National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

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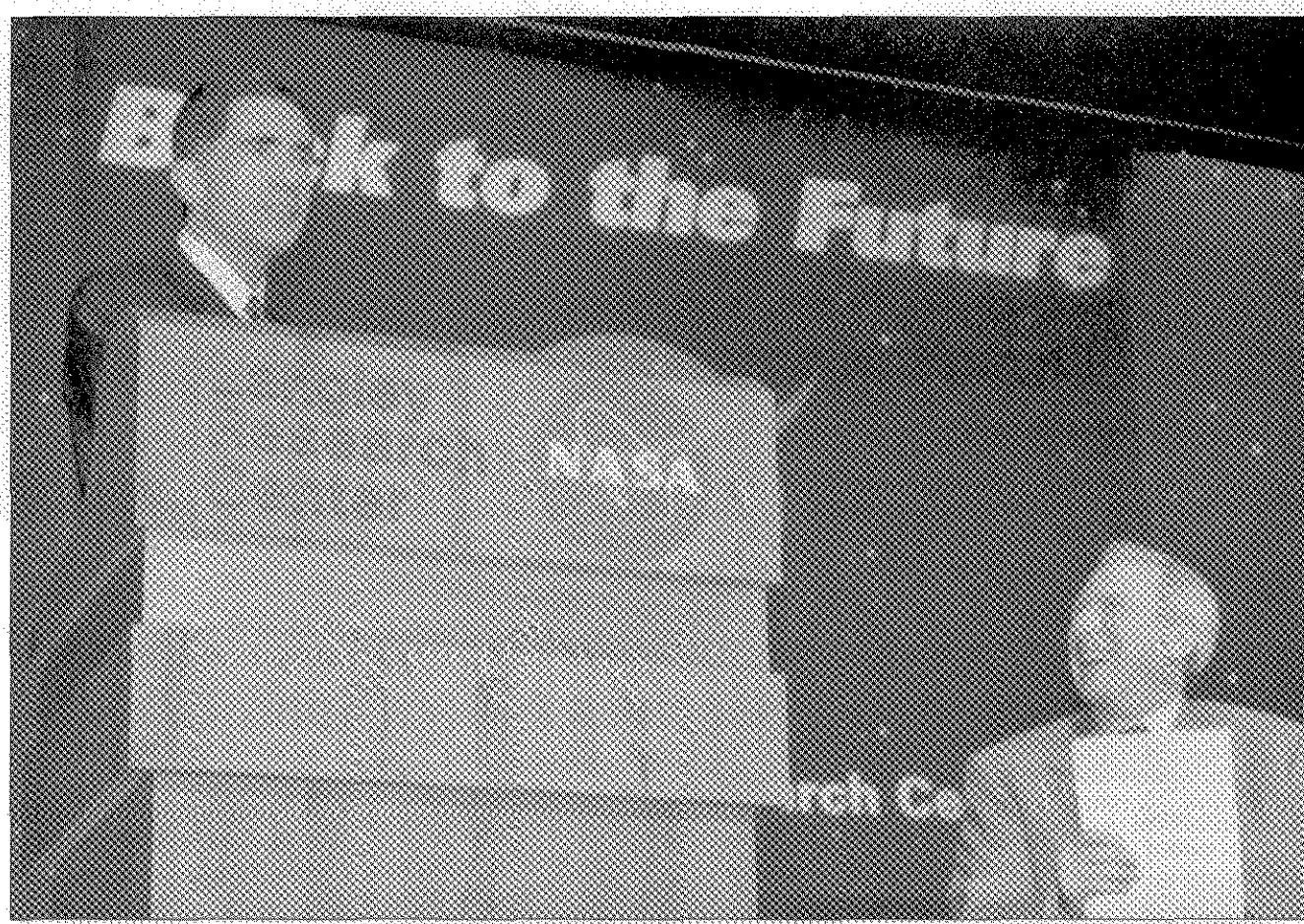
Congressmen Deliver $250 Million Announcement



Sen. Charles Robb, left, and NASA Administrator Daniel S. Goldin visited Langley Research Center on Jan. 7 to announce that the Center will receive an additional $250 million in funding over the next five years. Robb told a standing-room-only crowd at the H.J.E. Reid Conference Center that the money will be used for the Small Aircraft Transportation System (SATS), the Intelligent Synthesis Environment (ISE) Program, aircraft noise reduction and other Langley-centered projects. Robb went on to announce that Langley has been designated the lead center for "Revolutionary New Aerospace Concepts." Also on-Center for the announcement were Rep. Bobby Scott; Dan Scandling, Rep. Herbert Bateman's chief of staff; and members of the NASA Aeronautics Support Team. "Thanks to the efforts of the NASA Aeronautics Support Team, the dedicated employees of NASA and the area's Congressional delegation, an addition $250 million will be added to the NASA budget for Langley," Robb said. "The men and women who work at this important facility make our military aircraft the best in the world, improve the performance and safety of our civil aircraft and keep aerospace science moving forward." Goldin thanked Robb and then told employees they need to "go back to the future" and produce revolutionary new technologies in the new millennium.

Photo by Jeff Caplan

Smooth Rollover To Y2K

Agency And Center Report A Problem-Free Transition

By JIM ROBERTS
Researcher News Editor

NASA's Chief Information Officer applauded the entire agency on Jan. 3 for its successful rollover into 2000.

"The NASA Y2K team should take pride in what has been a truly extraordinary accomplishment," said CIO Lee Holcomb. "As of today, NASA has transitioned successfully to the Year 2000 with no significant problems. The few minor anomalies that arose were easily fixed, and we have closed them all out."

Langley Research Center's Y2K Project Manager Manjula Ambur — who spent the rollover period on-Center with the Y2K "Rollover" team, Center Director Dr. Jeremiah F. Creedon and acting Deputy Director Delma C. Freeman — reported a smooth, problem-free rollover and assessment process.

Ambur

During the rollover weekend, the Y2K "Rollover" team made sure the Center's infrastructure was Y2K OK by focusing the assessment on the utilities, buildings, alarm systems, telecommunications and business systems.

"My sincere thanks to all the NASA and contractor employees for their excellent contributions to the Y2K Project that has resulted in the Langley's smooth and successful transition," Ambur said. "Special thanks to the employees who spent the New Year's Eve weekend helping with the Center's rollover assessment."

Langley CIO Pat Dunnington added, "Congratulations and thanks are due to many, many civil service and contractor employees across the Center for the high-quality technical work and true spirit of teamwork and collaboration that enabled Langley's Y2K success."

CERES Instruments Launch Aboard Terra

Scientist Says, 'They Are Working Perfectly'

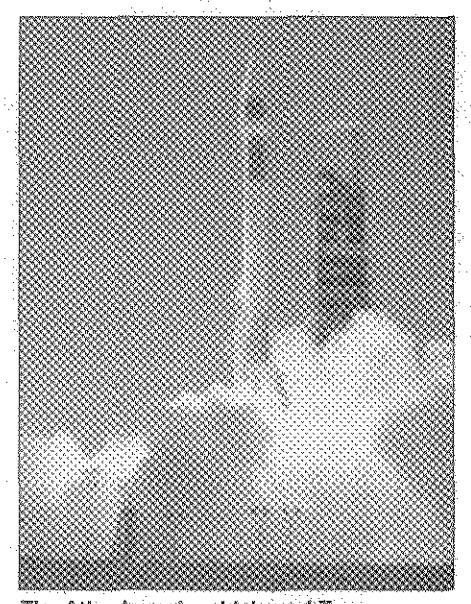
By CHRIS RINK
Office of Public Affairs

Many expectant parents paced the rooms. They waited, watched and wondered when the Atlas IIAS rocket was going to shoot their "baby" into space. But the ground launch computer halted on the first try a few seconds before lift off. Call it false labor.

Two days later, the second attempt would see Terra fly high with Langley Research Center's Clouds and the Earth's Radiant Energy System (CERES) instruments into orbit.

Described by some as picture perfect, the Atlas launch vehicle lifted off from Vandenberg Air Force Base, Calif., at 1:57 p.m. EST, on Dec. 18, near the end of its 25-minute launch window. And as the rocket safely steered the Terra

Continued on Page 3



The Atlas launch vehicle and Terra spacecraft lifted off from Vandenberg Air Force Base on Dec. 18 near the end of its 25-minute launch window.

Photo by Bill Ingalls, NASA Headquarters

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ARIES 757 Makes Trip To California For 'Home & Home' *Page 4*

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News Briefs

Around the Agency

GALILEO SEES DAZZLING LAVA FOUNTAIN ON IO

During a recent close flyby of Jupiter's moon Io, NASA's Galileo spacecraft observed a fiery lava fountain shooting more than a mile above the moon's surface.

The images, showing a curtain of lava erupting within a giant volcanic crater, were unveiled during the American Geophysical Union's fall meeting in San Francisco. Galileo took the pictures on Thanksgiving night, Nov. 25.

"We've finally caught a close-up of a massive volcanic eruption in action on Io," said Galileo project scientist Dr. Torrence Johnson of NASA's Jet Propulsion Laboratory, Pasadena, CA. "The erupting lava was so hot and bright, it over-exposed part of the camera picture and left a bright blur in the middle."

The new Io images are available at <http://www.jpl.nasa.gov/pictures/io>. Additional information and pictures taken by Galileo are available at <http://galileo.jpl.nasa.gov>. RELEASE: 99-148

YOUNG TO LEAD MARS ASSESSMENT TEAM

A. Thomas Young has been named by NASA Administrator Daniel S. Goldin to chair the Mars Program Independent Assessment Team which will review the agency's approach to robotic exploration of Mars in the wake of the recent loss of the Mars Polar Lander mission.

Young retired as executive vice president of Lockheed Martin Corp. in 1995. During his career, Young has managed numerous complex, technically challenging programs, including serving as mission director of the 1976 NASA Viking landings on Mars. Young was director of NASA's Goddard Space Flight Center in Greenbelt, Md., from 1980 to 1982, and then joined Martin Marietta Corp. in 1982 as vice president of aerospace research and engineering. He was named president and chief operating officer of Martin Marietta in 1990.

The team will evaluate several recent successful and unsuccessful NASA missions to deep space, including Mars Pathfinder, Mars Global Surveyor, Mars Climate Orbiter, Mars Polar Lander, Deep Space 1 and Deep Space 2. It will analyze the budgets, content, schedule, management structure and scientific organization of these missions. It will then assess how these roles and responsibilities are related to mission safety, reliability and success. RELEASE: 99-147

MULVILLE NAMED ASSOCIATE DEPUTY

NASA Administrator Daniel S. Goldin selected NASA's Chief Engineer, Dr. Daniel R. Mulville, as the space agency's Associate Deputy Administrator, effective Jan. 1. He replaced General John R. Dailey, who left to head the National Air & Space Museum. As Associate Deputy Administrator, Mulville will plan, direct and manage the daily operations and reinvention activities of the Agency.

"NASA's Associate Deputy Administrator is my most senior advisor on Agency operations, and I am very pleased that Dan Mulville has agreed to accept this position," Goldin said. "Dan has done an outstanding job over the past four years as NASA's Chief Engineer, and I look forward to working with him in his new position." RELEASE: 99-146

News Researcher

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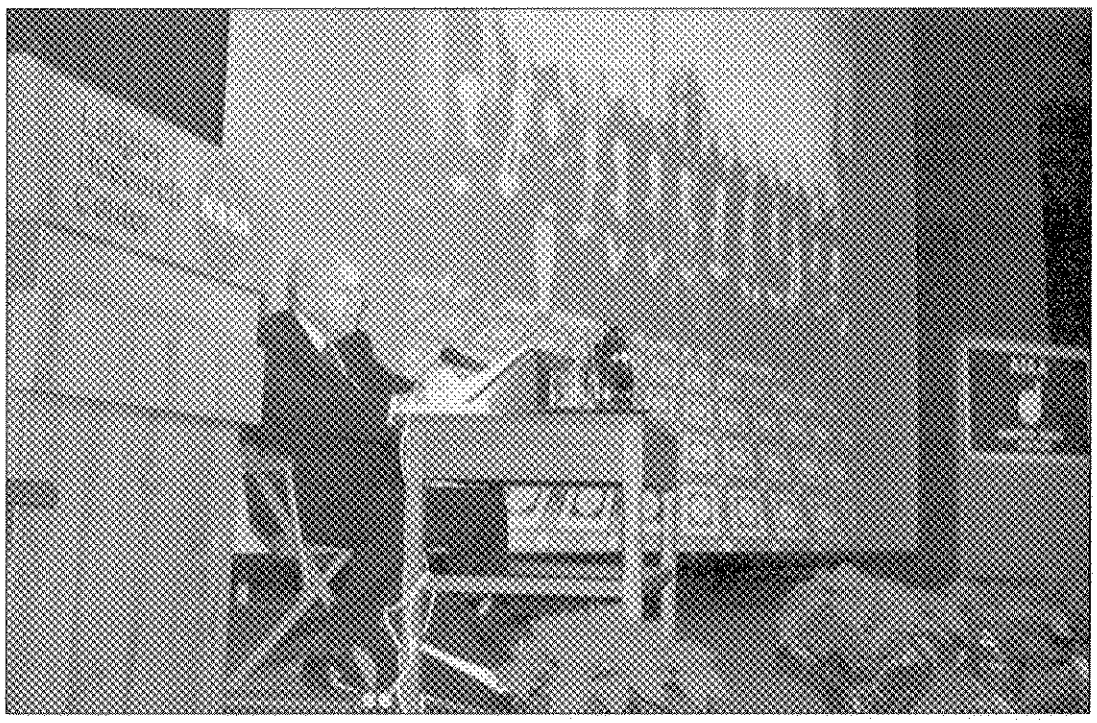
The privilege of listing announcements in this publication is restricted to the employees, con-tractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People



The Hon. Lloyd Welch Pogue delivers the annual Wright Brothers Memorial Lecture on Dec. 16 in the H.J.E. Reid Conference Center. Pogue, a 100-year-old who was appointed Chairman of the Civil Aeronautics Board in 1942 by President Franklin D. Roosevelt, spoke about the 1944 International Air Transit Treaty that still governs international aviation today.

Photo by Jeff Caplan

McGowan Receives AIAA's Sperry Award

Anna-Maria R. McGowan, a research engineer in Langley Research Center's Aeroelasticity Branch, received the American Institute of Aeronautics and Astronautics' Lawrence Sperry Award on Jan. 11 at the 38th Aerospace Sciences meeting in Reno, Nev.

McGowan

The award honors Lawrence B. Sperry, a pioneer aviator and inventor, and is presented for a notable contribution made by a young person to the advancement of aeronautics and astronautics.

The award is inscribed: "For significant contributions to the DARPA/AF/NASA smart wing program enabling successful wind-tunnel demonstrations of the world's two most advanced wings with embedded smart materials."

McGowan received her bachelor's degree from Purdue University and her master's from Old Dominion University. Her research focuses primarily on aeroservoelasticity using conventional and smart material-based mechanisms. Her research activities include active and passive aeroelastic load alleviation, flutter suppression, and adaptive wing shaping. Currently, she is the Level III Manager for Smart Structures and Applications in NASA's Morphing Program and the NASA Lead on the DARPA/AFRL/NASA Smart Wing program.

Letter

" 'Thanks' seems to be such a small word. I was raised to be polite, so I use it often, and it seemed adequate enough for everyday use. This recent illness was more than I could bear alone. Thanks for giving leave so I could heal and not worry about bills and food. Thanks for praying when my faith needed help. Thanks for smiles and words of encouragement. Thanks for being who you are and doing what you do so I can continue to be the person I am meant to be."

With great thanks,

Carol C. Winbush

In Memoriam

William J. Lawton

William J. Lawton died on Dec. 18, 1999, at the age of 95. Lawton, a native of New Jersey and a Peninsula resident since 1938, retired from NASA in 1966.

Linwood K. Outlaw

Linwood K. Outlaw died on Dec. 21, 1999, at the age of 84. Outlaw, a native of Norfolk, served in the U.S. Army during World War II, then trained as an aviation metalsmith and worked at Langley until his retirement in 1973.

Frank Joseph Senft

Frank Joseph Senft died on Dec. 24, 1999, at the age of 78. Senft, a native of Baltimore and a Navy Air Corps veteran of World War II, retired from NASA in 1989 as an electrical engineer after 27 years of service. He was a member of the Institute of Electrical and Electronic Engineers.

Joseph M. Shinn Jr.

Joseph Martin Shinn Jr. died on Dec. 9, 1999, at the age of 76. Shinn, a native of Salisbury, N.C., and a Navy veteran of World War II, served an apprenticeship at Newport News Shipbuilding and Dry Dock Company and later became a material engineer for NASA, where he served until his retirement.

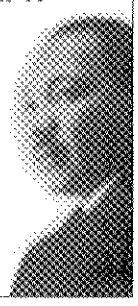
Paul K. Trent

Paul K. Trent died on Dec. 16, 1999, at the age of 85. Trent, a native of Big Stone Gap and a Peninsula resident since 1942, retired from Langley, where he worked in the 16-Foot Wind Tunnel.

MLK Jr.'s Birthday Will Be Observed On Jan. 17

"Let us all hope that the dark clouds of racial prejudice will soon pass away and the deep fog of misunderstanding will be lifted from our fear-drenched communities, and in some not too distant tomorrow, the radiant stars of love and brotherhood will shine over our great nation with all their scintillating beauty."

Martin Luther King Jr., April 16, 1963



Agency Receives Langley's GIFTS

Weather Technology Selected For New Millennium Program

By ELIZABETH ENLOE
SAIC

Langley Research Center has been selected to build and flight-test a measurement concept known as the Geostationary Imaging Fourier Transform Spectrometer (GIFTS) under NASA's New Millennium Program.

GIFTS, a component of a 2003 mission known as Earth Observing 3 (EO-3), will provide critical weather information impossible to achieve through conventional means. Weather information transmitted by GIFTS will be equivalent to that obtained by launching 100,000 weather balloons every minute at intervals of two miles. The motion of clouds and the transport pollutants in the atmosphere also will be measured.

"In 2003, this space flight demonstration will involve genuinely revolutionary measurement approaches that will have a major impact on Earth system science," said Ghassem Asrar, NASA's Associate Administrator for Earth Science.

"The eventual incorporation of this technology on geostationary weather satellites would provide up-to-the-minute information, never before available, on active severe weather systems, such as hurricanes and tornadoes," Asrar said. "These observations will help improve the accuracy of the current three-day weather forecasts and extend the duration of forecasts up to five days during the next decade."

The GIFTS measurement concept was developed by William L. Smith, Langley's Chief Atmospheric Scientist, together with scientists at the Cooperative Institute for Meteorological Satellite Studies at the University of Wisconsin–Madison and the Space Dynamics Laboratory of Utah State University.

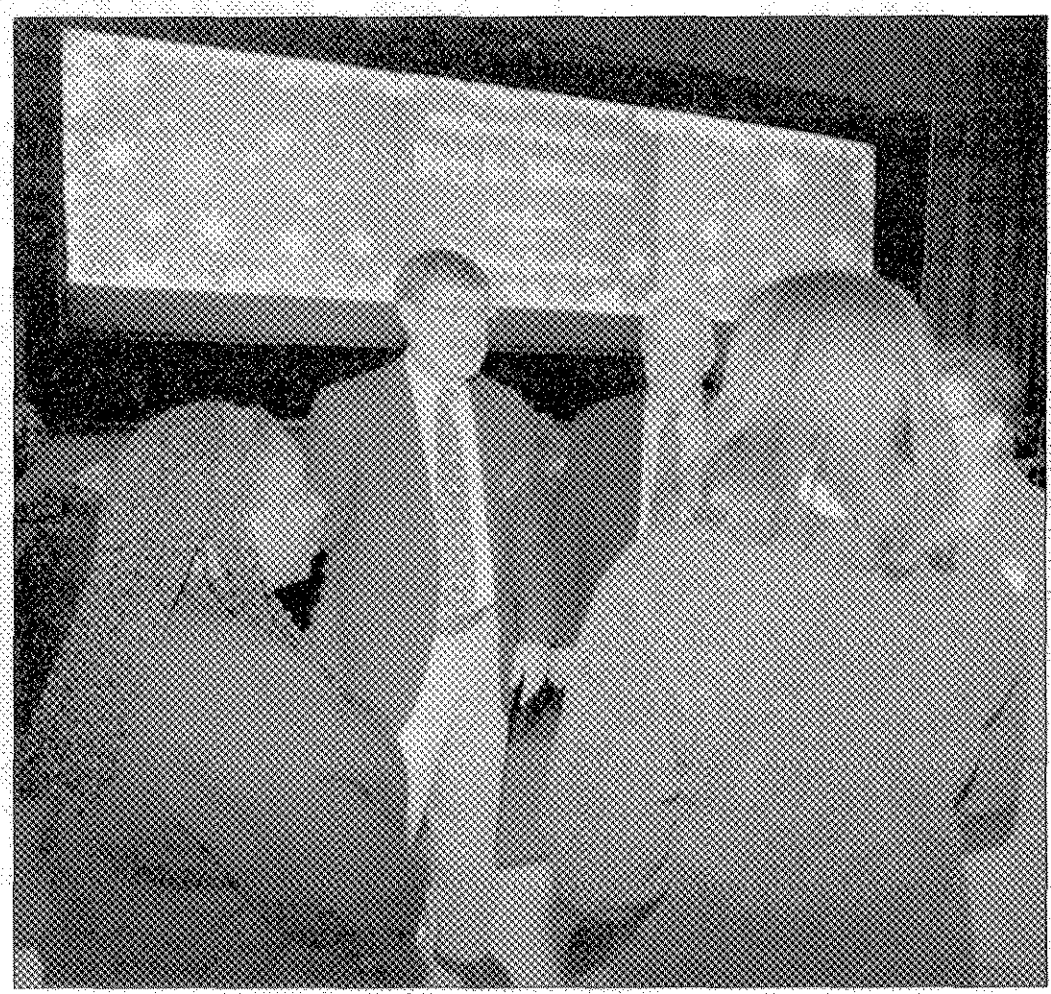
The program will be managed by Langley under Project Manager Wallace Harrison. Henry Revercomb of the University of Wisconsin–Madison and Gail Bingham of Utah State University are the co-investigators responsible for critical engineering and technology components of GIFTS.

NASA selected Langley's concept from four finalists out of 24 proposals submitted in response to a NASA Research Announcement (NRA) released in September 1998.

The NRA solicited innovative approaches for observing the Earth's surface and atmosphere from positions outside low-Earth orbits, with an emphasis on advanced measurement concepts and technologies.

More information on NASA's New Millennium Program is available at <http://nmp.jpl.nasa.gov>.

Holiday Snapshots



Center Director Jeremiah F. Creedon and acting Deputy Director Delma C. Freeman greet employees at the Director's Holiday Reception, which took place on Dec. 17 in the H.J.E. Reid Conference Center.

Photo by Jeff Caplan

Linda Urquhart of the Office of Procurement and Sandra Lemons of the Office of Public Services prepare to load a NASA van with clothing, toys and money donated to The Salvation Army's Angel Tree program. Lemons said the program gets *bigger and better* each year: Langley employees succeeded in increasing the number of "Angels" from 75 in 1998 to 105 in 1999. Langley employees also donated more than 200 pounds of food to The Salvation Army's Food Pantry. The pantry distributed over 17,000 pounds of food during 1999.

Photo by Meghan Woodcock

CERES

Continued from Page 1

spacecraft through upper-level winds, some Langley employees expressed relief and excitement.

"It was like going with your wife to the hospital, but not being sure if delivery was a day, week or month away!" said Langley's Bruce Wielicki, one of the lead scientists for the CERES project.

Wielicki noted the successful Terra liftoff arrived after 18 months of launch delays and three launch failures last spring caused by an upper-stage motor used on many rockets, including Terra's Atlas IIAS.

"It wasn't until the upper RL-10 engine lit and burned perfectly that my blood pressure slowly dropped back out of the stratosphere," Wielicki said. "In the end, the launch went perfectly and hit our orbit altitude within one kilometer."

The Terra mission will simultaneously study the Earth's clouds, water vapor, trace gases, land surface and oceanic properties, and how their interaction affects our planet's climate. Terra is a joint Earth Observing System venture between the United States, Japan and Canada.

There are actually two CERES instruments on Terra: One will scan the Earth from the equator to a pole; the second in angles to cover the hemisphere radiation flow.

"With CERES on Terra we will be able to see the global picture of energy fluxes for the first time since ERBE in 1989," Wielicki said. "The other exciting aspect of the Terra mission is the ability to combine the CERES data on energy flows with simultaneous data on surface, atmosphere and cloud properties measured by other instruments aboard. This lets us start to unscramble the relationships between cloud properties and radiation energy flows on local as well as global scales.

"This combination also lets us measure the energy flows of clear and cloudy atmospheres more accurately than every before," Wielicki said. "The combination will also let us look deeper into the mystery of why clouds appear to have changed in the tropics over the last decade."

One of the first things lead scientists Wielicki and Bruce Barkstrom will do is to compare CERES data from a previous satellite mission to Terra's data and look for confirmation of the changes. None of the climate models currently predict them.

However, before total activation of the Terra spacecraft, the baby needs to get rid of a little gas. And there are several weeks of "outgassing" before the instruments are turned on to start collecting images and data. Particles and gases not allowed to diffuse from the spacecraft can contaminate mirror or lens surfaces and corrupt instrument calibration.

"This new baby stays at the hospital for about a month of check-out," Wielicki said. "Already the two CERES instruments are turned on and the data indicates they are working perfectly. We wait about 30 days for outgassing of contaminant gases from the spacecraft launch and later orbital burns. So late January we will open the contamination covers and start observing the Earth."

NASA's Goddard Space Flight Center manages Terra for NASA's Office of Earth Science. Goddard reports that in spite of some minor software problems, the mission is going extremely well.

Center Begins Tabbs Creek Cleanup

Office of Public Affairs

Langley Research Center has begun the cleanup of Tabbs Creek, which was inadvertently contaminated with PCBs (Polychlorinated Biphenyls) and PCTs (Polychlorinated Terphenyls) from four storm sewers at NASA and the Air Force base.

"We've worked long and hard to prepare for a safe and thorough cleanup of Tabbs Creek," said Greg Sullivan, an environmental engineer and Langley's remedial project manager. "This is a site that has been studied for several years. We're happy, finally, to be moving forward with the actual cleanup."

NASA's cleanup goal is to reduce levels of PCBs and PCTs in sediments to levels that are even less than those set by the U.S. Environmental Protection Agency (EPA) to be protective of human health. Sullivan said the cleanup will take six to eight months.

The cleanup is happening in three steps: mobilization, sediment removal and demobilization.

The cleanup of Tabbs Creek involves excavating sediment, a mechanical process that scoops up the soil from the bottom of the creek. Excavating will remove about 7,500 cubic yards of contaminated sediment.
Photo by Jeff Caplan

Foster Wheeler Environmental Corp., hired by NASA, took the first step in late summer. A big part of the cleanup involves gaining access to the creek so contaminated sediments can be removed.

"Work crews have cleared and prepared areas where we must access the creek," Sullivan said. "We constructed a temporary road so that the vehicles and machines can get to the contaminated areas. Office and laboratory trailers have been brought to the site and we've constructed a temporary building, which we will use to dry and process the sediment before it is loaded onto trucks for transportation to an off-site landfill."

Included in the cleanup plan are procedures that work crews will follow for minimizing disturbances to the community during the excavation of sediment and transportation of the waste.

"We will also follow a strict health and safety plan and conduct environmental monitoring throughout the cleanup," Sullivan said.

The actual cleanup involves excavating sediment, a mechanical process that scoops up the soil from the bottom of the creek. Excavating will remove about 7,500 cubic yards of contaminated sediment.

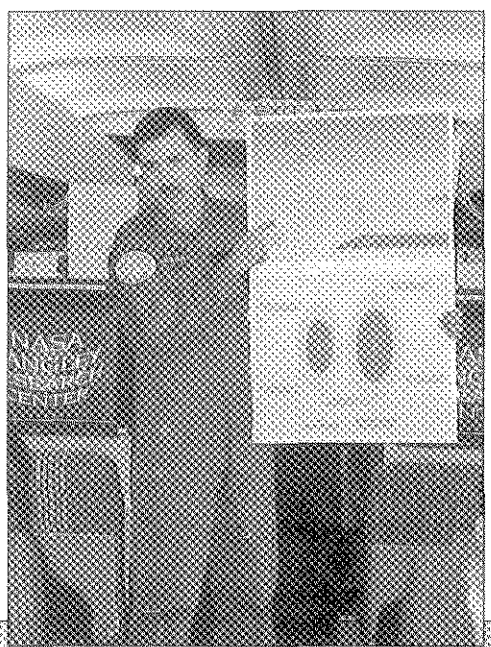
"Our work plan outlines strict procedures for the protection of the wetlands surrounding the creek. We will exercise extreme care during the cleanup to minimize any impact on this vital ecosystem," said John Lee, acting head of NASA Langley's Office of Security and Environmental Management.

The last stage, or demobilization, occurs when the contaminated sediment has been removed. The final step will be to remove the equipment and buildings and restore the creek bed.

"We recognize that Tabbs Creek is an important resource for the community," Sullivan said. "NASA is committed to completing the cleanup process in the safest and most thorough manner possible."

Langley Showcases Capacity Technologies At 'Home & Home'

The ARIES 757, below, was a popular tour stop during the second Code R "Home & Home" visit, which took place Dec. 13 and 14 at Ames Research Center. Ames requested that Langley send the 757 to highlight how the aircraft supports the Aviation Systems Capacity Program's research to increase aircraft operating efficiency and compatibility with future air traffic control systems. After welcoming the participants onboard, Langley staff, including Doug Arbuckle, right, Director of Langley's Airborne Systems Competency, provided an overview of simulation-to-flight research and explained how the aircraft was involved in two recent capacity program accomplishments: Airborne Information for Lateral Spacing (AILS) and Low Visibility Landing and Surface Operations (LVLASO).
Photos by Donna Roper and Luci Crittenden



Scanners Available For CMTS Inventory

By KEN THOMANN
SAIC

Langley Research Center's Office of Environmental Management now offers hand-held barcode scanners to speed up the chemical materials inventory reconciling process.

Chemical Material Tracking System (CMTS) users can check out a barcode scanner for up to two weeks by contacting the CMTS help desk at ext. 49200 or <cmts@larc.nasa.gov>.

When users check out a scanner, they will be shown how to use it and given printed instructions. Instructions for using the scanners also will be available online in the "Manuals and Guides" section of the CMTS Web site: <http://cmts.larc.nasa. gov/>.

Users can scan the barcode label instead of entering data into the CMTS by hand, so reconciling a facility's inventory can now be done more quickly and easily. It is also more convenient because the inventory can be reconciled at the chemical materials' storage location rather than at the user's computer.

For more environmental news, visit the Office of Environmental Engineering's monthly newsletter on the Web at <http://osemant1.larc.nasa.gov/env_inst/>.

There are two ways to use the scanners:

- Scan remaining inventory and all records not entered will be consumed.
- Scan inventory that is to be consumed.

The scanners will only scan labels printed with the new barcode font available from the CMTS download page. If the item will not scan, the user can type in the ID number of the container on the keypad of the scanner.

If another type of barcode scanner is being used in a facility, or if a facility plans to purchase a barcode scanner, contact the CMTS help desk for information on specifications and the format for the output of the scanner.

Agency Announces Top Stories of 1999

Langley-Supported Projects Make The List

On Dec. 20, NASA released its list of the top 10 stories of the 1999. The Agency's achievements extended from terrestrial airport runways to extrasolar planets and addressed concerns ranging from the environmental to the cosmological.

1 Hubble Illuminates Universe's Rate Of Expansion

Hubble scientists found a value for how fast the universe is expanding after eight years of painstaking measurement. The rate of expansion, called the Hubble Constant, is essential to determining the age and size of the universe. Measuring Hubble's constant was one of the three major goals for the telescope when it was launched in 1990. For more information, visit <http://oposite. stsci.edu/pubinfo/pr/1999/19/index.html>.

2 Astronomers Find Evidence Of First Planet Orbiting A Pair Of Stars

Astronomers funded by NASA witnessed for the first time a distant planet passing in front of its star, providing direct and independent confirmation of the existence of extrasolar planets that to date has been inferred only from the wobble of their star. For more information, visit <http://bustard.phys.nd.edu/MPS>.

3 Mars Global Surveyor Provides First Global 3-D Map of Mars

An impact basin deep enough to swallow Mount Everest and surprising slopes in Valles Marineris highlight a global map of Mars that will influence scientific understanding of the red planet for years. Generated by the Mars Orbiter Laser Altimeter (MOLA), the high-resolution map represents 27 million measurements gathered in 1998 and 1999. For more information, visit <http://ltp-www.gsfc.nasa.gov/tharsis/mola.html>.

4 Gamma Ray Burst Imaged for First Time

Astronomers racing the clock managed to take the first-ever optical images of one of the most powerful explosions in the Universe — a gamma ray burst — just as it was occurring on Jan. 23. Such bursts occur with no warning and typically last just for a few seconds. For more information, visit <http://science.nasa.gov/newhome/headlines/ast27jan99_1.htm>.

5 First Female Shuttle Commander

Orbiter Columbia's 26th flight (July 22-27) was led by Air Force Col. Eileen Collins, the first woman to command a Shuttle mission. STS-93 successfully carried to orbit the Chandra X-Ray Observatory, the third of NASA's "Great Observatories," joining the Hubble Space Telescope and the Compton Gamma Ray Observatory. For more information, visit <http://www.jsc.nasa.gov/Bios/htmlbios/collins.html>.

6 First Docking Of Space Shuttle With The International Space Station

STS-96 was the four-million-mile flight of Discovery, from May 27 to June 6, on which the crew performed the first Shuttle docking to the International Space Station and delivered more than 3,600 pounds of supplies — ranging from food and clothes to laptop computers — for the first crew to live on the station next year. For more information, visit <http://spaceflight.nasa.gov/shuttle/archives/sts-96/index.html>.

7 New Technology To Help Planes Land More Safely In Bad Weather

NASA and industry partners have developed new technology to allow planes to land safely in bad weather on parallel runways spaced as closely as 2,500 feet apart. Airports where this new approach, which expands on existing communication and navigation technology, could improve on-time arrivals are Detroit, Seattle, Minneapolis and Memphis. For more information, visit <http://www.aerospace.nasa.gov>.

8 Chandra, Third Great Observatory, Begins Work

After barely two months in space, NASA's Chandra X-Ray Observatory in September took a stunning image of the Crab Nebula, the most intensively studied object beyond our solar system, and revealed something never seen before: a brilliant ring around the nebula's heart. For more information, visit <http://chandra.nasa.gov>.

9 X-34 Rocket Plane Takes To The Sky For Safety Checks

Locked to the belly of its newly modified L-1011 carrier aircraft, a test version of NASA's X-34 rocket plane made its first flight in June as part of a certification process. The prototype of the robotic spacecraft will test new technologies and methods of operations needed to develop low-cost reusable space vehicles. For more information, visit <http://stp.msfc.nasa.gov/pathfinder/pathindex.html>.

10 Flagship of NASA's Earth Observing System Launched Dec. 18

Almost on the eve of the millennium, Terra was launched into space from Vandenberg Air Force Base, Calif., and at press time, was operating as expected. The mission will enable new research into the ways that Earth's land, oceans, air, ice and life interact as a whole climate system. For more information, visit <http://terra.nasa.gov>.

The "NASA CONNECT" staff poses with the award it received from the United States Distance Learning Association. Pictured are: first row, left to right, Wesley Jones, Gwen Wheatle and Steve King; second row, Heidi Boyette, Anna Ruzecki, Jennifer Pulley, Shelley Canright, Susan Heard and Bob Starr; and third row, Bill Bensen, Jeff Seaton, Kevin Krigsvold, John Evans, Franklin Fitzgerald, and Thom Pinelli.

Photo by Thom Pinelli

'NASA CONNECT' Wins USDLA Award

By JENNIFER TRINKLE
Office of Education

The United States Distance Learning Association (USDLA) named "NASA CONNECT" the best K-12 distance learning program in the U.S. for 1999 in November at TeleCon West in Anaheim, Calif.

The first-place award was based on the five programs in the '98-'99 "NASA CONNECT" series, the instructional quality of the programs in the series, technical production and the integration of print, video and Web-based media. Two programs in the '98-'99 series, "Quieting the Skies" and "Recipes for the Future," were singled out by the USDLA as exemplary.

"NASA CONNECT" is produced by Langley Research Center's Office of Education with technical assistance provided by Computer Sciences Corporation, the Learning Technologies Project and the Media Services Center.

Now in its third year of production, the goals of the award-winning, integrated math, science and technology instructional program are: to show students the application of math, science and technology on the job; to present math, science and technology as a process requiring creativity, critical thinking and problem-solving skills; to demonstrate workplace math, science and technology as a collaborative process; to raise student awareness of careers requiring math, science and technology; and to overcome stereotyped beliefs by presenting women and minorities performing challenging engineering and science tasks.

As of December, approximately 75,000 educators and 4.8 million students in all 50 states were registered for "NASA CONNECT."

The '99-'00 "NASA CONNECT" series consists of seven 30-minute instructional programs, delivered via television and the Internet, that demonstrate how mathematics, science and technology are used every day by NASA engineers and scientists. Each program in the series features two schools and includes a lesson guide for educators and parents containing a hands-on activity and a Web-based component.

"NASA CONNECT" is free to educators; there are no fees or licensing agreements. Off-air rights are granted in perpetuity. Educators do have to register to obtain the teacher materials. Educators are encouraged to tape the broadcast and copy the teacher materials. Neither the broadcast nor the teacher materials are copyrighted.

As of December, approximately 75,000 educators and 4.8 million students in all 50 states were registered for "NASA CONNECT."

For more information, visit the "NASA CONNECT" Web site at <http://edu.larc.nasa.gov/connect>.

AdVentures

CLASSIFIED

FOR SALE: Renovated house in Hampton's historic Wythe section. Two bedrooms, renovated bathroom, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, custom privacy fence, large detached garage workshop, one block from the Chesapeake Bay. $64,900. Call 247-5144.

FOR SALE: Two-story condo in Lee's Mill, next to Ft. Eustis. Two bedrooms, one and a half bathrooms, new carpet, new paint, new dishwasher, skylight, fenced patio and storage, built in 1994. Quiet neighborhood. HOA fee: security, trash, ground maintenance, playground, pool, etc. $61,900. Call 887-5026.

FOR SALE: 1996 GMC Suburban SLT, 4x4, tow package, ABS, leather, CD, luggage rack, running boards, power everything, excellent condition, 64K miles. $23,950. Call 898-8164.

FOR SALE: Sega game system with three controllers and six games: NBA All Star Basketball, Pat Riley's Basketball, Chakan, Columns, Desert Strike and Gunstar Heroes. $60. Call 826-1862.

FOR SALE: Stainless steel bug screen, fits 1997 and up Jeep Wrangler. New, never used. Retails for $40, asking $25. Call 874-7454.

HOUSEMATE WANTED: Seeking professional, non-smoker to rent room in a three-bedroom, two bathroom waterfront house in York County, 10 minutes from Langley. Garage parking space. No pets. $450 per month plus 1/3 utilities. Call 874-0254 or page 872-5485.

WANTED: Piano teacher for 9-year-old. Call 827-6447.

Eldercare Presentation Jan. 21

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will host "Eldercare: First Steps," a presentation by Patricia Meszaros, at noon Jan. 21 in the private dining room of the cafeteria.

Meszaros, a licensed clinical social worker, is the Employee Assistance Program Coordinator for REACH.

The brown-bag lunch program will be open to everyone; reservations are not required. Free pizza and soda will be available for AIAA members at 11:45 a.m. For more information, contact Marilyn Ogburn at ext. 41175 or at <m.e.ogburn@larc.nasa.gov>.

Blood Drive Dates

Langley's Occupational Health Service Office recently announced the Center's blood drive schedule for 2000: Jan. 26, March 22, May 24, July 26, Sept. 27 and Nov. 22. For more information, call Alice Eley at ext. 43308.

CDC Collecting Food Labels

The Langley Child Development Center (LCDC) is collecting food labels for the Campbell's Labels for Education program.

The program allows product labels from many companies — including Campbell's, Pepperidge Farm, Franco-American, Swanson, V8 and Pace — to be exchanged for educational items at no expense to the daycare center.

For a complete listing of eligible products, visit <http://www.labelsforeducation. com> on the Internet. To participate in the program, send food labels to Mail Stop 263.

Thompson Fellowships

The Office of Human Resources is accepting applications for the 24th annual Floyd L. Thompson Fellowship Program.

Interested individuals are encouraged to explore the possibilities of a research assignment with an appropriate institution and to seek the support of their line management for their candidacy. The required application form and instructions for its completion can be found on the Internet at <http://ohr-r.larc.nasa.gov/ do.fltfpin.html>.

Completed applications must be received by Feb. 29. For more information, call George Allison at ext. 42594.

AIAA Paper Competition

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics is seeking entries for its 2000 Young Professionals Paper Competition.

To be eligible, the paper must have been published or accepted for publication in an archival and refereed publication and originally submitted while the author was an AIAA member under the age of 35. (Previously submitted papers are eligible for this year's competition.)

AIAA members interested in participating in the competition should submit three copies of the manuscript, a copy of the acceptance letter and author information (including age and AIAA membership number) by Jan. 31 to John C. Lin at Mail Stop 170.

The award for the winning paper, judged on technical content and style by an independent reviewing committee, will be presented at the spring awards banquet. The winner will receive a certificate and a free one-year membership to AIAA, and his or her name will be engraved on a plaque permanently on display in the H.J.E. Reid Center. Prizes for second- and third-place winners also will be given.

