



# AeroSpace FRONTIERS

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## Mishap Investigation Delivers Valuable Lessons

Last September, a fire occurred after hours in a test cell at Lewis Field during an unattended laser operation. This fire did not result in personnel injury, but it uncovered a vulnerability that we are working to correct. I remain proud of Glenn's safety record and our safety culture. When we have an incident or mishap, we report it, thoroughly investigate it, and ensure we learn from it. I would like to thank the Building 24 Test Cell Fire Mishap Investigation Team for their in-depth examination of the root causes of the fire. The findings help us gain situational awareness, improve our approaches and become more attentive.

Successful research engages safety and delivers quality.

## 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 to the editor at [doreen.b.zudell@nasa.gov](mailto:doreen.b.zudell@nasa.gov).

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GRC-2017-C-02905

Photo by Bridget Caswell

## Agency Held Live Events to Highlight FY18 Budget Request

NASA held a series of events May 23, highlighting the agency's fiscal year 2018 budget proposal, including a televised State of NASA address and Facebook Live virtual tours of NASA's 10 field centers.

Acting Administrator Robert Lightfoot presented the live State of NASA to employees across the agency. He talked about the President's budget and NASA's scientific and technological achievements and cutting-edge future work. "We are pleased by our top line number of \$19.1 billion, which reflects the President's confidence in our direction and the importance of everything we've been achieving," Lightfoot said.

Immediately following Lightfoot's remarks, Center Director Dr. Janet Kavandi and Chief Information Officer Larry Sivic led an all-hands meeting with employees. They discussed the local impacts of the fiscal 2018 budget request and took questions from employees.

The fiscal 2018 budget proposes \$677.4 million in spending at NASA Glenn, which is \$52 million more than in fiscal 2016. (Our fiscal 2017 omnibus allocations are awaiting approval.)

That same day, the agency's social media teams took visitors behind the scenes for virtual tours at NASA centers to highlight work enabled by the budget. NASA Glenn's Web and Social Media team, with assistance from Imaging Technology Center staff, kicked off the live events by hosting a 20-minute tour of the Electric Propulsion Laboratory (EPL).

Glenn experts Mike McVetta and Dave Irimies told Facebook fans about the EPL, where the agency tests solar propulsion technologies that are critical to powering spacecraft for NASA's deep-space missions. The event concluded with questions from Facebook users. The tour generated more than 100,000 views, reaching 690,000 people.

By Doreen B. Zudell

### Pictured Above:

Dave Irimies, left, explains the significance of solar electric propulsion for deep-space missions to Web and Social Media Team Lead, Nikki Welch, and thousands of Facebook viewers.

### On the Cover:

Glenn's Web and Social Media Team Lead Nikki Welch, right, interviews Mike McVetta inside a vacuum chamber in the Electric Propulsion Laboratory at Lewis Field. Glenn kicked off the series of live virtual tours of NASA's 10 centers as part of the fiscal year 2018 Budget Proposal Briefing.

GRC-2017-C-02895

Photo by Bridget Caswell



## 2017 Invention of the Year

# Glenn Nominees Received Honorable Mention

Two of NASA Glenn's technologies received honorable mention in the 2017 NASA Invention of the Year (IOY) Award. These two technologies exemplify some of the cutting-edge research that continues to be performed at our center.

### Hall Thruster Life Extension

The invention increases the operational lifetime of a space propulsion engine called a Hall Effect Thruster by a factor of five or more. This increase is accomplished by utilizing an innovative magnetic field configuration to eliminate interactions between the high-energy xenon plasma produced by the thruster and the ceramic chamber that contains it. Hall thruster life extension, through magnetic shielding, is the key to unlocking the benefits of high-performance electric propulsion and fundamentally changes how we do solar electric propulsion. Developers of this technology include Dr. Dave Manzella, Dr. David Jacobson, Robert Jankovsky, Richard Hofer (JPL) and Peter Peterson (VPL).

