



HIGH MACH

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AEDC and UTSI cryo-contamination research heralded a success

By Shawn Jacobs
Aerospace Testing Alliance

A collaboration between AEDC and graduate students at the University of Tennessee Space Institute (UTSI) resulted in the most recent of three cryo-contamination experiments in AEDC's small ultra high vacuum (UHV) chamber. Researchers at both organizations are calling the joint venture a success.

The researchers used a laser to study detection and possible mitigation of ice buildup on a mirror in the UHV. Similar to frost on a windshield, cryo-contamination inside space chambers in a lab or on satellites in space is not a new problem. The cryo-deposits cause the chamber optics to degrade and result in other problems for the chamber's mechanical components.

Dr. Trevor Moeller, an assistant professor at UTSI and a principal investigator, said the research went extremely well.

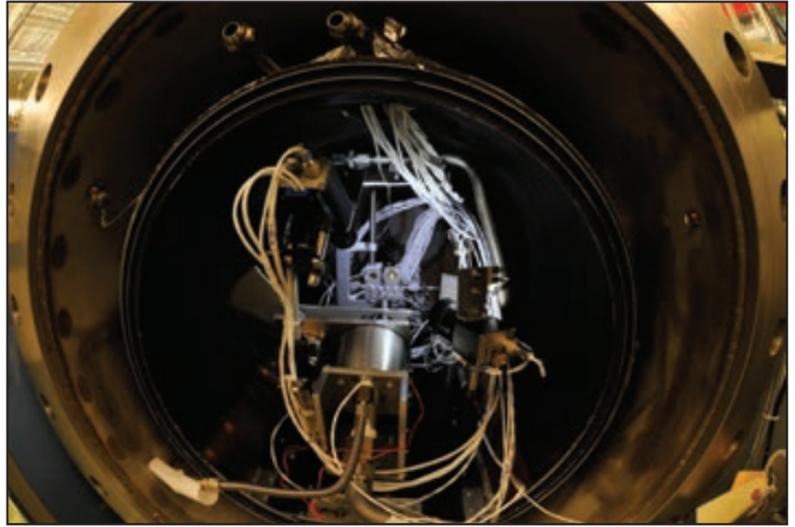
"We've had people working the experiment that include ATA, Air Force civilians

and UTSI personnel working side by side on the project at various times, and I think it's gone extremely smoothly," he said. "It has allowed us to take some ideas that we've had at UTSI and use ... the UHV chamber over on base to allow us to test some of those capabilities in an environment and for applications that are of interest to the Air Force.

"The initial results that we got from the optical detection system basically confirmed what we got in the second test, and we had a new laser in our optical setup that provides us higher resolution, so that it gives us more details of what we're measuring. Things look very consistent so far even though we haven't completed our analysis, but initially things look very good."

Dr. Heard Lowry, an ATA Technology and Analysis Branch Technical Fellow who oversaw the experiment, agreed.

"They have actual data that will give us information on the deposition versus time - how much water vapor is ac-



This look inside AEDC ultra high vacuum (UHV) chamber shows the equipment used to measure the formation of cryo-deposits, including a mirror and a quartz crystal microbalance (QCM). The resonant frequency of the QCM changes as small amounts of mass are deposited. (Photo by Rick Goodfriend)

cumulating versus time," he said. "The real detail has yet to be pulled out of all the data, but just right away we've ... learned something. We hope to contribute to the literature there as well. I think it's definitely a success."

Dr. Lowry said good data were obtained from the first two tests, but the recent one, completed Jan. 18, was even

more sophisticated.

"[In the] previous tests we had trouble getting the devices we were trying to get the contaminants on as cold as we wanted, but we did get some data," he said. "This test we worked to obtain better cooling to these areas and we got them down another

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Students enjoy National Engineers Week



Coffee County Central High School students Lainey Wilkins, left, and Brittany Fox celebrate after a successful test of their space elevator during the Student Design Competition held at the Hands-On Science Center Feb. 21. For more on the competition, see the story on page 8. (Photo by Jacqueline Cowan)

Area Chamber of Commerce CEO receives Air Force community service award

By Philip Lorenz III
Aerospace Testing Alliance

Secretary of the Air Force Michael Donley and Air Force Chief of Staff Norton Schwartz recently presented Walter Wood, Arnold Community Council member and Shelbyville-Bedford County Chamber of Commerce corporate executive officer, with the Air Force Distinguished Public Service Award.

The occasion for the presentation was the annual Civic Leader program held at Joint Base Andrews, Md., which brought prominent civic representatives from 32 states and Guam together.

The award citation reads in part, "Mr. Walt Wood provided exceptionally distinguished public service to the United States Air Force from January 2008 to January 2012. He conscientiously advised senior Air Force leaders on the development of national and international Air Force pro-



Secretary of the Air Force Michael Donley and Air Force Chief of Staff Norton Schwartz present Walter Wood, Arnold Community Council member and Shelbyville-Bedford County Chamber corporate executive officer, with the Air Force Distinguished Public Service Award. (U.S. Air Force photo/Scott M. Ash)

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Fellows nominations due March 23

AEDC is currently accepting nominations for the 2012 Fellows Program with submissions due no later than March 23.

Established in 1989, the Fellows program recognizes AEDC individuals who have made substantial and exceptionally distinguished technical contributions to the nation's aerospace ground testing capability at AEDC.

Since the inception of the program, AEDC has bestowed the center's highest honor to a grand total of 72 individuals (Fellows, Lifetime Achievement Fellows and Honorary Fellows).

AEDC Fellows nominations may be submitted by any present or former AEDC government or operating contractor/subcontractor employee. All current or retired military, civilian and operating contractor and subcontractor personnel assigned or previously assigned to AEDC can be considered candidates for selection as an AEDC Fellow. Candidates qualified for consideration as an AEDC Fellow must personally have made sustained, notable and valuable contributions in aerospace ground testing at AEDC.

AEDC Lifetime Achievement Fellow nominations may be submitted by any present or former AEDC government or operating contractor/subcontractor employee. AEDC Lifetime Achievement Fellows are reserved for exceptional candidates and are not necessarily selected each year. All current or retired military, civilian and operating contractor/subcontractor personnel assigned or previously assigned to AEDC can be considered candidates for selection as an AEDC Lifetime Achievement Fellow. Candidates qualified for consideration as an AEDC Lifetime Achievement Fellow must personally have made notable and valuable lifetime contributions to AEDC in any area relevant to the AEDC mission.

Only AEDC Fellows may submit a nomination for an AEDC Honorary Fellow. AEDC Honorary Fellows are reserved for exceptional candidates and are not necessarily selected each year. Candidates qualified for consideration as an AEDC Honorary Fellow must have made sustained, notable,

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HIGH MACH

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An Air Force Materiel Command Test Center

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The center's vision: AEDC as the test center of choice, the workplace of choice for our people and a model of environmental excellence.

**Core Values**

- Integrity first
- Service before self
- Excellence in all we do

**Vision**

"ATA will be a trusted partner in delivering best value warfighter support and assert stewardship to AEDC"

Core Values

- Be accountable for our own actions
- Ensure the safety of individuals and equipment
- Demonstrate the highest integrity and ethical standards
- Communicate clearly and openly
- Deliver professional and technical excellence
- Nurture, enable and treat people fairly
- Align with customer goals and objectives
 - Use disciplined and innovative processes
- Continually improve in all that we do

Fundamentals for successful mentoring

By Shirley Ross
Force Development Talent Management

WASHINGTON (AFNS) – I have studied, designed, launched, repaired and been a part of many mentoring programs during my 25-year-plus career in talent management.

To be frank, at this point I have some pretty strong biases about how to design and execute mentoring programs because I have seen so many fail. They almost never yield what is hoped for, but there are some exceptions.

My own philosophy about how to construct mentoring programs is rooted in these exceptional successes.

What do you talk about?

Topics worked on in the mentoring relationship typically include areas such as strengths and weaknesses of leadership style, modifying damaging behavioral patterns, addressing gaps in leadership and management skills, or making a leap to the next level of responsibility.

Mentoring can be accomplished with a mentor either internal or external to the organization.

An internal mentor, however, can offer significant advantages if well chosen.

A senior executive will have a broader view of the internal working of the organization than the mentee, as well as a successful track record of negotiating success in that organization.

Mentors should be chosen on several criteria, but one of the most important is their knowledge of how to make important and valuable things happen in that organization.

Mentors can also help with the landmines: where they are and how to avoid them, and how to recover from missteps.

Yes, this is about politics, but politics are found in virtually every organization with people. If engaging in politics seems distasteful, then think instead in terms of influence, sensitivity to cultural norms, dealing with difficult people and knowledge of human nature -- because these are elements of politics.

Political savvy and emotional intelligence significantly

cantly overlap.

Why mentoring fails

Lack of chemistry is the most common reason that mentoring relationships fail. Either the mentor or mentee just can't relate to the other or make a meaningful connection.

When this happens, mentees can experience the meetings as too uncomfortable or just not productive, and mentors may consistently dodge their obligations to the mentee by being "too busy."

If the pair does not work out, it is vital that changes be made quickly. If negotiated properly with the mentoring program lead, these changes don't have to be uncomfortable or seen as a failure.

What works in mentoring programs

Whether mentors are internal or external, I prefer to have mentorships reside in the framework of a formal program rather than relying on ad hoc arrangements. The successful mentoring programs that I've designed or experienced in industry have incorporated a great deal of structure.

The structural components typically include:

1. A specified period of time for the program, say, for example, nine months. This way, both parties feel on point to accomplish their objectives, and there are established start and stop points so the relationship doesn't just fizzle out or uncomfortably fade away at some point.

2. Formal guidelines and training for both mentors and mentees. Expectations and commitments are clarified and both parties have a set of formal and firm guidelines to steer them through the process. This training can be accomplished on one session, but it is important and mentors can't be given a "pass."

3. A provision to quickly address pairs that are not working out or have failed to make a connection as I've mentioned above.

One successful example

One unusual program I participated in as a mentor really changed my outlook about what success looks like.

Sponsored and structured by an outside third party, this program used the team approach: two mentors paired with four

mentees. The mentees just loved it.

I had quite a different leadership style from the other mentor, and we approached problems very differently. Those differences were a favorite feature of the mentees.

Our group sessions were remarkably dynamic, and the mentees reported it helpful to see that different approaches could work equally well. They could choose for themselves which approach in which situation played to their strengths.

The second advantage of this team concept, one I wouldn't have anticipated, was that the mentees felt less awkward calling on us between meetings if they had a problem. Because they could call one or the other of us, they felt the burden they imposed was less onerous.