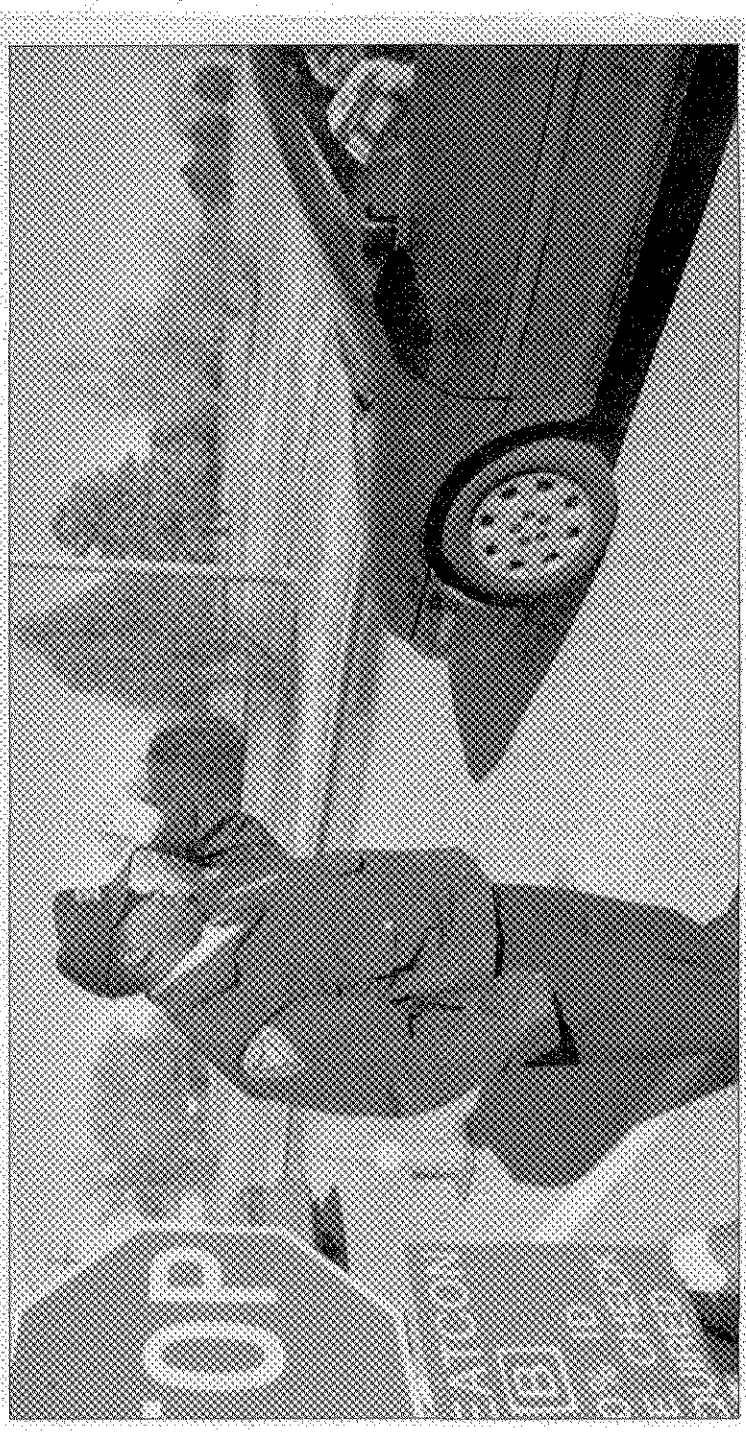
More information on the competition and other upcoming AIAA programs is available on the Internet at <http://www.seva.net/~aiaa>.

Duplicate Bridge Club Results

The results of the Langley Duplicate Bridge Club's Dec. 8 game: first place, Judy Ferris and Tom Finley; second place, Jay Robinson and S. Balakrishna; third place, John Ferrainolo and S.N. Sankaran; fourth place, Bill and Nan Jones.

For information about future games, call Geoff or Marty Temille at 850-1532.

Center Snapshot



Wayne C. Simmons of Dyncorp Security returned to work on Jan. 3 after a six-month break to recover from the cancer surgery he underwent in July. Simmons grew up in the Bronx, N.Y., and served in the U.S. Air Force until 1994; he has worked the gates at Langley Research Center for Dyncorp for the last three years. When he is not working, Simmons said he enjoys working on his car, making decorative pens and producing instructional videos for his church. What does he like about working at Langley? "Meeting people from different countries and traditions," he says. "You have people of all walks of life."

Photo by Jeff Caplan

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Researcher News

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Civil Employee and Contractor Publication

Volume 14 ❖ Issue 2 ❖ Jan. 28, 2000

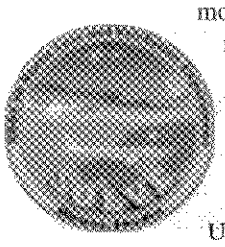
SAGE II Experiment

Campaign Kicks Off In Sweden

By CHRIS RINK
Office of Public Affairs

Six teams of Langley Research Center scientists joined researchers in Sweden this month for the largest field campaign ever to study ozone loss over the North Pole.

The second stage of the international SAGE II Ozone Loss and Validation Experiment (SOLVE) involves more than 350 researchers, technicians and support personnel from the U.S., Canada, Europe, Russia and Japan. It will be conducted jointly with the European Commission-sponsored Third European Stratospheric Experiment on Ozone (THESEO) 2000.



Mission results will expand the present understanding of polar ozone dynamics and improve ozone loss prediction forecasts. In addition, data will be used in combination with results from Langley's future stratospheric aerosol and gas experiment (SAGE) III satellite instrument. SAGE III is scheduled for launch next summer aboard the Russian Meteor-3M satellite.

Continued on Page 6

Center Director Jeremiah F. Creedon, NASA Administrator Daniel S. Goldin, Sen. Charles Robb and Rep Bobby Scott share the stage in the H.J.E. Reid Conference Center following the announcement that the Center will receive an additional $250 million in funding over the next five years.

Photo by Jeff Caplan

Future Looks Brighter

Lawmakers Pledged Support For Langley

By JIM ROBERTS
Researcher News Editor

A new year typically brings hope that it will be better than the previous one. For Langley Research Center, the year 2000 began with a lot of hope: a potential for more money and more jobs.

Sen. Charles S. Robb, Rep. Bobby Scott and NASA Administrator Daniel S. Goldin visited Langley on Jan. 7 to announce that the Center will receive more than $250 million over the next five years for its programs.

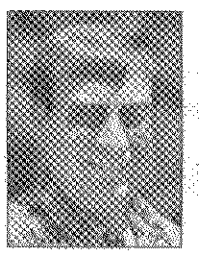
"This funding — which is over and above last year's budget — will support both new initiatives and augment existing efforts," Robb told a crowd in the H.J.E. Reid Conference Center Auditorium that was spilling into the lobby and adjacent rooms.

"The money is exclusive of funding for Langley's significant role in space launch pro-

■ *Sen. Charles S. Robb's and NASA Administrator Daniel S. Goldin's prepared remarks appear on pages 3 and 4 respectively.*

Continued on Page 3

Dwoyer Appointed To Mars Assessment Team



Dwoyer

From NASA Headquarters

Team's Report Is Due By Mid-March

Douglas L. Dwoyer, the Associate Director for Research and Technology Competencies at Langley Research Center, is one of 16 engineers, scientists and executives appointed by NASA Administrator Daniel S. Goldin to the Mars Program Independent Assessment Team.

The team, which has been chartered to review NASA's approach to robotic exploration of Mars in the wake of the recent loss of the Mars Polar Lander mission, held an organizational meeting on Jan. 7 at NASA Headquarters and has since concluded a two-and-a-half-day meeting at the Jet Propulsion Laboratory (JPL) in Pasadena, Calif.

The team will evaluate several recent successful and unsuccessful NASA missions to deep space, including Mars Pathfinder, Mars Global Surveyor, Mars Climate Orbiter, Mars Polar Lander, Deep Space 1 and Deep Space 2. It will

Continued on Page 6

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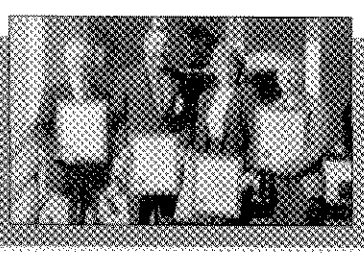

Award-Winning Software Includes Langley Program — Page 6

February Colloquium: John Anderson Jr. On 'The Sound Barrier' — Page 7

News Briefs

Around the Agency

SHUTTLE PROGRAM JOINS STAMP COLLECTION

The Space Shuttle Program joined video games, the Cabbage Patch Kids dolls and 12 other American memories as part of the U.S. Postal Service's "Celebrate the Century" program; the 15-stamp series was unveiled at Kennedy Space Center.

The stamps, which are available at post offices across the country starting today, were selected by the public during nationwide balloting in February 1999. The stamps highlight significant events of the 1980s. RELEASE: 00-12

CHANDRA RESOLVES X-RAY BACKGROUND GLOW

While taking a giant leap toward solving one of the greatest mysteries of astronomy, NASA's Chandra X-ray Observatory also may have revealed the most distant objects ever seen in the Universe and discovered two puzzling new types of cosmic objects.

Chandra has resolved most of the X-ray background, a pervasive glow of X-rays throughout the Universe, which was first discovered in the early days of space exploration. Before now, scientists have not been able to discern the origin of the hard, or high-energy, X-ray background, because until Chandra no telescope has had the technology to resolve it.

For images connected to this release, and to follow Chandra's progress, visit the Chandra sites at <http://chandra.nasa.gov and http://chandra.harvard.edu>. RELEASE: 00-10

SATELLITE IMPROVES RAINFALL FORECASTING

New research shows that adding rainfall data from NASA's Tropical Rainfall Measuring Mission (TRMM) satellite and other meteorological satellites to forecast models can more than triple the accuracy of short-term rainfall forecasts.

These findings by researchers at Florida State University were presented today at the annual American Meteorological Society's (AMS) meeting in Long Beach, Calif., and will be featured in an upcoming edition of the Journal of Climate.

TRMM, a NASA-Japanese mission, is part of NASA's Earth Science Enterprise, a long-term research program designed to study the Earth's land, oceans, air, ice and life as a total system. Information and images from the TRMM mission are available on the Internet at <http://trmm.gsfc.nasa.gov/>. Information on the AMS is available at <http://www.ametsoc.org/>. RELEASE: 00-9

GOLDIN ON NASA'S ROLE IN WEATHER PREDICTION

In a keynote address to weather forecasters at their annual convention, NASA Administrator Daniel S. Goldin outlined the space agency's role in studying Earth's climate — a commitment to scientific research and technology development that will help forecasters make more accurate weather predictions in the new millennium.

Speaking to the American Meteorological Society convention in Long Beach, Calif., Goldin discussed how NASA technology and climate studies can help predict such dramatic events as El Nino and La Nina — providing advance notice that saved America billions of dollars last year alone. For the future, NASA has set goals for its Earth Sciences research and technology development projects that may result in new satellite technologies and models to help National Weather Service replace the common three- to five-day forecasts of today with accurate 10- to 14-day forecasts, Goldin added. RELEASE: 00-8

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Anita Runkel, left, an accountant in the Office of the Chief Financial Officer at Langley Research Center, presents NASA educational materials to Norma Blackwell, a teacher at Portland Primary School in England, and Blackwell's son, Michael. Runkel and her husband, Harold, spoke about NASA educational mission and the aerospace industry at two public schools during their recent 12-day trip to England; they also presented a flag from Virginia's Isle of Wight County to the Isle of Wight in England.

Photo courtesy of Anita Runkel

Wind Tunnel Named After Nicks

Texas A&M University recently named its Low Speed Wind Tunnel after the late **Oran W. Nicks**, a former Deputy Director at Langley Research Center.

An official dedication ceremony is tentatively scheduled for April 20.

Nicks joined NASA in 1960 and served as the Agency's Director for Lunar and Planetary Programs. He worked on the Mercury and Viking programs and was a key player in getting Langley named as the center to manage the Lunar Orbiter program.

Nicks

Nicks served as Deputy Director at Langley from 1970 to 1980, when he retired to become the director of the Texas A&M Low Speed Wind Tunnel, a position he held until 1997. He died one year later at the age of 73 in a crash landing of his glider plane.

For more information, visit the Oran W. Nicks Low Speed Tunnel Web site at <http://wind.tamu.edu/introduction.htm>.

Whitcomb Receives Aeronautical Award

Richard T. Whitcomb will receive the National Academy of Sciences' Award in Aeronautical Engineering during the Academy's 137th annual meeting on May 1 in Washington, D.C. Whitcomb, a distinguished research associate (retired) at Langley Research Center, was chosen for his pioneering contributions to the aerodynamic design of high-performance aircraft.

The NAS Award in Aeronautical Engineering is awarded every five years for distinguished contributions to aeronautical engineering. The $15,000 award was established by a gift of Dr. and Mrs. J.C. Hunsaker and has been presented since 1968.

Letters

"I would like to thank all my friends and co-workers at Langley who participated in my retirement social and gift contribution. A special thank you goes to the staff at the National Transonic Facility and the people in the Research Facilities Branch. My years at Langley have been both enjoyable and rewarding for me. Again, thank you."

George Boyles

"I would like to thank all of my friends and co-workers for my recent retirement luncheon. My wife and I had a very enjoyable time. Thank you very much for the cards and gifts. I will always treasure the memories and friendships of my years at Langley. I wish you all continued success in the new year."

Rich Boyden

Retirement

The Office of Procurement will host a retirement party for **Joan Y. Crepps** at 5 p.m. Feb. 4 in the H.J.E. Reid Conference Center. The cost is $11 per person; the suggested gift-only donation is $3.

Please RSVP with payment by Jan. 28 to Sherry Harper at ext. 42474 or Linda Fitzgerald at ext. 42359.

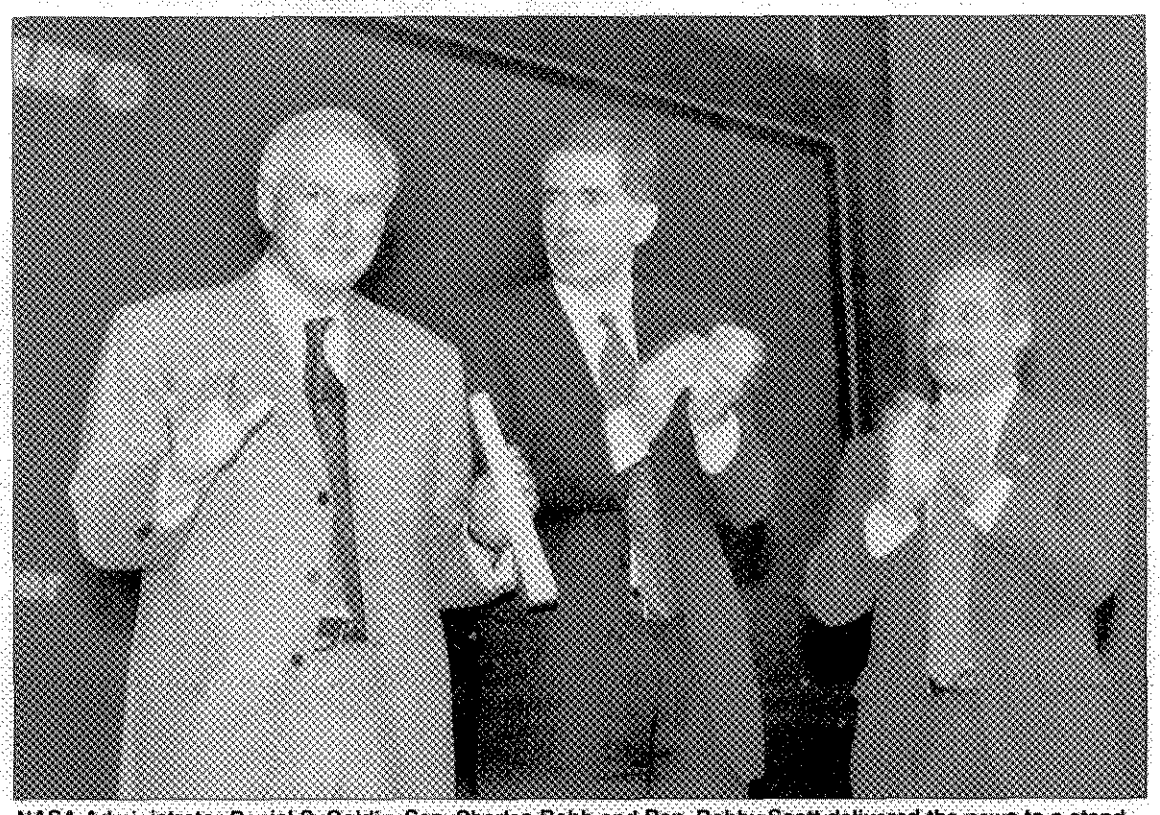
Clarification

An article in the Oct. 22, 1999, edition of the *Researcher News* about Hernandez Engineering Inc. (HEI) winning the Recertification and Configuration Management Services (R&CMS) contract at Langley Research Center neglected to mention HEI's subcontractor, Mainthia Technologies, Inc. Mainthia, which also supports Langley's Facilities Systems Engineering Division and the Facilities Test and Engineering Division at Glenn Research Center, will be responsible for the computerized maintenance management system program cur-

Sen. Charles S. Robb's Remarks ...

'Our Efforts Have Not Fallen On Deaf Ears'

Editor's note: These were Sen. Charles S. Robb's prepared remarks for his address to Langley Research Center employees on Jan. 7.



NASA Administrator Daniel S. Goldin, Sen. Charles Robb and Rep. Bobby Scott delivered the news to a standing-room-only crowd of employees in the H.J.E. Reid Conference Center.

Photo by Jeff Caplan

The last time I was at Langley was in August, shortly after the House had proposed to cut over a billion dollars from NASA's budget. At the time, all of us were very concerned about the kinds of things that such a huge budget cut could do to Langley, and to the rest of NASA. It was a tough fight, but we got every dime of that money added back to the NASA budget, and won support to add an additional $20 million for noise research.

Today, we're here not just to talk about Langley's prospects for the next year, but to talk about the Langley we'll see over the long term. As you all know, Langley has a great story to tell, and I've been spending the past few months telling it to everyone who would listen to me in Washington, D.C.

I met with the President's top advisers at the Office of Management and Budget. I met with the man you'll hear from in a few minutes, NASA Administrator Dan Goldin. I arranged for Roy Harris, the former director of aeronautics research here at Langley, and now a member of the NASA Aeronautics Support Team, to meet directly with the President's top NASA advisers just as the President was putting the final touches on his budget for the next year.

These were good meetings, and ones that I think we'll find were very helpful when the President's budget is announced early next month.

While the actual budget is embargoed until its release date, I'm pleased to be able to tell you some very good news today. Our vigorous efforts to convince the Administration that aeronautics research is still important have not fallen on deaf ears. Over the next five years, the President and Administrator Goldin have agreed to boost funding for programs led out of NASA Langley by more than a quarter billion dollars!

This funding — which is over and above last year's budget — will support both new initiatives and augment existing efforts.

> *"Today, we're here not just to talk about Langley's prospects for the next year, but to talk about the Langley we'll see over the long term."*

The money is exclusive of funding for Langley's significant role in space launch programs. And most importantly, unlike in the past, most of this new funding will be spent right here in Virginia.

Among other programs, Langley will see new funds directed to the Small Aircraft Transportation Program, which will fundamentally change our future air transportation system for both business and personal air travel. The Small Aircraft Transportation Program will enable travel for the public at their convenience — any time, anywhere to over 40,000 airports — not the 400 airports used today with our overcrowded hub and spoke system — and we'll do it with the same level of safety of today's commercial jet transport aircraft.

Additionally, Langley will see a new infusion of funds for it's airplane noise reduction program. The work done at Langley with this program will enable our airports to become better neighbors within their communities. With the new emphasis on this program, your goal will be to keep the airplane noise within the airport boundary and significantly improve the quality of life for those who live within airport communities.

Langley will also see funds directed to strengthen its ongoing efforts in its Intelligent Synthesis Environment. This program will revolutionize our approach to the engineering and product process and will have a major impact on the development, deployment and training of tomorrow's workforce.

Finally, Langley will be designated to lead the Agency in revolutionary new aerospace concepts that will exploit the breakthrough technologies that Langley will be developing in the future. It will be Langley's challenge to develop the technology that could lead to an intelligent, self-diagnostic and self-healing space transport, for example, or a resilient, evolvable "aquabot" that could explore the oceans of other planets and moons.

In this new budget, the Langley civil service workforce will finally be stabilized and increased. With the combination of its historic record and the exciting new work now planned, Langley will be a magnet to attract the best and brightest from academia and industry to complement its current workforce.

Much of thanks here should go to the Langley Community Support Team, now known as the NASA Aeronautics Support Team. As many of you know, they've provided valuable support over the past few months as we've tried to drum up support for aeronautics. They've been particularly helpful in providing their expertise on some of the technical issues surrounding aeronautics research, and helping us get our message across.

Let me just say that at a time when aeronautics research has fallen out of favor with many in Washington, I still firmly believe that new investments in basic aeronautics research are vital to our Nation. As our highways and skyways become more crowded, it's essential that we find ways to move people in ways that are faster, quieter and more efficient than ever before. Without significant new investments in aeronautics research, our transportation infrastructure is certain to grind to a halt.

What's equally important, in my view, is that Langley continue to move forward. Consolidation in the civil aviation market has made aeronautics research an increasingly tough sell up in Washington, and we'd be foolish to look only to aeronautics as a way to keep Langley as vital in this new century as it was in the last.

Langley has the finest engineers and scientists in all of NASA — Dan Goldin will tell you so himself — and this new budget will make sure that we can bring other work here to keep Langley strong for the future. I can assure you that I'll be fighting for it vigorously in Washington over the coming year.

As I mentioned earlier, last month I met with Administrator Goldin, and we had a long talk about Langley's role in NASA. When he told me how much he respected Langley, and laid out his vision of Langley's promising new future, I wanted to make sure he came down here as soon as possible to share his vision with you.

Support

Continued from Page 1

grams," he said. "And, most importantly, unlike in the past, most of this new funding will be spent right here in Virginia."

Robb said the money will be designated for the Small Aircraft Transportation System (SATS), airplane noise reduction and the Intelligent Synthesis Environment (ISE) Program.

"Finally," Robb said, "Langley will be designated to lead the Agency in revolutionary new aerospace concepts that will exploit the breakthrough technologies that Langley will be developing in the future."

Robb said the new budget also will allow for Langley's civil service workforce to stabilize and possibly even increase.

"With the combination of its historic record and the exciting new work now planned," Robb said, "Langley will be a magnet to attract the best and brightest from academia and industry to complement is current workforce."

Also on-Center for the announcement were Dan Scandling, Rep. Herbert Bateman's chief of staff; and members of the NASA Aeronautics Support Team, whom Robb credited.

After Robb's announcement, Goldin articulated some of his goals for Langley — notably in the programs Robb cited — and he credited the Center's employees for their perseverance.

"I know Langley has been heavily impacted by the changes in the Agency, including the restructuring of NASA, downsizing of personnel and changing national priorities," Goldin said. "I want you to know I understand how these changes and the tremendous uncertainty and concern for the future have affected you.

"I am here today to salute you and to stand with these great supporters of our mission to re-emphasize NASA's commitment to you and to the future of NASA Langley."

NASA Administrator Daniel S. Goldin's Remarks ...

'I Am Here To Salute You'

Editor's note: These were NASA Administrator Daniel S. Goldin's prepared remarks for his address to Langley Research Center employees on Jan. 7.

Good afternoon, everyone. Thank you for being here.

Before I begin, I want to salute the distinguished members of Virginia's Congressional delegation who are here today.

I first met Sen. Chuck Robb when I came to Washington over seven years ago. Sen. Robb is a strong supporter of NASA ... but he really makes me work! He asks tough questions, demands answers and casts his vote based on what's best for this nation. We at NASA are fortunate to have his kind of leadership in the Senate.

Congressman Bobby Scott has also been a strong supporter of the incredible work you do here at Langley. And he is a strong voice for you and for Virginia in the House. Congressman Scott also asks tough questions and demands accountability from NASA, but the results speak for themselves. The Langley team steps up and delivers time after time.

Congressman Herb Bateman is also deeply committed to the incredible team at Langley. Sadly, Congressman Bateman has announced that he will retire after this term. But Virginia, NASA Langley and America are much better places because of his nearly 8,000 votes in the House.

Unfortunately, Congressman Bateman couldn't be with us today, but he deserves a round of applause for his years of service to the first district.

We are honored that Congressman Bateman sent his highest-ranking staff member to be with us — Dan Scandling. Dan, I hope you will pass along our gratitude to the Congressman for his service to this nation.

I also want to recognize the members of the local community who have been such ardent supporters of NASA Langley. Your support and dedication have helped NASA move through some challenging times, and we thank you for that.

And there have been challenges. I don't think that's really news to anyone here.

I know Langley has been heavily impacted by the changes in the Agency, including the restructuring of NASA, downsizing of personnel and changing national priorities.

I want you to know I understand how these changes and the tremendous uncertainty and concern for the future have affected you.

And I truly appreciate your continued hard work and dedication to the Agency during these trying times. It has been hard on all of us.

But the people of NASA Langley have persevered. You have risen to the challenges and maintained your commitment to excellence.

So I am here today to salute you and to stand with these great supporters of our mission to re-emphasize NASA's commitment to you and to the future of NASA Langley.

As you know, this center was named for Samuel Langley. He was an aeronautics pioneer — not always successful, but a pioneer nonetheless. And he faced his share of naysayers. But Professor Langley was the first to encounter the aeroelasticity problem. It was this Center that went on to understand this problem and open up the speed and performance of future aircraft. Here is what the New York Times had to say about Langley's early work on the airplane, and I quote:

"We hope that Professor Langley will not put his substantial greatness as a scientist in further peril by continuing to waste his time and the money involved in further air experiments. Life is short, and he is capable of services to humanity incomparably greater than can be expected to result from trying to fly."

Those lines appeared in the Times on Dec. 10, 1903. Yes, it was just one week before the Wright Brothers' historic flight at Kitty Hawk.

I recently received a letter from Arthur C. Clarke, who reminded me how to respond to such criticism. Clarke pointed out the words of Winston Churchill, who carried England through the dark days of World War II:

"Never give up, never give up, never EVER give up."

The visionaries who believed in the possibility of powered human flight never gave up, and the results are aeronautics history.

Each of you on the NASA Langley team has an important role in that history because of the revolutionary aerospace leadership you have provided to the world.

As I look at the audience, I see many of the Langley veterans who helped create the great history of this facility.

You clearly know your legacy, but there are some here who may not.

This great facility was the first civil aeronautics lab, where NACA nurtured U.S. aviation from infancy to world leadership.

Fundamental research and wind tunnel testing of airfoil design concepts happened at Langley in the '20s and '30s. This enabled the first Golden Age of aviation and the data is still used to design aircraft today.

In the '40s and '50s, Langley provided an equally significant achievement through the testing and understanding of structural shells. This research became the underpinning for the aerospace industry's design handbooks.

Since then, Langley has invented winglets, the supercritical wing, the area rule and many other incredible discoveries.

And even before NACA became NASA, Langley was already leading the way into space. Research for the first space station was going on here in the early 1950s — and Langley even established the first Space Station Office in the Agency in 1958. That's what I call looking ahead!

The blueprints for the Mercury and Gemini programs came from Langley's own Max Faget, my dear friend, who designed the Mercury capsule in the early 1950s, and when

Continued on Page 5

"I have a vision for NASA Langley to lead NASA in integration of aeronautics and space technologies to bridge the gap between flight in the atmosphere and flight in space. This will build on Langley's heritage and strengths in fundamental technology disciplines and innovative vehicle concepts."

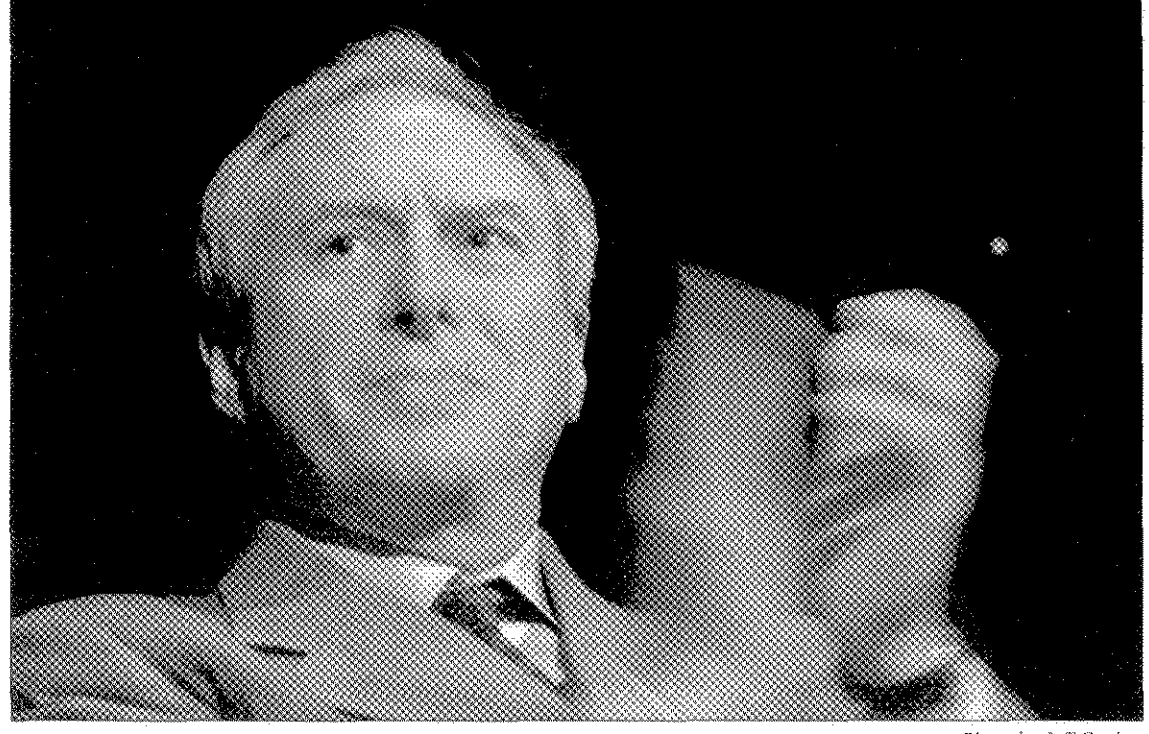


Photo by Jeff Caplan

Goldin

Continued from Page 4

Sputnik spurred the nation into action, we were ready.

The first astronauts trained here — and research by the Langley team was essential to meeting President Kennedy's visionary goal of sending humans to the moon and returning them to Earth safely. It was the Langley team who led the world in rendezvous, docking and re-entry research, and the nation owes you a tremendous debt of gratitude for it.

Langley also provided spectacular management of the Lunar Orbiter Project that made the systematic photographic maps of the lunar landing sites.

But you refused to rest on your laurels. Langley played a key role in the development of the Space Shuttle. Your wind tunnels performed all the basic aerodynamic testing during the early years of Shuttle development.

You were there at the beginning of aeronautics, and you were there at the beginning of space exploration.

Now it's time to reassert Langley's leadership in research that tackles and solves the challenges of the future.

And I'm committed to help make this happen by going "Back to the Future."

Back to world class innovation.

Back to the things that made Langley great to start with.

No, I'm not planning to resurrect the Mercury or Gemini programs.

But I do believe the spirit of those days will make Langley's future a dynamic and exciting one.

How?

Well, many of the best engineers and scientists in the world are right here at Langley. And we need you to focus on the revolutionary, not just the evolutionary.

We need to balance fundamental, high-risk, long-term R&D with focused programs. The last time I was here at Langley, I was asked a question regarding the level of funding for fundamental work at this Center. I said I believed that there was enough money at Langley to aggressively pursue new innovative research activities. I turned to Jerry and asked him if he agreed — his response was no. I got the message and am now here to tell you, we are committed to fix the problem. We are going to ensure Langley returns to a premier, breakthrough research organization for the Agency as we move into the next century.

This also means we will take risks. If we are truly pushing the envelope, not all of our efforts will succeed. But this Agency, this Administrator and this Center will support you in taking the risks necessary to achieve great things.

> *"The last time I was here at Langley, I was asked a question regarding the level of funding for fundamental work at this Center. I said I believed that there was enough money at Langley to aggressively pursue new innovative research activities. I turned to Jerry and asked him if he agreed — his response was no. I got the message and am now here to tell you, we are committed to fix the problem."*

I have a vision for NASA Langley to lead NASA in integration of aeronautics and space technologies to bridge the gap between flight in the atmosphere and flight in space. This will build on Langley's heritage and strengths in fundamental technology disciplines and innovative vehicle concepts.

We will continue to invest in Langley's unique expertise in hypersonic flight and scramjet development.

We will strengthen Langley's leadership in innovative advanced materials and structures, controls, aerodynamics and aerothermodynamics, and acoustics.

To do this, we will provide the resources to exploit emerging opportunities in nano-technology, biologically inspired technologies and other revolutionary approaches.

Langley will continue to develop innovative technologies and concepts for atmospheric sensors, instruments and platforms.

Langley will also continue to provide critical technological support to the nation's military aircraft programs.

And we will create a new role for Langley as a leader for the assessment of revolutionary aerospace system concepts and architectures and provide resources needed to assure technology breakthroughs will be there to support these advanced concepts. This is critical in determining how NASA can best invest its resources to enable future missions.

And I am going to provide seed money to get this critical activity started today.

Langley will improve our national air transportation system through cutting-edge research in aircraft noise reduction and safety.

Your excellence in systems analysis is already helping us to develop air vehicle concepts that will completely change the paradigm of air travel, like the Blended Wing Body concept you see to my right.

As a matter of fact, Vice President Gore recognized Langley's outstanding capabilities when he gave NASA the challenge of solving the nation's aviation safety technology problems. This action resulted in more than doubling of the safety budget at Langley.

You have provided outstanding leadership for the national NASA/FAA Aviation Safety Program.

You are helping to revitalize the GA industry through the innovative AGATE program. This is more than just ground-based development of new components and systems. Langley will integrate this technology into new prototype general aviation aircraft to demonstrate this advanced capability in a real flight environment to support the Small Aircraft Transportation System (SATS) program. The last time I was here I declared the existing aircraft fleet would stay. I am here to tell you we will add to the Langley aircraft fleet the next generation of general aviation aircraft which will fly at Langley to ensure the successful development and evaluation of SATS.

And you are helping improve commercial aviation through the noise reduction initiative.

And for anyone who might be tempted to underestimate the significance of your efforts, just ask the 600 million people who use air travel each year for business and leisure travel.

Or ask the thousands of people who live near our nation's airports and will reap the benefits of your work to reduce aircraft noise and improve safety.

Those people know your work improves their quality of life — for today and tomorrow.

And speaking of tomorrow ...

Langley is currently leading the Hyper-X Project, which will begin to bridge the gap between aeronautics and space operations by providing the first flight demonstration of hypersonic air-breathing propulsion. We are going to accelerate this activity with new concepts currently under study today.

Langley has made and will continue to make key contributions to NASA's X-33, X-34 and X-37 programs in aerodynamics, aerothermodynamics, and structures and materials.

These contributions will help us achieve an order of magnitude reduction in the cost of space launch, while increasing reliability and safety.

And Langley will make vital contributions to improving the scientific understanding of the Earth's atmosphere and the way changes in the atmosphere affect our environment here on Earth.

You have a great future ahead of you at NASA Langley. And as you draw inspiration from the spirit of the past, you will create the dreams of the future.

I want to challenge each and every one of you to stretch your imaginations to the limit to create the incredible innovations that the nation needs from you.

We need whisper-quiet aircraft. Why can't we reduce the noise of commercial aircraft so it is confined within our airport boundaries?

> *"With the combined efforts of all of us here today — the NASA HQ staff, the talented Langley team, our Virginia Congressional delegation and our dedicated supporters in the local community — we will ensure a vital and exciting future for Langley. I think Doc Brown from the movie 'Back to the Future' sums it up best: 'Your future hasn't been written yet. No one's has. The future is whatever you make it. So make it a good one!'"*

What about eliminating sonic boom? That would enable supersonic, over-land flight leading to a whole new paradigm for air travel.

We need to revolutionize personal air transport. Why can't we have air flight anywhere, at any time, for anyone? And let's make it ultra-safe and affordable at the same time.

Let's provide the Highway-In-The-Sky (HITS) capability to every private pilot and Synthetic Vision in the cockpit to prevent accidents and allow pilots to "see through the weather."

We need future aircraft and spacecraft configurations radically different from what we know today.

What if we could eliminate traditional control surfaces by using multifunctional, self-adapting, warping surfaces?

Or create morphing vehicle configurations that re-tune themselves during each phase of flight? These advanced materials will be multifunctional and self-adapting and 10 times stronger than today's best materials.

Or design vehicles with distributed intelligence that are self-healing and self-sensing?

Langley researchers are already working these technologies and doing great things. To reach the exciting future I envision here at Langley, we need to develop and apply those technologies in a more aggressive and unconventional way.

In short, we need revolution, not evolution.

In the future, I envision Langley will be the agent of change and will lead the revolution in developing the next generation engineering design environments and processes.

This will include geographically distributed teaming, fully multi-sensory 3-D immersive environments, and rapid and accurate full-life cycle simulation, including cost and risk assessments.

In the future, we will design and operate all of our missions in virtual space before bending any metal, all based on the work you will do here at Langley over the next decade.

With the combined efforts of all of us here today — the NASA HQ staff, the talented Langley team, our Virginia Congressional delegation and our dedicated supporters in the local community — we will ensure a vital and exciting future for Langley.

I think Doc Brown from the movie "Back to the Future" sums it up best:

"Your future hasn't been written yet. No one's has. The future is whatever you make it. So make it a good one!"

Thank you very much.

SOLVE

Continued from Page 1

The four-month experiment, which began in November 1999, focuses on the puzzling balance of ozone production and loss and its movement in the lower Arctic stratosphere from early winter to spring. Analysis of ozone and other atmospheric gases will show how the stratosphere's chemical composition changes through the Arctic winter.

The SOLVE campaign hopes to identify the processes that control ozone concentrations over winter.

In turn, scientists hope to better understand the composition of polar stratospheric clouds and the chemical reactions involved in ozone loss on the surfaces of these cloud particles.

SOLVE will deploy a large number of instruments aboard specialized aircraft and long-duration balloons.

There will be ground-based instruments from more than 30 European stations and the earth observing satellite instruments Halogen Occultation Experiment (HALOE), Stratospheric Aerosol and Gas Experiment (SAGE) II, and the Polar Ozone and Aerosol Measurement (POAM) III.

Recent data and modeling efforts suggest that global warming might lead to larger than expected Arctic ozone losses in the future and may also delay the anticipated recovery of the global ozone layer. At present, models cannot account for the amount of Arctic ozone loss during the winter.

The Langley SOLVE Program and Project is managed by Lamont Poole and Chip Trepte. Thirteen Langley employees travelled to Sweden for the January phase of the three-part study.

The "Arena Arctica" research hangar at the Kiruna commercial airport functioned as base operations, housing the aircraft and many of the scientific instruments.

Balloons, with their payloads from a few pounds to a few thousand pounds, were launched from Esrange, a balloon and rocket launch facility near Kiruna.

For more information on atmospheric sciences, visit <http://asdwww.larc.nasa.gov/ceres/ASDceres.html> on the Web. For more information on SOLVE, visit <http://cloud1.arc.nasa.gov/solve/index.html>. For more information on THESEO 2000, visit <http://www.ozone-sec.ch.cam.ac.uk>.

Jeff Stroud, Olaf Storaasli, Tina Lotts and Jerry Housner were part of an eight-person team that developed Genoa, a failure-analysis software with unique predictive capabilities.

Photo courtesy of Olaf Storaasli

Software Of The Year

Four Langley Employees Contributed To Glenn's Award-Winning Program

From NASA Headquarters

Four Langley Research Center employees were part of a Glenn Research Center team that tied for first place in the 1999 NASA Software of the Year competition.

Jerry Housner of the Intelligent Synthesis Environment (ISE) Program Office and Tina Lotts, Olaf Storaasli and Jeff Stroud of the Analytical & Computational Methods Branch were part of the eight-person team that developed Genoa, a failure-analysis software with unique predictive capabilities. The other team members were Glenn's Christos C. Chamis and Pappu L.N. Murthy, Frank Abdi of AlphaStar Corp. and Levon Minnetyan, a professor at Clarkson University.

Genoa simulates and predicts aging and failure in all sorts of structural materials, including high-tech alloys and ceramics used in airplanes, cars, engines and bridges.

The development of Genoa began at Glenn in the 1970s and was commercialized only about a year ago. A minority-owned small business is now marketing the software, which is used by aircraft manufacturers and others.

The Genoa software can predict progressive aging and failure of materials as diverse as metals, ceramics, concrete and all types of composites. The ability to predict material and structural failure helps manufacturers build stronger aircraft fuselages, engines, car bodies, and bridges. This is especially important today as commercial aircraft fleets age and many elements of road and bridge infrastructure reach the end of their useful lives.

> *Genoa can predict progressive aging and failure of materials as diverse as metals, ceramics, concrete and all types of composites.*

Langley contributed its General-Purpose Equation Solver (GPS) to the Genoa project. The GPS has a tenfold speed advantage over other solvers and can handle a very broad class of complex structural systems.

The GENOA team shared the Software of the Year award with a 25-person team from Ames Research Center and the Jet Propulsion Laboratory that developed Remote Agent, a giant leap in the world of artificial intelligence.

Over three days last May, Remote Agent planned Deep Space 1 activities on board and then carried out the plan without ground intervention. The software package took command of Deep Space 1 during a flight experiment, and the artificial intelligence more than met expectations. The software detected, diagnosed and fixed simulated problems, showing that it can make decisions to keep a mission on track. This capability will reduce the cost of future spacecraft operations as computers become "thinking" partners along with humans. Remote Agent is a precursor to self-aware, self-controlled robots, exploring rovers and intelligent machines that previously have existed only in science fiction.

The NASA award is the largest award for software excellence in the United States. The winners were selected from 50 entries representing more than 150 corporations, universities and government laboratories.

Editor's note: *The* Researcher News *published a brief announcement about the Software of the Year Award in August, but the Langley contributors were not acknowledged at that time.*

Dwoyer

Continued from Page 1

analyze the budgets, content, schedule, management structure and scientific organization of these missions. It will then assess how these roles and responsibilities are related to mission safety, reliability and success. It also will review proposed revisions to NASA's existing Mars exploration program architecture as options are developed by a group at JPL.

At the JPL meeting, the team heard detailed reports about the laboratory's overall Mars Program management structure and about the history of the Mars Program. They also heard from members of several Mars projects, including key people from the Mars Polar Lander and Mars Climate Orbiter projects.

"Our team is at the beginning of our fact-finding mission," said Thomas Young, chair of the Assessment Team. "We are asking a lot of questions, and JPL is cooperating by giving us detailed answers. Our job is to look at NASA's overall approach to the robotic exploration of Mars."

Dwoyer added, "The team is operating with an open mind and trying to understand all of the facts."

In addition to Young and Dwoyer, the team's participants are: James Arnold, Ames Research Center; Thomas Brackey, Hughes Space and Communications Co.; Michael Carr, U.S. Geological Survey; Gen. Ronald Fogelman, U.S. Air Force (retired); Maj. Gen. Ralph Jacobsen, U.S. Air Force (retired); Herb Kottler, Massachusetts Institute of Technology (MIT) Lincoln Laboratory; Peter Lyman, consultant; Joanne Maguire, TRW Space & Technology Group; Robert Pattishall, National Reconnaissance Office; Larry Soderblom, U.S. Geological Survey; Peter Staudhammer, TRW Inc.; Kathy Thornton, retired NASA astronaut; Peter Wilhelm, Naval Center for Space Technology; Brian Williams, MIT Space Systems Laboratory; and Maria Zuber, MIT.

