



Dr. Shin Outlines Plan for Next Generation of Aircraft

Recognizes Employees' Contributions

NASA Associate Administrator for the Aeronautics Research Mission Directorate (ARMD) Dr. Jaiwon Shin visited NASA Glenn, March 24, to meet with center management, tour facilities and speak with employees. During his Town Hall meeting, Shin presented an overview of NASA's New Aviation Horizons, an original major research initiative to flight test several new experimental aircraft, or X-planes, during the next decade.

"Working with our partners in government, industry and academia, New Aviation Horizons will include demonstrating green technologies on several

experimental aircraft of various shapes and sizes," he said.

Shin told Glenn employees that the "unprecedented level of funding increase for NASA Aeronautics in the President's budget request to Congress—total budget of \$10 billion over the next 10 years—recognizes the hard work you have done."

As one of NASA's four aeronautic research centers, Glenn's work in hybrid-electric propulsion, noise reduction in super- and hypersonic aircraft and engine aircraft icing will be critical to helping the agency achieve its long-term goals.



Dr. Shin, left, and Dr. Kavandi, right, present Dr. Colantonio with his AETC award.

"It's our hope that by building and flying these X-planes, NASA can show our technologies will work in the air, thus reducing the risk for industry in adopting these ideas and accelerating the nation's shift to green aviation," Shin added.

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Center Bids Farewell to Director Free



Pictured: Free, left, talks with employees at the reception.

Members of the NASA Glenn family gathered in the MIC Auditorium, March 28, to thank Center Director Jim Free for his dedication to NASA and our center. Free, who has served in several leadership positions at Glenn since 1999, was named deputy associate administrator for technical in the agency's Human Exploration and Operations Mission Directorate at Headquarters in Washington.

Glenn Core Technologies Tested on Space Station

On the heels of the Saffire launch in March, Glenn is readying another combustion experiment for operation, this time, aboard the International Space Station (ISS). The experiment is considered a crucial technology in engineering design to maintain the well being of crews on extended space missions to the lunar surface and Mars.

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Going the Extra Mile for Our Guests

As part of our 75th anniversary celebration, we're opening our doors to the public at Lewis Field this month, and at Plum Brook Station in June. I'm proud to showcase our aerospace bests in technology and innovation and grateful for the tremendous amount of effort put into planning the events to ensure public safety. As we participate in these multi-faceted events—whether staffing activities or attending with family and friends—we cannot lose sight that safety is our number one priority. NASA is committed to maintaining the security not only of our personnel, property and information, but also our visitors. Putting our safety practices into play will ultimately ensure the success of these 75th anniversary celebrations.

Here's to 75 more years of never sacrificing safety while producing some of the nation's greatest innovations!

—Janet

Core Technologies

Continued from page 1

The Packed Bed Reactor Experiment (PBRE) is a fluids experiment that was launched in October 2015, and staged to begin operation, May 2016, in the ISS Microgravity Science Glovebox (MSG). The unit is a test module which could provide answers that would help design more efficient reactors for space habitation, such as the water reclamation and air revitalization life support systems, critical to long-duration trips to Mars.

This hydrodynamic investigation studies the behavior of gases and liquids flowing simultaneously through a column filled with fixed porous media, or “packing,” that serves as a catalyst between two inconsistent fluid phases (e.g., liquid-gas, water-oil, etc.) The process is the most common type of chemical reactor used in industry today. Results of this investigation could provide answers about the process absent gravity, which could help design more efficient reactors for space habitation.

PBRE will be conducted over an 8-week period in the MSG, a self-contained,

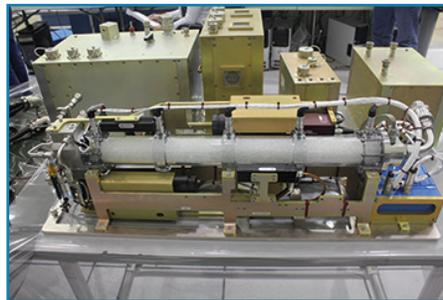


Photo by NASA

Packed Bed Reactor Experiment test section with a column of randomly packed glass beads to be integrated inside the MSG.

suitcase-sized lab. At 324 pounds (147 kilograms), PBRE is the heaviest and largest experiment in the MSG to date. Collaborators include ZIN Technologies, the University of Houston, the National Center for Space Exploration Research and NASA's Johnson Space Center. NASA Glenn's Dr. Brian Motil is the principal investigator.

