National Aeronautics and Space Administration

# AeroSpace FRONTIERS

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## We Want You Safe

It's an honor to have been selected as your center director at Glenn. My family and I are excited about becoming a part of the Cleveland community. This time of year, with winter on our doorstep, many of us connect with loved ones while we reflect on the year ahead. As you consider your plans, please be safe, whether you're traveling for the holidays or just clearing your driveway or sidewalk. Give yourself time to get where you're going and take your time to make sure you arrive safely. Our families need us, and we need you here at Glenn to accomplish the important work ahead. Thank you for your great work in 2022 and best wishes for a safe holiday season.

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Submit short articles and calendar items to the editor at doreen.b.zudell@nasa.gov.

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# Glenn Engineers Test Lunar Communications in Lava Field

GRC-2022-CN-00064

*A NASA engineer works on the prototype of a large, multi-wheeled, pressurized lunar rover at the Desert Rats Media Day event.*

Since smartphones entered the market in the late 2000s, users have grown accustomed to the speed and convenience of using cellular networks to connect to the internet. The 4G and 5G networks are now familiar forms of wireless technology that provide millions of users with high-speed mobile internet connections to hand-held devices.

The same networking technology that keeps us connected on Earth could soon be used by Artemis astronauts to communicate on the lunar surface.

While these systems are well understood on Earth, their deployment on the Moon is expected to be more challenging due to the harsh rocky environment of the lunar surface. NASA is developing a capability to overcome these obstacles brought on by the terrain through accurately predicting how communication signals will propagate across the lunar surface.

"Regolith [Moon dust] holds static charge and stays suspended above the ground, which can interfere with communication signals in surprising ways," said Aaron Yingling, Lunar LTE Studies project manager at NASA Glenn. "Finding ways to overcome the terrain and develop 4G and 5G networks on the Moon will allow astronauts and robotic missions to maintain clear reliable communications as they explore the extreme conditions found at the lunar South Pole."

The Lunar LTE Studies project, or LunarLiTES, is a Space Communications and Navigation (SCaN) technology initiative supporting NASA's efforts to bring 4G

and 5G networking to the Moon. The LunarLiTES capability tests how communication signals will spread across the terrain of the lunar South Pole, in an emulated environment at Glenn. Findings from the LunarLiTES project will help NASA determine the best path forward in using 4G and 5G networking for Artemis communications.

LunarLiTES recently concluded two weeks of testing in the harsh depths of the Arizona desert, where groundbreaking 4G LTE communications data was captured in an environment similar to the lunar South Pole. Data collected during field testing will be used to improve future emulation models.

"Field testing is an invaluable opportunity for us to validate our modeling with real-world data," said Mike Zemba, principal investigator for the LunarLiTES project. "It allows us to confidently predict performance of communications systems on the lunar surface and develop a robust communications infrastructure that can support the needs of Artemis."

The dry, rocky craters that make up the unusual land of Black Point Lava Flow, a 2-mile stretch of hardened lava located 40 miles north of Flagstaff, Arizona, closely resemble the severe landscape that Artemis astronauts are anticipated to encounter on the Moon. This makes it a valuable destination for lunar testing.

GRC-2022-CN-00063

*Glenn engineers Cameron Seidl, left, and Kerry Johnson conduct lunar communications testing at Black Point Lava Flow.*

GRC-2022-CN-00065

*Glenn engineers test lunar communications equipment at Black Point Lava Flow.*

Once utilized as a training site for Apollo astronauts, Black Point Lava Flow is the current location of NASA's Desert Research and Technology Studies (DesertRATS) program, where missions can test new technologies in a simulated lunar environment.

On Oct. 24, DesertRATS hosted an educational media day event to share NASA's cutting-edge lunar technology with the public. The LunarLiTES team concluded two weeks of field testing by representing SCaN at the event, where they educated the public on Glenn's lunar communication efforts.

By Molly Kearns

*ON THE COVER: Glenn Engineers Cameron Seidl, Taylor Pember, and Kerry Johnson test lunar communications at Black Point Lava Flow in Arizona.*

# Dr. Jimmy Kenyon Named Center Director

NASA Deputy Associate Administrator for Business Operations Casey Swails joined Glenn's Town Hall on Nov. 7 to announce the appointment of Dr. Jimmy Kenyon as center director. Kenyon was named acting center director and Dawn Schaible acting deputy director in June.

"We wanted to bring in two leaders [Kenyon and Schaible] with fresh perspectives and new ideas," said Swails. "The foundation and relationships they've taken months to nurture will continue."

The search for a permanent deputy director is underway. Until that time, Schaible will continue as acting deputy director.

Dr. Kenyon took the podium to graciously accept the position as center director. "I'm thrilled and humbled to be here. This is truly an honor of a lifetime," he said. "I've enjoyed getting to know so many of you and especially learning about the great work you do every day."

He then recognized individual employees who were nominated by their organizations for their outstanding work.