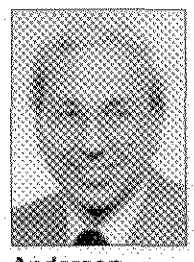
During the next few weeks, the team will meet at Lockheed Martin in Denver and at NASA Headquarters and will return to JPL for follow-up discussions.

The JPL Mars Polar Lander Failure Review Board is meeting concurrently and will present its findings to the Assessment Team. Both the JPL Review Board and the NASA Assessment Team are due to issue their final reports by mid-March 2000.

Colloquium and Sigma Series Lectures

Anderson On 'Breaking The Sound Barrier'

John D. Anderson Jr. will present a Colloquium and Sigma Series Lecture entitled "Breaking The Sound Barrier: The Aerodynamic Breakthroughs That Made It Possible" at 2 p.m. Feb. 1 in the H.J.E. Reid Conference Center and at 7:30 p.m. Jan. 11 in the Virginia Air and Space Center.


Anderson

Abstract

On Oct. 14, 1947, the Bell XS-1, with Chuck Yeager at the controls, flew faster than sound; it was the first piloted aircraft to exceed Mach 1.

It did not happen by chance. It was preceded by 30 years of research work carried out by the NACA that finally led to the proper intellectual understanding of the nature of high-speed aerodynamics around and above Mach 1.

This is one of the NACA's most stellar success stories, and it focuses on the work of John Stack and his colleagues at the NACA Langley Memorial Laboratory during the 1930s. This presentation covers the exciting story of how we obtained our intellectual understanding of high-speed aerodynamics, making the design of the Bell XS-1 possible.

Speaker

Anderson received his doctorate degree in aeronautical and astronautical engineering in 1966 from Ohio State University. He served as a professor of aerospace engineering at the University of Maryland, where he became the Glenn L. Martin Distinguished Professor for Education in Aerospace Engineering. He is a Fellow of the American Institute of Aeronautics and Astronautics and of the Royal Aeronautical Society. Among his numerous accomplishments, he was awarded the AIAA Pendray Aerospace Literature Award for writing textbooks in aerospace engineering.

In 1999, Anderson retired from Maryland and was appointed professor emeritus. He currently serves as the curator for aerodynamics at the National Air and Space Museum.

■ For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Creedon Presentation Available For Speakers

The PowerPoint slides from Center Director Jeremiah F. Creedon's January lecture, "Langley Research Center: Contributing to the Quality of Life for Americans," are available for Langley speakers through the Office of Public Services. For more information, call Olin Jarrett at ext. 46320.

Creedon

Lavender Named Suggestion Committee Chairperson

By KAREN RIDLON
Office of Human Resources

Boyce E. Lavender has been selected as the new chairperson of Langley Research Center's Employee Suggestion Committee (ESC).

Lavender, the Assistant Deputy Director for Facility Systems Support of the Aerodynamics, Aerothermodynamics and Acoustics Competency (AAAC), has served as a member of the ESC since 1994 and as the vice-chairperson since 1998.

The ESC consists of a chairperson, vice chairperson, executive secretary and union representatives. In addition, employees who have been selected by their respective management generally serve two-year terms as committee members.

The ESC reviews technical and administrative suggestions submitted by Langley employees, determining the eligibility of the employee to receive an award and recommending the type or amount of award to be granted.

Lavender

If a suggestion is adopted by the Center, the suggester will receive a monetary or non-monetary award based on tangible and/or intangible benefits received by the suggestion.

■ **To make a suggestion** to the Employee Suggestion Committee, fill out an Optional Form 303 and submit it to the Personnel Management Branch at Mail Stop 174.

Employees are encouraged to submit ideas in writing explaining how their idea will significantly improve product quality, eliminate unnecessary work, devise new tools or equipment, reduce cost of materials and directly increase effectiveness of government operations.

Lavender began his NASA career at Langley in 1966 as an Engineering Technician Apprentice supporting laboratory experimentation in polymer research. In 1971, after graduation from the Apprentice School, he joined the Tunnels Operations Branch and for the next 14 years supported aerospace research at the Low Turbulence Pressure Tunnel, the last five years as a supervisor.

Since August of 1999, Lavender has been in his current position as the Assistant Deputy Director for Facility Systems Support in the AAAC. In this capacity, he supports the Director of the AAAC on matters pertaining to the technician workforce in support of research facility operations, such as balancing staffing levels and skill mix, maintaining present core capabilities and developing new skills for the future, and providing management oversight in areas of safety, human resources and labor relations.

Lavender has received numerous outstanding performance and special achievement awards at Langley for his contributions over his career. The most recent was a Superior Accomplishment Award for his participation on the Source Evaluation Committee for the Research Equipment Operations Services (REOS) contract.

Deadlines Approaching For Contests And Fellowships

AIAA Paper Competition

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics is seeking entries for its 2000 Young Professionals Paper Competition.

To be eligible, the paper must have been published or accepted for publication in an archival and refereed publication and originally submitted while the author was an AIAA member under the age of 35. (Previously submitted papers are eligible for this year's competition.)

AIAA members interested in participating in the competition should submit three copies of the manuscript, a copy of the acceptance letter and author information (including age and AIAA membership number) by **Jan. 31** to John C. Lin at Mail Stop 170.

The award for the winning paper, judged on technical content and style by an independent reviewing committee, will be presented at the spring awards banquet. The winner will receive a certificate and a free one-year membership to AIAA, and his or her name will be engraved on a plaque permanently on display in the H.J.E. Reid Center. Prizes for second- and third-place winners also will be given.

More information on the competition is available on the Internet at <http://www.seva.net/~aiaa>.

R&D-100 Award Entries

Langley Research Center's Technology Commercialization Program Office (TCPO) is soliciting entries for Research and Development Magazine's annual R&D-100 Awards.

To be eligible, the nomination should be a new technical product that was first available for purchase or marketed between Jan. 1 and Dec. 31, 1999. Physical existence of the product must be shown in a photograph or actual sample. (Proof-of-concept models should not be entered until they reach a more advanced age.)

A panel of judges will select the 100 most technically significant new developments of the past year from items submitted by organizations throughout the world. Langley has won 32 of the awards in the 35-year history of the competition.

Besides being prestigious to the winning organization and the developer, R&D-100 Awards generate considerable industrial interest, resulting in a greater opportunity to transfer the technology.

Completed entry forms should be delivered to Sherry Sullivan in the TCPO by **Feb. 13**. Entries will then be checked for completeness and forwarded to Research and Development Magazine prior to the Feb. 18 deadline. The TCPO will pay the entry fee.

For an entry form or more information, call Sherry Sullivan at ext. 42556 or visit <http://www.rdmag.com/rd100/100award.htm> on the Web.

Thompson Fellowships

The Office of Human Resources is accepting applications for the 24th annual Floyd L. Thompson Fellowship Program.

Interested individuals are encouraged to explore the possibilities of a research assignment with an appropriate institution and to seek the support of their line management for their candidacy. The required application form and instructions for its completion can be found on the Internet at <http://ohr-r.larc.nasa.gov/do.fltfpin.html>.

Completed applications must be received by **Feb. 29**. For more information, call George Allison at ext. 42594.

AdVentures

CLASSIFIED

FOR SALE: Renovated house in Hampton's historic Wythe section. Two bedrooms, renovated bathroom, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, custom privacy fence, large detached garage/workshop, one block from the Chesapeake Bay. $64,900. Call 247-5144.

FOR SALE: Two-story condo in Lee's Mill, next to Ft. Eustis. Two bedrooms, one and a half bathrooms, new carpet, new paint, new dishwasher, skylight, fenced patio and storage, built in 1994. Quiet neighborhood. HOA fee: security, trash, ground maintenance, playground, pool, etc. $61,900. Call 887-5026.

FOR SALE: 1996 GMC Suburban SLT, 4x4, tow package, ABS, leather, CD, luggage rack, running boards, power everything, excellent condition, 64K miles. $23,950. Call 898-8164.

FOR SALE: Full set of golf woods. Graphite Taylor Made Burner driver, Orlimar Trimetal 3+, Wilson 4+ and Adams Tightlie 5+. Stiff Shaft. Excellent condition. Selling for $125. Eagle Palmer irons, $100. Call 622-8269.

FOR SALE: Stainless steel bug screen, fits 1997 and up Jeep Wrangler. New, never used. Retails for $40, asking $25. Call 874-7454.

HOUSEMATE WANTED: Seeking professional, non-smoker to rent room in a three-bedroom, two-bathroom waterfront house in York County, 10 minutes from Langley. Garage parking space. No pets. $450 per month plus 1/3 utilities. Call 874-0254 or page 872-5485.

WANTED: Piano teacher for 9-year-old. Call 827-6447.

Super Bowl Bash On Jan. 30

The Langley Activities Association will host a Super Bowl Sunday Bash at After Burners on Jan. 30. Doors will open at 4 p.m.; the game starts at 6.

The game will be televised on a 17-foot screen and two 60-inch big screen TVs.

Draft beer will be sold for $1.25, and Jell-O shooters in opposing team colors will be sold for $1. Free munchies — including Chi Chi's chips and salsa, taquitos, quesadillas, taco salad and chili — also will be available.

Call ext. 46369 to reserve a table.

Alumni Association Meets Feb. 8

The NACA/NASA Alumni Association will meet at 11:30 a.m. Feb.8 in the private dining room of the cafeteria. The program will consist of a review of Y2K activities and results.

SHARP Applications Due Feb. 28

Modern Technology Systems, Inc. is accepting applications for Langley Research Center's Summer High School Apprenticeship Research Program (SHARP).

SHARP offers area students the opportunity to conduct intensive, hands-on science research for a minimum of eight weeks under the direction of a NASA professional. SHARP is specifically designed to attract under-represented students, increase success rates in math and science courses and encourage career paths that help build a pool of under-represented science and engineering professionals in the workplace.

To be eligible, applicants must be at least 16 years old by the time the program starts in June and live within a 50-mile radius of the Center.

For more information, call Walter Darden at ext. 44848 or visit the SHARP Web page at <http://www.mtsibase.com/sharp>.

Karate Club Offering Instruction

The Langley Karate Club offers instruction for beginners and experienced martial artists.

Children's classes (age 8 and up) take place from 6 to 7 p.m. on Mondays and Wednesdays in the LAA gym; adult classes (age 14 and up) take place from 5 to 7 p.m. on Mondays and Wednesdays.

The club's instructors are sanctioned by the Cuong Nhu Oriental Martial Arts Association, a federally recognized, non-profit, educational organization. Visit the national Web site at <http://www.cnomaa.org>.

The first month is free. Local dues are $40 for six months; national dues are $30 per year. Family rates are available.

For more information, call Roy Albang at ext. 46160 or Craig Cleckner at ext. 47048 or visit the club's Web site at <http://members.aol.com/cuongnhu/>.

Club Bowls Every Tuesday

The NASA Bowling Association has started league play, but anyone still interested in bowling is invited to participate from 6 to 9 p.m. every Tuesday at AMF of York on Route 17.

For more information, call Rodney Russell at ext. 43053 or Alan Frizzell at ext. 45413.

5K Race Winners Announced

The "Flight Ops" team won the Langley Runners Club's Dec. 8 5K Team Race with the low score of 9 points. Team members were Mike Wusk, first place (22:27); V. Eric Roback, second place (22:55); and Rob Rivers, sixth place (27:34). The "Jan&Art&Al" team of Jan Spangler, Art R. Johnson and Al Graham placed second with 10.5 points. SAIC's teams "#1" and "#2" placed third and fourth with 13 and 23 points, respectively.

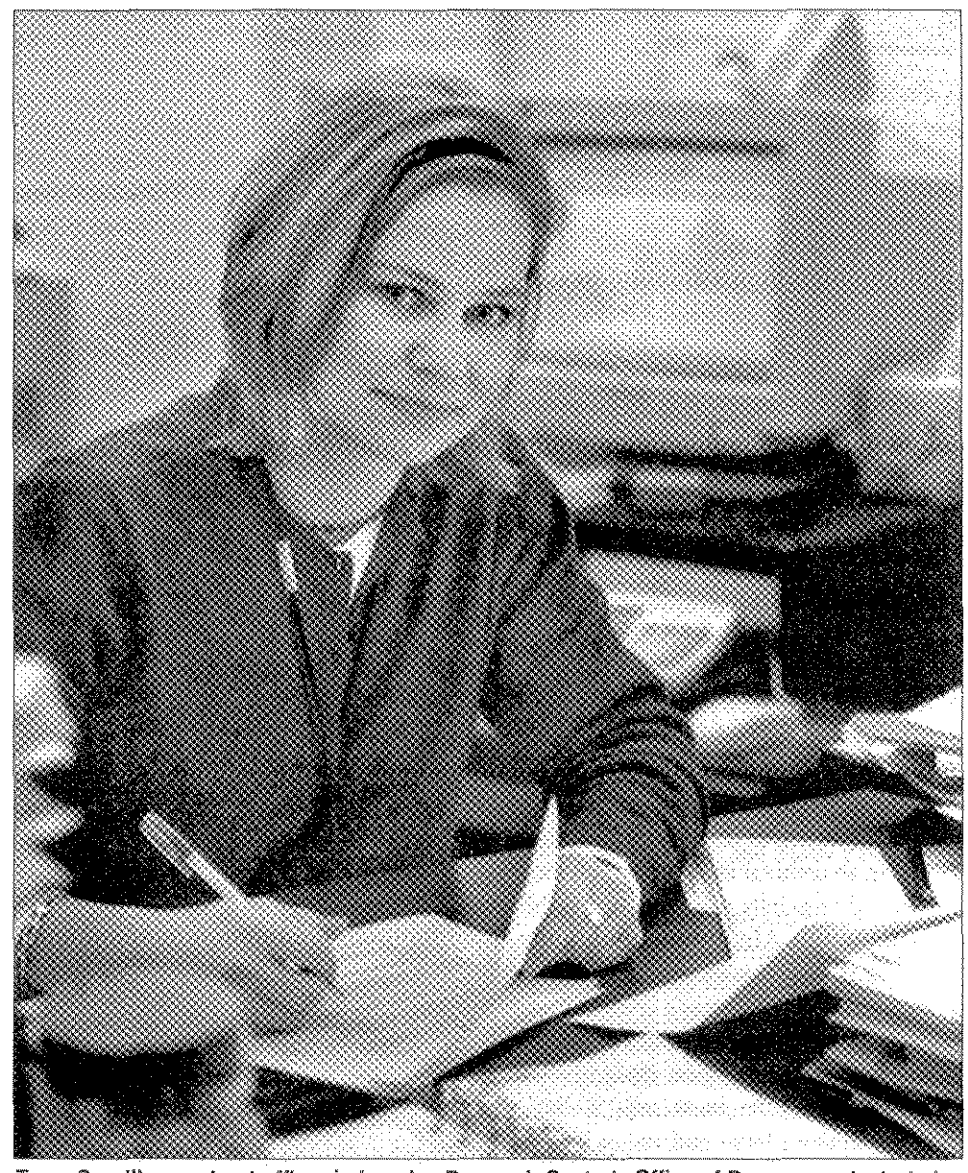
Jan Spangler was the first-place woman at 24:41 and Sharon Graves of "SAIC #1" was the second woman in 28:16.

New IMAX Film Opens At VASC

"Wolves," a new IMAX film shot in Yellowstone National Park, Montana, Idaho, Alaska and Quebec, opened at the Virginia Air & Space Center on Jan. 14 and will run through April 13. Showtimes are 10 a.m., 1 p.m. and 3 p.m. daily; an evening double feature of "Wolves" and "Amazon" shows at 7:30 p.m. Thursday through Sunday.

For more information, call 727-0900 or visit VASC's Web page at <www.vasc.org>.

Center Snapshot



Tracy Spruill, a contract officer in Langley Research Center's Office of Procurement, started working on-Center 10 years ago as a co-op student from Old Dominion University. Spruill, who grew up in Virginia Beach and now lives in Newport News, works in the Service and Construction Contracting Branch. Her brother and sister-in-law, Staten and Kate Spruill, also work on-Center. What does she like most about working Langley? "I enjoy what NASA does and I enjoy being a part of that."

Photo by Jeff Caplan

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Researcher News

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February Is National African American History Month ... See Page 5

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 3 ❖ Feb. 11, 2000

Joe Shockcor, left, donated one of his kidneys to his wife, Susan, who had a genetic disease called polysistic kidneys, last summer. The Shockcors both work at Langley Research Center: Joe is a data analyst in the Aerospace Systems, Concepts and Analysis Competency; Susan is the business manager for the Office of Safety and Mission Assurance.

Photo by Jeff Caplan

Donations In Kind

Langley Employee Has Her Husband To Thank For Kidney And Fellow Employees For Time Off

By JIM ROBERTS
Researcher News Editor

When Susan Shockcor went on leave last summer, she was the business manager for Langley Research Center's Office of Safety, Environment and Mission Assurance. By the time she returned, some six months later, her office had moved and her department had split in two, leaving her in the Office of Safety and Mission Assurance.

But even bigger changes had taken place in her personal life.

In July, Susan had both of her kidneys removed and replaced by one donated by her husband, Joe, a data analyst in the Aerospace Systems, Concepts and Analysis Competency.

Susan, who had polysistic kidneys — a genetic disease that causes cysts to grow in the kidneys and disrupts organ function — always knew a transplant was inevitable. When she was a teenager, her father died of kidney failure, and one of her three sisters is living with a kidney donated by their mother. But Susan's doctors had told her she probably wouldn't need a transplant for another four years.

The diagnosis changed in June. During a routine check-up, Susan's doctors said her kidney function had dropped to 11 percent and she would need to do something right away.

The standard option would have been to have had her kidneys removed, start dialysis and go on a waiting list for a kidney — a three-year-wait — but Joe sped up the process by volunteering one of his right away.

"I knew when we started dating this day would come," Joe said. Although he had never actually

Continued on Page 3

Space Shuttle Endeavour

Mission Linked To AvSP

Synthetic Vision Will Rely On Terrain Information For Maps

By KATHY BARNSTORFF
Office of Public Affairs

Future airline passengers have a stake in Space Shuttle Endeavour's next mission.

Endeavour's 11-day mission will produce the most accurate and complete topographic map of the Earth's surface ever assembled. That terrain information will be used by the NASA Aviation Safety Program, headquartered at the Langley Research Center, to help develop Synthetic Vision for pilots and make flying commercial and private aircraft safer.

■ At press time, Endeavour was scheduled to lift off on Feb. 11.

The Shuttle Radar Topography Mission (SRTM) is designed to collect three-dimensional measurements of nearly 80 percent of the Earth's land surface with an accuracy of better than 53 feet. It is an international project sponsored by NASA, the National Imagery and Mapping Agency, the German Aerospace Center and the Italian Space Agency.

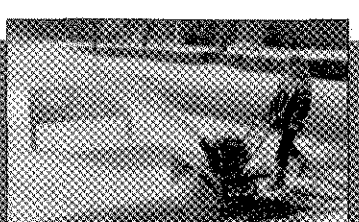
SRTM will build on Spaceborne Imaging Radar-C technology that flew twice on Endeavour in 1994. To collect the topographic images, engineers will add an almost 200-foot-long mast, additional C-band imaging antennae and improved tracking and navigation devices. The mast, the longest rigid structure ever to be flown in space, will extend sideways from the orbiter's cargo bay. The antennae at the tip will allow the system to acquire stereo-like radar images of the Earth's surface through a technique called interferometry.

Scientists will then use the 3-D images to generate computer versions of topographic maps, called digital elevation models, that can be used for a large number of scientific, civilian and military applications.

One of those is Synthetic Vision, a revolutionary cock-

Continued on Page 3

Inside This Issue:



January Snowstorms Shut Down Center For Two And A Half Days — *Page 2*

Reps. Bateman And Pickett Announce Their Retirements — *Page 4*

News Briefs

Around the Agency

CANCER SCREENING AID CLEARED FOR USE

The war against breast cancer has a new weapon, thanks to an advanced sensor developed at NASA's Jet Propulsion Laboratory. The device, called the BioScan System, was developed by OmniCorder Technologies, Inc., in Stony Brook, N.Y. OmniCorder received clearance to market the system from the Food and Drug Administration in December 1999.

Studies have determined that cancer cells exude nitric oxide. This causes changes in blood flow in tissue surrounding cancer that can be detected by the sensor. The BioScan System is sensitive to temperature changes of less than .027 degree Fahrenheit and has a speed of over 200 frames per second. It causes no discomfort to the patient and uses no ionizing radiation. RELEASE: 00-17

HUBBLE REOPENS ITS EYE ON THE UNIVERSE

NASA's Hubble Space Telescope is back in business, as made dramatically evident in stunning new celestial pictures of remote galaxies and a colorful dying star released in January.

The images were taken Jan. 10-13 as part of the activities to recommission the earth-orbiting telescope.

"Thanks to the great work by the astronauts, Hubble is better than new," said Ed Weiler, NASA Associate Administrator for Space Science. "I think there is no better proof than these pictures that NASA's capability to send humans into space to work on Hubble has had a vital role in space science and the renaissance in astronomy we're now seeing."

Images are available on the Internet at: <http://oposite.stsci.edu/pubinfo/pr/2000/07> and <http://oposite.stsci.edu/pubinfo/pr/2000/08>. RELEASE: 00-16

NASA SELECTS PROPOSALS FOR MORE RESEARCH

NASA has selected eight promising research proposals for negotiation of Phase 2 contract awards for NASA's Small Business Technology Transfer Research program.

Phase 2 continues development of the most promising, previously selected Phase 1 projects. Selection criteria include scientific and technical merit, future importance and eventual value of the innovation to NASA, company capabilities and commercial potential. Funding for Phase 2 contracts may be up to $500,000 for a two-year performance period.

A listing of the selected companies can be found on the Internet at: <http://sbir.nasa.gov>. RELEASE: 00-15

MARS ASSESSMENT TEAM CONTINUES REVIEW

The Mars Program Independent Assessment Team (MPIAT) continued its review of NASA's Mars missions with a visit to Lockheed Martin Astronautics in Denver.

"At this point, we are talking with as many key players in these missions as possible," said team chairman Thomas Young. "We have heard from officials at NASA Headquarters and JPL," said Young. "This visit with Lockheed Martin's engineers, scientists and managers gives us insight into the contractor's processes used in implementing the Mars '98 missions and the successful Mars Global Surveyor."

The team is asking NASA and contractor personnel tough questions about how these missions were conducted, to identify any changes that may be needed to assure mission success in the future. Young added that the team is still in the fact-finding mode. "It is much too early to draw any conclusions," he said.

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

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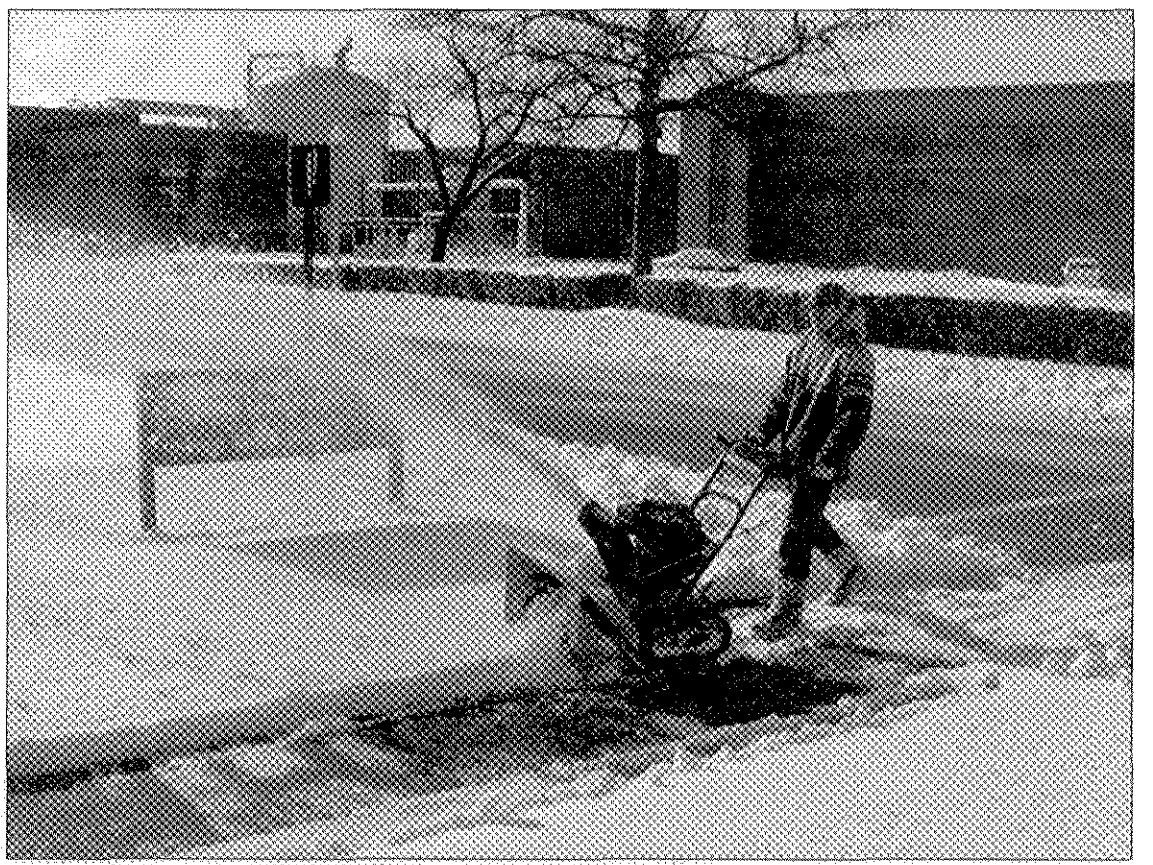
Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People



Floyd Ferrell, a Johnson Controls employee on contract to Langley Research Center, clears snow from a sidewalk in front of Bldg. 1148-1 on Jan. 26, one of two and a half days in January the Center was closed due to weather conditions. Alan Phillips, the head of Safety and Facility Assurance Office, said about 40 people worked on-Center during the days it was closed to help clear the roads, parking lots and sidewalks and to spread sand and salt to keep the surfaces in a non-slip state. The employees worked day and night in rotating shifts to return the Center to a safe condition.

Photo by Alan Phillips

Speakers Bureau Busy In January

Langley speakers gave 10 presentations to 1,787 Stakeholders in January. The groups included six school groups, three civic clubs, and one Cub Scout Pack.

The speakers were: **Steven Bauer, Larry Bement, Larry Cooper, Larry Huebner, Jane Hogge, Phillip Morris, Edwin Prior, Rob Rivers** and **Myra Walton.**

For more information about the Langley Speakers Bureau, call Olin Jarrett at ext. 46320 or e-mail him at <o.jarrett@larc.nasa.gov>.

Deadline Watch

R&D-100 Award Entries

Langley Research Center's Technology Commercialization Program Office (TCPO) is soliciting entries for Research and Development Magazine's annual R&D-100 Awards.

Completed entry forms should be delivered to Sherry Sullivan in the TCPO by **Feb. 13**. Entries will then be checked for completeness and forwarded to Research and Development Magazine prior to the Feb. 18 deadline. The TCPO will pay the entry fee.

For an entry form or more information, call Sherry Sullivan at ext. 42556 or visit <http://www.rdmag.com/rd100/100award.htm> on the Web.

Thompson Fellowships

The Office of Human Resources is accepting applications for the 24th annual Floyd L. Thompson Fellowship Program.

Interested individuals are encouraged to explore the possibilities of a research assignment with an appropriate institution and to seek the support of their line management for their candidacy. The required application form and instructions for its completion can be found on the Internet at <http://ohr-r.larc.nasa.gov/ do.fltfpin.html>.

Completed applications must be received by **Feb. 29**. For more information, call George Allison at ext. 42594.

In Memoriam

Harold Hamer Jr.

Harold "Al" Hamer Jr. died on Jan. 18 at the age of 73. Hamer, a native of Elmira, N.Y., retired from NASA in 1986 after working for 38 years as an aerospace engineer.

Tom L. Howell

Tom L. Howell died on Jan. 23 at the age of 81. Howell, a native of Cruso, N.C., retired from NASA after 23 years of service.

John Francis Lawrence

John Francis Lawrence died on Jan. 18 at the age of 75. Lawrence, a native of Springfield, Mass., served in the Navy and the Air Force and was awarded the Distinguished Flying Cross, four Air Medals, the Gold Star and the Purple Heart.

Following his distinguished military career, Lawrence worked in the business and engineering and technology divisions at Thomas Nelson Community College and was an advocate of Langley's co-operative education programs.

Josephine T. R. Lowery

Josephine "Joe" Tabb Roach Lowery died on Jan. 20. Lowery, a native of Hampton, worked in Langley's Cafeteria for more than 40 years.

Charles Peter Seitz Jr.

Charles Peter "Jack" Seitz Jr. died on Jan. 22 at the age of 82. Seitz, a native of Richmond and an Air Force veteran of World War II, retired from NASA in 1973 after working for 37 years as an engineering technician.

The Voice Behind 'Newsline'

OPA's Mike Finneran Lets Employees Know When To Stay Home

By JIM ROBERTS
Researcher News Editor

Mike Finneran isn't about to knock James Earl Jones from the top of the voiceover market, but his voice is music to the ears of employees at Langley Research Center ... especially when he's telling them they don't have to report to work because of the weather.

Finneran, the head of Langley's Office of Public Affairs, is responsible for updating "Newsline," the phone-based system — reached by calling 864-2111 — employees call for Center information during extreme weather conditions or other emergency situations. During the snowstorm in January, tens of thousands of calls were made to "Newsline," each one starting with Finneran intoning that familiar phrase: "You have reached the Langley Research Center 'Newsline' ..."

Finneran started doing the job when he came to Langley as a public affairs specialist in 1995, and he chose not to delegate the responsibility after he was promoted to head of the office a year later ... "just because I enjoyed it," he said.

The January closings and the hurricanes last summer — notably Hurricane Floyd, which closed the Center for one day — have kept Finneran busier this year than in years past. Of course, there was the government furlough of 1996 that caused a major Center closing and daily updates for three weeks.

Finneran

Finneran's messages, which are posted around the clock, represent the work of a lot of people around the Center, namely Harold Beazley, Alan Phillips and the rest of the staff of the Office of Safety and Mission Assurance. The OSMA staff monitors the weather from the Emergency Operations Center and makes recommendations to Delma Freeman, the acting Deputy Director, on whether or not the Center should stay open. After Freeman makes the official decision, a representative of the OSMA calls Finneran — either at work or at home — and has him update the message.

It's not uncommon for Finneran to post messages at 1:30 and 4:30 a.m. "There's a little sleep deprivation that comes into play," he said. "I get up in the middle of the night, but really it's the safety people and others who have to put in a lot more hours than I do. They are the folks who are really out there overnight."

Because the message system is automated through a keypad, Finneran can post the messages from anywhere there is a phone. But he said he always types the message first; he can't do it off-the-cuff.

"I always stumble at some point," he said. "I have to keep doing it over until I get it right."

What does his wife think of him having to work all hours of the night? "She works at the Daily Press," he said, "so she's used to it."

Finneran is also a former newspaper employee. His first newspaper job was at the Fitchburg Sentinel in Massachusetts, where he said he had to write a lot of snow-related stories. He also edited for the Miami Herald and The Virginian-Pilot before accepting a position with Bionetics as editor of Langley's Researcher News.

In 1993, Finneran was hired by NASA as a public affairs specialist at Goddard Space Flight Center. Two years later, he accepted a similar position at Langley and in 1996 was named head of Langley's Office of Public Affairs.

The renown of being the voice behind "Newsline" came with the territory, but he hasn't let it go to his head.

"I have a face made for radio," Finneran joked, "and a voice made for print."

AvSP

Continued from Page 1

pit display system that would give pilots a clear, electronic picture of what's ahead outside their windows, no matter what the weather or time of day.

Limited visibility is the greatest contributing factor in the world's deadliest aviation accidents, according to Michael Lewis, NASA Aviation Safety Program (AvSP) director. "When you can't see out the window of the aircraft either at night or in poor visibility conditions, accidents can happen. So for the traveling public, if we are successful, 30 percent of all fatal accidents would basically be eliminated."

AvSP is working with a number of industry teams to create and refine Synthetic Vision. NASA researchers envision a system that would use new and existing technologies to incorporate data into displays in aircraft cockpits. The displays would show terrain, ground obstacles, air traffic, landing and approach patterns, runway surfaces and other data to the flight crew.

NASA tested a prototype of Synthetic Vision in flights over Asheville, N.C., last year. Engineers loaded an experimental terrain database that had been augmented by sophisticated computer rendering techniques onto a "flying simulator" research aircraft owned by the Air Force. During tests, pilots assessed how those three-dimensional images of the area compared with the real out-the-window scene. One pilot commented during a flight, "The terrain picture, the synthetic vision display, is just terrific. I find myself forgetting that that's not the real world I'm looking at."

It's expected to take about 18 months to process the terrain data from the shuttle mission. AvSP officials hope a Synthetic Vision system can be available commercially in five years.

For more information on the NASA Aviation Safety Program, visit <http://avsp.larc.nasa.gov> on the Internet. For more information on the Shuttle Radar Topography Mission, visit <http://www.jpl.nasa.gov/srtm>.

Donations

Continued from Page 1

talked about it with her, when the situation turned urgent, he stepped up and went through the process to see if he was a matching donor.

What was Susan's reaction? "Kind of a stunned thanks, I guess," he said.

"I think my reaction was more of deep gratitude for his profound generosity," Susan said. "Once I got over my stunned thanks."

Susan and Joe checked into the Washington Hospital Center in Washington, D.C., on July 29. In a seven-hour surgery, doctors removed both of her kidneys and transplanted one of his. The kidneys they removed from Susan were each a foot long and together weighed 25 pounds.

Joe was on his feet within days. "The doctor said we were pretty freakish in our recovery," Joe said. "I haven't even needed an aspirin."

Susan, on the other hand, stayed in the hospital for a week and then went home to recover, a process that included taking steroids and immunosuppression drugs, exercising and changing her diet.

Susan ran out of leave time in October but was able to continue her recovery at home through the holiday season thanks to Langley's Voluntary Leave Transfer Program. Her first day back at work was Jan. 4.

"I especially want to thank everyone who donated leave to me during my extended time off," Susan said. "We feel blessed to work among such a generous and caring group of people."

Ironically, one of the people who donated leave was Joe. (To add another interesting twist to the story, a law was passed in September — just two months after their surgeries — which increased the amount of leave a person can get for donating a kidney from seven to 30 days.)

The sacrifices made by her Langley co-workers did not end there.

David and Ivelisse Gilman, NASA employees who live in the same neighborhood as the Shockcors, rallied their neighbors — including fellow employees Kathy Kurke and Carlos Roithmayr — to help take care of Susan's son and do other household chores.

"It was the most amazing thing," Susan said. "It's kind of humbling to be the recipient of so much. There's just so much that people give when you need it."

Despite all she and her family have been through, Susan said she wouldn't change a thing. "Being challenged with your health, I think of it as a blessing in disguise. It helps you appreciate the small things in life.

"I would never want to forget about it," she said. "I don't think it's sad; I think it's wonderful. I am so, so lucky."

SAGE III Update

ER-2 Makes Flight

By CHRIS RINK
Office of Public Affairs

NASA's high-flying ER-2, a modified design of Lockheed's U-2 aircraft, completed its first science flight through Russian airspace on Jan. 27 in support of the largest international ozone field experiment to date over the Arctic.

The six-hour flight that passed southwest of Moscow was closely coordinated with Russian observers. The single-seat aircraft, based at NASA Dryden's Flight Research Center, carried instruments to collect data for NASA's SAGE III Ozone Loss and Validation Experiment (SOLVE). SOLVE is managed by the Upper Atmosphere Research Program of NASA's Office of Earth Science.

Scientists are hoping the ER-2's stratospheric measurements will help them better understand the complicated chemistry involved with ozone loss. NASA is working with the European Commission-sponsored Third European Stratospheric Experiment on Ozone (THESEO) 2000. Research teams include scientists from NASA, Europe, Russian, Japan and Canada.

Another NASA flying laboratory, NASA Dryden's DC-8, also flew through Russian airspace in conjunction with the ER-2. The DC-8 flew its first mission over Russia's Franz Josef Land during SOLVE's first phase last December.

The NASA planes and the field experiments are based north of the Arctic Circle in Kiruna, Sweden. A large hangar built especially for research, "Arena Arctica," houses the instrumented aircraft and the scientists.

For more information on SOLVE, check the Internet at <http://cloud1.arc.nasa.gov/solve/index.html>. For more information on THESEO 2000, see <http://www.ozone-sec.ch.cam.ac.uk>.

Congressmen Announce Retirements

Reps. Bateman And Pickett Have Been Longtime Supporters of NASA And Langley

By LEE RICH
Office of External Affairs

Congressional Notebook

The New Year brought with it the announcements that Reps. Herbert H. Bateman (R) and Owen B. Pickett (D) would not seek re-election to the U.S. House of Representatives.

Bateman, who is representing "America's First District" for a ninth term, has been, and continues to be, a loyal friend and an articulate advocate for NASA and Langley.

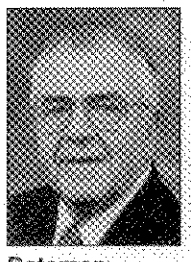
All of us owe him a sincere "thank you" for the many times he has used his considerable influence as a senior legislator and chairman of a powerful subcommittee to advance Langley's research programs.

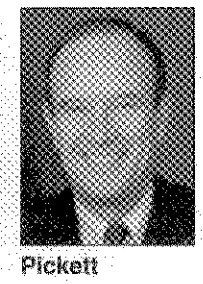
Early on, Bateman understood the significance of advanced aerospace research to U.S. security and military capability. As chairman of the Military Readiness Subcommittee of the Armed Services Committee, Bateman has oversight responsibility for keeping America's armed forces in fighting trim at an annual cost of more than $90 billion.

He fully recognizes the role that aeronautics and space research play in keeping the nation strong.

Some time ago, Bateman became alarmed about the cuts to NASA's — and especially Langley's — budgets. He believes that Langley's programs are critical not because he represents the Center and many of its employees but because Langley's research is vital to America's security, economy and prestige.

Long an active participant in keeping area military bases open and in representing the interests of Newport News Shipbuilding, Bateman has been able to direct focus on aerospace research as vital to America's global leadership.


Bateman


Pickett

We wish Bateman "all the best" during and after his final year on Capitol Hill. Langley will greatly miss his wise and attentive presence in Washington.

A few days following Bateman's announcement, Pickett, who represents the Southside's 2nd District, surprised his many friends and colleagues by announcing that he would not seek re-election to an eighth term.

As a senior legislator and ranking member of the Military Research and Development Subcommittee, Pickett clearly has long understood the relationship between research and advanced technology and security and economic well-being. Maintaining America's air superiority is one of his most pressing goals.

He has done everything possible to support and enhance Langley's programs as the way to reach that goal. While we wish him "godspeed" this last year on the Hill and beyond, we will indeed miss his considerable knowledge and influence.

Bateman and Pickett, regarded by colleagues as being gracious, attentive and principled, have well represented the people of Hampton Roads.

Langley employees may wish to express gratitude and good wishes. The address is: U.S. House of Representatives, Washington D.C. 20515.

Lee Rich is Langley's Congressional Affairs Officer.

NASA Scholarship Process Begins Now

From NASA Headquarters

The NASA College Scholarship Fund, Inc., a Texas nonprofit corporation, was established to award scholarships to qualified dependents of current and former NASA employees.

The scholarship was established as the direct result of a substantial unsolicited gift offer by the noted Pulitzer Prize winning author, James A. Michener, who said he held the people of NASA in such high esteem for their good work through the years and that he thought it important for education to go forward in this country.

Other significant contributions have been made by the Freedom Forum to honor Shuttle crewmembers and the Johnson Space Center Chapter of the NASA Alumni League. Many NASA employees have contributed to the fund directly or through the Combined Federal Campaign.

The NASA College Scholarship Fund, Inc., was incorporated under the laws of the State of Texas on Oct. 20, 1982, to receive contributions and to use those contributions and/or income therefrom exclusively for charitable, educational and scientific purposes, namely, the awarding of college scholarships to full-time students who are dependents of current or retired employees of NASA and dependents of current reimbursable detailees to NASA. In addition, college scholarships may be awarded to full-time students who are dependents of former NASA employees or reimbursable detailees to NASA who died while employed by NASA.

Application Forms Available From OHR

■ Application forms are available at Langley Research Center from Carlie Johanson in the Office of Human Resources (OHR). She can be reached at ext. 49007 or <c.e.johanson@larc.nasa.gov>. Forms also are available on the Web at <http://hro.jsc.nasa.gov/Announce/scholarship/scholarships.html>.

Applications should be prepared with black inked pen or be typewritten. All applicants are encouraged to provide complete information in all categories.

■ All completed application forms, transcripts, scores or materials must be mailed in a sealed envelope directly to: NASA Johnson Space Center, AH12/NASA College Scholarship Fund, Inc., Building 4 Room 840, 2101 NASA Road 1, Houston, Texas 77058.

■ All completed forms and attached grades/scores must be received by the scholarship committee by March 31, 2000.

■ High school students must furnish, or arrange for the school to furnish, an official transcript of their high school grades and, if the SAT or ACT scores are not shown on the transcript, they must furnish an official record of their scores on the Scholastic Aptitude Test (SAT) or the American College Test (ACT) with their applications, or as soon thereafter as they become available, but no later than March 31, 2000.

■ College students must furnish, or arrange for the school to furnish, their most recent official transcript of college grades with the application as well as an official transcript of high school grades. If the SAT or ACT scores are not shown on a transcript, an official record of SAT or ACT scores must be furnished no later than March 31.

Number And Type Of Scholarships Available

Six $2,000 scholarships will be awarded in this 18th year of the program (2000-2001 school year). The renewable scholarship is for a maximum of $8,000 over six calendar years. Applicants must be pursuing a course of study in the science or engineering field that will lead to a recognized undergraduate degree at an accredited college or university in the United States.

Eligibility Requirements

All applicants must, in addition to the NASA dependency requirement, be graduated from an accredited public, private or parochial high school or be currently enrolled in college with good academic standing.

An applicant must have a combined high school grade and college (if any) grade point average of 2.5 on a 4.0 scale or the equivalent. Applicants who are dependents of current or retired NASA employees must be dependents of NASA employees who are actually employed by NASA for a period of two years as of January of the scholarship year.

There is no minimum period of employment requirement for eligible dependents of former NASA employees or former reimbursable detailees to NASA who died while employed by NASA.

A dependent under this program is defined as a student who is currently lawfully claimed as a dependent on the federal income tax return of a current NASA employee or a retired NASA employee or as a student who was lawfully claimed at the time of death on the federal income tax return of a former NASA employee or a former reimbursable detailee to NASA who died while employed by NASA.

