



NASA selects Government and Commercial Invention of the Year

Glenn news release

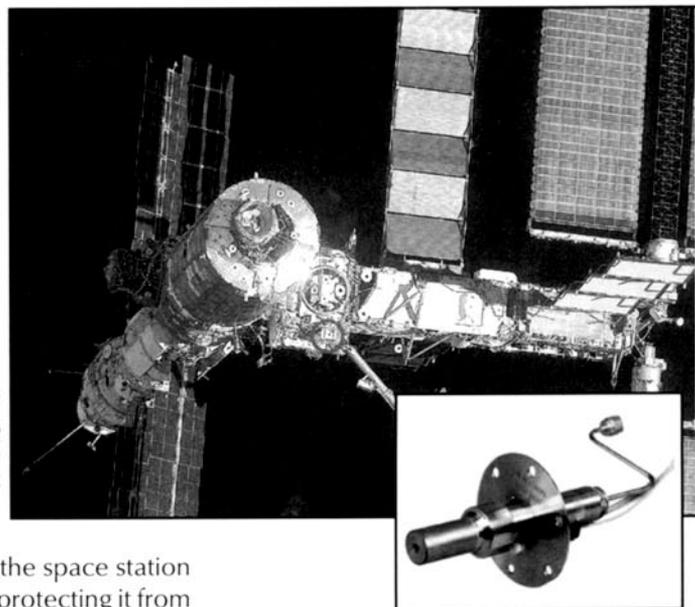
A device that ensures the safety of the International Space Station and its crew and a miniature pump designed to help your heart have received NASA's Government and Commercial Invention of the Year awards.

The NASA Government Invention of the Year award goes to researchers from Glenn. They invented a hollow cathode assembly that is the primary component of the space station's plasma contactor system. This mission-critical system protects the space station and its crew from the dangers associated with electrical charges.

As the space station floats through space in low-Earth orbit, the surface of the structure builds up a high-voltage,

Pictured (inset) is the hollow cathode assembly. Its location is identified on the photo by the black circle on the bottom of the International Space Station.

Photo courtesy of NASA Archives



static charge. The plasma contactor system safely grounds the space station from this high voltage, protecting it from arcing that could severely damage its surface. This device is unique because it reduces the static charge in a self-regulating manner to levels safe enough for astronaut spacewalks.

Michael Patterson and Timothy Verhey, On-Board Propulsion Branch, and George Soulas, Analysis and Management Branch, developed the technology from a laboratory device to flight-qualified hardware at Glenn, and then manufactured the space flight hardware for the orbiting research platform. Their efforts in-

Continued on page 2

Nuclear Regulatory Commission approves NASA decommissioning plan

Glenn news release

The U.S. Nuclear Regulatory Commission (NRC) has approved Glenn's plan for the decommissioning of the closed Reactor Facility at

The Reactor Facility consists of a 60-megawatt test reactor and a 100-kilowatt mockup test reactor that operated from 1961 to 1973 testing the effects of radiation on materials used in space flight. Glenn expects the decommissioning to be completed by the end of 2007.

Glenn has assembled a Federal Sector Team, which brings together NASA, Argonne National Laboratories (part of the U.S. Department of Energy), and the U.S. Army Corps of Engineers. This Federal partnership will combine the expertise and experience of these three agencies for the decommissioning process.

Continued on page 3

Inside

WATERY PROTECTION 6
Unique facility will test dual flywheel systems

CLEVELAND HOSTS FIRST..... 8
Annual robotics competition makes Regional debut

LAB IN THE SKY 12
Lear Jet sets test flight record

System measures water mass and more



The launch of the twin satellites that make up the Gravity Recovery and Climate Experiment (GRACE) began NASA's Earth System Science Pathfinder Program, designed to increase the accuracy of many techniques used by scientists who study Earth with space-based instruments. GRACE is a joint NASA/German Center for Air and Space Flight mission managed by the Jet Propulsion Laboratory that will precisely measure Earth's shifting water masses and map their effects on Earth's gravity field. For more information, refer to <http://www.csr.utexas.edu/grace>.

History volume receives Emme Award

The first comprehensive NASA history of the Soviet human space flight program entitled "Challenge to Apollo: The Soviet Race to the Moon, 1945-1974," by Asif A. Siddiqui, received the Emme Award for Astronautical Literature. The award is named for the first NASA historian, Eugene Emme. The volume goes beyond the basic facts and weaves together broader themes, including a challenge to Western conventional wisdom that the Soviets always tended toward incremental—rather than revolutionary—technological innovation. Details on ordering the book can be found at <http://history.nasa.gov/gpo/order.html>.

Software helps construction industry

Virtual reality software developed at Ames Research Center as a tool to enable mission scientists and operations personnel to command and control remote robotic spacecraft in a Mars virtual environment is now being used to build and plan a complex industrial facility in the "virtual world." The NASA technology was transferred in a license agreement to Reality Capture Technologies, Inc., of San Jose, CA, to advance the platform for use as a productivity/life-cycle, information-management tool to create and validate startup procedures.

Model traces source of worldwide precipitation

A new NASA computer model developed by Meteorologist Mike Bosilovich, Data Assimilation Office at Goddard Space Flight Center, and coworker Siegfried Schubert can pinpoint individual regional sources of precipitation. The model simulates water movement in the atmosphere around the world and traces it from the places where it evaporates to the places where it falls back to Earth. Bosilovich and Schubert have demonstrated the model's capabilities by analyzing the atmospheric water cycles over India and North America. Additional information is available at <http://www.gsfc.nasa.gov/topstory/20020401watervapor.html>.

