National Aeronautics and Space Administration

AEROSPACE Frontiers

VOLUME 15 ISSUE 5 MAY 2013

SCaN Testbed Checks Out! Experiments Begin

Glenn Technology On Space Station

The Space Communications and Navigation (SCaN) Testbed has successfully begun its experiments after completing its checkout on the International Space Station.

Designed and developed at NASA Glenn, the testbed is an advanced communications laboratory facility that was installed on space station. Using a new generation of Software Defined Radio (SDR) technologies, the testbed allows researchers to develop, test and demonstrate advanced communications, networking and navigation technologies in the dynamic space environment.

Checkout activities ensured the payload safely made it through launch and installation and established its status and health, including the antenna systems and the as-launched software on each of three SDRs.

Preparations were made for experiment operations during commissioning. The testbed is now performing

Continued on page 2

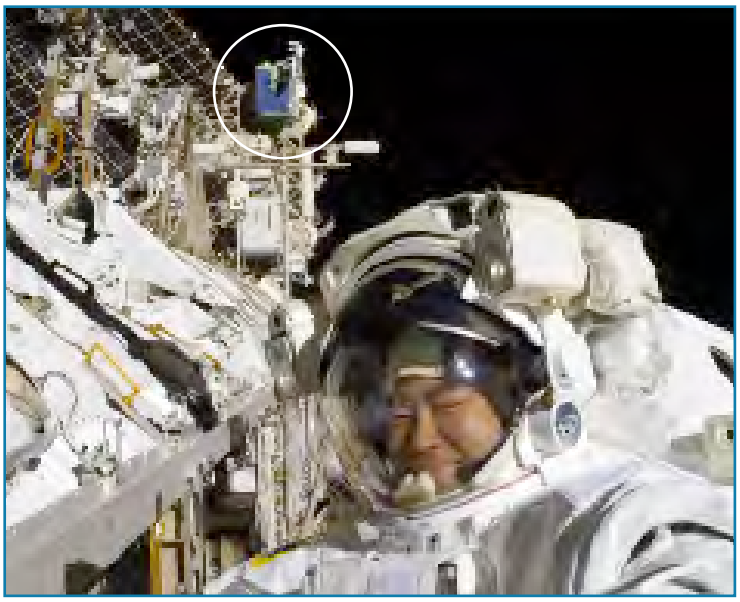


Photo courtesy of NASA

The SCaN is pictured (circled) on the ISS. Japan Aerospace Exploration Agency astronaut Akihiko Hoshide is conducting the spacewalk.

Seven Glenn Employees Earn Federal Executive Board Awards

Wings of Excellence

The Cleveland Federal Executive Board honored seven Glenn employees with a Wings of Excellence Award during the Federal Employees Recognition and Awards Program Luncheon, May 10. The award recognizes nominees from federal agencies across Northern Ohio for their outstanding service and contributions of significance to a major project, national program or the enrichment of a community. Congratulations to the following Glenn honorees:

Charles Doxley, Avionics Systems Branch, for mentoring skills that inspired middle-school-aged students on the For Inspiration and Recognition of Science and Technology (FIRST) Lego League (FLL) team from Olivet Institutional Baptist Church. Based on the student nominations, Doxley received the 2012 Mentor Award at the Northeast Ohio Regional FLL Robotics Alliance. The FLL supports a national goal to improve student learning in science, technology, engineering and mathematics (STEM).

Karin Huth, chief, Research and Space Operations Branch, for outstanding support to the Communications, Navigation and Networking Reconfigurable Testbed (CoNNeCT) and High Ice Water Content (HIWC) programs. Huth negotiated contracts for these major programs with excellence, in addition to her normal supervisory responsibilities and despite staff reductions, demonstrating a model of exceptional dedication, initiative and performance.

Continued on page 2

In This Issue

FEB Awards

Continued from page 1

Dr. Ruth Jones, NASA Safety Center's Mishap Investigation Support Office, for significant contributions to three agency investigations that required rapid intervention and assistance, as well as an extended temporary duty at Marshall Space Flight Center to complete one of the investigations within the 75-day requirement. Jones is also a mentor for the Youth Motivation Task Force at the University of Arkansas (Pine Bluff), that offers students assistance transitioning to a professional environment.