By S. Jenise Veris



Plum Brook Station's June Open House

As part of NASA Glenn's 75th anniversary celebration, Plum Brook Station will hold its public open house on June 11 and 12, from 10 a.m. to 6 p.m.



The event will include onsite guided bus tours of the Space Power Facility and the Spacecraft Propulsion Research Facility. In an exciting departure from previous open houses, the exhibits, demonstrations and activities will take place at the Kalahari Convention Center adjacent to Plum Brook Station. Bring your family and friends and come out for a fun and informative peek at what goes on in this world-renowned campus. Tour space is limited and the last tour bus departs from Kalahari each day at 4 p.m. Parking at Kalahari is free!

Employees, contractors and retirees are needed to staff a variety of positions. Onsite personnel should visit http://events.grc.nasa.gov/PBS_OpenHouseVol/ (internal only) for information and to register. Retirees should call Geneva Biglin at 419-621-3344.

New Siren Informers Installed at Plum Brook

To improve the center's response during severe weather, the Office of Emergency Management recently installed new “siren informers” in the Engineering Building and Space Power Facility lobbies at Plum Brook Station (PBS). These devices will produce an audible tone whenever Erie County activates its severe weather warning sirens during testing periods or an actual emergency.

The new informers were activated during the Statewide Tornado Drill, March 23. In addition, they will be used when Erie County tests its siren system on the first day of every month at noon. Glenn's Emergency Manager, Allen Turner, said security staff will monitor the informers' performance to determine the need for additional informers throughout PBS.

Traveling Exhibit Upgraded to Better Communicate NASA's Mission

The NASA Glenn-based Journey to Tomorrow traveling exhibit—host to more than 150,000 visitors since it took to the road in 2007—has been upgraded to showcase the latest in NASA research and technology. The 53-foot trailer, offering interactive and static exhibits in an engaging learning environment, brings the excitement of NASA exploration and discovery to events across Glenn's six-state area and beyond.

This popular outreach trailer was recently retrofitted with new digital content and equipment to incorporate state-of-the-art hardware and software, interior information graphics and an

exterior wrap that reflects NASA's current research missions. Highlights include customizable touchscreen content that can be continually updated and/or replaced, cutting-edge holographic displays and a modified layout providing improved mobility for guests in wheelchairs.

"These capability upgrades will improve how we use the exhibit to engage local, regional and national audiences with the NASA story. The new Journey to Tomorrow is ready to continue informing and inspiring visitors of all ages," said Carlos Gomez, Journey to Tomorrow upgrade project manager.



The Journey to Tomorrow trailer's new exterior wrap reflects NASA's current research missions.

The Journey to Tomorrow trailer will be open to the public during the Lewis Field and Plum Brook Station open houses. Be sure to drop in to explore the exciting improvements!

By Doreen B. Zudell

Dr. Shin Visits

Continued from page 1

The Town Hall included an ARMD AA Awards Ceremony where Shin recognized several Glenn employees who have demonstrated exemplary performance contributing to ARMD activities over the past year. They include:

Technology and Innovation

Winner

ERA Project and ITD Teams

Glenn employees were part of a multi-center Environmentally Responsible Aviation (ERA) Project Team that successfully achieved its goals of maturing airframe and propulsion technologies. Their success positions NASA Aeronautics on the forefront of green aviation innovation. There are three Integrated Technology Development (ITD) Teams under the ERA Project: the 30A Compressor Team (Team Lead Mark Celestina), 35A Ultra-High Bypass Integrated System Team (Team Chris Hughes) and 40A Combustor Team (Team Lead Angela Surgenor).

Honorable Mention Team Award

High Ice Water Content (HIWC) Radar Flight Campaign Team

Team Lead, Thomas Ratvasky

The team accomplished a substantial effort in performing a multi-center flight test to investigate an alternate use of commercial aircraft radars to detect the presence of ice crystal icing conditions while also documenting the atmospheric conditions.



Left to right: Hughes, Surgenor and Celestina led ITD Teams under the ERA Project.

Strategic Partnership

Honorable Mention

Dr. Paula Dempsey

Dempsey developed a partnership between NASA, the U.S. Army Aviation Engineering Directorate at Redstone Arsenal and the Federal Aviation Administration Tech Center in Atlanta to significantly increase the effectiveness of health management technologies in detecting damage in flight critical components and rotorcraft drive systems.