The mentees spoke with great feeling about how we had helped each one of them through difficult decisions and missteps that year, all with positive outcomes.

When a mentoring program does work, it can indeed be powerful.

Turning change into opportunity to build new CE enterprise

By Maj. Gen. Timothy Byers
The Civil Engineer

WASHINGTON (AFNS) – Today, our nation faces a number of challenges that affect all branches of our government. As a consequence, our Air Force is operating in a resource constrained environment that is driving cost cutting measures and manpower reductions across the service. Despite these reductions, we must continue our focus on accomplishing key capabilities, priorities and missions, and strive to accomplish them more efficiently and effectively.

Air Force Civil Engineers take pride in our "Can-do, Will Do" attitude, and have a reputation for building ready engineers, great leaders and sustainable installations. However, resource constraints are forcing us to rethink how we provide installation and expeditionary combat support. We must maintain our commitment to managing our installations: the Air Force's three-dimensional weapons systems.

The civil engineer community will rise to this challenge by accelerating transformation efforts we initiated in 2007. These efforts, which align with Air Force transformation initiatives, reexamine our processes and capabilities, and centralize, standardize and streamline our core activities, services and products. This will ensure we continue managing our installations while preparing for and executing our expeditionary responsibilities.

This initiative changes

the way we conduct business at our bases. Civil engineers will take a more focused and centralized approach to installation management that prioritizes requirements across the service, puts our scarce resources towards the Air Force's highest priorities, and minimizes the risks to Airmen and the mission. Ultimately, this will lead to a more efficient and effective way of managing our resources.

Going forward, civil engineer squadrons will become more selective when it comes to facility management. Base engineers will focus on sustaining our facilities to support the mission and quality-of-life. Maintenance will be conducted based on the condition of each facility instead of the scheduled approach we use today. However, if there is an emergency requirement that impacts a base's quality-of-life or mission, we will address that need. Civil engineer firefighters, emergency managers and explosive ordnance disposal personnel will continue to provide emergency response capabilities during times of crisis.

This refined installation management approach requires organizational change throughout the civil engineer community. Squadrons will see their capabilities streamlined based on processes and product delivery, resulting in smaller, leaner, more technologically-advanced units. Many duties, such as planning, execution, and

environmental compliance and restoration, will be leaner at base-level with overall program management and technical support shifted to a centralized Civil Engineer Field Operating Agency (FOA). The new FOA will provide full-spectrum engineering services to Air Force installations and major commands. It will be formed by combining the unique capabilities of three existing agencies – the Air Force Civil Engineer Support Agency, the Air Force Center for Engineering and the Environment, and the Air Force Real Property Agency – and strive to become a worldwide center of excellence for centralized installation support. The new organization will operate from the offices and operating locations currently occupied by our FOAs. Additionally, MAJCOM CE staffs will transform to focus on prioritizing and advocating for their installations' requirements, while the Office of the Civil Engineer at Headquarters Air Force will provide policy, oversight and resourcing for the community.

The new FOA plays a key role in our transformation effort. The reduction of manpower and resources at civil engineer squadrons and MAJCOMs requires us to shift many responsibilities to the FOA for central management and execution. This will enable civil engineer squadrons to focus on their core mission of installation support and expeditionary combat support preparation.

We recognize that we have a difficult road ahead.

Transformation will involve organizational realignment and personnel reductions throughout the community, as well as impact the levels of service we are capable of providing to our installations. We are committed to working with our stakeholders to address these challenges and will be candid and transparent regarding our initiatives. At our installations, base civil engineers are informing their wing commanders of the impacts of our transformation efforts. They are also actively working with civil engineer personnel affected by manpower reduc-

tions. Likewise, FOA leaders are keeping their staffs informed of organizational changes and addressing problems that arise.

Every day, civil engineers do amazing things at home station and around the world. We proudly serve our Air Force and our nation with the skills, expertise and "Can-do, Will-do" attitude that has earned us our stellar reputation. We will continue being resilient throughout our transformation, and will work to turn change into an opportunity to develop a civil engineer enterprise that is "Built to Last."

Action Line

Team AEDC

I believe in free and open communications with our Team AEDC employees, and that's why we have the Action Line available. People can use the Action Line to clear up rumors, ask questions, suggest ideas on improvements, enter complaints or get other issues off their chests. They can access the Action Line in one of three ways: via the AEDC intranet home page, Action Line boxes at the base cafeterias and by calling 454-6000.

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

Col. Michael Brewer
AEDC Commander

**AEDC Information Line****454-3600**

The AEDC Information Line is available for ATA employees to get the latest information on a wide variety of emergency circumstances that could impact base operations or driving conditions.

Smoking Policy

1. The following revised AEDC smoking policy is effective immediately. Smoking is permitted solely in designated areas identified by a plastic "smoke genie." This receptacle is for the sole purpose of cigarette butt disposal. If there is no receptacle, you cannot smoke in that area. It is the responsibility of all smokers to clean up the area surrounding the receptacles for any cigarette butts on the ground. Smoking in government-owned vehicles is strictly prohibited. Personnel are allowed to smoke in their personal vehicles at any time. In case of inclement or cold weather, employees are encouraged to use their personal vehicles if a sheltered designated smoking area is not available nearby. Smoking areas will be held to the absolute minimum and will be located in low traffic, low visibility areas away from points of building ingress/egress and air intakes. A map of all authorized smoking areas is available on the AEDC web portal at [https://lppro.arnold.af.mil/PORTALimages/Smoking area map. pdf](https://lppro.arnold.af.mil/PORTALimages/Smoking%20area%20map.pdf). Smoking near a facility in an area not designated on the map is prohibited and any smoking receptacles located in areas not shown on the map will be removed. All "smoking permitted" and "no smoking" signs will be removed unless specifically required by OSHA.

The fact a person smokes has no bearing on the number of breaks they may take. Breaks should be taken in accordance with the company/agency personnel policies that apply to all employees.

Regarding use of smokeless tobacco, 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. Smokeless is strictly prohibited in conference room meetings and other areas, e.g. PMEL, where Air Force regulations specifically prohibit.

Due to the nature, appearance, and safety concerns of electronic cigarettes (also known as "e-cigs"), they are considered to be in the same category of tobacco products whose use is governed by Air Force Instruction (AFI) 40-102, Tobacco Use in the Air Force. Therefore, all rules stated above for tobacco products apply to electronic cigarettes.

2. Supervisors at every level will ensure this policy is followed. Disciplinary action is appropriate for repeated violations.

3. Updates to this policy will be made in the future to further align with Air Force guidelines.

4. This letter supersedes previous letter dated 28 October 2006, subject as above.

First female TSU president speaks at African-American History Month event

By Philip Lorenz III
Aerospace Testing Alliance

In observance of African-American History Month, AEDC featured Dr. Portia Shields, Tennessee State University's (TSU) first female president, as the guest speaker for the event luncheon at the Arnold Lakeside Center Feb. 16.

This year's theme was "Black Women in American Culture and History."

For Reginald Floyd, an AEDC Air Force Analysis Branch aeropropulsion engineer, Dr. Shields' presentation resonated on several levels.

"She did a very good job of speaking to the topic of the day, as well as black history in general," he said. "Her thoughts on the importance of maintaining a strong cultural and personal

identity were applicable to all those in attendance, regardless of race. Having several generations of my own family in attendance brought that message even closer to home."

Floyd, who invited Dr. Shields to speak at the annual event at AEDC, said, "I am a proud 2010 graduate of Tennessee State University, where I received my Bachelor's of Science in mechanical engineering."

Before her presentation, Dr. Shields spoke about the gender gap in upper education.

"More black women are graduating from college than ever before; more are going," she said. "The problem is, the men aren't going [and] the men aren't graduating. They're [women] going to have to assume larger roles as breadwinners, and also larger roles as the head of families."



Tennessee State University President Dr. Portia Shields shares some of the lighter moments of her career before speaking at the annual African-American History Month event held at the Arnold Lakeside Club at Arnold Air Force Base Feb. 16. (Photo by Rick Goodfriend)

Britt Covington, AEDC's Executive Director, agreed with Floyd's assessment of the TSU president's presentation.

"I was impressed by Dr. Shields," Covington said. "She gave an inspiring speech. I was particularly taken by her reflec-

tions on her family upbringing and that her parents had set high expectations for her and her sisters.

"They limited her TV watching and required her to first do her homework when she came home from school. They also

required her to do chores and they offered her constructive role models. She has obviously lived up to expectations placed upon her as have her sisters – one being a current U.S. Congresswoman."

Dr. Shields' presentation also

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Unique aircraft test at NFAC

Eric Paciano, above left, and Jonathan Lichtwardt, both aerospace engineering graduate students at California Polytechnic State University, prepare the AMELIA model airplane for a test. "If you go to SFO (San Francisco International Airport) you're not going to see a single plane that looks like this," Lichtwardt said. AMELIA is still about 20 years away from becoming a reality. The plane would be capable of flying at about .8 Mach speed, or about 600 miles per hour. The model is made of aluminum and steel with a 10-foot wingspan. (Photos by Mike Anderson)

Donate now to AF Assistance Fund

This year's Air Force Assistance Fund campaign will be conducted at active duty Air Force Installations between February and May. The campaign for Arnold AFB is NOW through March 16.

The Air Force Assistance Fund was established to provide for an annual effort to raise funds for the charitable affiliates that provide support to the Air Force family (active duty, retirees, reservists, guard and their dependents, including surviving spouses) in need. These organizations are the Air Force Villages, Inc., the Air Force Aid Society, Inc., the General and Mrs. Curtis E. LeMay Foundation and the Air Force Enlisted Village, Inc.

These organizations help Air Force people with aid in an emergency, with educational needs, or to have a secure retirement home for widows or widowers of Air Force members in need of financial assistance. For those individuals who can, please consider helping those less fortunate.

For more information about the Air Force Assistance Fund, visit www.afassistancefund.org.

Contact 2nd Lt. Carl Tegmeier at 454-5482 if you would like to contribute or for more information.

SecAF: Air Force must continue to modernize

By Tech. Sgt. Richard A. Williams Jr.
Air Force Public Affairs Agency

ORLANDO, Fla. (AFNS) – Secretary of the Air Force Michael Donley highlighted the service's need to continue future modernization plans during remarks to approximately 400 Airmen, industry officials and Air Force Association members Feb. 24.

Donley spoke on the second day of the Air Force Association's 2012 Air Warfare Symposium and Technology Exposition, telling attendees the Air Force must recapitalize needed capabilities despite fiscal challenges.

"We made some hard choices to closely align our FY13 budget submission with the new (Defense Department) strategic guidance," he said. "Even as

budgets decline, we must still provide the essential force structure and capabilities on which the Joint Force depends, and be ready to respond to a challenging and dynamic security environment.

