

NASA develops blueprint to address aviation issues

NASA'S Office of Aerospace Technology recently released an integrated strategy, or blueprint, that addresses solutions to critical issues in aeronautics by developing new technology leading to a bold era of aviation.

"The aeronautics blueprint identifies a new and revolutionary technology vision," said Administrator Sean O'Keefe. "Working in partnership with the Federal Aviation Administration, the Department of Defense, and industry, this blueprint will transform NASA and create the excitement necessary to inspire and develop an engineering workforce that will enable a new era in flight."

The blueprint identifies four elements on which NASA will focus: the digital airspace, revolutionary vehicles, security and safety, and a state-of-the-art, educated workforce.

"Aeronautics technology has not reached its limits," said Sam Venneri, associate administrator for the Office of Aerospace Technology at Headquarters. "Revolutionary advances in materials, information technology, complex engineering systems, and much more will enable aviation to surpass the achievements of the first century of flight."

The digital airspace will provide precise knowledge to pilots and

controllers of air traffic, terrain, and weather for greater safety and efficiency. Revolutionary vehicles will enable unprecedented levels of mobility and safety while protecting the environment and allowing airports to be quiet, friendly neighbors. Security and safety will protect life and property from hazards and malicious intent. A state-of-the-art, educated workforce will adapt to and use complex technology in a world of rapid advancements.

Director of Research & Technology Woodrow Whitlow served as Glenn's representative for the 6-month process to formulate the blueprint. He explained that he and representatives from Ames, Dryden, and Langley frequently met to map out the blueprint. They sought comments from industry and other government agencies, which helped guide them in the process.

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Glenn minority contractor among top NASA honorees

THE Agency honored three minority contractors for their innovative and outstanding contributions to its

mission during the NASA Minority Business Advocates Award Ceremony held February 20 at NASA Headquarters, Washington, DC.

Gilcrest Electric & Supply Company, Inc. of Elyria, OH (the prime contractor for Glenn's Maintenance, Operations, Recertification, and Engineering contract supporting primarily the aeronautic test facilities for the Facilities and Test Engineering Division) earned the NASA *Minority Contractor of the Year*

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Administrator Sean O'Keefe (left) presented Sam Gilbert, president of Gilcrest Electric & Supply Co., a prime contractor at Glenn, the NASA *Minority Contractor of the Year Award for FY01*.



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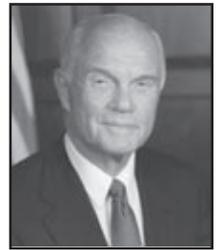
TECHNOLOGY SHOWCASE 12
 NASA's latest innovations featured in *Spinoff 2001*

Sen. Glenn to serve on NASA Advisory Council

Former U.S. Senator and veteran Mercury and space shuttle astronaut John H. Glenn, Jr., is among the six new, distinguished members of the

NASA Advisory Council. Glenn has agreed to serve on the panel that provides advice and counsel to the NASA Administrator.

"I am delighted Senator Glenn has accepted this responsibility and I look forward to his contribution to this vital advisory council," said Administrator Sean O'Keefe. "His



Senator Glenn

impeccable credentials as an aviator and space explorer, and his untiring dedication to the betterment of this Agency are valuable assets."

Astronaut Dr. Shannon Lucid selected as chief scientist



Dr. Lucid

Administrator Sean O'Keefe has selected space veteran and NASA astronaut Dr. Shannon W. Lucid as the Agency's next chief scientist.

The only woman to be awarded the Congressional Space Medal of Honor by the President of the United States, Lucid currently supports space shuttle and International Space Station missions as spacecraft communicator.

Lucid will be responsible for ensuring the scientific merit of the Agency's programs. She will report for duty as soon as she fulfills her responsibilities as capcom for STS-109. Lucid replaces Dr. Kathie Olsen, whom the President has announced he will nominate as the associate administrator for Science in the Office of Science and Technology Policy in the Executive Office of the President.

Gregory named AA of Space Flight



Gregory

Administrator Sean O'Keefe has named Frederick D. Gregory as associate administrator for the Office of Space Flight, placing him permanently in charge of the Agency's Human Exploration and Development of Space Enterprise.

Gregory, 60, has served as acting associate administrator for the office since December, when he replaced Joseph H. Rothenberg, who retired.

"I am pleased Fred agreed to make this commitment to what is one of the most important positions within NASA," O'Keefe said.

Astronaut William F. Readdy will remain in the critical senior leadership position of deputy associate administrator for Space Flight with expanded responsibilities over major programs, operations, and management of the Human Exploration and Development of Space Enterprise.

Before accepting his appointment in the Office of Space Flight, Gregory was the associate administrator for the Office of Safety and Mission Assurance.

New director at JSC

Jefferson D. Howell, Jr., will be the new director for NASA's Johnson Space Center (JSC) in Houston, TX.



Howell

Howell is a retired U.S. Marine Corps lieutenant general and former commander of Marine Forces, Pacific. He previously served as senior vice president and program manager for the Safety, Reliability, and Quality Assurance contract at JSC, and was employed by Science Application International Corporation.

Howell replaces Roy Estess, who was temporarily assigned to JSC last February as acting director. Estess returns to his duties as director of John C. Stennis Space Center.

ACTS recognized

The Society of Satellite Professionals International has awarded NASA the 2002 *Industry Innovators Award for Technology Development and Applications* for the Advanced Communications Technology Satellite (ACTS).