Program and Mission Support: Individual Honorable Mention

Kimlan Pham

Pham applied her knowledge and experience in procurement and NASA Research Announcement (NRA) solicitations to directly aid several ARMD projects with NRA solicitation execution, and Glenn Procurement processing.



Dr. Ratvasky, Dr. Benafan, Pham and Dr. Dempsey were recognized for their contributions.

Leadership and Management Excellence

Winner

Dr. Renato Colantonio

As Aeronautics Evaluation and Test Capabilities (AETC) Project manager, Colantonio was recognized for leadership and management excellence in designing and implementing the AETC project structure and developing its operational strategy of NASA ground test facilities.

High Potentials

Honorable Mention

Dr. Othmane Benafan

Benafan contributed significantly to the development of shape changing materials known as Shape Memory Alloys (SMA). His work focused on developing lightweight SMA actuation capabilities through expanding alloy transition temperature range; understanding fundamental microstructural characteristics; and ensuring long-term reliable mechanical behavior for NASA missions.

By Doreen B. Zudell

Library Holds Customer Appreciation Day

If you didn't get to stop by Glenn's Science and Engineering Library on April 14, you missed out on what the staff described as a "book blowout." In celebration of National Library Week, April 10-16, the Library Commons hosted a Customer Appreciation Day featuring popcorn and a book giveaway. Customers browsed and bagged a variety of surplus materials from the NASA History Series, including books and DVDs on topics ranging from aeronautics, facilities, Russian space history—and even NASA center-specific history.



Photo by S. Jenise Veris

Pictured, left to right: Employees Jimmie Robinson and Charles Castle at the book giveaway.

Airport Showcases Glenn's Art Exhibit

Mayor Frank Jackson and other distinguished guests joined Dr. Janet Kavandi at the Cleveland Hopkins International Airport for the opening of the Glenn art exhibit, "Research Rising," on March 24. The exhibit features works of art by retired Glenn technical illustrator Les Bossinas and 26 photos from the center archives. Through a partnership between the airport and Glenn, this exhibit offers a retrospective on NASA Glenn's history, current research activities and future exploration. The exhibit is on display in the art gallery on the ramp to Concourse A through Aug. 31.



GRC-2016-C-1517

Les Bossinas, retired Glenn technical illustrator, stands by his work on display, during the art exhibit opening.

Photo by Rami Daud

Glenn Nurtures Winners in FIRST Robotics Competition

The 15th annual FIRST Robotics Competition Buckeye Regional, held March 17-19 at Cleveland State University's Wolstein Center, drew more than 1,500 high school students. Glenn's FIRST Program Manager Stephanie Brown-Houston reported that several Glenn-sponsored teams excelled during the competition. Team #2399/ Hathaway Brown School won Delphi's Excellence in Engineering Award, while team member, Hanna Keyerleber, earned the FIRST Dean's List Finalist Award. Veteran team #120/Cuyahoga Community College—Youth Technology Academy with Glenn mentor Larry Oberle—won General Motors' Industrial Design Award, while Robert Gest, also a team mentor, earned the Woodie Flowers Finalist Award. Visit <http://www.oai.org/firstbuckeye/index.html> for more results.



GRC-2016-C-01215

Hathaway Brown students and mentor troubleshoot their robot in the pits.

Photo by Bridget Caswell

Celebrating a 75-Year Legacy

This is the fourth in a monthly series of historical highlights commemorating Glenn’s 75th anniversary and extraordinary technical accomplishments that reach across seven decades.



Looking Back: 1970s

In the early 1970s, NASA Glenn (then NASA Lewis) strove to become the agency leader in energy conversion. This included not only aerospace uses, but also direct applications to life on Earth, such as solar panels, non-fossil fuel automobiles and wind energy.

A 1973 wind turbine symposium co-hosted by NASA Glenn and the Energy Research and Development Administration (ERDA) sparked a call for an official Wind Energy Program. By 1975, Glenn and ERDA began a 10-year effort to develop cost-effective large horizontal axis wind turbines and integrate them into utility grids.