In case of divorced or separated parents, dependency can be established upon proof of the above requirements by either parent. If the claiming parent is not the NASA employee (reimbursable detailee or retiree or former employee/reimbursable detailee), then proof of the divorce or legal separation is also required. Any officer of the corporation is authorized to make dependency determinations based on the requirements of the bylaws.

After meeting the minimum requirements, applicants will be ranked based on the following objective standards: academic preparation, including all high school grades, any college grades, high school graduating class rank and pattern of courses; school activities; community activities; performance on recognized tests designed to measure ability and aptitude for higher education; written recommendations from instructors or other knowledgeable individuals not related to the applicant (limit of three); and a one-page statement of academic purpose by applicant.

Selectee Agreement

Each selectee and their sponsor shall be required to execute a written agreement with the corporation that he or she will comply with the scholarship program requirements as set out in the bylaws of the corporation.

Selection of Winners

The Scholarship Committee will evaluate application forms and the students' scholastic records and the top candidates selected.

All applicants will be notified by mail of the results by approximately May 16.

National African American History Month

Astronaut Will Lecture At William And Mary

Mae C. Jemison, the first African American woman to go into space, will speak from 7:30 to 9 p.m. Feb. 16 in the College of William and Mary's University Center. Jemison's talk is part of the college's African American History Month theme, "Sharing the Story: Passing the Torch to a New Generation."

The lecture is free and open to the public.

Jemison blasted into space aboard the space shuttle Endeavour on Sept. 12, 1992. Her journey on STS-47, a joint U.S./Japanese mission, was only one in a series of historic accomplishments.

Jemison was also the first NASA Science Mission Specialist to fly aboard the space shuttle. During the mission, she conducted experiments in life sciences and material sciences and was co-investigator in the bone cell research experiment.

■ For more information about African American "firsts" in space, visit <http://www.jsc.nasa.gov/pao/black_history/blackhistory.html> on the Web.

A chemical engineer and physician, Jemison also has a degree in African and African-American studies. She founded The Jemison Group, Inc., in Houston, to research, develop and transfer advanced technologies for use in developing countries.

Current projects include a satellite-based telecommunications system to improve health care in West Africa and an international youth science camp that uses an experiential curriculum. Jemison also serves on the faculty at Dartmouth College as part of the environmental studies program.

The lecture, presented by William and Mary's Office of Multicultural Affairs, is sponsored by a grant from the Ira W. DeCamp Foundation.

The Office of Multicultural Affairs is a department within the division of student affairs. The office provides programs and services, and promotes cultural activities that will create an awareness of, and an appreciation for, racial and cultural diversity.

For more information, call 221-2300 or visit the office's Web site at <http://www.wm.edu/osa/msa/multi.htm>.

Mae C. Jemison will speak at 7:30 p.m. Feb. 16 in the College of William and Mary's University Center. Jemison's talk is part of the college's Black History Month theme, "Sharing the Story: Passing the Torch to a New Generation."

It's Time To Celebrate 'Heritage And Horizons'

National African American History Month, 2000

By the President of the United States of America

A Proclamation

We can use this time of extraordinary prosperity and peace to widen the circle of opportunity in America, to recognize that our society's rich diversity is one of our greatest strengths, and to unite around the fundamental values that we all share as Americans. ... And we can ensure that our laws, our actions, and our words honor the rights and dignity of every human being.

Each year during National African American History Month, as we explore the history and culture of African Americans, we discover anew a treasure of stories about the triumph of the human spirit, inspiring accounts of everyday people rising above the indignities imposed by prejudice. These stories are not only an important part of African American history, but an essential part of American history.

We are awakened to such stories through the power, beauty and unflinching witness of poets and writers like Maya Angelou, Gwendolyn Brooks, Paul Laurence Dunbar, Langston Hughes, James Weldon Johnson, Toni Morrison and Alice Walker. We find them in the lives and voices of Frederick Douglass, Sojourner Truth, Booker T. Washington and others who, rising above slavery, brutality and bigotry, became great American champions of liberty, equality and dignity. We see them written in the achievements of civil rights leaders like Daisy Bates, James Farmer, John Lewis, Martin Luther King, Jr., Thurgood Marshall, Mary Church Terrell, Roy Wilkins and Whitney Young.

Forty years ago this month, a new chapter in African American history was written. On Feb. 1, 1960, four courageous young men — freshmen at North Carolina Agricultural and Technical College in Greensboro — sat down at a segregated lunch counter in a local store and politely refused to leave until they were served. Their nonviolent action challenged a barrier that, symbolically and practically, had separated black and white Americans for decades and denied equal treatment to African American citizens. The extraordinary bravery and determination of Ezell Blair Jr., Franklin McCain, Joseph McNeil and David Richmond galvanized young men and women of conscience across America, setting in motion a series of student sit-ins in more than 50 cities and nine states. Subjecting themselves to verbal abuse, physical violence and unjust arrest, thousands of black and white students peacefully demonstrated to end segregation in restaurants, theaters, concert halls and public transportation and called for equality in housing, health care, and education. Their story of conscience and conviction and their ultimate triumph continue to inspire us today.

The theme of this year's African American History Month is "Heritage and Horizons: The African American Legacy and the Challenges of the 21st Century." It is a reminder that the new century on which we have just embarked offers us a unique opportunity to write our own chapter in the history of African Americans and of our nation. We can use this time of extraordinary prosperity and peace to widen the circle of opportunity in America, to recognize that our society's rich diversity is one of our greatest strengths and to unite around the fundamental values that we all share as Americans. We can teach our children that America's story has been written by men and women of every race and creed and ethnic background. And we can ensure that our laws, our actions, and our words honor the rights and dignity of every human being.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by virtue of the authority vested in me by the Constitution and laws of the United States, do hereby proclaim February 2000 as National African American History Month. I call upon public officials, educators, librarians and all the people of the United States to observe this month with appropriate ceremonies, activities and programs that raise awareness and appreciation of African American history.

IN WITNESS WHEREOF, I have hereunto set my hand this thirty-first day of January, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

William J. Clinton

*The Feb. 25 issue of the Researcher News will include a feature story about **Julie Williams-Byrd**, an electronics engineer/aerospace technologist at Langley Research Center who is participating in a NASA-sponsored "Web chat" for students during National African American History Month.*

AdVentures

CLASSIFIED

FOR SALE: Renovated house in Hampton's historic Wythe section. Two bedrooms, renovated bathroom, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, one block from the Chesapeake Bay. $64,900. Call 247-5144.

FOR SALE: '97 Jeep Wrangler Sport. Six cylinder, power steering, anti-lock brakes, CD, hard-top, full doors, rear track lock differential, low miles, $17,000. Call 723-2868.

FOR SALE: Full/twin-size black futon with full-size mattress, $185. Full/twin-size bunk bed, $185. Glass dining room table with chairs, $150. Floral sofa, needs to be cleaned, $85. Six-foot Christmas tree, $25. Call 875-0705 after 6 p.m.

FOR SALE: 31-inch color TV, Mitsubishi CS31205. Less than four years old, stereo, CC, parental lock, multi-remote, sleek black case, new condition. Paid $940, asking $400. Call 850-1388.

FOR SALE: Parquet wood dining table with six cushioned chairs, $75. Call 826-1862.

FOR SALE: Ty Beanie Babies, $8 and up. Beanie Buddies, Bears, Bunnies and more, including retireds, $12 and up. Will consider trades. Call 865-0586.

'Aviators' Booksigning on Feb. 11

Local author Sandra McClinton will introduce her new book, "Lyrical Aviators," to Langley Research Center employees at noon Feb. 11 in the NACA room of the Cafeteria.

"Lyrical Aviators" is on sale in the Exchange Shop, and McClinton will autograph copies at the lunchtime event. For more information, call ext. 41585 or ext. 47918.

National Engineers Week Banquet

The Peninsula Engineering Council (PEC) will host its National Engineers Week Banquet at 6 p.m. Feb. 26 at the Omni Hotel in Newport News.

The PEC will honor American Institute of Aeronautics and Astronautics (AIAA) Fellow Wilmer H. "Bill" Reed with the Engineer of the Year Award.

Tickets are available through Feb. 21 for $17 or $8.50 for AIAA student members. For tickets, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

New IT Fellowship Will Be Offered

Langley Research Center's Office of Human Resources recently established a new fellowship program for Information Technology. The purpose of the Information Technology Fellowship Program is to enhance capability of Langley computer engineers, computer specialists and other knowledge workers and to foster excellence in information technology management as well as information and knowledge management at the Center.

Employees interested in the fellowship can find a full description of the fellowship and the application process on the Web at <http://ohr-r.larc.nasa.gov/do.itfpin.html>. The deadline to apply is March 31.

For more information, contact George Allison at 42594 or e-mail at <g.d.allison@larc.nasa.gov>.

SHARP Applications Due Feb. 28

Modern Technology Systems, Inc. is accepting applications for Langley Research Center's Summer High School Apprenticeship Research Program (SHARP).

SHARP offers area students the opportunity to conduct intensive, hands-on science research for a minimum of eight weeks under the direction of a NASA professional. SHARP is specifically designed to attract under-represented students, increase success rates in math and science courses and encourage career paths that help build a pool of under-represented science and engineering professionals in the workplace.

To be eligible, applicants must be at least 16 years old by the time the program starts in June and live within a 50-mile radius of the Center.

For more information, call Walter Darden at ext. 44848 or visit the SHARP Web page at <http://www.mtsibase.com/ sharp>.

Lunchtime Aerobics Class Resumes

Langley Research Center's Fitness Center has resumed its lunchtime aerobic program. Classes, which consist of step training, upper- and lower-body sculpt, circuit training and abdominal work, are offered from 11:00 a.m. to noon every Monday, Wednesday and Friday.

Classes are led by Joanne Edmonds, an aerobic instructor and personal trainer certified through the Aerobic & Fitness Association of America (AFAA).

Classes are free to all NASA employees, but participants must complete a Health Questionnaire and an Informed Consent Form and have physician approval prior to participation.

For more information about the medical clearance requirements, call the Clinic at ext. 43192. For more information about the class, call Joanne Edmonds at ext. 46387.

Exchange Shop Selling New Tickets

The Exchange Shop now offers one-day tickets to Disney World and Sea World Florida at a substantial savings off the gate price. For more information, call ext. 41585 or 47918.

Duplicate Bridge Club Results

Langley Duplicate Bridge Club results for Jan. 12: first place, Raj Sistla and S. Balakrishna; second place, Geoff and Marty Tennille; third place (tie) Ram and Sumithra Prabhu and Judy Ferris and Tom Finley.

For information about future games, call Geoff or Marty Tennille at 850-1532.

New IMAX Film Playing At VASC

"Wolves," a new IMAX film shot in Yellowstone National Park, Montana, Idaho, Alaska and Quebec, will play at the Virginia Air & Space Center through April 13. For showtimes or more information, call 727-0900 or visit VASC's Web page at <www.vasc.org>.

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National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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Researcher News

Center Snapshot

Teresa O'Neil has worked in Langley Research Center's Structures and Materials Competency for almost 15 years. Her main responsibility is testing carbons, thermoplastics, metals and resin in the Dimensions Stability Lab. Her current project is testing samples from materials that will be used on the X-33 Reusable Launch Vehicle. O'Neil moved from Ohio to Newport News to join the Engineering Technician Apprentice Program after studying physics at Central State University. In her free time, she enjoys scuba diving, cycling, modeling and teaching aerobics at Langley Air Force Base.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 4 ❖ Feb. 25, 2000

'On The Upswing'

Langley Slated For 14 Percent Increase In 2001

Joe Struhar, Langley Research Center's Chief Financial Officer, looks over the Center's proposed 2001 budget at a press briefing on Feb. 7 in the Pearl Young Theater.

Photo by Jeff Caplan

By JIM ROBERTS
Researcher News Editor

President Bill Clinton and NASA Administrator Daniel S. Goldin unveiled the 2001 budget proposal — the first since 1997 that includes an increase for Langley Research Center — on Feb. 7. If passed, Langley's budget will increase 14 percent, from $566.7 million in 2000 to $645.8 million in 2001.

"There is a smile on our face today because our budget is back on the upswing," Center Director Jeremiah F. Creedon said at a press conference in the Pearl Young Theater. "I think the news is good here at NASA Langley."

The proposed budget includes a 20 percent, $64 million increase in research and development funding at Langley. The budget for Aerospace Technology will rise from $216 million to $253 million; the budget for Earth Science will rise from $87 million to $101.7 million.

Most of the new Aerospace Technology money will go toward the Intelligent Synthesis Environment (ISE) Program ($10.1 million) and three new programs: 2nd Generation Reusable Launch Vehicle (RLV), $31.8 million; Small Aircraft Transportation System (SATS), $9 million; and Noise & Emissions, $5 million.

The following descriptions of the programs are included in the Agency's white papers:

■ "2nd Generation RLV is aimed at implementing a central tenet of the National Space Policy: the transition of routine space activities to the private sector to concentrate NASA resources on high-leverage science research, technology development, and exploration activities. By 2005, NASA will conduct a competitive launch services procurement to support the launch requirements of both robotic and human spaceflight operations. The objective will be

Continued on Page 4

More Budget News

■ Breakouts of Langley's budget and NASA Administrator Daniel S. Goldin's remarks appear on pages 4 and 5.

NNS: A New Partner

Center Signs MOA To Work On Flow Controls

Office of Public Affairs

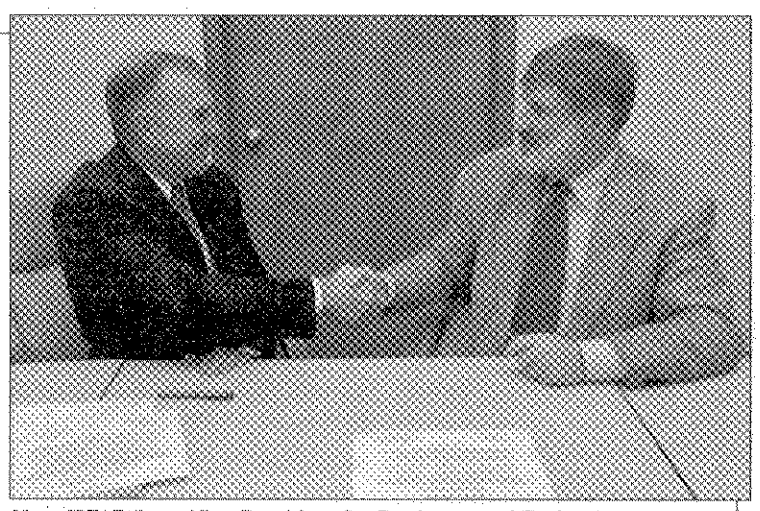
Langley Research Center and Newport News Shipbuilding (NNS) signed a memorandum of agreement (MOA) on Feb. 11 which will enhance the performance of marine vessels and make it much easier and faster for companies to partner with the Center.

The MOA begins with a $50,000 joint effort to "investigate the performance of flow control technology for marine application."

Flow control technology manipulates the way water flows around a ship or submarine hull to make the craft faster, quieter and more efficient.

"Rapid access to NASA's research facilities and personnel will allow Newport News Shipbuilding to expedite the transition of new flow control technolo-

Continued on Page 3



Marc Y.E. Pelaez, Vice President for Business and Technology Development at Newport News Shipbuilding, and Langley Research Center Director Jeremiah F. Creedon shake hands after signing a memorandum of agreement on Feb. 11.

Photo by Jeff Caplan

Inside This Issue:

Center Director Talks About New Initiatives During Town Meeting — Page 3

March Colloquium: Langley's Tom Yager On 'Slipping And Sliding' — Page 6

News Briefs

Around the Agency

NASA BEGINS NEXT MISSION TO STUDY COMETS

NASA's Comet Nucleus Tour (CONTOUR) mission took a giant step closer to its launch this month when the project received approval to begin building the spacecraft.

Planned for a July 2002 launch, CONTOUR is expected to encounter Comet Encke in November 2003 and Comet Schwassmann-Wachmann-3 in June 2006. The mission has the flexibility to include a flyby of Comet d'Arrest in 2008 or an as-yet undiscovered comet, perhaps originating from beyond the orbit of Pluto. Such an unforeseen cometary visitor to the inner solar system, like Comet Hale-Bopp discovered in 1995, would present a rare opportunity to conduct a close-up examination of these mysterious, ancient objects which normally reside in the cold depths of interstellar space. RELEASE: 00-26

SOHO SPACECRAFT BAGS 102 COMETS

The record is to comet-hunting what Mark McGwire's home-run streak is to baseball: In just four years of operation, the Solar and Heliospheric Observatory (SOHO) spacecraft has found 102 comets, making it by far the most successful comet-hunter in history.

Calculations have shown that the latest comets discovered with SOHO are previously unknown comets, with the 102nd comet observed by Douglas Biesecker of SM&A and Goddard Space Flight Center, a member of the SOHO team personally responsible for 45 of the discoveries.

More information and images are available on the Internet at <http://sungrazer.nascom.nasa.gov/soho100> and <http://pao.gsfc.nasa.gov/gsfc/spacesci/sunearth/sunearth.htm#soho>. RELEASE: 00-23

AGENCIES WORKING TO IMPROVE AIR TRAFFIC

NASA and the Federal Aviation Administration (FAA) are studying ways to reduce the concerns and inconveniences of the flying public by reducing airline delays, improving efficiency and making flying safer.

Researchers from both agencies are studying various human factors issues— involving air traffic controllers, flight crews and dispatchers — that may occur as the FAA's Free Flight Program evolves during the next 10 to 20 years.

Free Flight is a new FAA and aviation industry concept designed to increase operational flexibility and reduce restrictions in the National Airspace System. RELEASE: 00-10AR

QUICKSCAT WEATHER DATA AVAILABLE ONLINE

Scientists, weather forecasters and the public now have access to a valuable stream of meteorological and climate observations, as the first calibrated measurements from NASA's SeaWinds instrument on the Quikscat satellite become available — information that can improve weather forecasting around the world.

Access to daily wind data and animations from the ocean-wind tracker, managed by NASA's Jet Propulsion Laboratory, is available on the Internet at <http://podaac.jpl.nasa.gov/quikscat/> and at <http://haifung.jpl.nasa.gov/>.

"We're opening the tap on this global data to the world," said Michael Freilich, principal investigator on SeaWinds and a professor at Oregon State University, Corvallis. The measurements and data products show developing weather systems with unprecedented detail. RELEASE: 00-19

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

The American Institute of Aeronautics and Astronautics' Technical Committee on Management (AIAA TCM) held its annual winter meeting at Langley Research Center on Feb. 10 and 11. The meeting, which was hosted by Adarsh Deepak, the president and CEO of Science and Technology Corporation, included a tour of the Center and presentations by Center Director Jeremiah F. Creedon; Dennis Bushnell, Langley's Chief Scientist; John Malone, Director of the Intelligent Synthesis Environment (ISE) Program Office; and Bruce Holmes, Langley's General Aviation Program Manager. Twenty-seven AIAA TCM members attended the meeting, including representatives from Lockheed Martin Corporation, The Boeing Company, Northrop Grumman Corporation, Gulfstream Aerospace Corporation, Stavatti Corporation and Sverdrup Technology.

Photo by Jeff Caplan

In Memoriam

M. Arnold Emmons Jr.

M. Arnold Emmons Jr. died on Jan. 23 at the age of 80. Emmons, a native of West Virginia, retired from NASA in 1974 after more than 30 years of service. He worked in the 20-Foot Subsonic Terminal and the Internal Aerodynamics Facility before being selected to head the Mach 10 Continuous Flow Facility in 1959.

Wayne S. French

Wayne Sheffield French died on Feb. 10 at the age of 50.

French participated in Langley Research Center's Teacher-in-Residence program in 1999 and was part of the team that created the Digital Earth Virtual Environment and Learning Outreach Project (DEVELOP). His vision, commitment and dedication to DEVELOP resulted in the project's becoming a cornerstone in a Virginia statewide effort to award undergraduate degrees in satellite/remote-sensing education.

John R. Leaman Jr.

John Randolph Leaman Jr. died on Feb. 10 at the age of 80. Leaman, a native of Newport News and a Navy veteran who served in World War II, graduated from the Newport News Apprentice School and retired from NASA in 1980 after 30 years of service in the Structural Design Department.

William Letko

William "Bill" Letko died on Feb. 10 at the age of 81. Letko, a native of Maplewood, N.Y., worked as an aeronautical engineer at Langley until 1974.

John R. McGehee

John Robert "Bob" McGehee died on Feb. 4 at the age of 77. McGehee, a native of Montgomery, Ala., was awarded the Air Medal with seven oak clusters, the Distinguished Flying Cross, the Presidential Unit Citation and the Purple Heart for his service in the U.S. Army-Air Force during World War II.

Following the war, McGehee earned a degree in aeronautical engineering and worked for NASA until 1983. He was honored with numerous awards for the advancement of the nation's space program, including a special achievement award for development of the landing gear for the Viking Spacecraft.

Roland R. Montgomery

Roland Rollin Montgomery died on Feb. 9 at the age of 82. Montgomery, a native of Hampton, retired from Langley's Fabrication Department in 1970.

Harry D. Pilgrim

Harry "Pierre" Dunkin Pilgrim died on Feb. 4 at the age of 85. Pilgrim, a native of Chicago and an Army Air Corps veteran who served in World War II, worked at NACA and NASA as a professional aircraft mechanic until 1970.

Fellowship Opportunities

Thompson Fellowships

The Office of Human Resources is accepting applications for the 24th annual Floyd L. Thompson Fellowship Program.

Interested individuals are encouraged to explore the possibilities of a research assignment with an appropriate institution and to seek the support of their line management for their candidacy.

The required application form and instructions for its completion can be found on the Internet at <http://ohr-r.larc.nasa.gov/do.fltfpin.html>.

Completed applications must be received by Feb. 29. For more information, call George Allison at ext. 42594.

IT Fellowships

Langley Research Center's Office of Human Resources recently established a new fellowship program for Information Technology.

Employees interested in the fellowship can find a full description of the fellowship and the application process on the Web at <http://ohr-r.larc.nasa.gov/do.itfpin.html>. The deadline to apply is March 31.

For more information, contact George Allison at 42594 or e-mail at <g.d.allison@larc.nasa.gov>.

NASA Returns To Alpha Security Status

By MEGHAN WOODCOCK
Researcher News Assistant Editor

NASA Administrator Daniel S. Goldin returned all NASA facilities to Threatcon Alpha security status on Feb. 21.

Goldin had heightened the security status on Aug. 21, 1998, to Threatcon Bravo, which is implemented "when there is an increased and more predictable threat of hostile activity even though no particular target has been identified."

His decision was in line with national policy at the time, taken in response to the increased threat of terrorist incidents directed against the United States.

Now that the threats are diminished, NASA has returned to Threatcon Alpha, a security status described as "a general warning of possible hostile activity, the nature and extent of which are unpredictable."

What does it mean for Langley?

"To the general workforce, the change is transparent," said Monica Schrum, Langley Research Center's Chief of Security.

"Badges should still be worn at all times, and the Security Management Office continues to encourage employees to challenge anyone without a badge and to report any suspicious activity," Schrum said.

ID checks and visitor badges will remain a requirement for entry onto the Center. Employees can request a badge for visitors by sending in a completed Langley Form 103, "Official Visitor — Badge Request," to the Badge and Pass Office.

For more information or answers to security-related questions, contact the Office of Security and Public Safety at ext. 43420.

Report Health Fraud To OIG

Office of Inspector General

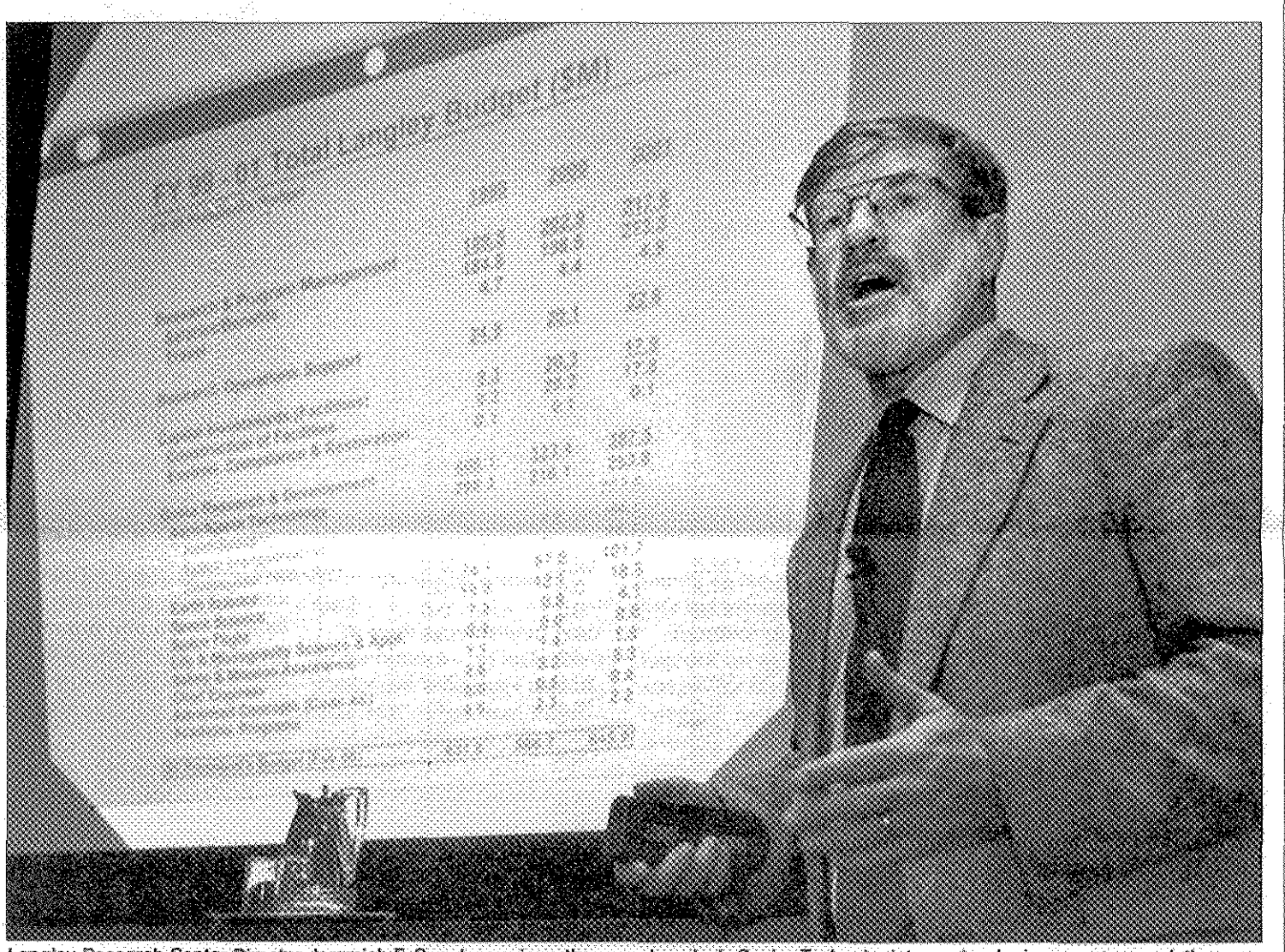
A recent General Accounting Office (GAO) report on health care fraud schemes estimated the dollar amount of nationwide health care fraud for 1997 to be $53.9 billion — $20 billion attributed to private insurance claims and $34 billion attributed to public insurance claims.

In an effort to reduce health care fraud, the U.S. Department of Justice has established a national working group made up of investigative representatives from public and private entities, including NASA's Office of Criminal Investigations.

In Virginia, there are health care fraud working groups and task forces operating statewide.

Please notify the Langley's Office of Inspector General (OIG) at ext. 41679 if you think you may have been billed for services not rendered, provided services at a lower level than you were entitled to receive, or if your insurance carrier is questioning services provided or not covering services called for in their benefit plans.

New Initiatives Outlined At Town Meeting



Langley Research Center Director Jeremiah F. Creedon reviews the 2001 budget proposal at a town meeting for Center employees on Feb. 11 in the H.J.E. Reid Conference Center. Creedon also discussed the Revolutionary Aerospace Concepts and Outreach Team 2 initiatives at the meeting. Revolutionary Aerospace Concepts is a response to NASA Administrator Daniel S. Goldin's Jan. 7 challenge for Langley to become "a leader for the assessment of revolutionary aerospace system concepts and architectures." Creedon said the Center will use seed money from the Agency to breed "new concepts" and "enabling technologies." Doug Dwoyer, Langley's Associate Director for Research and Technology (R&T) Competencies, and Joseph Heyman, Langley's Senior Technologist, are developing a recommendation on how to implement a plan to solicit and fund innovative ideas. On a similar note, Creedon said the work done by Outreach Team 2 will result in the formation of a New Business Development Office — a pilot office with three full-time employees — and the appointment of Technical Intelligence Officers to each of the six R&T Competencies. He also outlined plans for the Center to grow its "external network" and develop "Innovation Institutes." Complete stories about Revolutionary Aerospace Concepts and Outreach Team 2 will be included in future editions of the *Researcher News*.

Photo by Jeff Caplan

MOA

Continued from Page 1

gies out of the laboratory and onto the ship," said Michael L. Powell, Director of Technology Development for Newport News Shipbuilding.

"Although the initial focus is on flow control, our perception of this agreement is that it opens the door to a wide spectrum of potential ship improvements. This partnership will marry the world-class research capabilities of NASA with the strong engineering and production capability at NNS.

"The beneficiary of this MOA truly is the U.S. Navy," Powell said, "who will reap the rewards of the technologies we pursue under this agreement. This is just another example of our commitment to providing the U.S. Navy with the world's most capable warships."

Under the agreement, Langley will use its 20-by-28-Inch Low-Speed Tunnel to analyze the downstream flow characteristics of flow control devices. Langley also will help the shipyard optimize the flow control technology for marine application, with a final report due by Dec. 15.

"This is research that, in its practical application, will help assure the continued superiority of our national defense," said Samuel A. Morello, director of Langley's Technology Commercialization Program Office. "Naturally, we're delighted to be able to make this contribution to the safety and security of the United States."

Morello said the flow control agreement is the first of what he hopes will be many "annexes," or additions, to the overall partnership with the shipyard. The agreement, he said, is designed so further joint efforts with Langley can be put into effect quickly.

Morello said the structure of the agreement also will be used as a model for working with other businesses. "We want to improve the way we partner with industry," he said, "and this is a tool that will let us respond very fast and effectively to those seeking our expertise or help.

"The beauty of it is that we use a general, overall agreement as the basis for a partnership, then add specific annexes as desired. That way you don't have to redraw the entire agreement every time you want to do something new," Morello said. "We're zapping the bureaucracy."

Morello said the aerodynamic research conducted at Langley to improve aircraft can be applied to the marine environment as well, because the principles are basically the same. "This makes our work with the shipyard a very natural thing to do," he said. "Also, the work that we do with the shipyard is likely to have applications to aircraft, so it's a double benefit."

FY 2001 Budget

FY 99 - 01 Total Langley Budget ($M)
FY 01 President's Budget

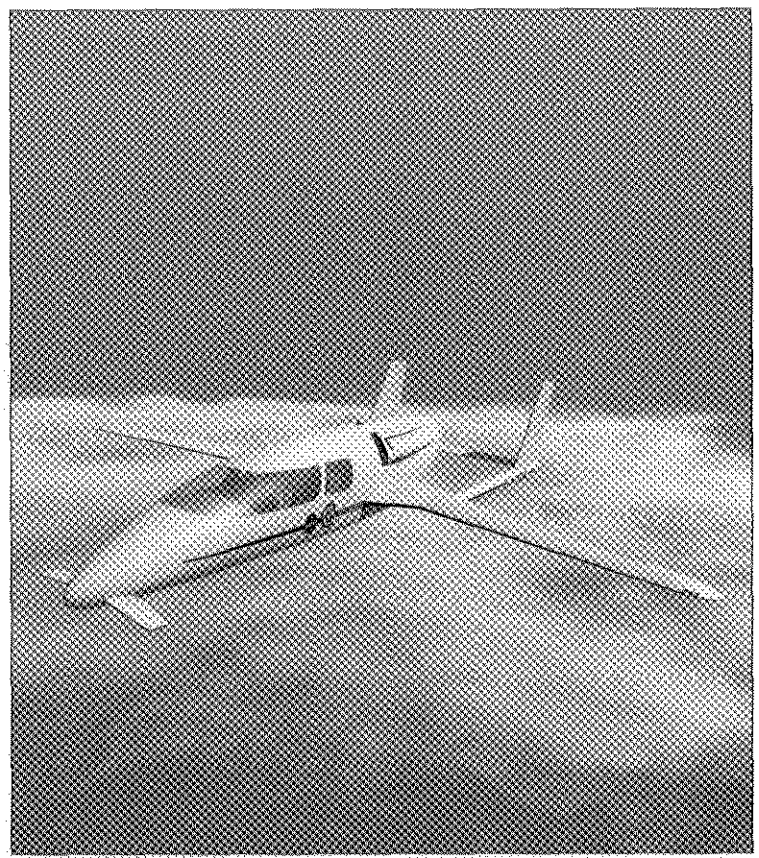
	1999	2000	2001
Research & Program Management	189.5	202.9	217.8
Salaries/Benefits	184.8	198.5	213.3
Travel	4.7	4.4	4.5
Research Operations Support	24.9	20.1	22.6
Capital Investments (Facilities)	9.3	20.3	17.9
Construction of Facilities	9.2	20.2	17.8
Environ. Compliance & Restoration	0.1	0.1	0.1
Gross Research & Development	408.1	323.4	387.5
Aero-Space Technology	298.3	216.1	253.8
Aero-Space	256.5	184.1	193.6
Space Transportation	24.4	14.8	44.1
Commercial Technology	17.4	17.2	16.1
Earth Science	74.1	87.0	101.7
Space Science	19.9	12.1	18.5
Space Flight	7.2	0.8	4.1
Life & Microgravity Science & Appl.	0.4	0.0	0.0
Safety & Mission Assurance	1.1	1.4	1.5
Chief Engineer	2.6	3.2	5.3
Advanced Concepts (Code AE)	0.0	0.5	0.4
Academic Programs	4.5	2.3	2.2

FY 99 - 01 Aero-Space Technology ($M)
FY 01 President's Budget

	1999	2000	2001
Aero-Space Base	112.0	117.3	119.8
Vehicles Systems Technology	89.4	106.5	100.4
Propulsion & Power Systems	1.3	0.2	0.0
Operations Systems	10.8	0.7	0.7
Flight Research	0.4	4.1	4.0
Information Technology	6.4	4.4	4.6
Rotorcraft	3.2	0.0	0.0
Intelligent Synthesis Environment	0.0	1.4	10.1
Interdisciplinary Technology	0.5	0.0	0.0
Aero Focused Programs	144.5	66.8	73.8
High Speed Research	91.2	0.0	0.0
Advanced Subsonic Technology	37.8	0.0	0.0
Aviation System Capacity	12.0	19.5	13.5
High Performance Computing	3.5	4.2	4.4
Aviation Safety	0.0	39.5	39.7
Ultra Efficient Engine Technology	0.0	3.6	2.2
Noise & Emissions	0.0	0.0	5.0
Small Aircraft Transportation	0.0	0.0	9.0
Space Transportation Programs	24.4	14.8	44.1
X-33, X-34, Pathfinder	13.1	4.4	1.1
Base Program	7.9	9.5	11.2
Future Space Launch Studies	3.4	0.9	0.0
2ND Generation RLV	0.0	0.0	31.8
Commercial Technology	17.4	17.2	16.1
Total Aero-Space Funding	**298.3**	**216.1**	**253.8**

FY 99 - 01 Earth Science ($M)
FY 01 President's Budget

	1999	2000	2001
Earth Observing System Program	32.0	29.9	30.4
AM-1 Project	0.7	0.0	0.0
PM-1 Project	1.1	1.0	0.8
Special Spacecraft Projects	4.5	2.7	0.0
EOS Follow-On Projects	3.5	2.5	14.8
EOSDIS Project	9.6	11.1	12.6
EOS Algorithm Development Proj.	12.6	12.7	2.3
Earth Probes Program	5.0	21.4	26.2
ES Science Pathfinders Projects	5.0	21.4	26.2
Mission Operations	0.4	0.4	0.4
UARS Operating Mission	0.4	0.4	0.4
Research and Technology	35.8	34.5	43.8
Research and Analysis	21.7	23.2	24.9
Tech. Infusion (New Millennium)	9.2	5.7	1.8
Mission Science Teams	4.9	4.6	15.7
UAV Science	0.0	1.0	1.4
Investment - ES	*0.8*	*0.8*	*0.8*
Minority University Research	0.8	0.8	0.8
Total Earth Science Funding	**74.1**	**87.0**	**101.7**



Langley Research Center will receive $9 million in the 2001 budget for the Small Aircraft Transportation System (SATS). The objective of SATS is to develop and demonstrate technologies for small aircraft that will enable safe, efficient use of these aircraft at small, public-use airports.
Langley Research Center

Budget

Continued from Page 1

to dramatically improve safety while significantly reducing the cost of such launch services, thus eliminating the current need for the Government to own and operate a full system. ... In FY 2001, the 2nd Generation RLV Program will solicit industry in the areas of Systems Engineering and Requirements Definition, RLV Competition and Risk Reduction and NASA Unique Systems. ... NASA centers will contribute to the effort according to their areas of expertise and in accordance with an overall integrated industry/NASA approach.

■ "The objective of SATS is to develop and demonstrate technologies for small aircraft that will enable safe, efficient use of these aircraft at small, public-use airports. Community vitality and economic opportunity are dependent on access to the high-speed transportation afforded by small aircraft. Building on NASA's success in developing general aviation technologies, most notably the Advanced General Aviation Transport Experiments project, SATS addresses the technical barriers that have impeded growth in this area: safety of flight and accessibility to underutilized public-use facilities.

■ "Quiet Aircraft Technology: This focused program will build upon the highly successful noise reduction efforts that were begun in the Advanced Subsonic Transport (AST) program and maintain the progress toward meeting the Enterprise's noise reduction goal. The achievement of these goals will lead to a noise-constraint-free air transportation system with the objectionable aircraft noise being contained within airport boundaries. The AST noise reduction milestones will be completed on their original schedule as part of this focused technology effort."

Langley's Earth Science budget includes significant increases for recently selected Langley-led missions, including the the PICASSO-CENA mission and the New Millennium GIFTS Technology Validation mission. There are also increases for the science Research and Analysis program and the Distributed Active Archive Center.

The budget also calls for a small increase in the number of civil servants at Langley, from 2,382 positions in 2000 to 2,387 in 2001.

Langley's $645.8 million accounts for 5 percent of the Agency's $14.1 billion budget and ranks ahead of four other NASA facilities: Headquarters and the Glenn, Dryden and Stennis Centers.

But Creedon tempered the news by echoing Goldin's note of "cautious optimism." "While this is good news, " he said, "this is a proposed budget."

For more budget news, visit <http://oea.larc.nasa.gov/news_rels/FY2001.html> on the Internet.

NASA Administrator Daniel S. Goldin's Remarks ...

'Look At The Smile On My Face'

Editor's note: *These were NASA Administrator Daniel S. Goldin's prepared remarks for the FY 2001 Budget press conference on Feb. 7.*

Good afternoon . . .

I'm a rational engineer. But the video you just saw paints the real side of America's space program: the emotional side, the human side. That's the side that motivates us at NASA, but we all know it's the numbers that fuel our vision.

The numbers and facts we are unveiling today will not only help revolutionize the space program, but it will also help develop the technologies essential to America's future.

As we do that, we will instill new pride and rekindle the spirit of America — like what we just saw in the video from the Mars team as Pathfinder successfully landed.

Just last week, I met with a handful of reporters. One of the first questions was, "What can you tell us about the 2001 budget?"

All I could say was, "Look at the smile on my face."

Today, I can tell you why.

With this budget we will take on revolutionary new missions, like Living with a Star and the Small Aircraft Transportation System. We will take the next steps toward a permanent human presence in space.

And we will build on our exciting missions to understand our planet, our solar system and our universe.

Over the past seven years, we were challenged to operate more safely, more efficiently and at higher levels of performance. The NASA team delivered and will continue to improve.

For the first time in seven years, the NASA budget is going up — $435 million in 2001.

In 2005, the budget will be $2 billion higher than this year's budget. For this, all of us at NASA would like to thank the President, the Vice President, OMB Director Jack Lew and our friends in the Congress.

In a way, this process started last year when thousands of Americans called, wrote and e-mailed support for their space program.

What do these increases mean?

Today we take the next major step in decreasing our involvement in operations and increasing our investment in cutting-edge R&D.

The best indicator of this change is how we balance our human space flight with our science and aerospace technology investments.

Over the past decade, our science and aerospace technology investment went from 31 to 41 percent of our budget.

In the next five years, we will raise our investment to 51 percent.

However, we will never compromise safety — it's our number one priority. That's why I am proud to announce that our shuttle safety program alone will jump from $600 million to $2.1 billion over the next six-year period. This allows us to fly the shuttle for at least the next decade and roughly double its safety.

Even as we upgrade our shuttle fleet, we are aggressively investing an even larger sum of money in our number one development priority, the next generation of "revolutionary" reusable launch vehicles. Over the past seven years, $1.8 billion has gone to this effort.

Now that the pump has been primed, we plan to invest $6 billion over the 2000 to 2005 period.

NASA will continue to do what it does best: develop breakthrough technologies. The private sector will be responsible for their integration into tomorrow's safer and more reliable launch vehicles.

This will ensure that progressive aerospace companies and the emerging launch vehicle industry can compete in this new era of opening up access to space.

For the first time in seven years, the NASA budget is going up — $435 million in 2001. In 2005, the budget will be $2 billion higher than this year's budget. For this, all of us at NASA would like to thank the President, the Vice President, OMB Director Jack Lew and our friends in the Congress.

To reach our ambitious goals for the future — to make these science and technology dreams come true — we need incredible leaps in research and development.

Three key interrelated technologies will take NASA where it wants to go: biotechnology, nanotechnology and information technology.

Over the past decade, there have been tremendous scientific breakthroughs. And now, we are ready for our technology to move out and incorporate that knowledge.

These new technologies will monitor the health and well-being of our spacecraft and our astronauts, allow our systems to perform many tasks autonomously and allow systems to evolve and perform new and different functions.

In a sense, these technologies are the key ingredients for our recipe of the future. Without them, we won't rise to the next level of technology capability.

To carry this analogy a step further, no great meal is prepared without a talented chef. And to do the things NASA does, it takes a lot of talented people.

For the first time in almost a decade, we intend to hire close to 2,000 new employees in the next two years — that's a gain of almost 550 after expected attrition.

When we performed our Zero Based Review, we planned downsizing to 17,500. We also planned to monitor and to evaluate the impact on our people to ensure a safe and vibrant workplace.

