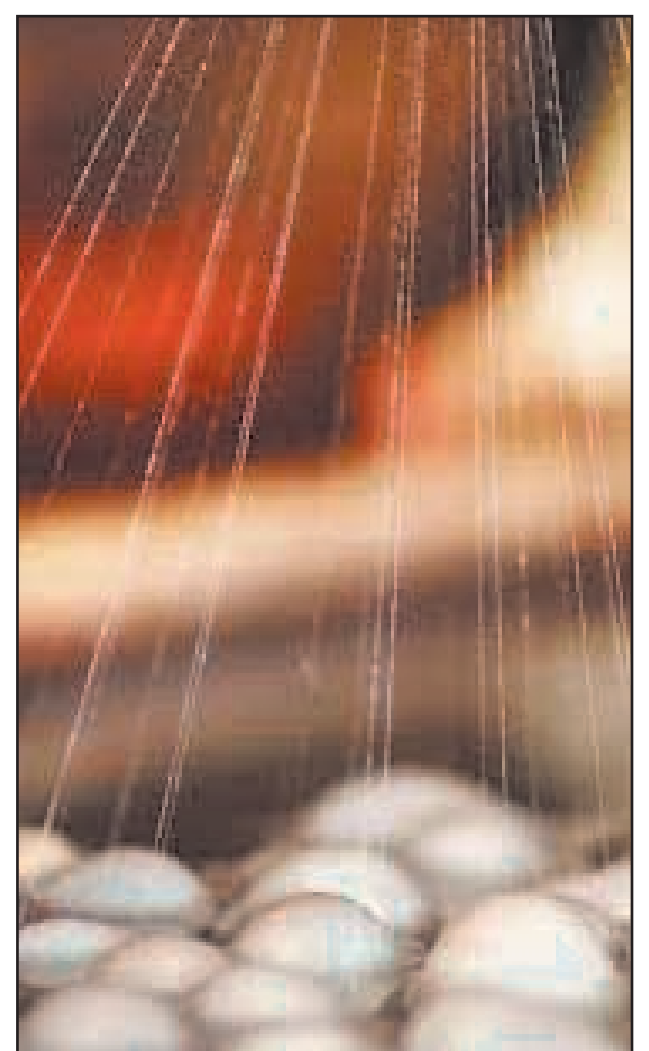
Estimates indicate that while artificial spider silk may initially cost twice as much as Kevlar, the product's minimal weight, incredible strength and elasticity and potential adaptability for other needs are characteristics enhancing its salability.

"Making the warfighter more comfortable by enhancing body armor is just one of the many improvements my team hopes to make by studying natural silk," said Dr. Augustine Urbas, researcher in the Functional Materials Division of the Materials and Manufacturing Directorate. "Understanding natural silk will enable us to engineer multifunctional fibers with exponential possibilities. The ultra-strong fibers outperform the mechanical characteristics of many synthetic materials, as well as steel. These materials could be the future in comfort and strength in body armor and parachute material for the warfighter."

Tents for forward operating bases could also be composed of the natural material. This would enable the warfighter to work in a cooler environment.

Fibroin, a silk protein secreted by the silkworm, can be processed into a lightweight material for fabricating artificially engineered synthetic and optical materials. The structured optical materials can reflect, absorb, concentrate or split light enabling a material to perform differently in a specific situation.

According to the AFRL researchers, understanding light transport and heat transfer will lead to various innovations and is a great opportunity.



Artificial silk fibers can be woven into sizeable, flexible fabrics using existing textile manufacturing methods. (Courtesy photo)

The Green Scene

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All office bond paper, notebook paper, newspaper, magazines, file folders, telephone directories, paper bags, wrapping paper, etc.

Make sure the information is releasable before placing in community bins.

If you need a bin or your bin needs emptying before the routine pick up, then you may call and request to have it emptied.

Thank You from The Green Team
David Miller (manager), Bud Schell, Rick Shaner
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Please Recycle

AEDC Woman's Club kicks off the new club year

By Barbara McGuire
AEDC Woman's Club

TULLAHOMA, Tenn. – The AEDC Woman's Club will kick off their club year Sept. 6 with a meeting at the Arnold Lakeside Center featuring Maj. Gen. Carl Schneider.