The society cited NASA for proving the viability of a number of first-time satellite communications technologies using ACTS. Glenn's Acting Deputy Director Gerald Barna, Space Communications Office Chief Pete Vrotsos, and ACTS Project Manager Robert Bauer accepted the award for NASA during a ceremony in Washington, DC on March 6.

AeroSpace Frontiers is an official publication of Glenn Research Center, National Aeronautics and Space Administration. It is published the first 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. Its circulation is approximately 6,700.

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DEADLINES: News items and brief announcements for publication in the May issue must be received by noon, Friday, April 12. The deadline for the June issue is noon, Thursday, May 16. Submit contributions to the editor via E-mail doreen.zudell@grc.nasa.gov, fax 216-433-8143, phone 216-433-5317 or 216-433-2888, or Ideas for news stories are welcome but will only be published as space allows.

NEWS NOTES

IFM EXPO: Find out more about the Agencywide Integrated Financial Management Program (IFM) at an EXPO on May 1, 10 a.m. to Noon, Project managers for each of the IFM modules—Core Financial, Travel Manager, Resume Manager, and Position Description Manager—will be available to answer questions and demonstrate software.

TAKE OUR CHILDREN TO WORK DAY (TOCTW): This year's TOCTW will be held on April 25. Children must be 9 to 15 years of age and either a child or grandchild of a Center employee. Online registration is available April 15–17 from the Women's Advisory Group web site: <http://www.grc.nasa.gov/WWW/AdvisoryGroups/WAG/> Registration for both badges and tours will start at 2 p.m., April 15. You may register without signing up for tours. Badge pickup will be from 11 a.m. to 1 p.m., April 22, Main Cafeteria. Onsite support service contractors should consult management to participate.

BPW SCHOLARSHIPS: The NASA Glenn Business and Professional Women's (BPW) organization is offering two scholarships, each for \$300, to any female employee (civil servant or contractor) enrolled in a program of higher education. Funds can be used toward tuition, books, or related expenses. The scholarships will be awarded on May 21 at the Installation of Officers meeting. Call Judy Budd, 216-433-5580, for information. Application deadline is April 19.

NASA-HUNGARIAN SPACE AGENCY EXHIBIT: To commemorate the first anniversary of a Space Act Agreement between NASA and the Hungarian Space Agency, the Cleveland Hungarian Heritage Society will hold a special event with a Glenn speaker on April 20 at 3 p.m. Exhibits from NASA and the Hungarian Space Agency will be on display at the Cleveland Hungarian Heritage Society until June 30.

RELAY FOR LIFE: The American Cancer Society Relay For Life of Medina County (Brunswick) will take place on June 7. Employees or retirees interested in joining a NASA team or making a donation can call Berny Baldwin, 216-



Director's Corner

with DONALD CAMPBELL

NASA's new vision and mission

A significant cornerstone of Administrator O'Keefe's message to the NASA staff during his Center visits was that it is crucial for all centers to work together to achieve the Agency's mission. Using this "spirit of cooperation," NASA's senior management team recently met to discuss and rethink the Agency's Vision and Mission. The results of our discussions were the establishment of new Agency Vision and Mission statements:

The NASA Vision: To improve life here, To extend life to there, To find life beyond.

The NASA Mission: To understand and protect our home planet, To explore the universe and search for life, To inspire the next generation of explorers...as only NASA can.

These statements purposely do not include specific words such as aeronautics or space. Rather, they represent the global overarching themes for the Agency. They will guide us as we set specific objectives and develop strategies to deliver on our commitments to the American public. As we continue to push the technological envelope in our respective mission areas, these statements serve to remind us that technology is not an end in itself; it provides the tools required to reach higher ideals.

I am proud to have been part of the process of forming these statements. I am also very confident that by working together as *one* Center and *one* Agency, we can further invigorate NASA.

433-2316, or Rick Baldwin, 216-433-6156, or home phone 330-225-3576. This annual fundraiser is an up-to-24-hr national event that teams 8 to 15 individuals who take turns walking or running around a track to raise donations from family, friends, coworkers, and neighbors. Luminarias will be sold to light in memory of someone who lost a battle with cancer or in honor of a cancer survivor.

KEEPING IN TOUCH: If you are an alumnus of the College of Aeronautics, Flushing, NY, who would like to stay current on the College's affairs, please contact Kalli Koutsoutis, assistant director of alumni and development, 718-429-6600, ext. 142 or E-mail at

kkoutsoutis@aero.edu. An alumni registration form is also available on the web site: www.aero.edu for your convenience.

GOLFERS WANTED: NASA Sunshine (mixed) Golf League is accepting new members for its Thursday league at _____ The league plays 9 holes with tee times from 3:30 to 5 p.m., April 25–September 12. Spouses and retirees are welcome. Dues are \$30. For information, call Donna Clements, 216-433-3566.

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people on the move

honors & awards

The American Institute of Aeronautics and Astronautics recently presented the 2002 *Losey Atmospheric Sciences Award* to **Thomas Ratvasky**, a lead flight research engineer in the Icing Branch. Ratvasky was recognized for his "outstanding contributions to the understanding of iced airplane aerodynamics and the communication of this knowledge to the pilot community through educational materials." Ratvasky conceived and led Glenn's Tailplane Icing Program, which produced training aids and information for pilots such as the video program *Tailplane Icing* and the Federal Aviation Administration Advisory circular *Ice Contaminated Tailplane Stall*.

Employees continue to share their creativity by contributing to the efficiency and economy of the Center. The following three people were recently recognized in the Employee Suggestion Award Program.

Deborah Cotleur and **Dionne Hampton** (QSS), both of the Office of Equal Opportunity Programs, received certificates for their joint suggestion concerning an Outreach Resources and Opportunity Fair, which was held last November. The fair resulted in many new volunteers for Glenn's outreach effort.