#### Magnetically Shielded Hall Thruster

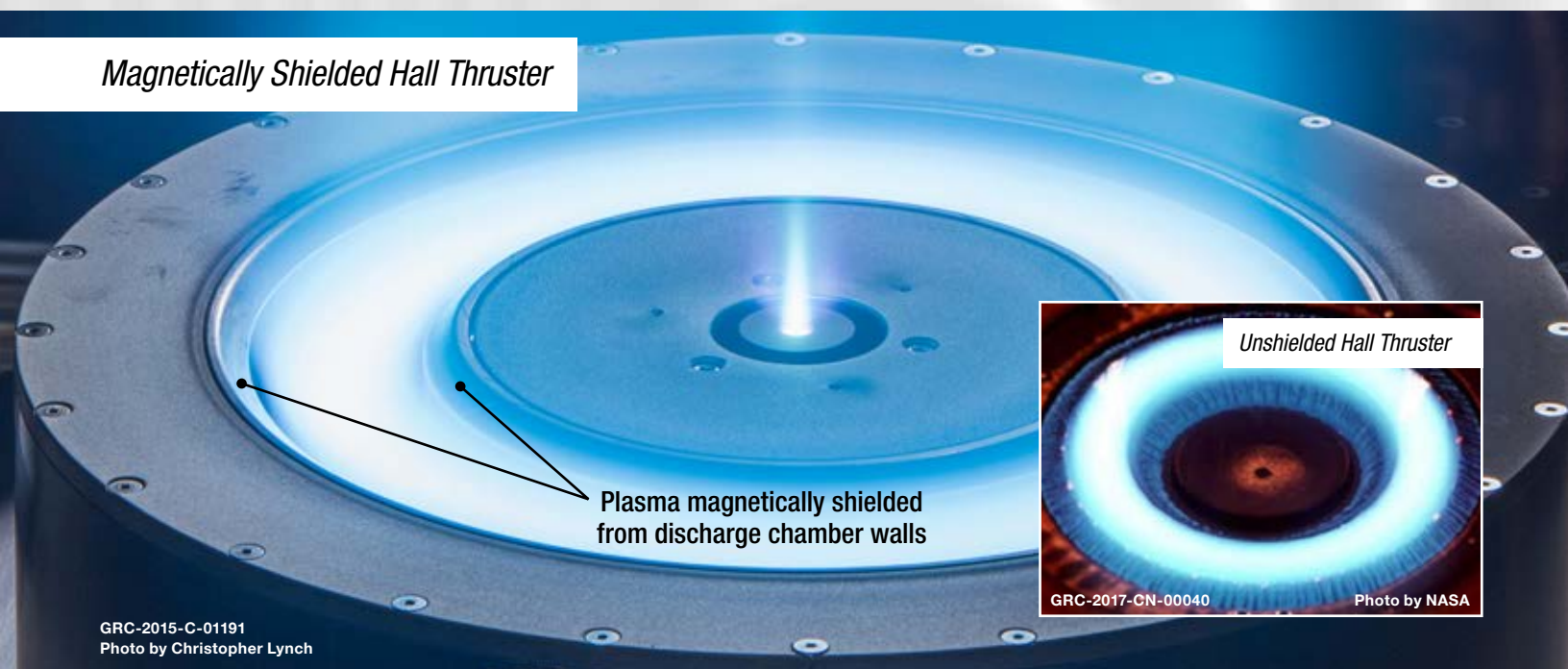


Photo by Makel Engineering, Inc.

### Schottky Diode Hydrogen and Hydrocarbon Gas Sensors

This suite of sensors overcame significant limitations in state-of-the-art sensing technology, including the need for hydration or oxygen, the reliance on lower-temperature materials, and nonselective detection of species. The developers successfully surmounted such limitations by increasing the range and durability of sensing applications, while providing sensitive quantitative readings of the targeted species, i.e., hydrogen and hydrocarbon gases. The developers of this technology include Dr. Gary W. Hunter, Dr. Jennifer C. Xu and Dorothy Lukco (VPL).