Jennifer Jordan, Electron and Opto-Electronic Devices Branch, for technical expertise that has brought NASA Glenn recognition for world-class research and development of high-temperature wireless electronics for monitoring aircraft engine health, as well as design/analysis of hybrid radiofrequency (RF)/optical communication systems for future space exploration. Jordan is also cited for her commitment as a mentor and recruiter for NASA Co-op/Internship Programs, career fairs and participation in a variety of charitable events.

Doxley

Huth

Dr. Jones

Jordan

Kilkenny

Miller

Tirone

Mark Kilkenny, Strategic Integration and Project Control Office, for creativity and excellence in performing a wide variety of analyses regarding Glenn customer satisfaction and research contributions, and metrics developed for business effectiveness and efficiency. He is also recognized for his engaging presence at many charitable events in and outside of the center.

Richard Miller, SAIC/Safety and Health Division, for outstanding contributions to NASA Glenn workplace health and safety. His in-depth knowledge of occupational health and safety regulations has not only enabled Miller to anticipate and identify hazards, but also educate workers and provide alternative methods for accomplishing workplace safety.

Doris Tirone, Human Capital Consultant Division, for mentoring veterans and people with disabilities as lead for NASA Glenn's pilot program to recruit formerly homeless veterans. Her efforts enabled Glenn to surpass 2012 agency goals with the highest rate of veterans hired and/or disabled. Tirone is a noted blogger on Govloop.gov, consistently communicating advice to veterans.

SCaN Testbed

Continued from page 1

on-orbit experiments. These initial experiments include advancements in S-band and Ka-band SDR technology to a mature technology readiness level, making existing communications paths, especially in the Ka-band, even more capable than in the past.

Additionally, an experiment with NASA's latest Tracking and Data Relay Satellite (TDRS-K) will be the first in-orbit test and demonstration of a TDRS spacecraft acquiring and successfully autotracking a Ka-band user in Low Earth Orbit.

"SCaN Testbed represents a significant advancement in SDRs and their applications for NASA," said Project Manager David Irimies, Space Communications Office. "Investigating these SDR technologies in the dynamic space environment increases their technology readiness level and maturity, which, in turn can be used for future missions as risk reduction."

The Testbed will help technology developers and mission planners understand how SDRs will be used in future missions. It is expected to operate on-orbit on station for up to six years.

For more information about the SCaN Testbed, visit: http://spaceflightsystems.grc.nasa.gov/SOPO/SCO/SCaNTestbed/.

SCaN Testbed Timeline

Oct. 2007	Glenn begins SCaN Testbed development
Feb. 13, 2012	SCaN Testbed shipped from Lewis Field to Tanegashima, Japan (JAXA) in anticipation of launch
July 21, 2012	SCaN Testbed launches from Tanegashima, Japan
July 27, 2012	Japanese H-II Transfer Vehicle delivers SCaN Testbed to space station
Aug. 7, 2012	SCaN Testbed successfully installed on space station
Aug. 13, 2012	SCaN Testbed successfully activated on space station
Feb. 15, 2013	SCaN checkout operations complete

NASA Begins Flight Research Campaign Using Alternative Jet Fuel

Quantifying Benefits of Renewable Fuels

NASA researchers recently completed a series of flights using the agency's DC-8 flying laboratory to study the effects of using biofuel on engine performance, emissions and aircraft-generated contrails at cruise altitudes.

The Alternative Fuel Effects on Contrails and Cruise Emissions (ACCESS) research involved flying the DC-8 as high as 39,000 feet while an instrumented NASA Falcon HU-25 aircraft trails behind at distances ranging from about 300 feet to 10 miles.

"We believe this study will improve our understanding of the effects of alternative fuels on aircraft engine emissions at cruise altitudes as well as study their effects on contrail properties and quantify potential benefits of renewable alternate fuels in terms of aviation's impact on the environment," said Ruben Del Rosario, manager of NASA's Fixed Wing Project at Glenn.