Shuttle to carry Glenn hardware to station

The STS-111 mission of Space Shuttle *Endeavor* is scheduled to launch May 30. Glenn's SAMS II (Space Acceleration Measurement System), an instrument to detect and report data on vibrations onboard the space station, and the hardware for InSPACE (Investigating the Structure of Paramagnetic Aggregates of Colloidal Emulsions), a new glovebox experiment that will be activated later this fall, will be onboard. InSPACE is designed to obtain fundamental data of the complex properties of magnetorheological fluids, a new class of smart materials capable of providing rapid rheological response that can be used to advance such items as brake systems, seat suspensions, robotics, clutches, airplane landing gear, and damper systems. Juan Agui and Jack Lekan, both members of the Microgravity Division, are the InSPACE project scientist and project manager.



Inventions of the year

Continued from page 1

creased the lifetimes of hollow cathodes with inert gases from 500 to 28,000 hours, which enables their use on ion thrusters, a key propulsion technology for NASA spacecraft missions such as Deep Space 1.

Earning the NASA *Commercial Invention of the Year* award is a miniaturized ventricular-assist device (VAD). Initially called the NASA/DeBakey heart pump, it is based in part on technology used in space shuttle fuel pumps. It is intended as a long-term "bridge" to a heart transplant or as a permanent device to help patients toward recovery to a more normal life.

The concept for the pump began with talks between Dr. Michael DeBakey of Houston's Baylor College of Medicine and one of his heart transplant patients, NASA engineer David Saucier. Saucier, who worked at Johnson Space Center in Houston, knew firsthand the urgency heart-failure patients feel waiting for a donor heart. He also knew space shuttle technology.

Six months after his 1984 heart transplant, Saucier was back at work and arranged for fellow NASA engineers James Akkerman, Bernard Rosenbaum, Gregory Aber, and Richard Bozeman to meet with DeBakey, Dr. George Noon, and other Baylor College of Medicine staff.

The result was a remarkable battery-operated pump—approximately 3 inches long, 1 inch in diameter, and weighing less than 4 ounces—that seems to be an answer to the decades-long quest to develop an implantable VAD.

NASA, in keeping with its mission of transferring space-based technology to the private sector and after intense competition, granted exclusive rights to MicroMed Technology, Inc., Houston, in 1996. In European trials, the MicroMed/DeBakey VAD was implanted in 115 people without incidence of device failure. U.S. trials will involve 178 implants, of which 21 have already been successfully performed. ♦

The Integrated Financial Management Program (IFMP) is reengineering NASA's business infrastructure—financial, physical, and human resources management—by implementing enabling technology that will provide information for better decisionmaking. The program consists of several module projects, each designed to disseminate accurate, timely, and consistent information. IFMP will allow the Agency to seamlessly manage multicenter programs and will enable *one* NASA with ten interdependent centers.



The Resumé Management Project module, an online automated Staffing And Recruitment System (STARS), was implemented at Glenn on November 26, 2001. NASA STARS, now available Agencywide, makes it easier for NASA employees and the general public to apply for NASA jobs by providing postings on the NASAJobs web site, in addition to allowing applicants to use an online resumé builder. For more information, contact Judy Drabik.

The Position Description Management (PDM) module will debut in July 2002. PDM will create position descriptions (PD's) in significantly less time. NASA has secured the Avue Digital Services (ADS) Classification Module to accomplish this objective. The ADS Classification Module modernizes the way Federal agencies create and classify positions. Managers will use a web site to select PD's from an electronic library or build PD's by starting with a predetermined grade level, or by identifying duties and allowing the system to determine the series and grade. For more information, contact Fran Pierce.

The Core Financial module, powered by SAP, will be available in October 2002. Core Financial, the "backbone" system of IFMP, will standardize financial processes across NASA, including all accounting functions, purchasing, cost management, and budget execution. Core Financial will improve NASA's accountability by determining total program and project costs and relating those costs to value. For more information, contact Christine Root.

The Travel Manager module will debut simultaneously with Core Financial in October 2002. Glenn will be the pilot center for the integration between SAP's Core Financial and Gelco's Travel Manager software. The Travel Manager module consists of a comprehensive Web-based, user-friendly, end-to-end electronic travel system. Employees can use the system from any location with Web access. For more information, contact Rick Neubauer.

Glenn is committed to making the IFMP implementation successful. Nearly everyone will be affected throughout the Lab. Whether you are purchasing new research equipment, getting reimbursed for your travel expenses, or applying for a new job or promotion, all of these activities will involve using the new IFMP system.

For more information, please visit the IFMP web site: www.ifmp.nasa.gov.

From the Editors

Adopting Administrator Sean O'Keefe's philosophy of "one Agency," *AeroSpace Frontiers* is now incorporating news from Headquarters and other centers into our publication. With the support of Center Director Donald Campbell, this publication will dedicate space each month to articles that illustrate collaboration and cooperation among the centers, as well as highlight significant research and initiatives of individual centers.

—Doreen Zudell, editor, and S. Jenise Veris, assistant editor

NASA technology aids patient safety

NASA news release

Patients at Department of Veterans Affairs (VA) hospitals and clinics nationwide will now have an extra pair of eyes looking out for their safety.

The VA, in collaboration with NASA, rolled out a new medical reporting system, called the Patient Safety Reporting System (PSRS), to most of its medical facilities nationwide. The PSRS is an independent, external system that complements the Agency's current internal reporting systems. The PSRS is modeled after NASA's Aviation Safety Reporting System (ASRS), an incident-reporting program administered for the Federal Aviation Administration by Ames Research Center.