*Pictured: "Lick and Stick" Smart Sensor System including a SiC hydrocarbon sensor.*

NASA's Invention and Contribution Board (ICB) annually nominates Government and Commercial Inventions of the Year, which have significantly contributed to NASA programs or that exemplify NASA's mission to transfer cutting-edge technology to U.S. industry.

# Assuming Our Responsibility to Keep One Another Safe

## Safety and Health Awareness Day, 2017

NASA Glenn held its annual Safety and Health Awareness Day, June 13, where speakers, panelists and exhibitors addressed the theme “Safe and Sound—Your Voice Matters.”

The morning program featured three speakers who took turns reinforcing our individual responsibility for safety and taking risks for the right reasons. The presentations were aired live on Glenn TV Channel 13 and shown in the Engineering Building at Plum Brook Station.

Center Director Dr. Janet Kavandi cautioned listeners to thoughtfully trade the gain versus risk of daily tasks, such as aggressive or distracted driving. Oftentimes, she said, the gain is minimal compared to the risk. She also addressed justified risks, based on the significance of gains derived, such as those for human spaceflight and for national defense.

“We (NASA) weigh the potential risks, and we test to ensure that the risks are minimized,” Kavandi explained.

Wayne Hale, director of Human Spaceflight, Special Aerospace Services, LLC, discussed lessons learned from NASA’s past accidents. He cautioned pinning failure to any single person because vigilance by everyone is the price for safety. He offered the following suggestions to reduce/eliminate error chains:



GRC-2017-C-02945

*Hale discusses lessons learned.*

- Employ imagination when identifying risks
- Seek lessons learned
- Don’t simplify conclusions
- Communicate
- Commit to resilience; no shortcuts to good work



GRC-2017-C-03004

*Lewis Field employees on Health Walk*



Employees also heard from John Martin, the founder and counselor for Martin Safety Solutions, who shared a personal experience on how taking shortcuts led to a horrific accident.



GRC-2017-C-02961

*Martin shares his personal story.*

Martin gave an account of an industry safety failure that left him hospitalized for over 5 months, enduring burns to 75 percent of his body. He risked his own safety and that of a fellow employee by ignoring personal safety equipment and undertaking a task with minimal knowledge. This incident impacted many people's lives, including family, friends and co-workers.

Center personnel stood ready at a variety of booths outside the MIC Auditorium to inform employees of the latest safety, health, security and operational guidelines and technologies.

After lunch, employees were encouraged to return for the Mishap Case Study Panel presentation on lessons learned from Glenn mishap statistics and two case studies: Building 24 Test Cell fire and battery safety.

On June 14, Lewis Field employees put on their walking shoes to participate in the Center Health Walk and compete for the coveted Golden Shoe Award. Plum Brook Station held their walk on June 13.

By S. Jenise Veris



GRC-2017-C-02981

Photos by Jordan Salkin

*The Mishap Study panelists, left to right: Jim Smith, Dr. Brad Lerch and Michael Milbert.*



## PROMOTIONS



*Eckel*



*Martzaklis*

**Dr. Andrew Eckel** has been named chief of the Program and Project Assurance Division. Dr. Eckel has served in several leadership positions in science, research and technology, as well as center and agency-level project and program management.

**Konstantinos (Gus) Martzaklis** has been named Glenn's deputy director of the Safety and Mission Assurance Directorate (SMAD). Martzaklis has been a member of the SMAD management team for over the past 5 years, most recently as chief of the Program and Project Assurance Division.

## Slimathon Participants Speed Up, Slim Down

The Fitness Center's 2017 Slimathon concluded with impressive figures—77 percent of 269 participants lost body fat, while 11.6 percent managed to maintain without any gain. During the 12-week program, regular exercise and body fat measurement helped encourage a healthier lifestyle.

