National Aeronautics and Space Administration

AEROSPACE Frontiers

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SpaceX Testing Completed at Plum Brook

How loud is 166 decibels? It's about as loud as the thrust of 20 jet engines or a rock concert with 36,000 speakers. It's also the level of noise some spacecraft experience when launched and is now the highest level of noise that can be produced in the Reverberant Acoustic Test Facility (RATF) located at NASA Glenn's Plum Brook Station (PBS).

Space Exploration Technologies Corp. (SpaceX) recently completed testing on a 5.2-meter fairing for its Falcon 9 rocket in the RATF. The tests confirmed the fairing could withstand the harsh conditions associated with space travel.

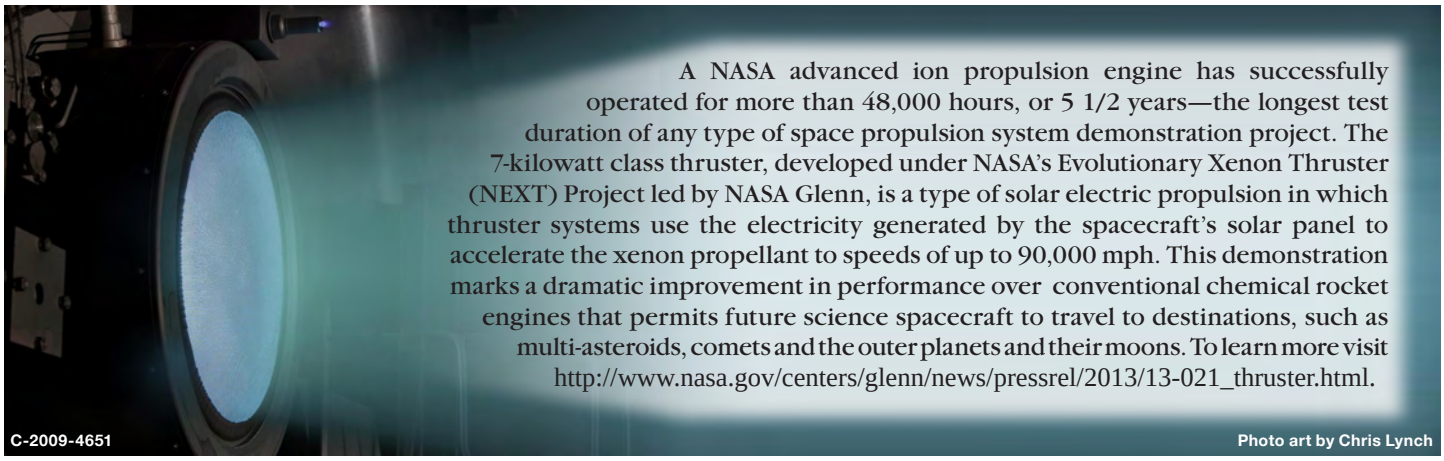
"Testing at Plum Brook enabled simulation of some unique flight conditions, furthering what we are able to do on the ground to ensure flight success," said Elon Musk, SpaceX CEO and chief designer.

The SpaceX fairing tests prove the Plum Brook Station Space Power Facility (SPF) can provide vibroacoustic test capabilities and one-stop space environmental testing for space vehicles. The SPF, now, combines the world's largest vacuum chamber and the world's most powerful low-frequency mechanical vibration test stand in one facility that is unrivaled in its space environment simulation test capabilities. For more information about the SPF, visit: http://facilities.grc.nasa.gov/spf/.

Pictured are members of the SpaceX and PBS team that prepared and performed testing of the Falcon 9 Payload Fairing in the new acoustic chamber.

Photo by Chris Lynch

NASA Thruster Achieves World Record 5+ Years of Operation



A NASA advanced ion propulsion engine has successfully operated for more than 48,000 hours, or 5 1/2 years—the longest test duration of any type of space propulsion system demonstration project. The 7-kilowatt class thruster, developed under NASA's Evolutionary Xenon Thruster (NEXT) Project led by NASA Glenn, is a type of solar electric propulsion in which thruster systems use the electricity generated by the spacecraft's solar panel to accelerate the xenon propellant to speeds of up to 90,000 mph. This demonstration marks a dramatic improvement in performance over conventional chemical rocket engines that permits future science spacecraft to travel to destinations, such as multi-asteroids, comets and the outer planets and their moons. To learn more visit http://www.nasa.gov/centers/glenn/news/pressrel/2013/13-021_thruster.html.

