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National Aeronautics and
Space Administration

AeroSpace Frontiers

NASA Night at the Ballpark

Monthly Safety Bulletin

A key element of a strong safety culture is good engagement at all levels. The monthly Glenn Safety Bulletin is a great resource with timely safety topics, and its content should be reviewed at staff meetings once a month. This is especially helpful during the summer when many student interns are on-site. Discussions around safety also help to enhance safety awareness and serve as reminders for all of us. Check out the latest safety bulletin at https://nasa.sharepoint.com/sites/grc-smad/SitePages/Safety-Bulletins.aspx.

Here's to a safe and enjoyable summer.

AeroSpace Frontiers
is an official publication of NASA's Glenn Research Center. It is published the second Friday of each month by the Office of Communications 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.

Editor: **Doreen B. Zudell**, ATS, 216–433–5317

Design: **Rhys Sampson**, ATS

Managing Editor: **Kelly R. DiFrancesco**

NASA Honors Photographers and Videographers

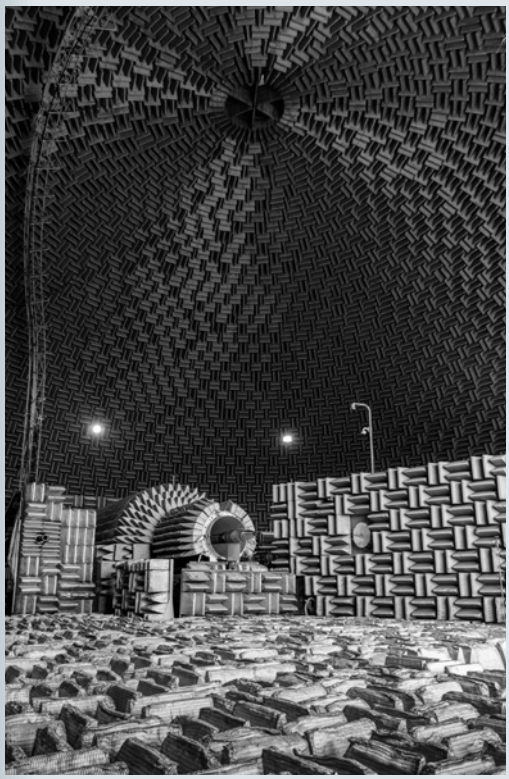
Several of Glenn's photographers and videographers earned NASA's Imaging Experts Group Photographer and Videographer of the Year 2022 awards. The winning entries showcase our people, places, and projects, as captured by NASA's talented photographers and videographers.

Photographer of the Year

Jef Janis, first place for Places; Jordan Salkin, first place for People; and Bridget Caswell, third place for Documentary. To view the winning photographs, visit http://go.nasa.gov/41x83HI.

Videographer of the Year

Jordan Salkin, first and second place for Timelapse, https://images.nasa.gov/details/GRC-2023-CM-0115.3 and https://images.nasa.gov/details/GRC-2023-CM-0116.2; and Dennis Brown, Jim Zunt, and Heather Brown, third place for Production, https://images.nasa.gov/details/GRC-2023-CM-0117.



GRC-2022-C-01318 Photo by Jef Janis

GRC-2022-C-04467 Photo by Bridget Caswell

On the cover:
Left to right: Center Director Dr. Jimmy Kenyon, Guardians player Tyler Freeman, Slider, and NASA Administrator Bill Nelson pose before the ceremonial first pitch.

GRC-2023-C-03236 *Photo by Jef Janis*

Let's Play Ball

NASA Administrator Bill Nelson and other senior leaders joined Glenn employees in celebrating NASA Night at Progressive Field with the Cleveland Guardians on May 8. Employees, family members, and others cheered when Nelson represented the agency by throwing out the first pitch!

The NASA Glenn Exchange offered discounted tickets for employees and provided more than 100 free tickets to the game through an online drawing. Free ticket winners enjoyed a reception with senior agency leadership.

GRC-2023-C-03232

Center Director Dr. Jimmy Kenyon shakes hands with the Guardians' mascot, Slider.

GRC-2023-C-03264 Photos by Jef Janis

Glenn's astronaut celebrates with the winner of the hot dog derby.

GRC-2023-C-03220

NASA Associate Administrator Bob Cabana takes a selfie with Glenn employees and family members.

GRC-2023-C-03225

NASA employees show their spirit!