The following individuals and teams achieved the highest rate of change:

### INDIVIDUAL MEN

Doug Astler  
Eric Hendricks  
Daniel Sutliff

### INDIVIDUAL WOMEN

Candice McDonald  
Thuy Truong  
Kate Dunlap

### TEAMS

Hidden Figures  
The Slimsons  
Leave the Cannoli



"These are the best results we've seen in a long time," said Fitness Center Director Bob Laws. "Everyone who completed the program deserves to be recognized as amazing people and athletes and for not giving up!"

# Indebted to Them All



GRC-2017-C-02816

Photo by Marvin Smith

Employees gathered at the Briefing Center for the 2017 Memorial Day Ceremony, hosted by the Veterans Awareness Committee. Thomas Hartline, director of Facilities, Test and Manufacturing and Veterans Awareness Committee trustee, addressed the crowd. He reminded everyone that although we do not know them all, we are indebted to the military members and families who made the ultimate sacrifice and to those who continue to serve. Guest singer Marie Daniels delivered a powerful a cappella performance of “Wind Beneath My Wings” in tribute to the fallen heroes.

## Columbus Clippers Fans Catch a Glimpse of Space Exploration

Native Ohioian and former astronaut Tom Henricks took to the field for Space Day weekend activities hosted by the Columbus (Ohio) Clippers minor-league baseball team, May 6-7. Henricks, who flew on four space shuttle missions, threw out the first pitch on Saturday and signed autographs for fans on Sunday. Glenn’s Community Relations team showcased models of NASA’s new Space Launch System rocket and Orion crew vehicle. Spacesuits, aircraft models and graphics representing Glenn’s latest research and technology activities were also on display.



GRC-2017-CN-00019

Photo by Carlos Gomez

## NEWS AND EVENTS

## Glenn’s Interns Are Ready to Take Off

**NASA Glenn has officially launched its 2017 summer internship program!**



GRC-2017-C-02858

Photo by Marvin Smith

The Office of Education welcomed interns and faculty from across the nation on June 5 and June 12. On June 5, their orientations kicked off with a welcome address from Director of Center Operations Robyn Gordon and a presentation on Glenn’s Core Competencies from Director of Engineering and Research Dr. Rickey Shyne. Deputy Director of Center Operations Seth Harbaugh provided the welcome on June 12. Briefings and/or training from other center representatives followed. A total of 240 students and faculty left the briefings ready to hit the ground running and begin learning and working in a variety of Glenn core competency-based areas. Pictured is a group of NASA Internship Project participants.

**Attention Interns!** To view all the orientation group photos, visit the NASA Internships at Glenn-Interns Yammer site.





GRC-2017-CN-00029

Photo by Richard Woodard

## Celebrating Arts for All

Glenn's Associate Director for Strategy, Therese Griebel, left, applies a NASA tattoo to an aspiring artist, during Arts for All, May 4. Glenn's Office of Diversity and Equal Opportunity and the Disability Awareness Advisory Group supported the annual outreach event at the Cuyahoga County Fairgrounds. The Cuyahoga County Board of Developmental Disabilities sponsors the event to ensure individuals with disabilities have equal opportunities to participate in arts programs. Glenn employees staffed hands-on activities highlighting STEM-related concepts, and the NASA photo booth. Eva the Astronaut stopped by for a visit. Hundreds of young people from Cuyahoga County attended.

## Maintaining John Glenn Highway

A group of Glenn employees and retirees recently supported the local community by joining the Glenn-sponsored Adopt-A-Highway cleanup by removing unsightly trash along the Grayton Road and I-480 interchange.

Participants must watch a brief safety video and sign a Department of Transportation release. Stay tuned to *Today@Glenn* for future cleanup dates.

Contact Christine Staschiak, 3-6662, if you can help.



