



## Media, Social Media Get Up-close Look at Research Event Stresses Budget-Technology Connection

NASA Glenn Center Director Jim Free welcomed members of media and social media to Lewis Field, Feb. 2, to participate in the “State of NASA” event, conducted at Glenn and across

the agency. The event coincided with President Obama’s 2016 budget proposal of \$18.5 billion for the agency. Included in the proposal is \$601.5 million for Glenn.

Free talked about NASA’s budget request and how it must go through Congress for final approval. More importantly, Free stressed how budget dollars enable the cutting-edge technologies being developed at Glenn and across the agency.

“You’re going to hear a lot today about what we do and how we are connected to the budget,” Free said. “You’ll see the people doing the work and the pride they take in it.”

The event included a live NASA Television broadcast of NASA Administrator Charles Bolden addressing the agency’s scientific and technological achievements, and the exciting work ahead. Bolden affirmed that the budget request will enable NASA to

Continued on page 2



C-2015-406

Photo by Marvin Smith

John Lekki, Optics and Photonics Branch, shares highlights on algal bloom flight research with media and social media guests while on tour.

## Plum Brook Station's Water Pump Station Transferred to Erie County

A 15-year project to excess pump stations to local governments and demolish aging water towers at Plum Brook Station (PBS) has significantly reduced NASA’s water consumption and ecological footprint.

The project began with a study (hydraulic analysis) in 2000 to determine if the local utility company could support PBS’s water needs. PBS had been operating with a dual water system since the 1940s. A raw water system for cooling processes and fire protection was installed using untreated water pumped directly from Lake Erie via two pumping stations, located about 5 miles from PBS. Domestic, treated water was supplied by Erie County, but was not adequate to meet all the water demands.

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C-1984-05382L

Rye Beach Pump Station located on Lake Erie.

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## Safety Training is a Priority

While NASA has earned the ranking of Best Place to Work among large federal agencies, our safety record is one of the best among industry and other federal agencies as well. This is greatly due to how we make personnel training a priority—especially in the area of safety. To continue our commitment to safety, we recently deployed NASA’s Environmental, Health and Safety Learner Needs assessment to Glenn supervisors to identify employee training needs based on work functions. While some of us may feel safety training requirements are high, I ask you to remember that learning more about potential hazards gets us closer to mission success.

*Allocate some quiet time for safety training on SATERN offered by the NASA Safety Center. It's worth your time and effort.*

— Jim

## Advancing Technology

### New Software Aids Satellite Communications Design

NASA Glenn has released the “Space Communications and Navigation (SCaN): Optical Satellite Link Assessment Tool, version 1.” The software helps users in the design and specification of a space-based optical communications system.

“This is part of an ongoing SCaN Program-level effort to standardize software tools, models and technical data to reduce acquisition and operations costs,” explained David Bittner, Architectures, Networks and System Integration Branch. “Standardization enables creating a SCaN tool suite for flexibility and scalability ideal for adjusting to budget changes or user needs.”

Future releases of this software will include an advanced graphical user interface (GUI) and an interface to the Satellite Tool Kit. The kit includes a commercial, off-the-shelf software for integrated analyses and visualization of land, sea, air and space assets.

The software is available for license through Glenn’s Technology Transfer Office (TTO) licensing website (see below).

### About Glenn's Advanced Communications Research



NASA Glenn’s research in advanced communications is improving technology used in mobile satellite communications, tracking, telemetry, networking, radar and navigation. Technologies include solid state devices as well as more efficient micro-sized antennas, many of which are directly applicable to terrestrial communications. Visit <https://technology.grc.nasa.gov/communications.php> for more details.

## Deputy Named

NASA astronaut Dr. Janet L. Kavandi has been named NASA Glenn’s new deputy director. A veteran of three shuttle missions, Kavandi served most recently



*Dr. Kavandi*

as the deputy director of the Health and Human Performance Directorate at NASA’s Johnson Space Center in Houston, Texas. She succeeds Gregory Robinson, who was named deputy associate administrator for programs for NASA’s Science Mission Directorate.

## Research Close Up

Continued from page 1

continue building on significant investments conducted over the past 6 years.

“The state of NASA is strong,” Bolden said. “I could not be more excited about our future.”