Schneider is an Air Force fighter pilot who was in the Air Force for 32 years. He joined the Air Force in 1946 and rose to the rank of two-star general. He flew 100 combat missions in Korea and served in Vietnam flying combat missions.

He now lives in Tennessee and is president of the Veteran's Resource Group. Schneider has written two books – one about his life growing up in the fields of Texas and another about his life experiences in the Air Force.

Feel free to invite people to this event. Table donations at the September meeting will go to Good Samaritan of Winchester.

The social hour of the Sept. 6 meeting starts at 9:30 a.m., with the business meeting and program beginning at 10 a.m.

Reservations must be made no later than noon Aug. 30. Make reservations by calling 931-393-2552.

The AEDCWC meetings are open to the public and provides the opportunity to meet the members and become a member. You don't need to have military connections or be involved with Arnold Air Force Base to visit



The AEDC Woman's Club board members display the *Jet Pioneer* book written by Maj. Gen. Carl Schneider. Schneider will be speaking about his Air Force career at the next AEDCWC meeting Sept. 6. Pictured left to right are Susan Harris, Barbara McGuire, Gale Klingelhoets and Kelly Doyle. (Courtesy photo)

and become a member.

For information about the AEDCWC, call the membership chairman at 931-455-3569.

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.

SQUADRONS from page 6

restrictive Air Force Instructions and updating organization models to align with the new National Defense Strategy.

This helps every Airman gain a clarity of purpose to understand how they contribute, add value and are valued.

Strengthening squadron leadership and culture

Purposeful leadership means valuing mission outcomes, investing time in Airmen development, and creating an environment where taking smart risks is rewarded to find better ways of getting the mission done, seizing the opportunity to learn from mistakes.

Starting in the fall an Air University squadron commander foundational

course will be launched to better prepare officers (and civilians for squadron-like units) for purposeful command.

"The first time an Airman leads a large team is as a flight chief or a flight commander," Williford said. "So flight commander and flight chief courses will be developed at the wing-level to help enable leaders to focus on the key skills to succeed in this first essential level of leadership."

In addition, boosting mental and physical fitness is a key ingredient of the leadership and culture line of effort. While there will be no changes to physical fitness standards and tests, squadron leadership gains authority for administering physical fitness

tests, and wing commanders will build incentive programs to reward innovative unit-level fitness programs that increase Airmen readiness.

Taking care of Airmen and their families

Williford said the third, esprit de corps, may happen naturally when the previous two are in place.

"It means belonging to a group that's respected, and they are accomplishing something that's larger than themselves," he said. "They are warfighters who belong to a valued team doing meaningful work. That alignment of purpose to the respective unit, to being a member of this group is what we found creates a high level of esprit

de corps."

The plan includes helping squadrons better support Airmen and families by building on their resilience, strengthening family support programs and community connections.

"We tangibly discovered that focusing on supporting families gave the Airmen more focus at work," Williford said. "An Airman who is fulfilled and has a good work-life balance comes to work more focused."

"The process of being able to achieve that long-term vision that the CSAF and the Secretary of the Air Force have, that's incredibly exciting," the director of the task force said. "We know it's a long process to get there, but we're excited to be a part of it."

2 **CORNHOLE TOURNAMENT & Movie @ ODR FamCamp**
for registered guests only

3 **CLOSED**
FITNESS CENTER & CAFE 100
OPEN
ODR 10am-5pm

4 **5** **CAFÉ 100**
Personal Cheese Pizza \$3
National Cheese Pizza Day

7 Take your turn at the mic
all ages
FIRST FRIDAY 6-10 pm
Jam Night
Arnold Lakeside Center

8 See 3 events below

4 **OCEAN'S 8**
ALC Family Movie
PG13 6pm
CC
dining 5-7pm

ODR Winter Hours start 4 Sep
Closed S & W
Mon-Tue & Thu-Sat
10am-5pm

8 Arnold Golf Course
FALL OPEN
two-day event 8:30 am
\$50 green fee & cart extra
Sign up by Sep 7
454-GOLF

8 **Zip Lining**
age 10+
5:30am - 4pm
stopping for lunch on the way back
\$35 \$30 mbr
Sign up deadline Aug 25
454-6084

