National Aeronautics and Space Administration

AeroSpace FRONTIERS

VOLUME 24 • ISSUE 1 • JANUARY 2022

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Welcome 2022

Welcome back and happy new year to all! Your dedication, commitment, and hard work are the reasons for our success. Despite the obstacles and challenges of 2021, we successfully completed key milestones and deliverables and continued testing in our world-class facilities in support of NASA missions. Building off our successes from last year, I am excited about 2022 and the significant milestones ahead of us, including the Artemis I launch, and progress toward all others from our 2022 GRC Top Priorities in space, aeronautics, the institution, and external partnerships. As we begin 2022, let us be mindful to maintain our focus on safety by continuing to follow COVID–19 guidance to keep your family and our workforce healthy. Thank you in advance for your part in executing our priorities with safety, excellence, and mission success in mind.

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 in the interest of the Glenn workforce, retirees, government officials, business leaders, and the general public.

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Inside Glenn Site Launches on OneNASA Intranet

NASA Glenn's Office of Communications (OCOMM) and the Office of the Chief Information Officer have officially transitioned Today@Glenn and the Director's Corner to the new Inside Glenn on the OneNASA Intranet!

"The Inside Glenn transition is part of an agencywide effort to modernize and integrate intranet sites to better connect work and people across the agency, regardless of their location," said Glenn's Internal Communications team lead Kelly DiFrancesco.

In addition to a new look and feel to its content, the site now offers navigation bars for agency and center resources at the top of the page. It also offers an updated Director's Corner, links to Glenn's social media sites and NASA Live, the official stream of NASA TV. The OneNASA intranet also includes a robust Community feature that allows all NASA employees and employee groups to share information about their news and events.

Users are encouraged to click the link within the **Welcome to Inside Glenn** blue banner at the top of the page to access a brief training video, FAQs, a crosswalk doc, and a link to the Office 365 Support Portal at the bottom of the page.

A limited version of the WING site will be available until Jan. 31 if you would like to copy previous announcements you have posted. On Feb. 1, the WING site will be decommissioned and removed from service. See the FAQ for more details on how to access archived WING content. Please update your bookmarks or set your browser's homepage to Inside Glenn.

OCOMM is planning to conduct an Inside Glenn information session this month; watch the Center News section for details on this event. It will be taped and shared for later viewing on Inside Glenn for those who are unable to attend. Training materials for SharePoint Online can be found on the **Office 365 Support Portal**.

Have a question or want to share feedback about our site with the Inside Glenn team? Click **here** to submit your ideas or comments.

Glenn's Future of Work Pilot Underway

NASA Glenn has been hard at work on developing a hybrid work environment of flexibility, inclusion, and collaboration.

A cross-directorate Core Team at Glenn has been working since March 2021 to develop the GRC Universe Future of Work Pilot that capitalizes on findings from the NASA Future of Work study generated by NASA Headquarters. A Virtual Town Hall with Center Director Dr. Marla Pérez-Davis last October, highlighted the GRC Universe Future of Work Pilot and Core Team's activities to date.

Civil servant and support service contractor employees tuned in to the town hall to discover the strategies, objectives, and next steps for the pilot that is now underway. Champion Pérez-Davis, Sponsor Robyn Gordon, and Core Team members provided details on culture, engagement methods, benchmarking, workforce surveys, infrastructure, IT, and more.

Project Lead Michael Moxley explained that while all NASA centers are implementing pilot programs established from the Headquarters study, specifics may differ slightly based on each center's needs.

During Phase 1, the Formation phase, the Core Team focused on investigating potential hoteling space opportunities in the new Research Support Building (RSB) at Lewis Field, benchmarked other organizations' best practices and processes for operating in a hybrid model, and conducted internal surveys to collect employee feedback.

During Phase 2, the Experimental phase, January–June 2022, the Core Team will sponsor several initiatives. The entire center will have an opportunity to engage in some part of the experimental phase. Some of these include working with directorates to establish meeting/work room norms, updating telework agreements, and continuing to gather employee feedback. The center is planning to use the new RSB for a hoteling pilot during the experimental phase; however, some of the pilot activities may need to be adjusted to ensure compliance with all safety and health practices and center access requirements.

