AEDC National Full-Scale Aerodynamics Complex:
One of a kind, ready for future testing

By Deidre Ortiz
AEDC Public Affairs

The National Full-Scale Aerodynamics Complex, managed and operated by AEDC, remains the world’s largest aerodynamics test facility and, because of its large size, has a wide range of testing capabilities that are unmatched by any other facility of its kind.

NFAC, a geographically separated unit located at Mountain View, Calif., is primarily used for determining the aerodynamic characteristics of large-scale and full-scale fixed wing, rotorcraft and powered-lift vertical and short take-off and landing aircraft. Additionally, it has the capability to perform other non-traditional types of wind tunnel testing on test articles as varied as wind turbines, parachutes and long-haul trucks.

According to Jeffrey Johnson, NFAC Test Operations and Sustainment branch chief, new vertical lift technologies are being readied to undergo testing in the wind tunnel complex. These developments include models supporting the Joint Multi-Role (JMR) technology demonstration and the DARPA Tactically Exploited Reconnaissance Node programs. Both are precursors to the Department of Defense’s Future Vertical Lift program, the plan for which is to develop a family of different sized military lift capabilities to meet various mission profiles.

NFAC has two wind tunnel sections, a 40- by 80-foot originally built in the 1940s, capable of providing test velocities up to 300 knots and Reynolds numbers up to 3 million per foot. The other tunnel is an 80- by 120-foot test section, capable of testing a full-size Boeing 737 at velocities up to 100 knots at nominal unit Reynolds numbers of 1.1 million per foot. This open-circuit leg was added and a new fan drive system was installed in the 1980s.

Do’s and don’ts for DOD employee political activities

By Eric Norton
AEDC Staff Judge Advocate Office

As we draw near to the end of another presidential election cycle it is prudent that we take a moment and recall what activities government personnel – both civilian and military – can and cannot participate in regarding partisan political activity.

The following is general guidance and is not meant to be an exhaustive list of do’s and don’ts, but rather a tool to help each individual Department of Defense employee decide what activities they can legally take part in when it comes to partisan politics.

As a reminder, military members are subject to DOD Directive 1344.10, Political Activities by Members of the Armed Forces. Air Force military personnel are also required to follow Air Force Instruction (AFI) 51-902, Political Activities by Members of the Air Force, which states in part: While on active duty, however, members are prohibited from engaging in certain political activities as proscribed below in order to maintain good order and discipline and to avoid conflicts of interest and the appearance of improper endorsement in political matters.

DODD 1344.10 and AFI 51-902 set out an extensive list of both permitted and prohibited activities. Some permitted activities include registering to vote, voting, displaying a political bumper sticker on your private vehicle and expressing personal opinions on political candidates and issues, but not as a representative of the Armed Forces.

AEDC capabilities essential for B-52 upgrade


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- Driving on base a privilege …Page 3
- Franklin County Industry Day students tour AEDC …Page 3

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AEDC engineers were part of a test team that performed wind tunnel testing on the parachutes for the NASA Orion spacecraft in January 2015 at the AEDC National Full-Scale Aerodynamics Complex in Mountain View, Calif. (Courtesy Photo)
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Use High Mach as your reference or resource vs. Contact Rep. at 931-455-3100 (Woodhead Publishing) for more information.

AEDC Legal advises:

1. Collection boxes donated may be sent to a contractor's POC, who chooses to attend a fundraiser event, connect with an unofficial fundraising representative, and can be approved by the Commander or designate.

2. Contractors and contractor employees must receive supervisor permission and be in leave status.

3. Collection boxes:

   Putting out boxes to collect toys, clothing, canned goods, etc., in public areas (e.g., building entrances or lobbies) is not considered to be fundraising and can be approved by the Commander or designate.

4. Tobacco products, services or tobacco advertising can be used at fundraising events. If you would like to support an unofficial fundraising event or effort, the request must be approved by the Commander or designate.

5. Government title endorsement:

   Air Force employees may not ask or allow subordinates to use their official time to support an unofficial fundraising event or effort. Additionally, Air Force employees may not solicit funds or other support (like personal time) from subordinates in connection with an unofficial fundraising event or effort.

6. Endorsement:

   Air Force employees may not use or allow subordinates to use official time to support an unofficial fundraising event or effort. Additionally, Air Force employees may not solicit funds or other support (like personal time) from subordinates in connection with an unofficial fundraising event or effort.