Before leading the question-and-answer session, Associate Director Larry Sivic shared his pleasure in working with Kenyon over the past months and welcomed him aboard in a permanent capacity. Sivic also said to be on the lookout for information on the cafeteria opening and a collaborative social time in the Research Support Building.

The question-and-answer session included several subjects, some of which centered on the Future of Work, attrition and hiring, competencies and expertise, center priorities, vision for the future, and Employee Viewpoint Survey.

To learn more about Glenn's new center director, visit https://go.nasa.gov/3zZxLtb.

By Doreen B. Zudell

GRC-2022-C-09848 Photo by Bridget Caswell

*Dr. Kenyon, right, addresses employees' questions at the town hall. Swails looks on.*

# Ohio Delegation Staffers Visit

Glenn's Lee Mason, pictured front, provides a briefing on surface power technology to Ohio delegation staffers. NASA Glenn recently hosted members of the Ohio delegation for staffers at the center. Nearly 30 congressional staffers and the governor's cabinet-level aerospace advisor visited to learn more about Glenn's wide range of missions and facilities at Lewis Field and Armstrong Test Facility. They met Glenn staff and discussed the benefits NASA Glenn brings locally and regionally.

Photo by Marvin Smith

GRC-2022-C-08669

# Film Tells Oppy's Story

Great Lakes Science Center's (GLSC'S) Dome Theater hosted a screening of Amazon's Good Night Oppy exclusively for Glenn employees, support service contractors, and science center members, Nov. 2. Good Night Oppy tells the inspirational story of NASA's Opportunity rover, which was sent to Mars for a 90-day mission but ended up surviving for 15 years. Glenn Acting Deputy Director Dawn Schaible, center, introduced the film, and scientist Geoffrey Landis, left, gave a presentation, and answered audience questions. GLSC's JonDarr Bradshaw, right, assisted. The film is now on Amazon Prime Video.


GRC-2022-CN-00061 Photo by Jan Wittry

# CFC Kicks Off

NASA Glenn kicked off its annual Combined Federal Campaign (CFC) with a hybrid event on Oct. 20. This year's theme "You Can Make a Difference" empowers federal employees and retirees to help improve the quality of life in our neighborhoods and around the world through the CFC. This year's monetary goal is $265,000.

During the kickoff, Glenn's Lori Manthey, Ohio LFCC Zone 28 committee chair, welcomed employees and special guests Glenn Acting Deputy Director Dawn Schaible and Ohio CFC Regional Manager Michelle Wooddell.

Schaible talked about the importance of giving what you can, and that your pledge truly does make a meaningful difference to individuals in need. "Giving, even small amounts, will make a difference when we give together," she said.

Wooddell echoed those sentiments and shared a video that provided ways to give. "There are more than 5,000 charities that do amazing work out there in our region," she said.

Manthey introduced 2022 co-chairs Glenn's Firas Asfoor, Wylyn McCullough, and Thomas Ozoroski. Each shared a video of a CFC charity dear to them. This year's Glenn campaign chair, Tonya Mitchell, was unable to attend the event.

Visit https://nasa.sharepoint.com/sites/grc-cfc/ for a complete list of charities, the weekly cause, directorate representatives, keyworkers, and how to give.

By Doreen B. Zudell

# Inspiring Girls' Moonshot

Glenn's Office of STEM Engagement and the Lakewood Public Library recently hosted the Million Girls Moonshot event, a national effort to inspire a million girls to join the engineering field by 2025. K–12 students and their families enjoyed an in-person watch party of a downlink with NASA astronaut Jessica Watkins and actress Keke Palmer, a question-and-answer session with a panel of NASA subject matter experts, and a hands-on engineering design challenge. Glenn's Dr. Jamesa Stokes, left, and Greg Marsh, guide a student participant in constructing paper rockets for testing.


GRC-2022-C-08746 Photo by Marvin Smith

# More Than a Memory

## Dr. Nelson Delivered Wide-Ranging Expertise

*Dr. Nelson*

**Dr. Emily S. Nelson,** 65, a research engineer in the Low-Gravity Exploration Technology Branch, died Oct. 24. Dr. Nelson began her 31-year NASA career in 1991 in the Materials Division after working for one year at Sverdrup. She began supporting the Microgravity Science Division in 1996, moving to the Human Research Program in 2004. Nelson's expertise included fluid physics computational modeling, metadata analysis, and model validation. She developed a probabilistic model of bone fracture prediction and a lumped parameter model of the human eye, deriving a mathematical relationship between intraocular pressure and posture. She co-edited the book Green Aviation (2020).

"Emily was a self-professed Star Trek geek who loved to travel, crafted beautiful scarves, made unique jewelry, and had a hive of bees that created amazing honey," said her supervisor, David Urban. "She will be greatly missed by her co-workers."

Nelson received an Exceptional Service medal (2011) and a Silver Snoopy (1995).

## Slywczak Dedicated to Safety and Mission Assurance

*Slywczak*

**Richard A. Slywczak,** 55, chief of Glenn's Management Integration Office in the Safety and Mission Assurance Directorate (SMAD), died Oct. 25.