C-2009-4651

Photo art by Chris Lynch

In This Issue

Scoring High on SBA Procurement Scorecard

NASA has achieved an "A" on the fiscal year 2012 (FY 12) Small Business Administration (SBA) Procurement Scorecard. Glenn aided NASA's climb to this level of success through small business prime contracts awarded for FY 12.

Glenn achieved four out of five prime contractor goals in FY 12 to ensure each small business category—small business concerns, small disadvantaged business, HubZone,

Continued on page 2

Free Stresses "Stability" at Plum Brook Station All Hands

C-2013-2755

C-2013-2746 Photos by Bridget Caswell

At the July 10 All Hands meeting at Plum Brook Station, Center Director Jim Free told employees that finding "stability" for NASA Glenn is his top priority. He stressed that Plum Brook and Lewis Field intertwine equally to make up one center.

"I get frustrated with budget challenges just like all of you," Free affirmed. "So we're working to find a strategy that insulates us from the ups and downs."

In addition to stability, Free said advocating for programs that bring work to the center—partnering internally within the agency or externally with industry—is a high priority under his leadership. He talked about the value of an empowered workforce that feels comfortable in sharing recommendations for improvements. Free also highlighted the successes of SpaceX testing and Plum Brook Reactor Decommissioning Project. Retirees who had worked on the decommissioning project were invited to the All Hands. Those attending commented on their decommissioning activities while viewing a time-lapse video. Pictured, top: Free answers employees' questions during the All Hands. Pictured, right: Retirees at the All Hands.

SBA Scorecard

Continued from page 1

women-owned small business, and service-disabled-veteran owned small business—had a fair share of work with the federal government. As a result, the center had the agency's highest percentage of prime contract small business in FY 12, at 70 percent.

In addition to hosting a HubZone Industry Day in June, Glenn personnel also conducted small business workshops at county libraries and participated in other SBA events throughout FY 12, prior to presenting at the NASA Technology Showcase in November. All these events were designed to inform and/or solicit small businesses' interest in learning about upcoming business opportunities with NASA.

"Our acquisition staff and technical community receive the training needed to stay current on small business issues," said Teresa Monaco, Small Business specialist. "This is reflected in our contributions that enable NASA to achieve government-wide statutorily mandated goals."

Currently, Glenn is exceeding all five prime contractor small business category goals for FY 13 and leads the agency with the highest percentage at 73 percent, evidence of its firm commitment to promoting small business and helping the agency meet its future goals.

Class of 2013 CFCLI Graduates

Suzanne Aldrich and **Thomas Stueber** recently graduated from the Cleveland Federal Community Leadership Institute (CFCLI). The 9-month program develops leaders committed to advancing cooperation among federal agencies in the Greater Cleveland area, while strengthening community partnerships. Participating in a community service project that linked federal government resources with local community needs was required prior to CFCLI graduation.

Aldrich, Facilities Division Project Management Branch, supported the "Feeding Seniors for the Summer" project, created as a sustainable food drive to replenish nonperishable food items for the Lorain County Office on Aging food pantry. Her CFCLI team partnered with Lorain County members of the Girl Scouts of Northeastern Ohio.

C-2013-065 Photo by Bridget Caswell

Cleveland Federal Executive Board Executive Director Michael Goin, left, joins Glenn Associate Director Janet Watkins, right, in congratulating Aldrich and Stueber.

Stueber, Communications, Instrumentation, and Controls Division, initiated the "TEACH (Take-Home Educational Activity Center for Children)" project by collecting books and other preschool learning materials for the Cleveland Center for Families and Children, Archwood Head Start School.

Glenn Debuts Food Service Pilot Program

Cafe Offers New Fare and Atmosphere

—Graphic by Kelly Shankland

NASA Glenn has launched a food service pilot program that offers employees a unique experience in cafeteria dining, featuring locally owned food vendors and food trucks at Lewis Field. The program began on Aug. 1, at the conclusion of the 8-year contract with Acorn Food Services.