Following Bolden’s broadcast, Free led the media and social media participants on a tour of facilities that showcased solar electric propulsion, environmentally responsible aviation, algal bloom flights and icing research. These areas illustrated the center’s current and near-term contributions to the agency’s missions. Participants talked with the Glenn researchers who have been advancing the agency’s work in aeronautics and space exploration.

The event concluded with a briefing by NASA’s Chief Financial Officer David Radzanowski on the agency’s 2016 budget proposal. Following the teleconference, Glenn’s Chief Financial Officer Larry Sivic answered questions from reporters and social media attendees.

For details on NASA’s 2016 budget request, visit <http://www.nasa.gov/news/budget/index.html#.VO7CIUjNeBM>.

By Doreen B. Zudell



# Pump Station

Continued from page 1

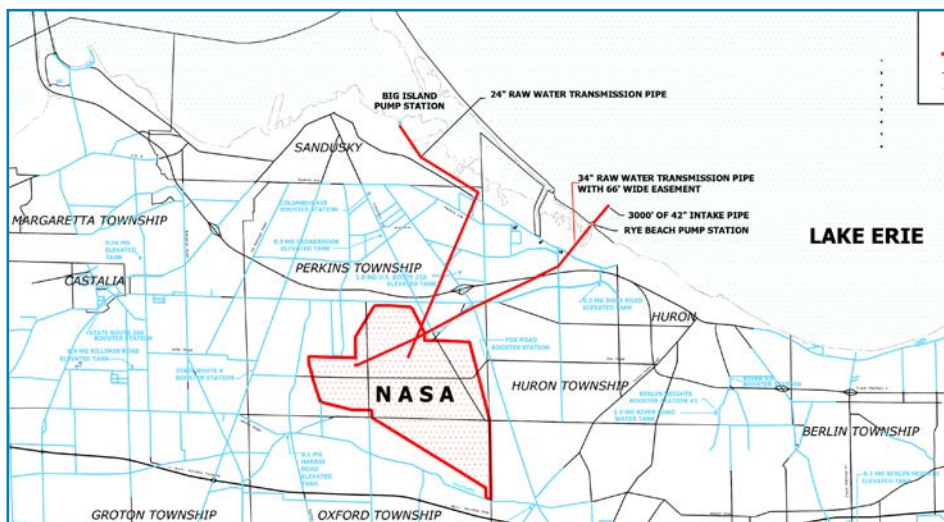
"Because the two systems were originally built to accommodate the large demands of a World War II ordnance plant, by the 21st century they no longer operated efficiently," explained Bob Puzak, chief, Systems Management Branch, Facilities Division.

Puzak said the hydraulic analysis concluded that all of PBS's water could be supplied by the county-treated water system. New mains would need to be installed to meet the demands at PBS, and then NASA could discontinue maintaining the deficient pump stations.

A Construction of Facilities (CoF) project began in 2003 to install service connection to the county. A CoF project in 2008 added more water mains to parts of PBS. Demolition projects covered the removal of five water towers (totaling 550,000 gallons), one 500,000-gallon treated water reservoir, a raw water pump building and abandonment of 40 miles of pipe.

"Today Plum Brook has reduced its water consumption by 80 percent of a 2007 baseline," Puzak said. "It also meets an Executive Order for NASA to reduce water intensity 2 percent each year from 2007 to 2015."

In December 2014, NASA exsessed its Rye Beach Pump Station and transmission lines through the General Services Administration (GSA). GSA used a Department of Health and



The red lines on this map show the pipe lines to the two pump stations in relation to NASA's Plum Brook Station. The Rye Beach Pump Station (top right) was transferred to Erie County in December. The Big Island Pump Station (top left) is expected to be exsessed and transferred to Sandusky this year.

Human Services conveyance mechanism allowing the property transfer at no cost to Erie County. The pair of water lines, originating from the pump station, has the potential to distribute Lake Erie water to the community. NASA expects to exscess its Big Island Pump Station to Sandusky this year.

"The water lines, built by our grandparents before World War II, can now guarantee access to fresh water for Erie County residents through the

21st century," said PBS Director David Stringer. "It's a great example of continuing to earn dividends from an initial investment."

Puzak said this project also addresses a NASA Headquarters' directive, which is a 10 percent reduction in the dollar value of our facilities and infrastructure by 2020. With this exscessing project, NASA Glenn has achieved a 4 percent reduction since 2009 toward this goal.