Gary Loder, Test Installations Division, was recognized for a suggestion to install flow switches that provide a quick "alarm" when flow levels exceed machine limits on combustion air dehydrators.

For information about the Employee Suggestion Award Program, visit the web site: <http://www.grc.nasa.gov/WWW/OHRS/Suggestion/>



Ratvasky



Cotleur



Hampton



Loder

new appointment

Dr. Dhanireddy Reddy has been named chief, Turbomachinery and Propulsion Systems Division, Research and Technology Directorate.



Dr. Reddy

Reddy will provide enabling capabilities to the aerospace community by leading research and developing technology in the areas of turbomachinery, combustion, propellants, icing, inlets, nozzles, propulsion system simulation, engine systems, and computational methods. Reddy will also lead partnerships with internal and external organizations to conduct research and development to plan new initiatives.

NEWS NOTES

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SATURDAY GOLF LEAGUE: The NASA Golf Association (NGA) is looking for new members. The NGA is an 18-hole travelling league that plays Saturday mornings from May through September. NASA employees (civil servants and contractors), retirees, family, and friends are welcome. Dues are \$30. Call Rob Button at 216-433-8010 or visit <http://www.nasagolf.com>

GOLF & KID'S FAIR: Mark your calendar for June 14 to attend the second annual Lewis Little Folks Benefit Golf Outing and Kid's Fair. For more details, call Dave Williams, 440-716-0798.

LESA MEETING: LESA/IFPTE, Local 28, will hold its monthly membership meeting on Wednesday, April 10 at noon in

Exchange Corner

- The Exchange Store offers advance tickets for the I-X Indoor Amusement Park (\$12 per ticket), March 28-April 21, and discount movie tickets for Regal Cinema, General Cinema, and Cinemark theaters.
- Cleveland baseball season opener lunch special on Monday, April 8, will feature two hot dogs, peanuts, and canned pop for \$1.99. Stop in the Exchange Store the same day for 20 percent off.
- The new GRC Exchange Coffee Club mugs are available at Main and DEB Cafeterias. Purchase the mug for \$2.99 and coffee refills are only 50 cents through June 30.
- Don't forget new extended hours. The Main Cafeteria is open until 5:30 p.m., Monday through Friday, for late afternoon snacks, sandwiches, entrees, pizza, and ice cream. The deli is also open until 5:30 p.m. with convenient take-home items.

RE DISCOVER AMERICA
@ your library

National Library Week
April 14-20

at a glance



Photo by Elizabeth Dabrowski, Magnificat High School

reaching out to students

Glenn (coordinated through the Office of Educational Programs) and the Cleveland Area National Engineers Week (N.E.W.) Committee participated in the annual N.E.W. national program, February 17-23. Sixty-five speakers (54 Glenn civil servants and support service contractors and 11 engineers from local corporations and universities) visited 58 schools (72 classrooms in Cuyahoga and surrounding counties in Ohio). The volunteers reached over 5000 students. Pictured left is Kim Pham, Aeropropulsion Research Program Office, speaking to Chemistry classes at

In addition to providing information on careers in science and engineering and suggesting courses students should take to prepare for careers in these fields, Pham shared a woman's perspective. She explained to the all-girl audience that women's ability to work well in teams, to multitask or parallel process, and to be naturally creative make them ideal candidates for technical fields. She emphasized that women can successfully maintain fulfillment in both their career and personal lives.

unbiased respect

"Racism will continue because it's in the fabric of this country," said Thomas Todd, the featured speaker for Glenn's Black History Month Observance. The noted Chicago attorney and long-time civil rights activist cited how the



Photo by Marvin Smith

country's preoccupation with race and the psychosomatics of racism dictate that people making laws are compelled to first protect the class they represent. Therefore, the challenge of the 21st century is how we (all of us) control racism's influence when we're in a position to be fair. Todd said, "It will come down to taking a position of 'equality of assigned value'—an individual's personal commitment to fairness and mutual respect absent any presumptions (based on sex, color, religion, etc..) when in a position to decide promotions." Todd is pictured after the event with Renee Batts (0180).

local connection

A 1970 graduate of Western Reserve Academy in Hudson, OH, Astronaut Lee Morin is one of seven crew members for the STS-110 mission that begins the third and final phase of construction on the International Space Station. The Space Shuttle *Atlantis* is scheduled to launch on April 4.



40th anniversary

The Young Astronauts Club from John Glenn Elementary School

visited

Glenn on February 20 as a part of the Center's commemoration of the 40th anniversary of John Glenn's Mercury flight. Students started their day at Glenn's Aeronautics Educational Laboratory (AEL) in the Tech Park, toured the Visitor Center including the *John Glenn: Tribute to an American Hero* gallery, and participated in an information scavenger hunt. They also viewed the STS-95 mission highlight video documenting John Glenn's historic return to Earth orbit aboard the Space Shuttle *Discovery*.



Photo by Doreen Zudek

John Glenn Elementary School's Danny Glazer (grade 5) and Nancy Boscarello (grade 6) experienced flying through this flight simulator at the Visitor Center.

Thrusters precisely guide a satellite in space

Glenn news release

A new generation of thrusters has been used to precisely guide and point a satellite in space, paving the way for use of this technology on future spacecraft to save weight, fuel, and cut power consumption.

Engineers used Pulsed Plasma Thrusters (PPT) onboard NASA's Earth Observing (EO-1) satellite as a precision attitude control actuator in space. A single PPT unit with two opposing thrust nozzles controlled the 1166-lb (529-kg) spacecraft's pitch (up and down) axis for 4 hours as it made several orbits of the Earth.

