



Focus on Cybersecurity Awareness

Education is the First Line of Defense

NASA has an allure to people across the world because of what we do. NASA also has one of the largest web presence in the nation, which makes the agency a target for persistent cyber attacks.

Staff from Glenn's Office of Chief Information Officer and NASA's Information Technology Security Awareness and Training Center (ITSATC), managed by Dr. Brenda Ellis, collaborated to present Glenn's 2014 National Cyber Security Expo, Oct. 23. During the event, employees received training on emerging IT threats and how to avoid them. Local vendors also exhibited the latest tools of deterrence.

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Art and Technology Merge at Centaur Challenge



This painting commemorates Centaur's 50th anniversary. See page 3 for details.

SEMAA Critical to America's Future

Not everyone wants to be an astronaut. Yet there are many science, technology, engineering and mathematics (STEM)-related careers that offer exciting challenges for the next generation of explorers. NASA's national Science, Engineering, Mathematics and Aerospace Academy (SEMAA) Project, managed by Darlene Walker, NASA Glenn, Office of Education, has exposed more than 800,000 participants to careers in STEM.

Designed to increase participation and retention of historically underserved and underrepresented K-12 youth in STEM, SEMAA began in 1993, with a partnership between NASA and Cuyahoga Community College (CCC). Through the years, SEMAA has expanded its scope to include sites located at Historically Black

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Pictured above: SEMAA students at Cuyahoga Community College.

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Reducing the Risks

The Orbital's Antares rocket and Virgin Galactic's SpaceShipTwo mishaps are painful reminders of the inherent risk in space flight. As many await details on the causes of these mishaps, this center continues to work diligently to reduce our risks and deliver on successful missions. Recent audits show we're on the mark—affirming great progress in software engineering and in some of the key processes for flight development as well as uncovering areas that need improvement. This progress can be directly attributed to you. Thank you for your commitment to continuous improvement in all areas of safety.

Wishing you and your family a safe holiday season!

—Jim



NASA is With You When You Fly

Traveling by air this holiday season? NASA works every day to make flying more efficient and safe. The aviation industry is infused with NASA-developed technology or research—whether inside the cockpits, cabins and jet engines; atop traffic control towers; or from the departure gate to arrival terminals. Spread the word!

www.nasa.gov/aero

SEMAA Exposes Students to STEM

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Colleges and Universities; Hispanic Serving Institutions; Tribal Colleges and Universities; and science centers/museums in urban and rural cities across the country.

SEMAA's core components include hands-on, inquiry based K-12 STEM curricula encompassing the research and technology of NASA's four mission directorates. Through a portfolio of NASA-unique experiential learning opportunities and challenges, SEMAA encourages innovation and critical thinking while developing problem-solving skills, which are characteristics required of our nation's future STEM workforce.

In FY 14, NASA provided \$1.9 million in funding for SEMAA. Through a diverse portfolio of partnerships, SEMAA sites were able to obtain an additional \$1.3 million to sustain operations and give students access to real life STEM experiences.

In addition, SEMAA sites nationwide offer numerous extended learning opportunities outside of normal SEMAA sessions. The University of Texas at El Paso hosted a SEMAA summer camp for elementary and middle school girls; Hartnell College, Salinas,



Above: left to right, Dr. Wilson, Walker and Cafe Coordinator Carmen Holes, with Gov. Martin O'Malley's citation to Morgan State University's SEMAA site. Above, right: students at the Hartnell College SEMAA site.



Calif., partnered with the Monterey County Airshow to send 300 SEMAA students to this spectacular STEM event; and the Oglala Lakota College SEMAA site, Kyle, S.D., collaborated on the Journey Museum's film featuring Native Americans from the Pine Ridge Reservation discussing indigenous astronomy.

In September 2014, Morgan State University, Baltimore, Md., held a SEMAA STEM Extravaganza. More than 500 participants were exposed to careers and various hands-on STEM activities. Numerous federal, academic and corporate sponsors participated.

During the event, Morgan State's SEMAA Site Director, Dr. Jonathan Wilson, received a citation from Maryland Governor Martin O'Malley, applauding the SEMAA site's efforts.