Slywczak began his NASA career at Goddard Space Flight Center in 1996 and transferred to Glenn in 2001. He previously served as branch chief in the Reliability and System Safety Engineering Branch and Mission Assurance manager for the Program and Project Assurance Division, as well as acting branch chief in several other areas. He was a member of the American Institute of Aeronautics and Astronautics and senior member of the Civil Air Patrol. Slywczak received the Supervisor Award (2020).

"Rich was an outstanding supervisor and employee, but most of all, he was dedicated to his family," said SMAD Director Gus Martzaklis. "He also had a great sense of humor. We will miss him dearly."

**Earl O. Boyer,** 89, a 1994 retiree with 32 years of NASA service, died Oct. 21. Boyer began his career with NASA as a research pilot. His flight research projects included testing advanced inlets and nozzles on the F–106 Delta Dart, flying the Gulfstream II outfitted with Advanced Turboprop, and flying microgravity and solar cell calibration flights in the Learjet. In 1972, he earned qualification to fly helicopters. He also served as deputy chief of Aircraft Operations from 1991 to 1994 before retiring. He earned several achievement awards.


MIC AUDITORIUM
MONDAY, DEC. 12
1 TO 3 P.M.

SEE INSIDE GLENN
FOR DETAILS!

## Save at the Exchange Store!

Looking for last-minute holiday gifts for your family and colleagues? Stop by the Glenn Exchange Store located in the Research Support Building 164. The store is open Tuesdays, Wednesdays, and Thursdays from 9 a.m. to 2 p.m., or shop online at NASAShop.com.



**10% off through Dec. 15!**

## Come In Out of the Cold

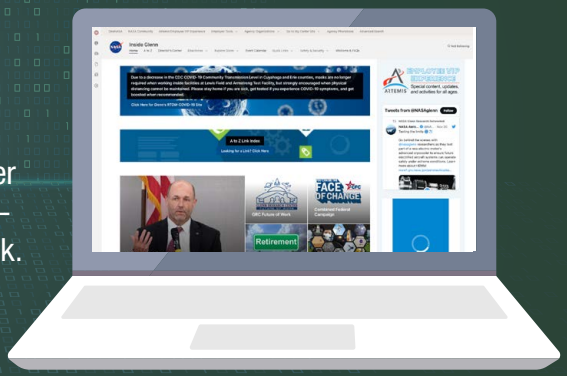
**Winter weather challenging your workout?**

Join Glenn's Fitness Center, in person at building 341, or virtually via Microsoft Teams. The fitness center offers group classes, exercise equipment, personal training, fitness evaluations, and more! Contact robert.c.laws@nasa.gov, call 216–433–6313, or visit https://www.grc.nasa.gov/smad/medical-fitness/.

## Information Café: Inside Glenn

The next Information Café will feature Kelly DiFrancesco from Glenn's Office of Communications. She will offer tips on how to navigate the Inside Glenn site, share updated features, and answer questions. Join the Library staff on Wednesday, Dec. 14, from 11–11:45 a.m., room 108, or on Teams. Check Inside Glenn for the link.

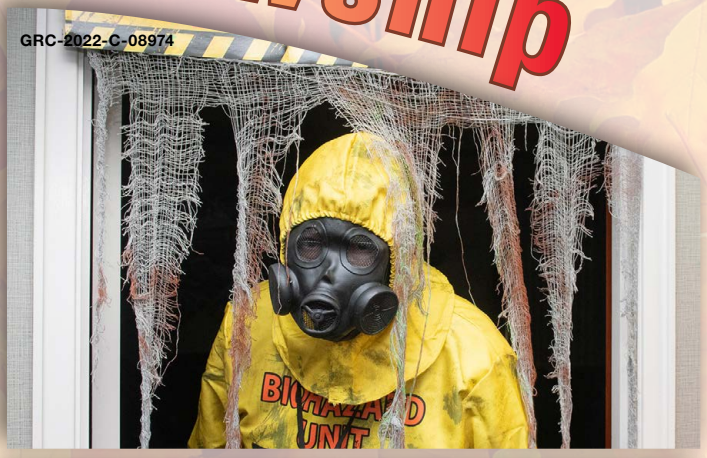
POC: robin.n.pertz@nasa.gov.




For more information on upcoming events,
visit **https://nasa.sharepoint.com/sites/grc/SitePages/calendar.aspx**

# Celebrating Fall and Fellowship


GRC-2022-C-9001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GRC-2022-C-9013

Center Director Dr. Jimmy Kenyon and Glenn's senior leadership team invited employees to celebrate the fall season and NASA's amazing accomplishments during the Fall Fun Fest and Building 3 Open House on Oct. 31. Each directorate hosted a table featuring a fall treat and showed off their best seasonal decorations. Employees voted for the best-dressed table after the event. See Inside Glenn for the winners and more photos.


Photos by Marvin Smith
GRC-2022-C-08969


GRC-2022-C-09016

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