GRC-2017-CN-00037

Photo by Fred Kohl



## Allies Speak Up for Respect, Inclusion

In recognition of Lesbian, Gay, Bisexual and Transgender (LGBT) Pride Month, Glenn's Rainbow Alliance Advisory Group (RAAG) held its third annual Open House and Brown Bag Lunch, June 15. The gathering centered on the video "Anyone Can Be An Ally." The video dispels misconceptions and encourages communications towards the goal of creating a comfortable and respectful work environment. Members of the group facilitated an informal discussion based on the video and the importance of becoming allies who speak up for respect and inclusion. Pictured are Kelly Gilkey, RAAG co-chair; Aretha Carr, executive sponsor for Rainbow Alliance and Brown Bag co-facilitator; Christine Paulsen, RAAG co-chair; and Tamika Laldee, Brown Bag co-facilitator.

C-2017-GRC-03032

Photo by Rami Daud

## Glenn's Office of Chief Counsel Recognized for Service



GRC-2017-CN-00041

Photo by Amy Xenofos, NASA Johnson Space Center

*Glenn OCC award winners celebrate with staff, left to right: Jaclyn Facinelli, Laldee, Laura Henry, Puchmeyer, Jackson, MacAllister West, James Burke and Linda Hastings.*

Three members of Glenn's Office of the Chief Counsel (OCC) were recognized for their outstanding service at NASA's Office of General Counsel's Annual Conference Awards Dinner, May 12.

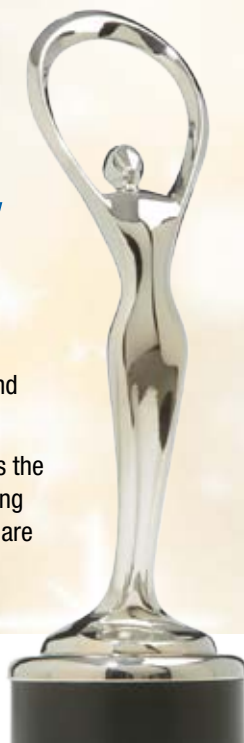
**Callista Puchmeyer** received the Attorney of the Year Award for assuming a critical leadership role while the center's OCC was undergoing major changes, including the retirement of former Chief Counsel William Sikora and five of six attorneys serving in new roles.

Glenn attorneys **Jay Jackson** and **Tamika Laldee** received Teamwork Awards for their contributions to the Knowledge Information Sharing System (KISS) Team. The agencywide team developed a Knowledge Management System for the NASA Legal community. Jackson was recognized as a member of the KISS Tools Team and Laldee for the KISS Culture Team.

## Glenn Newsletter Recognized for Quality

The Academy of Interactive & Visual Arts awarded the *AeroSpace Frontiers* newsletter and staff with a 2017 Communicator Award. The 2017 Communicator Awards featured more than 6,000 entries, making it the largest and most prestigious award of its kind.

In receiving this award, the newsletter staff acknowledges the efforts of Glenn's Imaging Technology Center and Publishing Services staff. Their imaging services and graphic design are crucial to producing a quality communications product.



## Cheston and Lucas Receive 2017 NTA Nsoroma Awards



GRC-2017-CN-00042 Photo by NTA Cleveland Chapter

*Cheston, center, accepts the Lifetime Achievement plaque presented by left, Dr. Bilal Bomani, NTA vice president, and Dr. Lateef Saforre, NTA president.*

The National Technical Association, Cleveland Chapter, honored Glenn's Derrick Cheston and Zachary Lucas during the 15th Annual Nsoroma Technical Symposium and Awards Program, hosted at the Ohio Aerospace Institute, June 2.

Cheston, who leads NASA Glenn's Systems Engineering and Architecture Division, received the Nsoroma Lifetime Achievement Award and served as the keynote speaker for this year's event. He was recognized for his leadership and mentorship with FIRST robotics, summer interns and as a member of the Speakers Bureau.