By Doreen B. Zudell

## Project Highlights

Total reduction in Current Replacement Value: \$51,751,065

Total square footage reduction: 19,048

Total land reduction: 1.013 acres



A century of aerospace achievement

Earlier this month, NASA began celebrating the 100th anniversary of the National Advisory Committee for Aeronautics, or NACA. Over the next several months, NASA Glenn will reflect on some of NACA's accomplishments over 100 years, and the people who made them possible. Stay tuned!

Pictured, right: NACA pilot in front of the Lewis Flight Propulsion Laboratory hangar in 1958. (Photo by Ernie Walker)

Visit <http://www.nasa.gov/naca100/> for agency highlights.





C-2015-521

Photo by Bridget Caswell

## Center Celebrates Employees Fundraising Efforts

Committee members and supporters of Glenn's 2014 Combined Federal Campaign (CFC) gathered, Feb. 4, to celebrate the close of a successful campaign. Chair Dawn Pottinger and co-chair Andrea Bonesteel recognized several committee members and directorates for exceptional service and participation. (A list of award recipients can be found on the CFC website, <https://www.grc.nasa.gov/cfc/>.) Center Director Jim Free joined in celebrating the generosity and compassion of employees across the center. Pictured, left to right: North Coast CFC Campaign Manager Carol McClain, Bonesteel, Pottinger and Free display a check facsimile for \$445,878.26, raised to benefit thousands of charities worldwide.



C-2015-4144

Photo by Marvin Smith

## Genealogist Traces Local Roots of Slavery

Did you know Ohio had more safe houses that aided fugitive slaves traveling the pathway to freedom than any other state in the union? Dr. Deborah Abbott, a genealogist who specializes in African-American genealogy, shared this and other information on slave trade during her presentation at Glenn's Black History Month event, Feb. 19. Abbott pointed out several local historic landmarks that help tell the story of "slavery to freedom." The event also featured poetry performed by Glenn's own Lance Foster and local talent, Jay Floyd, as well as music by the Net Jazz band. Pictured, left: Abbott displays a collection of shackles used on slaves.

## Website, Video Honor Inspirational Women

During Women's History Month, it is fitting to recognize three Glenn employees who were chosen to participate in the agency's 2014 Women@NASA project. The website, <http://women.nasa.gov/>, celebrates the women of NASA's contributions to science and exploration.

Rula Coroneos, Multiscale and Multi-physics Modeling Branch; Mary Lobo, Facility Management and Planning Office; and Quiana Reese, Integration Office, are among the diverse group of 2014 NASA women featured on the website. They discuss their accomplishments and offer encouragement to women and girls considering technical careers. The website contains the stories of all participants since 2011.



Coroneos



Lobo



Reese

While centers were only permitted to submit three names to Headquarters for the agency project, Glenn's Human Resource Panel chose to honor all 12 of its 2014 nominees by producing a Women@GRC video. The video features Betsy (DeLaCruz) Lavelle, Kim de Groh, Barbara McKissock, Elaine Pappas, Bernadette Puleo, Gwynn Severt, Lizalyn Smith, Denise Varga and Susan Wrbanek. To view the video, visit <http://youtu.be/-41MPHAsQk8>.





C-2015-496

Photo by Michelle Murphy

## Cleveland Shares Connection to Dr. King

Sonali Wilson, Cleveland State University general counsel, shared personal memories of Dr. Martin Luther King Jr., during her presentation at Glenn's Martin Luther King (MLK) Observance, Jan. 30. Wilson (pictured) shared family photos taken at their home in Cleveland and in the community. The photos revealed how her father, former *Call & Post* publisher, John Bustamante, and King shared a friendship and zeal for the Civil Rights Movement during the 1960s. The Black Women's Advisory Group and the Office of Diversity and Equal Opportunity Programs sponsored this year's event that also included a video featuring stirring highlights of the Civil Rights Movement and Glenn managers' reflections on MLK's legacy.