Continued testing of the EO-1 PPT is expected to demonstrate additional attitude control capability and thruster performance characteristics.

Glenn developed the PPT system, and Goddard Space Flight Center managed, designed, and implemented the PPT experiment into the EO-1 spacecraft.

"The path is now open for PPT use on new missions due to the successes in our flight validation and ongoing PPT development," said Scott Benson in Glenn's Power and Propulsion Office.

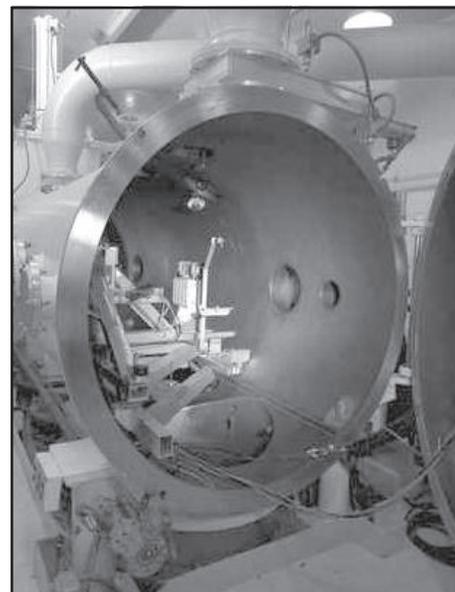
"Our initial operations with the PPT have been highly successful and we have reached a significant milestone," said Goddard's Chuck Zakrzewski. "The thruster and the entire spacecraft performed as expected during the PPT calibration and closed-loop attitude control tests."

The PPT is a unique electromagnetic propulsion system that utilizes solid bars of Teflon® as fuel. Pulses of electricity, lasting only one one-thousandth of a second, are fired across the Teflon® bar. Each pulse turns a minute amount of the Teflon® into an electrically charged gas that is accelerated out of the thruster. Each pulse has approximately the same force as dropping a paper clip into the palm of your hand from about one-half inch away. Because the PPT also uses electromagnetic forces, it is three times more fuel efficient than conventional chemical thrusters.

NASA's EO-1 spacecraft is the first to fly the smaller, lighter, and more efficient new-generation PPT. Engineers tested the thruster's precision attitude control ability by using the PPT in place of one of the conventional reaction wheels. This is the first time this has ever been done and demonstrates that the technology could be used as a precision attitude control actuator as well as a precision orbit adjust thruster.

"Potentially, a set of PPT's could be used to replace reaction wheels and their associated electromagnetic torquers as well as the conventional chemical propulsion for both orbit and attitude control," Zakrzewski said. "An analogy to this would be an automobile that has its power steering and its forward motion supplied by its common power source—the car's engine—rather than separate, multiple power sources."

"Such a configuration would offer better performance and likely be more weight and cost effective than conventional systems," Benson said. "The PPT's extremely small impulse level, high-propellant efficiency, low power, and compact size make it well suited for a number of precision pointing and positioning functions on future spacecraft."



EO-1 Pulsed Plasma Thruster installed on a thrust stand in Glenn's Vacuum Facility 3 (Bldg. 16).

The PPT demonstration is the result of a partnership among Goddard and Glenn, General Dynamics Space Propulsion Systems, and Swales Aerospace. The EO-1 spacecraft was built by Swales Aerospace. The spacecraft is part of the New Millennium Program managed by the Jet Propulsion Laboratory. ♦

Blueprint identifies new and revolutionary technology vision

CONTINUED FROM PAGE 1

"Researchers at Glenn can play a vital role in making the vision outlined in the blueprint a reality," Whitlow said. "Revolutionary propulsion systems are required to enable the flight vehicles of the future. These propulsion systems will allow quieter aircraft that have near-zero emissions. This will eliminate the need for airport noise restrictions and lead to reduced greenhouse gases and improved local air quality. The result

will be 'good-neighbor' airports that spur local economic development. Glenn will have a vital role in enhancing the safety and security of air travel. In addition, our expertise in communications, navigation, and surveillance will facilitate growth of the aviation system." ♦

A copy of this report is available on the Internet: <http://www.aerospace.nasa.gov>

P2 Team enhances environmental harmony

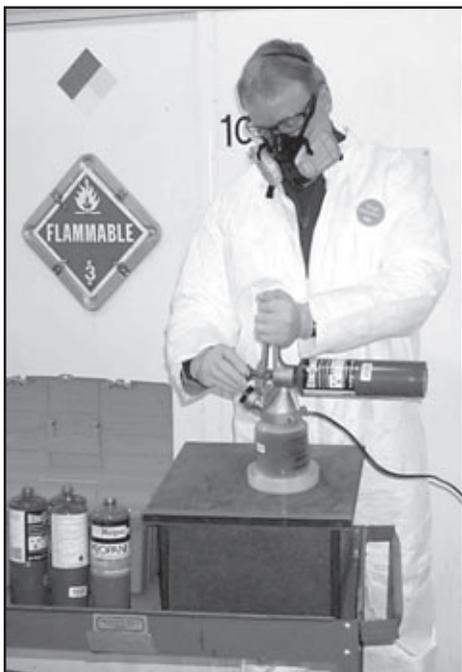
BY S. JENISE VERIS

THERE are people who say they want to help make the world a safer place in which to live, and then there is Glenn's Pollution Prevention (P2) Team, partners in the Environmental Management Office (EMO) effort to ensure a safe workplace and to minimize impact to surrounding communities.