The new program promises to provide variety, quality and value to please the most discerning patrons. Employees can enjoy a choice of cuisine from one to two different food trucks available each weekday on the north-side parking lot, adjacent to the cafeteria. At the same time, locally owned restaurant vendors such as Donatos, Jimmy John's and Chick-fil-A offer additional food selections on a rotating basis at stations inside the Glenn Café. Breakfast will be available from 7 to 9 a.m. and lunch from 11 a.m. to 2 p.m. The names of each food truck and vendor participating in the pilot, with links to their individual websites and menus, is posted on the new Glenn Café website at https//www.grc.nasa.gov/WWW/glenncafe/.

"We're initially expecting some crowds due to the excitement and novelty of the program," said Institutional Resources Analysis Division Chief Aimee Bergquist, the Food Services Team lead, "So, we encourage employees to use the website to familiarize themselves with the new service model and help them plan their visit."

The Food Services Team expects to attract a wider variety of vendors throughout the year. Additionally, the team is exploring a self-serve "Micro-Market" for employees whose appetite urges do not coincide with the normally scheduled lunch hours. Further details about the micro-market will be announced at a later date.

—By S. Jenise Veris

Prototype Radio Provides Critical Communications Link

Photo by Steve Walker

Griner coordinates this testing from his seat behind the cockpit of the S-3 Viking airplane.

NASA Glenn's communications experts have begun flight testing a prototype radio as part of the agency's contributions toward fully integrating civil and commercial Unmanned Aircraft Systems (UAS) into the National Airspace System.

This particular radio is one of the first steps to provide the critical communications link for UAS pilots on the ground to safely and securely operate their remotely piloted vehicles in flight even though they are many miles—if not continents or oceans—apart.

"So far the tests are going well and we're learning a lot about how this prototype radio operates under various conditions, but we still have much more testing to do on this radio and others that will come," said Jim Griner, Networks and Architecture Branch.

To learn more about these tests on NASA's S-3 Viking research aircraft, read the complete story on NASA Glenn's Web portal at http://www.nasa.gov/topics/aeronautics/features/uas_prototype_radio.html#.UeQFgLYmx7U.

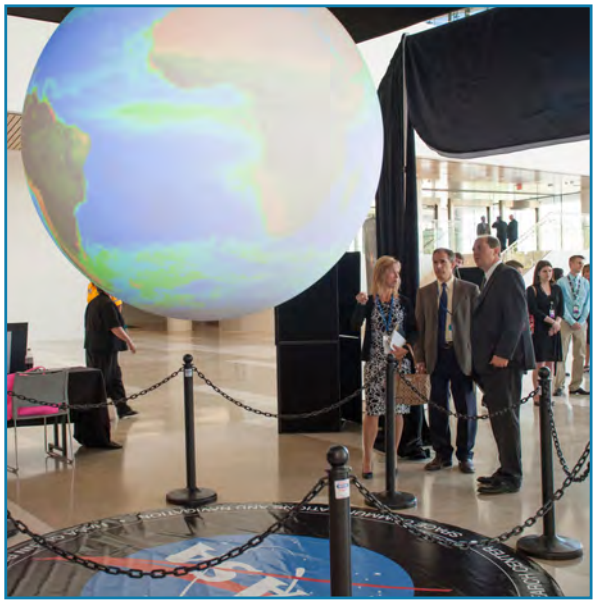
Women@Glenn Video Honors Inspirational Women

Ready to be inspired? Be sure to check out a new video featuring all of Glenn's nominees for the 2013 Women@NASA interactive project. The video, which provides a glimpse of our nominees and their inspirational messages, offers women encouragement to consider a career at NASA. Congratulations to Terrian Nowden, Debbie Zamostny and Michelle Mader, whose packages were forwarded to Headquarters on behalf of the center, and to all the women who submitted nominations. To see the video, visit http://www.grc.nasa.gov/WWW/AdvisoryGroups/WAG/events.html.