To reduce stress levels, improve our skill mix and address the high number of imminent retirements, we are investing $600 million over five years for personnel and facilities. This will strengthen our workforce and make our facilities safer — including clean-up of the deactivated reactor at Plum Brook, Ohio.

New Partnerships

In addition to employing the best and brightest at NASA, we will augment our strengths through strategic partnerships. We are pursuing new links with research-focused government agencies, high tech industry, progressive aerospace companies and, perhaps most importantly, academia.

And we are strengthening old ties. National Science Foundation Director Rita Colwell has done an incredible job strengthening our nation's commitment to science. So we are pleased to work with her to leverage our respective agencies' strengths into an even stronger partnership. As just one example, NASA's remote sensing activities will complement the work of NSF's National Ecological Observatory Network.

New Leadership

To emphasize our commitment to new partnerships, I am proud to announce several new appointments ...

Sam Venneri — already NASA's Chief Technologist — will guide our newly integrated Aerospace Technology Enterprise and Chief Technology Office.

Lt. General Sam Armstrong, having led the revitalization of the Aerospace Technology enterprise, will become my Senior Advisor. He will ensure the entire NASA organization executes the new relationships with the partners I mentioned.

Brian Keegan will become our new Chief Engineer. He will lead our efforts to strengthen our engineering foundation and implement our new commitment to Design for Safety.

Orlando Figueroa will become our first Chief Systems Engineer. He will strengthen NASA's systems engineering workforce.

And Dr. Mary Cleave will become the Deputy Associate Administrator for Earth Science. She will lead the second phase planning in the Earth Observation System.

With this new talent and our investment in the future, NASA will deliver on the promises of discovery and the excitement of exploration for generations to come.

What Do The Aero-Space Enterprise Changes Mean?

By BRIAN WELCH
NASA Headquarters

NASA Administrator Daniel S. Goldin announced on Feb. 11 that the Agency would merge the Chief Technologist's office with the Office of Aero-Space Technology to better focus the Agency's strategy for maintaining its long-term technology base.

Chief Technologist Samuel Venneri will retain that position while becoming Associate Administrator for Aero-Space Technology. He will succeed Lt. Gen. Spence Armstrong, USAF (Ret.), who will become Senior Advisor to the Administrator.

Armstrong will spearhead a new initiative that will allow the Agency to create new synergies with universities, industry and other scientific and technical agencies. He will work with academia and industry — both aerospace and non-aerospace — to identify new opportunities for NASA partnerships. He also will coordinate NASA's plans with the Department of Defense, the Federal Aviation Administration and other agencies to ensure that NASA's activities are integrated with other agencies' and that NASA establishes government-wide partnerships where appropriate.

In the combined position, Venneri will be the Administrator's principal advisor on Agency-wide technology issues.

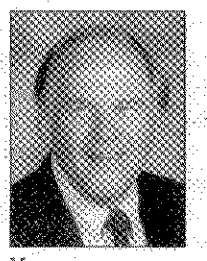
Under Venneri, the Office of Aero-Space Technology will be charged with developing integrated, long-term, innovative Agency-level technology for aeronautics and space.

Venneri also will be responsible for developing new commercial partnerships that exploit technology breakthroughs, and for establishing and maintaining technology core competencies at the NASA Centers.

Venneri has been NASA's Chief Technologist since November 1996. Before being named Chief Technologist, Venneri served as Director of the Spacecraft Systems Division in the former Office of Space Access and Technology.

Colloquium and Sigma Series Lectures

Center Expert Goes 'Slipping And Sliding'


Yager

Thomas J. Yager will present a Colloquium and Sigma Series Lecture entitled "Slipping and a Sliding — One Researcher's Dilemma" at 2 p.m. March 7 in the H.J.E. Reid Conference Center and at 7:30 p.m. March 7 in the Virginia Air and Space Center.

Abstract

The ability of a pneumatic tire rolling on a traveled surface to perform the vehicle's braking and steering requirements can vary drastically depending on many factors. Yager will describe how these factors interact to produce the desired vehicle motion. In addition, he will present highlights of his research in the general field of aircraft ground handling performance.

In his review of test sites, unexpected problems and accomplishments, Yager will emphasize dependence on other people and that work can be a "joyful journey" that continues to offer new challenges.

Speaker

Yager is a senior research engineer in the Structural Dynamics Branch at Langley Research Center. He conceives, directs and conducts research into the mechanisms of friction and the wear of aircraft tires in order to define and predict the performance of aircraft steering and braking systems under adverse weather conditions.

In addition, he coordinates NASA's research activities with the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB), to which he serves as consultant, and several outside U.S. organizations including Transport Canada, the International Civil Aviation Organization and civil aviation authorities in England, Sweden and Norway.

Yager is an internationally recognized expert in the investigation of aircraft skidding accidents.

He is NASA's leading expert on friction measurement and pavement treatments. He has a long history as a consultant on landing gear issues with the National Space Transportation System as well as many national and international aviation safety organizations.

In addition to his tire friction studies at Langley's Aircraft Landing Dynamics Facility (ALDF), Yager has conducted aircraft braking performance tests on more than 100 runways. He has supported space shuttle landing performance studies, developed an aircraft ground-handling simulation capability and consulted in more than 20 aircraft traction-related accident investigations.

Yager earned a bachelor's degree in engineering science from the University of Portland in in 1963 and started work at Langley in June of that year.

The recipient of numerous awards, he was presented a NASA Exceptional Engineering Achievement Medal for his aircraft/runway friction work and the Space Technology Hall of Fame Award for safety grooving in 1990. In 1997, he was given the NASA Exceptional Engineering Achievement Medal for work in harmonizing ground vehicle friction measurements.

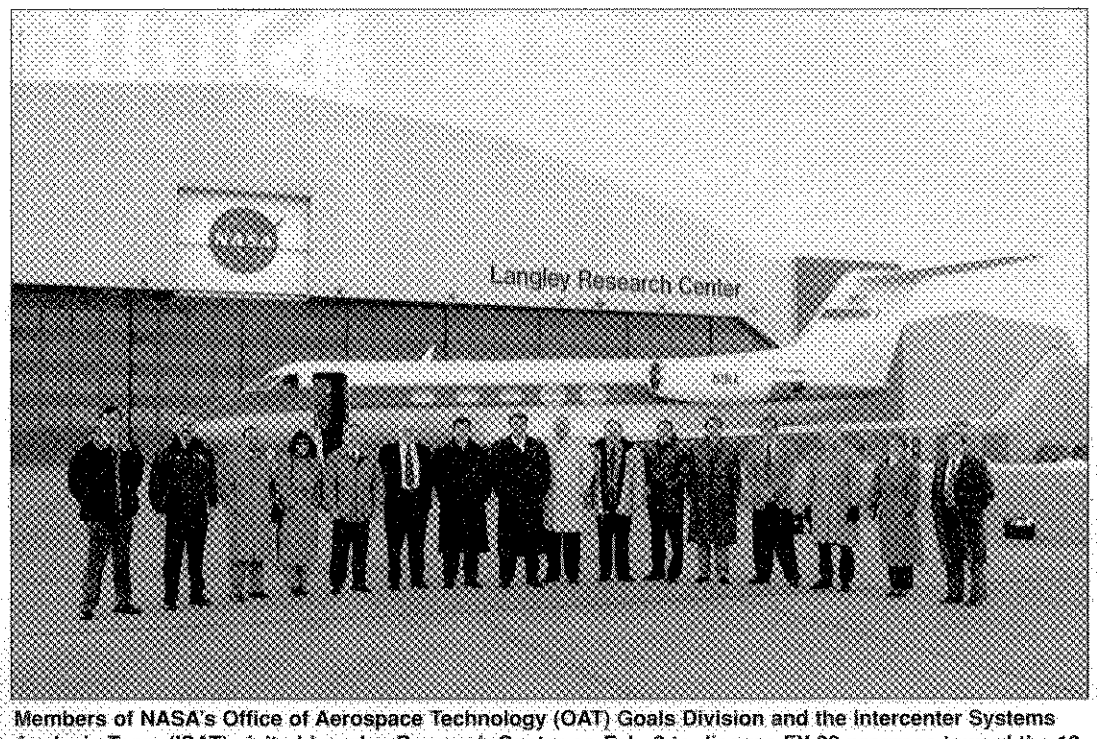
He is also the author or co-author of more than 100 technical reports and papers.

Upcoming Lectures

- **April 4:** Robert T. Watson on "Protecting Our Planet — Securing Our Future: Linkages Among Global Environmental Issues and Human Needs."
- **May 2:** Jack Crow on "Magnet Science and Technology: From Quantum Wells to Floating Frogs."
- **June 6:** Horst Simon on "The Future of Computers."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Goals Visit



Members of NASA's Office of Aerospace Technology (OAT) Goals Division and the Intercenter Systems Analysis Team (ISAT) visited Langley Research Center on Feb. 2 to discuss FY 99 progress toward the 10 enabling technology goals and to review the schedule for completing the FY 00 analysis. In addition to Langley, the Headquarters-based teams also visited the Ames, Dryden, Glenn and Marshall centers.

Photo by Jeff Caplan

EPCRA Requires Reports On Hazardous Materials

Information Helps In Planning For Emergencies

By KIM TAYLOE
SAIC/STC

Langley Research Center's Environmental Management Office is preparing reports on hazardous materials stored and used at the Center.

The reports — required under the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 — help local and state planners develop a broad perspective of chemical hazards for Langley and the entire community.

The law, which provides for public access to the reports, recognizes that government, industry and citizens are partners in preparing for emergencies and managing chemical risks in the community.

Each of the partners has responsibilities to ensure chemicals are safely used and facilities and emergency responders are prepared to respond appropriately to accidents.

Langley is responsible for:

- using the most appropriate techniques and technologies for operating safely;
- gathering information on chemicals used, stored and released into the environment and reporting it to local and state agencies; and
- setting up procedures to handle chemical emergencies.

For more environmental news, visit the Office of Environmental Engineering's monthly newsletter on the Web at <http://osemant1.larc.nasa.gov/env_inst/>.

Local and state agencies are responsible for:

- identifying the risks posed by chemicals in the locality;
- managing and reducing those risks; and
- responding to chemical emergencies.

The Local Emergency Planning Committee receives annual chemical inventory reports from local facilities such as Langley and develops the community's chemical emergency response plan.

It is important to understand that the presence of hazardous chemicals does not necessarily mean that the community is at risk.

Chemicals can be, and usually are, handled safely. Many of the chemicals reported under EPCRA pose little risk to the community because, even if spilled, they may not migrate beyond the facility.

They may, however, pose a risk to workers at the facility. Some chemicals are hazardous only if you are exposed to them over a long period of time or above certain concentrations.

The EPA has set limits for some chemicals on how much of the chemical can be released safely to the air or water per hour or day, and the Occupational Safety and Health Administration (OSHA) has set permissible exposure levels for workers for many chemicals that are generally included on Material Safety Data Sheets.

Langley's Chemical Materials Tracking System (CMTS) is an integral part of the Center's hazardous materials reporting program.

The system is used to track hazardous materials purchased, received, stored and used at each Center facility and provides the information necessary for chemical emergency planning and response.

If you have questions about hazardous material inventory procedures in your facility, contact your facility safety head or facility environmental coordinator, or call the Environmental Management Office at ext. 43500.

Information on the Center's ECPRA policies can be found on the Web at <http://osemant1.larc.nasa.gov/Envcord/ref/env_ref.htm>.

Educational Opportunities

SHARP

Modern Technology Systems, Inc. is accepting applications for Langley Research Center's Summer High School Apprenticeship Research Program (SHARP).

SHARP offers area students the opportunity to conduct intensive, hands-on science research for a minimum of eight weeks under the direction of a NASA professional. SHARP is specifically designed to attract under-represented students, increase success rates in math and science courses and encourage career paths that help build a pool of under-represented science and engineering professionals in the workplace.

To be eligible, applicants must be at least 16 years old by the time the program starts in June and live within a 50-mile radius of the Center.

For more information, call Walter Darden at ext. 44848 or visit the SHARP Web page at <http://www.mtsibase.com/sharp>.

NASA Scholarship

The NASA College Scholarship Fund, Inc., will award six $2,000 scholarships to qualified dependents of current and former NASA employees this year.

The renewable scholarship is for a maximum of $8,000 over six calendar years. Applicants must be pursuing a course of study in the science or engineering field that will lead to a recognized undergraduate degree at an accredited college or university in the United States.

Application forms are available at Langley Research Center from Carlie Johanson in the Office of Human Resources (OHR). She can be reached at ext. 49007 or <c.e.johanson@larc. nasa.gov>. Forms also are available on the Web at <http://hro.jsc.nasa.gov/Announce/scholarship/scholarships.htm>.

All completed forms and attached grades/scores must be received by the scholarship committee by March 31.

Applications should be prepared with black inked pen or be typewritten. All applicants are encouraged to provide complete information in all categories.

■ All completed application forms, transcripts, scores or materials must be mailed in a sealed envelope directly to: NASA Johnson Space Center, AH12/NASA College Scholarship Fund, Inc., Building 1 Room 840, 2101 NASA Road 1, Houston, Texas 77058.

National African American History Month

Julie Williams-Byrd, an electronics engineer/aerospace technologist at Langley Research Center, answers questions online during a NASA Quest Web chats on Feb. 9..

Photo by Jeff Caplan

Answers For All

Langley Engineer Participates In NASA Quest Web Chats With Elementary School Students

By JIM ROBERTS
Researcher News Editor

Julie Williams-Byrd, an electronics engineer/aerospace technologist at Langley Research Center, was one of nine NASA employees to participate in NASA Quest Web chats with elementary school students during African American History Month.

"NASA Quest's annual series of African American History Month chats offers K-12 students and the general public an opportunity to interact with various African American men and women who support NASA's mission and goals," said Oran Cox, who organized the chat series at Ames Research Center. "We believe this exchange is significant in providing role models for young people and will help in reaching populations historically underrepresented in science, engineering and technology fields."

Williams-Byrd earned bachelor's and master's degrees in physics from Hampton University and has worked at Langley since 1986. She designs and develops solid-state laser systems for the Remote Sensing Technology Branch but spent the last six months of 1999 serving on Outreach Team 2.

Williams-Byrd answered more than 30 Web chat questions from Feb. 8-10. The questions ranged from professional — "How do the lasers that you help make work and what do they exactly do?" — to the personal — "Does your job invade your personal life?"

There were, of course, a few silly ones thrown in, like: "Have you or any of your coworkers received deadly radiation from the lasers that you work with and/or around?"

One class wrote: "We are working on the 'Red Rover' project and we have a hypothesis that a laser stimulated reaction of the minerals in the polar region of Mars may emit some form of humidity that we could record with the sensors we have available. Do you think this is feasible?"

Other Web chat participants were: Patricia Cowings, research psychologist, Ames Research Center; Janis Davis-Street, nutritionist, Johnson Space Center; Aprille Ericsson-Jackson, aerospace engineer, Goddard Space Flight Center; Kim Hubbard, computer scientist, Ames Research Center; Dionne Jackson, analytical chemist, Kennedy Space Center; Jennifer Murray, biomedical engineer, Kennedy Space Center; Laurie Marshall, aerospace engineer, Dryden Flight Research Center; and Daniel Winterhalter, space plasma physicist, Jet Propulsion Laboratory.

The text of Williams-Byrd's Web chat is available on the Internet at <http://quest.nasa.gov/women/archive/02-08-00jwb.html>.

LAA Announcements

Runners' Club

The Langley Runners' Club will host a "Leap Year 2K" race at 5 p.m. Feb. 29 on Doolittle Road.

For more information, contact Richard Shearer at ext. 47036 or <r.l.shearer@larc.nasa.gov>, or visit the club's Web page at <http://larc-exchange. larc.nasa.gov/laa/runners>.

Garden Club

The Langley Garden Club is accepting applications for membership. The club has 60 plots, each measuring approximately 20 feet by 50 feet. Memberships will be accepted on a first-come, first-served basis until all plots are assigned. Dues for 2000, payable upon acceptance, are $20.

For more information, contact Barry Price at ext. 47146 or <b.l.price@larc.nasa.gov>.

Volleyball Club

The Langley Volleyball Club's spring season is scheduled to start the week of March 20.

Three co-ed leagues and one non-coed league will be offered. BB- and C-league games will be played on Tuesday nights; open-league games will be played on Wednesday nights, and B-league games will be played on Thursday nights.

Registration will begin on March 1 and close at 4 p.m. March 15. Online registration is available at <http://volleyball.larc.nasa.gov>.

For more information, contact Tom Britton at ext. 46619 or <t.c.britton@larc.nasa.gov>.

Bowling Association

The NASA Bowling Association has started league play, but anyone still interested in bowling is invited to participate from 6 to 9 p.m. every Tuesday at AMF of York on Route 17.

For more information, call Rodney Russell at ext. 43053 or Alan Frizzell at ext. 45413.

Karate Club

The Langley Karate Club offers instruction for beginners and experienced martial artists.

Children's classes (age 8 and up) take place from 6 to 7 p.m. on Mondays and Wednesdays in the LAA gym; adult classes (age 14 and up) take place from 5 to 7 p.m. on Mondays and Wednesdays.

For more information, call Roy Albang at ext. 46160 or Craig Cleckner at ext. 47048 or visit the club's Web site at <http://members.aol.com/cuongnhu/>.

AdVentures

CLASSIFIED

FOR SALE: Wooded lot within walking distance of Gloucester Court House. 2.39 acres on Duval Avenue at Frances Street. $35,000. Call 886-1900.

FOR SALE: '95 Plymouth Voyager minivan. AT, AC, PB, PS, CD changer, tilt steering wheel, cruise control, rear window defroster/wiper, seating for seven passengers, dual air bags, velour/cloth seats, 73,000 miles. $7,200. Call 244-3033.

FOR SALE: Piano. $700. Call 850-3428 after 5 p.m.

FOR SALE: 12 interior shutters, white pine with 1.25-inch louvers. Fits windows 33 to 37 inches wide by 21.25 to 24.25 inches high. Still in box with all hardware. Easy installation. Retails for $70 each, will sell for $50 or best offer. Call 480-5329.

FOR SALE: Black Tappan microwave, 124V/60Hz/650 watts, turntable and basic features, 15-by-23-by-16, works great. $50. Call 826-1862.

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The deadline for the March 10 edition of the *Researcher News* is Feb. 28. Please e-mail submissions to <j.r.roberts@larc.nasa.gov>.

National Engineers Week Banquet

The Peninsula Engineering Council (PEC) will host its National Engineers Week Banquet at 6 p.m. Feb. 26 at the Omni Hotel in Newport News.

The PEC will honor American Institute of Aeronautics and Astronautics (AIAA) Fellow Wilmer H. "Bill" Reed with the Engineer of the Year Award.

For more information, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

Alumni Association Meets March 14

The NACA/NASA Alumni Association will meet at 11:30 a.m. March 14 in the private dining room of the cafeteria. Bob Thust of the AARP will deliver the program: "The Driving Dilemma for the Elderly — How Much Is Too Much?"

INCOSE Symposium

The Hampton Roads Area Chapter of the International Council on Systems Engineering (INCOSE) will host a two-day systems engineering symposium on March 14 and 15 the H.J.E. Reid Conference Center. The theme will be "Managing the Requirements Process."

Day one will feature lectures, presentations and exhibits by leading experts on requirements from industry, government and education. Day two will be dedicated to demonstrations of products and services, primarily major requirements analysis tools.

There is no registration fee, and attendance is open to the public. Registration for day one is required to reserve a seat and may be submitted through the chapter's symposium Web site at <http://seva.net/~incose/soreq>. Attendees should register for day two demonstrations directly with the exhibitor of interest during day one.

For more information, contact Alan Wilhite at ext. 42982 or <a.w.wilhite@larc.nasa.gov>.

Duplicate Bridge Club

Results of the Langley Duplicate Bridge Club's Feb. 9 game: first place, Jay Robinson and Tom Norum; second place, Judy Ferris and Tom Finley.

The next game will be held at 5:30 p.m. March 8 in the Langley Room of the H.J.E. Reid Conference Center. A brief business meeting will be held before the game to formally elect officers and approve the club's constitution. For more information, call Geoff or Marty Tennille at 850-1532.

Exchange Shop Selling New Tickets

Langley Research Center's Exchange Shop now offers one-day tickets to Disney World and Sea World Florida at a substantial savings off the gate price. For more information, call ext. 41585 or 47918.

VASC Looking For Volunteers

The Virginia Air and Space Center in Hampton is recruiting adult volunteers to serve as tour guides on weekdays and weekends. Generally, a four-hour, half-day obligation is involved, with weekday guides committing to two days each month.

VASC will provide all necessary training. Training sessions will be held on Saturday mornings beginning with an orientation session at 9:30 a.m. March 4. A similar sequence of training sessions has been scheduled to begin in October.

In addition to the role of tour guides, volunteer opportunities also are offered as assistants in the Langley Research Center Educator Resource Center and in administrative services, special events and children's programs.

For more information about volunteering, call Bert Smith at 727-0900, ext. 735.

New IMAX Film Playing At VASC

"Wolves," a new IMAX film shot in Yellowstone National Park, Montana, Idaho, Alaska and Quebec, will play at the Virginia Air & Space Center through April 13. For showtimes or more information, call 727-0900 or visit VASC's Web page at <www.vasc.org>.

Lunchtime Aerobics Class Resumes

Langley Research Center's Fitness Center has resumed its lunchtime aerobic program. Classes, which consist of step training, upper- and lower-body sculpt, circuit training and abdominal work, are offered from 11:00 a.m. to noon every Monday, Wednesday and Friday.

Classes are led by Joanne Edmonds, an aerobic instructor and personal trainer certified through the Aerobic & Fitness Association of America (AFAA).

Classes are free to all NASA employees, but participants must complete a Health Questionnaire and an Informed Consent Form and have physician approval prior to participation.

For more information, call Joanne Edmonds at ext. 46387.

Center Snapshot

Local author Sandra McClinton signs copies of her new book, "Lyrical Aviators," at Langley Research Center on Feb. 11. McClinton also showed slides of her journeys over North America and talked about her dreams to reach for the skies. "Lyrical Aviators" is on sale in the Exchange Shop. For more information, call ext. 41585 or 47918.

Photo by Jeff Caplan

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 5 ❖ March 10, 2000

Sharon Grove, an assistant at Langley Research Center's Child Development Center, demonstrates how to use the Langley-developed fetal heart monitor in the Center's clinic. In its present form, an at-home patient would strap a wide, soft belt embedded with sensors over her belly, tune a computerized control device to hear the fetal heartbeat and send the signal directly to her doctor's office via the Internet.

Photo by Jeff Caplan

Baby Technologies

Aero Application Yields Fetal Heart Monitor

By KEITH HENRY
Office of Public Affairs

and DAVID SHANNON
Technology Commercialization Program Office

The results are in. A technology originally used at Langley Research Center to measure airflow over airplane wings has been successfully used to develop a portable, non-invasive, easy-to-use fetal heart monitor.

The new, clinically proven fetal heart monitor takes advantage of aerospace technology to make it more affordable, portable and easy to use by expectant mothers in their own homes. What's more, it "listens, documents and stores" fetal heart-rate data without injecting energy into the womb, making it totally non-invasive.

A team of aerospace researchers from Langley worked with Veatronics, Inc., of Charlotte, N.C., to convert the technology to this innovative medical application. NASA granted the company a license to market one or more commercial products based on the technology.

"Because the material we used for wing surface measurements is flexible, it is ideally suited to fit over the curved surface of a maternal abdomen for fetal testing," said Allan Zukerwar of Langley's Advanced Measurement and Diagnostics Branch.

Other research team members were E. Thomas Hall of the Composites Applications Technology Branch; Tim Bryant, retired from the Electronics Applications Branch; David Livingston and Dr. Stephen Zehorian of Old Dominion University; and Robert Pretlow III of Lockheed Engineering & Sciences Company.

Current fetal heart-monitoring devices generally work well but cost thousands of dollars and can only be used in a clinic or doctor's office.

NASA developed the portable technology at the suggestion of a

Continued on Page 3

Knights Prepared For Robot Contest

By ROBERT ALLEN
Office of Public Affairs

A team of local students sponsored by Langley Research Center is preparing to test its skills and its robotic mettle against 38 teams from as far away as New Hampshire.

From March 16-18, 39 teams of high school students will converge at Virginia Commonwealth University's (VCU) Siegel Center to participate in the For Inspiration and Recognition of Science and Technology (FIRST) regional robotics competition.

Their goal is to find out who designed and built the best robot for an environment that will look and sound more like a basketball game than a science competition.

Langley is sponsoring a team from the New Horizons Regional Education Center in Hampton that calls itself the "NASA Knights." Right now, the team is tweaking and testing its robotic representative, which looks like a jumbo video game controller and a roving, six-foot-tall shopping cart with an attitude. FIRST allows just six weeks for a competition-ready robot to emerge from the minds of students and their engineering mentors.

Last year, the New Horizons team placed fifth in the national

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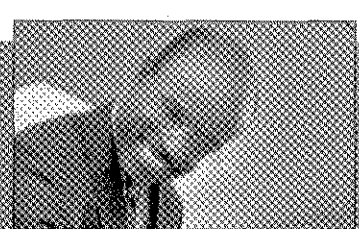

WAVY-TV Anchor Brings Positive Rap Message To LCDC
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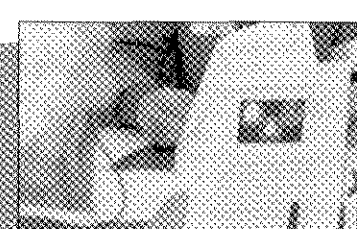

Judging For NSIP Educational Contest Takes Place On-Center
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News Briefs

Around the Agency

NASA AWARDS CONTRACT TO QSS GROUP INC.

NASA Ames Research Center has awarded a new five-year contract valued at $128.3 million (including options) to QSS Group Inc., Lanham, Md., to provide support to NASA's enterprise and mission programs.

Under the terms of the contract, QSS Group Inc., will provide support to Ames' Computational Sciences Division's mission to provide cross-cutting technologies to enable missions and programs throughout NASA's major enterprises. The company will provide support for leading-edge research in artificial intelligence, knowledge-based systems, soft computing, model-based diagnostic reasoning, fault-tolerant computing hardware and networking, integrated design, and human-centered computing. RELEASE: 00-12AR

CREWS NAMED TO CONTINUE ISS ASSEMBLY

Veteran Shuttle commanders James Halsell (Col., USAF) and Terrence Wilcutt (Lt. Col., USMC) will lead the next two Space Shuttle missions to continue on-orbit assembly of the International Space Station NASA managers announced Feb. 18, as they officially added Shuttle mission STS-106 to the manifest.

Halsell will lead a crew of seven on the STS-101 mission, which is scheduled to launch aboard Space Shuttle Atlantis no earlier than April 13. For complete biographical information on the crewmembers, see the NASA Internet astronaut biography home page at <http://www.jsc.nasa.gov/Bios>. RELEASE: 00-29

NEAR BEGINS LOOKING CLOSELY AT EROS

Only a few days into the first close-up study of an asteroid, data from NASA's Near Earth Asteroid Rendezvous (NEAR) mission indicate that 433 Eros is no ordinary space rock.

Since the NEAR spacecraft met up with and began its historic orbit of Eros on Feb. 14, NEAR team members at the Johns Hopkins University Applied Physics Laboratory, which manages the mission for NASA, have pored over images and other early scientific returns. It will take months to unravel the deeper mysteries of Eros, but data from NEAR's final approach and first days of orbit offer tantalizing glimpses of an ancient surface covered with craters, grooves, layers, house-sized boulders and other complex features.

Images and information about the NEAR mission are available on the Internet at <http://near.jhuapl.edu>. RELEASE: 00-28

ONSET OF COLLISION LIGHTS UP SUPERNOVA RING

NASA's Hubble Space Telescope is giving astronomers a ringside seat to a never-before-seen, violent, celestial "main attraction" unfolding in a galaxy 169,000 light years away. The knockout event is the collision of the fastest moving debris from an immense stellar explosion seen in February 1987 with the gas ring that circles that site.

This collision is beginning to cause the gases in the ring to glow as they are heated to millions of degrees and compressed by the sledgehammer blow of a 40 million mile-per-hour blast wave. In new pictures taken on February 2, Hubble's sharp view revealed four bright new knots of heated gas at places that had been fading slowly for a decade.

Images are available on the Internet at: <http://www.stsci.edu>. RELEASE: 00-27

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Locals Named AIAA Fellows

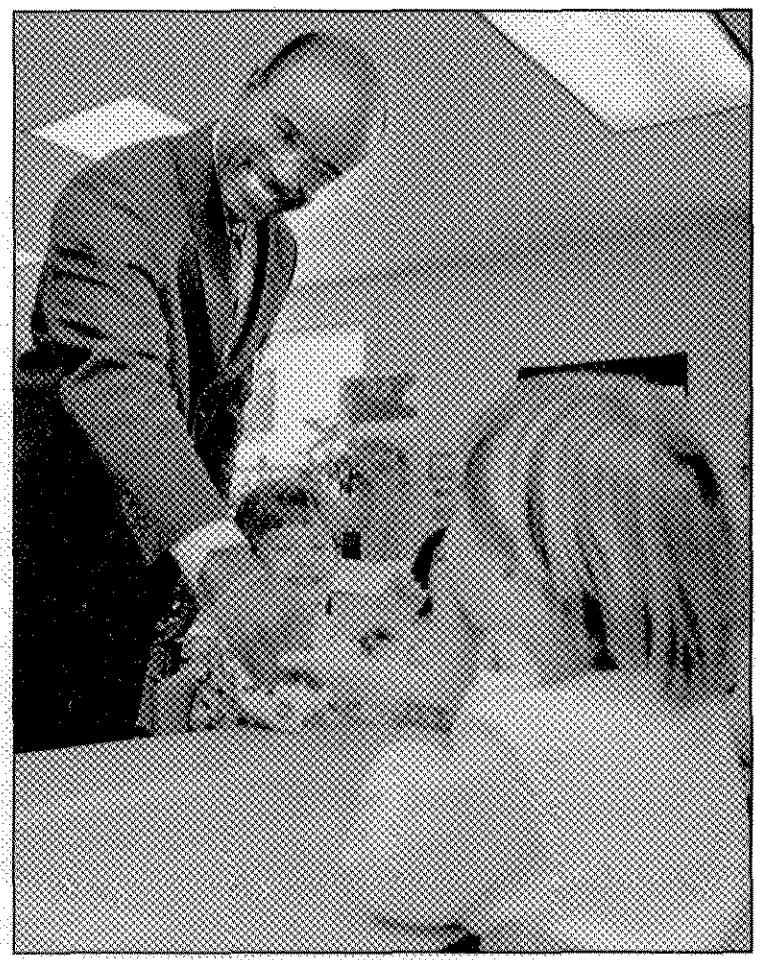
The American Institute of Aeronautics and Astronautics (AIAA) recently announced that two members of the Hampton Roads Section are among the 33 to be named Fellows in 2000.

Sidney F. Pauls and **John L. Whitesides** will be officially confirmed at the 2000 Global Air & Space International Business Forum and Exhibition, which will take place from May 10-12 in Arlington.

Pauls began his career at Langley Research Center in 1963 and held management positions in the Analysis and Planning Group, the Business Data Systems Division and the Personnel Division. He served as the Center's Associate Director from 1987 until he retired in 1995.

Whitesides is a professor of engineering at The George Washington University and the associate director of the Langley/GWU Joint Institute for Advancement of Flight Sciences (JIAFS).

AIAA is the world's pre-eminent aerospace information resource and the largest professional society for aeronautics and astronautics professionals. Historically, Fellow selection is limited to candidates demonstrating strong potential for leadership and distinguishing themselves in the field of aerospace. For every 1,000 voting members of the AIAA, one Fellow is selected.



Don Roberts, the co-anchor of WAVY-TV's morning news show, visits with children in Langley Research Center's Child Development Center on Feb. 28. Roberts is the author of "Rap To Live By," a collection of positive poetry and rap songs for kids of all ages. His book is published by Hampton Roads Publishing and can be ordered by calling 1-800-766-8009.

Photo by Jeff Caplan

'99 Was A Good Year For Speakers Bureau

The Langley Speakers Bureau had a 43 percent increase in the number of stakeholders reached in 1999. In Calendar Year 1999, 80 speakers gave 158 talks to 15,931 stakeholders; in the previous year, 64 speakers gave 130 talks to more than 11,000 listeners.

The Speakers Bureau is an important part of the Center's outreach to stakeholders. The coordinator gets several calls for speakers each week. Many of the requests are forwarded via e-mail to the membership of the Bureau. To be included in the e-mail list, contact Olin Jarrett at <o.jarrett@larc.nasa.gov>.

In Memoriam

Melvin Echlin Hathaway

Melvin Echlin Hathaway died on Feb. 24 at the age of 96. Hathaway worked at Langley as a research scientist and was one of the original designers of the "big squirt" for water landing, the frangible tube and the heat shield for the original space capsule.

H. Doyle Ambrose

H. Doyle Ambrose died on Feb. 21 at the age of 85. Ambrose retired from NASA as a tunnel mechanic in 1977.

Robert Donald Lindeman

Robert Donald Lindeman died on Feb. 16 at the age of 73. Lindeman, a native of Pennsylvania and a Hampton resident since 1948, served in World War II and earned the American Campaign Medal and the World War II Victory Medal.

After the war, he worked as a research technician for NASA, contributing to the development of the Vertical Take-Off and Landing (VTOL) aircraft and the Lunar Excursion Module (LEM).

Leonard T. Melfi

Leonard T. Melfi died on Feb. 11 at the age of 62. Melfi worked at Langley for 30 years and was the holder of two patents. At the time of his death, Melfi was working as the senior research scientist/aerospace projects manager for Science and Technology Corp.

Willis Albert Shearin Jr.

Willis Albert Shearin Jr. died on Feb. 24 at the age of 65. Shearin, a native of Rocky Mount, N.C., graduated from the NACA Apprentice School and served NASA for 39 years. He retired in 1995 as head of the Contracting Resource Center and Production Controller.

Fellowship Opportunity

IT Fellowships

Langley Research Center's Office of Human Resources recently established a new fellowship program for Information Technology.

Employees interested in the fellowship can find a full description of the fellowship and the application process on the Web at <http://ohr-r.larc.nasa.gov/do.itfpin.html>. The deadline to apply is March 31.

For more information, contact George Allison at ext. 42594 or <g.d.allison@larc.nasa.gov>.

Center Receives ISS Flag

By MEGHAN WOODCOCK
Assistant Editor

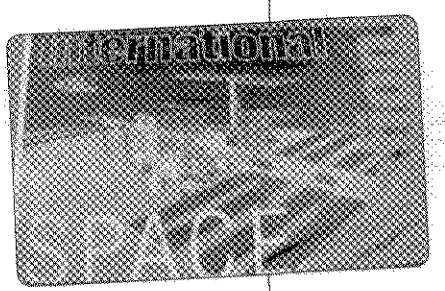
New International Space Station (ISS) flags have been sent out to each NASA Center from Johnson Space Center's Space Flight Awareness (SFA) office.

The SFA office previously provided NASA centers with orbiter flags to be flown during each shuttle mission.

The new 4- by 6-foot flag, featuring a picture of the ISS, will be flown for the next major ISS milestone — the docking of the Russian-built Zvezda Service Module.

The module is currently scheduled for launch between July 8 and 14 atop a Russian Proton launch vehicle from the Baikonur Cosmodrome in Kazakhstan, Russia.

The crucial service module is the third station element, joining the Zarya and Unity modules already in orbit. Zvezda (Russian for "star") is the module that will serve as the early living quarters for astronauts and cosmonauts and will also control the life-support system, electrical power distribution, data processing system, flight control system and propulsion for the ISS until the arrival of the U.S. Destiny module.

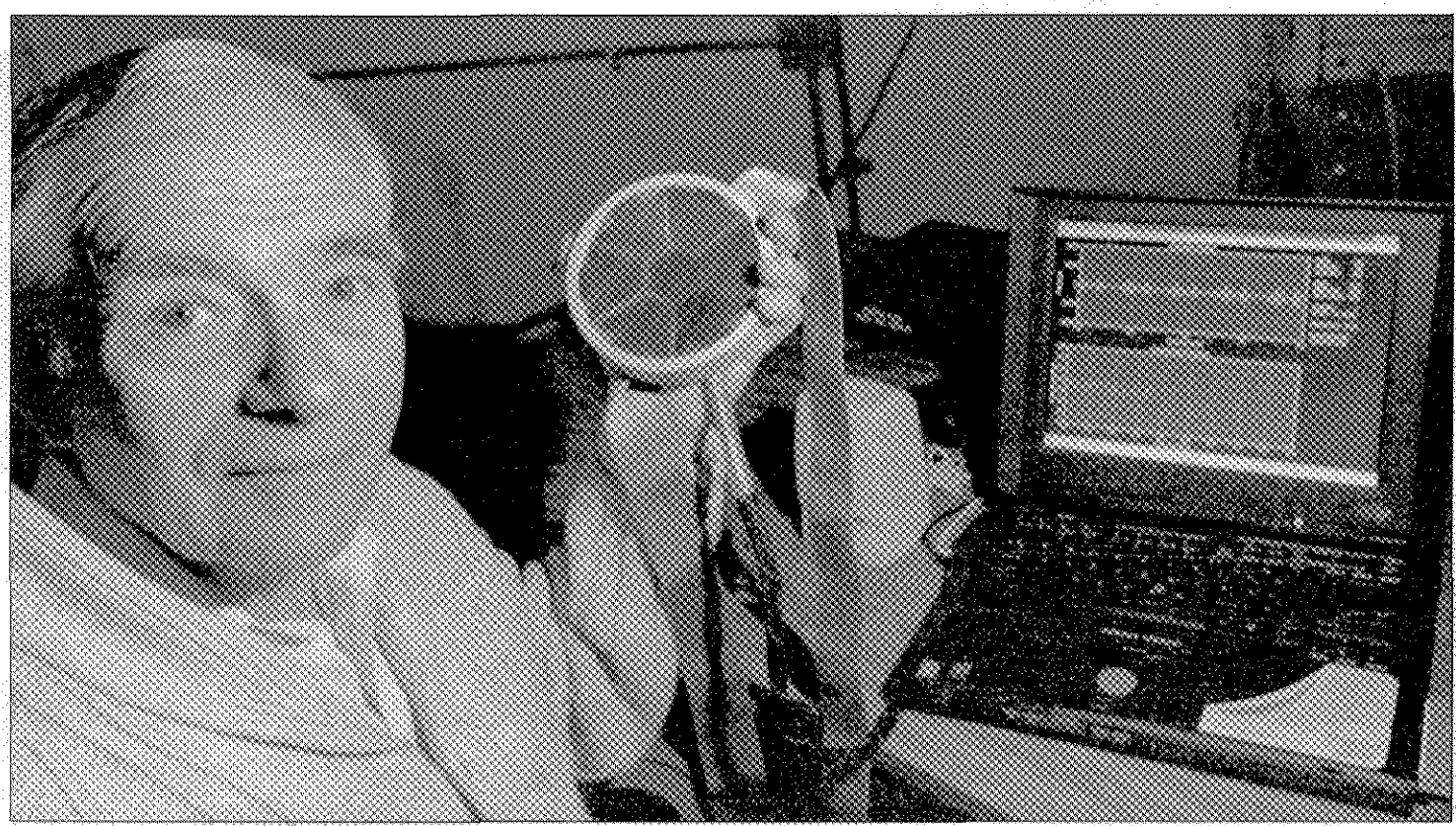


The ISS Flag.
Photo by Meghan Woodcock

The decision to fly the ISS flag will come officially from the SFA office in Houston. According to SFA Program Manager Lois Walker, it has not been determined whether centers will be instructed to leave the flag up continuously after the space station is manned, or to fly the flag briefly for each new crew.

Since the launch of Zarya in 1998, the ISS has completed more than 7,000 orbits. Space Station viewing opportunities worldwide are available on the Internet at <http://spaceflight.nasa.gov/realdata/sightings/>.

For more information on the International Space Station, visit <http://spaceflight.nasa.gov/station/index.html> on the Internet.



Allan Zukerwar of Langley Research Center's Advanced Measurement and Diagnostics Branch shows the hardware used for the fetal heart monitor. "Because the material we used for wing surface measurements is flexible, it is ideally suited to fit over the curved surface of a maternal abdomen for fetal testing," he says.

Photo by Jeff Caplan

Monitor

Continued from Page 1

medical doctor in a remote area that suffers from a lack of appropriate health care. For several reasons, when expectant mothers do not receive necessary prenatal care, the result is often increased fetal mortality.

In its present form, an at-home patient would strap a wide, soft belt embedded with sensors over her belly, tune a computerized control device to hear the fetal heartbeat and send the signal directly to her doctor's office via the Internet. The device is as easy to use as tuning a radio, which one doctor considers essential to its ultimate success.

"I think the portability of this technology will make it very useful," said Dr. Kevin Gomez, a specialist in maternal fetal medicine at Atlanta Perinatal Associates in Atlanta. "Instead of having patients travel to where the technology is, we bring the technology to the patients."

Gomez led a recently completed series of Langley-sponsored clinical trials at Morehouse School of Medicine in Atlanta. Clinical trials also were sponsored at Eastern Virginia Medical School in Norfolk and at Encino/Tarzana Medical Center in Encino, Calif.

Among other things, the trials are expected to establish that the Langley acoustic monitor meets federal Food and Drug Administration guidelines. Results are being compared to those recorded via Doppler ultrasound and scalp-electrode monitors, and also to standard accepted measurements.

The Morehouse trials, along with continuing investigations at Atlanta Perinatal, proved to Gomez's satisfaction that the technology offers an easy-to-use alternative to visits to the doctor's office.

This is especially important, he explained, for high-risk patients who should be examined twice a week or more, or for patients who cannot easily travel. All of Gomez's patients are considered high-risk, due to maternal complications of pregnancy or fetal abnormalities.

Even perfectly healthy patients may not be able to afford the time or money for periodic trips to the doctor — or may find themselves ordered to long periods of bed rest.

The new method of checking fetal heart behavior might actually prove to be a better way of monitoring some pregnancies than technologies now in use. In addition, the system could provide objective data to complement information gained from other methods.

Prior to the clinical trials, the three medical centers signed agreements with Langley's Technology Commercialization Program Office to test the Langley device.

The office is part of an active NASA technology transfer program, established to move space-age technology from the laboratory to the marketplace. For more information, check the Internet at <http://tech-transfer.larc.nasa.gov/>.

Take Our Daughters (And Sons) To Work Day

Register Now For The April 27 Event

By PATSY CAMPBELL
Office of Equal Opportunity Programs

Langley Research Center's Federal Women's Program Committee (FWPC) will co-sponsor the Center's annual "Take Our Daughters (And Sons) to Work Day" program on April 27 with the Newport News branch of the American Association of University Women and the Virginia Space Grant Consortium.