The guiding principles of the PSRS are improvement of patient safety through voluntary participation, confidential reporting, and nonpunitive provisions for VA employees who choose to participate, according to officials.

The VA operates 163 medical centers across the country. The PSRS invites all VA medical facility staff to voluntarily report any events or concerns that involve patient safety. ♦

Decommissioning

Continued from page 1

During decommissioning, which is often referred to as "construction in reverse," crews will remove and dispose of all radioactive components, equipment, and materials within the Reactor Facility; thoroughly decontaminate and then remove all buildings and structures at the facility to 3 feet below grade; and backfill the area with clean fill. When the project is complete, the area will meet the NRC's criteria for unrestricted use. The levels of radiation will be the same as area background levels, and the area will be clean enough to use for any purpose. ♦

For more details on the decommissioning process, refer to the online press release: <http://www.grc.nasa.gov/WWW/PAO/html/newsroom.htm>.

Family connection

If your relative had been living aboard the International Space Station and you hadn't seen or spoken with him for 3 months, what would you talk about?



Photo by Doreen Zudell

Members of Astronaut Carl Walz' family, who came to Glenn on March 30 to hook up with him via videoconferencing, talked about such topics as baseball, snow, and Easter lamb cake. Through the efforts and technology of Glenn and Johnson Space Center's Video Teleconferencing System (ViTS), 30 family members shared about 1-1/2 hours interacting with Walz, orbiting 240 miles above the Earth. Glenn's Patricia Foltz, RSIS/7190, and Johnson's An-

gela McDaniel coordinated the event. "We were connected to Carl 'audio only' for about 20 minutes until the video stream was established," Foltz said. "The family burst into smiles when they finally saw Carl. This was a reminder of how powerful video communications can be." During the connection, Walz entertained his family by performing somersaults, showing off his freeze-dried space food, and playing "Heartbreak Hotel" on his guitar as he imitated Elvis Presley. Originally scheduled to return to Earth in May, Walz' stay on the space station has been extended to June.

Photo by Doreen Zudell



Above (left to right): Michael Salkind, OAI; Jih-Fen Lei, Glenn; Minoo Dastoor, NASA HQ; James Mursley, National Nanotechnology Coordinating Office; and Murray Hirschbein, NASA HQ, share ideas at the Nanotechnology Forum.

Right: Bill Saettle (left), 9400, provides marketing consultation to Polymer Summit participants.



Photo by Rodney L. Brown

Technical forums

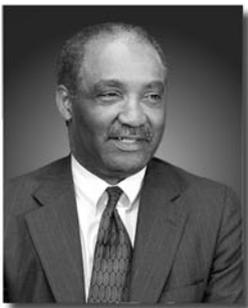
On March 4, Glenn and OAI cosponsored a Nanotechnology Forum, attended by more than 100 participants from NASA Headquarters, industry, the Air Force Research Laboratory (AFRL), and Glenn. Nanotechnology programs at the national level, NASA, Glenn, and AFRL were described in the morning. In addition, TRW, General Electric, and Applied Sciences all provided industry perspectives. The afternoon consisted of three parallel working sessions (Materials and Tribology, Power and Fuels, and Instrumentation, Electronics and Communications) aimed at developing networks and research partnerships for future collaborative projects. The major objectives were to accelerate research and position partnerships for NASA, national, and state funding opportunities.



Photo by Marvin Smith

Spotlight on women

Glenn's Women's Advisory Group (WAG) presented its annual Women's History Month celebration and Federal Women's Program on March 28. As guest speaker, Commander Mary Bounds (current coordinator of Recruitment and Retention), the first woman police chief in the city of Cleveland, shared—with wisdom and humor—some of her career challenges. Her talk was followed by the Women in History, a nonprofit corporation dedicated to education through re-creations of the lives of notable women in U.S. history. Their vignettes featured environmentalist Rachel Carson and civil rights activist Fannie Lou Hammer. Comdr. Bounds (above, left) is pictured receiving a token of appreciation from WAG Chairperson Sue Puleo (7250). See page 10 for Federal Women's Program award winners.



Director's Corner

With Donald Campbell

Keeping our promises

I want to devote my column this month to a very important topic for the Center—"The President's Management Agenda."

As we move forward under the new Administration, we can expect to see new management philosophies incorporated into NASA's day-to-day activities. These directives are outlined in a report entitled "The President's Management Agenda, Fiscal Year 2002."

Within the 71-page document, the President puts forth what he calls "a bold strategy for improving the management and performance of the Federal government." His message is clear: in order to make good on its promise to the American people, the Federal government will plan, execute, and measure its successes. While the report focuses on 14 areas of improvement aimed at delivering on these promises, the areas

that affect NASA rest primarily within the five sections under the Government Initiatives. The management agenda centers on expansion and improvement in electronic government, financial performance, competitive sourcing, budget and performance integration, and human capital management.

The NASA Administration, in full support of the directives described in "The President's Management Agenda," and I encourage the Glenn community to become familiar with these directives. This document can be found on the Web at www.whitehouse.gov/omb/pubpress/2001-30.html.

The recommendations embodied in this document will help to ensure that the Agency successfully completes its mission and delivers on its commitments to the Nation.

News Notes

ASIAN/PACIFIC AMERICAN HERITAGE MONTH: Glenn retiree David Namkoong will be the master of ceremonies for the Asian/Pacific American Heritage Month festival to be held in the May 29, from 10 to noon. Individual booths highlighting Chinese, Korean, Vietnamese, Hawaiian, and East Indian culture will feature artifacts, music, and samples of each country's cuisine. A martial arts demonstration is also planned.