7. Participating in unofficial fundraising activities on personal time:

   Air Force employees may not use government resources (like funds, equipment, vehicles, supplies, postage, mass mailings, etc., to support an unofficial fundraising event or effort.

8. Participating in unofficial fundraising activities at a personal capacity:

   Air Force employees generally may not solicit funds or other support (like personal time) from subordinates in connection with an unofficial fundraising event or effort. Additionally, Air Force employees may not solicid funds or other support (like personal time) from subordinates in connection with an unofficial fundraising event or effort.

9. Government employee fundraising:

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10. Government time fundraising:

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11. Junior personnel:

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12. Subordinates:

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AEDC Fitness Trail closed for weekend and holiday hunting

By AEDC Natural Resources

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TINKER AIR FORCE BASE, Okla. (AFNS) – The first B-52H Stratofortress to be resurrected from long-term storage at the Aerospace Maintenance and Regeneration Group (AMARG) to reunite the active strategic bomber fleet soared into the sky from Tinker Air Force Base Sept. 27.

The historic flight, which the aircraft is nicknamed “Ghost Rider,” marked the end of the warbird’s 19-month transformation from a mothballed, 55-year-old, eight-engine jet parked in the Arizona desert to a fully updated conventional- and nuclear-capable global strike bomber platform.

Testing at AEDC contributed to upgrades for the B-52 fleet.

Tinker’s 76th Aircraft Maintenance Group handled the plane 90 days ahead of schedule to Air Force Global Strike Command. Ghost Rider will join the 5th Bomb Wing at Minot AFB, North Dakota.

“I am extremely proud of the team that was able to deliver Ghost Rider back to Air Force Global Strike Command,” said Brig. Gen. Mark Johnson, the Oklahoma City Air Logistics Complex commander. “This is really a testament to accomplishing the art of the possible. It shows that when there is a common goal, team members from across multiple organizations can rally behind the objective and deliver their team’s full impact to the project.”

Tinker’s 565th Aircraft Maintenance Squadron completed the overhaul, modernization and restoration work in 272 calendar days.

Charles Alley, the 565th AMXS director, said maintainers, engineers and support teams were excited to work on the historic project, spending approximately 45,000 man-hours restoring Ghost Rider to fighting shape.

Alley said pilots of Tinker’s 10th Flight Test Squadron flew the B-52 six times to verify system functionality and ensure a safe and reliable aircraft before declaring the plane ready for delivery Sept. 13.

The jet needed an extra 7,000 hours over normal programmed depot maintenance to “get it up to speed with all the other B-52s in the fleet,” Alley said.

“I told people during test flight that because the aircraft sat in the desert so long, we’re knocking all the ghosts out of it,” he said. “It seemed like every time it came back it had two or three different things wrong with it.”

Lt. Col. Darrel Hines, a B-52 flight commander with the 10th FTS, flew the plane from Arizona to Barksdale AFB, Louisiana, in February 2015, and flew in part of the six final functional test flights. The plane arrived at Tinker AFB on Dec. 14, 2015, with overhaul and maintenance work beginning Dec. 31, 2015. The plane was due to be delivered later this year on Dec. 23 but was delivered 90 days early.

Hines praised all the organizations involved in the restoration, including the 309th AMARG, the OC-ALC, Air Force Life Cycle Management Center, and above all the maintainers whose skilled hands-on work made the difference.

“This was a great team effort from multiple commands and it was a great success,” Hines said.

“Now this plane is going to come out of Tinker back to the warfighter, and it’s going to be a huge asset to the guys going out in combat.”

Ghost Rider will join 75 other B-52s in the Air Force’s operational bomber fleet.
Every Airman who plays an unauthorized device into a network or circumvents a security control on a maintenance leader needs to understand that he or she is creating vulnerabilities for our own unit to exploit,” Bender said).

Air Force leadership also emphasized that the cyber domain is much more than the internet. “While the internet is a part of cyber space, it is not all of cyber space,” Bender said. “Any computer system capable of communicating with other computer systems in some way is part of cyber space. A desktop computer, an avionics computer on an aircraft, a smart phone, an industrial controller, and the processors on a modern car are all part of cyber space, although only some of them are routinely connected to the internet. Most modern military equipment - from a hum- manely to a B-2 (Raider) bomber – has some form of processor and is thus reliant on and a part of cyber space.”