"SEMAA is the agency's only K-12 project that establishes a pipeline as well as a mechanism for learners to be inspired, engaged and educated while progressively being challenged," Walker said. "Through SEMAA, NASA is investing in the next generation of STEM leaders who not only have the ability to meet future mission priorities but also the ability to potentially change the world."

—By Doreen B. Zudell

Art and Technology Merge For Centaur 50th Anniversary

NASA Glenn teamed with Cleveland's Ingenuity Festival and the Great Lakes Science Center (GLSC) to conduct an educationally inspired art competition commemorating the 50th Anniversary of the Centaur rocket. Dubbed "America's Workhorse in Space," the Centaur upper stage rocket was developed by NASA's Lewis (Glenn) Research Center and continues to be the principal upper stage used to launch the nation's most demanding space missions.

The competition added a new and creative perspective to IngenuityFest's goals of collaboration between art and technology, while conveying some of the key engineering accomplishments of the Centaur Program to the artistic community and general public. Craig Williams, Ascent and Thermal Propulsion Branch, worked with IngenuityFest Cleveland's James Krause to promote the competition and share Glenn's history of managing NASA's launch vehicles and developing Centaur.

GLSC displayed the seven Centaur art entries in the Promenade throughout the Ingenuity Festival weekend, Sept. 26-28. A talk and demonstration by



Photo by David DeFelice



Above, left: Bossinas demonstrates his craft while illustrating NASA mission concepts. Above, right: This 9- by 20-foot graphic by David Mikolajczyk, tied for first place with the 8- by 8-foot painting (on the front page) produced by the collective of James Giar, Erin Schechtman, Benjamin Hale, Randolph Crider, Timothy Switalski and Craig Worrell for the Centaur Challenge. Both pieces were displayed at the GLSC during IngenuityFest 2014. Photos of the art are courtesy Of Teresa DeChant, DeChant Art Consulting, LLC.

Les Bossinas, a retired NASA artist, was an additional attraction to festival attendees who ventured into the NASA Glenn Visitor Center at the GLSC. The competition resulted in a tie for first place and sharing the prize to tour

various NASA Glenn test sites associated with developing Centaur, including the Spacecraft Propulsion Research Facility at Plum Brook Station.

—By S. Jenise Veris

**Centerwide
Holiday Gathering**
Monday, Dec. 15
1 to 3:30 p.m.
MIC Auditorium

Come hear
Center Director Free
discuss agency highlights
and DSM members
provide a forward
thinking glimpse of their
plans for 2015!

POC: Brunie DeJesus
216-433-2789

Advancing Technology

Shape Memory Alloy Rock Splitters Meet Rocks

NASA Glenn researchers are working on a nonconventional way of fracturing planetary rocklike materials and minerals. The concept consists of Glenn-developed smart materials known as Shape Memory Alloys (SMAs) that expand in response to a heat signal. SMAs are used in lieu of explosives or hydraulic methods to break rocks in a static and more controllable manner without any demolition damage to the surrounding environment. The concept is targeted for use in space applications for sampling geological deposits in extraterrestrial environments, including planetary bodies such as the moon, Mars and near-Earth asteroids. Pictured: researcher Dr. Othmane Benafan, left, and test engineer Timothy Halsmer in the Simulated Lunar Operations (SLOPE) Laboratory.



C-2014-6969

Photo by Bridget Caswell

News and Events



Photo by Sarah Egan-Reeves

Teaching the Teachers

Glenn's Office of Education conducted an educator workshop, Oct. 20, to acquaint 30-plus math and science teachers/educators with the center's new Engineering Design Challenge, "Gaining Traction on Mars." The challenge centers on student teams designing and building model wheel configurations for effective traction on a simulated Martian surface when installed on a battery-operated rover. Participants received teaching aids and guidance on facilitating the design challenge, built rovers and tested their wheels in a miniature testbed. The challenge is part of NASA's efforts to prepare students to meet science and math standards. Pictured: Tracey Canale, Glenn Office of Education/PATL (right) explains model configurations to a participant.