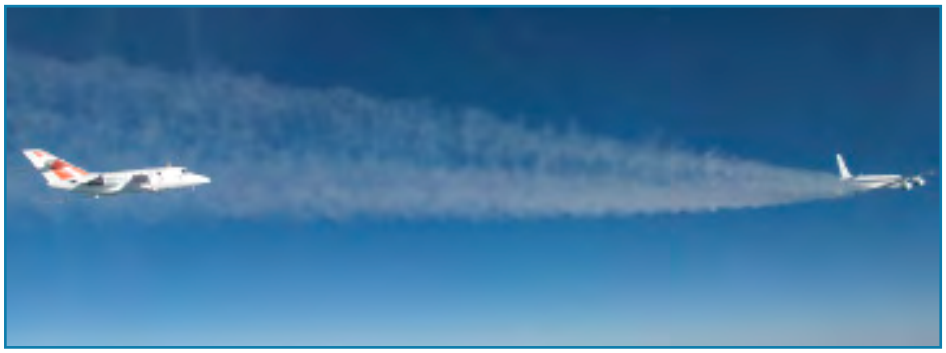


Photo courtesy of NASA Dryden

Pictured, left, is the Falcon jet in the DC-8's downstream exhaust plume during testing.

ACCESS flight operations were staged from NASA's Dryden Aircraft Operations Facility in Palmdale, Calif., and took place within restricted airspace over Edwards Air Force Base, California. During the flights, the DC-8's CFM56 engines were powered by conventional JP-8 jet fuel, or a 50-50 blend of JP-8 and an alternative fuel of hydroprocessed esters and fatty acids produced from oil derived from camelina plants.

More than a dozen instruments mounted on the Falcon jet characterized the soot, gaseous emissions and contrail properties streaming from the DC-8, and monitored changes in these properties as the exhaust stream mixed with ambient air and aged downstream of the engine.

ACCESS follows a pair of Alternative Aviation Fuel Experiment studies conducted in 2009 and 2011 in which similar but more extensive instruments measured the exhaust emissions from the same DC-8 engines as the aircraft burned various alternative fuels while parked on the ramp at the Palmdale facility.

A second phase of ACCESS flights is planned for 2014. It will capitalize on the results obtained from the 2013 flights and may include additional measurements or fuels.

The ACCESS study is a joint project involving researchers at NASA's Dryden, Glenn and Langley research centers.

The Fixed Wing Project within the Fundamental Aeronautics Program of NASA's Aeronautics Research Mission Directorate manages ACCESS.

Morton Arboretum Partners with Glenn

Technology Used in Tree Failure Research

Tree failure has caused billions of dollars in damage to buildings and the infrastructure of utilities. Understanding how trees fail under the strains of extreme weather—hurricanes, ice and snow loads—is critical for arborists as they work with businesses to find solutions to reduce damage.

Photo by Matt Melis

NASA Glenn engineer Matt Melis, Structures and Dynamics Branch, is partnering with researchers at the Morton Arboretum (near Chicago) to demonstrate how stereo photogrammetry technology— technology he used during the Space Shuttle Columbia accident investigation—can enlighten arborists on the biomechanics of tree failure.

Visit the NASA Glenn Web Portal to read how: www.nasa.gov/centers/glenn/technology/morton_tree.html.

Research trees were whitewashed and black dots were applied so computer-imaging equipment could capture the stress points as the tree was pulled by a winch.

Celebrating Women's Past and Present Contributions ˇ

During NASA Glenn's Women's History Month Observance celebrating "Women Inspiring Innovation Through Imagination," March 22, NASA Glenn Associate Director Janet Watkins touted NASA's status as one of the nation's largest employers of women in STEM careers. In the welcoming remarks, she highlighted some of those talented women across the agency.

C-2013-1155 Photo by Bridget Caswell

Watkins, left, and Acting Director of Engineering Tom Hartline, right, with guest speaker Daley.

Griebel

Zakrajsek

The featured speaker, Tim Daley, executive director of the Soldiers' and Sailors' Monument, extolled the heroics and innovative fundraising of local women in the Northern Ohio Branch of the U.S. Sanitary Commission and their impact during the American Civil War.

Following Daley's presentation, this year's Federal Women's Program award recipients were recognized for their outstanding contributions to the advancement and inspiration of women at Glenn and in the community. Therese Griebel, chief, Avionics and Electrical Systems Division, is this year's supervisor honoree. June Zakrajsek, program planning and assessment manager of the Radioisotope Power Systems Program, is the nonsupervisor recipient.

Glenn Kicks Off Earth Day, Sustainability Events, EarthFest 2013 ˇ

The center's Green Earth Committee kicked off its 2013 *Greening NASA Glenn One Event at a Time* season April 18 at Lewis Field. Director of the Facilities and Test Directorate Dr. Rickey Shyne, who serves as Glenn's Sustainability officer, opened the event by affirming his commitment to "green" practices and sharing examples of how "green is a way of living" at NASA Glenn. Committee members then gave brief descriptions of the series of environmental awareness events planned at Lewis Field and Plum Brook Station through November.