Bender called on Airmen across the total force to start considering cyber- security as part of their normal routine in the same way they’re accustomed to thinking about physical safety.

“Is it not just the cyber- space warriors who need to adapt, operators and support personnel who focus on the physical do- mains also need to practice operating effectively in an environment of constant change where not every- thing works as expected,” he said. “Everyone in the total force must learn to think of cyber space as a war-fighting domain.”

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

AF launches year-long ‘Cyber Secure’ campaign

WASHINGTON (AFNS) – The Force must...
Project Management Institute announces speaker of October luncheon

By Douglas Brown
PMI®-Plant & Programs

The Project Management Institute (PMI®) Southern Middle Tennessee Branch will hold a luncheon meeting at the University of Tennessee Space Institute on Oct. 27 from 11 a.m. to 12:30 p.m. Join local project management professionals for a time of networking and learning. Guest speaker will be Leanne Sigrist Barron. Barron is a trainer, leader and coach who has been working in the training and development industry for over 15 years. She holds a bachelor’s degree in human resource development from Texas A&M University, is a certified training professional and is a Myers-Briggs Type Indicator® certified training professional. She will be discussing “Team Building and Communication.”

She specializes in customized soft skill training and team building workshops for organizations as well as career counseling for individuals. Her mission is to set the individual and organization up for success and promote learning new skills, self-analysis, communication techniques, building new methods, leadership modules and training programs, changing team morale, productivity and engagement.

Barron believes in her roles as lifelong learner, bridge builder and change agent. She inspires others to examine their own communication practices in order to improve their personal and professional lives.

The Project Management Institute is the world’s leading not-for-profit professional membership association for the project, program and portfolio management profession. PMI advances the profession of project management through its globally recognized standards, certifications, tools, research, and networking opportunities.

Call 454-6728 for additional information about joining the local branch or to make a reservation for the luncheon.

By Air Force Medical Service

There is no single cause of depression. However, certain things can raise a woman’s risk for depression:
• Genetics (family history): If a woman has a family history of depression, she may be more at risk of developing it herself. However, depression may also occur in women who don’t have a family history of depression.
• Medical illness: Dealing with serious medical aches, digestive disorders, or chronic pain some people. Lead to depression.
• Hormonal factors: Menstrual cycle changes, pregnancy, miscarriage, postpartum period, chemical imbalance: The brains of people with depression look different than those who don’t have depression. Also, the parts of the brain that manage your mood, thoughts, sleep, appetite, and behavior don’t have the right balance of chemicals.
• Stressful life events such as trauma, loss of a loved one, a bad relationship, work responsi- bilities, caring for children and aging parents, stress and poverty may trigger depression in some people.
• Medical illness: Dealing with serious medical illnesses like stroke, heart attack, or cancer can lead to depression.
• Symptom of depression may include:
  • Feeling sad or empty
  • Feeling hopeless, irritable, anxious, or guilty
  • Loss of interest in favorite activities
  • Feeling very tired
  • Difficulty concentrating, remembering, or making decisions
  • Thoughts of suicide or suicide attempts
  • Persistent physical symptoms such as head- aches, digestive disorders, or chronic pain
  • On average, approximately 16 million new cases of depression are diagnosed in the U.S. each year.
  • Less than two-thirds of people diagnosed with depression receive care.
  • The DoD is taking measures to decrease the stigma associated with seeking behavioral healthcare.

Flexible batteries: Evolving energy for the ‘new’ reality

By Martin Novotný
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFNS) — It’s a $37 million research industry today, ex- pected to be worth $400 million by 2025. For researchers at the Air Force Research Laboratory’s Materials and Manufacturing Directorate, the “energy” spent in this re- search area is worth much more.

By using highly conductive, flexible carbon nanotube mats, scientists here have developed a new type of flexible lithium-ion battery that not only stores energy, it can be folded, bent and manipulated hundreds of times without voltage fluctua- tions, revolutionizing power sources for the warfighter technology of today. “It’s time to ‘rethink’ energy,” said Ryan Kohlmeyer, a materials research scientist with Wright Labs. “There is great interest in flexible electronics. People want to have things like wearable sensors and flexible displays that they then encapsulate in a thin, carbon nanotube-based anode and cathode. Between these electrodes is a thin polymer separator, which keeps the electrodes from touch- ing and allows lithium ions to pass through during charging or discharging.”