Photo by Doreen B. Zudell

## Glenn Hosts Protective Measures Training

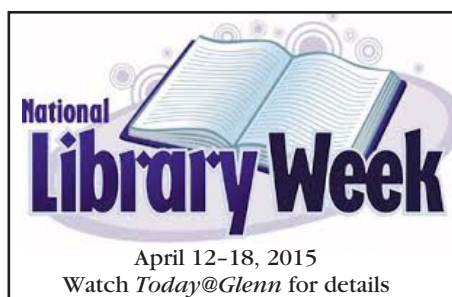
Glenn's Emergency Management Office hosted an onsite Personal Protective Measures (PPM) for Biological Events course, Feb. 5. The Federal Emergency Management Agency (FEMA) Center for Domestic Preparedness and the Cuyahoga County Emergency Management Agency coordinated the training. The event included examples of biological agents and biothreats, demonstrations and technical decontamination protocols, agility drills and practice skill sessions that included "donning and doffing" PPM equipment. Participants included Glenn safety and health personnel as well as emergency personnel from Cuyahoga County, neighboring cities and area hospitals. Pictured: Glenn's John Hild participates in a exercise where the instructor shows how to decontaminate feet.



Photo by Dr. Joe Shaw

## Canadian Consul Visits Lewis Field

Glenn hosted Douglas George, the Consul General of Canada, Feb. 3, during his trip to Ohio. While at Glenn, George learned more about the center's aerospace research and development and partnering opportunities. Dr. Joe Shaw, Glenn's director of Venture and Partnerships, escorted George for a brief meeting with Center Director Jim Free and tours to the Icing Research Tunnel and Materials and Structures Division laboratories. George is pictured with Materials Chief Dr. Ajay Misra (blue shirt) and members of his staff, Geneviève Dionne, left, and Lilianne Pin, right.



# Glenn Celebrates Summer of Innovation (SoI) Culminating Event

NASA Glenn's Summer of Innovation (SoI) Project Office and some of its partners and collaborators gathered for the SoI Culminating Event, Jan. 31, at Cuyahoga Community College (CCC) Metro Campus. They celebrated the sunset of NASA's SoI initiative that began 5 years ago.

The event featured recognition of past and current SoI collaborators, a slide presentation of SoI Project highlights and a video on a developing partnership with the 4-H Organization. In addition, six teams from Cuyahoga County high schools and academies competed in the 4-H "Rockets to the Rescue" engineering design challenge.

NASA launched the SoI Project in the summer of 2010 to support President Obama's "Educate to Innovate" campaign addressing the national need for improvement in science, technology, engineering and mathematics (STEM) education. Since then, NASA Glenn has managed SoI activities agency wide, providing funding and resources through national, center and mini awards. SoI Project objectives focused on building local educational capacity to support STEM education for underserved and underrepresented students. Some objectives were met by infusing



Photos by Mack Thomas

*Above: Representing SoI partnering organizations and co-sponsors of the event are, left to right: Vanessa Mullins, SEMAA at CCC-Metro campus; Darlene Walker, Robert LaSalvia and Priscilla Mobley, NASA Glenn's Office of Education (OE); Dr. Michael Schoop, president of the CCC-Metro; Dovie Lacy, Glenn's Center Operations Directorate; Joseph Konen, OSU-Cuyahoga County Extension/4-H; Dr. Ja'Nice Marshall, associate vice president, Access & Community Engagement, CCC-Metro; and Stephanie Brown-Houston, OE. Below: Nexus Academy student adjusts the angle of the rocket launcher during the "Rockets to the Rescue" competition.*

NASA-based themes and resources in educator workshops, summer camps and/or after-school programs.

"Since its inception, NASA has delivered SoI content to more than 200,000 students and 20,000 educators across the country," said Priscilla Mobley, NASA SoI project manager. "We achieved this via partnerships and collaborations with other federal agencies, community and school-based organizations, nonprofits, higher education



institutions, professional societies and industry and local partners."

By S. Jenise Veris

*NASA Glenn civil servants, support service contractors and retirees are invited to celebrate Hubble Space Telescope's 25 years of Discovery!*

## HUBBLE 25

**Monday, March 30:** Center Director Jim Free presents "Hubble@25: Rewriting History Yet Unwritten" at the City Club of Cleveland, 7:30 to 9:30 a.m. Tickets: \$15 members/\$20 nonmembers. Register at: <https://www.cityclub.org/events/hubble-25-rewriting-history-yet-unwritten>.

**Wednesday, April 1:** Hubble@25 Anniversary Awards Ceremony honoring Glenn's Hubble Team, 10:30 to 11:30 a.m., MIC Auditorium at Lewis Field.