Renovated Visitor Center Showcased at Space Week

The Great Lakes Science Center celebrated Space Adventure Week, July 8–14, with the opening of its newest gallery in the NASA Glenn Visitor Center. The 3,000-square-foot area, called Discover, highlights the underlying science and engineering principles that make major accomplishments possible in space and aeronautics. The Community and Media Relations Office staff led the effort to develop the new exhibits and multimedia content. They also lined up speakers and special exhibits for the week-long celebration while members of the Education Programs Office conducted demonstrations. Pictured, far right: the Power Lab is one of four new technology theme areas in the Discover gallery. Pictured, right: Two visitors watch a launch in the new Rocket Lab in the Discover gallery.

Photos by David DeFelice



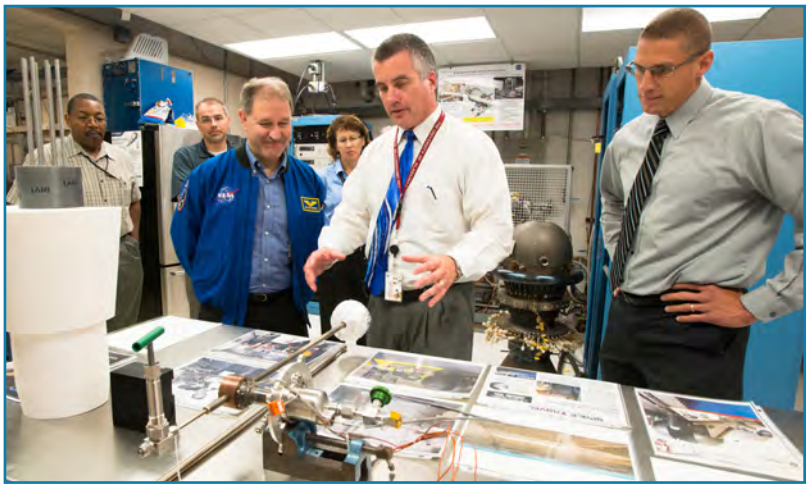
C-2013-2372 Photo by Michelle Murphy

Showcasing Medical Technology

NASA's Science on a Sphere display of Space Communications and Navigation technologies and their benefit to the biomedical discipline was showcased at the Global Center for Health Innovation (GCHI) during the ribbon-cutting ceremony for the new Cleveland Convention Center, June 14. The GCHI displays the future of health and healthcare innovation, technology, education and commerce through state-of-the-art spaces, programs and virtual offerings. Pictured by the display are Associate Director Janet Watkins, Space Flight Systems Director Bryan Smith and Space Operations Project Office Division Chief Dr. John Sankovic.

Veterans: Join Us for Lunch!

The Veterans Awareness Committee (VAC) will host a Veterans Appreciation Luncheon on Aug. 23 at the Guerin Management Center from 11:30 a.m. to 1 p.m. Cost for the luncheon is $7 and includes Jersey Mike Sub sandwiches, chips, soda and dessert. RSVP and payment must be received by Aug. 19 to Samantha Brinkman 216–433–6613 or Valerie Daniel, 216–433–2327. All veterans—working at Glenn, retired or contractor—are encouraged to attend to spend some time reminiscing with fellow veterans.



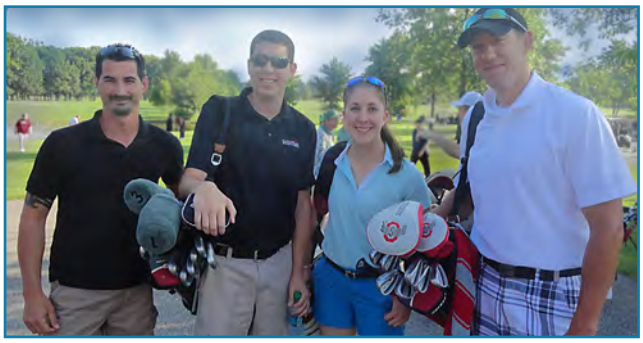
C-2013-2605 Photo by Bridget Caswell

Dr. Grunsfeld Tours Research Facilities

NASA Associate Administrator for the Science Mission Directorate Dr. John Grunsfeld visited Lewis Field for a center overview and an informational tour of several facilities, June 28. Pictured, left to right: are Deputy Director Greg Robinson, Director Jim Free, Grunsfeld, Ann Over, John Hamley and Marc Gibson, discussing the Advanced Stirling Radioisotope Generator.