"We're here because we know it's important and because we want to make a difference," said P2 member Antoinette Mayor, EMO. "Our team reflects a large-scale effort spreading nationwide to address preservation of our environment."

The P2 Team maintains a Pollution Prevention Program guided by NASA's ISO-14001-compliant Environmental Management System, which was created in response to Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*.

The P2 Team, led by EMO's Daniel Papcke, includes staff from EMO, Plum Brook's Environmental Coordinator



Joseph Trapp, SIAC/0540, performs propane cylinder metal recycling.

Robert Lallier, and volunteers from across the Center. All are knowledgeable about environmental issues and capable of conducting Pollution Prevention Opportunity Assessments (PPOA's) of various facilities across the Lab, but they depend on the cooperation and coordination of employees from the line organizations for process implementation.

"The goals of the P2 Team were revised and refocused to be more proactive in their efforts to identify, evaluate, and implement pollution prevention projects," explained EMO Chief Michael Blotzer. "They have already identified 20 Pollution Prevention Opportunities (PPO's) for FY 2002 and implemented a P2 activity to eliminate hazardous materials in 3 years."

For instance, methylene chlorides, 1-1-1 trichloromethane, and methyl ethyl ketone, chemicals used Labwide as surface cleaners and preparation agents, have been identified as potential pollutants. As a result, they have been listed for substitution.

Recycling empty propane bottles has turned out to be a relatively simple project with big benefits. "The propane cylinder metal recycling requires removing a stem and carbon cartridge before the bottles can be recycled as scrap metal," explained Papcke. "It currently costs \$200 to dispose of non-recycled bottles. We ordered the device, installed it, and began using it on a regular basis. The investment has already paid for itself."

Perhaps one the best P2 "opportunities" was the addition of Dr. Walter Kocher, a professor teaching solid waste engineering and pollution prevention courses at Cleveland State University. Kocher serves as a P2 team member through a grant that has enabled him to continue developing his Real-Time Environmental Monitoring System (RTEMS) initiated as an ASEE/OAI Summer Research Fellow in 1999. The bench model of Kocher's RTEMS was demonstrated to have numerous potential benefits.

"This partnership has enabled an expanded scope of work that reflects a



- **April 15–21**—Earth Day Exhibit and souvenirs in the Main Cafeteria,
- **April 15**—Tom Henry, Ohio Division of Wildlife, will be the Earth Day featured speaker, 10 to 11 a.m. in
- **April 16**—Earth Day theme week of activities at Lewis Little Folks.
- **April 17**—Old Computer Roundup for Cuyahoga County. Glenn's P2 Team will be at the Berea Fair Grounds to help properly dispose of unwanted computers dropped off by Cuyahoga County residents.
- **April 17**—AeroBus at Youngstown State University Earth Day Celebration.
- **April 21**—Glenn Exhibit at EarthFest 2002 at the Zoo.

more global approach to P2 projects and allowed my students to create case studies from real-world P2 Team experiences that have given them the opportunity to exchange valuable information," Kocher said. "It has been a win-win situation."

The success of this partnership is punctuated in a second grant funding Glenn's Garnet Recycling Project, which is primarily student supported. The goal is to develop a process to recover spent garnet sand used as a refining material for water-jet cutting devices and reuse the expensive stones. The project could potentially save as much as \$7,000 a year, if applied to other water-jet machines.

The P2 team plays a vital role in Glenn's comprehensive approach of executing environmental activities. However, Lab-wide participation is what pushes progress. One way everyone can become a partner in this mission is to submit pollution prevention and resource conservation ideas to the Employee Suggestion Award Program for a monetary reward—when you win, the Center wins. ♦

Aylward recognized for community service

BY DOREEN B. ZUDELL

THE Cudell Neighborhood Community Development Association in Cleveland recently presented Hugh Aylward, IDI/Logistics and Technical Information Division, with a "Certificate of Appreciation" during a ceremony that included members of the Cleveland Police Department, Councilman Jay Westbrook, and Mayor Jane Campbell. An audio-visual technician in the Imaging Technology Center (ITC), Aylward analyzed evidence in a "hate crime" case that led to the arrest and conviction of four suspects.

Marvin Cross of the Cleveland Police Department's Fugitive Unit, now commander of Community Policing, explained that for over a year several youths had tormented a woman by using racial slurs and obscenities. They had also broken into her home and stolen and burned her car.

"We discovered that a neighbor's security camera had captured footage of the crime. However, bad lighting and obstruction from trees and vehicles made it difficult to identify the suspects' car," Comdr. Cross explained. "Our Homicide Unit, which had worked with Hugh on previous cases, recommended that we ask him to take a look at the tapes."

With the same state-of-the-art equipment that is used for analyzing images taken during testing by Glenn researchers, Aylward slowed the video down, digitized selected frames, and applied image enhancements while zooming in on particular areas of the footage.

"During the process, I discovered distinguishing characteristics of the suspects and their car," Aylward explained. "This gave the police enough information to identify the car and eventually arrest the suspects."

This is not the first time Aylward or the ITC has aided law enforcement in forensic video analysis. Over the past 10 years, Glenn has become known and respected throughout Ohio and

surrounding states for analyzing video associated with crimes such as counterfeiting, assault, and homicide. Although Aylward is the forensic video point of contact, he said that others in the TC, such as Video Engineer Jim Firak (IDI), assist him in the process.