"Yet, the new strategic guidance also requires continuing modernization, both to recapitalize aging systems and platforms and to address the proliferation of modern technologies and threats," Donley said.

To meet this requirement, the secretary said service leaders determined that the Air Force's best course of action is to trade size for quality.

"We will become smaller in order to protect a high quality and ready force, that

will continue to modernize and grow more over time," he said. "In this decision, we sought the proper balance between today's Air Force and meeting the immediate needs of combatant commanders, while also laying the groundwork for the Air Force our nation will need 10 years from now and beyond."

While the fiscal 13 budget proposal slows the pace and scope of modernization, Air Force officials took measures to protect programs that are critical to future warfighter needs as outlined in the new strategic guidance, Donley said.

He said these programs include the Long Range Strike bomber; the KC-46A refueling tanker; key space

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Secretary of the Air Force Michael Donley delivers remarks during the 2012 Air Force Association Air Warfare Symposium Feb. 24, 2012, in Orlando, Fla. In his speech, Donley addressed the importance of modernization in the Air Force's fiscal 13 budget proposal and out-year plans. (U.S. Air Force photo/Scott M. Ash)

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30 degrees Kelvin. We saw a big difference in how the water attached to the mirror.

“In the first test when the temperature was higher, it was like a very clear thin sheet. It just kept building up. And during the latest test, the cryo-deposits fractured almost immediately, now that this temperature was colder. It looked like the frost on a windshield; you could see strong scattering from the laser light. We’re trying to learn more about at what temperature and thickness that happens.”

Dr. Moeller said experimentation also involved ways of developing an early warning system of cryo-deposit buildup and attempts to mitigate the problem.

“We had a mitigation technique that we did – a very preliminary test that utilized electromagnetic fields applied to surfaces to try to prevent or slow the accumulation of these water molecules on critical surfaces,” he said. “We’re still analyzing all of the results, so I can’t say how

well that worked but it’s a next step in the sequence. You detect the problem, and then the second step is to find out how to prevent it from happening or slow it down.”

Dr. Moeller said the same mitigation methodologies used to reduce or remove ice from components in space chambers would be applicable to satellites in space.

Jim Burns, AEDC’s Space Chambers Lead, initiated the project with UTISI about two years ago and called the collaboration a “win-win.”

“I believe partnering with universities allows us to gain access to specialized expertise when needed and also keeps us connected to the front lines of research,” he said. “That lets us tap into much more areas than we could if we tried to do everything in-house. Ultimately one long-term advantage of a partnership would be for UTISI to leverage what we do with their own grant and research applications. Much like making stone soup, none of us has all the

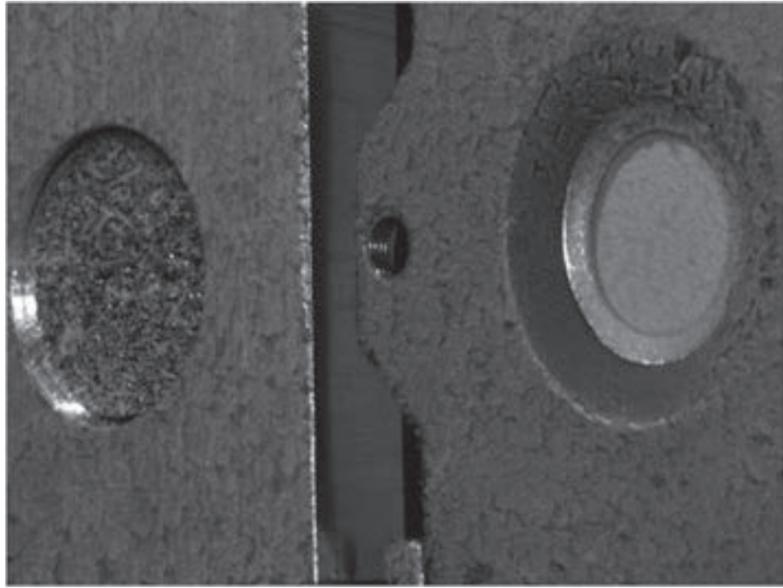
resources to do it alone, but together we can.”

Dr. Lowry thinks more research along this line is warranted.

“We had another type of contamination occur that seems to be related to a type of thermal grease that was used in one of the components,” he said. “The next testing is really going to be looking at that and seeing how that might migrate from where it is to the surface of the things we’re interested in. We want to bear down on that more and try to learn more about it.”

Dr. Lowry said he’s looking forward to further collaboration with UTISI.

“We have some other goals for the UTISI contract that we need to start working on, so we wanted to go ahead and get this one done and move to the next thing on the list,” he said. “Hopefully, we can continue this work relationship with UTISI. We’re under contract until the end of the [fiscal] year right now, and we’re trying to show how useful this is and maybe we can get money to continue



This photo depicts cryo-deposits formed on both the mirror and the quartz crystal microbalance inside the UHV chamber. (Photo provided)

their work next year.”

Dr. Moeller said he, too, would like to continue to partner with AEDC on current and future research.

“I think this has been an extremely positive program,” he said. “We’ve learned a lot [and] we have had some very good collaborations, and assuming that there is funding going forward, I think that there’s a lot more to be learned and

a lot more that we can do together.”

UTSI graduate students involved in the research included James Rogers and Billy Ring. Jesse Labello, who participated in the previous experiments, graduated with his Ph.D. and had to move off the project. Other UTISI faculty who participated included Dr. Monty Smith and Dr. Frank Collins, a

retired professor emeritus.

“We have multiple papers that are going through [clearance] for public release that will be submitted to journals to show people the work that we have been doing at AEDC,” Dr. Moeller said. “We’ll also be submitting abstracts to technical conferences to help spread the word about the good work that we’re doing together.”

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impressed 1st Lt. Char-meeke Scroggins, a test project manager with AEDC’s arc heater facilities.

“I felt as though she gave great examples about the different black women who have made significant contributions to our history,” the lieutenant said. “One thing that stuck with me was ‘know your roots and understand where you come from and continue to share that information with your family, generation after generation.’”

Dr. Shields said the positive impact of the military on African-Americans must not be overlooked.

“The Army, the Air Force, the Armed Services [in general] has made a strong impact on the African American culture,” she said. “I applaud our students who go into the Reserve Officer Training Corps; as a matter of fact, I encourage them to do so.”

Floyd, who agrees with her assessment, said he has benefitted from the opportunities available to minorities.

“The federal government and the United States military have long been at the forefront of breaking down racial and gender-based barriers,” he said. “I think for that reason, the Air Force in general and AEDC in particular has always been a great example for the country (and the local community) when it comes to offering endless professional opportunities to minorities.

“Due to the long his-

tory that the Air Force and AEDC have with providing equal opportunity, I believe they do a better job than private industry and academia. I am proud to be a part of that great tradition.”

Dr. Shields said TSU is initiating a charter school pilot program with a science, technology, engineering and math (STEM) focus.

“[TSU] has so much potential,” she said. “We have engineering, nursing, all the health professions and the education scene. We’re getting ready now to open a charter school – the goal of the school is not to insulate ourselves from the community, but to spread out into the community [with] role models who are students and our faculty and staff.”

Covington said he is impressed with the caliber of students he has met at TSU.

“When I was in college, I studied aerospace engineering,” Covington said. “There were few females in my classes and even fewer minorities. I have been fortunate to travel twice to Tennessee State University on recruiting trips in the last few years. I was impressed by many of those I met and ended up hiring two promising engineering graduates to AEDC.”

In her presentation, Dr. Shields focused a considerable amount of attention on the importance of family, both men and women, emphasizing their role and

responsibility to ensure their children commit to pursuing a sound education.

“I have come up to be a giver, a nurturer, sort of following in the footsteps of my mother who was a teacher and counselor and my father was an attorney,” she said. “But I gravitated toward my mother’s kind of nurturing and that’s why I had opportunities to go to other schools.”

However, Dr. Shields decided a career administering historically black colleges and universities made the most sense. It put her in a position to help both the institutions and provide the stewardship and leadership required to keep students on track to graduate with the most viable degrees.

Floyd said making women the focus of this year’s African-American History Month was particularly appropriate.

“This year’s theme is a great one to bring to light as often as we possibly can,” he said. “African American women have long been the object of great respect and reverence in our own community, yet that doesn’t always translate to American society as a whole.

“Black women have always served as the strongest pillars in African American communities around this nation, but wider opportunities were out of reach for far too long.”

Floyd said besides his

education at TSU, his job at AEDC has provided him with a firm professional footing.

“As my first real job after graduation, my work here has become the foundation for my career from here on out,” he said. “What I have learned here at AEDC has placed my career on a path that seems very promising.

“The area of national defense is one that is paramount to our mission as a nation. I am fortunate to have been given the opportunity here at AEDC to make a contribution to our national defense, and I believe the lessons learned here in my short time will be invaluable to me in the long-term.”

Lieutenant Scroggins said coming to work at AEDC has had a positive impact on her as well.

“I’ve learned a lot about AEDC’s role to the mission of not only the Air Force but to all of the other services as well” she said. “Being able to interact with people in team efforts and just keeping a positive outlook on any situation will lead you to success.”

She added, “AEDC does present unique opportunities for women and minorities. I do believe that these same opportunities are available elsewhere in the Air Force, industry and academia, it’s just the matter of being able to step up to the challenge and put your best foot forward to be successful in any position you are placed in.”

WOOD from page 1

grams, and facilitated cooperation between civilian communities and Air Force entities to ensure each program’s success. He openly communicated information about Air Force missions and requirements to the American public, increasing awareness and understanding among local, regional and national audiences.”

Wood, who recently completed two terms on the ACC board of directors, said, “I was humbled and deeply grateful to receive this type of recognition from the secretary and the chief. [It was] very meaningful, especially since I’ve gotten to know them over the last several years.

“We have to continue to be supportive of the Air Force and their programs as things change – we still are online to get our new tanker, the strike fighter, the long-range bomber and space platforms. We want to be sure AEDC is involved and engaged with the new way the Department of Defense and the Air Force is dealing with the future.”

He said it is important for AEDC’s workforce to be in a position to stay focused on the mission.

“We face a very dangerous world,” Wood said. “Arnold is on the forefront, making sure aircraft, solid rocket motors and engines work properly and we get as much life as we can out of them. We need [our weapon systems] to do what they’re supposed to – when our Airmen, soldiers and other members of the military press the button, pull the

trigger or give the command, it’s got to work.”

Wood said AEDC’s capabilities extend beyond Tennessee.