Pictured right: Dr. Shyne gives Dogwood seedlings to Jim Lucic and Kelly Shankland, Publishing Services, during the Greening Glenn One Event at a Time kickoff. Pictured below: Kirsten Duffy, Structure and Dynamics Branch, conducts a Flywheel interactive demonstration at EarthFest 2013.

C-2013-1466 Photo by Michelle Murphy

One of those first activities included NASA Glenn's presence at EarthFest 2013, Ohio's largest environmental education event held at the Cuyahoga County Fairgrounds, April 21. Visitors enjoyed the "Journey to Tomorrow" trailer filled with interactive activities and displays, along with the inflatable space shuttle and EVA, the astronaut, that were prominently displayed at the entry gate. Glenn volunteers and Extreme Green Explorer Post 634 members greeted a steady flow of visitors circling NASA demonstrations on alternative energy technology solutions, including wind and water turbines, flywheels and fuel cells. Guests also enjoyed the "Picture Yourself…" photo booth, inflatable Mars rover and literature handouts.

Photo by Mack Thomas

New Visitor Center Galleries Unveiled ˇ

Above: Glenn's Deputy Director Robinson, second from left, helped pierce ceremonial hydrogen balloons with GLSC representatives at the unveiling. Right: Guests try manipulating a glove box experiment in one of the new interactive displays.

Photos courtesy of Babulski Productions

Glenn Deputy Director Gregory Robinson joined the Great Lakes Science Center's (GLSC) new president Kirsten Ellenhogen and Board Chairman Paul Dolan in offering welcoming remarks to guests and media attending the April 4 unveiling of the newly renovated NASA Glenn Visitor Center galleries. The galleries highlight the challenges of living and working in space and Glenn's role in research to prepare for journeys farther in space. These are the first three galleries of the redesigned Visitor Center, with two new galleries coming this summer. Retired astronaut and Cleveland native Don Thomas made a special appearance, April 6, for GLSC's "Space Saturday" activities and public grand opening.

Glenn Supports Another Great FIRST Robotics Season ˇ

More than 130 NASA Glenn employees volunteered to make the 12th annual FIRST Buckeye Regional Robotics Competition a roaring success. Fifty-three teams and more than 1300 students with their mentors, teachers, parents and friends converged on Cleveland State University Wolstein Center, March 27 to 30. They cheered on the engineering and robotics prowess of robots created to meet the game challenge "Ultimate Ascent."

Glenn continues to be a primary sponsor of the Buckeye Regional, one of 77 FIRST regionals across the country. This year the center sponsored 14 of the 30 Ohio teams participating, including rookie award winners: North Olmsted High School Eagles, for Rookie Inspiration Award; and Olentangy Local Schools' O-Zone, for Highest Rookie Seed and Rookie All Star. Several other Ohio teams earned honors for imagery, competitive play, creativity and teamwork.

In addition to winning the General Motors Industrial Design Award, Plum Brook's home team, The Mavericks from EHOVE Career Center, was part of the winning alliance that won the Buckeye Regional competition (view the final match at https://www.youtube.com/watch?v=TIxhL2HGrEw) and the right to advance to the FIRST Robotics Competition Championship in St. Louis, Missouri. The Mavericks also competed well in the Pittsburgh Regional, March 16–18, making it to the semifinal round elimination and winning the Innovation in Controls Award.

Team 639, Ithaca (NY) High School's robot, displays its scoring prowess—rapidly firing discs into the scoreboard—to claim a place on the 2013 Buckeye Regional FIRST Robotics Competition winning alliance.