Pearce Highlights Aeronautics Activities

Aeronautics Research Mission Directorate (ARMD) Associate Administrator (AA) Robert Pearce and members of his senior leadership team visited Lewis Field on May 3 and 4. During an All Hands meeting, Pearce provided updates on ARMD activities. He focused on what he called the "bedrock of aviation," which includes ultra-efficient transport, high-speed commercial flight, future airspace and safety, and advanced air mobility. Pearce thanked employees for their work to advance technologies, pointed to areas where Glenn's research has made significant contributions, and addressed a variety of topics during a Q&A session. After the meeting, group photos were taken with the 2019, 2020, and 2021 ARMD AA Award recipients who were unable to be recognized in-person during the pandemic. Early career employees then guided Pearce and his staff through a tour of the Power Systems Facility where work is underway on the X-57 aircraft.

GRC-2023-C-02910 Photos by Jef Janis

2019 ARMD AA award recipients with senior leadership.

GRC-2023-02911

2020 ARMD AA award recipients with senior leadership.

GRC-2023-C-02912

2021 ARMD AA award recipients with senior leadership.

Welcome Summer Interns!

NASA Glenn joins the Office of STEM Engagement in welcoming summer interns to Lewis Field and Armstrong Test Facility. Students will be on-site from June 5 through Aug. 11.

Encouraging Careers in ICT

NASA's Space Communications and Navigation office partnered with Hyland Software to celebrate Girls in Information and Communications Technology (ICT) Day, an initiative founded to encourage young women's interest in STEM. Students in middle and high school from the Cleveland community traveled to Hyland Software in Westlake, Ohio, to attend coding workshops and hear from an expert panel of women working in ICT on April 27. Hyland Software's Alexandra White, front, and Glenn's Tim Gallagher, back, assist students with HTML coding during the Build Your Own Website workshop.

GRC-2023-C-02832 Photo by Jef Janis

GRC-2023-C-03124 Photo by Quentin Schwinn

Left to right: Cathy Graves, OSTEM; Evalina; Deputy Center Director Dawn Schaible; Mary Rose; Clara; Girl Scouts of North East Ohio Chief Executive Officer Jane Christyson; and Office of STEM Engagement Director Darlene Walker.

Girl Scouts Receive Badges Flown on Artemis

Congratulations to Evalina, Mary Rose, and Clara—winners of the "Girl Scouts to the Moon and Back" national essay contest! Glenn's Office of STEM Engagement (OSTEM) hosted a recognition event for three local Girl Scouts who are among the 75 national winners of the essay contest. They received a Space Science badge that flew on Artemis I. The scouts, their families, and troop members then toured research facilities, talked with women working in STEM at NASA, and participated in a hands-on engineering design activity.

Wadel Leads Technology Incubation and Innovation

Mary Wadel has been named director of Technology Integration and Partnerships. She leads NASA Glenn's Office of Technology Incubation and Innovation and is responsible for Glenn's discretionary investments in technology and innovation, technology transfer and commercialization, and building and maintaining partnerships with external organizations and stakeholders. Wadel has 35 years of space and aeronautics research, project management, and technology investment experience at NASA. To view her biography, visit https://go.nasa.gov/306WxiV.

Wadel

Retirements

Wade T. Arida, Aviation Environments Test Engineering Branch, retired Dec. 22, 2022, with 34 years of NASA service.

Daniel Catalano, Power and Propulsion Project Office, retired April 30, 2023, with 19 years of NASA service.

Michael J. DePauw, deputy chief, Space Environments Test Branch, retired Dec. 31, 2022, with 35 years of NASA service.

Louis Handler, System Architectures and Analytical Studies Branch, retired Dec. 31, 2022, with 31 years of NASA service.

Arida

Catalano

DePauw

Handler

More Than a Memory

Irving G. Hansen, 90, a 1995 retiree with 32 years of NASA service, died April 3. Hansen joined NASA in 1963 at Plum Brook Station (Neil A. Armstrong Test Facility). In 1972 he transferred to Lewis Field. Hansen provided critical technical guidance in the area of advanced electrical power systems. He invented a pulse population method of motor control. This technology followed his earlier invention of high-frequency, alternating current technology, the first new conceptual advance in electrical power distribution in 50 years. Hansen was internationally renowned for his technical contributions, and he mentored many engineers and scientists. To view his online obituary, visit https://tinyurl.com/592k5e4p.