"Most police departments—due to lack of funds and/or knowledge—don't have the equipment necessary to accurately examine videotape,"

Aylward said. "I look at my role as providing a resource, either by analyzing tapes myself or recommending

other resources. It's a way of giving back to the community as well as the Nation that supports us." ♦



ITC's Hugh Aylward works with law enforcement officers such as Detective Rebecca Steiner (pictured) of the Medina Township Police Department on criminal cases where videotape is used as evidence.

OIG and ITC cohost video analysis seminar

GLENN'S Office of Inspector General (OIG) and the Logistics and Technical Information Division's Imaging Technology Center (ITC) hosted a half-day seminar on the science of forensic video analysis in the DEB Auditorium on February 20.

Entitled *Unlocking Hidden Evidence*, the seminar featured renowned forensic video expert Grant Fredericks, a former police officer in Vancouver, Canada. Nearly 300 people—in the areas of law enforcement, security, and prosecution—from a tristate area attended the event to learn about the latest tools and methods for processing video.

Hugh Aylward, IDI/ITC, who has aided law enforcement agencies by analyzing videotape for criminal investigations, explained that forensic video analysis is a science involving

the examination of images and sounds captured by a videocamera and recorded to videotape, or to a computer hard drive, or other digital media. It includes photographic comparisons of individuals, clothing, and property captured by the camera to images of known individuals, clothing, and property.

Aylward, along with Donald Catanzarito, senior resident agent in Glenn's Office of Criminal Investigations, OIG, coordinated the seminar as a community service to municipal, state, and federal agencies, as well as individuals involved in security.

"It's a matter of sharing," Catanzarito said. "If NASA technology and knowledge can aid the law enforcement community, we want to facilitate the process." ♦

Glenn gears up for "Centennial of Flight" celebration

BY DOREEN B. ZUDELL

IN 2003, NASA will join this Nation in celebrating a century of powered flight propelled by the Ohio-born Wright Brothers, who, on December 17, 1903, turned their dreams into reality and revolutionized the world.

Three premier events are scheduled to spotlight this historic anniversary throughout 2003. The events include the *Aviation World's Fair* in

the *Inventing Flight Celebration* in (July 4-20), and the *First Flight Celebration* in (Dec. 13-17).

While the Agency (with Glenn's participation) will lead in each of these major events, Glenn's Centennial 2003 Action Team is working to coordinate participation in other venues to highlight the Center's contributions to aviation (i.e., school assemblies or presentations, technical conferences, and local festivals).

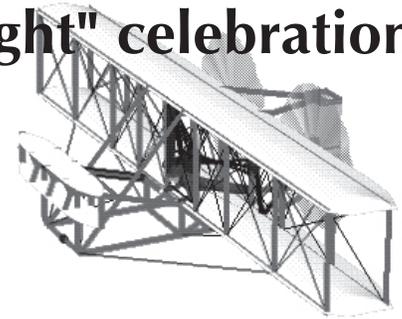
"Glenn's Centennial 2003 Action Team that comprises a cross section of employees throughout the Lab first met in September 2001," said Liaison Officer Karen Hickman, program chair for Glenn's Centennial 2003 activities. "Since that time, we have worked on an integrated plan for participation in various centennial events locally and throughout the country."

Centennial 2003 Action Team

Karen Hickman, chair (0140), Barbara Mader (0142), Donald Palac (0170), Kristen Easton and Bonnie Smith (ID1/0620), Sandy App and Mary Tharp (2000), Lori Manthey (2100), Jim Giomini and Susan Hennie (5000), Bryan Palaszewski (5830), Tom Benson and Theresa Benyo (5880), John Mudry (6120), Rhonda Holstein (7000), Carol Galica (ID1/9200), David DeFelice and Orlando Thompson (9300), and Donald Costello (9400)

Hickman stressed that employee and retiree volunteers (in addition to the core team) are crucial to Glenn's participation in the celebrations. She explained, "We'll be relying heavily on volunteers to share their memories as well as their time." ♦

For more information about NASA's plans for the 2003 Centennial of Flight celebration, see the web site: <http://www.grc.nasa.gov/WWW/Wright/>



Editor's note: A series of articles in future AeroSpace Frontiers issues will highlight specific areas where the Centennial 2003 Action Team will rely on your help. A list of team members is included on this page.



Graphic by Terry Condrich

A high level of verification

SEVEN times a year, the KC-135 turbojet touches down at Glenn. This airborne test facility complements the ground testing capabilities available to microgravity science customers in the 2.2-Second Drop Tower and Zero-Gravity Facility. The Micro-heater Array Boiling Experiment (MABE) was one of five Glenn experiments that recently used NASA's unique flying facility.

MABE is an investigation of boiling phenomena in both Earth and microgravity environments. It utilizes an array of 96 platinum resistance heater elements (each 0.26 by 0.26 mm in size) that are individually controlled to maintain a constant temperature and to measure power. Power levels are substantially greater when liquid is covering the heater as opposed to vapor. With this array of microheaters, it is possible to make localized heat-transfer measurements. In Earth gravity, bubbles grow to about the size of an individual heater before buoyancy forces the bubble to float away. In reduced gravity, a single vapor bubble can grow to cover the entire 96-heater array.

"Aboard the KC-135, the principal investigator and project scientist (Dr. Jungho Kim, University of Maryland and John McQuillen, Microgravity Fluid Physics Branch) observed data collected realtime and reconfigured test conditions as necessary between parabolic maneuvers that provided 20 to 25 seconds of weightlessness," explained Glenn's KC-135 Test Director James Withrow, Space Electronic Test Engineering Branch. "An average flight lasts 2 to 3 hours and consists of 30 to 40 parabolas. A lot was accomplished in one day and without the expense of space flight."