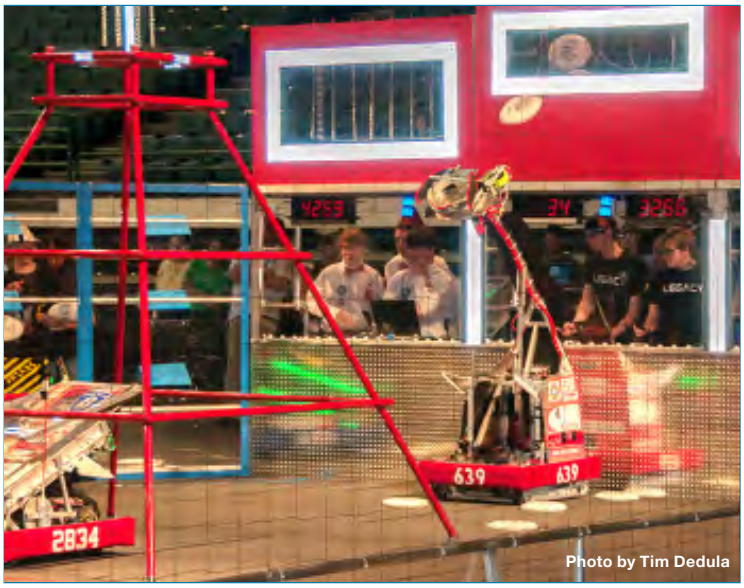


Photo by Tim Dedula

Larry Oberle, Diagnostics and Data Systems Branch, received the regional's Woodie Flowers "Mentor Award." A FIRST mentor since 1995, Oberle currently partners with the Youth Technology Academy team. Volunteer of the Year was presented to Ann Heyward, OAI vice president of Research and Educational Programs and Buckeye Regional Planning Committee chairperson for the past 10 years.

Awards, Honors and Promotions

Nancy Hall has been selected Fluids Multiphase Flow project manager within the Space Operations Project Office. She previously served as project manager for the Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions-3 and Shear History Extensional Rheology Experiment investigations.

Hall

Dr. Moss

Dr. Antoine Moss has been selected transportation officer and mail manager in the Logistics and Technical Information Division, Center Operations Directorate. Moss brings to the position some unique work experience and education as a federal intern, in addition to competencies developed most recently as a logistics management specialist.

Dr. Sutter

The Society for the Advancement of Material and Process Engineering (SAMPE) has named **Dr. James Sutter** among the 2013 class of fellows. Sutter is an organic/polymer chemist in Glenn's Polymers Branch, Materials & Structures Division, who also serves the NASA Engineering Safety Center as a senior research polymer scientist and project manager for polymer composites. His research focuses on applications for large composite spacecraft structures, composite pressure vessels, and high-temperature polymers for advanced aircraft and hypersonic engines.

Retirements

David Brinker, Icing Branch, Research & Technology Directorate, retired April 30 with 32 years of NASA service.

David Lamar, Space Communications Office, Space Flight Systems Directorate, retired Sept. 20, 2012, with 23 years of NASA service.

Calendar

GRC CONNECTIONS: The next GRC CONNECTIONS forum is Thursday, May 16, from 10 to 10:45 a.m. in the Briefing Center Auditorium.

RETIRED NASA WOMEN'S LUNCHEON: The next NASA Retired Women's Luncheon is Thursday, May 16, at 1 p.m. (note time) at Longhorn Steakhouse at Westgate, corner of W. 210 and Center Ridge Road. Contact Gerry Ziemba, 330-273-4850, to reserve your place.

Sustainability Events

Eco-painting and Environmental Initiatives for Your Home: May 16, noon to 1 p.m., building 15, Small Dining Room. POC: Sue Puleo, 3-6654

Vermicomposting: July 18, noon to 1 p.m., building 15 Small Dining Room. POC: Tom Hinshaw, 3-5462.

ASIAN-PACIFIC AMERICAN HERITAGE: The center's annual Asian-Pacific American Heritage Observance will be Wednesday, May 22, 10 a.m. to noon, in the Administration Building Auditorium.

LUNCH WITH THE DIRECTOR OF: The next Lunch with the Director Of is Wednesday, May 22, noon to 1 p.m. in the Small Dining Room, building 15.

MEMORIAL DAY OBSERVANCE: Glenn's Veterans Awareness Committee will host a Memorial Day ceremony, Friday, May 24, noon, at the flag pole in front of the Administration Building. (The backup, in case of rain, is the Briefing Center.)

BPW SCHOLARSHIP: The Glenn Business and Professional Women's (BPW) organization is accepting applications for its annual Career Advancement Scholarship. The $500 scholarship is open to all women at Glenn and used toward tuition/expenses for the 2013-14 academic year. The application deadline is Friday, May 24. POC: Jill Noble, 3-3711.

JUNE PUBLIC TOUR: The next Saturday tour, June 1, will highlight the 8-by 6-Foot Supersonic Wind Tunnel. Tours are open to U.S. citizens and lawful permanent residents. Space is limited and reservations are required for admission. To register, call 216-433-9653 or send an email to sheila.d.reese@nasa.gov. For more information and a complete schedule of Glenn's tours, visit http://www.nasa.gov/centers/glenn/events/tours.html.