"This is an exciting, long-term effort," said Moxley, "where we will look for ways to continually improve the model."

To learn more about this initiative, visit https://nasa.sharepoint.com/sites/grcfutureofwork.

By Doreen B. Zudell

On the Cover:

The GRC Future of Work Core Team represents the diversity of our workforce—people and organizations.

Image by Daniel Frydl

Glenn Deputy Director Bids Farewell

Glenn's Deputy Director **Susan M. Motil** retired on Dec. 31, 2021, with 32 years of NASA service. Motil was named deputy director in June 2020. Prior to that appointment, she managed the Orion Program's European Service Module Integration Office.

Motil has successfully managed projects with diverse multidisciplinary teams, ranging from small to large multi-center teams throughout her career. Since joining Glenn in 1989, she managed several significant projects, including the Cryogenic Propellant Storage and Transfer Technology Demonstration Mission, Space Environmental Test Project at Armstrong Test Facility, the Cryogenic Fluid Management Technology Portfolio, and the Altair Project at Glenn.

Motil has been recognized with many awards, including the Presidential Rank Award in 2019.

"I'm excited for my next great adventure, but I will also miss my NASA family," Motil said. "Thanks to each and every one of you, for your dedication to the NASA mission and making GRC a great place to work. I will be watching this very talented GRC workforce with pride, and all along knowing you will continue to do great things!"

Motil

Calhoun Named Safety and Mission Assurance Deputy

Cynthia Calhoun has been selected as deputy director of the Safety and Mission Assurance Directorate, effective Jan. 2.

Calhoun previously served as the deputy chief of the Program and Project Assurance Division where she supported the chief in assuring aerospace systems were of high quality and operated safely, ensuring mission success for NASA's programs and projects.

Calhoun holds a bachelor's degree in Electrical and Computer Engineering from Ohio University, and is an alumnus of the Duquesne University Palumbo-Donahue School of Business. She is the recipient of the NASA Group Achievement Honor Award, the NASA Mission Manager's Flight Commendation, the NASA Exceptional Service Medal, the NASA Equal Employment Opportunity Medal, and the NASA Administrator's Gears of Government Initiative Award.

Calhoun

AN EVENING WITH THE Stars Illuminates Cutting-Edge Technologies

NASA Glenn celebrated "An Evening With the Stars" with the theme "80 Years of Pushing Boundaries and Breaking Barriers" at Cleveland State University on Oct. 27. The event featured presentations by Glenn researchers and a networking reception.

Sponsored by the Ohio Aerospace Institute (OAI), the event attracted sponsors and guests from more than 50 companies, universities, and organizations. OAI President John Sankovic opened the program, followed by Cleveland State University President Harlan Sands who provided welcoming remarks.

Center Director Dr. Marla Pérez-Davis acknowledged special guests, including David McBride, center director at NASA's Armstrong Flight Research Center in California.

"It is so good to see you all here tonight as we celebrate the accomplishments and 80th Anniversary of NASA Glenn," said Pérez-Davis. "Some of our nation's most significant accomplishments in aerospace have come from our center, and we are incredibly proud of that legacy."

Pérez-Davis said that over the coming year, NASA will prepare to launch the first in a series of more complex missions to the Moon under Artemis. The agency is also working to change the way we fly through innovative engines, more electric propulsion, and advanced materials.

The evening featured three Glenn experts—our stars—who delved deeper into a few NASA projects and missions that are helping to make this future a reality.

For nearly 21 years, the International Space Station has been continuously operating in low-Earth orbit, conducting important science and technology demonstrations. Dr. Daniel Dietrich, Low-Gravity Exploration Technology Branch, explained how Glenn is furthering our scientific understanding of the microgravity environment, including fluid and combustion physics.

Did you know we can train metals to do specific tasks like move parts of an aircraft's wing, deploy solar arrays, or even create nearly indestructible tires? Dr. Othmane Benafan, High Temperature and Smart Alloys Branch, discussed some of Glenn's recent advances with shape memory alloys, including testing on Boeing's EcoDemonstrator aircraft and uses on the future Mars Sample Return Mission.