BPW SCHOLARSHIPS: The NASA Glenn Business and Professional Women's (BPW) organization is hosting a dinner meeting on May 21 for the installation of its officers and to award two \$300 career development scholarships to women from Glenn. If interested in attending, contact Erlene Trsek, 216-433-9394.

GOLF & KID'S FAIR: Lewis Little Folks 2nd Annual Benefit Golf Outing (Springvale Golf Course, North Olmsted) and Kid's Fair will be held on June 14. Both events are open to civil servants, support service contractors, and friends of Glenn. Corporate sponsors are encouraged to participate as well. Proceeds will go towards school programs

and tuition assistance. For more details, call Dave Williams, 440-716-0798.

STEP OUT: Glenn's annual Step Out is May 15, in honor of National Employee Health and Fitness Day. Join fellow employees for a 1-mile walk anytime between 11 a.m. and 1 p.m. The walk starts on

Door prizes will be awarded. During the event, stop by the for blood pressure screening, a beverage, a piece of fruit, and other healthy food samples from the dietician.

LESA MEETING: LESA/IFPTE, Local 28, will hold its monthly membership meet-

ing on Wednesday, May 8 at noon in

RETIRES WANTED FOR VC: Glenn retirees looking for a rewarding way to spend their time might consider becoming a Visitor Center volunteer. Several positions such as lobby aide and docent are available. If you can donate 4 to 5 hours per week or one weekend day per month, this opportunity may be for you. Call Monica Boyd, 216-433-2004.

FRAUD HOTLINE: Aware of waste, fraud, or abuse? Contact the Office of the Inspector General at 433-5592 or Confidentiality is maintained.

Exchange Corner

● *Exchange Store News:* Cedar Point and Six Flags Amusement Park tickets for the 2002 season (can be purchased by credit card) are available. Save 20 percent during the Customer Appreciation Sale, Thursday and Friday, May 9 and 10. Don't forget Mother's Day is Sunday, May 12. Gift ideas and fresh-cut flowers are available during the sale.

● *Main Cafeteria Patio:* Ribs and Chicken BBQ Cook Out on Thursday, May 30, 11 a.m. to 2 p.m.

Facility uses watery protection

Glenn news release

With the new High Energy Flywheel Facility (HEFF), Glenn engineers are ready to test dual flywheel systems that may soon be used on satellites and other spacecraft for both electrical energy storage and spacecraft attitude control.

Engineers designed the HEFF to test algorithms, or control programs, for the flywheels. In the facility, two flywheels will sit on opposite sides of a single-axis, air-bearing table that rotates in response to torque from the counter-rotating flywheels. Controlling the flywheels' accelerations controls the torque and, thus, the speed and direction of the table's movement. The table represents the spacecraft, or the part of it that needs to be aimed.

HEFF project engineer Larry Trase, Space Electronic Test Engineering Branch, said a major design challenge in the facility was the containment system. If a flywheel rotor were to rupture, it would send high-speed carbon fibers flying off in all directions—like the splat of large raindrops hitting the windshield of a fast-moving car. Conventional steel containment would have to completely surround the experiment and would be both heavy and costly.

The solution was standard food-grade containers—plastic-lined cardboard boxes—filled

Continued on page 9

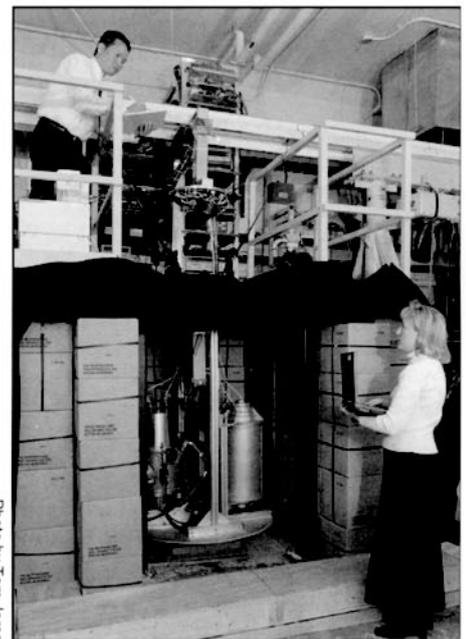


Photo by Tom Jares

Donald Fong and Vicki Crable, Space Electronic Test Engineering Branch, make adjustments to the new HEFF

Center employees raise record amount of food

BY DOREEN B. ZUDELL

Glenn showed its community spirit and generosity to Harvest for Hunger, a regional food and fund drive that helps feed the hungry in Northeast Ohio. From March 1 to April 5, the Center collected the equivalent of 5,429 pounds of non-perishable food items.

"Employees' donations of food, money, time, and effort will be greatly appreciated by hungry families throughout this great community in which we live

and work. This was a true example of the power of teamwork," said Gregory Bobbitt, IDI/Office of Equal Opportunity Programs, who has coordinated the Center's Harvest for Hunger food and fund drive for the past 3 years.

Glenn's Great American Chili Cook-Off, held March 28 in the upper level of the Main Cafeteria, was a highlight of this year's drive. For \$3, employees received

a sampling of chili prepared by their peers. Gift certificates and other items donated by local vendors were awarded to chili recipe winners.

There were three Chili Cook-Off prize winners: First Place—Laurie Yost, Computer Services Division, and her husband, Bill; Second Place—Ella Scott, NASA Exchange; and Third Place and People's Choice—Gregory Bobbitt. Judges included Ruben Ramos, Test Installations Division, Nora O'Toole, MTC/Plans and Programs Office, and S. Jenise Veris, IDI/Community and Media Relations Office.