IFPTE LOCAL 28, LESA MEETING: LESA will host its next membership meeting on Wednesday, June 12 at noon in the Employee Center's Small Dining Room.

Father's Day is June 16

Choose from a variety of gift ideas: Polo shirts, hats, sunglasses or beach towels for the warm weather; and laptop bags, Fisher Space Pens, Apollo and space shuttle medallions, as well as patches and pins for the NASA memorabilia collector.

Exchange Online Gift Shop
www.nasagiftshop.com

Emergency and Inclement Weather Lines
Lewis Field: 216-433-9328 (WEAT)
Plum Brook Station: 419-621-3333

In Memory

Romero Demonstrated Skill and Commitment

Noel Romero, 51, a Sierra Lobo, Inc. (SLI) employee supporting NASA Glenn as a welder and research laboratory mechanic for more than 20 years, died April 13.

Romero

Throughout his career at the center, Romero earned several awards for expertise in welding intricate assemblies and structures used for facility and research applications, including the more difficult weld assemblies during fabrication of the "tuna can" sections for the ARES 1-X. More recently, as a member of the Space Power and Technical Propulsion Branch, Romero's welding expertise proved invaluable in fabricating a large test stand needed in the Tank 6 vacuum chamber. He also used his skills to repair "robotic warriors" in the NASA-sponsored mobile machine shop in support of the FIRST Robotics Competitions.

"Noel especially enjoyed working with young people and helping to keep their robots running during the FIRST competitions," said SLI Supervisor Jeff Smith. "He will always be remembered as a loyal, hard working person who truly took pride in supporting NASA Glenn."

Romero's brother, Robert Romero, works in Glenn's Venture Development and Partnerships Office.

Welcome New Additions to the NASA Family

C-2013-889

Pictured above, left to right: Jennings, Varis and Vyhnalek. Pictured right, below, left to right: Webb, Hartwig and Gallagher.

The center welcomed the following new employees during the month of March: **Rochelle Gallagher**, Human Capital Development Division; **Jason Hartwig**, Propulsion and Propellants Branch; **Frank Jennings**, Community and Media Relations Office; **William Varis**, Institutional Services Branch; **Brian Vyhnalek**, Antenna and Optical Systems Branch; and **Courtney Webb**, Human Capital Development Division.

C-2013-1194 Photos by Bridget Caswell

Article Submissions

News items and brief announcements for publication in the June issue is noon, May 24. Larger articles require at least one month notice.

READ US ON THE INTERNET:
http://aerospacefrontiers.grc.nasa.gov

Hermes Award 2009-2012

2010 APEX AWARDS FOR PUBLICATION EXCELLENCE

Get Social with NASA Glenn!

Billy Harrison, 89, who retired in 1978 with 35 years of NACA/NASA service, died Feb. 10. Harrison was a graduate of the first NASA Lewis Apprentice class. He began his career as a mechanic and became chief of the Test Installation Division (TID) in 1966. He earned a NASA Exceptional Service Medal. Harrison was named associate director of Technical Services in 1970, a position he held prior to retirement along with his division chief responsibilities. His brother, Richard, a NASA retiree who also served in TID, survives him.

Harrison

William (Bill) E. McKissock, 83, who retired in 1987 with 35 years of federal service, died March 7. A U.S. Army veteran, McKissock began working at NACA-NASA in 1958. He spent his entire NASA career in the Engineering Design Division, where earlier, he performed mechanical design of numerous aeronautic projects and space research experiments—from propeller acoustic test rigs and models for wind tunnel testing to cryogenic fluid management and acceleration equipment in the Zero-G Facility. Later, he became chief of Engineering Support and received the NASA Exceptional Service Medal. McKissock's son, David, and daughter-in law, Barbara, work in the Power Systems Engineering Branch.

McKissock

NASA 2012 SPINOFF MAGAZINE: The 2012 NASA Spinoffs magazine highlights NASA-sponsored research and technology that has been transferred to the private sector. To view the online version, visit http://www.sti.nasa.gov/tto/Spinoff2012/index.html.