NASA is working to cut air travel time in half, but before we can enjoy those reduced travel times, we must focus on quieting sonic booms. Ray Castner, Inlets and Nozzles Branch, plays a critical role on the agency's X–59 QueSST, our low-boom flight demonstrator. This experimental aircraft will begin flying over communities in the United States in the coming years to prove we can quiet the boom and help usher in a new age of commercial supersonic flight.

"Tonight, you've seen merely a glimpse of all the incredible research and development going on at NASA Glenn," said Pérez-Davis. "All three of our presenters are perfect examples of our best and brightest; a small part of our team at NASA Glenn developing cutting-edge technologies for the next 80 years of pushing boundaries and breaking barriers."

By Doreen B. Zudell

GRC-2021-C-04148 Photos by Marvin Smith

Dr. Dietrich discusses furthering our scientific understanding of the microgravity environment.

GRC-2021-C-04188

Dr. Benafan explains advances with shape memory alloys.

GRC-2021-C-04222

Castner highlights the X–59 QueSST, our low-boom flight demonstrator.

Employees Recognized for Roles in Human Spaceflight Safety

NASA's Space Flight Awareness (SFA) Program has recognized Glenn employees for their roles in astronaut safety and mission success in the challenging task of flying humans in the hostile environment of space.

Two ceremonies were held virtually last November to acknowledge six Glenn SFA Teams and three Trailblazer award recipients. Former Glenn Deputy Center Director Susan Motil participated in both events.

The SFA is a NASA-managed recognition program for NASA civil servants and contractors. These individuals have major responsibilities for human spaceflight safety and mission success.

Space Flight Awareness Team Awards

The Space Flight Awareness Team Award recognizes significant contributions made to human spaceflight through the collective efforts of the many teams within the entire NASA/industry community.

Orion Service Module T–0 Collet Stress Assessment Team

This team was awarded for their critical analytical support of the Service Module T–0 Collet for successful flight readiness certification. The T–0 Collet is part of the T–0 Umbilical separation mechanism that connects the Orion vehicle to the ground support system before launch. It is critical to ensure that this mechanism will operate reliably without any failures during launch.

Team members: **Matthew Appleby, Douglas Astler, Louis Ghosn, Jennifer Hayes (lead), Michael Politi, Elliot Schmidt, Linda Yoon (NASA); Robert Allen (HX5 Sierra)**

Config 7 Post Test Correlation Work Team

This team was awarded for their critical support of the Service Module Structural Qualification Testing Campaign (Configuration 7) for Artemis I. The NASA Orion Service Module Structures Team assumed multiple in-line responsibilities, which enabled the success of an important vehicle assembly level test (known as Configuration 7 from the test campaign) that included national and international partners.

Team members: **Rula Coroneos, Louis Ghosn, Jennifer Hayes (lead), John Ramsey, Elliot Schmidt, Lizalyn Smith, John Thesken, Jerald Thompson and Linda Yoon (NASA); Robert Allen (HX5 Sierra); John Shaker (NovaTek Engineering)**

Space Launch System Mission and Fault Management Team

This team was awarded for outstanding contributions toward the development of the Space Launch System (SLS) Mission and Fault Management flight computer algorithms, and operational and engineering analysis support of those algorithms during Green Run validation tests. These contributions were integral to test verification of the SLS Block 1 core stage for the Artemis I Mission.

Team members: **Edmond Wong (lead) (NASA); Michael A. Mackin and William A. Maul (HX5 LCC)**

Medical Extensible Dynamic Probabilistic Risk Assessment Tool (MEDPRAT) Team

This team was awarded for the development of a computational analysis tool to predict medical event occurrence and estimate resource utilization and performance impacts for human spaceflight missions. In adopting an Agile Development approach, this dedicated team provided customer-focused versions of the tool available for early use by the Human Research Program.

Team members: **Kyle Gee, Lauren McIntyre (lead), Jerry Myers (NASA); Lawrence Leinweber (ZIN Technologies)**

Photovoltaic Investigation on the Lunar Surface (PILS) Team

This team was awarded for the successful design, build, and test of the PILS platform to be included on the first Commercial Lunar Payload Services lander to the lunar surface. The PILS platform will measure performance of advanced solar cells and measure electrical charge buildup on solar arrays on the lunar surface, helping to ensure safe and reliable future human exploration of the Moon.