Not Just Playing A Round: Glenn Golfers Tee-up Camaraderie and Competition

Photos by Jim Onest

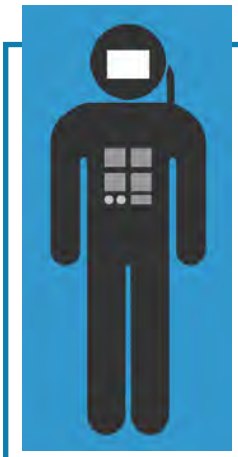


On July 11, Glenn employees, retirees and friends gathered at Mallard Creek Golf Course for the 4th annual Glenn Research Center golf outing. A total of 228 golfers participated in the four-person scramble. Although the course was somewhat mushy, it did little to slow down this year's winners: Red 18-holes—Lynne Sahay, Erin Dowdell, Dave Winchell and Mike Hein (11 under par 61); and on the Blue 18-holes—Tim Monk, Kevin Meredith, Jeff Schultz and Art Hugo (15 under par 57). All the results are posted on *Today@Glenn*. Pictured, above: Golfers mingle and prepare to play. Pictured, left, left to right: Patrick Edmonds, Tony Doglio, Bridget Popovic and Chris Williams.

Adjutant General Ashenhurst Visits

On July 15, Major General Deborah Ashenhurst, Adjutant General, Ohio National Guard, accompanied by her executive officer Major Phillip McGonagill and Director of Operations for the Ohio Air. National Guard Colonel Zane Brown, toured Plum Brook Station and Lewis Field campuses and met senior managers and enhance her understanding of the research and technology development work performed at the center. Pictured is Glenn's chief of Aircraft Operations Alan Mickle-wright, far left, conducting a tour of the Hangar for, left to right, McGonagill, Ashenhurst and Brown, who were escorted by Center Director Free.

C-2013-2851 Photo by Michelle Murphy



Ohio Astronaut Facts

Did you know Ohio is home to 25 astronauts who have taken 78 space flights and 3 trips to the moon? Learn more interesting facts about these astronauts by visiting NASA Glenn's Web Portal. It offers a brand new set of interactive features on the Ohio Astronaut pages. Very cool stuff!

Link directly to these pages:
http://www.grc.nasa.gov/WWW/portal/apps/astros/
http://www.grc.nasa.gov/WWW/portal/apps/map/

Centaur 50th Celebration

Save the date and plan to help celebrate the 50th anniversary of Centaur, the upper stage rocket developed and managed by NASA Glenn over 35 years. Festivities will be Friday, Nov. 22, hosted by the Ohio Aerospace Institute in the NASA Glenn Visitor Center located at the Great Lakes Science Center.

Awards and Honors

Dr. Arnold

Foster

Dr. Landis

ASM International (formerly the American Society of Metals) has elected **Dr. Steve Arnold**, chief of the Mechanics and Life Prediction Branch, to the rank of fellow. Arnold is recognized for pioneering work in the area of constitutive modeling of metallic and composite materials and for his leadership in ASM's contributions to the Integrated Computational Materials Engineering and Materials Genome Initiative.

Lance Foster, Inlet and Nozzle Branch, has been elected president of the National Technical Association, the nation's oldest (since 1925) technical association of minority scientists and engineers. Foster is an aerospace research engineer focused primarily on wind tunnel testing and computational analysis for air-breathing propulsion. He is currently part of the Boundary Layer Ingesting Inlet Distortion Tolerate Fan research team.

The American Institute of Aeronautics and Astronautics (AIAA) presented the 2013 AIAA Aerospace Power Award to **Dr. Geoffrey Landis,** Photovoltaics and Power Technologies Branch, July 16, during the 11th International Energy Conversion Engineering Conference. Landis was recognized for 35 years of developing advanced photovoltaic power systems for extreme space environments; providing leadership, fostering innovation, interfacing with the public; and contributing to an improved scientific understanding of operating solar power devices from the solar corona to the Martian surface and beyond.