National Aeronautics and Space Administration

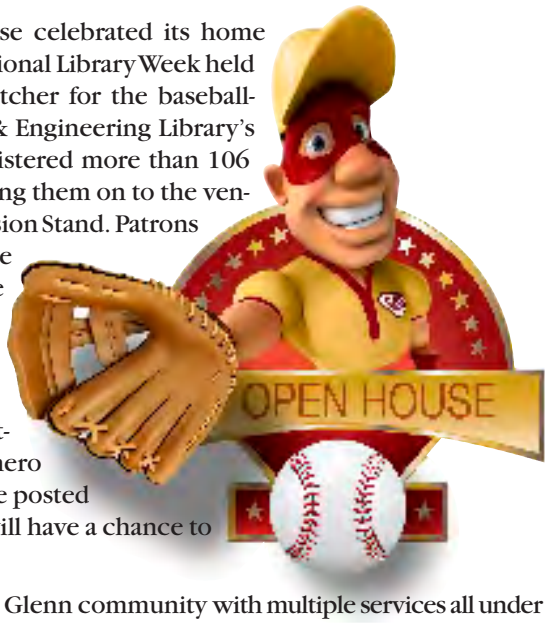
John H. Glenn Research Center at Lewis Field
21000 Brookpark Road
Cleveland, Ohio 44135
www.nasa.gov

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 Community and Media Relations Office in the interest of the Glenn workforce, retirees, government officials, business leaders and the general public. View us online at *http://aerospacefrontiers.grc.nasa.gov*. Submit contributions via e-mail to the editor: doreen.b.zudell@nasa.gov or 216–433–5317.

Editor: **Doreen B. Zudell**, SGT, Inc.
Assistant Editor: **S. Jenise Veris**, SGT, Inc.
Managing Editor: **Kelly R. DiFrancesco**

Batter Up! Library Commons Event Hits a Home Run

The Library Commons Open House celebrated its home opener, April 23, on the heels of National Library Week held April 14–20. The Opening Day pitcher for the baseball-themed event was Glenn Science & Engineering Library's Kate Dunlap, who greeted and registered more than 106 patrons for door prizes before waving them on to the vendor giveaways table and the Concession Stand. Patrons enjoyed popcorn and peanuts before rounding the bases (areas) where they tagged up with team reps who pitched brief descriptions of the Library Commons services.

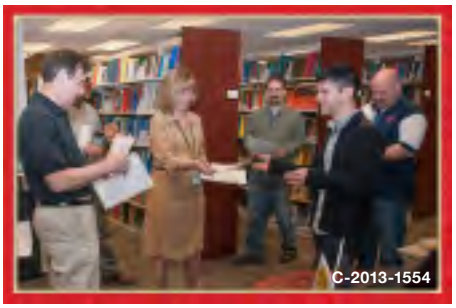


Some great suggestions were submitted for renaming the library superhero contest. The top three names will be posted on *Today@Glenn* and employees will have a chance to vote for their favorite.

The Library Commons provides the Glenn community with multiple services all under one roof. Whether it's research help, professional training and development, assistance with archives or managing records, facilitating social media—or even using a more creative method to move forward with a project or solve a problem—the Library Commons can help you hit a home run!

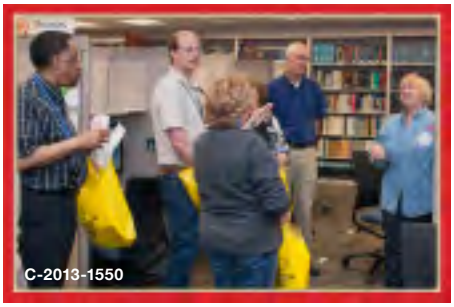
Written by S. Jenise Veris, Graphics by Lisa Liuzzo and Photos by Michelle Murphy

Anne Mills, left, defends Third Base/ Records Management & Archives.

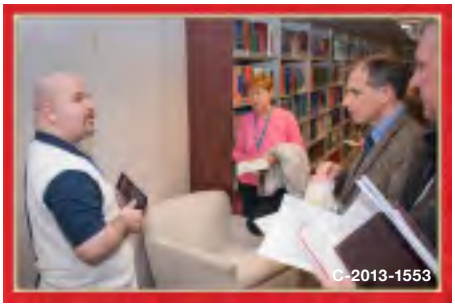


Alan Montroso, second from right, fielded Shortstop/Special Projects.

Head Librarian Kate Dunlap, right, on the Pitcher's Mound/Registration.



Annette Rostetter, right, played First Base/Learning Center.



Second Baseman Don Reams, left, covered Library Social Media.