Photos by Doreen Zudell



C-2014-8047

Photo by Marvin Smith

Forum Provides Veteran Resources

Glenn's Veterans Awareness Committee held a Veterans Information Forum at Lewis Field, Nov. 4. Glenn's Veterans Program Coordinator Doris Tirone and representatives from the Veterans Health Administration, Veterans Benefits Administration and Cuyahoga County Veterans Services Administration provided veterans useful benefits-related information and answered questions during a 1-hour panel session. Additionally, 17 veteran-related organizations staffed resource booths and distributed information. Approximately 85 veterans participated in the forum.

PBS Holds CFC Festival

Plum Brook Station held a Combined Federal Campaign Festival, Nov. 5, raising \$745 for local charities. Hal Weaver and Geneva Biglin worked with CFC chair Dawn Pottinger and Co-chair Andrea Bonesteel to host the event. Pictured, top photo: Chili Cook-Off winner Wes Sallee with Weaver. Middle photo: Euchre champs Nick Connelly and Michelle Conley. Bottom: Glenn's Loaned Executive Leon Dozier, Keyworker Paul Raitano and Bonesteel serve chili choices to Jan VonKamp.



Photo by Geneva Biglin



C-2014-6378

Photo by Marvin Smith

Healthy Steps Earn Golden Shoe Awards

Glenn's Safety and Mission Assurance (SMA) Directorate took first place with 51 percent participation in the 2014 Golden Shoe Competition held on Safety and Health Assurance Day, Sept. 17. The Office of the Director, Office of Diversity and Equal Opportunity, and the Office of the Chief Counsel, tied for second place with 49 percent participation. The Office of the Chief Information Officer took third with 43 percent participation. Meanwhile, the Engineering Building staff earned Plum Brook Station's (PBS's) inaugural Golden Shoe award for the highest participation among the PBS facilities. Pictured, top left: Safety representatives Bill Brutsche and Dave Tabayoyon present PBS Golden Shoe award to Engineering Building representative Sandy Todd as (back row) Tom Mears and PBS Deputy Director Dave Taylor look on. Pictured, top right: Center Director Jim Free presents SMA Director Anita Liang with the Golden Shoe award for her directorate at Lewis Field.

Observance Events Provide Cultural Insight

NASA Glenn's Office of Diversity and Equal Opportunity, in collaboration with Glenn's Native American and Hispanic American advisory groups, co-sponsored two observance events in November.

During the National Native American Heritage Observance, Nov. 6, Bruce Kafer of the Lakota Sioux Nation, who serves as a nurse at the Louis Stokes VA Medical Center in Cleveland, talked about the spiritual resiliency of Native Americans and efforts to maintain their traditions. Marian Saastamoinen, a Taos Pueblo Indian, supported Kafer's talk and demonstrated her craft of pottery (pictured, far right).

At the Hispanic American Heritage Observance, Nov. 12, Michael Ferrer, director of Programs for the Lorain County Urban League, discussed the importance of the United States' growing Hispanic/Latino population. He cited examples of how Hispanics are entwined in America's past and future success. Authentic Latin cuisine from Campus Grille was available following the event. Ferrer, pictured right, receives a plaque and certificate of appreciation from, left, Associate Director Janet Watkins, and Dr. Azlin Biaggi-Labiosa, Hispanic Advisory Group chairperson.



C-2014-8229

Photo by Bridget Caswell

New Cafe to Sprout at Lewis Field in 2015

Lewis Field food services will be transitioning to Marigold Catering in the New Year. After more than a year operating under the Glenn Café Food Services Pilot Program, and based on an opportunity identified by the Food Services Team, the center is transitioning to a single indoor food services vendor under an Exchange contract. Marigold Catering of Cleveland will be offering a NASA-specific menu for the Lewis Field workforce during "Sprout Café" breakfast and lunch service, starting in January 2015. To transition as quickly as possible, current indoor food services will be suspended at the conclusion of lunch on Friday, Dec. 12. Until the Sprout Café service begins, the BSVI Micro Market, located on the mezzanine of the building 15 large dining room, remains available for 24/7 food purchases. Watch for updates about the Marigold Sprout Café on *Today@Glenn*.