The program will introduce girls and boys between the ages of 9 and 15 to the technical community in which their parents work.

Langley's program will include a structured event in the morning and the afternoon spent at the parent's workplace.

The morning event, which will take place in the H.J.E. Reid Conference Center, will include hands-on activities and a tour for the students and a one-hour briefing for the parents.

The hands-on activities will focus on actively involving the students in understanding math and science concepts used at Langley.

The parents' briefing will feature an educational specialist talking about gender bias in education and offering tips on how to help children overcome difficulties in math and science skills.

The parents/sponsors can return to work following their briefing and reconvene with the students in the Reid Conference Center at 12:15 for a group picture.

The structured program will adjourn for lunch at 12:30 p.m. The afternoon is left open for the parents/sponsors to share with the children at the workplace.

The program is available on a first-come, first-served basis and is open to all NASA employees and contractors. (Civil servant employees can charge their time to J.O. B1011. Contractors must negotiate leave with their employer.) The first 100 registrants will be accepted, with 50 slots for girls and 50 slots for boys.

Application forms are available online at <http://ltw.larc.nasa.gov/daughters_form.html>. Completed forms should be returned by March 31 to Patsy Campbell at MS 178.

For more information, call Patsy Campbell at ext. 43291 or Patricia Williams at ext. 44775.

From the Office of Procurement

Rat Problem? We're Here To Help

Here's What You Can Do To Avoid Ratifications ...

By STAN WARD
Office of Procurement

There are some things which are clearly to be avoided, and you can spot them just by their names. Others are less obvious. Clearly, a "rat" is usually something unpleasant, and the very word may bring to mind images from some old horror movie. So it's no surprise that in the world of government procurement, "rats" are also things to avoid, and here's why.

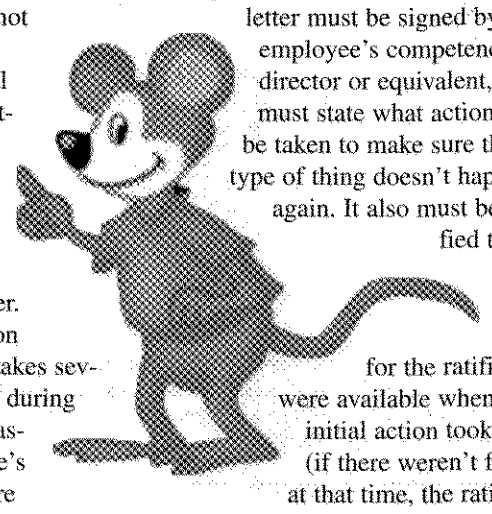
Sometimes abbreviated "rats," ratifications are procurement actions which are illegal simply because the person who committed the government to buy something didn't have Uncle Sam's delegated authority to spend federal money that way. In order to make that commitment legal — and to get the vendor paid for those goods or services — a formal ratification process must be completed. If the process can't be completed for whatever reason, the person who made the illegal commitment can get into some pretty serious hot water; additionally, the only way to get the vendor paid may be for that person to pay for it out of his or her pocket.

A ratification may begin innocently enough. You need something fixed, so you send it out for a free estimate. Then, out of nowhere, the item comes back, already repaired, and it arrives with a bill for the work. All you wanted was an estimate, but now the work's done and the company wants to get paid. Yes, to get this paid with federal money, you now need to begin the ratification process.

As another example, in an effort to plan ahead, you talk to a vendor with whom you've done business before. You tell them to expect an order for the needed item within a couple of weeks (you're in a hurry for it), and you start a Purchase Request (PR) through the system.

Meanwhile, this anxious vendor somehow misunderstands you and sends you the item before any order is placed. Starting a PR through the system is not enough.

If you receive and accept an item or service before a Purchase Order is awarded and signed by a contracting officer, you are in the realm of ratifications. You must not accept the item before the formal award is completed, because there is no guarantee that this vendor will ultimately get awarded the order.



The ratification process usually takes several months, and during this entire unpleasant process, there's a vendor out there wondering (sometimes very vocally) why it can't get paid.

Because the events leading to a ratification could trigger an Anti-Deficiency Act violation or result in a violation of various other laws, the government has created a very detailed, time-consuming process for handling ratifications.

In a nutshell, the process works like this: The ratification-causing employee must generate and sign a document stating, among several other details, how and why he or she caused the action and explaining how the vendor was selected and why the price is fair and reasonable. The letter must be signed by the employee's competency director or equivalent, who must state what actions will be taken to make sure this type of thing doesn't happen again. It also must be verified that funds to pay for the ratification were available when the initial action took place (if there weren't funds at that time, the ratification is disapproved), and a PR must be provided.

Then the contracting officer must concur with proceeding with the ratification. Next, the Chief Counsel reviews the package and must concur that there is a legal basis for proceeding with the ratification. Finally, only the Center's Procurement Officer may actually approve the ratification. The regulations also provide for further possible reviews, including involvement by the General Accounting Office (GAO).

This process is not career-enhancing. So how do you avoid ratifications? Well, you want to make sure you don't commit the government to buy anything you aren't legally empowered to buy yourself. If you have a Government Purchase Card, and if you perform a Purchase Card-legal transaction to buy a good or service, you're fine (as long as you've completed the Purchase Card transaction before the item is delivered or the work is done).

For everything else, work with the Office of Procurement before you get a repair estimate, before you tell anyone they can expect to receive an order or before you do anything that may lead to getting a bill.

When in doubt, ask Procurement first. You are guaranteed that this call will always be less painful than processing a ratification. We're here to help. Honest!

NSU, HU Receive NASA Research Grants

By SONJA ALEXANDER
NASA Headquarters

Norfolk State University and Hampton University are among the 18 minority institutions to receive educational research grants from NASA's Office of Equal Opportunity Programs.

NASA recently awarded 20 grants and cooperative agreements totaling more than $2.9 million.

Norfolk State was one of three universities to receive an award under the Partnership Awards for the Integration of Research into Mathematics, Science, Engineering and Technology (PAIR) program and one of six universities to receive an award under the Mathematics, Science and Technology Awards for Teacher and Curriculum Enhancement Program (MASTAP).

The PAIR awards provide opportunities for minority colleges and universities to build upon their NASA-sponsored research across disciplines by creating innovative approaches to the interdisciplinary study of mathematics, science, engineering and technology.

Each university will receive up to $300,000 per year for a maximum of four years based on performance and availability of funds under the program.

The MASTAP awards provide opportunities for minority colleges and universities to strengthen their teacher education programs by developing diverse and exemplary research-based mathematics, science, and technology teacher-education curricula, integrated with content from NASA's mission.

Each MASTAP award recipient will receive up to $200,000 per year for a maximum of three years based on performance and availability of funds under the program.

Hampton University was one of 11 schools to receive an award under the the Pre-college Awards for Excellence in Mathematics, Science, Engineering and Technology (PACE/MSET) program.

The PACE grants provide opportunities for minority colleges and universities to implement innovative projects in collaboration with NASA and local school districts to increase the pool of undergraduate students pursuing degrees in mathematics, science, engineering and technology. This is accomplished by providing students in grades K-12 with educational opportunities that will enhance the number and percentage of students enrolled in mathematics and science college-preparatory courses.

Each university will receive up to $100,000 per year for a maximum of three years based on performance and availability of funds under the program.

Additional details on these awards can be found on the Internet at <http://mured.alliedtech.com>.

FIRST

Continued from Page 1

FIRST robotics competition at the Disney's Epcot Center in Orlando.

Ned Carr, New Horizons' executive director, said the competition is a great combination of ideas and experience.

"It is important to know science, but it's even more important to *do* science," Carr said.

"The FIRST competition puts students together with engineers and technicians in a real-world setting," he said. "This kind of experience goes beyond theory. It encompasses all of what we try to do here at New Horizons."

In addition to a financial boost, the New Horizons team gets the benefit of the experience of current and retired NASA engineers and fabrication specialists like Bill Reed, Jeff Seaton, Dave Fahringer and Ansel Butterfield.

Reed, a Langley retiree and the recipient of the the Peninsula Engineers Council's Engineer of the Year award, is a veteran of four FIRST competitions.

"Some of these kids had never held a screwdriver before this," Reed said. "Now, some of these young women will be teaching their husbands how to work with tools."

Langley has provided a total of approximately $260,000 to support the FIRST regional robotics competition this year.

FIRST is a non-profit organization established in 1989 by Dean Kamen, an entrepreneur and inventor with more than 100 patents. FIRST's mission is to stimulate students' interest in math and science.

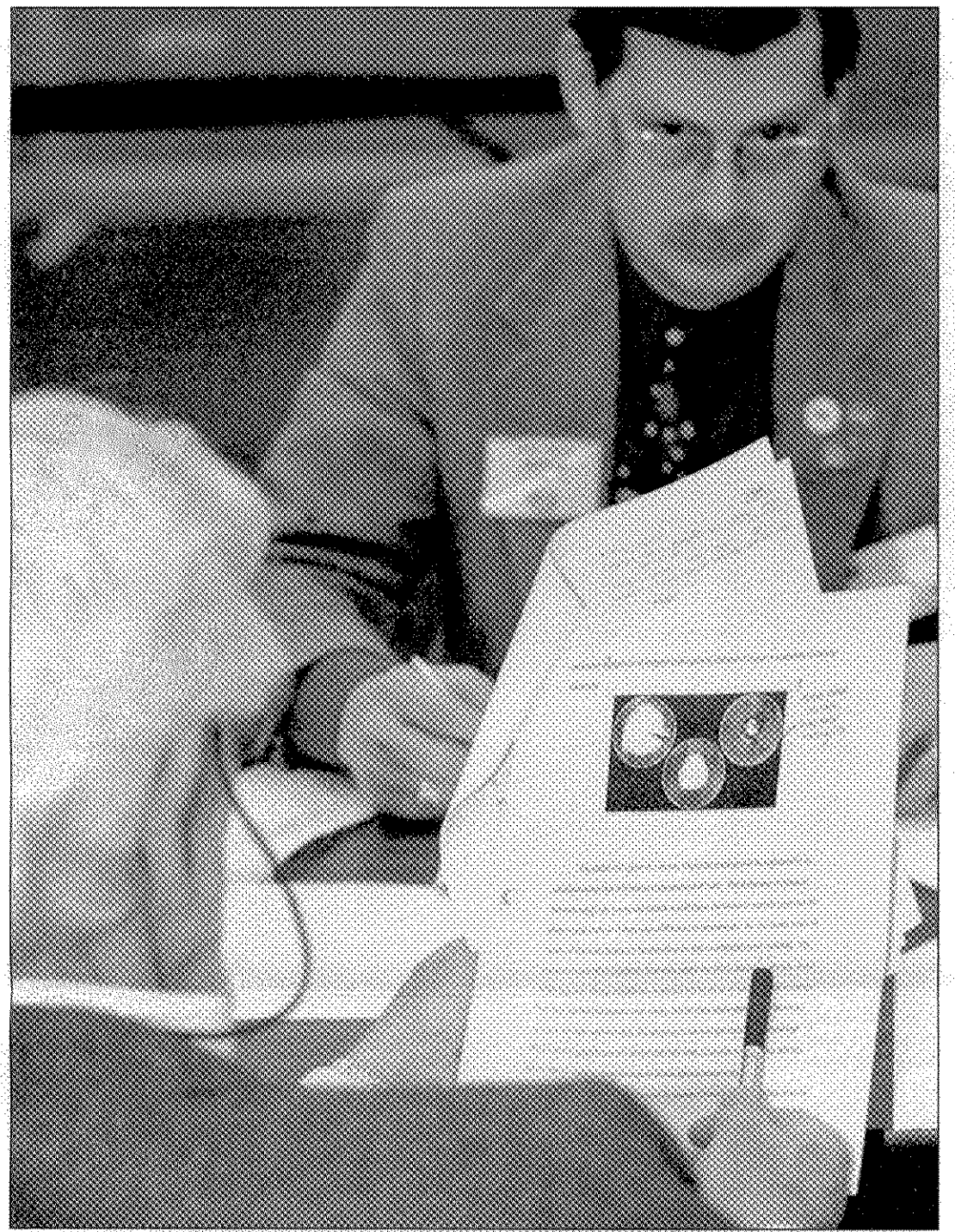
In 1992, FIRST began organizing a national robotics competition. The goal of the program is to join high school students with professional engineers and technicians from industry and academia to design, construct and operate the robots.

Each year, FIRST develops the robotics competition by supplying a "problem" and a kit of parts to teams of students.

The competition is different each year, and the details are kept secret until the unveiling at the competition kick-off. After that, each team has just six weeks to organize, design, build and test its robot.

For more information, visit the FIRST Web site at <http://www.usfirst.org/>.

NSIP Judging



Judging for the NASA Student Involvement Program (NSIP) took place at Langley Research Center on Feb. 26. Sixteen volunteers spent the day evaluating 117 entries from students in Virginia, West Virginia, North Carolina, South Carolina and Kentucky. NSIP is designed by scientists and educators to challenge students to learn about science, math, geography and technology. There are five categories in this year's NSIP competition: "Design a Mission to Mars," "Watching Earth Change," "Earth Systems in My Neighborhood," "Aeronautics & Space Science Journalism" and "Flight Opportunities." Judging also will take place at seven other NASA facilities. The winners will be announced in mid-April. For more information, visit <www.nsip.net> on the Internet or contact Gresha Brown at ext. 45288 or Nick Koltun at 727-0900.

Photo by Jeff Caplan

Langley Begins Study Buddies Tutor Program

Langley Research Center is partnering with Machen Elementary School in Hampton to provide Study Buddies, a new, "one-on-one" tutorial program for students.

The program, which will begin the week of March 13, is modeled after a highly successful volunteer tutorial program conducted by Newport News Shipbuilding (NNS) and Huntington Middle School in Newport News. That program, Taking Action To Overcome Obstacles (TATOO), has been marked by significant and continuous improvements in students' performance on the Literacy Passport and the Standards of Learning testing programs.

Pat Cosgrove of Langley's Spacecraft and Sensors Branch volunteered in the TATOO program while employed at NNS.

"Not only was the program successful in bringing the kids' test scores up," Cosgrove said, "but I really had a sense that we were making a real, positive difference in the lives of these kids.

"Just the happy look in their eyes as we came through the door was enough to keep me going back. And one hour a week at such a close school was an easy commitment to meet."

Study Buddies volunteers will be assigned to tutor a first-, second-, third- or fourth-grade student. They will meet for one hour a week in their student's classroom.

Tutors requesting a specific grade level or specific day and time of the week will be accommodated on a first-come, first-served basis. Machen's teachers will have lessons planned and are ready for the volunteers to maximize the value of the time with the students.

Volunteers are required to have their supervisor or organizational unit manager authorize their voluntary participation by completing a Study Buddies form.

For a form or more information about the Study Buddies program, contact Pat Cosgrove at ext. 42031 or Bill Williams at ext. 49728.

Mathcounts Competition

Local Teams Advance

By GWEN WHEATLE
Office of Education

Student teams from Berkeley, Grafton, Poquoson and Syms middle schools advanced to the state-level "Mathcounts" competition after winning the daylong regional qualifier on Feb. 19 in the H.J.E. Reid Conference Center.

The top four teams at the state level will progress to the national finals.

The 16th annual regional Mathcounts competition included 10 teams of seventh- and eighth-grade students from Hampton Roads Academy, Walsingham Academy and public schools in Gloucester County, Hampton, Poquoson, Williamsburg/James City County and York County.

Students competed in individual and team events. The "mathletes" responded to questions meant to foster mathematical thinking, reasoning and problem-solving.

Sample question: "A rubber ball is known to rebound half the height that it drops. The ball is dropped from a height of 32 feet. Assuming that it bounces straight up and down, how many feet will it have traveled by the time it hits the ground the fourth time?"

Mathcounts is sponsored by the National Society of Professional Engineers. It is a competition program designed to stimulate middle school students' interest and achievement in mathematics; develop students' awareness of the relevance of mathematics to everyday life; and encourage students to pursue mathematics-related careers.

NASA, a national sponsor of Mathcounts, supports the competition by sending the top team and the top three runners-up to Space Camp. NASA also sponsors a three-day orientation workshop for math coaches.

The regional competition held at Langley was just one of several National Engineers Week outreach activities supported by the Center during February.

Educational Opportunities

SHARP

Modern Technology Systems, Inc. is accepting applications for Langley Research Center's Summer High School Apprenticeship Research Program (SHARP).

SHARP offers area students the opportunity to conduct intensive, hands-on science research for a minimum of eight weeks under the direction of a NASA professional. SHARP is specifically designed to attract under-represented students, increase success rates in math and science courses and encourage career paths that help build a pool of under-represented science and engineering professionals in the workplace.

For more information, call Walter Darden at ext. 44848 or visit the SHARP Web page at <http://www.mtsibase.com/sharp>.

NASA Scholarship

The NASA College Scholarship Fund, Inc., will award six $2,000 scholarships to qualified dependents of current and former NASA employees this year.

The renewable scholarship is for a maximum of $8,000 over six calendar years. Applicants must be pursuing a course of study in the science or engineering field that will lead to a recognized undergraduate degree at an accredited college or university in the United States.

Application forms are available at Langley Research Center from Carlie Johanson in the Office of Human Resources (OHR). She can be reached at ext. 49007 or <c.e.johanson@larc. nasa.gov>. Forms also are available on the Web at <http://hro.jsc.nasa.gov/Announce/scholarship/scholarships.htm>.

All completed forms and attached grades/scores must be received by the scholarship committee by March 31.

■ All completed application forms, transcripts, scores or materials must be mailed in a sealed envelope directly to: NASA Johnson Space Center, AH12/NASA College Scholarship Fund, Inc., Building 1 Room 840, 2101 NASA Road 1, Houston, Texas 77058.

AdVentures

CLASSIFIED

FOR SALE: Mahogany entertainment center. Two-piece main unit (top and bottom) with two matching speaker cabinets. Made in Spain from solid mahogany (no veneers) 25 years ago. Unit is in great shape and very heavy. All shelves (including those in the speaker cabinets) are adjustable. Main unit measures approximately 83 inches high, 87 inches wide and 22 inches deep; each speaker cabinet measures 35 inches high and 26 inches wide. A 32-inch TV will fit into center section of unit. $1,000 or best offer. Call 596-6978 after 5 p.m.

FOR SALE: Full/twin-size black futon with bottom full-size mattress ($100.00) and 1 full/twin size bunk bed ($100.00). Glass dining room table with chairs, $88. Floral sofa, $75. (Needs to be cleaned.) Call 875-1284.

FOR SALE: Fisher wood stove, complete with front screen and all pipes, $400. Portable dishwasher, $100. Call 868-4688.

FOR SALE: Hospital bed, $250 or best offer. Call 723-6142.

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The deadline for the March 24 edition of the *Researcher News* is March 13. Please e-mail submissions to <l.r.roberts@larc.nasa.gov>.

NARFE Meeting March 13

Chapter 682 of the National Association of Retired Federal Employees (NARFE) will meet at 10:30 a.m. March 13 at the Midtown Community Center in Newport News. Cpl. Leo Flibotte of the Hampton Police Department will speak about "Stealing Your Identity." For more information, call Catherine Askew at 247-1558.

Alumni Association Meets March 14

The NACA/NASA Alumni Association will meet at 11:30 a.m. March 14 in the private dining room of the Langley cafeteria. Bob Thust of the AARP will deliver the program: "The Driving Dilemma for the Elderly — How Much Is Too Much?"

INCOSE Symposium March 14-15

The Hampton Roads Area Chapter of the International Council on Systems Engineering (INCOSE) will host a two-day systems engineering symposium on March 14 and 15 in the H.J.E. Reid Conference Center. The theme will be "Managing the Requirements Process."

For more information, visit the symposium Web site at <http://seva.net/~incose/soreq> or contact Alan Wilhite at ext. 42982 or <a.w.wilhite@larc. nasa.gov>.

Women's History Month Speaker

NASA astronaut Heidemarie Stefanyshyn-Piper will speak in honor of Women's History Month at 2 p.m. March 17 in Langley's H.J.E Reid Conference Center.

Stefanyshyn-Piper finished her two-year astronaut training in 1998 and has not yet flown a mission. She is currently assigned to the Astronaut Office Flight Support Branch at Kennedy Space Center, supporting space shuttle launches and landings.

The event is being co-sponsored by the Federal Women's Program Committee and the Office of External Affairs. For more information, contact Patsy Campbell at ext. 43291 or <p.l.campbell@larc.nasa.gov>.

Astronomy Club Viewing March 17

The Skywatchers Astronomy Club will host an evening of free telescopic viewing from 8 p.m. to midnight March 17 at the club's observatory, Building 1231A. A variety of telescopes will be set up for the event.

No reservations are required. For more information, call Marilyn Ogburn at ext. 41175.

Volunteer Luncheon On March 21

Everyone interested in learning more about Langley Research Center's volunteer program is invited to a Dutch treat lunch at 11:30 a.m. March 21 in the private dining room.

The guest speaker will be Anna-Marie McGowan, Project Manager for NASA's Morphing Project in the Aerospace Vehicle Technology Program Office. For more information, contact Sandra Lemons at ext. 43957 or <s.c.lemons@larc.nasa.gov>.

VASC Looking For Volunteers

The Virginia Air and Space Center in Hampton is recruiting adult volunteers to serve as tour guides on weekdays and weekends. Generally, a four-hour, half-day obligation is involved, with weekday guides committing to two days each month.

In addition to the role of tour guides, volunteer opportunities also are offered as assistants in the Langley Research Center Educator Resource Center and in administrative services, special events and children's programs.

For more information about volunteering, call Bert Smith at 727-0900, ext. 735.

V-ball Registration Ends March 15

The Langley Volleyball Club's spring season is scheduled to start the week of March 20.

Three co-ed leagues and one non-coed league will be offered. BB- and C-league games will be played on Tuesday nights; open- league games will be played on Wednesday nights, and B-league games will be played on Thursday nights.

Registration will close at 4 p.m. March 15. Online registration is available at <http://volleyball. larc.nasa.gov>.

For more information, contact Tom Britton at ext. 46619 or <t.c.britton@larc.nasa.gov>.

Garden Club

The Langley Garden Club is accepting applications for membership. The club has 60 plots, each measuring approximately 20 feet by 50 feet. Memberships will be accepted on a first-come, first-served basis until all plots are assigned. Dues for 2000, payable upon acceptance, are $20.

For more information, contact Barry Price at ext. 47146 or <b.l.price@larc.nasa.gov>.

Center Snapshot

Glenn Brehm, the supervisor of Langley Research Center's 8-Foot High-Temperature Tunnel, holds a "Swiss Chalet," one of 21 cuckoo clocks which hang on the walls of his office. Brehm, who has worked at Langley for 26 years, says the clocks serve as a stress-reliever. Brehm lives in Grafton and has four children, three girls and one boy. What does he like about working at Langley? "Being in wind tunnels the past 26 years, I've been privileged to see cutting-edge technology before it flies," he said.

Photo by Jeff Caplan

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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Researcher News

March Is National Women's History Month ... See Page 5

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 6 ❖ March 24, 2000

'Creativity And Innovation'

Outreach Team 2 Outlines Steps To Develop New Business

By JIM ROBERTS
Researcher News editor

NASA Administrator Daniel S. Goldin may not have realized it, but Langley Research Center was at least a few steps ahead of him when he challenged employees on Jan. 7 to "stretch your imaginations to the limit to create the incredible innovations that the nation needs from you."

"We're really about creating something of value to our stakeholders, not to us. If we are not in the end viewed as innovators, we will be irrelevant."

Doug Dwoyer, Outreach Team 2 Leader

Outreach Team 2 (OT2) had just spent six months hashing out that very concept, and the recommendations the team recently made to that end will all be implemented by the end of the year.

The 15-person team, which was headed by Doug Dwoyer, the Center's Associate Director for Research and Technology (R&T) Competencies, originally was charged with identifying and implementing new, long-term research opportunities for the Center. Instead, the team devised an organizational means to encourage creativity and innovation and to develop new business for the future.

Among the team's recommendations:

■ The creation of a New Business Development Office (NBDO). The pilot office will

Continued on Page 4

'The Eagles Have Landed'

Langley Employees Continue Their Careers In Scouting

By MEGHAN WOODCOCK
Researcher News assistant editor

"Houston, Tranquility Base here. The Eagle Scout has landed."

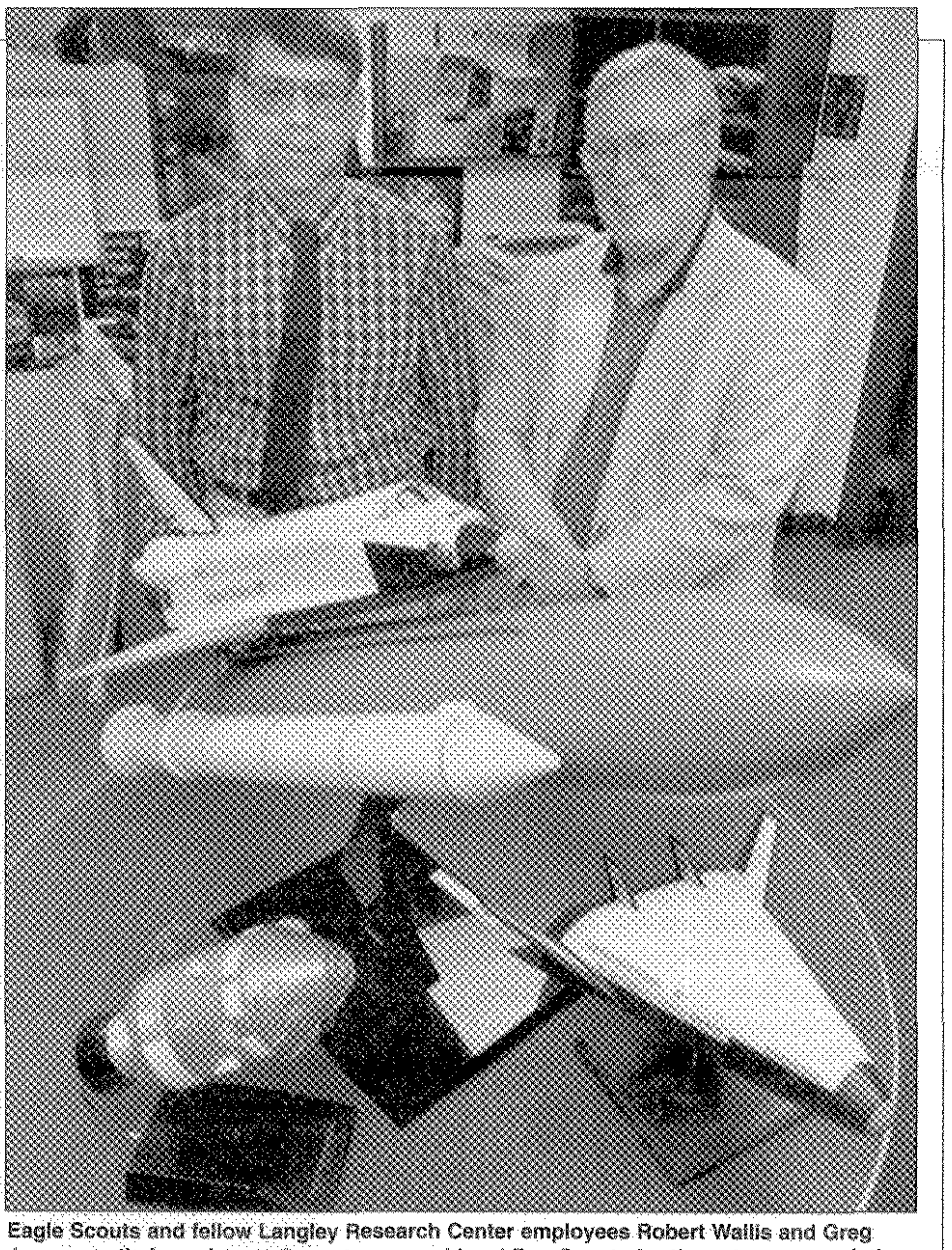
No, those weren't Neil Armstrong's exact words after landing on the moon, but they would have been fitting. Armstrong and more than 140 past and present U.S. astronauts all share another common bond beyond space: the Boy Scouts of America and the Girl Scouts of America.

Armstrong actually attained the rank of Eagle Scout, the highest achievable rank in Scouting. Fewer than two percent of all Scouts make it to that rank, but at least two employees at Langley Research Center — Greg Jones and Robert Wallis — achieved Eagle Scout status and are now adult leaders for local Boy Scout troops. Jones is the Scoutmaster of Troop 6 in Denbigh; Wallis is an Assistant Scoutmaster of Troop 28 in Poquoson

Leadership ... From Master To Scout

"It's almost another 40-hour per week job," said Jones, who works in Langley's Flow Physics and Control Branch. "And we're volunteers. But my payment comes when I see that young fellow sitting at the end of the trail and know that he has accom-

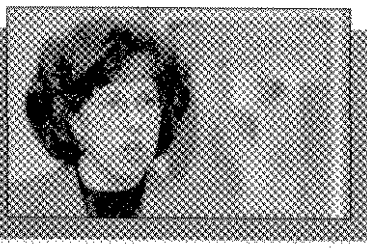
Continued on Page 3



Eagle Scouts and fellow Langley Research Center employees Robert Wallis and Greg Jones use their work experience to counsel local Boy Scouts for the astronomy, aviation and space exploration merit badges.

Photo by Jeff Caplan

Inside This Issue:



Kim Stone Offers Career Advice In FWPC Speech *Page 2*

April Colloquium: Robert T. Watson On 'Protecting Our Planet' *Page 4*

News Briefs

Around the Agency

GLAST SELECTED TO MONITOR GAMMA BURSTS

NASA has selected the Gamma-Ray Burst Monitor (GBM) to be flown on the Gamma Ray Large Area Space Telescope (GLAST) mission, planned for launch in 2005. The instrument will complement the primary instrument, the GLAST Large Area Telescope Flight Investigation, selected Feb. 28.

GLAST will explore the most energetic and violent events in a quest for the ultimate sources of energy in the universe. Objects explored will include distant galaxies fueled by super massive black holes at their center, neutron stars and individual black holes that are the remnants of stars that have ended their life with an explosion (supernova), and many other stars at the extremes of mass and energy. RELEASE: 00-39

NEAR SPACECRAFT RENAMED FOR SHOEMAKER

The NASA satellite conducting the first-ever close-up study of an asteroid will be renamed to honor Dr. Eugene M. Shoemaker, a legendary geologist who influenced decades of research on the role of asteroids and comets in shaping the planets. The Near Earth Asteroid Rendezvous (NEAR) spacecraft, currently orbiting asteroid 433 Eros more than 145 million miles from Earth, will now be known as NEAR Shoemaker.

"Gene Shoemaker was an inspirational, charismatic pioneer in the field of interplanetary science," said Dr. Carl B. Pilcher, Director of Solar System Exploration at NASA Headquarters. "It is a fitting tribute that we place his name on the spacecraft whose mission will expand on all he taught us about asteroids, comets and the origins of our solar system." RELEASE: 00-38

VIEW INSIDE MARS REVEALS BURIED CHANNELS

Some of Mars' best-kept secrets, long buried beneath the surface of the red planet, were recently revealed by instruments on NASA's Mars Global Surveyor spacecraft.

New observations of Mars reveal that the planet's flat northern lowlands were an early zone of high heat flow that later may have been the site of rapid water accumulation, according to a view of the Martian interior generated using data from Mars Global Surveyor (MGS). Elevation and gravity measurements, which have been used to probe beneath the surface of Mars, indicate a period of rapid cooling early in Martian history and evidence for large, buried channels that could have formed from the flow of enormous volumes of water.

Maps of the interior of Mars may be viewed on the Internet at <http://pao.gsfc.nasa.gov/> or <http://svs.gsfc.nasa.gov/imagewall/MOLA/mola_images.html>. RELEASE: 00-36

AMES AWARDS AIR TRAFFIC RESEARCH CONTRACT

NASA Ames Research Center has awarded two new contracts with a combined value not-to-exceed $150 million (with no option years), to Raytheon Systems Company of Marlborough, Mass., and Computer Sciences Corporation, Federal Sector — Civil Group of Rockville, Md., to provide air traffic management system development and integration for research and development in the Aerospace Directorate at Ames.

Under the terms of each contract, the requirements will be stated in performance-based contract task orders for technical research and development, studies and task activities for air traffic management concepts and automation technologies. RELEASE: 00-17AR

Researcher News

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

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Science and Technology Corp.

Assistant Editor..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

AIAA Seeking Nominations

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for Fellows and Associate Fellows.

Associate Fellows are persons who have:

- accomplished or been in charge of important engineering or scientific work;
- done original work of outstanding merit; and/or
- made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics.

Nominees must be Senior Members with at least 12 years of professional experience. (Four years of postgraduate studies may be included, if applicable.) Three AIAA member references with the standing of the Associate Fellow, Fellow or Honorary Fellow are required. Nomination forms are due by April 15; references are due by May 15.

Newly elected Associate Fellows receive a certificate and lapel pin. A list of newly elected Associate Fellows is published every January in "Aerospace America."

Fellows are persons of distinction in aeronautics or astronautics and shall have made notable, valuable contributions to the arts, sciences or technology thereof. Nominees must be of Associate Fellow status. Five references are required. Nomination forms are due by June 15; references are due by July 15.

Newly elected Fellows receive a certificate and lapel pin and are honored at the Honors Night Banquet, in conjunction with the Global Air & Space Conference.

Upgrade forms are available on AIAA's Web site at <http://www.aiaa.org/information/professional/upgrades-pdf.html>.

For more information, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

Role Model

Kimberly G. Stone, the director of Langley Research Center's Office of Procurement, speaks to Center employees during National Women's History Month on March 8 in the Pearl Young Theater. Stone spoke about her career progression from a GS-2 position to her current Senior Executive Service (SES) position. She also encouraged employees to be positive, honest and results-oriented, and she said a good way to develop self-confidence is through public speaking. Stone's speech was sponsored by the Federal Women's Program Committee.

Photo by Jeff Caplan

Speakers Bureau

Langley speakers gave 12 presentations to 1,457 stakeholders in February. The groups included a civic club, two universities and local museums, Scout groups and middle and high schools.

The speakers were: **Larry Cooper, Pamela Davis, Joel Everhart, Yolanda Hinton, Jane Hogge, Luther Jenkins, Greg Jones, Angela Mason, Leonard McMaster, Al Ragsdale, Marshall Rouse, Robert Singletary, David Throckmorton, Robert Wallis, Myra Walton** and **Stanley Woodard.**

To receive announcements of speaking opportunities via e-mail, contact Olin Jarrett at ext. 46320 or <o.jarrett@larc.nasa.gov>.

Retirements

The National Transonic Facility will host a retirement party for **Jean Foster** and **Bill Johnson** at 11:30 a.m. April 5 in the Williamsburg Room at the Langley Officer's Club.

Please RSVP to Tracey Redman at ext. 45116 by March 31. Gift donations are welcome.

Letter

"I would like to thank all my co-workers and friends who participated in the wonderful retirement social and the many nice gift contributions. The party was, without a doubt, the best ever, and I appreciate all the hard work that went into making it so successful. You are a great bunch of people, and I do appreciate your generosity and treasure your friendship. Thanks again."

Joani Crepps

In Memoriam

Leonora A.F. Bristow

Leonora Anne Fague Bristow died on Feb. 23 at the age of 79. Bristow, a native of Grand Rapids, Mich., worked as a secretary for NASA and retired in 1980 after 26 years of service.

Jane Adams Moore

Jane Adams Moore died on March 7 at the age of 85. Moore, a Hampton resident since 1936, retired from NASA in 1970 after 17 years of service.

Clarification: Fetal Heart Monitor Story

In the March 10 edition of the *Researcher News*, the article about the fetal heart monitor developed at Langley Research Center omitted the names of three Langley employees on the current fabrication team: **Nancy Holloway** and **Dennis Mowrey** of the Microelectronics and Technical Support Section and **Mark Wynkoop** of the Electronics Instrumentation Development Section.

Conference Will Showcase SBIR Program

By JIM ROBERTS
Researcher News editor

Langley Research Center will host the first-ever Research Development and Technology Conference on April 6 at the Radisson Hotel in Hampton.

The conference will focus on NASA's Small Business Innovation Research (SBIR) and Small Business Technology (STTR) programs and the National Institute of Standards & Technology's Advanced Technology Program (ATP).

Thayer Sheets, NASA's SBIR New Initiatives Manager, discussed the conference with Gov. Jim Gilmore and Virginia Secretary of Technology Donald W. Upson last year and suggested that Langley serve as host.

He said the conference will allow Langley to market itself to Virginia's small, high-tech businesses and offer them information on how to compete for SBIR funds.

The SBIR and STTR programs have Fiscal Year 2000 budgets of $92.1 million and $5.5 million, respectively.

"It is an opportunity for them to learn about the program," he said. "We are trying to attract Virginia companies that are interested in research being performed at Langley."

NASA speakers will include: Langley Center Director Dr. Jeremiah F. Creedon, who will give the opening remarks; General Aviation Programs Manager Bruce J. Holmes; Technology Commercialization Program Office (TCPO) Director Samuel A. Morello; SBIR/STTR Program Manager W. Paul Mexcur; and SBIR Procurement Manager Karin Huth.

Other speakers will include: Upson, who will give the keynote address; K.C. Das, director of Virginia's Office of Innovative Technology; Anne A. Armstrong, president of the Virginia Center for Innovative Technology, Dr. Michael Dingerson, Old Dominion University's associate vice president for research and graduate studies.

The $30 registration fee includes a luncheon, reception and an evening visit to the Virginia Air and Space Center's IMAX theater.

To register, call Sue Eilertson at (804) 371-2748 or visit <http://www.sotech.state.va.us/oit/events.htm>. For more information, contact Thayer Sheets at 42487 or <r.t.sheets@larc.nasa.gov>.

Center Receives Safety And Health Survey Results

Office of Safety and Facility Assurance

Langley Research Center recently received the results of the NASA Performance Evaluation Profile (PEP) Survey for Occupational and System Safety.

The PEP self-evaluation survey, which was conducted in December 1999, analyzed management's and employees' perceptions of the Center's safety and health program by measuring compliance with NASA and OSHA safety and health requirements.

It also evaluated the effectiveness of employee participation in the Center's safety and health program.

Measurement was accomplished through a scoring system, with the highest possible score of 5.0. Center personnel also were given the opportunity to provide comments pertaining to the safety and health program.

All Langley civil service personnel were given the opportunity to participate in taking the Occupational Safety Survey with selected groups of Project Office personnel taking the System Safety Survey.

Overall employee participation was 53 percent of the Langley civil service workforce.

Survey scores for the Center are as follows:

- Occupational Safety Survey (Employees), 3.7
- Occupational Safety Survey (Managers), 3.9
- Systems Safety Survey (Employees), 4.2
- Systems Safety Survey (Managers), 3.2

Employees taking the Occupational Safety survey scored the Center high in the areas of hazard control, facility/equipment maintenance, employee participation and first aid, with lower scores in management involvement, accident investigation and data analysis.

Project Office employees scored the Center high in mishap reporting, risk analysis and employee involvement, with lower scores in support training and manager risk analysis.

Specific safety comments/concerns included ergonomic issues, hazard correction funding, occupational health care and response to workplace violence. Several comments expressed the need for Facility Safety Heads to have more authority to effectively address safety issues.

Langley will use the survey results to identify improvement opportunities within the safety program and specific safety related issues.

The results have been forwarded to NASA Headquarters to evaluate the composite agency safety and health programs.

Scouts

Continued from Page 1

plished something such as becoming an Eagle Scout, or finding the courage to jump off [repel down] the side of the mountain. Or for some of them, just finishing the 50-mile track. That's the payment I get."

Jones has maintained his Scout leadership duties while employed at Langley for the past 17 years.

"Another thing we do in Scouting is emphasize leadership development," said Wallis, who works in Langley's Engineering Support and Facilities Project Branch. "The first badges, you learn certain skills. From then on, you earn merit badges and leadership positions."

The Scouting leadership structure has a hierarchy much like a large business. At the highest leadership position, a Scout may be in charge of leading up to 70 other boys with his own management assistants.

"If a Scoutmaster does well, he does nothing," Jones said. "Because you want this to be a boy-run program, whether they make mistakes or not. I'm just there to give them a safe-haven, a safe environment to work and learn in."

Mentoring Assists Parenting

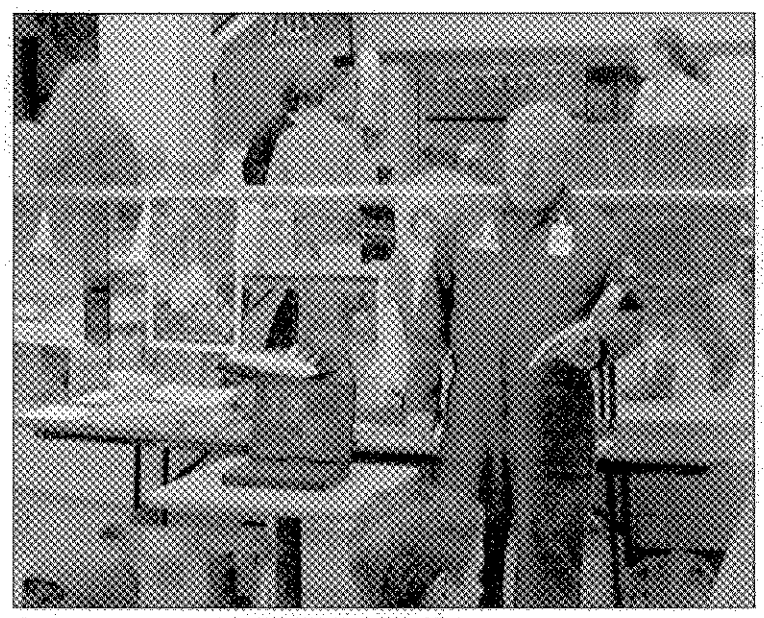
The Boy Scout program includes boys between the ages of 10 and 18. "You have to teach them maturity and patience," Jones said. "So you help them get through all of the bad parts of growing up."

It's a tough road, but well worth it for the citizenship and leadership skills acquired.

Both Wallis and Jones agree that their jobs as mentors are an important assist to parenting during the teenage years. "Some kids in my troop might spend as many as 30-40 days (out of the year) Scouting," Jones said.

"Think about that. That's one month out of the year that they are with us. A lot of what we do in Scouting is character and value training.

"Apart from the parents, a Scout leader is probably one of the most influential people in that boy's life. We teach them by the example of who we are and what we do. Sometimes we have to have more patience with those boys that give us trouble, but you have to think of the alternatives for where this kid might end up otherwise. And that's something I'm willing to invest in now before he gets into trouble."