**Wednesday, April 1:** Hubble@25 Exhibit Opening, Cleveland Public Library, Louis Stokes Wing, 325 Superior Ave., 3:00 to 4:30 p.m. **April 2-30:** Hubble@25 interactive exhibit, 10 a.m. to 5 p.m., Monday through Saturday. Free!

**April 24-26:** IMAX movie "Hubble" at the Great Lakes Science Center. For times and ticket prices, visit <http://www.greatscience.com/>.

For more information on Hubble@25 events, visit <http://hubble25th.org>

## Welcome to the NASA Family



Lynch



Jackson

Glenn welcomed two new employees, who reported for duty/orientation, Jan. 26 and Feb. 23. They are Kyle Lynch, former veteran intern, Space Combustion and Materials Branch, and James W. Jackson, Office of Chief Counsel.

### Emergency and Inclement Weather Lines

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



## Promotions

The Facilities, Test and Manufacturing Directorate announced two personnel selections, effective Feb. 8.

Donald Easterling has been selected chief of the Energy and Environmental Management Office. He has extensive background in environmental issues. He previously served as Glenn's Environmental Program manager with delegated authority as the primary contact for NASA Headquarters' Office of Strategic Infrastructure and liaison to state and federal agencies regarding environmental issues.



*Easterling*

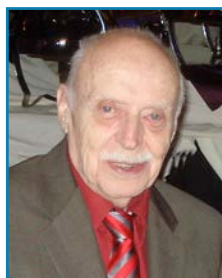


*Williams*

Christopher Williams has been selected chief of the Planning and Integration Office. Williams most recently served as Glenn's Construction of Facilities (CoF) Program manager. In this role, he advocated for and managed funding for Glenn institutional and research facility construction and improvement projects. He is an agency-recognized expert in the CoF Program.

## More than a Memory

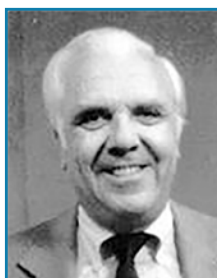
Johnny E. Haystrick, (not pictured) 94, a 1976 retiree with 32 years of federal service, died Dec. 7, 2014. Haystrick was U.S. Army Veteran of World War II. Early in his NACA/NASA career, he trained



*Kennard*



*Mitchell*



*Tiede*

and served on the center's Emergency Plan First Aid Group. He became a metal worker in the Fabrication Division. Haystrick co-authored a 1967 patent for "Refractory Metal Forming Die," which documented a metal working process to form materials from refractory metals or super alloys to meet space-age needs.

Jarman G. "Jerry" Kennard, 92, a 1982 retiree with 20 years of federal service, died June 25, 2014. Kennard was a World War II U.S. Army veteran. He began his NASA career as a support service contractor supporting the Snap-8 Power program as a field office manager. Kennard joined the Lewis workforce in 1968 working on the Communications Technology Satellite and later in the Technology Utilization Office. He was a member of the NASA Flyer's Club and actively mentored through center and community organizations, including NASA's Explorers Post and Speaker's Bureau.

Glenn A. Mitchell, 86, a 1987 retiree with 33 years of NASA service, died Aug. 25, 2014. Mitchell was an aerospace research engineer, who earned the nickname "Mr. Tunnel" because he was a member of the 8- by 6-Foot and 10- by 10-Foot Supersonic Wind Tunnel Test Crews throughout his career. He designed an advanced turboprop model for a tunnel (1981) and later served on the Propeller Aeroelastic Test Team. This team provided significant technical support to the NASA/Industry Advanced Turboprop Team that earned the 1987 Collier Trophy.

Charles "Chuck" J. Tiede, a 1982 retiree with over 20 years of federal service, died Nov. 28, 2014. Tiede was a U.S. Army Air Corp Veteran of World War II. He provided business management (i.e., costs, funding and scheduling) to several directorates throughout his NASA career. He earned a Group Achievement Award as team lead for managing the extensive financial needs of the Atlas-Centaur Project, Launch Vehicles Directorate. Tiede retired as chief of the Management Operations, Space Directorate.

## Calendar

**LUNCH AND LEARN FOCUSES ON ENVIRONMENT:** Learn about the negative impact improper waste disposal can have on an ecosystem when Mike Durkalec, Cleveland Metroparks, discusses the Rocky River Fish Kill of 2012. The event takes place on March 24, 11:30 a.m., Employee Center Small Dining Room. POC: Bethany Eppig, 3-3726.