Lucas

Lucas received the Nsoroma award in the category of Prince, symbolizing a young man of exemplary character and outstanding personal attributes at home, on the job and in the community. Lucas is the resources manager and community relations specialist in the Office of Communications and External Relations.





# Glenn Hosts Design Challenge Winners

*Deputy Center Director Dr. Perez-Davis, center, poses with left to right: USDC winners Cal Poly Pomona, Dr. Edberg, Pham, Lopez, Callahan and Handa; and second place, Ohio State's Barrington, Petsche, Brandon, Scott and Trussa.*

GRC-2017-C-03056

Photo by Rami Daud

Glenn welcomed the winners of NASA's first University Student Design Challenge (USDC), June 12, for a culminating event sponsored by Glenn's Office of Education. The first- and second-place winners, respectively, are teams from California State Polytechnic University, Pomona, and The Ohio State University in Columbus.

During the 4-month challenge, teams were encouraged to think of out-of-the-box approaches to integrating aeronautics into commuter travel in metropolitan areas, focusing on one or more of Glenn's Core Competencies.

At the culminating event, the winning teams met Glenn mentors Jeff Berton, Sydney Schnulo and Jonathan Seidel, whose research project was adopted for the USDC; Office of Education representatives; and Glenn senior staff. Deputy Center Director Dr. Marla Perez-Davis and Aeronautics Director Dr. Ruben Del Rosario attended and presented certificates during an awards ceremony. Team presentations of their USDC designs and facility tours followed.

Both teams presented their designs to the mentors' Propulsion Systems Analysis Branch. The first-place team included: Raghav Handa, Michael Pham, Alexander Callahan, Gabriela Lopez and the faculty advisor Dr. Donald Edberg. They developed a fully electric,

short takeoff and landing aircraft concept capable of carrying six passengers and operate in the greater Los Angeles area. This team was also invited to present their design to the Director's Senior Management Team.

Members of the second-place team included: Brennan Barrington, Dennis Scott, Jake Brandon, Colin Trussa and Austin Petsche, minus their faculty advisor Ken Gordon. Their focus was a fully electric lighter-than-air concept, similar in appearance to a subway car, to transport 192 passengers to and from Honolulu, Hawaii.

The competition was open to teams of full-time, sophomore-through-senior year undergraduate students in accredited U.S. academic institutions. The teams were composed mostly of students studying science, technology, engineering, arts and mathematics (STEAM), but also included students of economics, marketing and other disciplines that could aid in the success of an idea.



## Successful Path to STI Clearance

Scientific and Technical Information (STI) is one of the most valuable assets NASA creates. The Glenn STI Program is committed to helping authors share their research while also protecting NASA's interests. A short video explains the STI process, why it is important and the author requirements for clearing STI for release.

Visit <https://www.youtube.com/watch?v=dkKrvFIAE5U> to watch the video and learn more.

## RETIREMENTS



*Hoberecht*



*Schroeder*

**Mark Hoberecht**, Photovoltaic and Electrochemical Systems Branch, Power Division, retired January 3, 2017, with 39 years of service.

**Lawrence Schroeder**, Systems and Operations Management Branch, Facilities Division, retired June 26, 2017, with 50 years of service.

**Gene L. Stygles**, Facilities Division chief, Facilities, Test & Manufacturing Directorate, retired June 30, 2017, with 33 years of service.

**Debra Zamostny**, Engineering Managing Branch, Facilities Division, retired June 30, 2017, with 26 ½ years of service.



*Stygles*



*Zamostny*



*Free*

**James Free**, deputy associate administrator for Technical in the Human Exploration and Operations Mission Directorate at Headquarters, retired May 12, 2017, with 27 years of service. He served as Glenn's Deputy Center Director from 2010 through 2012 and as Center Director from Jan. 2013 to April 2016.