Greg Jones answers questions about NASA and Langley Research Center for the Boy Scouts and the general public at an open forum held on Feb. 5 at Patrick Henry Mall in Newport News.
Photo courtesy of Robert Wallis

Wallis also shares the same sense of dedication to the Scouts. "When I was a young guy and I was thinking about the 10 most important people in my life, my Scoutmaster was one of them. And I thought that would be a neat thing for me to try to do. For me to be involved in someone's life and for them to say, 'That guy really made a difference in my life.' "

The NASA Connection

Jones and Wallis make the most of their workplace to teach the Boy Scouts. They are frequently called upon to speak to Boy Scouts about NASA and to give tours of Langley.

Also, once a year, Wallis and Jones answer questions for the Scouts and the general public at an open forum held at Patrick Henry Mall. They are also asked to participate in special Boy Scout events, such as the rocket launch held last year at the Langley Carnival.

Part of the Boy Scout program is earning merit badges. The space exploration merit badge, created in 1965, requires Scouts to learn about the physics of rockets, propulsion and guidance, spacecraft components, the space station, the space shuttle, the X-33 and the history of space exploration. There are also merit badges for astronomy and aviation.

Scouts are given activities to complete individually or in groups. "We give them the chance to be creative on their own, to think like a scientist," Jones said.

"We encourage them to think differently and design differently. You're never going to make them an expert in astronomy or space exploration or aviation. But hopefully you can introduce them to that and entice their interest so that they make it a career or a hobby."

For more information, visit the Boy Scouts of America Web site at <http://www.bsa.scouting.org>. For information about the astronomy, aviation and space exploration merit badges, visit <http://www.meritbadge.com/>.

Colloquium and Sigma Series Lectures

Watson On 'Protecting Our Planet'

Robert T. Watson will present a Colloquium and Sigma Series Lecture entitled "Protecting Our Planet: Securing Our Future" at 2 p.m. April 4 in the H.J.E. Reid Conference Center and at 7:30 p.m. April 4 in the Virginia Air and Space Center.

Watson

Abstract

The Earth's physical and biological systems have always been exploited to fulfill the basic needs (food, water, energy, soil generation, air and water purification) essential for our survival. During the last few decades, the scale of our demands has grown so that we are degrading the ecosystems at local, national and global levels.

All environmental problems are caused by the same underlying driving forces: population size, level of consumption and choice of technologies.

Governments have negotiated environmental conventions to protect the stratospheric ozone layer, the climate system, biodiversity and arrest desertification and land degradation. The lecture will demonstrate the scientific and policy inter-linkages among these global environmental issues and our ability to meet basic human needs in a sustainable manner.

Speaker

Watson received his doctorate in chemistry from London University in 1973. Before joining the World Bank, he was Associate Director for Environment in the Office of Science and Technology Policy in the Executive Office of the President. Prior to joining the Clinton White House, he was Director of the Science Division and Chief Scientist for the Office of Mission to Planet Earth at NASA.

Watson has played a key role in the negotiation of global environment conventions and the evolution of the Global Environment Facility (GEF), and from 1991 to 1994, was Chairman of the GEF's Scientific and Technical Advisory Panel. He has received many awards, including the American Association for the Advancement of Sciences Award for Scientific Freedom and Responsibility in 1993.

Upcoming Lectures

■ **May 2:** Jack Crow on "Magnet Science and Technology: From Quantum Wells to Floating Frogs."

■ **June 6:** Horst Simon on "The Future of Computers."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Recycling Paper Has Numerous Benefits

By DAVE STEIGERWALD
SAIC

Did you know that recycling one ton of paper saves 17 trees? It's true!

In Fiscal Year 99, Langley Research Center recycled 130 tons of paper; that equates to 2,210 trees! Also, one ton of recycled paper creates 74 percent less air pollution and uses 64 percent less energy and 50 percent less water than one ton of paper products produced from virgin wood pulp.

Approximately 30 percent of the earth's surface is covered by forest, compared to 60 percent in prehistoric times. This amount is on a decline.

A huge amount of the earth's trees has been used to make paper. It is estimated that approximately 50 percent of all trees harvested this year will go to the paper industry.

With paper being one of the largest components of the waste stream going into landfills, why not recycle your paper? When you recycle your paper, you're conserving landfill space. The paper will then be used to make pulp; as a result, fewer trees are cut down and less landfill space is consumed.

Another way to help conserve the environment and its natural resources is by reducing and reusing paper. This could be simply done by printing on both sides and by reusing paper that is only printed on one side. Some types of printers and copiers are more tolerant of used and slightly rumpled paper than others. Simple impact printers and inkjets are more likely to tolerate reuse. Once the paper becomes no longer usable, you should then place the paper in your recycling bin.

It's easy to recycle your paper on-Center. The paper recycling process starts when you empty your individual recycling bin into the large accumulation containers. The large accumulation containers are picked up by an on-site contractor and taken to the Center's Recycling Facility.

It is important that you separate your paper into the proper collection containers. White paper goes into the blue containers and mixed paper in the green containers. With well-sorted, high-quality paper, the Center receives the maximum rebate from the sale of the paper.

The Center sells all of its recyclables to different local vendors; therefore, when you recycle on the Center you're helping the local economy. The revenue that is collected from the sale of recyclables is used to support the Pollution Prevention and Recycling Programs on the Center.

More information on Langley's Recycling Program can be found on the Internet at <http://osemant1.larc.nasa.gov/rapp/>.

OT2

Continued from Page 1

fall under the Technology Commercialization Program Office (TCPO) and will be staffed by three full-time employees.

■ The appointment of a Technical Intelligence Officer (TIO) to each of the six R&T Competencies. The TIOs will be responsible for making sure there is a technical intelligence "strategy" within each competency and developing ways of distributing technical information throughout the competency.

■ The creation of Innovation Institutes, a means to build multidisciplinary competencies and capabilities to work in conjunction with external partners.

The greatest product of the team's work, however, may be the redefinition of the Center's mission and its commitment to creativity and innovation.

"The basis for future growth at the Center must be creativity and innovation," Dwoyer said. "The Center ought to be really locked in on doing innovation.

"As we become more successful in doing that, work will seek us," Dwoyer continued. "On the flip side, if the Center continues to try to market the same technologies incrementally improved, we'll find it harder and harder to find work."

Dwoyer pointed to the AGATE Alliance Association as an example of innovation at Langley. "They have created a value network that is bringing real innovation into the marketplace," he said. "That's the kind of direction I'd like the Center to move."

"We're really about creating something of value to our stakeholders, not to us," Dwoyer said. "If we are not in the end viewed as innovators, we will be irrelevant."

The Center will try to stimulate creativity and innovation by soliciting employees' proposals for new work and then funding the winning submissions. At press time, the specifics of OT2's plan had not been approved by the Strategic Quality Management Council (SQMC), but Dwoyer said he expects the solicitation to begin this summer and funding to be available for the selected proposals in October.

Although he didn't know how many proposals will be selected, Dwoyer said as many as 100 employees will be committed to the effort.

Now that OT2 has dissolved, Dwoyer has returned to his AD duties. (His first order of business was serving on the Mars Program Independent Assessment Team.) He is proud of the work done by OT2.

"It was really a very exciting and engaging activity," Dwoyer said. "We all learned a lot. … All of the team members are going to be more valuable to Langley because of their participation."

OT2: Who Participated?

OT2 Members
Belinda Adams
Don Avery
Jim Batterson
Gaudy Bezos-O'Connor
Stuart Cooke
Pete Covell
Doug Dwoyer
Cecelia Fletcher
Charlie Harris
Joe Heyman
Leslie Kennedy
Wilson Lundy
Dave McCurdy
Mike O'Hara
Joe Shockcor
Ed Waggoner
Rick Walker
Julie Williams-Byrd

OT2 Computer Supporters
Debi Hurst
Kenny Jones
Philip Morris
Jennifer Moxley
Rose Mustain
Sherry Richardson
Brenda Simpson
Stephanie Stockum
Jennifer Walter

OT2 Facilitators
Charles Dunton
James Fields
Sandi Foley

OT2 "Other" Contributors
Don Booth
Shawn Gallagher
Garland Gouger
Rami Hanash
Marianne Koehn
Wayne Martin
Tony Maturo
Bessie Nicholson
Karen Reilley
Kim Stone
Lucy Watkins

There were 440 additional employees who contributed as an internal assessment review member, as a focus group participant, through an individual interview or through Web input.

Women's History Month

Showing How Far Women Have Come

Women's History Month, 2000

By the President of the United States of America

A Proclamation

Last spring, three women astronauts paused during a shuttle mission to pay homage to the past. Thousands of miles into space, floating above the floor of the shuttle, they raised a women's suffrage banner and posed for a picture. Astronaut Ellen Ochoa, a participant in this special tribute and a member of the President's Commission on the Celebration of Women in American History, said, "We wanted to show how far women have come in this century and to honor the people who fought for our rights." Each year during the month of March, citizens across our country pause to honor the many heroes whose diligence and determination have helped to forge our Nation and enable people like Ellen Ochoa and her colleagues to soar so high.

Women's History Month is about highlighting the extraordinary achievements of women throughout our history, while recognizing the equally significant obstacles they had to overcome along the road to success. It is about the women who bravely donned uniforms and fought for our country. It is about the passion and vision of women educators like Mary McLeod Bethune, who, with only $1.50 in her pocket, founded a school for young black women. It is about the perseverance and pioneering spirit of women like Margaret Chung, the first Chinese American woman physician, who supported herself through medical school by washing dishes and lecturing on China. It is about Alice Paul's fight for the vote and Elizabeth Wanamaker Peratrovich's campaign to end discrimination against Alaska Natives. It is about the writings of Zora Neale Hurston, the paintings of Georgia O'Keeffe, the leadership of labor organizer Dolores Huerta, and the trail-blazing artistry of photographer Margaret Bourke-White. It is also about the millions of unsung women whose contributions have made life better for their families and their communities.

Inspired by the courageous pioneers who came before them, women today continue to shape our Nation's destiny. Last year, Air Force Lieutenant Colonel Eileen Collins became the first woman commander of a space shuttle mission. American violinists Sarah Chang, Pamela Frank, and Nadja Salerno-Sonnenberg were the first women to take home the prestigious Avery Fisher Prize in its 25-year history. And, in a game attended by the largest crowd of all time for a women's sporting event, the U.S. women's soccer team captured the World Cup. Today, 58 women hold seats in the U.S. House of Representatives, and 9 women are United States Senators. More women hold high-level positions in my Administration than in any other in history. And in the private sector, women own nearly 9 million small businesses, employing millions of Americans and contributing significantly to the strength of our economy.

Astronauts Ellen Ochoa, Julie Payette and Tamara Jernigan pose for a picture with a women's suffrage banner during a shuttle mission last spring. "We wanted to show how far women have come in this century and to honor the people who fought for our rights," Ochoa said.
Photo courtesy of Kennedy Space Center

As we honor the past and celebrate the present, we must also focus on the future. Our choices today will have an enormous impact on the destiny of our daughters and grand-daughters, our sons and grandsons. We must rededicate ourselves to forging a society in which gender no longer predetermines a person's opportunities or station in life. We must shatter the glass ceiling; eradicate wage discrimination; and ensure that every American has the tools to meet both family and work responsibilities and to retire in security. By breaking down the remaining barriers and opening wide the doors of opportunity, we can make the future brighter for women and for all Americans.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by virtue of the authority vested in me by the Constitution and laws of the United States, do hereby proclaim March 2000 as Women's History Month. I encourage all Americans to observe this month with appropriate programs, ceremonies, and activities, and to remember throughout the year the many contributions of courageous women who have made our Nation strong.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-ninth day of February, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

William J. Clinton

March 2000 is National Women's History Month, a time to celebrate and commemorate the remarkable contributions women have made in the past. The theme for this year's National Women's History Month is "An Extraordinary Century for Women — Now, Imagine the Future."

During the 20th century, women struggled for equality and won many rights, as well as privileges and benefits of the Constitution formerly afforded only to men. American women of every race have been leaders, not only in securing their own rights of suffrage and equal opportunity but also in the abolitionist movement, the industrial labor movement, the civil rights movement, and the peace movement, which have created a more fair and just society for all.

Goldin

In the future, women must seek creative and innovative ways to ensure that their exemplary achievements become a part of our country's rich history. The future needs all people, women and men, to shape our world's destiny.

NASA women are continuing into the 21st century in non-traditional occupations and breaking barriers as scientists, engineers, pilots and astronauts.

In keeping with the established NASA tradition, I encourage you to celebrate the accomplishments of women and participate in the planned programs and activities at your Centers and within your community.

Daniel S. Goldin
NASA Administrator

Time For Software Of The Year Nominations

Technology Commercialization Program Office

NASA is now accepting nominations for its 2000 Software of the Year Award, which recognizes software developed and owned by NASA.

The award is sponsored by Chief Information Officer Lee Holcomb and Acting Chief Engineer Keith L. Hudkins, who also chairs NASA's Inventions and Contributions Board (ICB).

The award, which will include a certificate signed by Administrator Daniel S. Goldin and a monetary award of up to $100,000, will be presented to the author or authors of software that:

- NASA has an intellectual property interest in;
- has been supported, adopted, sponsored or used by NASA; and
- is significant to the NASA mission.

To be eligible, the software must have been released by the Center Software Release Authority to qualified users in accordance with NPG 2110.1, or it must have been dedicated for use in a NASA mission.

Entries will be judged by the NASA Software Advisory Council, comprised of software development experts from all of the NASA centers and the Jet Propulsion Laboratory. After its review, the Council will submit its selection or selections to the ICB. The award will be presented by NASA officials later in the year on behalf of the NASA Administrator.

NASA Form 1329 (ICB Space Act Award Evaluation Questionnaire) must be filled out for each entry. Copies of the software, sample applications, data and descriptive documentation of the package should be included, in addition to evidence demonstrating the impact, ease of use and degree of innovation and suitability of the entry.

A NASA Form 1679 "Disclosure of Invention and New Technology" must have been completed and submitted to the Office of Patent Counsel prior to or together with the nomination. This information will be the primary data used by the panel in recommending awards.

All entries and supporting material must be submitted to the Space Act Awards Office (M.S. 200 or Bldg. 1229, Room 122) no later than April 14 for consideration.

For more information about the Software of the Year Award, contact Sherry Sullivan at <s.l.sullivan@larc.nasa.gov>.

AdVentures

CLASSIFIED

FOR SALE: Diamond engagement ring, platinum set, 1 carat, G color, with certification and estimate, $4,500. Call 623-4262.

FOR SALE: 19 foot 1975 Renkin fiberglass boat, closed bow with walk-through windshield, 115-horsepower outboard, trailer, 18-gallon fuel tank, carpet and vinyl trim has been replaced, $1,000. Also available: 2,000-pound electric winch. Can sell separately. Call 247-3060.

FOR SALE: Piano, excellent condition, $700. Call 850-3428.

FOR SALE: Brand-new infrared plaque heater, 27,000 BTUs, with thermostat control, free-standing base and optional thermostat blower, $300. Call 259-0767.

FOR SALE: Sega game system with six games and three controllers, hardly used, $50. Tappan microwave, 650 watts, works great, $50. Call 826-1862.

FOR SALE: 50-gallon fish tank, comes with stand and lights, $75 or best offer. Call 867-7591.

FOR RENT: Four-bedroom, two-bathroom house in Hampton, with garage and fenced back yard, available now. Call 868-6621.

TCPO Will Offer Courses

Langley Research Center's Technology Commercialization Program Office (TCPO) will host a series of courses in March and April covering the transfer and commercialization of NASA technology. The course schedule is: Technology Commercialization, March 29 and 30; Technology Licensing, April 11; Intellectual Negotiation, April 12; Technology Marketing, April 13.

Employees interested in attending any or all of the courses should mail a completed "Application For On-Site Training Form" to DeAnna Lawrence at M.S. 309 or fax it to 48543.

For more information about the courses, contact Sherry Sullivan at <s.l.sullivan@larc.nasa.gov> or visit <http://tech-transfer.larc.nasa.gov/> on the Web.

IT Fellowship Deadline Is March 31

Langley Research Center's Office of Human Resources recently established a new fellowship program for Information Technology.

Employees interested in the fellowship can find a full description of the fellowship and the application process on the Web at <http://ohr-r. larc.nasa.gov/do.itfpin.html>. The deadline to apply is March 31.

For more information, contact George Allison at ext. 42594 or <g.d.allison@larc.nasa.gov>.

VASC Looking For Tour Drivers

The Virginia Air and Space Center in Hampton is recruiting drivers for its Langley Research Center van tours. Anyone interested in participating is invited to attend the first drivers meeting of the year, which will be held at 9 a.m. April 7 in the VASC meeting room. The positions are open to NASA, U.S. Air Force and contractor retirees.

All drivers should bring a valid Virginia driver's license; new drivers also should bring a current copy of their DMV driving record.

For more information, call Steve Devan at 898-9290.

Ames Will Host Workshop April 18-19

Ames Research Center and Oracle will co-sponsor a data management workshop on April 18 and 19 at the Oracle Headquarters Corporate Visitor Center in Redwood Shores, Calif.

The purpose of the workshop is to inform and educate NASA and contractor project managers and researchers from across the entire Agency about the present availability and applicability of a wide range of commercial, off-the-shelf (COTS) database systems.

For more information, go to <http://ace.arc.nasa.gov/postdoc/t/folder/main.ehtml?url_id=37952>. To register online, go to <http://ace.arc.nasa.gov/postdoc/t/group/members.ehtml?group_id=-759>.

Bridge Club

The Langley Duplicate Bridge Club elected the following officers at its March 8 meeting: president, Larry Bement; vice president, Ram Prabhu; and secretary/treasurer, Geoff Tennille.

The results of the bridge game were: first place, Jay Robinson and Tom Norum; second place, Larry and Joan Bement; third place, Ram and Sumithra Prabhu.

The club's next game will take place at 5:30 p.m. April 12 in the Langley Room of the H.J.E. Reid Conference Center.

Runners' Club Race Results

The top finishers in the Langley Runners' Club Winter Five-Mile Race on Feb. 16 were: Andrew Cutler, 35:22; Larry Goins, 35:36; and Michael Smart, 37:56. Hillary Hawkins was the first woman to finish at 42:04.

The top finishers in the Leap Year 2K Race on Feb. 29 were: Scott Bartram, 6:46, and Michael Wusk, 7:49. The age group winners were: 40-49, Don Brown, 7:52; 50-59, Arthur R. Johnson, 9:07; and 60 and over, Al Graham, 10:31.

Exchange Shop Selling New Tickets

The Exchange Shop now offers tickets to Disney World, Sea World Florida, Universal Studios Florida and Kennedy Space Center at a substantial savings off the gate price. For more information, call ext. 41585 or 47918.

Free Federal Guide Available

Government employees are eligible to receive a free copy of "The 2000 Federal Personnel Guide."

The 230-page book includes information on pay, benefits, leave, health insurance, life insurance, veterans benefits, retirement planning, disability, travel and per diem rates, taxes, employment policies, job application procedures, performance appraisals, security clearances, injury benefits and much more.

To request a copy, visit <http://www.fedreport.com> on the Web. The offer expires on March 31.

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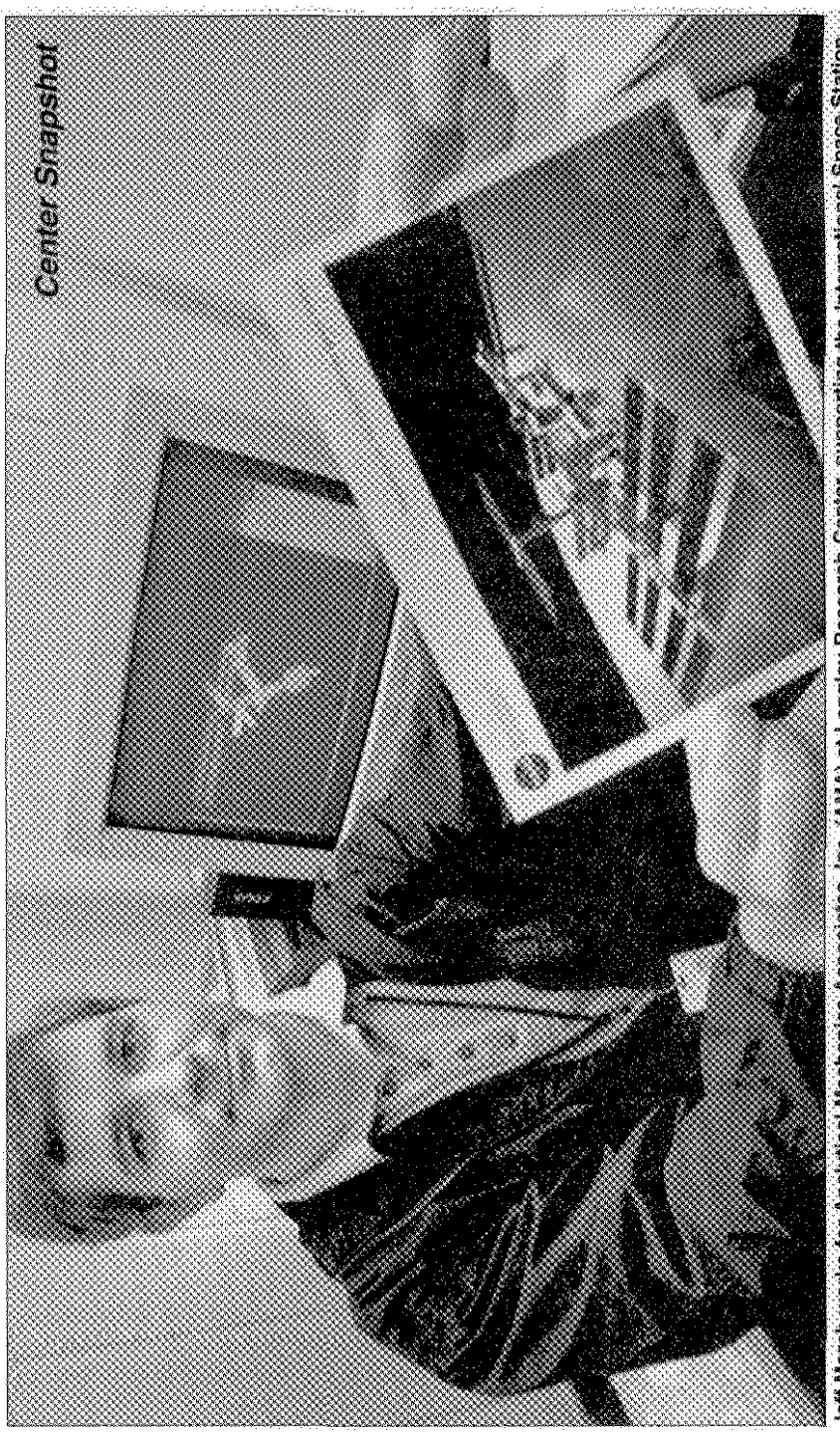
Researcher News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

Official Business. Penalty for Private Use $300.

Center Snapshot



Jeff Merch works for Analytical Mechanics Associates, Inc. (AMA) at Langley Research Center, supporting the International Space Station (ISS) Program. His current project is model integration between Langley and Kennedy Space Center. Merch, a native of Stillwater, Okla., is working toward a bachelor's degree in mechanical engineering at Old Dominion University and plans to graduate next year. His hobbies are golf and sailing. What does he like most about working at Langley? "The atmosphere of being around spacey people," he says.

Photo by Jeff Caplan

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 7 ❖ April 7, 2000

Assessment Teams' Reports Released

Dwoyer

Newman

Two independent assessment teams — the Mars Program Independent Assessment Team (MPIAT) and the Space Shuttle Independent Assessment Team (SIAT) — recently made their final reports to NASA Administrator Daniel S. Goldin.

Both teams included representation from Langley Research Center. Doug Dwoyer, Langley's Associate Director for Research and Technology Competencies, served on the MPIAT, and Jim Newman, a senior scientist in the Mechanics and Durability Branch, served on the SIAT.

"The Mars team was absolutely dedicated to finding out the truth of the situation, no matter how bad it was or who it involved," Dwoyer said. "I was very impressed with [team leader] Tom Young's dedication, courage and leadership."

"It was an honor for me to be assigned to the SIAT," Newman said. "As [team leader] Henry McDonald said at the end of our team investigation, the team assembled to review the shuttle program was extremely talented and did a superb job."

For complete stories about the assessment teams, see page 4.

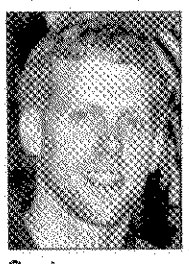
FIRST's Slam Dunk!

Langley Robot Wins Regional Contest At VCU

By ROBERT D. ALLEN
Office of Public Affairs

Excalibur, a robot built by students at Hampton's New Horizons Regional Education Center and their mentors at Langley Research Center, dunked its way to victory over 36 other robots to win the For Inspiration and Recognition of Science and Technology (FIRST) regional robotics competition.

The competition, which was co-sponsored by Langley and Virginia Commonwealth University (VCU), took place in VCU's Siegel Center March 16-18.

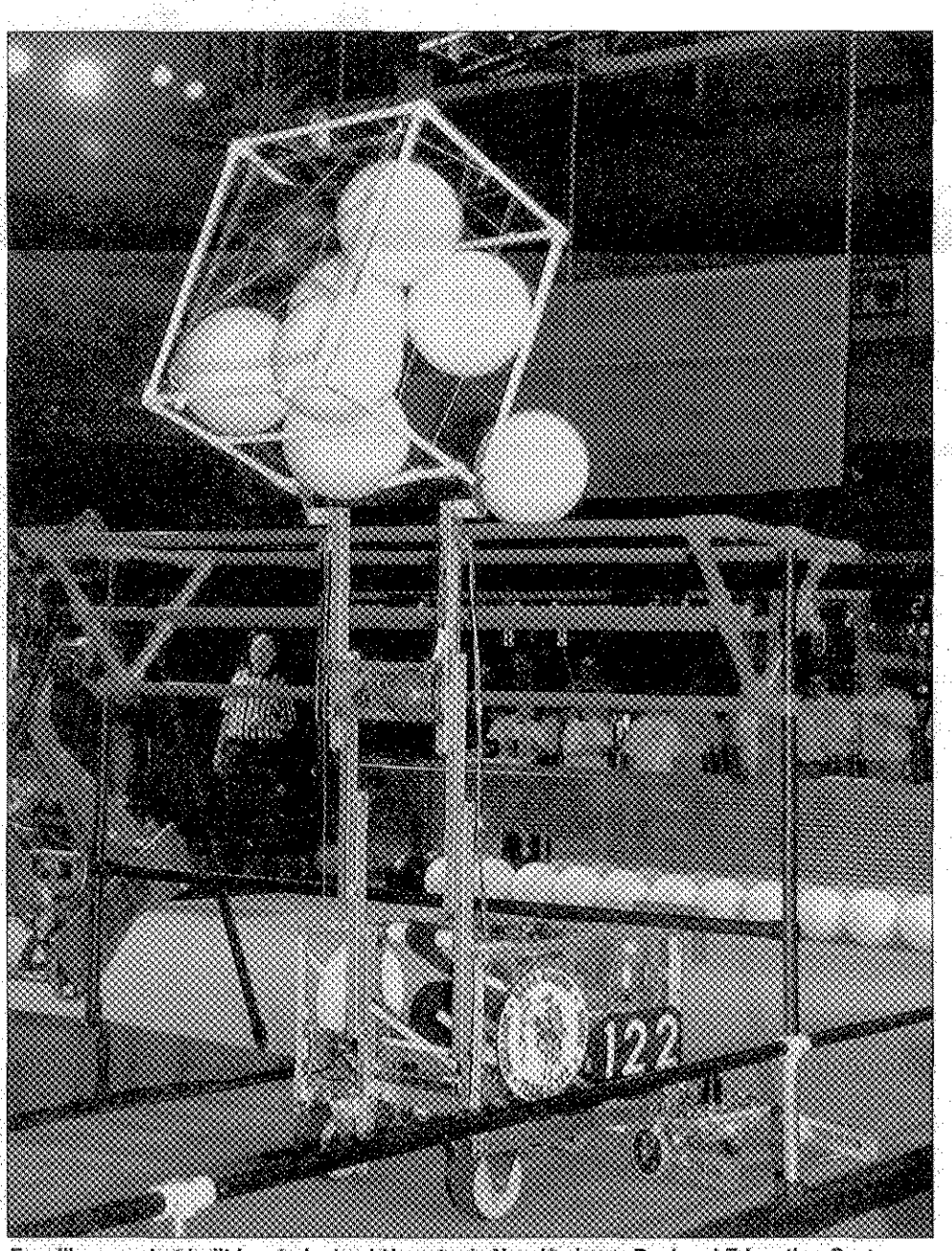

Seaton

"It was one of those special moments," said Jeff Seaton, the Langley employee who led the support for the New Horizons team. "Not only did the robot work as we hoped it would, it exceeded our expectations."

Thirty-nine teams competed in the regional, one of 10 such competitions around the country. While Langley co-sponsored more than half of the teams in the tournament, the Center worked closest with about 25 students from the New Horizons Regional Education Center.

Seaton led the support for the New Horizons team, with help from Dave Fahringer and Al Motley and former

Continued on Page 3



Excalibur, a robot built by students at Hampton's New Horizons Regional Education Center and their mentors at Langley Research Center, won the For Inspiration and Recognition of Science and Technology (FIRST) regional robotics competition in Richmond. The robot will now participate in the national competition at Disney's Epcot Center.

Photo by Peggy Hopkins

Langley Inventors Awarded

By KEITH HENRY
Office of Public Affairs

It won't be long before products as diverse as lipstick, art and circuit boards could benefit from a thermoplastic developed for use in space.

NASA thinks so much of its commercial potential that it named the high-tech material its 1999 Commercial Invention of the Year.

The material, developed by a research team at Langley Research Center, offers protection from ultraviolet radiation as a coating for art and outdoor statues. It promises ultraviolet (UV) protection as an additive to cosmetics and exterior paints. It offers temperature-resistance as solid components in electronic devices like liquid crystal displays and in flexible printed circuit boards.

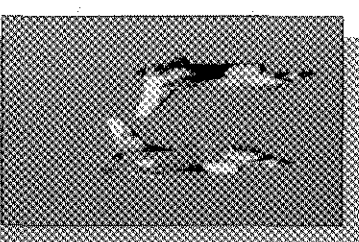
Originally developed for solar propulsion and power, the material has remarkable qualities of transparency, UV resistance and operating temperatures. When cast as large thin films, the thermoplastic material serves exceptionally well as solar thermal concentrators for space-based propulsion and power concepts and, potentially, for inflatable large space antennas.

Inventors Anne St. Clair,

Continued on Page 3

Inside This Issue:

Jane Hogge Named Speaker Of The Year At Awards Ceremony — *Page 3*



Thunderbirds Unveil 2000 Performance For General's Approval — *Page 5*

News Briefs

Around the Agency

HESSI SUSTAINS DAMAGE DURING TESTING

NASA's High Energy Solar Spectroscopic Imager spacecraft — an international mission to explore the basic physics of particle acceleration and energy release in solar flares — has sustained substantial damage during vibration testing. Repairs to the spacecraft, known as HESSI, will likely delay its launch to no earlier than January 2001.

The incident occurred March 21 while the spacecraft was undergoing vibration testing in facilities at NASA's Jet Propulsion Laboratory.

More information on the HESSI mission can be found on the Internet at <http://hesperia.gsfc.nasa.gov/hessi/> or <http://hessi.ssl.berkeley.edu>. RELEASE: 00-45

NASA'S GAMMA-RAY TELESCOPE MISSION ENDS

NASA's extremely productive and long-lived Compton Gamma-Ray Observatory mission — which exceeded its mission by four years and completely changed ideas on the most important unsolved puzzles in astrophysics — has come to end with the failure of one of the satellite's three gyroscopes.

NASA plans to safely direct the satellite back into Earth's atmosphere no earlier than June 1 with the remaining two gyroscopes, which are used to steer the craft.

As an extra precaution, Compton engineers are also developing a method to control the satellite without any gyroscopes, for use as backup during the reentry maneuvers in case an anomaly is encountered with the gyroscopes. Compton's four instruments are still in working order.

More information is available on the Internet at <http://pao.gsfc.nasa.gov/gsfc/spacesci/structure/cgro.htm>. RELEASE: 00-44

'E.T.' GASES DISCOVERED IN BUCKYBALLS

Extraterrestrial gases, including helium, are trapped in "buckyball" molecules in a layer of sedimentary clay found in many places on Earth, according to a paper published on March 28 in the Proceedings of the National Academy of Sciences.

The discovery provides a new tool for tracing asteroid and comet impacts in Earth's geological and biological records. A University of Hawaii geochemist and her colleagues, including a NASA scientist, found gases that did not originate on Earth inside buckyballs, or fullerene carbon molecules. RELEASE: 00-20AR

METEORITE MAY PROVIDE "NEW WINDOW"

A meteorite that exploded over a remote area of northwest Canada in January may offer "a new window into the universe before the solar system was created," said a NASA scientist who has begun analyzing some of the meteorite fragments.

The very primitive composition and pristine condition of the 4.5-billion-year-old meteorite "offers us a snapshot of the original composition of the entire solar system before the planets formed," said Dr. Michael Zolensky, a cosmic mineralogist at NASA's Johnson Space Center (JSC) in Houston. "It tells us what the initial materials were like that went into making up the Earth, the Moon and the Sun."

The age of the solar system is about 4.5 billion years. RELEASE: 00-41

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

O'Brien Receives Award Of Merit

T. Kevin O'Brien of the Army Research Laboratory's (ARL) Vehicle Technology Directorate (VTD) located at NASA Langley Research Center recently was awarded the American Society for Testing and Materials (ASTM) Award of Merit.

O'Brien

The Award of Merit was established in 1949 by the ASTM's board of directors and is the highest society award granted to an individual member for distinguished service and outstanding participation in ASTM committee activities. Recipients also receive the honorary title of ASTM Fellow.

O'Brien received a doctorate in mechanics and materials from Virginia Tech in 1978 and then joined the Army's co-located research laboratory at Langley. At VTD, O'Brien has lead research in characterizing, analyzing and predicting delamination behavior in composite materials.

O'Brien has over 100 publications and presentations in his research area, including peer-reviewed journal articles, national and international conference proceedings, as well as keynote and invited seminar, symposia and workshop presentations.

His work has been cited over 800 times in the open literature. O'Brien's research results have found wide spread use in the aerospace industry and have contributed directly to the improvement of advanced composite materials. O'Brien was elected as an ARL Fellow in July of 1993.

CFO Announces Reorganization

Joe Struhar, Langley Research Center's Chief Financial Officer, announced on March 26 the reorganization of his office's Resources Management area into three branches: the Programs Resources and Analysis Branch (PRAB), the Competency Resources and Analysis Branch (CRAB) and the Business Resources and Analysis Branch (BRAB).

The three branches provide resources support (money and workforce) to Langley programs, service activities and institutional accounts. Struhar said the reorganization aligns better with Langley's newest organization structure.

Catherine Prohaska, the Deputy CFO for Resources Management, is on maternity leave. In her absence, **Connie Basnett** is serving as Acting DCFO/RM.

For more information about the reorganization, contact Basnett at ext. 43260 or <c.b.basnett@larc.nasa.gov>.

Retirements

Retirement parties were held for the following employees in March and April:

- **Rodney L. Duncan** of the Atmospheric Sciences Competency's Research Support Office on March 30;
- **Jane I. Druen** of the Pricing, Closeout and Analysis Branch on March 31;
- **Jules J. Lambiotte Jr.** of the Data Analysis and Imaging Branch on March 31;
- **Elizabeth Buchan** of the Director's Office on March 31;
- **Jean Foster** of the Data Acquisition and Information Management Branch on April 5; and
- **William G. Johnson** of the Research Facilities Branch on April 5.

In Memoriam

George T. Malley

George T. Malley died on March 22 at the age of 86. Malley, a resident of Bonita Springs, Fla., served in the U.S. Navy and attained the rank of lieutenant commander. After his military career, he served as chief counsel at Langley Research Center for 12 years and was on the Apollo 204 Review Board.

Tom Henry Nichols

Tom Henry Nichols died on March 27 at the age of 74. Nichols, a native of Buffalo, N.Y., and a Hampton resident since 1977, served in the U.S. Air Force and attained the rank of lieutenant colonel. After his military career, he worked for SDC/Unisys at Langley Research Center until his retirement in 1988.

Deadlines

Software of the Year Award

NASA is now accepting nominations for its 2000 Software of the Year Award, which recognizes software developed and owned by NASA.

The award, which will include a certificate signed by Administrator Daniel S. Goldin and a monetary award of up to $100,000, will be presented to the author or authors of software that: NASA has an intellectual property interest in; has been supported, adopted, sponsored or used by NASA; and is significant to the NASA mission.

NASA Form 1329 (ICB Space Act Award Evaluation Questionnaire) must be filled out for each entry. Copies of the software, sample applications, data and descriptive documentation of the package should be included, in addition to evidence demonstrating the impact, ease of use and degree of innovation and suitability of the entry.

All entries and supporting material must be submitted to the Space Act Awards Office (M.S. 200 or Bldg. 1229, Room 122) no later than **April 14** for consideration.

For more information about the Software of the Year Award, contact Sherry Sullivan at <s.l.sullivan@larc.nasa.gov>.

AIAA Nominations

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for Fellows and Associate Fellows.

Nomination forms for Associate Fellows are due by **April 15**; references from three AIAA Associate Fellows, Fellows or Honorary Fellows are due by **May 15**. Nomination forms for Fellows are due by **June 15**; references from five AIAA Associate Fellows are due by **May 15**.

Upgrade forms are available on AIAA's Web site at <http://www.aiaa.org/information/professional/upgrades-pdf.html>.

For more information, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

Speakers Bureau Awards

20 Employees Honored For 1999 Speaking Engagements

By OLIN JARRETT
Office of Public Services

Langley Research Center's Speakers Bureau held its annual awards ceremony on March 28 in the H.J.E. Reid Conference Center.

Jane Hogge was recognized as the Speaker of the Year. Hogge, an engineering technologist in the Composite Applications Technology Branch, made 14 presentations during the year.

Special recognition also went to Bob McKinley and Rob Rivers, who gave eight and nine talks respectively.

Those recognized for giving three or more talks during the year were: Larry Bement, Jonathan Cruz, Rita M. Dal Santo, Walt Darden, Catherine Fay, Hank Jarrett, Bob McKinley, John Micol, Gary Price, Mark Saunders and Martin Waszak. Each received a Speakers Bureau award pin.

Previously pin recipients who also were recognized for giving three or more talks were: Bobby Braun, Dick Davis, Russ DeYoung, Melvin Ferebee, Jane Hogge, Sam James, Rob Rivers, Mary Ann H. Smith and Nina Tappan.

John Quarstein, director of the Virginia War Museum in Newport News, made a keynote presentation in which he shared some of techniques for making a presentation vivid and alive for an audience.

For more information about the Langley Speakers Bureau, contact Olin Jarrett at ext. 46320 or <o.jarrett@larc. nasa.gov>.

Gary Price, head of Langley's Office of External Affairs, presents Jane Hogge with the Speaker of the Year Award during the Langley Speakers Bureau awards ceremony on March 28.

Photo by Peggy Hopkins

Robot

Continued from Page 1

Langley engineers Ansel Butterfield, Bill Reed and Jim Wise. Rick Mangum, a mechanic and husband of Langley's Cathy Mangum, lent vital skills to the team as well.

The New Horizons students and their mentors had just six weeks to devise, design and build a robot that could gather as many yellow one-point and black five-point playground balls as possible and "dunk" them into a goal six feet off the ground. If that wasn't difficult enough, teams also could earn 10 points if their robot could hold a chin-up at the end of the match, or five points if it could successfully jockey for a hotly-contested position on the ramp leading to the bar.

Each two-minute round featured two teams of two robots each competing head-to-head. During the two minutes between rounds, teams made repairs to their machines and discussed "game plans" with their assigned partners for the next match.

Just 36 inches tall and nearly 130 pounds, Excalibur breezed through warm-ups on March 16. But on March 17 and 18, the plucky little robot put on its game face, displayed power and finesse battling all contenders and rolled away with the grand prize.

New Horizons was seeded first at the end of the preliminary matches and "cruised" through the semifinals without a loss, Seaton reported.

However, Excalibur was rammed in the last semifinal match and sustained damage serious enough to cause it to miss the first two matches of the best-of-three final. As the New Horizons team worked frantically to repair Excalibur, its two teammates managed a split with the opposing teams. That gave New Horizons just enough time to get its champion back into the decisive match and deliver the knockout blow.

VCU Athletic Director Tim Lampe estimated between 2,500 to 3,000 people watched the finals on Saturday afternoon.

The event brought more than 1,000 students to VCU, including a team from Brazil. The competition also featured the youngest team to compete in any FIRST event this year, St. Michael's Middle School from Richmond.

"If we communicated only this ideal [gracious professionalism] to the students, then we have truly succeeded, regardless of the final standings."

Jeff Seaton

The New Horizons team won several awards — a shared award as a tournament winner, the number one seed award and the award Seaton considers the most important, the Johnson & Johnson Best Sportsmanship Award.

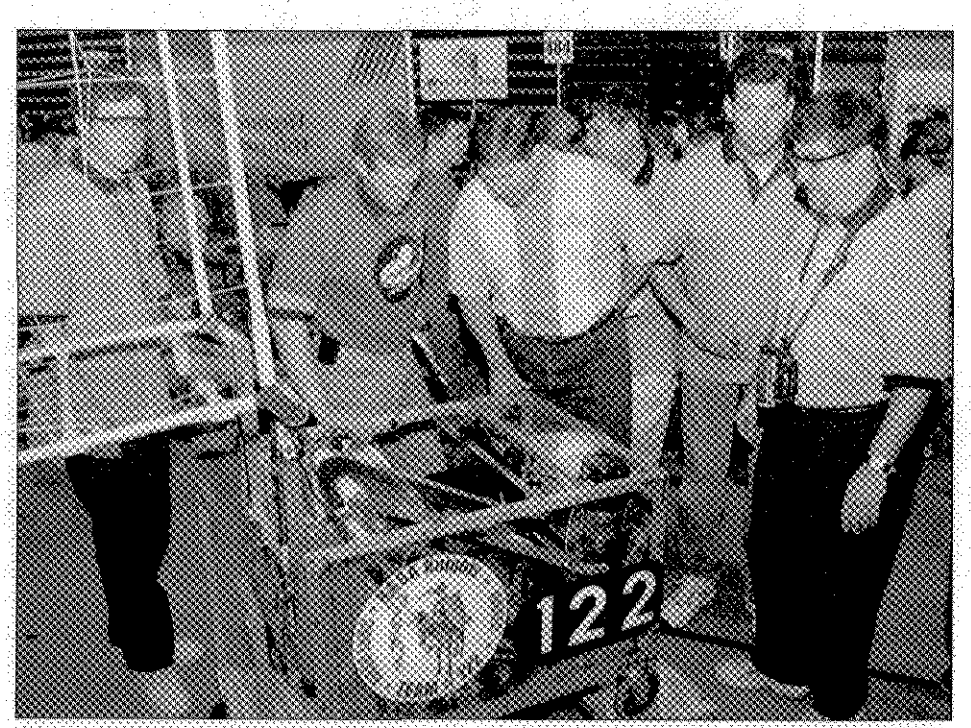
The Best Sportsmanship award is given to the team that best demonstrates "gracious professionalism." Seaton said FIRST officials defined this as "exhibiting a desire to be the best you possibly can be ... to succeed, but not at the expense of others."