Team members: **Kaiser Aguirre, Mathew Deminico, Susan Jansen, Michael Krasowski, Katherine McGinnis, Jeremiah McNatt (lead), Brian Morris, Timothy Peshek, Norman Prokop, Abigail Rodriguez, Amy Stalker, Greeta Thaikattil, Brian Tomko (NASA); Linda Nero (Alcyon Technical Services); Joseph Francz, John Heese, Lowell Wolfe (Vantage Systems Inc.); Trish Seaman (Bastion)**

Realtime Optical Receiver (RealTOR) Optical Artemis II Orion O2O Space Modem Testing Team

This team was recognized for the exceptional performance in the design and development of a field programmable gate array (FPGA)-based transmitter and simple receiver for use in testing the O2O space modem. Optical communications will be demonstrated on a human spaceflight for the first time with the O2O mission, which will be launched on Artemis II, the first crewed flight of Orion.

Team members: **Thomas Bizon, Jennifer Downey (lead), Nicholas Lantz, Michael Marsden, Mary Jo Shalkhauser, W. Peter Simon, Daniel Zeleznikar (NASA); Joseph Hickey (Vantage Systems Inc.)**

Trailblazer Awards

The Space Flight Awareness Trailblazer Award is an early-career recognition award for exemplary performance given within their first seven years. This award includes a shadowing opportunity with the executive of their choice.

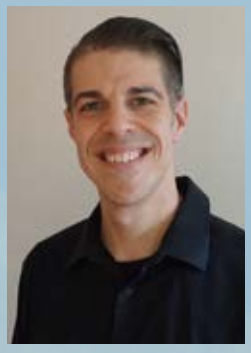
Glenn's recipients include:

Spencer C. Furin
For selfless dedication and diplomatic ability to foster collaboration in support of preparing the Orion Multi-Purpose Crew Vehicle for flight.

Dr. Timothy Peshek
For significant contributions toward advancing photovoltaics and space power technologies to ensure successful NASA space missions.

Jerald T. Thompson
For instrumental leadership in the structural certification of the Orion Pyramidal Separation Mechanism.

Furin



Dr. Peshek

Thompson

NASA's Day of Remembrance Set

NASA will hold its 2022 Day of Remembrance on Thursday, Jan. 27, to honor members of the NASA family who lost their lives while furthering the cause of exploration. This includes the crews of Apollo 1, Space Shuttle Challenger, and Space Shuttle Columbia. Check Inside Glenn for details on this year's observance.

Presentation Focuses on Native American STEM Workforce

NASA Glenn's Advisory Group for Native Americans and the Office of Diversity and Equal Opportunity hosted a virtual presentation on Nov. 16 celebrating Native American Heritage Month. The presentation featured Rick Stephens, emeritus chair of the American Indian Science and Engineering Society board of directors, who spoke on the theme "Together Towards Tomorrow." Stephens highlighted what the future of the STEM workforce will look like as more Native American students enter STEM fields. He also described his ongoing work of engaging Native American students and encouraging them to pursue STEM education.

NEWS AND EVENTS

NASA Wins LinkedIn Diversity Award

NASA has been named the Diversity Champion winner of LinkedIn's 2021 Talent Awards. This award recognizes companies who initiated and inspired meaningful conversations around diversity, inclusion, belonging, and equity. Being named Diversity Champion not only acknowledges NASA for its efforts in attracting new talent, but for telling the story of the agency's diverse workforce and culture. NASA was the only federal agency nominated for any category. Learn more about the awards here: https://business.linkedin.com/talent-solutions/events/21/05/talent-awards.

Retirements

Senior Leaders

Dr. Christopher DellaCorte, Senior Technologist in Tribology and Rotating Machinery, Materials Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 34 years of NASA service.

Andrew J. Eckel, Program and Project Assurance Division chief, Safety and Mission Assurance Directorate, retired Dec. 31, 2021, with 34 years of NASA service.

Randall B. Furnas, Power Division chief, Research and Engineering Directorate, retired Dec. 31, 2021, with 41 years of NASA service.

James Zakrajsek, Materials and Structures Division chief, Research and Engineering Directorate, retired Dec. 31, 2021, with 34 years of NASA service.

Deborah Bizon, Program/Project Integration Office, Space Flight Systems Directorate, retired Jan. 31, 2021, with 40 years of NASA service.