**Attention Retirees!** To electronically subscribe to *AeroSpace Frontiers*, email [grc-aerospacefrontiers-subscribe@lists.nasa.gov](mailto:grc-aerospacefrontiers-subscribe@lists.nasa.gov).

*thank  
you*

## IN APPRECIATION

Thanks to all my friends and co-workers that shared their time to help me celebrate my retirement. It has been a fantastic 50 years working for NASA! Many of you signed my retirement book, which I will read often—to help me remember! Thank you most sincerely! — Larry Schroeder

## MORE THAN A MEMORY

### Selby Made Significant Contributions in Facility Design and Construction



*Selby*

**John A. Selby**, 71, chief of the Project Management Branch, Facilities Division, died June 3. Selby served as the project manager for the relocation of NASA facilities during the expansion of Cleveland Hopkins International Airport and also for the Construction of the Space Experimental Testing facilities at the Space Power Facility, Plum Brook Station. His architecture career spanned over 40 years and included projects in the government, corporate, healthcare, justice, science and sports sectors. He has been a Leadership in Energy and Environmental Design (LEED) Accredited Professional since 2000 and an active participant in the design and construction of several high-performance buildings. Selby held a Bachelor of Architecture Degree from Oklahoma State University. He was a retired U.S. Navy officer, and earned several medals for his contributions.

"John was a devoted husband and father and never took anything or anyone for granted," said Facilities Division Chief Gene Stygles. "He was always mindful of how blessed he was to live in a beautiful and supportive community, work with incredible people and have good and caring friends and family. John was profoundly touched by the generous support and 'unity' of his colleagues, and he was thankful for all the prayers that came his way during his illness."



*Wlasuk*

**Claudette J. Wlasuk**, 72, a 2007 retiree with 21 years of NASA service, died June 8. Wlasuk retired from the Office of Human Capital Management. She was a member of the first team of government workers in the nation to pursue a Habitat for Humanity project spearheaded by the Cleveland Federal Executive Board. Wlasuk was also a charter member of Glenn's Veterans Awareness Committee (VAC) and continued to support VAC programming as the government affairs liaison for Rolling Thunder, Inc. Chapter 1, after retiring.

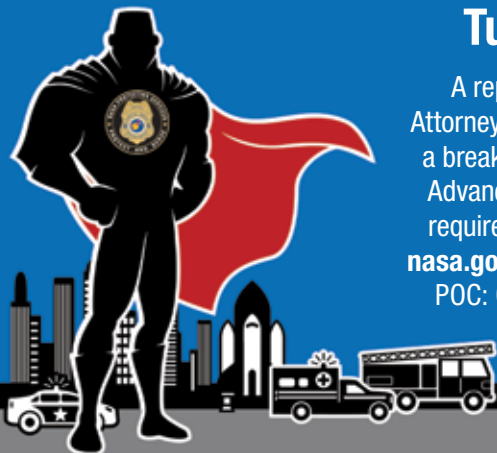


# Upcoming Center Events

## NASA Glenn Security Day Identity Theft—What You Should Know

**Tuesday, Aug. 1**

A representative from the Ohio Attorney General's Office will facilitate a breakout session on identity theft. Advanced registration by July 24 is required. Visit, <https://events.grc.nasa.gov/securityday/> for full details. POC: Candice McDonald, 3-5424



## Centerwide Golf Outing Friday, Aug. 4

The 8th Annual Glenn Center Open Golf Outing is Friday, Aug. 4, at Mallard Creek Golf Course in Columbia Station. The format will be a four-person scramble. NASA employees, contractors, retirees, friends and family are invited to attend. POC: Sandra Doehne, 3-8636



**SAVE THE DATE**

**UPCOMING FARMERS MARKET DATES:** Mark your calendar for Wednesday, July 26; Tuesday, Aug. 29; and Tuesday, Sept. 12, for Glenn's 2017 Summer Farmers Market. A variety of vendors will offer fresh produce, homemade goods and more. Stay tuned to *Today@Glenn* for specific details on each market date. Hosted by the Fitness Center, the markets take place at the Picnic Grounds from 10 a.m. to 1:30 p.m. POC: Gabby Albrigo, 3-6313

**SOLAR ECLIPSE:** On Monday, Aug. 21, all of North America will be treated to an eclipse of the sun. To learn more about the eclipse and NASA-sponsored events, visit <https://eclipse2017.nasa.gov/>.