The Wind Energy Program consisted of two efforts—a small experimental 100-kilowatt turbine at Plum Brook Station (PBS) and a series of increasingly powerful machines connected to utilities around the country. The most

successful of these wind turbines was a 4-megawatt machine in Wyoming—the nation’s most powerful turbine for over 20 years.

For a time, America’s enthusiasm for wind energy faded with a perceived end to the Energy Crisis. In the 2000s, however, national interest in wind energy, particularly the large wind turbines, returned. The United States has the infrastructure to provide more megawatts of wind energy than any other country in the world. Most of this installed capability stems from large multi-megawatt wind turbines.

Glenn’s contributions, such as flexible steel-tube towers, variable-speed generators and fiberglass blades are key components of these new turbines. Glenn later developed an internationally recognized mathematical model to forecast wind turbine power levels in high-wind conditions.

Courtesy of NASA Glenn History Office



The 100-kw wind turbine at PBS was modest in size. Its proximity to Glenn allowed researchers to test many configurations and components. Researchers found that the turbine’s original steel truss tower disrupted air flow. They resolved the issue with the flexible steel tube seen here.

News and Events

Glenn Hosted Dignitaries From Near and Far

Glenn senior staff hosted two notable dignitaries at Lewis Field in March. Ambassador Valeriy Chaly of Ukraine and members of his staff met with several senior leaders and toured the Electric Propulsion Laboratory (EPL). Chaly noted Ukraine’s value to the European Space Agency and NASA’s Asteroid Redirect Mission, as his country produces 57 percent of the world’s xenon gas. Ohio Lt. Gov. Mary Taylor learned more about Glenn’s research and technology development and testing capabilities during her first visit to the center. She toured the EPL and the Propulsion Systems Laboratory.



GRC-2016-C-01075

Photo by Bridget Caswell

Pictured: Ambassador accepts a foil memento of the center from Center Director Jim Free.

Save The Date!
Wednesday, Aug. 10
2016 Center Picnic & Retiree Reunion
More details to come!

PBS Reunion Set
 Plum Brook Station’s (PBS) seventh reunion will be held on Saturday, Sept. 24, in the Engineering Building. All current and former PBS and Lewis Field employees, support service contractors and surviving spouses are invited. A luncheon and program on PBS activities are planned. To place your name on the mailing list, contact Bill Brown in writing, 3802 Windsor Bridge Circle, Huron, OH, 44839 or email to huronbill@bex.net or Jack Crooks at jackcrooks@aol.com. If you know of others who should be contacted, please send their names and addresses as well.

Glenn Celebrates the Contributions of Women

Glenn's Women's Advisory Group (WAG) and Business and Professional Women's (BPW) Group collaborated to celebrate Women's History Month with a lunchtime program and awards presentation, March 30. Center Director Dr. Janet Kavandi provided the welcoming remarks for this year's event.

The program featured a debate by homeschooled students Mikayla Haught and Joel Meng, expressing their perspective on this year's theme "Working to Form a More Perfect Union: Honoring Women in Public Service and Government." The students invited the audience to judge the adequacy in recognizing women for contributions versus ensuring equal opportunity to make contributions for a more perfect union.



GRC-2016-C-01696 Photos by Bridget Caswell

Ponchak, center, accepts her award presented by Bland, left, and Dr. Kavandi. Dr. Kleinbenz was unable to attend.

Dr. Kavandi and Glenn's Federal Women's Program Manager Nola Bland joined WAG representatives in presenting the Supervisory and Non-Supervisory Federal Women's Awards. The honorees include Dr. Julie Kleinhenz, Chemical and Thermal



GRC-2016-C-01679

Debaters Mikayla Haught, left, and Joel Meng.

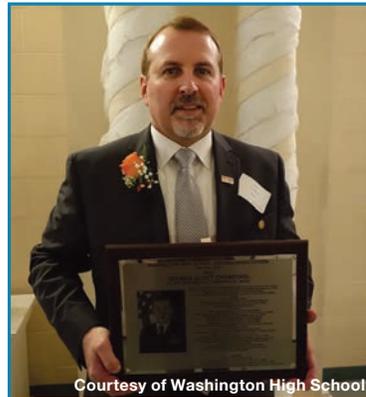
Propulsion Systems Branch, nominated as a supervisor honoree; and Denise Ponchak, Architectures, Networks and System Integration Branch, nominated as the non-supervisor honoree.