C-2014-8237

Photo by Marvin Smith

Employees Recognized for Space Flight Contributions

Glenn's Space Flight Systems Directorate recently recognized individuals and teams who received a Space Flight Awareness (SFA) award for outstanding contributions and dedication to quality work and flight safety. Center Director Jim Free joined astronaut Mark T. Vande Hei in congratulating awardees during the Snoopy award ceremony.

Silver Snoopy

Seven employees received the coveted Silver Snoopy pin and certificate reserved for less than 1 percent of the workforce and determined by the astronaut corps.

Diana Centeno-Gomez for overcoming numerous technical and schedule challenges as Mission Operations lead for the Space Communications and Navigation (SCaN) Testbed experiments.

Christopher Fulton, ZINT, for contributions to the Space Launch Systems Program as leader of the Core Stage Thrust Vector Control Systems Integrated Development team and lead developer of mission and fault management algorithms for safe and efficient operations.

Justin Funk, ZINT, for technical design and leadership as the contractor mechanical lead for the Advanced Exercise Concepts (AEC) project.

Eric Kelly, ZINT, for serving an integral role as a member of the Principal Investigator Microgravity Services team by developing and using acceleration analysis software.

Susan Motil (not pictured) for career engineering management contributions to microgravity research, crew module qualification facilities and advancement of materials and problem solving that enabled successful fabrication and manufacturing processes for the composite Cryotank Technologies and Demonstration Project in the Space Technology Mission Directorate's Game Changing Development Program.

Lauren Sharp for contributions to the successful operations of Investigating the Structure of Paramagnetic Aggregates from Colloidal Ellipsoids-3 (InSPACE-3) and 3+, Capillary Flow Experiment-2



Pictured, left to right: Center Director Free, Kelly, Fulton, Funk, Sharp, Centeno-Gomez, Dr. Sutter and Vande Hei.

(CFE-2) and Capillary Channel Flow (CCF) space flight experiments onboard the International Space Station.

Dr. James Sutter for expertise in technologies for deep space missions, enabling NASA Human Space Flight Program's incredible accomplishments.

SFA Trailblazer

David Chelmins received a SFA Trailblazer Award. The award recognizes innovative support to human space flight in an employee's early career. He is recognized for leadership and technical accomplishments in communications and navigation solutions that led to the world's first flight-validated in-space U.S. Global Positioning System—European Galileo Global Navigation Satellite System receiver.



Chelmins poses with his wife and branch chief Gene Fujikawa.

SFA Teams

The following Glenn teams received a SFA Team Award for demonstrating exemplary teamwork while accomplishing a task or goal supporting the human space flight program.

Structural Benchmark Test Team for successful completion of exacting multiaxial testing of the Orion Launch Abort System-Crew Module retention and release mechanism over the full range of anticipated flight loads.



Structural Benchmark Test Team attending, left to right: Frank Bremenour, Ralph Pawlik, David Krause and Lawrence Kren.

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More Than a Memory

Richard H. Cavicchi, 91, a 2009 retiree who served a record 65 years of federal service, died Oct. 7. Cavicchi served in the U.S. Army Corp of Engineers during World War II and later in the Army Reserves. He joined the NACA/NASA workforce as an aeronautical engineer in 1948. Cavicchi was among NASA researchers who investigated nuclear-powered aircraft and spacecraft to venture to Mars in the 1960s. He authored/co-authored 50-plus technical reports, contributing to turbojet cycle analysis, compressor and turbine design, electric power generation and computational fluid mechanics. He was an avid athlete and conservationist, who bicycled 11 miles daily to NASA.



Cavicchi



Sprungle



Zala

Arthur E. Sprungle, 88, a 1996 retiree with 41 years of service, died Oct. 28. Sprungle was a World War II veteran and served in the Army Reserves and National Guard until 1986. He joined NACA/NASA in 1954. He designed and drafted parts as a detailer in the Engineering Design Division, which he supported for much of his career. Sprungle generously supported a variety of organizations including the IFPTE-LESA union, Local 28. Treasured among his many awards and honors, was selection as a Community Hero/Olympic Torchbearer (1996).