The Reduced Gravity Program Office operated by Johnson Space Center approves scheduling and coordination of the KC-135 flights. To date, the program has flown over 126,000 parabolas in support of Mercury, Gemini, Apollo, Skylab, Space Shuttle, and International Space Station.

Glenn's James Withrow (right) in the KC-135.



Awards highlight outstanding contributions

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award for FY01. Muniz Engineering, Inc., Houston, TX, took home the award for *Minority Subcontractor of the Year* and SA Technologies, Inc., Marietta, GA, accepted the *NASA Women Owned Business of the Year* award.

Glenn managers cited that Gilcrest earned a 96-percent performance rating and achieved all scheduled work tasks at or below budget last year. The nomination also noted Gilcrest's cost-saving techniques, including a thorough engineering design conducted for the replacement of prefilters on Glenn service air machines, which saved the Center \$20,000 and enabled the purchase of another set of filters for a fourth service air machine previously delayed due to budgetary constraints.

One of three NASA *Exceptional Achievement Awards* recognizing outstanding advocacy, contributions, and innovative approaches to utilizing minority and women owned businesses was presented to Glenn's Dr. Grigory Adamovsky, Optical Instrumentation Technology Branch. Adamovsky was lauded for his technical assistance to and advocacy of minority business and partnerships with Historically Black Colleges and Universities. For example, he supported and monitored the grant that established an Integrated Optics Laboratory at Alabama A&M and also collaborated with a Hampton University, VA, professor to earn a NASA Research Award worth \$75,000.

Glenn was also recognized as one of eight NASA field centers that met or exceeded their negotiated Small

Business goals for FY00. Glenn's contribution to NASA's Socioeconomic Goals exceeded 40 percent of the Center's contract dollars. Ralph C. Thomas, III, associate administrator for Small and Disadvantaged Business Utilization and moderator for the event, noted Glenn's consistency as one of the top NASA supporters of the country's socioeconomic goals by executing the Agency's first competitive Historically Underutilized Business (HUB) Zone set-aside award. Center Director Donald Campbell graciously accepted the award on behalf of the Center.

Administrator Sean O'Keefe conferred the awards on all recipients following his *State of Small Business at NASA Address*. ♦

IN MEMORY



Buchele

Donald Buchele, 81, a Glenn retiree with 37 years of service and more recently a consultant for solar concentrator technology development with Zin Technologies, recently died.

Often referred to as "Mr. Optics," Buchele earned international recognition in the field of optics due to the success of his schlieren optic design system for the 8- by 6-foot and 10- by 10-foot supersonic wind tunnels, as well as numerous other optical systems around the Lab. After retiring in 1980, Buchele returned to Glenn 6 years later to work for Zin's predecessor, ADF (Aerospace Design Fabrication), where he earned recognition for his work on such projects as the Surface Tension-Driven Convection Experiment and the solar simulator for the 2-kW Solar Dynamic Ground Test Demonstrator in Vacuum Tank 6. He also received a distinguished publication award in 1996. He was a colonel in the Confederate Air Force, a group that restores WWII aircraft and flies

the planes at air shows across the country.

Charles Ferraro, 88, who retired in 1970 with 25 years of NASA service, recently died. He had worked as a placement officer.

Mildred Hutchinson, 81, who retired in 1994 with 45 years of NASA

service, recently died. She had worked as a patent assistant.

Carl McLucas, 69, who retired in 1988 with 33 years of NASA service, recently died. He had worked as an aircraft mechanic in the Test Installations Division. His daughter, Sandy Barrow, works in the Facilities and Test Engineering Division.

IN APPRECIATION

I would like to thank my NASA Glenn "family" for your support at the death of my husband, Ron. Your prayers and compassion meant a great deal, both during Ron's battle with cancer and at the time of his passing.

—Carol Cash, GE Aircraft Engines

I want to thank the employees who anonymously participated in the Leave Donor Program on my behalf. Having only worked at Glenn a little over a year prior to my surgery, your leave donations made a big difference in my life. The surgery went well and the tumor was benign. It meant a lot that NASA employees who didn't even

know me and were concerned, helped me out. I just want to thank everyone for your prayers, kind words, and again for the donated leave.

—Colleen Davis-Pearson

My family and I would like to express our gratitude to all of my friends at Glenn who expressed their sympathy and generosity at the unexpected passing of my father, George J. Dorony. A special thanks to my friends and coworkers in the Test Installations Division for the lovely flowers, thoughtful cards, and support at our time of sorrow.

—Tom Dorony & Family

Behind the Badge...

a closer look at our colleagues

Leslie Greenbauer-Seng



Job assignment: Chief, Environmental Durability Branch in the Materials Division.

Time at Glenn: I've been here for 23 years.

Hometown: I was born and raised in Grand Rapids, MI. I have lived in since 1980.

Describe your family: My husband is Gary Seng, who also works at Glenn. We have three daughters—Erica and Paula, who are 15 years old, and Stephanie, who is 12 years old.

Favorite food: I love fresh fruits and vegetables, and Einstein's raisin and cinnamon bagels.

Favorite music: Instrumentals—classical, pop, rock, and inspirational.

Favorite book or magazine: I enjoy historical fiction, mysteries, biographies, gardening, and home decorating books and magazines.

Favorite movie or play: To pick just one is not easy; however, since I've seen the *Wizard of Oz* once or twice a year throughout my life, it must be special to me.

Activities when away from Glenn: I enjoy landscape design and planting, reading, and working out at the gym. But in reality most of my time is spent transporting my daughters and their friends to their many activities.