“We have Tunnel 9 and the facility out at NASA Ames,” he said. “We have a national presence as far as testing and evaluation activities [are concerned].”

Wood said AEDC is a national treasure, but that new threats require an ongoing commitment to maintain a well-educated workforce, update processes and make the most of the latest technologies.

“The key is that we have been fighting two wars with bombers that were made in the 1950s, tankers that were made in the 1960s and fighters that were made in the 1970s and we’re transitioning to a new tanker, our new fighters are coming online,” he said. “It’s very important that we continue that process.

“We also must be vigilant and make sure that the long-range strike bomber goes forward. [Another] key issue is cyber warfare. The Pentagon is attacked daily by people trying to hack into our command and control system.

Wood added, “There’s a strong emphasis by this chief and especially his wife Suzy, and the secretary to support our Airmen and their families. This has been a key activity of those folks for the last several years, which has been very important. I feel very privileged to represent Arnold and Air Force Material Command and the Air Force.”

F-35A gets the green light to fly at Eglin AFB

WRIGHT-PATTERSON AIR FORCE BASE, Ohio (AFNS)—Officials at the Aeronautical Systems Center here issued a Military Flight Release (MFR) that will allow the F-35A Lightning II fighter to begin initial operations at Eglin Air Force Base, Fla.

This decision was reached after an airworthiness board conducted an assessment that evaluated potential risks and the corresponding mitigation actions to conduct unmonitored flights.

Flying the Air Force variant of the joint strike fighter will increase pilot and maintainer familiarity

with the aircraft, exercise the logistics infrastructure and continue to develop aircraft maturity.

These initial F-35A flights will be limited, scripted, conducted within the restrictions and stipulations of the MFR and flown by qualified pilots, officials said.

“The Air Force, Joint Strike Fighter Program Office and other stakeholders have painstakingly followed established risk acceptance and mitigation processes to ensure the F-35A is ready,” said Gen. Donald Hoffman, the commander of Air Force Materiel Command, the parent organization of ASC.



“This is an important step for the F-35A and we are confident the team has diligently balanced the scope of initial operations with system maturity.”

The assessment was

conducted with airworthiness engineering subject matter experts within ASC and was fully coordinated with the F-35 Joint Strike Fighter Program Office, Air Education and Training

Command and other expert participants. The Air Force is confident the aircraft is ready to fly in a safe and efficient manner, Hoffman said.

(Courtesy of 88th Air Base Wing Public Affairs.)

FELLOWS *from page 1*

valuable and significant contributions to AEDC. These eminent individuals need not have worked at Arnold AFB.

Newly selected AEDC Fellows are honored annually on or about June 25, the birthday of General of the Air Force Gen. Henry “Hap” Arnold.

For more information including the format for AEDC Fellows nomination submissions, contact AEDC Historian David Hiebert at (931) 454-4203. Nominations must be submitted in written form with supporting materials to: AEDC/CZ, 100 Kindel Drive, Suite A327, Arnold AFB, TN 37389-1327.

AEDC's Crawford Parrish aims high

By Philip Lorenz III
Aerospace Testing Alliance

Crawford Parrish has always aimed high, both literally and spiritually.

"I wanted to learn to fly from the time I was very young," said Parrish, AEDC's Capabilities Analysis and Risk Assessment manager. "The Air Force seemed an obvious route so I pursued it. It probably had a lot to do with growing up during the space race. I know I never missed any of the coverage of the space program in the 1960s."

He applied for an Air Force ROTC (Reserve Officer Training Corps) scholarship when he was in high school. Drawn to math and science throughout secondary school, Parrish graduated from University of North Carolina at Chapel Hill with a bachelor's degree in physics.

He joined the Air Force and served as a weapons systems officer or WSO (pronounced wizzo) on the F-111 Aardvark, a long-range fighter and tactical strike aircraft.

"Flying 500 feet above the ground at 500 or 600 miles per hour is fun," he said. "There's just no two ways about it. And moving at 1,000 feet per second is a challenge."

A WSO works closely with the pilot to ensure and maintain crew efficiency, situational awareness and mission effectiveness. If designated as the mission commander, the WSO has the additional responsibility of all phases of the assigned mission.

Thirteen years later, during a force downsizing, Parrish returned to the civilian world.

Looking back, he said it

was a time of uncertainty about what path to take going forward.

Parrish then did "something completely different" with his life.

"I spent a year working as the chaplain in a level-one trauma center at Miami Valley Hospital in Dayton, Ohio," he said. "There were three hospitals in the Dayton area that offered clinical pastoral education and each had a different perspective on it. I interviewed each program and chose the one that seemed the best to me."

"The one I did go with did make me a better, more rounded person. I learned a lot about myself and where I needed to grow personally."

Like any trauma center, patients would come in and be stabilized, but then without warning "there would be an automobile accident and it's people's lives hanging in the balance."

Parrish said personal growth should not be a passive experience, but children and adults need to be receptive to guidance, which is how the pastoral counseling job came about.

"It was something I did on the recommendation of some people from church," he said.

His son, Crawford Parrish Jr., who also works at AEDC, recalled how his father always took a very active role in his children's lives.

"As a student, I recognized that my father was unhappy with the volume and quality of education provided by the schools my sister and I attended," said Parrish Jr., a buyer for ATA's purchasing department. "He took it upon himself to fill in the gaps.



Crawford Parrish Sr., AEDC's acquisition program manager and a verger at St. Barnabas Church in Tullahoma, confers with his wife Fran, before an evening service. (Photo provided)

During summer breaks my dad taught us to read and write ancient Greek, much to my chagrin. At the time, I did not appreciate his efforts to teach me to do more than what was required, but I have since come to understand why he did it, and I am thankful."

Around two years later, the family moved to middle Tennessee, where Parrish Sr.'s wife Fran had a position at AEDC with a subcontractor for the re-engineering joint program office.

"Shortly after that, I came to work for ACS and then went to ATA and almost three years ago, came over to the government side," he said.

Since coming to Tennessee, the family has attended St. Barnabas Episcopal Church in Tullahoma.

About two and half years ago, Parrish Sr. assumed the duties as verger at the church.

Wearing a black cas-

sock, a verger is the person, usually a lay member of the church, who arrives early to unlock the doors, ensure that all of the lay ministers including acolytes, chalice bearers, choir members and lectors are present and ready to perform their duties.

The verger also makes sure that all the processional participants and the choir are present and in the correct order.

"Verge is the Latin word for rod or staff," Parrish Sr. explained. "Traditionally, and this is going back hundreds of years, the verge was a wooden stick with a cross at the end, that the verger carried to prod anyone falling asleep in the pews during a service. In medieval times, vergers also literally made sure the path was clear of rats and made sure the priest would be able to get to the front of the church."

Barbara Casey, who works in ATA's informa-

tion assurance department, knows Crawford Sr., through the church they both attend.

"Crawford is a very dedicated member of St. Barnabas Parish," she said. "He spends many hours performing his duties as a verger. I have always found him to be supportive and helpful and feel that he is devout in his service to our Lord."

Another member of the congregation, Linda Love, who works at AEDC's Technical Library, shares Casey's view of Parrish Sr.

"He is very knowledgeable about the Bible and all things Episcopalian," Love said. "His role is an assistant to our priest, mostly in the service, but sometimes in helping parishioners who have a need, like sickness or death, etc. He also teaches adult Christian education and has also done special lectures and studies we have had in the past, Lenten studies for

example."

With both his children grown, married and raising their own families, Parrish Sr. still aims high.

He enjoys reading science fiction, historical and scientific non-fiction and mysteries in his spare time.

His interest in the past has particularly resonated with his son.

"More and more I find myself curious about history, more about why things happened as opposed to a very basic timeline of when things happened," Parrish Jr. said. "I can thank my dad for that, in that he never would give me a simple answer."

"He always explained to me the circumstances leading up to an event, more than one potential point of view regarding the event in question, and the impact of that event on all parties involved. He never cheapened anything the way a high school textbook would."

SECAF from page 3

programs such as Space-Based Infrared System and Advanced Extremely High Frequency satellites, as well as follow-on GPS work; advanced intelligence, surveillance and reconnaissance; and initiatives related to the Air-Sea Battle concept.

Building fifth-generation fighter capabilities is also critical, Donley said.

"We remain fully committed to the F-35 (Lightning II Joint Strike Fighter)," he said. "This is the future of the fighter force, not only for the Air Force,

Navy and Marine Corps, but for about 11 other air forces as well. The F-35 remains the largest single Air Force program, accounting for nearly 15 percent of our total investment."

The secretary said that one of the keys to successful modernization within the Air Force is an effective acquisition process.

"Recapturing acquisition excellence has been a top priority for the Air Force, and in the last few years we have made important progress in....revitalizing

the acquisition workforce, improving our requirements generation process, instilling budget and financial discipline, improving source selections, and establishing clear lines of authority and accountability within our acquisition organizations," he said.

There is renewed emphasis in the Air Force on linking requirements and acquisition to ensure better understanding of capability, cost, and cycle time in decision making, and a continuing effort to simplify how

the services do business, he said.

Donley told the audience that maintaining momentum in critical modernization programs while budgets are declining will be difficult. However, there is a compelling need to invest in next-generation, high-impact systems so that the Air Force can continue to provide the capabilities on which the nation relies, he said.

"Our systems are growing older and new technologies are being fielded

in regions of critical interest, by state and non-state actors alike, diminishing our marginal advantages," Donley said. "Modernization, as challenging as it is in this resource constrained period, will not wait and remains essential to maintaining U.S. advantages in contested air, space and cyber domains."

Donley concluded by saying that Air Force senior leaders, to include Air Force Chief of Staff Gen. Norton Schwartz, are determined to ensuring today's Air Force and its Airmen remains the

world's best.

"General Schwartz and I feel deeply that our leadership team has inherited the finest Air Force in the world," he said. "It's one that was built over decades, passed down from one generation to the next."

"It's our obligation to keep it that way going forward, so that our joint and our coalition partners know that they can count on the Air Force to deliver the capabilities that we need together to meet future security challenges," he said.

Students put skills to the test during design competition

By Patrick Ary
Aerospace Testing Alliance

The idea of creating an elevator that can reach space is daunting enough.

Doing it with materials that may have been worth less than the box they came in is even more so.

But several area high school students took on the task at this year's Student Design Competition, held at the Hands-On Science Center Feb. 21 as part of National Engineers Week.

Students from Coffee County, Moore County, Huntland, Cascade, and Shelbyville Central high schools as well as Webb School all took on the task of creating a device that could lift a payload at least half a meter into the air.