Welcome to the NASA Family

C-2013-2062

C-2013-2460

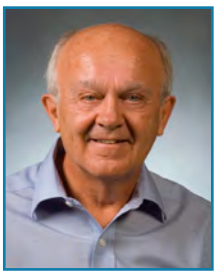
Photos by Bridget Caswell

Welcome to the following new employees who reported for duty/orientation in June. Pictured above, left, and left to right: Hyemin Yoon, Mechanical & Rotating Systems Branch; Jordon Spence, Engineering Management Branch; Michael King, Icing Branch; Taylor Pember, Engineering Management Branch; Kliti Kodra, Networks and Architectures Branch; Hyeon Kim, Operational Safety Branch; and Anthony Wilford, Integration Office. Above right, left to right: Daniel Saccomando, Exploration Systems Branch; Adam Wroblewski, Optical Instrumentation and NDE Branch; Michael Robbins, Planning and Integration Office; David Sadey, Engineering Management Branch; Dwight Robinson, Center Operations Support Branch; Rigoberto Roche, Aerospace Communications Systems Branch; Amanda Stevenson, Mechanical & Rotating Systems Branch; Steven Korn, Power Systems Engineering Branch; Jonathan Metscher, Thermal Energy Conversion Branch; and Raymond Robinson, Space Combustion and Materials Branch.

Retirements

Ihor T. Kiryk, Community & Media Relations Office, Center Operations Directorate, retired Aug. 2, 2013, with 44 years of federal service, including 40 with NASA.

Marilyn Stolz, Procurement Division, Center Operations Directorate, retired July 3, 2013, with 36 years of NASA service.



Kiryk

Stolz

More than a Memory

Frank E. Belles, 90, who retired in 1974 with 27 years of NASA service, died June 22. Belles was a chemist renowned for his definitive study of hydrogen combustion and was chief author of NASA's hydrogen safety manual, which was crucial for Apollo and other missions. He also contributed to a rocket propellant safety manual. He became NASA Lewis's Associate Director in 1972, while also serving as director of the Aerospace Safety Research and Data Institute. Belles was a U.S. Navy veteran. His son-in-law, James Felder, works in the Propulsion and Control Systems Engineering Branch.

Belles

Miser

John E. "Jack" Cotter, 65, who retired in 2004 with 38 years of NASA service, died June 3. Cotter was a mechanical engineering technician, who served the bulk of his career in the Test Installation Division's Engine Research Branch. He retired from the Space Combustion and Microgravity Technical Branch, Research Test Division.

James W. Miser, 89, who retired in 1979 with 25 years of NASA service, died May 9. Miser was a U.S. Air Force veteran and mechanical engineer who, early in his NASA career, aided research for a lunar lander. He retired as a budget analyst in the Resources Management Office. Miser was a member of the Speakers Bureau and active participant in NASA and neighboring Berea community outreach. *Former coworkers and friends are invited to attend a "Celebration of Life" service for Miser, Aug. 24 at 3 p.m. at the United Methodist Church of Berea, 170 Seminary St., Berea, OH 44017.*

Steiner

Tesar

Gordon "Gordie" R. Steiner, 82, who retired in 1987 with 33 years of NASA service, died May 21. Steiner was a U.S. Army veteran who began his NASA career in the 1956 Apprentice Class and became a mechanical engineering technician in the Fabrication Support Division. Steiner supported composite analysis and testing for advanced aircraft turbine engines. His son, Ray Steiner, is an SGT employee in the Logistics and Technical Information Division.

Ruth Hanna Tesar, 88, who retired in 1982 with 22 years of federal service, died May 17. Tesar was a secretary for the U.S. Air Force before joining the NASA Facilities Operations Division in 1966. She retired from the Fabrication Division's Outside Fabrication Branch. Tesar was a member of the Lewis Social Activities Committee and remained active coordinating the monthly NASA Women's Retiree Luncheon. Her husband, NASA retiree Lenny Tesar, died in 1995.

Calendar

IFPTE LOCAL 28, LESA MEETING: LESA will host its next membership meeting on Wednesday, Aug. 14, noon, Employee Center's Small Dining Room.

RETIRED WOMEN'S LUNCHEON: The next luncheon will be held Thursday, Aug. 15, 1 p.m., Orchid Café Restaurant, Miller Nature Preserve, 2739 Center Road (Rt. 83), Avon. For reservations, call Gerry Ziemba, 330-273-4850.