**IFPTE LOCAL 28, LESA MEETING:** LESA will hold its next membership meeting, Wednesday, April 8, noon, in the Glenn Employee Center's Small Dining Room.

**NASA SPACE APPS CHALLENGE:** Help solve challenges relevant to improving life on Earth and in space, April 10-12, as Glenn hosts the Cleveland site for the 2015 NASA Space Apps Challenge. Visit <https://2015.spaceappschallenge.org/location/cleveland-oh/>.

**SATURDAY TOURS BEGIN IN APRIL:** Glenn will offer free tours of its world-class facilities at Lewis Field one Saturday a month from April through October. Tour buses depart from the Main Gate every hour starting at 10 a.m. One-hour tours begin with a multimedia presentation in the Briefing Center Auditorium. The April 11 tour is in the Aero-Acoustic Propulsion Laboratory (APPL). For more information and a complete schedule, visit <http://www.nasa.gov/centers/glenn/events/tours.html>.

**GLSC HOSTS YURI'S NIGHT:** The Great Lakes Science Center (GLSC) will host its annual Yuri's Night, Saturday, April 11, from 8 p.m. to 1 a.m. Enjoy this fun global celebration of the past, present and future of human space flight. Visit <http://www.greatscience.com/> for details.

**GRC CONNECTIONS PRESENTS C&I:** Learn more about Glenn's Creativity & Innovation (C&I) Initiative during the next GRC Connections, April 16, 10 to 10:45 a.m., Briefing Center Aud. Panelists include Glenn staff who have been identified by their peers as being creative and innovative. POC: Mark Kilkenny, 3-8567.

### Connect with Glenn



## National Aeronautics and Space Administration

### John H. Glenn Research Center at Lewis Field

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[www.nasa.gov](http://www.nasa.gov)

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**April 2015 Calendar section deadline: March 20, noon**  
**News and feature stories require additional time**

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Read *AeroSpace Frontiers* online at <http://aerospacefrontiers.nasa.gov>

# Flight Research Reaches Unmanned Aircraft System Milestone

Glenn engineers have reached a critical milestone towards developing a secure wireless communications system that bridges the gap between federal and industry flight operations for the Unmanned Aircraft Systems (UAS) in the National Airspace System Project. They are flight testing the fourth iteration of a prototype UAS radio that will serve as the link for safe and reliable communications between pilots, aircraft and federal air traffic controllers.

Jim Griner, NASA's UAS communications subproject lead, heads a Glenn team of 20 engineers, researchers and pilots working with Rockwell Collins, an avionics radio manufacturer, to develop the prototype that will become the industry's communications standard. They are collecting in situ data to address a variety of operations and concerns to meet RTCA (formerly the Radio Technical Committee on Aeronautics) standards. Two of Glenn's planes, the S-3B Viking and T-34C, serve as airborne radio laboratories to aid the ground to aircraft communication testing.

"The S-3 has done the majority of the work as a UAS stand-in. However, it will take on the role of "intruder" later this summer, to begin testing the software avoidance commands for the next

iteration," explained Jim Demers, a research pilot for the project. "The T-34C was equipped to become the UAS surrogate in December, but is awaiting smaller packaging to install the latest prototype."

Glenn built and installed two radio towers to create realistic infrastructure for testing the effectiveness of radio signals transmitted across various terrain and atmospheric conditions. One tower is onsite in the West Area of Lewis Field and another is at Ohio University's airport in Albany. The towers enable pilots to securely communicate and maintain control of the aircraft during flights from Cleveland Hopkins Airport to a flight pattern southeast of Columbus, Ohio.

Anticipation is growing for completion of the 5-year project that will provide the data decision makers will need to meet a congressional mandate to open the national airspace to UASs. Throughout the project, data has been documented in parallel with system development and immediately shared with other subproject and industry participants. This departure from the traditional research process is expected to cut implementation time in half. Griner said his team expects to have a draft of the commercial system standards complete by July.



*Glenn's T-34C awaits the latest prototype radio.*

"This technology is the next big change for the aerospace industry. The last time aerospace experienced a significant change was the introduction of jet engines," Griner explained. "When we submit the final document, we have to think 50 years out, because once you set a standard, it's going to take another 50 years to get another. Our challenge is to create a system that can adapt to a growing number of UASs and ideas to make use of them."

By S. Jenise Veris