After the event, Harvest for Hunger's Deputy Director Beth Gaglione accepted checks from InDyne, Inc. (\$1,178 contributed by employees) and the NASA Exchange (\$304.19 collected from jars at the registers).

Children at Lewis Little Folks Day Care Center joined in this year's Harvest for Hunger drive as well. Children and teachers in the Bunny Room collected the most items—416 canned and boxed goods. All the classrooms combined donated a total of 1,120 items. ♦

Photo by Tom Jares



Photo by Doreen Zudell



Left: Laurie Yost (7100) serves her first-place chili to Nancy Amman (IDI/0620) during the Chili Cook-Off. Above: Lewis Little Folks' Victoria (left), daughter of Allen Holtz (7100), and Emma, daughter of Christine Greenwalt (0540), examine some of the donated items.

U.S. and Hungary explore mutual interests

May 14 marks the 1-year anniversary of a space cooperative agreement between NASA and the Hungarian Space Agency. Under the agreement, the United States and the Republic of Hungary agreed to explore their "mutual interest in the exploration and use of outer space for peaceful purposes."

"The agreement recognizes the benefits to be gained from working together in space-related research and encourages commercial applications," explained Laszlo Zala, Facilities Engineering and Architectural Branch, the son of native Hungarians and a U.S. citizen.

As a visiting professor at the University of Technology and Economics in Budapest during the 2000-2001 school year, Zala taught graduate-level students how to design and construct energy-efficient facilities. He used practical applications to show the students how proper energy management is accomplished in the United States. Zala also linked with an architectural and engineering firm in Budapest, providing students with a "real" building project. He participated in many activities where he educated organizations, businesses, and schools on NASA's mission and accomplishments. These experiences made it possible for him to be instrumental in the finalization of the NASA-Hungarian Space Agency agreement and to be part of the signing ceremonies last May.

Back at home in the United States, Zala is a board member of the Cleveland Hungarian Heritage Society. His experiences in Hungary propelled him to coordinate an exhibit showcasing technology from both American and Hungarian space research to commemorate the signing.

On April 20, Donald Campbell, Glenn's Center Director, and Dr. Julian Earls, Deputy Director of Operations, joined András Roboz, science and technical attaché of the Hungarian Embassy, Washington, DC, in the opening ceremonies at the Cleveland Hungarian Heritage Museum. The

exhibit will remain in the museum until June 30.

One example of Hungarian technology on display is the Pille dosimeter, which was designed, developed, and manufactured in Hungary to measure radiation in space. Astronaut Jerry Leninger used the Pille during the 1997 *Mir 23/NASA4* mission. In addition, several posters show the space activities of Hungarian institutions such as the Hungarian Space Office, the Institute of Geodesy, Cartography and Remote Sensing, and the Budapest University of Technology and Economics.

Also on display are Glenn's contributions to NASA's mission through research



Left to right: Laszlo Zala, Glenn; Michael Moore and John Schumacher, NASA Office of External Relations; Thomas Robertson, Temporary chargé d' affaires of the U.S. Embassy in Budapest (acting ambassador), and Nina Maria Fitte, Environment, Science and Technology, U.S. Embassy, Budapest, prior to signing of the document.

in bioengineering and biomedicine, as well as other examples of technology transfer. Models of the International Space Station, a space shuttle, and an ion engine, along with videos and CD's showing various space flights and activities are there as well. ♦



Graphic by Terry Condrich

ECRL sets Level 1 milestone

Last month, Glenn achieved an FY01 Level 1 milestone for the rocket-based combined cycle (RBCC) concept under the Aerospace Propulsion and Power Program. With the hot firing of a rocket in the Engine Components Research Laboratory (ECRL), technicians demonstrated the unique capability to test a hydrogen- and oxygen-burning rocket in a continuously operating altitude facility.

"The facility can take a rocket and ramjet from sea-level static conditions to 2.5 psia, while varying the inlet conditions (temperature to 600°F with up to 250 pps air mass flow)," explained Scott Williamson, Facilities and Test Engineering Division, who served as lead test engineer for the project.

The RBCC concept is designed to provide cheaper access to space by utilizing both rocket and air-breathing propulsion systems. The concept calls for the craft to initially be propelled by the hydrogen- and oxygen-burning rockets to a speed where hydrogen-fueled ramjets can take over. When the atmosphere can no longer support efficient combustion in the ramjets, the rockets will be reignited and propel the craft into space. The initial goal of the test program was to obtain data on both the rocket and ramjet systems.

Williamson said that in order for ECRL Cell-1B to support this testing, several new systems were installed including hydrogen and oxygen systems, a high-pressure water system, and a new Combustion Wave Igniter System. The Aerospace Propulsion and Power Program provided funding for the facility modification and research testing. ♦

FIRST Buckeye Regional: a first-rate event

BY S. JENISE VERIS

Nearly 1700 students, parents, mentors, and sponsors from around the country converged on

during the weekend of March 14-16 to participate in the inaugural FIRST (For Inspiration and Recognition of Science and Technology) Buckeye Regional robotics competition. Dressed in brilliant colors, competitors and spectators chanted and cheered during 2-minute battles that featured robotic gladiators.

"The Cleveland event was hands down the best first-year event we have ever seen," said David Brown, executive director of the FIRST Board of Directors.