The materials the 42 students worked with were chosen by AEDC engineers and looked more like the leftovers found in the bottom of an arts and crafts bin than building materials. Toilet paper rolls, metal nuts, straws, pencils and pipe cleaners were just a few of the items they were given to work with.

Nissa Smith, an aerospace engineer in AEDC's analysis group, was in charge of picking what went in the boxes. The idea was to give the students a shoestring budget to work with and flimsy materials that would challenge them to come up with creative solutions.

"There was a group of us that was looking at material ideas, and if one of us came up with a material that we thought we could use, we stuck it in there," Smith said.

The students were scored on an equation that factored in the weight of their payload, the height it traveled to and the amount of time it took to reach its maximum sustained height. Some students chose to focus on

different factors in order to score more points.

Huntland High School senior Ethan Scott said he enjoyed building his team's elevator and the teamwork aspect, but he was more focused on getting his team's elevator to work. It failed during the test portion of the competition, but that didn't diminish his spirit.

"I've learned to accept failure and laugh about it," he said.

Moore County High School junior Dakota Bateman said he felt the pressure of coming up with a design and then trying to execute it with the materials within the two-hour time limit. He and his partner worked down to the wire.

Despite the pressure of working with the materials they were given, Bateman says he enjoyed working with his hands – part of the reason he's already planning on a career in engineering.

"I like everything to be exact," he said. "In reading and English, it's all opinionated. In math, it's the same thing for everybody. Absolute."

Not all of the designs carried out their objective, but Smith said exposing students to a side of engineering they may not always see at the high school level was the most important part of the competition.

"Most people think engineering is just really complicated and boring, and by having fun things like this to do, they can realize that it's not just sitting at a desk and coming up with equations and calculations," she said. "You can actually think and do fun projects."

Moore County High School physics and chemistry teacher Doug Price said that's why he brings students to the competition and has every year for several years. He said he sometimes

chooses students for the competition who aren't necessarily interested in engineering, but he believes they should be exposed to it as a career possibility.

"The one thing I've noticed over the years is it makes it kind of cool to be smart," Price said. "I think they feel like they're part of that crowd when they come in here."

AEDC Commander Col. Michael Brewer was one of the judges for student presentations. When all of the teams had tested their devices, he spoke to them and encouraged them to pursue a career in engineering because of its ability to have an impact on a large number of people.

"We all drove here in a car or a bus," Brewer said. "We all have phones at work and televisions. And everything that makes our life as comfortable as it is was developed by scientists and engineers and mathematicians. It's the engineers and scientists who – no kidding – will reshape and change the world."

The top three teams were awarded Amazon Kindle e-reading devices. Haena Lee and Tyler Burns from Webb School came in first place, Webb's Tianyuen Wang and Dongwon Choi came in second and Moore County High School students Erica Limbaugh and Sarah Raby placed third.

The competition and other National Engineers Week activities were sponsored by the Tullahoma chapter of the Tennessee Society of Professional Engineers (TSPE), the Highland Rim chapter of the American Society of Mechanical Engineers (ASME), the local Tennessee chapter of the International Test and Evaluation Association (ITEA) and the Tennessee section of the American Institute of Aeronautics and Astronautics (AIAA).



Moore County High School junior Dakota Bateman works on a space elevator designed to carry a payload a minimum distance of half a meter during the Student Design Competition held at the Hands-On Science Center Feb. 21. (Photos by Jacqueline Cowan)



Haena Lee and Tyler Burns, Webb School



Tianyuen Wang and Dongwon Choi, Webb School



Sarah Raby and Erica Limbaugh, Moore County High School



Engineer-for-a-Day

Photos by Rick Goodfriend



Maynard Schewe, ATA instrument technician, talks about his role at AEDC to Eric Nelins and Trevor Summers from Tullahoma High School.



Local area high school students ask Carrie Reinholtz, technology project manager for AEDC's Test Technology Branch, and other career panel discussion members questions about their work during the 2012 Engineer-for-a-Day event.



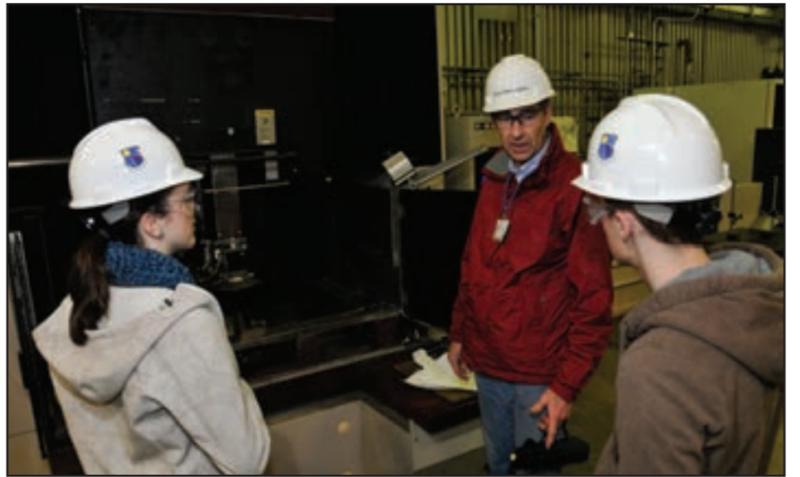
From left, Cole Johnson, Grundy County High School, Dylan Pew from Franklin County High School and Jon-Luc Roberts from Grundy County High School listen as Dusty Vaughn, ATA project engineer at APTU, explains the contour and throat size of the 16.63 area ratio (AR) nozzle sitting on the floor. Vaughn also described the test process to the students, explaining how simulated flight test true temperatures and true pressures are achieved when the nozzle is installed on the Combustion Air Heater (CAH).



Gene Klingensmith, AEDC Navy test project manager, uses the turbine engine powering the Firebee Drone to explain the ground test process to area high school students. The location for his presentation is the large turbine engine test cell C-1 for military engines in the Aeropropulsion System Test Facility.



Jacob Cashion, a mechanical design engineer with ATA's Test System Design branch, explains the roll gear drive mechanism to (from right) Maxwell Richards, Sewanee-St. Andrews High School, Andrew Casey, Coffee County High School, and Sidney Durant, Sewanee St. Andrews High School.



Tom Hartvigsen, an engineer with ATA's Projects and Design Engineering Department, shows Caroline McKinley, Warren County High School, and Nick Green, Grundy County High School, an electro-discharge wire machine at the Model Shop and explains how it cuts metal.

AFMC vice commander nominated for management center job

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – The President has nominated Air Force Materiel Command Vice Commander Lt. Gen. C.D. Moore II for appointment as commander of the Air Force Life Cycle Management Center.

The nomination was announced by Air Force officials Feb. 29. Pending Senate confirmation, Moore will lead the new center to be located at Wright-Patterson.

AFMCMC will provide life-cycle management of Air Force weapon systems and other capabilities. It is the result of an AFMCM-wide restructure that will consolidate the missions now performed by the Aeronautical Systems Center at Wright-Patterson, the Electronic Systems Center at Hanscom AFB, Mass.,

the Air Armament Center at Eglin AFB, Fla., and some functions at other AFMCMC bases. AFMCMC will also include the new Air Force Security Assistance and Cooperation Directorate, formerly the Air Force Security Assistance Center, at Wright-Patterson. The center is expected to reach initial operational capability Oct. 1, 2012.

The AFMCMC restructure was announced Nov. 2, 2011, as part of several Air Force efficiency efforts.

The restructure will cut overhead costs and redundant layers of center headquarters staffs and is expected to generate Air Force savings of \$109 million annually.

The restructure will improve AFMCMC's overall management of the Air Force's research and de-



Moore

velopment, test and evaluation, life cycle management and sustainment of weapon systems and nuclear support, and will allow AFMCMC to provide better

support to the warfighter and use taxpayer dollars more efficiently.

Prior to his assignment as AFMCMC vice commander in October 2011, Moore

was the deputy director of the Joint Strike Fighter Program Office in Arlington, Va.

Moore's previous assignments include deputy director of the Global Power Directorate in the Office of the Assistant Secretary of the Air Force for Acquisition at the Pentagon, and deputy director of the Capabilities Integration and Transformation Directorate at Headquarters AFMCMC. Moore served as the chief of air operations, Multi-National Forces-Iraq in 2004, and he is a command pilot with more than 3,000 flight hours in 30 types of aircraft.

Moore also served at Wright-Patterson AFB during previous tours as director, F-16 System Program Office, June 2002 to August 2003; as vice commander, Aeronautical

Systems Center, September 2003 to August 2004; as director, F-22 System Program Office, November 2005 to May 2007, and as commander, 478th Aeronautical Systems Wing, May 2007 to July 2008.

He graduated from the U.S. Air Force Academy in 1980 with Bachelor of Science degrees in aeronautical engineering and political science. In 1981, he earned a Master of Science degree in aeronautical engineering from Columbia University in New York. He also earned a Master of Science degree in national resource strategy from the Industrial College of the Armed Forces, National Defense University at Fort Lesley J. McNair, Washington, D.C.

A replacement for Moore has not been announced.

Milestones

30 YEARS

Mark Cross, ATA
Joel Grissom, ATA
Roger Scott, ATA
James Taylor, ATA
Clare Zisk, ATA
Michael Forsythe, ATA
Thomas King, ATA
Charles Ary, ATA
Jerry McCullough, ATA
Gregory Casteel, ATA
Vicki Peters, ATA
Tommy Dorsett, Premier

25 YEARS

William Castleman, ATA
Reginald Sizemore, ATA
Joel Gregory, ATA

20 YEARS

Denise Gavin, ATA
Tony Rollins, ATA
Floyd Sherman, ATA
Lynn Tate Jr., ATA

15 YEARS

Kenneth Maxwell II, ATA

Jason Farris, ATA
John Sain, ATA
George Garrett, ATA
Mitchell Luthi, ATA
Tracy Seals, ATA
Mark Bymaster, ATA
Timothy Floyd, ATA

10 YEARS

Miriam Harris, AF
James Lucas, ATA
Charles Bonine, ATA

5 YEARS

Hal Corum, ATA
Christopher Cunningham, ATA
Constance Rogers, ATA
Dwane Kimmel, ATA
Kimberly Haugen, ATA
John Sizemore, ATA
Zachary Lowry, ATA

INBOUND MILITARY

Master Sgt. Whitney Smith, AF
Tech Sgt. Jeremy Dinsmore, AF
1st Lt. Brett Ramnarine, AF

OUTBOUND MILITARY

Tech Sgt. Naomi Bullock, AF
Tech Sgt. John Bankston, AF

RETIREMENTS

Peggy Gray, AF
Jere Matty, AF
Hugh Gonzales, ATA

PROMOTIONS

Philip Voyles, ATA

Marine Corps squadron gives F-35B an official rollout

By Chrissy Cuttita
Team Eglin Public Affairs

EGLIN AIR FORCE BASE, Fla. – Marine Fighter Attack Training Squadron 501 hosted the Marine Corps' official F-35B Lightning II rollout ceremony Feb. 24.