Penni Dalton, Exploration Systems Office, Human Exploration and Space Operations Project Office, Space Flight Directorate, retired Dec. 31, 2021, with 34 years of NASA service.

Terry L. Ferrier, Project Management Branch, Facilities Infrastructure Division, Facilities, Test and Manufacturing Directorate, retired Dec. 31, 2021, with 40 years of NASA service.

Brian Good, Environmental Effects and Coatings Branch, Materials and Structures Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 38 years of NASA service.

Daniel S. Gorman Jr., Aircraft Operations, Facilities, Test and Manufacturing Directorate, retired Dec. 31, 2021, with 41 years of federal service, including 33 with NASA.

Dr. Joseph Grady, Ceramic and Polymer Composites Branch chief, Materials and Structures Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 35 years of NASA service.

Earl Hanes, Ceramic and Polymer Composites Branch, Materials and Structures Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 69 years of NASA service.

Ethel McLaughlin, Management Support and Integration Office, Research and Engineering Directorate, retired Dec. 31, 2021, with 21 years of NASA service.

Dr. Brian J. Motil, Thermal Systems and Transport Processes Branch chief, Power Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 32 years of NASA service.

Jean Roberts, Neil A. Armstrong Test Facility, retired Dec. 31, 2021, with 35 years of NASA service.

Mark A. Stevens, Rotating and Drives Systems, Materials and Structures Division, Research and Engineering Directorate, retired Dec. 31, 2021, with 35 years of NASA service.

Orlando Thompson Sr., Office of STEM Education, Center Operations Directorate, retied Dec. 31, 2021, with 38 years of NASA service.

Barbara Wilson, Mission Support Office, Office of Chief Information Officer, retired Nov. 24, 2021, with 32 years of NASA service.

More retirements will be featured in the February AeroSpace Frontiers.

Dr. DellaCorte

Eckel

Furnas

Zakrajsek

Ferrier

Hanes

Dr. Motil

Roberts

Thompson Sr.

Wilson

Promotions

Timothy Ferlin has been selected chief, Program and Project Assurance Division for the Safety and Mission Assurance (SMA) Directorate. He most recently served a 1-year detail as the acting deputy director of the SMA Directorate. Previously, Ferlin served as the chief SMA officer for the Gateway Power and Propulsion Element.

Jason Hanna has been selected as the Center Export Control Administrator (CEA) in the Office of Technology Incubation and Innovation Directorate. He most recently served as the center's software release manager and assistant CEA. Hanna supported the Technology Transfer Office for the past 20 years.

Ferlin

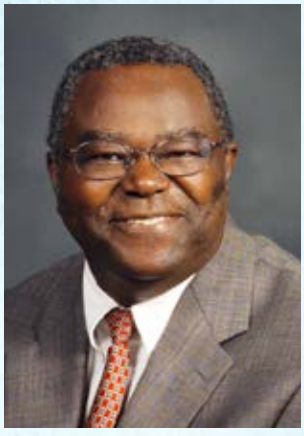
Hanna

Awards

Glenn retiree **Gene Addy** was honored with the Losey Atmospheric Sciences Award at the 2021 Aviation Forum of the American Institute of Aeronautics and Astronautics (AIAA). During his 33-year career at Glenn, Addy made major contributions to research in aircraft ice accretion. AIAA cited his "exceptional achievements and leadership in advancing aviation safety."

Addy

More Than a Memory



Dr. Blankson

Dr. Blankson Leaves Lasting Impact at Glenn

Dr. Isaiah M. Blankson, Glenn's senior technologist for hypersonics in the Propulsion Division with 33 years of NASA service, died Nov. 19, 2021.

Blankson's research covered many topics, including hypersonic waveriders, advanced combined cycle propulsion, sonic boom mitigation, biomimicry, and plasma-based water purification for terrestrial and spaceflight applications. He is credited with laying the foundation for the SWERVE-PEGASUS program, which eventually became the X–43 aircraft. Blankson was a fellow of the American Institute of Aeronautics and Astronautics. He received several awards for his service, including a Presidential Rank Award (2007) and an Exceptional Technology Achievement Medal (2018).