In its debut, the Buckeye Regional earned first place among four first-year regionals for drawing the most teams (57) across eight states. The most unpredictable source of pride, however, was Glenn's bragging rights for sponsoring one of three teams in the championship alliance, Morgantown High School from Morgantown, WV, as well as the Chairman's Award winner, Buena Vista High School from Saginaw, MI.

Former Congressman and Honorary Chair Louis Stokes, Congresswoman Stephanie Tubbs-Jones, Cleveland Mayor Jane Campbell, Governor Taft's Science and Technology Advisor Frank Samuel, FIRST Founder Dean Kamen, and NASA HQ Program Executive for Solar System Exploration Dave Lavery were among the special guests.

Building on 8 years of working directly with teams to design robots, Glenn transitioned to the enormous task of



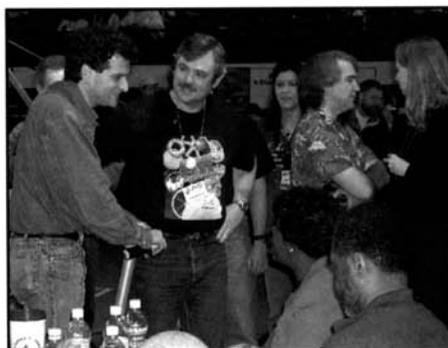
sponsoring a regional competition—the first in Ohio. Carol Galica, IDI/Office of Educational Programs, Glenn's FIRST program coordinator and this year's FIRST Buckeye Regional director, had all the resources and support needed to ensure a successful Regional.

"There was no lag in decisionmaking on the part of NASA management and Glenn employees who stepped up to fill all the crew positions within a few days of posting a request for volunteers," Galica recalled. "And although the majority of people on the planning committee were not familiar with FIRST, they

were proactive and committed to making the Regional a success simply because it was "for the kids."

Regional Volunteer of the Year Marty Kress, who is vice-president on NASA initiatives at Battelle Memorial Institute, and Michael Salkind, president at OAI, cochaired a planning committee composed of high-energy, innovative thinkers from Cleveland State University, Cuyahoga Community College, the Rock and Roll Hall of Fame and Museum, the Eastern Suburban Business Advisory Council, the Cleveland Clinic Foundation, British Petroleum, *The Plain Dealer*, the

Below left: Mayor Jane Campbell gets a tutorial on scoring from Carol Galica (IDI/9200). Center: FIRST founder Dean Kamen (left) chats with Chip Redding, (7755), and (seated) the Honorable Stephanie Tubbs-Jones and John Hairston (9000); Dave Lavery (HQ) with Maureen Toohey, DEKA, are in the background. Far right: Louis Stokes accepts an award from East Tech FIRST alumni and mentors Khadijah Quadeer and Orlando Antongiorgi for his longtime support of FIRST.





Regional Winner 2—Lahser High School and International Academy, West Bloomfield, MI.

Cleveland Growth Association, and the Cleveland Municipal School District.

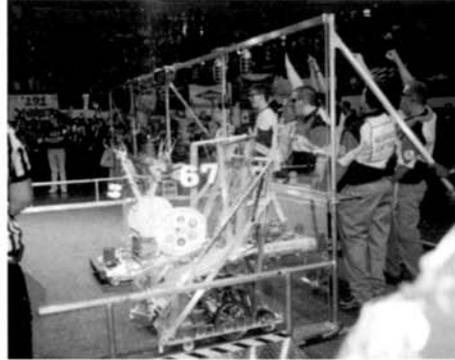
"The enthusiasm of the volunteers generated such a positive attitude among participants," said Robert Hammond, FIRST regional manager. "It was a very easy event for the FIRST staff to work due to such great local support. Keep up the good work!"

The FIRST organization was so impressed with the Buckeye Regional coordination and operation that they have already initiated discussion with John Hairston, Glenn's External Program Director, to host a double-field Regional—the first of its kind.

Glenn was the first NASA center to sponsor a team in FIRST competition, in 1994. The following year Glenn sponsored Cleveland's East Technical High School, the first urban school to compete in FIRST. Through the years, Glenn increased its sponsorship and mentoring to include James Ford Rhodes High School, Max S. Hayes Vocational High School, and Beachwood High School in the Greater Cleveland area, and Eastmoor Academy in Columbus.

This year, in addition to hosting the Buckeye Regional, Glenn awarded 20 NASA scholarships and 3 grants to teams across 5 states, including Bedford, Cleveland Central Catholic, Cuyahoga Heights, Alliance, and Shaw High Schools. The \$6,000 scholarship covers the Buckeye Regional entrance fee, travel, and miscellaneous expenses. Veteran teams that

Right: The skill and experience of Glenn engineers and technicians made the FIRST Machine Shop an invaluable resource for all teams participating. Below: Regional Finalist 1 and Highest Seed—Huron Valley Schools, Milford, MI.



received a Glenn scholarship were also required to mentor a rookie team. An Agencywide increase in sponsorship made NASA the top supporter of FIRST teams, sponsoring 186 of the total 600 teams competing in the 2002 FIRST competition season.

With the success of the Buckeye Regional, Glenn hopes to attract more regional as well as team sponsors and to create support for individual scholarships and institutional opportunities. Two examples are the "Introduction to Robotics" class developed and implemented at Cuyahoga Community College and the Robotics Option, a three-course sequence available in the Engineering Technology Department at Cleveland State University this fall.



"Glenn recognizes the value and impact of the FIRST program," said Jo Ann Charleston, chief, Office of Educational Programs. "We are committed to partnering with other FIRST sponsors in our community to bring about a cultural transformation where scientists and engineers are celebrated as heroes for their contributions to our quality of life."