"These Marines are part of the cutting edge of marine aviation," said Gen. Joseph Dunford, Assistant Commandant of the Marine Corps and presiding officer for the service's historic event. "The ability to combine supersonic flight and radar-evading stealth with the short take off and vertical landing capability needed aboard an amphibious warship is among the greatest innovations the aviation community, much less Marine aviation has ever known. Combined with the Navy's F-35C carrier variant of the aircraft, it gives the nation double the number of capital ships capable of operating a 5th generation, multi-role fighter."

All three variants of the joint strike fighter will be based at the 33rd Fighter

Wing where each service will train maintainers and pilots at the F-35 Academic Training Center and fly aircraft from operational squadrons. A total of 59 aircraft will be stationed at Eglin in the future. Currently the wing has six F-35As and three F-35Bs.

District 1 Congressman Jeff Miller called the F-35 the "workhorse of joint and allied forces for decades to come" during his speech commending the synergy of Eglin's units at the historic ceremony. Echoing the advancement in technology during the last century, Robert Stevens, Chairman and Chief Executive Officer of Lockheed Martin, said industry partners pledge to be just as faithful to the mission as their military counterparts are to the mission.

"VMFAT-501 is on the forefront of one of the most significant transition periods Marine aviation has ever known, certainly one of the most important in a long time, maybe since the introduction of the helicopter," said Dunford.

"Exciting" was the one



U.S. Congressman Jeff Miller, Assistant Commandant of the Marine Corps, Gen. Joseph Dunford and Chairman and CEO of Lockheed Martin Robert Stevens watch as Marine color guard retire the colors during the Marine Corps F-35B Lightning II roll out ceremony Feb. 24 at Eglin Air Force Base, Fla. (U.S. Air Force photo/Samuel King Jr.)

word the squadron's commander repeated.

"We understand how critical the jet is, a significant asset for our country," said Marine Lt. Col. David Berke. "It's a significant jump in technology and

change in how we operate. We are breaking new ground, training and learning as much as we can."

Since October 2009, each service's best in their aviation community have worked alongside con-

tracted logistic support to provide a quality training environment for U.S. and allied forces' pilots and maintainers at their collocated facilities in the 33rd FW.

Distinguished visitors,

civic leaders and Eglin military family attending the historic ceremony were left with a sense of how important the F-35 program is to the nation's defense. They also had an opportunity to see the jet for themselves.

Joint Strike Fighter test force overcomes hurdles linked to night flying

By Chrissy Cuttita
Team Eglin Public Affairs

EDWARDS AIR FORCE BASE, Calif. – Flying off into the sunset has new meaning for the 461st Flight Test Squadron. Reaching another milestone in the test program, the Joint Strike Fighter Integrated Test Force completed the first F-35A Lightning II night flight Jan. 18.

Taking off just before sunset, the aircraft flew test points in both twilight and darkness.

"We did a sequence of approaches to the runway, including touch-and-go approaches, to make sure everything was safe to use at night," said Lt. Col. Pete Vitt, 461 FLTS director of operations. "We were doing an evaluation to check and make sure that the interior cockpit lighting, the exterior lighting and the landing and taxi lights were adequate and safe for the F-35 at night."

Little difference exists between preparation for day flights and night flights; however, lighting



Mark Ward, Lockheed Martin test pilot, waits to take off in AF-6 to pilot the F-35A's first-ever night flight Jan. 18, 2012, at Edwards Air Force Base, Calif. The 461st Flight Test Squadron and the Joint Strike Fighter Integrated Test Force began the test at sunset and flew into the night. (Courtesy photo)

conditions at night are closely considered, as well as sunset timing, moonrise and phase, and variables such as amount of cloud cover.

Although the actual sortie took place in January,

initial testing to get the plane in the air at night began long before that.

"We did an internal cockpit lighting evaluation in spring 2010," said Rachel McKinnon, 773rd Test Squadron human factors engineer. "This examined the aircraft for any internal glares, reflections, anything that would be a

distracting lighting source for the pilot."

This testing discovered that the software on the aircraft did not allow for console dimming, which is vital to for optimum lighting configurations during night flight, added McKinnon. To achieve optimal cockpit lighting at night means to eliminate

distracting glares and any light sources that could lead to visual illusions for the pilot.

"We found a lighting problem with our taxi landing light and a software problem," said Capt. Jeff Newcamp, 461 FLTS flight test engineer. "Before we could fly at full capability at night, we had to write an amendment to a test plan in order to allocate some build-up test points to fly at night in the build-up fashion."

Once a 461 FLTS pilot noticed that the taxi landing light was not sufficient for taxi during a pre-dawn flight, that light source was evaluated and deemed insufficient.

"We noticed that light wasn't providing enough visibility; neither the forward coverage nor side coverage that we'd anticipated," said McKinnon. "When you have one light that performs two things, you have to find a compromise."

McKinnon explained that the compromise came in the form of altered refractory geometry in the light source, which optimized the optics inside the light. This change provided pilots with sufficient side-to-side and forward visibility to both taxi and land safely at night.

"Some of the feedback we've received from the pilots is that this is some of the best internal cockpit lighting they've flown," said McKinnon. "Everything [in the cockpit] dims down really nicely, lighting is optimized and the landing taxi light is really bright. I think that's incredible for having an unsuitable solution just a couple months ago."

This round of testing expands the F-35's combat

See NIGHT, page 12

70 years of airlift



A U.S. Air Force C-130J Super Hercules, assigned to the 37th Airlift Squadron at Ramstein Air Base, Germany, conducts a mass airdrop of paratroopers from the U.S. Army's 173rd Airborne Brigade Combat Team, out of Vicenza, Italy, Feb. 10. More than 300 paratroopers were dropped to commemorate 70 years of combat airlift abilities for the 37th AS. (U.S. Air Force photo/Airman 1st Class Holly Cook)

Air Force fiscal 2013 budget invests in critical space capabilities

By Tech. Sgt. Jess D. Harvey
Air Force Public Affairs Agency

WASHINGTON (AFNS) – Investment in space programs was a priority in this year's Air Force budget, according to Undersecretary of the Air Force Erin Conaton.

Air Force leaders sought to sustain and modernize the capabilities that enable the service to support the Department of Defense's new strategic guidance, Conaton told reporters during a media roundtable Feb. 17 in the Pentagon.

The U.S. military continues to rely heavily on Air Force space programs for a wide variety of activities that allow the military to be effective on the battlefield, she said.

As the Air Force went into the current budget cycle, she said, Air Force leaders were committed to aligning the service with the new DOD strategic guidance released Jan. 5, which included protecting programs in the budget that support main Air Force mission areas such as space.

"You see space highlighted in a variety of parts of the (DOD) strategy as critical to the full variety of missions that we take on, from the counterterrorism fight on the low end to the anti-access, area-denial challenge on the high end," she said.

Conaton said that key capabilities such as missile warning, satellite communications, launch and space situational awareness were protected in this year's budget to ensure continued support to warfighters and space operations around the globe.

Addressing the reduction in overall funding levels for the fiscal 2013 space program budget over last year, the undersecretary explained that this was due to four reasons.

"First, a lot of our programs have moved out of the developmental phase and are in production at this point," Conaton said. "Obviously, that has a different funding profile.

"Second, our partners

in Congress were incredibly generous in helping to robust the Wideband Global Satellite communications program, which allowed us to not have to fund additional satellites in that program this year," she said.

Third, Congress decided to terminate the Defense Weather Satellite System program, so funding for that was no longer needed in the fiscal 2013 budget, Conaton said.

And lastly, she said, the Air Force had to make some hard budget decisions on what areas could be scaled back or cut from the space program.

"When we looked at things like the Satellite Modernization Initiative line ... we had to take some reductions there," she said. "The department also decided to go a different path in terms of how we deal with operationally responsive space and to no longer use a stand-alone ORS program."

Conaton also addressed the Air Force's acquisition strategy for space.

"We continue with our Efficient Space Procurement program, which includes what we called (Evolutionary Acquisition for Space Efficiency) last year," she said. "So block buys of satellites, fixed price contracts, continued investment in research and development, and a modified funding profile through advanced appropriations over multiple years."

She said the other area that the Air Force is spending a lot of time on right now is launch, which has become increasingly expensive.

"The Department of the Air Force, along with our partners in the (National Reconnaissance Office) and in NASA, are committed to finding a way to get the best deal for the taxpayer, recognizing that launch continues to be at the core of what we do in the space business," Conaton said.

NIGHT from page 10

capability and provides the Integrated Test Center at Eglin Air Force Base, Fla., with a training platform that is representative of what will be flown in the field.

"Part of the procedure here [at Edwards] is to release capabilities to the warfighter," said Newcamp. "We fight wars under all conditions and we need to deliver those capabilities to the warfighter."

Future night testing includes aerial refueling evaluations to ensure that the F-35's lighting characteristics are compatible with various tankers.

"We have aerial refueling night evaluations with both the KC-10 and KC-135," said Vitt. "There are also some test points that are specifically designed to be done at night with various mission systems on the aircraft."

The JSF ITF overcame these unique technical challenges by taking the time to adjust testing in order to deliver an optimal product.

"We had night flying in our test plans but, but not necessarily in this fashion, this was kind of our version of slowing down and looking at this [the lighting issue] a little closer prior to jumping into night flying," said McKinnon.

"We have over 800 people in the ITF and this night flight project really touched most of those folks," said Newcamp. "Each group came together, did their own piece, and enabled us to fly two night sorties in January. Once we conquered the technical hurdles and got the jet in the right configuration to fly at night, two sorties went off, and both were remarkable successes."

Arnold Golf Course
454-7076

Check us out on Facebook!
Arnold AFB Golf Course

Mulligan's Coffee Bar & Grill is open 10:30 a.m.-2 p.m. Monday through Friday and 8 a.m.-2 p.m. Saturday and Sunday. Call ahead orders for dine or carry out, 454-FOOD (3663).

Arnold Lakeside Center
454-3350

Check us out on Facebook! **Arnold AFB Services Arnold Lakeside Center and Arnold AFB Services Information, Tickets and Travel**

First Friday Jam is March 2 starting at 6 p.m. Come to play, listen, dance and enjoy. Join in with the band to play an instrument or sing. Or take over and do your own performance.