By S. Jenise Veris

Awards

Crawford Selected "Hometown" Distinguished Citizen

In April, the City of Massillon and Washington High School honored NASA Glenn's Counterintelligence Lead Special Agent George Scott Crawford as a 2016 Distinguished Citizen. The award recognizes graduates of the school who have achieved local, national or international success in their field. Crawford was recognized for a decorated 28-year career of federal service as an Air Force veteran of the Iraq War with the Office of Special Investigations and NASA. He spoke at several assemblies and received commendations from the mayor, the Ohio legislature, local rotary club and high school.



Courtesy of Washington High School

Crawford at Massillon's award ceremony.

Morris Selected FISSEA Educator of the Year

The Department of Homeland Security presented the Federal Information Systems Security Educators' Association (FISSEA) 2015 Educator of the Year Award to Gretchen Morris on March 15. Morris, DBC/Risk Management and Security Office, was recognized for her knowledge, dedication to improving security awareness and training, and her commitment to coordinating the annual FISSEA Security Contest.



Courtesy of FISSEA

Homeland Security's Susan Hansche, left, presents the Award to Morris.

In Appreciation

I would like to sincerely thank everyone who offered support and condolences during my husband's illness and subsequent passing in March. It was such a blessing to be surrounded by so much compassion and kindness during a very difficult time.

—Annette Rostetter

Promotions

Meghan Ganss has been selected executive support assistant for NASA Glenn's Associate Director Janet Watkins in the Office of the Director, effective March 21. Over the past 20 years, Ganss has worked as an administrative assistant for several onsite contracts. She served in the Diversity Management Office, STTR/SBIR Program Office, and, over the past six years, in the Office of the Director.



Ganss

Hans Hansen has been selected project manager of the Evolvable Cryogenics (eCryo) Project in the Space Technology Project Office, Space Flight Systems Directorate. Hansen will manage the eCryo Project



Hansen

working with NASA's Marshall and Goddard centers in developing cryogenic fluid management technologies needed to enable long duration in space missions beyond low Earth orbit.

More Than a Memory



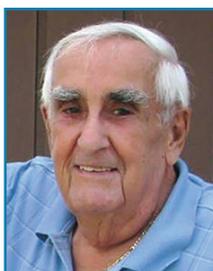
Benton

Diane Benton, 59, management support assistant for Glenn's Communications and Intelligent Systems Division, died unexpectedly March 14.

During her 31½ years at NASA, Benson earned the respect of co-workers for her sustained clerical and administrative expertise across several organizations. She received multiple support/clerical awards, while also obtaining certification as a Professional Secretary. She also earned an associates degree in business, a bachelor's degree in human services, and more recently, a master's degree. However, many will recall her role

on the Glenn Social Events Team and its predecessors, seeking and securing events for NASA employees to enjoy at discount prices.

"Diane was an extremely dedicated individual and civil servant. She had the knowledge and determination to take on the most challenging tasks, always finding a way to get things done to make our lives a little easier," said Dawn Emerson, chief, Communications and Intelligent Systems Division. "Diane loved her work and cared deeply about others. She was someone you could always depend on and trust. It was truly an honor to work with Diane and she will be greatly missed."



Stearns

Carl A. Stearns, 86, a 1990 retiree with 33 years of service, died March 8. Stearns was a highly regarded physicist and published expert on high-temperature materials for aircraft engines. He began his NACA/NASA Lewis career in 1956 and rose to positions of leadership, including High Temperature Chemistry Section chief and Environmental Durability Branch chief. Stearns performed critical testing for NASA's Conservation Of Strategic Aerospace Materials program. After retiring, he returned for seven more years to support the Combustor Materials team for NASA's High Speed Civil Transport.



Trujillo

Marjorie "Marti" W. Trujillo, 68, a 2007 retiree with more than 30 years of federal service, died March 7. Trujillo began her NASA career in 1983 and received multiple service awards from various organizations in which she supported. She received a 2002 NASA Exceptional Service Medal for her contributions to the Research and Technology Directorate. In 2003, Trujillo was selected executive support assistant to Deputy Center Director Richard Christiansen. She served in the Office of the Director until her retirement.