11 **ALC Family Movie**
PG13 6pm
CC
dining 5-7pm

12 **FALL FUN RUN**
2 laps on trail on your honor between 5am-7:30pm
1st 30 to sign up and complete get t-shirt
454-6440

14 **the BACKYARD JAMBOREE and BREWFEST**
SEP 8 4-10pm
yard games, inflatables, food, bands, home brew competition, Air Force Birthday cake, member door prizes, and more!
DINNER 5-7pm MEMBERS FREE nonmembers \$10
menu: fried chicken, potato salad, corn on the cob, mixed salad, cobbles
4-7pm Zone Status band (Murfreesboro TN)
7-10pm Not Quite Right band (Brentwood TN)
454-3350
LIMIT 2 HOME BREW BEER ENTRIES
Age 21+ May not sell or give away beer
Services will sell tickets for sampling
Submit entry form by Sep 4 to ALC
SERVICES GIFT CARD PRIZES: \$250, \$150, \$100

18 **ALC Family Movie**
6pm
CC
Movie selection not available at time of publication
Call 454-3350 to check what's playing
dining 5-7pm

20 **Jewelry Fair**
9am- 1pm
in Cafe 100
All items \$20 or less

25 **ALC Family Movie**
6pm
CC
Movie selection not available at time of publication
Call 454-3350 to check what's playing
dining 5-7pm

27 **ALC Trivia Night**
Last Thu every month
6-8 pm
TELEVISION THEME
all ages

14-16 **ODR Deep Sea Fishing Trip**
\$100 \$90 member
includes filet service with fish on ice does not include meals
10 hrs fishing Saturday
9am Fri thru 4:30pm Sun
some fish in season: snapper, mahi mahi, king mackerel
Military sign up NOW, retirees start Aug 27, all others Sep 3 454-6084

Arnold AFB SERVICES
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Barber - 454-6987
Café - 454-5885
FC - 454-6440
GC - 454-GOLF
Mktg - 454-3128
Mulligan's - 454-FOOD
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LIKE US

As of 8-9-18. Subject to change. Please call to verify. Services eligibility required except Golf-Open to Public. Contractors follow company policy when necessary. Visit www.arnold.af.mil/Home/Services/ for more details. See the August Services Calendar on page 8.

NASA assigns crews to first test flights, missions on commercial spacecraft

By NASA

NASA introduced to the world on Friday the first U.S. astronauts who will fly on American-made, commercial spacecraft to and from the International Space Station – an endeavor that will return astronaut launches to U.S. soil for the first time since the space shuttle's retirement in 2011.

"Today, our country's dreams of greater achievements in space are within our grasp," said NASA Administrator Jim Bridenstine. "This accomplished group of American astronauts, flying on new spacecraft developed by our commercial partners Boeing and SpaceX, will launch a new era of human spaceflight. Today's announcement advances our great American vision and strengthens the nation's leadership in space."

The agency assigned nine astronauts to crew the first test flight and mission of both Boeing's CST-100 Starliner and SpaceX's Crew Dragon. NASA has worked closely with the companies throughout design, development and testing to ensure the systems meet NASA's safety and performance requirements.

"The men and women we assign to these first flights are at the forefront of this exciting new time for human spaceflight," said Mark Geyer, director of NASA's Johnson Space Center in Houston. "It will be thrilling to see our astronauts lift off from American soil, and we can't wait to see them aboard the International Space Station."

Starliner Test Flight Astronauts

Eric Boe was born in Miami and grew up in Atlanta. He came to NASA from the Air Force, where he was a fighter pilot and test pilot and rose to the rank of colonel. He was selected as an astronaut in 2000 and piloted space shuttle Endeavour for the STS-126 mission and Discovery on its final flight, STS-133.

Christopher Ferguson is a native of Philadelphia. He is a retired Navy captain, who piloted space shuttle Atlantis for

STS-115, and commanded shuttle Endeavour on STS-126 and Atlantis for the final flight of the Space Shuttle Program, STS-135. He retired from NASA in 2011 and has been an integral part of Boeing's CST-100 Starliner program.