Hansen

John "Joe" Nieberding, 78, a 1999 retiree with 33 years of NASA service, died April 12. He was a widely recognized expert in expendable launch vehicles and had essential roles launching over 65 NASA space missions on Titan/Centaur and Atlas/Centaur vehicles, including the world's first spacecraft to Mars, Jupiter, Saturn, Uranus, and Neptune. Before retiring, he led the Advanced Space Analysis Office, responsible for all exploration advanced concept studies for Glenn. After retirement, he co-authored and presented a highly acclaimed two-day class titled "Mission Success First: Lessons Learned," taught over 130 times worldwide. For his online obituary, visit https://tinyurl.com/57fes39t.

Nieberding

PRIDE

2023

MONTH

Get Your e-Bikes

Looking for a convenient and eco-friendly way to get around the center? Electric bicycles (e-bikes) are now available for purchase through the Logistics and Technical Information Division! Contact Andrew.deenanauth@nasa.gov and check Inside Glenn for details.

New Environmental Review Form

The Environmental Management Office (EMO) is now using the NASA Environmental Review Form (NERF) online, which replaced the GRC-150 environmental evaluation form. EMO reviews all federally funded facility and infrastructure projects and research and development projects to ensure project compliance with multiple environmental and cultural preservation regulations. See Inside Glenn for details.

Save the Date!

Aero Dayz

On Aug. 16 and 17, Glenn's Aeronautics Directorate will host "Aero Dayz," a two-day event to showcase NASA Glenn's past, current, and future contributions to aeronautics research. Town hall meetings with Aeronautics Research Mission Directorate (ARMD) leadership and program directors, networking with ARMD leadership, and exhibits, models, and tours of Glenn aeronautics facilities will be included. Please plan to join the Aeronautics Directorate in networking with colleagues and senior leaders at this exciting event. See Inside Glenn for updates.

2023 GLENN SUMMER Fest

Celebrating All of Us

10 YEARS

of Teamwork, Mission Success, and Fun!

Wednesday, Aug. 9
11 a.m. to 2 p.m.
Along Taylor Road at Lewis Field

Know any NASA retirees who would like to attend? Have them contact **Kathy Clark,** 216–433–8354.

POC: betsy.e.lavelle@nasa.gov
Rain date: Thursday, Aug. 10

Deadline for small items in the July issue is **Wednesday, June 21,** noon.
News and feature stories require additional time.

Glenn Conducts First In-House Icing Research Test of a Spinning Rotor

An emerging aviation industry called Advanced Air Mobility (AAM) seeks to integrate air taxis, cargo delivery aircraft, and other new vehicle concepts into the National Airspace System by using electric vertical takeoff and landing (eVTOL) aircraft. As this industry matures, eVTOL aircraft must be able to operate in inclement conditions, including cold, icy weather.

"AAM introduces many novel aircraft designs for which weather tolerance, including icing, is a challenge," said Paul Von Hardenberg, an icing research engineer at Glenn. Von Hardenberg recently led the first icing research test of a spinning rotor for AAM aircraft at NASA. The system was designed, built, and tested completely in-house at NASA using an open geometry to allow dissemination of data to a broad audience.

"Several areas outside of the Icing Branch at Glenn, along with NASA's Langley Research Center, supplied the synergy needed to enable this first-of-its-kind testing," said Von Hardenberg.

The AAM Rotor Icing Evaluation Study, or ARIES I, focused on developing a competency in testing rotating test articles in the Icing Research Tunnel (IRT), obtaining 3D ice shapes for computational tool validation such as GlennICE and investigating propeller performance degradation and shedding in icing conditions.

GRC-2023-02506 Photo by Jordan Salkin

Curtis Flack, left, and Von Hardenberg inspect the ice formation on the spinner of an AAM propeller model tested in the IRT.

The team used three different propeller sizes (24-, 28-, and 36-inch diameter) to investigate scaling effects of icing. Propeller torque was measured to quantify performance degradation due to icing. Additional data gathered included laser-scanned ice shapes as well as ice shedding events captured using a high-speed camera.

"The data from the test will be used by researchers to better understand the risks of icing on eVTOL vehicles and to validate ice prediction tools," said Von Hardenberg. "Data will assist eVTOL aircraft manufacturers with the design and certification of new aircraft for flight into icing conditions, expediting the growth of the AAM industry."

Follow-up testing is planned for December. This research is supported by the Revolutionary Vertical Lift Technology program.

By Doreen B. Zudell

National Aeronautics and Space Administration

John H. Glenn Research Center

Lewis Field
21000 Brookpark Road
Cleveland, Ohio 44135

Neil A. Armstrong Test Facility
3597 E. Scheid Road
Sandusky, Ohio 44870

www.nasa.gov

Emergency and Inclement Weather Lines

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