Weekend dining room specials (all include two sides and salad bar):

- Friday 4-9 p.m.**
- March 2:** 50-cent wings
- March 9:** Fried chicken plate, \$9.95 member, \$11.95 nonmember.
- March 16:** Chicken fried chicken, \$9.95 member, \$11.95 nonmember.
- March 23:** Spaghetti & meatballs, \$9.95 member, \$11.95 nonmember.
- March 30:** Fried catfish plate, \$9.95 member, \$11.95 nonmember.

- Saturday 5-9 p.m.**
- March 3:** Homemade lasagna, \$10.95 member, \$12.95 nonmember.
- March 10:** Date Night Movie "New Year's Eve" with special 2 for \$25 (\$23 members) dinner menu or pizza
- March 17:** St. Patrick's Day Bash, FREE members, \$13.95 nonmembers (\$4.95 age 12 and under). 5:30-8p.m. RSVP by 2 p.m. March 14.
- March 24:** Prime Rib for Two, \$29.95 members, \$31.95 nonmember.
- March 31:** Cajun Chicken Pasta, \$10.95 members, \$12.95 nonmember.

All specials and times are subject to change without notice. Please call ahead to ensure availability and openings.

March Movie Schedule - Kids Movie Month

Movie nights are Thursdays with movie start time of 6:30 p.m. and dinner available from the Express or Pizza menus from 5-8 p.m.

March 8 – No Movie Night due to Annual Awards Banquet

March 15 – "The Muppets," rated PG starring Jason Segel and Amy Adams.

On vacation in LA, Walter, his brother Gary and Gary's girlfriend, Mary, discover the nefarious plan of oilman Tex Richman to raze the Muppet Theater and drill for oil recently discovered beneath the Muppets' former stomping grounds. To stage the Greatest Muppet Telethon Ever and raise the \$10 million needed to save the theater, Walter, Mary and Gary help Kermit reunite the Muppets, who have all gone their separate ways.

March 22 – "Happy Feet Two," rated PG starring voices of Elijah Wood, Robin Williams, Pink, Brad Pitt, Matt Damon, Sofia Vergara and Common.

Mumble has a problem because his tiny son, Erik,

is choreo-phobic. Erik runs away and encounters The Mighty Sven – a penguin who can fly! Mumble has no hope of competing with this charismatic new role model. But things get worse when the world is shaken by powerful forces. Erik learns of his father's "guts and grit" as Mumble brings together the penguin nations and all manner of fabulous creatures-from tiny krill to giant elephant seals-to put things right.

March 29 – "Alvin and the Chipmunks: Chipwrecked," rated G starring Jason Lee, David Cross and voices of Justin Long, Matthew Gray Gubler, Jesse McCartney, Christina Applegate, Amy Poehler and Anna Faris.

Playing around while aboard a cruise ship, the Chipmunks and Chipettes accidentally go overboard and end up marooned in a tropical paradise. They discover their new turf is not as deserted as it seems.

Arnold Lakeside Center will have a special **Date Night Movie** evening March 10. Dinner will be available in the ballroom at 6 p.m. with the movie starting at 7 p.m. The Four Seasons Dining Room will be open for dinner at 5 p.m. Choose from either the two for \$25 (\$23 member price) special menu or pizza menu. The regular dining room and Express menu will not be available. The special menu includes choice of appetizer: spinach artichoke dip, cheese sticks, fried mushrooms or onion rings; choice of two entrees: grilled bacon-wrapped sirloin, 10-spice vegetable pasta, Monterrey chicken or grilled cold-water salmon filet; choice of two sides for each entrée: rice pilaf, mashed potatoes, baked potato, steamed broccoli or fries; choice of dessert (served with two spoons): carrot cake, five-layer chocolate cake or bacon ice cream sundae. Reservations are requested, especially for parties larger than two, and may be made by calling 454-3350.

New Year's Eve is rated PG-13 and has an all star cast including Michelle Pfeiffer, Zac Efron, Robert De Niro, Halle Berry, Alyssa Milano, Chris "Ludacris" Bridges, Jessica Biel, Seth Meyers, Katherine Heigl, Jon Bon Jovi, Sofia Vergara, Ashton Kutcher, Lea Michele, Josh Duhamel, Sarah Jessica Parker, James Belushi, Hilary Swank, Til Schweiger, Hector Elizondo, Abigail Breslin and more. New Year's Eve celebrates love, hope, forgiveness, second chances and fresh starts in intertwining stories told amidst the pulse and promise of New York City on the most dazzling night of the year.

Arnold Lakeside Center will host a **bash to celebrate St. Patrick's Day** with the popular customs of corned beef and cabbage, green beer, music and dancing March 17. The night will kick off at 5 p.m. with green beer specials in the bar. A menu of corned beef and cabbage with vegetables, roasted potatoes, orange-glazed carrots, fresh baked bread and green shamrock cake will be served 5:30-8 p.m. A special mini buffet for kids will include cheese pizza, hot dogs, green mac and cheese and fries. Traditional and classic music will be provided by American Pie band and Irish Friends from 6-8:30 p.m. This event is part of the Family Fun

Daze biannual promotion to reward members with one of the benefits of being a Members First Plus member – a FREE event for members, their spouse and children. Nonmembers and guests may attend for \$13.95 per person (\$4.95 for age 12 and under). The Pizza menu will also be available for those wishing something other than the traditional Irish fare. The regular dining room and Express menus will not be available. All attending are encouraged to wear your best Irish gear. Reservations are required by 2 p.m. March 14 by calling 454-3350.

Arnold Lakeside Center has planned an evening getaway to **Chaffin's Barn Dinner Theater** in Nashville March 23 to see "Too Old for the Chorus but Not Too Old to Be A Star," a smart, funny musical revue about men and women who suddenly find themselves 50! Set in their neighborhood retro coffee shop, five characters express, over 18 musical numbers, the gamut of their frustrations and joys – from troublesome relations with still-demanding parents and cutting-edge technology, to finding delight in second careers (and second chances), to getting smarter and finally knowing that "age is just a number." The title celebrates life, finding fulfillment and being appreciated for exactly who you are – all the while getting a senior discount! As is custom at Chaffin's Barn, enjoy dinner before the show and then watch as the stage descends from the ceiling and the lights dim. Cost is \$55 and deadline to sign up is March 8. Cost if signed up March 9-16 will be \$60. Depart from the ALC at 4:30 p.m. and return approximately 12 a.m. Call Melissa at 454-3303 to sign up for the trip. There must be a minimum of six to go and maximum participants is 20.

Last Friday Trivia Contest is 6:30 p.m. March 30. Teams can have up to four people. No cell phones are permitted during the event. Anyone using a phone while a question is underway will be disqualified. Questions in random categories will be given. Prizes for top finishers.

Café 100 Pizza is available 10:30 a.m.-1:30 p.m. Monday through Friday. Pizza is available by the slice in pepperoni or sausage for \$2 per slice or the works (pepperoni, sausage, ham, green pepper, onion, mushrooms, black olives, bacon and extra cheese) for \$3.50 per slice. Whole pizzas are available if ordered the day prior and will require completing an order form and paying in advance. Selections for whole pizzas come in thin or thick crust and 12- or 16-inch. Choose from cheese, pepperoni, sausage, Canadian bacon, veggie, works, meat lovers or build your own from a variety of toppings. Salads are also available for \$3 with choice of ranch, French or Italian dressing.

Easter "Fun in the Sun" Picnic and Easter Egg Hunt is coming April 7 to the ALC. All ages are invited to attend. The event will be held on the patio (nearest Wingo Inn) 10 a.m.-1 p.m. The egg hunt will begin at 10 a.m. for ages 2-12 with three age groups (2-5, 6-8, 9-12) and there will be four prize baskets awarded in each age group. Remember to bring your own basket for gathering

Hours of operation:
Arnold Lakeside Center: Catering/Management offices by appointment. Dinner: Arnold Express Menu or Hap's Pizza only Thursday 5-8 p.m., dinner or Arnold Express Menus and Hap's Pizza Friday 4-9 p.m. and Saturday 5-9 p.m.; Main Bar Thursday 5-8 p.m., Friday 3:30-10 p.m. and Saturday 5-10 p.m.; Social Hour Friday 4-6 p.m., Movie Night Thursday 6:30 p.m.
Café 100: Monday through Friday 6:30 a.m.-1:30 p.m.
Barber Shop: by appointment – Monday, Tuesday, Thursday & Friday 8 a.m.-4 p.m.
GLC: Monday through Friday 7 a.m.-3:30 p.m. May vary depending on bookings.
Family Member/Youth Programs: Tuesday through Friday 10 a.m.-5 p.m., Saturday 12-5 p.m.
Outdoor Rec: Main Office, Check In and Auto Shop Tuesday through Saturday 10 a.m.-5 p.m. Marina by appointment only.
Fitness Center: Monday-Friday 5 a.m.-9 p.m.; Saturday 8 a.m.-4 p.m.
Arnold Golf Course: Pro Shop & Driving Range 8 a.m.-dusk. Driving Range open 24 hours with prepurchased key card. Mulligan's Coffee Bar & Grill Monday through Friday 10:30 a.m.-2 p.m., Saturday and Sunday 8 a.m.-2 p.m.
Recycling: Monday through Friday 7 a.m.-4 p.m.
Wingo Inn: Monday through Friday 7a.m.-6p.m., Saturday and Sunday 8 a.m.-4p.m.
Nonappropriated Funds Human Resources: Monday through Friday 7:30 a.m.-4 p.m.

eggs. The picnic lunch will be 11 a.m.-1 p.m. served buffet style including fried chicken, baked white fish, potato salad, baked beans, bag chips, cole slaw, hot dogs, mac and cheese, pecan pie, carrot cake, cookies, tea and lemonade. Lunch will be open seating and no reservations are required. Cost is \$9.95 for members, \$10.95 for nonmembers and \$5.95 for ages 12 and under. The Easter Bunny will be present 11 a.m.-1 p.m. for photos with kids and their families. The ALC will be closed on Easter Sunday.

Family Member/Youth Programs (FamY)
454-6440

Check us out on Facebook! **Arnold AFB Services Youth Programs**

Youth Programs has planned a **Daddy-Daughter Dance with the theme "Dance with Cinderella"** 6-9 p.m. March 23 at the Arnold Lakeside Center. Cinderellas age 5-17 are invited to attend this semi-formal event with their daddy (if daddy is unavailable, another "prince" may come in his stead). A special menu of grilled chicken breast with roasted red pepper cream sauce, wild rice, steamed vegetables, rolls and red velvet cupcakes will be served. Price is \$45 per couple for members (\$15 for additional daughters) and \$47 per couple for non members (\$17 for additional daughters). Each Cinderella will receive a tiara and carnation plus a 5x7 keepsake photo. All attending are asked to bring a picture from your younger years to share. A D.J. will provide music and videos for dancing. There will be a special appearance by Cinderella, her stepmother and stepsisters (Lady Tremaine, Drizella, Anastasia) and Belle from Beauty and the Beast. RSVP to Youth Programs, 454-3277, by March 19.