To fabricate their flexible power source, Kohlmeyer and fellow researcher or Aaron Blake, a graduate student at Wright State University, exchanged the commonly used metal foil current collector for collectors for chemical vapor deposition-grown carbon nanotube mats. Carbon nanotubes are known to be highly con- ductive and extremely strong – two fea- tures a flexible battery would need in or- der to generate power in diverse forms. The researchers prepared the bat- tery by placing a separator between a carbon nanotube-based anode and cathode that they then encapsulated in a thin, flexible plastic film. The battery was then charged and placed under mechan- ical testing where it was bent and creased to see if it could perform consistently under extreme mechanical abuse.

For researchers at the Air Force Research Laboratory (AFRL), “It’s time to ‘rethink’ energy.”

Traditional lithium-ion batteries con- sist of a negative electrode, or anode, and a positive electrode, or cathode, coated on a metal foil current collector. Between these electrodes is a thin polymer separator, which keeps the electrodes from touch- ing and allows lithium ions to pass through during charging or discharging.

Lithium-ion batteries are common in many home and portable electronics, in- cluding computers, mobile phones and wearable fitness trackers. Compared to traditional batteries, lithium-ion batteries charge faster; last longer and have a high- energy capacity, enabling them to deliver a large amount of power in a small package.

Given these benefits, lithium-ion bat- teries provide a platform for powering small sensors and battlefield devices – the form factor can be changed to meet the application needs.

“If you’re moving around in the field, you don’t want to wear something that is bulky and rigid,” Kohlmeyer said. “Flexible batteries are conformal, meaning that they can move with the person and the de- vice they power. The applications for this type of technology are limitless.”

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Thanks to Green Dot training, Hurlburt serviceman helps save woman from potential kidnapper

By Kelly Humphrey

HURLBURT FIELD – If you drive or ride around Hurlburt Field, you will see some cars sporting a magnetic green dot. The unusual accessory is designed to give students tools to intervene in a potentially violent situation.

For Tech Sgt. Jeremy Davey, the training, which he completed in early May, has almost immediate real-world applications.

Earlier this month, Davey and his wife, Svetlana, and their nearly 2-year-old daughter, Zoey, were enjoying a day at Navarre Beach.

“If you’ve ever been there, you know that to your right are the hotels and con-

The unusual accessory is designed to give students tools to intervene in a potentially violent situation.

Weary of certain aspects of their own and Duncan said most pregnant women are more prepared. Duncan, the chief resident for General Preventive Medicine Residency with the Uniformed Services University of Health Sciences, said, “We need to have a discussion about Green Dot training with giving him the tools to get involved.

The “something” was clearly having trouble walking. Davey, however, to be persistent. He asked the woman what her name was. “It was like a stubble with his beard, and I thought I think I have to.”

Davy recalled with a smile, “I told her, ‘I think I have to.’ ”

Davey decided to approach the man, who was walking the semi-conscious woman toward the parking lot.

“I asked him, ‘Davina, are you, is everything all right?’ ” Davey said. The man assured him that he was his friend, and he was much too drunk to take her home. Something still didn’t seem right to Davey, however, to be persistent. He asked her what was going on. “I’ll have to get ready to fight me. But he just said, ‘I don’t have time for this, she walked away.’ ”

While Davey tended to the woman, who was extremely inebriated, he noticed four other young women headed in her direction. They were like, ‘Oh my God, Sandra, are you OK?’ “ Davey said.

It turns out that all five women were visiting Navarre from out of town. The young man whom Davey met had come visiting Navarre from out of town. The young man whom Davey met had come visiting Navarre from out of town. The young man whom Davey met had come visiting Navarre from out of town. The young man whom Davey met had come visiting Navarre from out of town.

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AFMC promotes ‘RECESS’ physical activity challenge

By Secretary of the Air Force Public Affairs

WASHINGTON (AFNS) – Though monthly observances and themes center on energy conservation, the Air Force is responsible for at least half of that consumption.

According to Air Force Secretary Deborah Lee James, the Air Force must invest in new technologies that will allow it to operate less expensively and cleanly in the future, and more effectively at the strategic level, to preserve this capability for future generations.

The key is to move your body frequently during the day. Without energy, the Air Force would not be able to carry out some of its core missions such as intelligence, surveillance and reconnaissance; space; and cyber.