Nicole Aunapu Mann is a California native and a lieutenant colonel in the Marine Corps. She is an F/A-18 test pilot with more than 2,500 flight hours in more than 25 aircraft. Mann was selected as an astronaut in 2013. This will be her first trip to space.

Boeing's Starliner will launch aboard a United Launch Alliance (ULA) Atlas V rocket from Space Launch Complex 41 at Cape Canaveral Air Force Station in Florida.

Crew Dragon Test Flight Astronauts

Robert Behnken is from St. Ann, Missouri. He has a doctorate in engineering and is a flight test engineer and colonel in the Air Force. He joined the astronaut corps in 2000 and flew aboard space shuttle Endeavour twice, for the STS-123 and STS-130 missions, during which he performed six spacewalks totaling more than 37 hours.

Douglas Hurley calls Apalachin, New York, his hometown. He was a test pilot and colonel in the Marine Corps before coming to NASA in 2000 to become an astronaut. He piloted space shuttle Endeavor for STS-127 and Atlantis for STS-135, the final space shuttle mission. SpaceX's Crew Dragon will launch aboard a SpaceX Falcon 9 rocket from Launch Complex 39A at Kennedy Space Center in Florida.

After each company successfully completes its crewed test flight, NASA will begin the final process of certifying that spacecraft and systems for regular crew missions to the space station. The agency has contracted six missions, with as many as four astronauts per mission, for each company.

Starliner First Mission Astronauts

Josh Cassada grew up in White Bear Lake, Min-



NASA introduced to the world on Aug. 3 the first U.S. astronauts who will fly on American-made, commercial spacecraft to and from the International Space Station – an endeavor that will return astronaut launches to U.S. soil for the first time since the space shuttle's retirement in 2011. The agency assigned nine astronauts to crew the first test flight and mission of both Boeing's CST-100 Starliner and SpaceX's Crew Dragon. The astronauts are, from left to right: Sunita Williams, Josh Cassada, Eric Boe, Nicole Mann, Christopher Ferguson, Douglas Hurley, Robert Behnken, Michael Hopkins and Victor Glover. (NASA photo)

nesota. He is a Navy commander and test pilot with more than 3,500 flight hours in more than 40 aircraft. He was selected as an astronaut in 2013. This will be his first spaceflight.

Sunita Williams was born in Euclid, Ohio, but considers Needham, Massachusetts, her hometown. Williams came to NASA from the Navy, where she was a test pilot and rose to the rank of captain before retiring. Since her selection as an astronaut in 1998, she has spent 322 days aboard the International Space Station for Expeditions 14/15 and Expeditions 32/33, commanded the space station and performed seven spacewalks.

Crew Dragon First Mission Astronauts

Victor Glover is from Pomona, California. He is a Navy commander, aviator and test pilot with almost 3,000 hours flying more than 40 different aircraft. He made 400 carrier landings and flew 24 combat missions. He was selected as part of the 2013 astronaut candidate class, and this will be his first spaceflight.

Michael Hopkins was born in Lebanon, Missouri, and grew up on a farm near Richland, Missouri. He is a colonel in the Air Force, where he

was a flight test engineer before being selected as a NASA astronaut in 2009. He has spent 166 days on the International Space Station for Expeditions 37/38, and conducted two spacewalks.

Additional crew members will be assigned by NASA's international partners at a later date.

NASA's continuous presence on the space station for almost 18 years has enabled technology demonstrations and research in biology and biotechnology, Earth and space science, human

health, physical sciences. This research has led to dramatic improvements in technology, infrastructure and medicine, and thousands of spinoff technologies that have improved quality of life here on Earth.

The new spaceflight capability provided by Boeing and SpaceX will allow NASA to maintain a crew of seven astronauts on the space station, thereby maximizing scientific research that leads to breakthroughs and also aids in understanding and mitigating the challenges

of long-duration spaceflight.

NASA's Commercial Crew Program is facilitating the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable and cost-effective access to and from the International Space Station and low-Earth orbit. The public-private partnerships fostered by the program will stimulate growth in a robust commercial space industry and spark life-changing innovations for future generations.