Glenn award-winning teams

Highest Rookie Seed—

West Virginia University and Morganstown High School, WV

Judges Award—James Ford Rhodes High School, Cleveland, OH

Rookie All-Star—East High School, Columbus, OH

Engineering Inspiration Award—East Technical High School, Cleveland, OH



Engineers set to test flywheels

Continued from page 6

with water. If a flywheel rotor should rupture during testing, fragments will break through the cardboard and plastic container wall, without redirecting, and will slow down, losing 95 percent of their energy within a foot of water. The barrier also reduces the chance of fire since nearly all the fragments that might become combustible dust go into the water.

"Water containment is inexpensive, quick to set, and scalable for future tests with higher energy flywheels," said Fred Wolff, lead test engineer, Electrical Systems Development Branch. "This idea worked out so well that we finished the facility setup ahead of schedule."

Low-speed flywheels are currently used on satellites, such as the Hubble Space Telescope, for attitude control. State-of-the-art satellites use chemical batteries for energy storage. HEFF has been designed to test a combination of these two functions at a fraction of the mass of current technology. A successful test will show that the flywheels can be used for accurate aiming while they are storing or delivering electrical energy. ♦

For more details on the HEFF, refer to the online press release at <http://www.grc.nasa.gov/WWW/PAO/html/newsroom.htm>.

People



Charleston



Gonzalez-Sanabria



Kakiris



Dr. Lei



Dr. Pérez-Davis

Glenn engineers were among the six finalists honored at the Cleveland Chapter of the National Technical Association Annual Nsoroma awards, held March 16. The event, emceed by Cynthia Tinsley, news anchor for Channels 19/43, honored women of color for their scientific and technological accomplishments, fortitude, and community involvement. **Dr. Jih-Fen Lei**, chief, Instrumentation and Controls Division, received the Nsoroma Science award. **Jo Ann Charleston**, chief, Office of Educational Programs, and **Dr. Marla Pérez-Davis**, chief, Electrochemical Branch, were finalists in the categories of Education and Technology. In addition, **Gail Wright** (GLITeC), Glenn program manager for the Garrett Morgan Commercialization Initiative, was the recipient of the Nsoroma Technology award.



Reveley



Wright

The annual Glenn Federal Women's Program awards were presented as a part of the Women's History Month Observance on March 28. The awards recognize civil servant contributions to the advancement of women at Glenn and their participation in community service organizations. **Olga Gonzalez-Sanabria**, Plans and Programs Office, received this year's award in the "supervisory" category, while **Mary Reveley**, Propulsion Systems Analysis Office, received the award in the "nonsupervisory" category.

Barbara Kakiris (IDI), a public affairs specialist in the Community and Media Relations Office, placed runner-up in the state competition for the National Federation of Business and Professional Women's (BPW) annual Young Careerist competition. The Young Careerist program is one of BPW's premier activities designed to enhance personal and professional development, including self-presentation, public speaking, and debating skills. Before advancing to the state level, Kakiris won Glenn and Region 4 BPW competitions. The state competition was held on March 16.

In Memory

Paul Adam, 84, who retired from Glenn in 1995 with 30 years of service, recently died. He worked as a supervisory aerospace technician, experimental facilities techniques, before retiring.

John Kocsis, 88, who began his NACA/NASA career in 1941 as a fireman, recently died. Kocsis served as head of the ERB Operations Section, Facilities Operations Division, before retiring in

1972. His daughter, Sandy, who served as chief of the Logistics and Technical Information Division, retired last year.

Walter Lehman, Sr., 85, who retired in 1977 with 29 years of NASA service, recently died. He worked as an aerospace services operator leader. His daughter, Rita Guzell, IDI, works in the Calibration Laboratory.

In Appreciation

Your prayers, phone calls, flowers, good thoughts, attendance at Don's (Buchele) farewell held February 17, and the visible signs of caring and support extended to both my family and Don's have lessened the feelings of our sudden loss. I thank you and our families thank you very much for all your concern.

—June Bahan-Szucs

Your thoughts, prayers, and expressions of sympathy upon the death of my father are truly appreciated. The thoughtfulness and friendship of the NASA family have brought great comfort to my family.

—Sandy Kocsis

The Pestak family extends our heartfelt gratitude for the kind and generous support we received from the Glenn community during our father's illness and upon his death. Your prayers and expressions of condolences are a great comfort to our entire family at this time of loss.

—Mark and Chris Pestak

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 6700.

Editor.....**Doreen B. Zudell**
InDyne, Inc.

Assistant Editor.....**S. Jenise Veris**
InDyne, Inc.

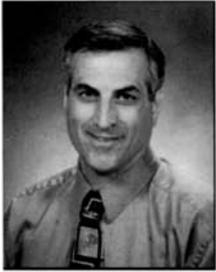
Managing Editor.....**Lori J. Rachul**

DEADLINES: News items and brief announcements for publication in the June issue must be received by noon, Thursday, May 9. The deadline for the July issue is noon, Friday, June 14. Submit contributions to the editor via E-mail at 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 be published as space allows.

Behind the Badge...

a closer look at our colleagues

Frank DeAngelo



Job assignment: I am the lifting device manager, Construction Safety Program lead, and a member of the Aviation Safety Committee for Glenn's Safety Office.

Time at Glenn: 25 years. I started during the blizzard in January 1977.

Hometown: I currently live in _____ but was born and raised _____

Describe your family: My wife, Debbie (who works in the Computer Services Division), and I have three great children: Michael, age 14, and Christie and Katie, age 12.

Career alternative: If I could, I'd love to be a full-time teacher. From my experience in the Glenn Speaker's Bureau, I find it most rewarding speaking to elementary and junior high students.