The Air Force has already taken several steps in an effort to save energy. After Air Combat Command’s procurement of a more spacious ground equipment to support the national airborne operations center e-4B alert cy-cles, the Air Force stands to save 680,000 gallons of fuel by adding AH-64 at just four other duty locations. Additionally, Air Materiel Command flight plan-ners recently resolved all global airbase issues for its tankers, eliminating all ad-ditional fuel they were quaring for all flights over Egyptian airspace, saving AMC over $5 million.

By being aware of en-ergy consumption, personnel and their families can also actively save energy.

There are several prac-tices individuals can incor-porate into their daily activities – from work to home – that can help “Pro-tect the Power.”

At home, go natural by turning off the lights and use sunlight when it’s available. Using this free resource instead of power can help save up to 40 per-cent of an electricity bill.

In the car, slow down. Instead of driving 75 mph, consider a lesser speed of 55 mph. Driving at slower speeds can save up to 25 percent in fuel costs, and if it takes $40 to fill up a ve-hicle’s gas tank every two weeks, savings could reach $240 a year.

At work, conserve en-ergy by remembering to turn off computer moni-tors at the end of the day. Combined, monitors use more energy than any other piece of equipment, so try to remember to eat them off when not in use for an extended period of time.

Mini-power savers also have a role to play. Try posting reminder cards to help get youth in the habit of sav-ing.

(EDITOR’S NOTE: Informa-tion for this article was provided by http://www. safeenergy.all.mil/Programs/energysection. Visit the site for more ways to Protect the Power.)
Hurricane Hunters fly data-gathering missions through Hurricane Matthew

By Maj. Marnee A.C. Losurdo

KEESLER AIR FORCE BASE, Miss. – The Air Force Reserve’s 53rd Weather Reconnaissance Squadron has been conducting around-the-clock operations flying into Hurricane Matthew to collect critical weather data for the National Hurricane Center in Miami to improve the center’s computer models that forecast movement and intensity.

The squadron, part of the 401st Wing and better known as the Hurricane Hunters, has been flying the storm since Oct. 6, and made its way up the Florida coastline Oct. 7 as a Category 2 storm. First Lt. J. Kelsie Carpenter, a 53rd Weather Reconnaissance Squadron officer, collects meteorological data during Hurricane Matthew’s six times to locate the low-pressure center and circulation of the storm. During each pass through the eye, they released a drosonde, which collects weather data on its descent to the ocean surface, measuring wind speed and direction, temperature, dew point and pressure.

“During storm flights, the aircraft supply the NHC with their forecasts and storm warnings,” Carpenter said. “We got a lot of good information and data today.”

Hurricane Matthew formed off the coast of Haiti in late September, became a hurricane Sept. 20 and rapidly intensified to a Category 5. It hit Haiti Oct. 4, the Bahamas Oct. 6, and made its way up the Florida coastline Oct. 7 to Category 2 storm. First Lt. Kelsie Carpenter was the aerial reconnaissance weather officer on a flight that left at 4 a.m. Oct. 7 and returned at 2 p.m. In addition to the aerial reconnaissance weather officer, the crew consists of a pilot, co-pilot, navigator and a weather loadmaster. They work together to collect vital data on a storm’s intensity and direction that assists the NHC with their communication every 10 minutes to the National Hurricane Center.

To gather this data, the aircraft flew through the eye of Hurricane Matthew six times to locate the low-pressure center and circulation of the storm. During each pass through the eye, they released a drosonde, which collects weather data on its descent to the ocean surface, measuring wind speed and direction, temperature, dew point and pressure. During storm flights, the aircraft transmit weather data via satellite communication every 10 minutes to the NHC.

On Oct. 7, the Hurricane Hunters found winds up to 120 mph at an elevation of 10,000 feet and 110 mph at the surface, said Carpenter. “With this kind of storm, where it’s so close to the East Coast, any variation or diversion in track, whether it’s 5 or 10 miles, can mean a lot to those people who live in those impacted areas. The more accurate information we get the more we can fine tune the forecast and keep people safe,” Carpenter said.

The storm currently has taken more than 800
lives and left thousands without power.

Capt. Lucas Caulder, a Matthew 27 times, stressed the importance of heed- storm warnings and evacuation orders. He said he is proud of the mission and service the Hurricane Hunters provide to the peo- ple in the community and the U.S. “This way people can make an informed decision on whether to hunker down or get out of town,” he said.