**NASA HONOR AND CENTER AWARDS:** Mark your calendar for Wednesday, Aug. 23, for the 2017 NASA Honor and Center Awards Program. Stay tuned to *Today@Glenn* for details.



### CENTER PICNIC REMINDER

Come join the fun at the 2017 Center Picnic, Wednesday, July 19, from 11 a.m. to 2 p.m. at the Lewis Field Picnic Grounds. Enjoy picnic food, lively music and fun activities with your co-workers and retirees.

In the event of inclement weather, the Center Picnic will be held Thursday, July 20 (same time and location).

POC: Betsy Lavelle, 3-3198

### AUGUST OUTDOOR SIREN TESTING

The Emergency Management Office staff will conduct an outdoor "voice" test at Building 6 on Wednesday, Aug. 2. An audible siren test focusing on the "lock-down" tone will be conducted on Saturday, Aug. 5, at Lewis Field.

POC: Allen Turner, 3-6826

### IFPTE LOCAL 28, LESA MEETING

LESA will hold its next membership meeting, Wednesday, Aug. 9, noon, in the Glenn Employee Center's Small Dining Room.

### RETIRED WOMEN'S LUNCHEON

The next luncheon is Thursday, Aug. 17, at 1 p.m. at Don's Pomeroy House, 13664 Pearl Road, Strongsville.

Please reserve your place with Gerry Ziemba at [goto64gerry@yahoo.com](mailto:goto64gerry@yahoo.com) or 330-273-4850.

Deadline for next calendar section is **July 21, noon**. News and feature stories require additional time.

Clip-and-save format! Cut along the dashed line to keep this calendar for your reference.

NASA Glenn Employees: For more calendar information, visit <https://wing.grc.nasa.gov/event-calendar/>.



# Central Process Systems Maintenance Shutdown Underway

Lewis Field's subsonic, supersonic and icing wind tunnels, along with jet engine test facilities, support a robust schedule of testing throughout the year. These facilities rely heavily on Glenn's Lewis Field Central Process Systems (CPS), especially the Combustion Air System and the Altitude Exhaust System. These two systems comprise over 9 miles of piping and more than 730 remotely controlled valves.

To ensure the reliability of these systems—with compressors and exhausters that can date back 60 years—Glenn's Facilities Maintenance Branch oversees an Annual CPS Maintenance Shutdown. The 2017 shutdown began July 10 and runs through Aug. 21.

"During the shutdown, crews execute lockout/tagout procedures to ensure personnel safety, physically enter the systems to inspect the integrity of piping and valves, and make the necessary repairs," said Facilities Maintenance Branch Chief Mark Woodling.

In addition to the Combustion Air and Altitude Exhaust Systems, the Variable Frequency System and two Cooling Tower Water Systems are scheduled to be shut down for inspection and repairs. During this time, other on-site maintenance contractors also inspect and repair items within their realm of responsibility.

Woodling said the annual shutdown is a massive undertaking that requires months of meetings with multiple personnel to plan and coordinate the activities. He said the 6-week period is designated to ensure not only the integrity of the equipment but also the safety of the personnel who perform the maintenance.

By Doreen B. Zudell



GRC-2003-C-01692

Photo by Marvin Smith

*Huge altitude exhaust equipment within the Central Air Equipment Building is shut down for maintenance.*

## Emergency and Inclement Weather Lines

Lewis Field: 216-433-9328 (WEAT)  
Plum Brook Station: 419-621-3333

## Connect With Glenn