Pretty Discoveries returns for a **Jewelry Fair** March 30 in Café 100. The fair will be 8 a.m.-2 p.m. and all jewelry is under \$20. There will be drawings for free jewelry. Pretty Discoveries also offers handbags and belts.

Fitness Center
454-6440

Check us out on Facebook! **Arnold AFB Services Fitness Center**

The Fitness Center is promoting **Fitness Assessments** during March using the MicroFit Health and Fit-

ness Systems. This includes resting heart rate, blood pressure, height, weight, body fat percentage, back flexibility, aerobic fitness (either bike or step test), pushups and sit ups. The assessment will take about 45 minutes and will provide an objective and standardized measurement of physical health along with professional reports. The MicroFit program gathers and integrates assessment data into educational graphic and text-based reports that compare individual results to those of others within the same gender and age group. It's a powerful way to motivate change toward healthier behaviors. Call Kevin today to schedule your assessment.

Pot O' Gold Run/Walk will be held March 14 anytime during regular business hours (5 a.m.-9 p.m.). This is "on your honor" for two laps around the Fitness Center trail. The first 25 to sign up receive an event T-shirt.

Group Class Schedule (for eligible users only):

- Boot Camp Monday, Wednesday and Friday 6-7 a.m. on the basketball court
- Yoga Monday 11 a.m.-12 p.m. on the basketball court
- Cycling Monday, Tuesday and Thursday 11 a.m.-12 p.m. upstairs
- Zumba Tuesday and Thursday 4:15-5:15 p.m. upstairs
- Karate Tuesday and Thursday 3-5 p.m. on the basketball court
- Pilates Wednesday 11 a.m.-12 p.m. on the basketball court
- Piloga Friday 11 a.m.-12 p.m. on the basketball court

Outdoor Rec (ODR)
454-6084

Check us out on Facebook! **Arnold AFB Services Outdoor Recreation**

Paintball in March will offer three different programs – regular Saturday play, beginner class and a team tournament. All paintball programs are for ages 10 and older. Ages 10-17 must have a parent permission form. Regular Saturday play is 9:30 a.m.-2:30 p.m. every weekend except third Saturday now due to monthly tournaments and the months of July and August due to heat. Those interested need to call and sign up at least a day ahead of time to ensure equipment availability. When the day arrives, simply meet at the paintball field and get play underway with the direction of an Outdoor Rec (ODR) staff member. Cost is \$35 per person with equipment provided and includes 500 paintballs and a tank of

air. It is \$20 per person for those with their own equipment and that also comes with 500 paintballs. All paintballs used must be purchased from ODR for \$13 per bag of 500 or \$45 for a box of 2,000. If you have never tried paintball before then you may want to start with our Introductory Class March 10 from 3-5 p.m. Learn about equipment used, the parts of the gun, shooting the gun and overall playing technique. Cost is \$12 and advance sign up is required by March 7. The class will be held at the paintball field. Beginning March 17 there will be monthly tournaments on the third Saturday (except July and August) beginning at 10 a.m. Teams of four will play a single elimination tournament to test your skills until the best team arises. There must be at least one team member above age eighteen and there must be at least six teams to hold the tournament. ODR has 25 paintball guns available on a first come first served basis. Indicate at time of registration if you will be using your own equipment or need to reserve equipment. Cost to enter the tournament is \$25 per person and includes a bag of 500 balls and air for the day. Cost is \$20 if you use your own equipment. The winning team will receive a free day of paintball (regular Saturday play) for all four team members valid for one year and includes equipment, field fee, air for the day and bag of 500 balls. Additional prizes will be awarded each month to the winning team. Those that attend the Introductory Class and enter the tournament will receive a \$5 discount off the tournament entry fee. Sign up deadline for the tournament will be the Tuesday prior and late registration/cancellation fees will be applied the Wednesday prior. Remember to wear appropriate clothing – long pants, a long-sleeved shirt and closed toe shoes – as paintballs fly at 300 feet per second and can sting and possibly leave a mark other than paint. Call 454-6084 for more information about the paintball program or to sign up for any of these events.

Outdoor Rec (ODR) will be heading to Chattanooga to Urban Rocks Gym on March 31 for some **indoor rock climbing**. The day starts at ODR at 8:30 a.m. and is for age 6 and older (with minimum weight of 35 pounds). As participants enter the facility they will trade their liability waiver for climbing gear. Those under age 18 must have a parent sign their waiver. Once

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everyone is suited up there will be a review to include gym orientation, bouldering and belay safety. Bouldering is shorter distance climbs without a rope over a crash pad and belay is to climb with a rope and maintain friction as to prevent falling. After the review, the group will split by age and those ages 14 and older will start a belay lesson while those under age 14 will start climbing with a staff member. Once everyone passes their belay test the group will be able to belay for each other and an Urban Rocks group leader will serve as safety monitor as well as give tips to help climb more efficiently. After two hours the staff member will allow the group to continue climbing on their own. The group will depart the gym at approximately 3 p.m. (CST) headed back to ODR. Cost for the trip is \$40. Remember to bring extra money for lunch and wear proper clothes for climbing. Deadline to sign up is March 21. Late registration/Cancellation fees go into effect March 22.

Wingo Inn
454-3051

Check us out on Facebook! Wingo Inn

Reservations for Wingo Inn can be made 120 days in advance. Room rates start at \$39 per night. Please call 454-3051 for reservations.

Gossick Leadership Center
454-3024

Check us out on Facebook! Arnold AFB Services Gossick Leadership Center

AFRL flight research vehicle designated X-56A

By Tom Brown and Holly Jordan
Air Force Research Laboratory

WRIGHT-PATTERSON AIR FORCE BASE, Ohio – The Air Force Research Laboratory was recently awarded an X-Plane designation for a vehicle that will be used to explore active control of lightweight, aerodynamically-efficient aircraft configurations.

The X-56A is an innovative, modular, unmanned flight research vehicle that will allow investigation of active flutter suppression and gust load alleviation technology.

Flutter is an instability that can occur when unsteady aerodynamic loads acting on a wing couple with its natural vibration modes, often resulting in catastrophic failures. The research to be conducted with the X-56A is critical for the successful development of future slender, lightweight, high aspect ra-

tio wing designs that could be used by energy efficient transport and unmanned aircraft.

The X-56A, also known as the Multi-Utility Technology Testbed (MUTT) flight demonstrator, is a product of the AFRL-led Multi-Utility Aeroelastic Demonstration (MAD) program.

This program is a joint effort between AFRL's Air Vehicles Directorate, NASA Dryden and Lockheed Martin.

The X-56A is powered by twin JetCat P240 turbojets, has a 28-foot wing span, weighs 480 pounds, and is designed and constructed for easy wing replacement to enable testing of various flexible wing configurations. An additional hard point is being designed into the center of aft upper deck of the fuselage for mounting



Simulated flight of the X-56A aircraft. The X-56A is an innovative, modular, unmanned flight research vehicle that will allow investigation of active flutter suppression and gust load alleviation technology. (U.S. Air Force photo)

an additional third engine or a structural member to support testing of joined wing configurations. These characteristics will allow the testing of a wide range of advanced aerodynamic concepts.

The X-56A will exhibit

multiple rigid body and aeroelastic instabilities within its flight envelope, which will be actively managed by its flight control system.

The first X-56A flight is scheduled for summer 2012. Following Air Force

flight testing, the X-56A will be used by NASA's Dryden Flight Research Center for their continuing research into lightweight structures and advanced technologies for future low-emissions transport aircraft.

Shuttle trainer landing at Air Force museum

By Rob Bardua
National Museum of the U.S. Air Force

DAYTON, Ohio (AFNS) – A retired NASA space shuttle crew compartment trainer is expected to arrive this summer at the National Museum of the U.S. Air Force.

The CCT is a high-fidelity representation of the Space Shuttle Orbiter crew station that was used primarily for on-orbit crew training and engineering evaluations.

It was in this trainer that astronauts learned how to operate many of the orbiter sub-systems in more than 20 different classes.

All Air Force astronauts in NASA's shuttle program

trained in the CCT.

The crew module of the CCT consists of a flight deck and a mid-deck, and contains components such as panels, seats and lights visible to or used by the flight crew. Non-functional switches, connections, guards and protective devices all have the same physical characteristics, operating force, torque and movement as a real space shuttle.

The museum is currently working with NASA to package the CCT for airlift to the museum via NASA's "Super Guppy" aircraft, which routinely carries out-

sized loads such as missile and rocket components. After arrival, technicians will offload the CCT and place it on interim display in the Cold War Gallery, before later moving it to a new Space Gallery in the planned fourth building.

According to the director of the National Museum of the U.S. Air Force, retired Lt. Gen. Jack Hudson, the CCT will be a great addition to the museum.

"When the CCT exhibit is completed, it will allow the public to have an up-close and personal look into the cockpit and mid-deck areas of a shuttle and learn how astronauts trained for their missions," Hudson said. "We also plan to build a full-scale mock-up of the payload bay and develop other new exhibits with an emphasis on science, technology, engineering and math to further illustrate the rich history of the Air

Force's space programs and vital Air Force, NASA and aerospace industry partnerships."

The new Space Gallery, where the CCT will eventually reside, is a part of a multi-phase, long-term expansion plan and will house the museum's growing space collection. The gallery will include a Titan IV space launch vehicle; Mercury, Gemini and Apollo spacecraft; and many recently retired NASA artifacts such as a nose cap assembly, landing gear strut and a variety of astronaut equipment. In addition, a range of satellites and related items will showcase the Air Force's vast reconnaissance, early warning, communications and other space-based capabilities. Other new exhibits will be developed to showcase Air Force technologies with many unique characteristics in design, propulsion,

payload capacity, human factors, communication, range, speed and operating environment.

One of the unique features of the fourth building will be the creation of dedicated, interactive spaces for learning in the galleries. Three "Learning Nodes" will provide a unique environment for lectures and demonstrations, as well as extensions of the exhibit experience. These 60-seat "gallery classrooms" will allow museum staff to facilitate new science, technology, engineering and math experiences, while guest scientists and engineers from Air Force organizations, the aerospace industry, and area colleges and universities will be invited to share their expertise. Multimedia presentations will introduce students to air and space missions and the men and women responsible for their execution.