Laszlo F. Zala, 80, a 2003 retiree with 17 years of service, died Oct. 8. Zala helped develop and implement the center's energy conservation program. He served as the first energy manager while also serving as chief of the Facilities Electrical Systems Management Branch. Zala received several awards for his conservation efforts including a 1995 NASA Exceptional Achievement medal and a 2000 Federal Inter-Agency Energy and Water Management Award. Following tenure as a visiting professor at Budapest University, Zala who is a native Hungarian, advocated for the 2001 NASA-Hungarian Space Agency Space Cooperative Agreement.

Space Flight Awareness

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Crew Service Module Structures Fully Faired Orion Design Team for outstanding and significant contributions to the Multi-Purpose Crew Vehicle in development of the Fully Faired Orion design option.

Orion Service Module Static Load Test Team for assistance to Lockheed Martin in identifying high-risk areas and making recommendations to ensure a safe flight of Exploration Flight Test-1 and Exploration Missions 1 and 2.



Crew Service Module (CSM) Structures Fully Faired Orion Design Team and managers attending, left to right: CSM Structures deputy manager Tom Cressman, Glenn's project manager for Orion Testing Nicole Smith; Structural Dynamics Branch chief Dr. Dexter Johnson, Robert Allen, Tom Goodnight, Samantha Bittinger and Elliot Schmidt.



Orion Service Module Static Load Test Team attending, front, left to right: Louis Ghosn, Tom Goodnight, Jennifer Hayes, Structural Mechanics Branch chief Mei-Hua Liao and Elliot Schmidt. Back row, left to right: Cressman, Smith, John Ramsey, Andrew Ring, Robert Allen, Nathan Wilmoth, Nelson Morales and Center Director Free.

Retirements

Leslie Greenbauer-Seng, Materials and Structures Division, retired Dec. 1, 2014, with 35 ½ years of NASA service.



Greenbauer-Seng

Calendar

IFPTE LOCAL 28, LESA MEETING: LESA will hold its next membership meeting, Wednesday, Jan. 14, noon, in the Glenn Employee Center's Small Dining Room.

Emergency and Inclement Weather Lines
Lewis Field: 216-433-9328 (WEAT)
Plum Brook Station: 419-621-3333

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AeroSpace Frontiers is an official publication of Glenn Research Center, National Aeronautics and Space Administration. It is published the second Friday of each month by the Office of Communications & External Relations in the interest of the Glenn workforce, retirees, government officials, business leaders and the general public. Submit short articles and calendar items via e-mail to the editor: doreen.b.zudell@nasa.gov or 216-433-5317.

January 2015 issue copy deadline: Dec. 15, noon

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Cybersecurity Awareness: First Line of Defense

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Guest speakers included NASA's Incident Response Service Executive Howard Whyte; FBI Special Agent Ganpat Wagh from Cleveland Cybercrimes Task Force; Glenn's Chief Information Security Officer (CISO) Gilbert Winter; Glenn's Deputy CISO David Murnan; and Lead Counterintelligence/Counterterrorism Special Agent George Crawford. They provided informative IT security presentations and case studies reinforcing the agency's 2014 theme: "STOP, THINK, CONNECT: Cybersecurity Best Practices To Protect and Safeguard NASA's Information & Assets."

Some areas of risk and IT security practices highlighted include:

- Phishing (pronounced fishing) social engineering is an emerging threat to NASA. Perpetrators use emails directing users to a fake website made nearly identical to a legitimate site. The agency is blocking phishing attempts daily.
- Ransomware is malware that will actually hold your files or your entire computer "hostage" unless a demanded fee is paid.
- Digital signing is an extra step NASA hopes to expand, along with the PIV card for protecting employees and NASA information systems.

The speakers and other IT experts in attendance stressed that education is



Pictured, left to right: Glenn IT Security's Kevin Bradley, Murnan, Crawford, Dr. Ellis, Winter and Wagh.



Headquarters' Whyte speaks.

the first line of defense in identifying risks and avoiding attacks. Glenn employees are encouraged to check *Today@Glenn* for future monthly IT



Vendors offer IT advice and products.

Security webinars and Lunch & Learn events to hear relevant tips for protecting your IT work and home environment.

—By S. Jenise Veris