Welcome to the NASA Family

Glenn welcomed four new employees who reported for orientation on March 21. They include John Bobanga, Reliability and System Safety Engineering Branch; Meghan Ganss, Office of the Director; Joshua Gibson, Space Power & Propulsion, Communications and Instrumentation Branch; and Leah Nakley, Space Combustion and Materials Branch. On April 4, two more new employees reported for orientation. They include Harry Burnsworth, Jr., Logistics and Technical Information Division, and Joseph Knott, Engineering Management Branch.



GRC-2016-C-01662

Photo by Bridget Caswell



GRC-2016-C-01639

Photo by Marvin Smith

Left to right: Bobanga, Gibson, Nakley and Ganss.

Left to right: Knott and Burnsworth.

Retirements



Liao

Mei-Hwa Liao, Structural Mechanics Branch, Materials and Structures Division, retired May 3, 2016, with 33 years of service.

Karen Pischel, Aeronautics and Ground-Based Systems Branch, Systems Engineering and Architectural Division, retired May 13, 2016, with 33 years of service.

Calendar

GRC CONNECTIONS: On May 19, a Glenn panel will discuss their positive experiences as past Regional Economic Development roadshow participants. See *Today@Glenn* for more details.

RETIRED WOMEN'S LUNCHEON: The next NASA Retired Women's Luncheon is Thursday, May 19, at 1 p.m., at Coppertop Restaurant, 5740 Center Rd. (Rt. 303), Valley City, Ohio 44280. Please notify Gerry Ziemba, 330-273-4850 or gto64gerry@yahoo.com to reserve your place.

MEMORIAL DAY OBSERVANCE: The center will hold its Memorial Day Observance, May 26, at 1 p.m., at the flag pole in front of the Administration Building. POC: Samantha Brinkman, 3-6613.

RAIN BARREL WORKSHOP: Learn about rainwater harvesting and build a rain barrel to take home, Tuesday, June 7, 11:30 a.m. to 1 p.m., Picnic Grounds. POC: Stacey Yanetta, 3-6468.

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

Lewis Field Open House

May 21 and 22
10 a.m. to 6 p.m.
Park at I-X Center

www.nasa.gov/glenn75

National Aeronautics and Space Administration

John H. Glenn Research Center at Lewis Field

21000 Brookpark Road
Cleveland, Ohio 44135

www.nasa.gov

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June 2016 Calendar section deadline: May 18, noon
News and feature stories require additional time

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Read *AeroSpace Frontiers* online at <http://www.nasa.gov/centers/glenn/news/AF/index.html>

Center Takes Pride in John Glenn Highway

Join the Highway Cleanup Challenge!

The I-480/Grayton Road interchange serves as the gateway to Cleveland for many visitors who arrive at Cleveland Hopkins International Airport. Named the John Glenn Highway in 1998, this is an important highway in the NASA Glenn neighborhood as well.

For more than 20 years, the center has helped maintain the grassy areas adjacent to the interchange by conducting monthly litter removal as part of the Adopt-a-Highway Program, sponsored by the State of Ohio Department of Transportation. This is considered a sanctioned center activity.

From April through October during lunchtime, civil servant and support service contractor employees and retirees meet in the Hangar parking lot for a safety review covering guidelines for trash collecting and alerts for roadside obstacles. They then receive gloves, vests and collection tools to safely perform the task of collecting trash. Participants carpool to the area, then form groups to canvas the roadside for debris.

"I'm stunned by the amount of trash along the roadside and amazed at how much we collect in a short time," said Glenn's Adopt-a-Highway Coordinator



Photo by Doreen Zudell

This group of employees and retirees gathered to help with a clean up last October. Pictured, left to right, back row: Christie Myers, Fred Kobl (retiree), Dale Force, Monica Guzik, Hans Hansen, Aimee DeChant and Jennifer Rock. Left to right, front row: Lisa Ferenc, Carol Ginty, Gloria O'Donnell (retiree) and Ransook Evanina.

Christie Myers. "This activity offers an opportunity to personally make a huge difference on the environment. Last year's Adopt-a-Highway efforts reaped more than 1000 pounds of trash!"

As part of NASA Glenn's 75th anniversary beautification efforts, Myers urges widespread support for this outreach. Employees are encouraged to gather their officemates, branch or division co-workers and commit to one monthly

clean up. Contact Myers at 216-433-8874 for more information or visit <http://spaceflight systems.grc.nasa.gov/outreach/highway/highway.html>.

By Doreen B. Zudell

Emergency and Inclement Weather Lines

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