Gregory Bobbitt



Job assignment: I'm employed by InDyne, Inc., and serve as administrative coordinator, Minority University Research and Educational Programs in the Office of Equal Opportunity Programs. It's rewarding to know that the work I do makes a difference in the lives of thousands of children from underserved communities.

Time at Glenn: Almost 2 years.

Hometown: I was born and raised in Cleveland, OH.

Since I'm single and don't have children yet, I'm able to participate in a lot of the culture and activities this city has to offer.

Describe your family: I come from a close-knit family of three children—two sisters and myself. I'm the middle child. Our mother has always instilled in us the importance of family and the benefits a strong family can provide throughout our lives.

Career alternative: If I wasn't at Glenn, I could imagine myself in some area of politics. I enjoy community outreach and making a difference in people's lives. I'd like to take on more of a community leadership role.

Favorite food: Fried pork chops and anything with peanut butter!

Favorite music: I enjoy a variety of music genres; it really depends on my mood. For instance, when I'm relaxing I listen to Maxwell or Grover Washington, Jr. For inspiration, I like Kirk Franklin or Fred Hammond. However, for motivation (when I'm performing a large task), it has to be rap such as DMX or The Goodie Mob.

Favorite web site: bluefly.com

Favorite movie or play: *Love and Basketball* and *Remember the Titans*.

Person you most admire: My mother is my motivation. She has always encouraged me not to settle for mediocrity. I have witnessed many times when she has sacrificed so that my sisters and I could have a better life. She has truly taught me to reach beyond the stars.

Graphic by Kelly Shankland

Employees achieve weight management goals

THE Fitness Center (Singleton Health Services) is proud to recognize the following employees who participated in the annual weight management program and stuck to their weight loss or weight maintenance goals over a 1-year period.

David Bennett (AKAC/7270), Doris Britton (5420), Robert Buckwald (ANLX/6500), Bella Fallner (RSIS/7725), Kenneth Fisher (2400), Anthony Hackenberg (7170), Kristin Jansen (ANLX/6500), Lamont King (7160), Diane Malarik (6724), Barbara Mc-

Kissock (5420), Kevin McPherson (6727), Marsha Nall (6724), Shelly Sweatt (JDDI/0620), Erlene Trsek, (7130), and Paulette Ziegfeld (RSIS/2900).

NASA publication brings space technology down to Earth

ONE of the most important by-products of aerospace exploration and research is finding ways to apply these cutting-edge technologies to life here on Earth. Many of the conveniences people take for granted today were first developed by NASA.

The latest Agency innovations are now featured in the 2001 issue of *Spinoff*. A new video enhancement tool and a noninvasive heart monitor are just a couple of the Agency's nearly 50 commercialized products featured.

In addition to highlighting new commercial products benefiting from NASA technology, *Spinoff 2001* revisits past innovations in a special millennium feature section.

Since 1976, *Spinoff* has showcased more than 1,300 public benefits of NASA's commercial partnerships with private industry. The publication also covers the Agency's research and development activities and serves as a reference resource to NASA's commercial technology network.

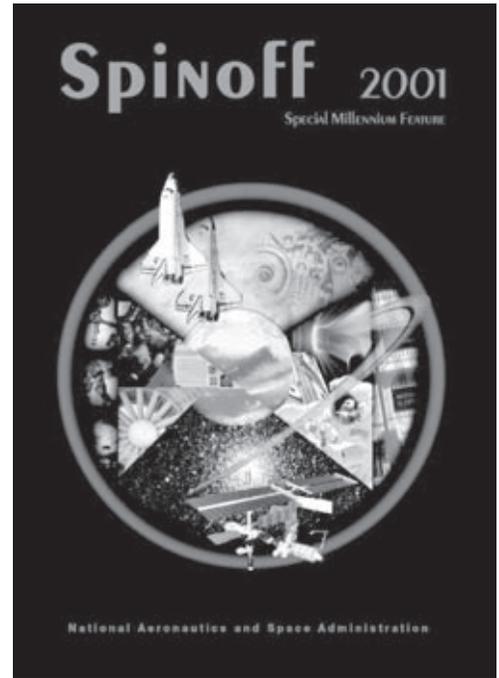
Since NASA's inception in 1958, technologies resulting from the space program have introduced Americans to

hundreds of new or improved products. The *Spinoff 2001* describes the latest products in the areas of health and medicine, transportation, public safety, computer technology, manufacturing technology, consumer/home/recreation, and environment and resources management.

Laurie Stauber, Glenn's *Spinoff* coordinator in the Commercial Technology Office, said Glenn has made significant contributions to *Spinoff* over the years.

"Although the publication was not yet established during the Apollo era, our technology spinoffs included cordless rechargeable batteries for small tools like cordless drills," Stauber said. "In the late 70's, Glenn's technology took the form of textured medical implants as well as cataract removal. More recent examples include the Atomic Art Restoration process, Moen's LifeShine faucet finish, and the Tempest/Embedded Web Technology. Glenn's work in the 90's with General Electric on the GE90 turbofan engine is considered to be one of our most significant successes."

Online versions of *Spinoff*, beginning with the 1996 issue, are available on



the World Wide Web. The *Spinoff* web site also contains a searchable database of all technologies featured in the past 26 years. Companies interested in showcasing their product in *Spinoff* or anyone wishing to request the latest issue can find information on the web site. ♦

Additional information about the NASA Technology network and an online version of *Spinoff* are available on the Internet: <http://www.sti.nasa.gov/tto/>
<http://www.nctn.hq.nasa.gov/>

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VOLUME 4 ISSUE 4 APRIL 2002