"Isaiah was renowned for his breakthrough technical contributions, extraordinary intelligence, and playful wit," said George Schmidt, Blankson's supervisor. "He was a beloved mentor to many engineers at Glenn and in the field of aeronautics. He will be sorely missed."

Attention Employees and Retirees

Do You Know This Person?

GRC-1990-C-00619

GRC-1990-C-01823

Glenn's Logistics and Technical Information Division needs your help identifying people, places, and research from archived images. If you recognize a photo placed here, email GRC-ITC@mail.nasa.gov.

To ensure your email reaches the right individuals, please enter "DYKTP" into the subject line. Although we cannot respond to individual emails, please know your participation is appreciated!

CFC DEADLINE

The 2021 Combined Federal Campaign (CFC) concludes on Saturday, Jan. 15, with the goal of raising $275,000. For more information, visit Glenn's CFC page at https://www.grc.nasa.gov/cfc/.

INFORMATION CAFÉ

Glenn's Library will continue hosting its popular Information Café series in 2022. Mark your calendar for Wednesday, Jan. 19, from 11–11:45 a.m., for the first session of the new year. Topic to come. Check Inside Glenn for the link.

POC: robin.n.pertz@nasa.gov

OUTDOOR SIREN TESTING

Emergency Management Office staff will conduct a mass notification voice test at building 6 on Wednesday, Feb. 2, at Lewis Field. An audible siren test will be conducted on the "severe thunderstorm" tone on Saturday, Feb. 5.

POC: allen.r.turner@nasa.gov

Deadline for the next calendar section is **Wednesday, Jan. 19, noon**. News and feature stories require additional time.

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

National Aeronautics and Space Administration

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Cleveland, Ohio 44135

Neil A. Armstrong Test Facility
3597 E. Scheid Road
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www.nasa.gov

Read AeroSpace Frontiers online at https://www.nasa.gov/glenn/aerospacefrontiers.

Fission System to Power Moon Exploration

Exploration of the Moon and Mars requires the power of human imagination and vision. It also takes the power of electricity to bring science and technology to life when astronauts land and stay on the surface.

NASA has plans for a robust presence on the Moon under Artemis and eventually Mars, including the development of a fission surface power system for safe, efficient, and reliable electrical power. Fission surface power—in conjunction with solar cells, batteries, and fuel cells—can provide the power to operate rovers, conduct experiments, and use the Moon's resources to produce water, propellant, and other supplies for life support.

"Plentiful energy will be key to future space exploration," said Jim Reuter, associate administrator for NASA's Space Technology Mission Directorate (STMD) in Washington, which funds NASA's fission surface power project. "I expect fission surface power systems to greatly benefit our plans for power architectures for the Moon and Mars and even drive innovation for uses here on Earth."

NASA, in coordination with the Department of Energy (DOE), is asking American companies for design concepts for a fission surface power system that could be ready to launch within a decade for a demonstration on the Moon. The system should be capable of autonomous operation from the deck of a lunar lander or a lunar surface rover.

"NASA and the DOE are collaborating on this important and challenging development that, once completed, will be an incredible step towards long-term human exploration of the Moon and Mars," said Fission Surface Power Project Manager Todd Tofil at Glenn. "We'll take advantage of the unique capabilities of the government and private industry to provide reliable, continuous power that is independent of the lunar location."

Fission surface power technologies will also help NASA mature nuclear propulsion systems that rely on reactors to generate power.

NASA and the DOE (through the Idaho National Laboratory operated by Battelle Energy Alliance) will select competing U.S. companies to develop initial designs over a 12-month period. The resulting designs will inform an industry solicitation for the final design and build of a flight-qualified fission power system to send to the Moon on a demonstration mission.

NASA's fission surface power project is managed by NASA Glenn. The technology development and demonstration are funded by the Space Technology Mission Directorate's Technology Demonstration Missions program, which is hosted at Marshall Space Flight Center in Huntsville, Alabama.

By Nancy Smith Kilkenny

Why fission?

- It is reliable. Fission systems can operate continuously around the clock in shadowy craters and during the weeks-long lunar nights, when power generation from sunlight is difficult.
- It is powerful. The systems NASA is asking companies to design would provide at least 40 kilowatts of power, enough to continuously power 30 households for 10 years.
- It can be compact and lightweight. Systems like these could someday provide enough power to establish an outpost on Mars.