GRC CONNECTIONS FORUM: The next forum is Thursday, Aug. 22, from 10 to 10:45 a.m. in the Briefing Center Auditorium.

LUNCH WITH THE DIRECTOR OF: The next Lunch with the Director Of will be Wednesday, Aug. 28, noon to 1 p.m., Small Dining Room, building 15.

SEPTEMBER PUBLIC TOUR: The next Saturday tour, Sept. 6, will highlight the Aero-Acoustic Propulsion Laboratory, an echo-free dome designed for aircraft noise-reduction testing. Space is limited and reservations are required. To register, call 216-433-9653 or send an e-mail 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.

HONOR AWARDS CEREMONY: Mark your calendar for the 2013 NASA Honor and Center Awards Ceremony, Tuesday, Sept. 10, from 9 to 11:30 a.m. in the Hangar.

SAFETY AWARENESS DAY: The center will promote awareness of a safe and healthy workplace during the annual Safety Awareness Event, Thursday, Sept. 12, from 9:30 a.m. to noon in the Hangar.

Exchange Online Gift Shop
www.nasagiftshop.com

SUSTAINABILITY FAIR: The center will hold its annual Sustainability Fair, Wednesday, Sept. 18, 10 a.m. to 2 p.m. in front of building 3, near the flag pole.

POW/MIA EVENT: Glenn's Veteran's Awareness Committee will hold a POW/MIA observance event, Friday, Sept. 20 at 1 p.m. in the Ad Bldg. Auditorium. Dr. Stephen P. Johnson, historian with the Defense POW/Missing Personnel Office, is the featured speaker.

IMPROVE YOUR SPEAKING SKILLS: The Toastmasters International is a non-profit organization with clubs worldwide that help members develop communication and leadership skills in a supportive environment. Glenn's Toastmasters Club meetings are every Thursday at 12:05 in building 54, room 101.

National Aeronautics and Space Administration

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

Glenn Provides Technical Expertise to Local Manufacturers

Following the success of the 2012 Manufacturing Innovation Project's (MIP's) Adopt a City Initiative with MAGNET (Manufacturing Advocacy and Growth Network), local manufacturers are lining up to learn how NASA Glenn's engineers could help solve technical challenges through the 2013 MIP.

Last year, eight manufacturers benefited from Glenn's expertise through the MIP partnership, formed between the city of Cleveland, Cuyahoga County, MAGNET and NASA. Three of the eight also took advantage of low-interest loans offered by the city and county to cover additional costs associated with the project.

"Many small- and medium-sized companies have ideas and concepts for new or improved product lines but lack the resources necessary to make the ideas come to fruition," said MIP Project Manager Carol Tolbert, Space Technology Project Office. "By working with knowledgeable NASA experts, the manufacturers can quickly get answers to technical questions that will enable them to better pursue their product lines, grow their companies and perhaps create jobs."

This fall, an independent panel of judges is expected to select and announce 10 new companies for this year's MIP.

Experts Solve Tough Challenges Through Partnership

Here are a few examples of how engineers helped the manufacturers solve their technical challenges:

• Identified a NASA polymer material and epoxy as potential candidates for an innovative dental implant system for crowns to reduce cost and time. If the company receives Food and Drug Administration (FDA) approval, this system can reduce the cost of a dental implant from $5,000 to $500 and can be inserted by a dentist instead of an oral surgeon.

To reduce costs and time, Glenn subject matter experts (SMEs) identified a NASA polymer material and epoxy as potential candidates for an innovative dental implant system for crowns.

• Reconfigured optics using commercial-off-the-shelf (COTS) components for a 3-D biomedical scanning microscope that matches the performance of higher cost microscopes. This will allow small universities/colleges and small- and medium-sized companies to be able to obtain a high-resolution 3-D optical capability at a fraction of the cost for biomedical research.

• Modernized circa 1960's and 1970's vinyl record presses to allow for higher output of old audio recordings. This is a multimillion dollar business in Cleveland that sells these recordings to audiophiles from around the world.

• Provided microstructural analysis of a watertight seal for a concrete foundation sensor that will revolutionize worldwide construction of buildings by providing real-time quality control during concrete curing. This same sensor system is being considered for health management of earthen dams and levees.

—By Doreen B. Zudell