Favorite music: Frank Sinatra, The Four Seasons, and Motown.

Favorite book or magazine: Any book by James Patterson. I also enjoy biographies.

Favorite movie or play: *Les Miserables* and *West Side Story*.

Person most admired: Chuck Yeager and General Richard Pearson, U.S. Air Force.

Activities when away from Glenn: I teach 4th grade Parish School of Religion at St. Mary's in Berea; coach baseball; golf; and enjoy spending time with my family (especially at the beaches in the Carolinas).

What do you see as an area of expertise to be proud of at Glenn: While a laboratory technician in the Test Installations Division, I took pride in being part of the research and development team. Our accomplishments are now put in place on aircraft and space power systems. As a safety specialist involved with construction, aviation, and lifting devices programs, I am proud of the safety record in those areas here at Glenn.

Caryn Chalupa



Job assignment: I am a small part of an awesome collection of extraordinary individuals who provide multiple health care and surveillance exams through Medical Services (Singleton Health Services, LLC). My education is in radiography and medical assisting, and I am registered in both categories. Chances are if you've used our services, you have crossed my path in some way—and that may or may not be a good thing.

Time at Glenn: I started in November 1989.

Hometown: I was born and raised in the "best location in the Nation." (Oops, giving away my age there.) Actually, I never quite appreciated how fortunate I am to have one of the great wonders of the world in my own backyard until I visited a friend in Cincinnati who asked me what it's like to live by the Lake. Frankly, I never thought about it. Now I try to visit the Lake at least once a season.

Career alternative: If I wasn't in medicine, I would be a motivational speaker with emphasis on the therapeutic benefits of laughter, a.k.a.—stand-up comic. People often say that I have a decent sense of humor.

Favorite music: I am a recent convert to country music—about 10 years ago—and a longtime lover of 60's Motown. (Oops, there is that age giveaway again.)

Favorite book or magazine: I like anything by Mary Higgins Clark. I also like the supermarket tabloids—you know, the ones that no one reads but have the largest circulation of all other magazines put together. I find the publications a mindless, brainless, and stress-relieving activity, serving no useful purpose but to entertain.

Person most admired: Medical Services' Dr. Susan Gifford for her calmness in crisis situations and her ability to juggle professional and personal commitments without "ruffling feathers." Her ability as a diagnostician is unsurpassed and she routinely acknowledges her staff as being "the wind beneath her wings." I also respect women who work full-time and have a family. Secretaries are also great. I'm glad they do their jobs because I couldn't do it. If I had their jobs I would be yanking the phone out of the wall and yelling at everyone. (Wait, I do that anyway.) Kudos to all the secretaries.

What do you see as an area of expertise to be proud of at Glenn: I stand in awe of all the "ideas" that come out of Glenn, which are used in everyday life. It saddens me that the general public is ignorant of these inventions, ideas, and advances, and how people benefit from the research. If people truly knew the significance of how NASA research affects their lives, we would have everyone's support. I think NASA deserves a lot more "positive press" coverage.

Lear Lab raises record

BY S. JENISE VERIS

This season, Glenn's Lear Jet-25 set a new flight record for high-altitude solar cell calibration—39 flights.

"This flight facility is a wonderful example of a cooperative effort among the researchers, pilots, and maintenance staff," said Pilot William Rieke, chief of Aircraft Operations. "The aircraft and maintenance staff has performed superbly under the leadership of Jerry Anschuets and more recently Dan Gorman, the current crew chief."

Using aircraft able to fly in the stratospheric environment provides a relatively inexpensive and rapid turnaround technique for calibrating solar cells to space flight conditions. The Solar Cell Evaluation Laboratory Program has provided Glenn's photovoltaic community with Air Mass Zero (AM0) calibration measurements since 1963. First the B-57B was used, later the F-106, and then the Lear was called into service in 1985.

"The Lear has been so reliable that you can develop a standard based on its accuracy, which is quite remarkable," said Dr. David Snyder, Photovoltaic and Space

Environment Effects Branch. "It is also the most affordable option for doing this type of testing. Although the Jet Propulsion Laboratory has a balloon that offers an alternative, it is more expensive and only capable of making two trips per year."

The Lear test flights take about 2 hours from start to finish. The flying season is limited to between October 1 and March 31, for optimal opportunities when there is less heat and humidity to distort the calibrations.

Pilots Rieke, Kurt Blankenship, and Jim Demers fly up to 50,000 feet in northern Michigan over a specific route and time period determined by Sun position. From there, they descend slowly to altitudes as low as 25,000 to 30,000 feet depending on the height of the tropopause to collect the data, which takes about 10 minutes. The height is determined by balloon soundings taken the morning of the flight by the National Weather Service.

Providing a platform for solar cell calibration is one of many roles the Lear has



Photo by Chris Lynch

Bill Rieke and Kurt Blankenship at 50,000 feet inside the Lear Jet prior to taking data.

performed. The plane has also supported testing for the Acoustic, Communications, Microgravity Sciences, and Shuttle Guidance programs.

In addition to the flight crew and Snyder, the current calibration team includes David Scheiman (OAI), Phil Jenkins (OAI), and Cosmo Baraona from the Photovoltaic and Space Environment Effects Branch. A former member and frequent consultant to the team is David Brinker, who now serves in the Icing Branch. ♦

National Aeronautics and
Space Administration

**John H. Glenn Research Center
Lewis Field**

21000 Brookpark Road
Cleveland, Ohio 44135

Volume 4 Issue 5 May 2002