"If we communicated only this ideal to the students, then we have truly succeeded, regardless of the final standings," Seaton said.

The New Horizons team recently competed in another regional competition in Philadelphia. Although the team's assigned partners frequently broke down and Excalibur had to compete at a one-on-two disadvantage, the team managed an eighth-place finish and received the award for the best offensive machine. New Horizons' next challenge is the National FIRST competition at Disney's Epcot Center.

FIRST is a non-profit organization founded by physicist, engineer and inventor Dean Kamen that seeks to generate an interest in science and engineering among today's youth.

FIRST sponsors annual regional and national robotics competitions. These competitions amount to a national engineering contest that team students up with engineering mentors from businesses and universities and gives them a hands-on look at how engineers really work.



Patrick Rault, Jeff Seaton, Don Owen, Rick Mangum and Ron Woodard look over Excalibur after one of the team's runs. Just 36 inches tall and nearly 130 pounds, Excalibur breezed through warm-ups on March 16. But on March 17 and 18, the plucky little robot put on its game face, displayed power and finesse battling all contenders and, along with its teammates, rolled away with the grand prize.

Photo by Peggy Hopkins

Inventors

Continued from Page 1

Terry St. Clair and Bill Winfree have been awarded four U.S. patents on the material, which they call Colorless and Low Dielectric Polyimide Thin Film Technology. They will be honored at a NASA Headquarters ceremony where they will receive an award check and certificate. R&D Magazine also selected the invention as one of the top 100 R&D products for 1999.

The technology has been licensed to SRS Technologies of Huntsville, Ala., and Triton Systems Inc. of Chelmsford, Mass.

The NASA inventors developed the thermoplastic technology — actually two similar polyimide chemical compounds — in a successful effort to improve upon the solar energy absorption and reflectance of existing space-based systems. Either compound can take the form of a highly-transparent and nearly colorless thin film which has good solar energy characteristics, is resistant to the environmental extremes of space and is lightweight, simple and economical for space launch applications.

Benefits to the end user can be dramatic. For example, SRS has developed fabrication processes to cast precise thin film segments for use as power augmentation panels for a satellite manufacturer that promise to increase the power production of the satellite's standard photovoltaic arrays.

Future aerospace applications may include use in optics for space telescopes or spaceborne lasers; antennas for communications, surveillance and positioning; solar shielding; and aircraft and missile cabling.

The award marks the culmination of a six-year effort by Langley's Technology Commercialization Program Office, led by Greg Manuel, including technology assessment, marketing, licensing and monitoring of product development.

Also to be honored at the awards ceremony is a team from Goddard Space Flight Center, which won the NASA Invention of the Year Award for an optical encoder expected to improve the pointing accuracy of the Hubble Space Telescope by a factor of 10.

Independent Assessment Teams' Reports Released

MPIAT Finds 'Significant Flaws' ...

... But Concludes Risks Of Deep Space Exploration Are Manageable

By PEGGY WILHIDE
NASA Headquarters

An in-depth review of NASA's Mars exploration program, released on March 28, found significant flaws in formulation and execution led to the failures of recent missions and provides recommendations for future exploration of Mars.

NASA Administrator Daniel S. Goldin appointed Thomas Young, a seasoned space-industry executive, to independently assess current and future Mars programs. The Mars Program Independent Assessment Team (MPIAT) started work on Jan. 7 and delivered its final report to the Agency in mid-March.

"I congratulate Tom Young and his team for a superb report," Goldin said today. "They have rigorously scrutinized both successful and unsuccessful missions, shining a searchlight into every corner of the incredibly complex endeavor of deep space exploration. He and his team have delivered an extraordinary report, and I thank them on behalf of NASA and the American people."

"Speaking for the team, I would like to express my appreciation for the spirit of cooperation that we enjoyed at NASA Headquarters, the Jet Propulsion Laboratory (JPL) and at Lockheed Martin," Young said. "The managers, scientists and engineers we spoke with were candid and frank in their presentations and in their answers to our questions. Everyone worked toward the same goal: finding ways to make the Mars program successful.

"One of the things we kept in mind during the course of our review is that in the conduct of space missions, you get only one strike, not three. Even if thousands of functions are carried out flawlessly, just one mistake can be catastrophic to a mission," Young said. "Our review confirmed that mistakes can be prevented by applying experienced oversight, sufficient testing and independent analysis."

The team's charter was to review and analyze successes and failures of recent missions to determine why some succeeded and some failed; examine the relationship between and among NASA Headquarters, JPL, the California Institute of Technology and industry partners; assess the involvement of scientists; identify lessons learned from successes and failures; review the Mars Surveyor Program to assure lessons learned are utilized; oversee Mars Polar Lander and Deep Space 2 failure reviews; and evaluate the risk management process.

The report concluded the most probable cause of the failure was the generation of spurious signals when the lander legs were deployed during descent. The spurious signals gave a false indication that the spacecraft had landed, resulting in a premature shutdown of the engines and the destruction of the lander when it crashed on Mars.

Without any entry, descent and landing telemetry data, there is no way to know whether the lander reached the terminal descent propulsion phase.

If it did reach this phase, it is almost certain that premature engine shutdown occurred, the report concluded.

NASA's Office of Space Science will develop an integrated strategic response to the findings and recommendations of the report. NASA Chief Engineer W. Brian Keegan also will coordinate an integrated Agency response to the recent reviews of NASA program management practices.

In addition, Edward Weiler, the Associate Administrator for Space Science, announced the cancellation of the planned Mars 2001 lander, awaiting his approval of a new overall Mars "architecture" plan.

Weiler also will make management changes in the Mars Exploration Program at NASA Headquarters and work with the California Institute of Technology to institute effective change at JPL, clearly articulating lines of authority, clarifying roles and improving communication between all organizations involved. In that regard, Weiler appointed Scott Hubbard as NASA's Mars Program Director. Hubbard is now Associate Director for Astrobiology and Space Programs at Ames Research Center.

The MPIAT report findings included:

- Mars exploration is an important national goal that should continue.
- Deep space exploration is inherently challenging, but the risks are manageable and acceptable.
- NASA, JPL and U.S. industry have the unique capabilities required to conduct successful planetary and deep space missions.
- NASA's "faster, better, cheaper" approach, properly applied, should be continued as an effective means of guiding program implementation.
- There were significant flaws in the formulation and execution of the Mars program, but all of the problems uncovered are correctable in a timely manner to allow a comprehensive Mars exploration program to continue successfully.

The MPIAT report found common characteristics among both successful and unsuccessful missions:

- Experienced project management or mentoring is essential.
- Project management must be responsible and accountable for all aspects of mission success.
- Unique constraints of deep space missions demand adequate margins.
- Appropriate application of institutional expertise is critical for mission success.
- A thorough test and verification program is essential for mission success.
- Effective risk identification and management are critical to assure successful missions.
- Institutional management must be accountable for policies and procedures that assure a high level of success.
- Institutional management must assure project implementation consistent with required policies and procedures.
- Telemetry coverage of critical events is necessary for analysis and ability to incorporate information in follow-on projects.
- If not ready, do not launch.

SIAT Report Delivers Mixed Message

Team Says The Shuttle Is Safe, But Safety May Not Be The Top Priority

By DAVID MORSE
Ames Research Center

The Space Shuttle Independent Assessment Team (SIAT), chaired by Ames Research Center Director Dr. Henry McDonald, delivered its long-awaited report on March 9.

The news for NASA was mixed; the media outcry was not.

On one hand, the team reaffirmed that the shuttle is a safe vehicle. It went on record as fully endorsing the continuation of shuttle flights as soon as its immediate recommendations have been addressed. The team also praised the skill, dedication, commitment and concern for safety of the entire shuttle workforce.

On the other hand, the team expressed concern that privatization and reduction of NASA oversight may have contributed to a situation in which safety is not consistently valued as the number one priority over speed and cost-cutting. The team also suggested that downsizing of the NASA and contractor workforces may have led to an environment of stress and overwork in the area of shuttle operations.

"In spite of the clear mandate from NASA that neither schedule nor cost should ever be allowed to compromise safety," the team reported, "the workforce has received a conflicting message due to the emphasis on achieving cost and staff reductions and the pressures placed on increasing scheduled flights."

The SIAT declared that NASA must take a more active and direct role in shuttle operations. It also reported a need for greater oversight in order to reduce risk factors. Cost and scheduling pressures have led to a situation where "oversight processes of considerable value, including safety and mission assurance and quality assurance, have been diluted or removed from the program." This must be addressed immediately, it concluded.

Responding to the report's findings, Joe Rothenberg, NASA's Associate Administrator for Space Flight, reiterated NASA's commitment to safety first and foremost. He said that safety has been, and continues to be, NASA's number one priority.

However, Rothenberg recognized that the team pointed out that "there is a minimum level of government involvement" required to "maintain a continuity of knowledge" and safety. "We were below that level and about to get worse," he said.

As a consequence of that realization, NASA has recognized that it has an "expertise problem" and therefore "downsizing is over," he stated.

Rothenberg went on to say that the agency plans to see that 800 new workers are hired to address problems and provide better inspection and oversight. The improvement will occur over a number of years as new workers are brought on board and trained in shuttle procedures.

The reaction of the media was consistent and rather critical of NASA:

- The Orlando Sentinel wrote, "Stressed-out space workers. Too few NASA inspectors. Overly optimistic risk assessments. A contractor struggling to increase profits while maintaining safety."
- The New York Times wrote, "Efforts to cut costs of operating the Space Shuttle are eroding safety."

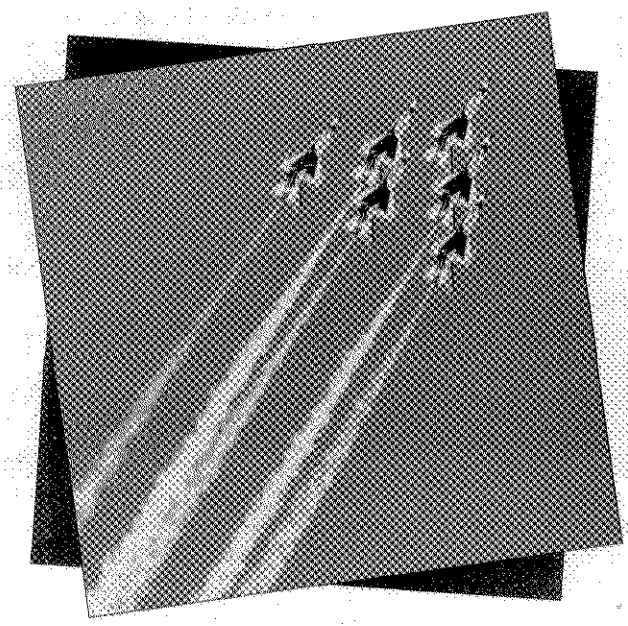
NASA Administrator Daniel S. Goldin took the findings in stride, reiterated the Agency's commitment to safety and lauded the McDonald committee for its fine work.

Shuttle flight personnel at the Johnson Space Center were mandated by Rothenberg's office to come up with a plan to address the report recommendations and propose implementation solutions.

In the interim, shuttle processing continues for upcoming flights with NASA and contractor managers keeping an eye on both the findings of the SIAT and any recommendations that may emerge as a result.

The Thunderbirds 2000

A Sneak Peek



Langley Research Center employees got a sneak peek of the Thunderbirds' 2000 air show on March 24, when the team debuted the new show at neighboring Langley Air Force Base. Gen. John Jumper, left, commanding officer of the Air Combat Command, watched the show with his wife, Ellen, and offered his approval before the team goes on the road for the summer.

Photos by Jeff Caplan

Langley Is In Compliance 'Down Under'

By CAROLINE DIEHL
SAIC

Since September of 1999, Langley Research Center has been in compliance "down under."

No, it doesn't have anything to do with Australia; it means the Center's Underground Storage Tanks (USTs) now meet federal guidelines.

What Is A UST?

A UST system is a tank and any underground piping connected to it that has at least 10 percent of its combined volume underground.

Most UST systems store petroleum products such as gasoline, diesel fuel and fuel oil.

There are an estimated 1.1 million USTs buried at more than 400,000 sites nationwide. These sites include marketers who sell gasoline to the public (such as service stations and convenience stores) and nonmarketers who use tanks solely for their own needs (such as local governments and fleet service operators).

What's The Concern?

Throughout the United States, leaking USTs have become an increasing source of groundwater contamination. In addition to creating environmental and safety problems, leaks from USTs are costly to repair.

Until the mid-1980s, most USTs were made of bare steel, which can corrode over time, allowing UST contents to leak into the environment. As of October 1996, almost 318,000 UST releases have been confirmed, and the Environmental Protection Agency (EPA) estimates that this number could reach 400,000 in the next several years.

Stopping The Leak

In response to growing concerns about leaking USTs, Congress passed the Hazardous and Solid Waste Amendments of 1984. One part of this law required the EPA to establish a National Regulatory Program for the control of new and existing USTs and their associated piping. At the same time, Congress banned the installation of unprotected steel tanks and piping beginning in 1985.

In 1988, the EPA issued regulations setting minimum standards for new tanks to include anti-corrosion protection, leak detection and prevention devices. The regulations also require owners of existing tanks to upgrade, replace or close them and help pay for the cleanup of any releases. The requirements were phased in over a 10-year period, with December of 1998 being the deadline for USTs to be in compliance.

Some USTs are exempt from the federal requirements, such as farm and residential tanks of 1,100 gallons or less, tanks storing heating oil that are used on the premises and tanks of 110 gallons or less capacity.

Until recently, Langley had several small USTs that stored gasoline, diesel and fuel oil. Although these tanks were exempt from the federal requirements, they were old and the decision was made to remove them in order to ensure protection of health and the environment. In September of 1999, the USTs were removed, and new, above-ground tanks were installed to meet all applicable regulations.

Although the Center's tanks are in compliance, you may be asking, "What's happening with the contaminated sites located throughout the U.S.?"

Last fall, President Clinton signed the fiscal 2000 budget for the EPA, appropriating $70 million for cleanup activities for the Leaking UST Trust Fund.

The EPA supports state programs through cooperative agreements funded by the Leaking UST Trust Fund dollars. The EPA helps states administer their corrective action programs, oversee cleanups by responsible parties and undertake necessary enforcement actions. States may also use the trust fund money to pay for cleanups in cases where a responsible party cannot be found or is unwilling or unable to pay for a cleanup. Such cases have accounted for less than 1 percent of all UST releases.

For more information about USTs, visit the EPA Office of Underground Storage Tank Web site at <http://www.epa.gov/swerust1/aboutust.htm>.

AdVentures

CLASSIFIED

FOR SALE: House in Poquoson, three or four bedrooms, two and a half bathrooms, new kitchen, detached double garage, water view, no flood insurance needed, $185,000. Call 868-4361.

FOR SALE: Diamond engagement ring, platinum-set, 1 carat, G color, with certification and estimate. $4,500. Call 623-4262.

FOR SALE: Mahogany entertainment center. Two-piece main unit (top and bottom) with two matching speaker cabinets. Made in Spain from solid mahogany (no veneers) 25 years ago. All shelves (including those in the speaker cabinets) are adjustable. Main unit measures approximately 83 inches high, 87 inches wide and 22 inches deep; each speaker cabinet measures 35 inches high and 26 inches wide. $1,000 or best offer. Call 596-6978 after 5 p.m.

FOR SALE: Three Slazenger tennis rackets with covers, OMS Series, graphite/fiberglass and silicon carbide construction; excellent strings with "string savers." $10 each. Call 221-0269.

FOR SALE OR TRADE: Ty Beanie Babies, $6 and up; Beanie Buddies, Bears, Bunnies and more, $12 and up. Call 865-0586.

NARFE Meeting April 10

Chapter 682 of the National Association of Retired Federal Employees (NARFE) will meet at 10:30 a.m. April 10 at the Midtown Community Center in Newport News. Will Corbin, vice president and editor of the Daily Press, will speak about "Our Neighborhood." For more information, call Catherine Askew at 247-1558.

TCPO Will Offer Courses

Langley Research Center's Technology Commercialization Program Office (TCPO) is hosting a series of courses covering the transfer and commercialization of NASA technology. The remaining course schedule includes: Technology Licensing, April 11; Intellectual Negotiation, April 12; and Technology Marketing, April 13.

Employees interested in attending the courses should mail a completed "Application For On-Site Training Form" to DeAnna Lawrence at M.S. 309 or fax it to ext. 48543.

For more information about the courses, contact Sherry Sullivan at <s.l.sullivan@larc.nasa.gov> or visit <http://tech-transfer.larc.nasa.gov/> on the Web.

Ames Will Host Workshop April 18-19

Ames Research Center and Oracle will co-sponsor a data management workshop on April 18 and 19 at the Oracle Headquarters Corporate Visitor Center in Redwood Shores, Calif.

The purpose of the workshop is to inform and educate NASA and contractor project managers and researchers from across the entire Agency about the present availability and applicability of a wide range of commercial, off-the-shelf (COTS) database systems.

For more information, go to <http://ace.arc.nasa.gov/postdoc/t/folder/main.ehtml?url_id=37952>. To register online, go to <http://ace.arc.nasa.gov/postdoc/t/group/members.ehtml?group_id=-759>.

FWPC Hosting 'Salute To Secretaries'

Langley Research Center's Federal Women's Program Committee will sponsor two programs as part of the Center's "Salute to Secretaries" in April:

- A breakfast program — featuring a "Design Your Destiny" seminar by Lee Milteer, a professional speaker from Virginia Beach — will be held on April 24 in the new addition of the Cafeteria. Breakfast will be served from 8:30 to 9 a.m.; the program will take place from 9 to 10:30 a.m.
- A "Financial Planning Workshop" featuring Nola Anderson, an American Express financial planner, will take place from 2:30 to 3:30 p.m. April 26 in the H.J.E. Reid Conference Center.

A formal letter of invitation will be sent to all secretaries. For more information, contact Patsy Campbell at ext. 43291.

Runners' Club Announces Races

The Langley Runners' Club will participate in the following NASA Intercenter Competition races this spring: 10K on April 12 and 20 and May 1, and two-mile on April 17 and 26 and May 4. All races start at 5 p.m. on Doolittle Road at the H.J.E. Reid Conference Center parking lot.

The Intercenter Competition is held each spring and fall among the NASA Centers. All Langley employees, retirees and on- or near-site contractors earn points for the Langley team by participating. Runners, joggers and walkers are welcome.

For more information, contact Richard Shearer at ext. 47036, or visit the Langley Runners' Club Web site at <http://larc-exchange.larc.nasa.gov/laa/runners>.

Library Holding Lost Book

Langley Research Center's Technical Library is holding a book that was inadvertently left there. The book is U. Schendel's "Introduction to Numerical Methods for Parallel Computers." The only identifying marks are two handwritten labels on the spine: One is oval-shaped, with the number 612; below that is a rectangle with the capital letter I.

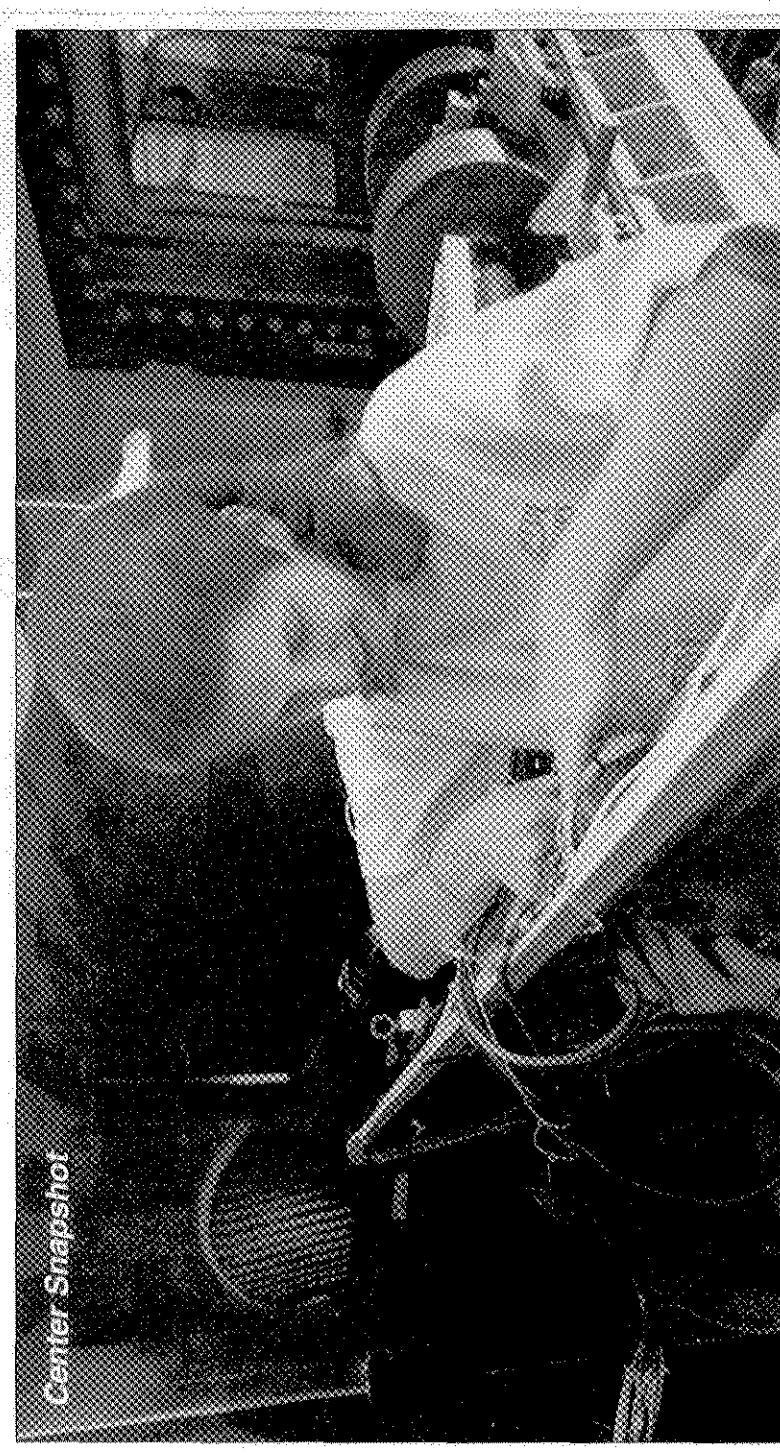
To claim the book, contact Kenneth Carroll at ext. 45079 or <k.g.carroll@larc.nasa.gov> by May 5.

Busch Gardens Tickets Available

The Exchange Shop is now selling tickets to Busch Gardens Williamsburg, which opened for 2000 on March 25. New this season is Jack Hanna's Wild Reserve, a new habitat offering up-close encounters with gray wolves, exotic lorikeets and other fascinating animals.

Adult tickets are available for $31, a savings of $6, and children's tickets are available for $24.75, a savings of $5.25. For more information, call ext. 41585 or 47918.

The deadline for the April 21 edition of the Researcher News *is April 10. Send submissions to <j.r.roberts@larc.nasa.gov>.*



Stacy Sigmon entered the NASA Apprentice School through Thomas Nelson Community College 10 years ago and has been at Langley Research Center ever since. The Gloucester native has worked as a technician in the 0.3-Meter Transonic Cryogenic Tunnel for the past year and previously worked in the Low Turbulence Pressure Tunnel (LTPT) on the East Side. She is currently helping to support the National Transonic Facility (NTF) with the installation of a Boeing 777 semi-span model. Her hobbies are fishing with her husband and collecting lighthouse figurines. What does she like most about working at NASA? "I enjoy being an active participant in the different types of research testing that we conduct here," she says.

Photo by Jeff Caplan

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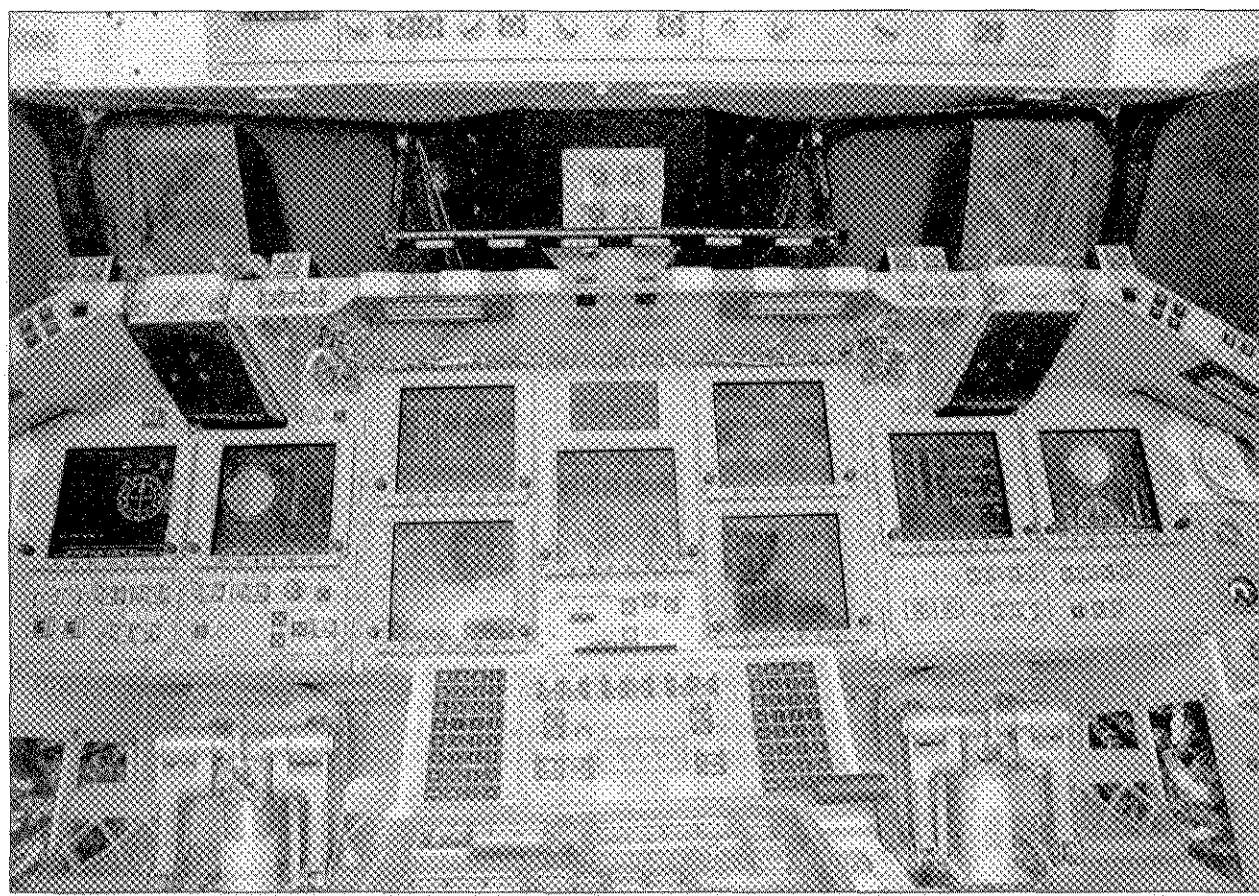


The Multifunction Electronic Display System (MEDS) pioneered at Langley Research Center in the NASA 737 flying laboratory has been incorporated into Space Shuttle Atlantis and will make its maiden space flight on STS-101.

Photo courtesy of Kennedy Space Center

First 'Glass'

New Cockpit Debuts On Atlantis

By KEITH HENRY
Office of Public Affairs

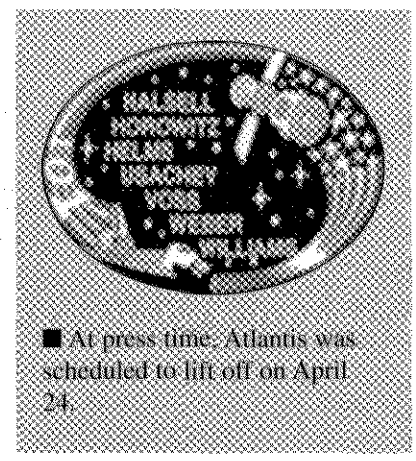
When NASA astronaut Fred Gregory learned that the cockpit in Space Shuttle Atlantis was slated for a total technology update, he advised shuttle managers to talk with the agency's aeronautics experts.

So it should be no surprise that Atlantis' new cockpit looks a lot like a future airliner cockpit, with colorful multi-function computer displays stretched from one side to the other. The radical new look is an accurate reflection of the cockpit's radical new capabilities.

Gregory, originally from Langley Research Center and now NASA Associate Administrator for Safety and Mission Assurance, knew that Langley had pioneered the "glass cockpit" concept in ground simulators and demonstration flights in the NASA 737 flying laboratory. Based on that work and a favorable response from industry customers, Boeing developed the first glass cockpits for production airliners. It was an aviation success story.

Four veterans of that research — Langley's Sam Morello, Lee Person, Jack Hatfield and George Steinmetz — enthusiastically demonstrated glass cockpit technologies to shuttle astronauts Bill Readdy and Charles Veach in 1989. They liked what they saw.

And, now, what is good for modern airliners will also be good for modern spaceships. The technology will make Atlantis much easier and safer to fly, according to shuttle officials. Scores of outdated electromechanical cockpit instruments and gauges have given way to 11 full-color flat panel screens.



■ At press time, Atlantis was scheduled to lift off on April 24.

Continued on Page 3

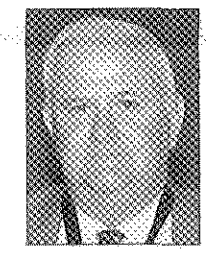
Langley Fills Key Positions

Freeman Named DD; Branscome Returns To Lead The SAEPO

By JIM ROBERTS
Researcher News Editor

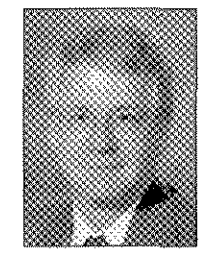
Langley Research Center filled two major organizational vacancies on April 3.

Center Director Dr. Jeremiah F. Creedon announced that Delma C. Freeman Jr. has been named Deputy Director and Darrell R. Branscome will succeed Freeman as Director of the Center's Space Access and Exploration Program Office (SAEPO).



Freeman

Freeman's position had been vacant since October 1999, when Wallace C. Sawyer transferred to the equivalent position at Dryden Flight Research Center. Freeman served as the Acting Deputy Director in Sawyer's absence.



Branscome

Delma C. Freeman Jr.

Freeman began his career at Langley in 1964 as an aerospace engineer working in the area of dynamic stability and control in the Langley Full-Scale Wind Tunnel.

Since then, he has served as the Assistant Head of Langley's Aerothermodynamics Branch, Head of Langley's Vehicle Analysis Branch, Assistant Chief of Langley's Space Systems Division, Chief of Langley's Space Systems Concepts Division and, most recently, as Director of the SAEPO.

He also has served as the Manager of NASA's Code R Space Transportation Technology Program and as the Deputy Chief Engineer for Space Transportation.

Darrell R. Branscome

Branscome began his NASA career at Langley in 1966 as an aerospace engineer. Since then, he has served in various management positions at Langley and at NASA Headquarters, including Chief

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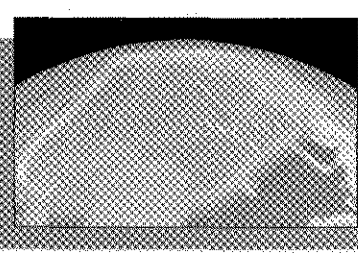
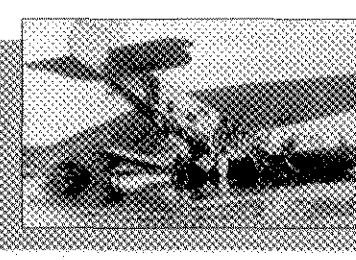


Langley Helped Collect Data For Ozone Discovery — Page 3



The American Legion Made Its Fateful Test Flight 73 Years Ago — Page 4

News Briefs

Around the Agency

APRIL 24 MARKS TEN YEARS FOR HUBBLE

A spectacular morning launch of the Space Shuttle Discovery ten years ago, on April 24, 1990, ushered in a new golden age of astronomy. The payload in Discovery's cargo bay, NASA's Hubble Space Telescope, was released by the crew into Earth orbit the next day and the Universe hasn't looked the same since.

"This month marks the anniversary of one of the greatest observatories ever flown. We have watched in awe as the Hubble Space Telescope has produced some of the most amazing images about the Universe that surrounds us," said Sen. Barbara A. Mikulski (D-Md.). "I am so proud of the NASA team that has worked to keep it running and I'm pleased my support has kept your efforts funded and in business."

More information about the telescope and its anniversary can be found on the Internet at <http://hubble.stsci.edu/go/tenth>. RELEASE: 00-59

SUSPECTED PLANET MAY REALLY BE A STAR

Follow-up observations of an unusual object initially suspected to be the first directly detected planet outside our solar system have shown that the object is too hot to be a planet.

Astronomers now believe it is more likely that the strange object is a background star whose light has been dimmed and reddened by interstellar dust, giving the illusion that it is in the vicinity of the double star system in which it was initially believed to have been a planet. RELEASE: 00-58

ULYSSES SPACECRAFT MEETS A COMET

During an unplanned rendezvous, the Ulysses spacecraft found itself gliding though the immense tail of Comet Hyakutake, revealing that comet tails may be much, much longer than previously believed.

"The odds that Ulysses' flight path would intersect the comet tail were probably less likely than someone breaking the bank at Monte Carlo," said Edward Smith of NASA's Jet Propulsion Laboratory, the Ulysses project scientist and a co-investigator for its magnetometer instrument. Before the unexpected encounter, Ulysses was hundreds of millions of miles, or kilometers, away from Comet Hyakutake and far beyond the visible tail.

More information on the Ulysses mission is available on the Internet at: <http://ulysses.jpl.nasa.gov> and <http://helio.estec.esa.nl/ulysses/>. RELEASE: 00-55

NASA TESTING TURBINE IN LARGEST WIND TUNNEL

For the first time ever, engineers at NASA's Ames Research Center will begin testing a wind turbine this month in the world's largest wind tunnel to learn how to design and operate the turbines more efficiently.

The three-week test of the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) "Unsteady Aerodynamics" research wind turbine was scheduled to begin on April 17. Tests will be conducted in Ames' 80-by-120-Foot Wind Tunnel. The wind tunnel is primarily used for determining low- and medium-speed aerodynamic characteristics of full-scale aircraft and rotorcraft (helicopters). RELEASE: 00-27AR

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

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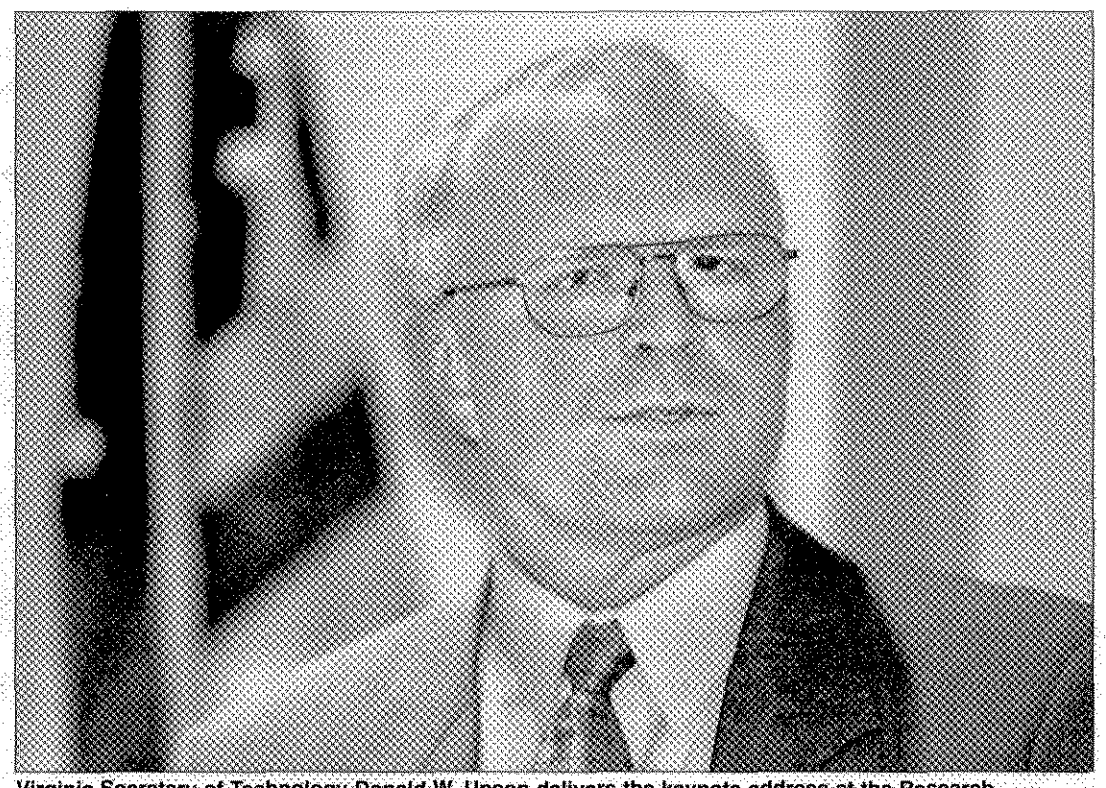
Keynote Speaker



Virginia Secretary of Technology Donald W. Upson delivers the keynote address at the Research Development and Technology Conference on April 6 at the Radisson Hotel in Hampton. Langley Research Center hosted the inaugural event to showcase NASA's Small Business Innovation Research (SBIR) and Small Business Technology (STTR) programs. "You have to use technology if you're going to be successful in this new century," Upson told the crowd of business, industry and academic representatives. "Research is important, and we need to communicate it to our delegation."

Photo by Jeff Caplan

People

Lee Named DD Of Competency

HaeOk S. Lee recently was named Deputy Director for Aerodynamics and Acoustics in Langley Research Center's Aerodynamics, Aerothermodynamics and Acoustics Competency.

Lee holds bachelor's, master's and doctoral degrees in mechanical engineering from the University of Illinois. She served as an associate professor of mechanical engineering at the University of Minnesota before going to work at Glenn Research Center in 1990.

At Glenn, Lee served as the Chief of the Icing Research Branch, Acting Deputy Manager of the Propulsion Systems Program and Chief of the Propulsion and Power Office.

Creedon Serving Term On VRTAC

Langley Research Center Director **Dr. Jeremiah F. Creedon** has been selected to serve as a member of the Virginia Research & Technology Advisory Commission (VRTAC).

VRTAC's mission is to promote technology-based economic growth in Virginia by advancing its university, industry and not-for-profit research capability and by improving the climate for growth of technology-based industry.

The commission is composed of about 30 senior leaders in research and technology in the commonwealth. Each member will serve for a renewable two-year term.

Aerobics Club Honors Macaraeg

The Langley Activities Association (LAA) Aerobics Club has instituted a scholarship in memory of **Michele Macaraeg**, who collapsed and died of diabetes-related complications during an aerobics class last June.

Macaraeg served as Branch Head of Langley Research Center's Computational Modeling and Simulation Branch. She played a key role in the development of revolutionary noise-reduction concepts and, more recently, a program to enhance the ability to simulate complex airflow phenomena.

Macaraeg

Macaraeg also took an exceptional interest in people's health and fitness. Along with her husband, **Craig Streett**, she created the LAA Aerobics Club.

Unlike many of today's fitness club settings, the LAA Aerobics Club caters to all levels of fitness using cutting-edge information on exercise science. It was through the LAA Aerobics Club that Macaraeg became an inspiration to so many and helped them find their "inner athletes."

The scholarship will be awarded to a Hampton Roads high school senior who can best describe "Inspiration And How It Impacts Our Lives." The scholarship, which will come from monies collected through the club, is expected to be worth $500 in its first year.

For more information about the scholarship, call Kim Tatum at ext. 48454.

Speakers Bureau

Fifteen speakers from Langley Research Center's Speakers Bureau gave 22 presentations to 2,264 stakeholders in March. The groups included eleven public schools, two civic clubs, one church school and one museum.

The speakers were: **Larry Bement, Bobby Braun, Vicki Connors, Dick Davis, Russ DeYoung, Melvin Ferebee, Larry Huebner, Sam James, Debbie Martinez, Rob Rivers, V. Eric Roback, Olaf Storaasli, Nina Tappin, Myra Walton** and **John White.**

To receive announcements of speaking opportunities, contact Olin Jarrett at ext. 46320 or <o.jarrett@larc. nasa.gov>.

Langley Helped Collect Ozone Data

Large Ozone Losses Observed Inside The Arctic Polar Vortex

By CHRIS RINK
Office of Public Affairs

While areas of the United States experienced days of record warm temperatures last winter, scientists at Langley Research Center found record cold in the Arctic stratosphere. These cold temperatures contributed to more than 60 percent ozone loss — one of the worst ever reported at this altitude near the North Pole.

According to reports from NASA's SAGE III Ozone Loss and Validation Experiment (SOLVE) and the European Commission-sponsored Third European Stratospheric Experiment on Ozone (THESEO) 2000, large ozone losses were observed inside the Arctic stratospheric polar vortex. The polar vortex is a large, swirling air mass with its thickest layer of ozone near 60,000 feet.

Six teams of Langley scientists studied and sampled the vortex in what was the largest field campaign ever to study North Pole ozone loss. With an international team of researchers based in Kiruna, Sweden, above the Arctic Circle, the joint study involved 350 scientists, technicians and support personnel from the U.S., Canada, Europe, Russia and Japan.

Edward Browell, Langley's principle investigator with the UV Differential Absorption LIDAR (DIAL) instrument, helped collect data over the ozone region and says it is the most extensive information compiled to date.

"We provided the bigger perspective on the ozone loss and the distribution of polar stratospheric clouds over the whole vortex," Browell said. "Ours was the prime instrument making the spatial extent of the ozone loss."

The UV DIAL, along with many other instruments, flew aboard NASA's DC-8 based at Dryden Flight Research Center. The UV DIAL sent pulses of laser light above the flying laboratory and was tuned to "see" absorption of ozone.

"We actually sent six laser beams above the plane," Browell said. "Different beams can get information about the particles and the clouds through the important part of the ozone layer or where the bulk of the ozone resides."

According to reports from NASA's SOLVE and the European Commission-sponsored THESEO 2000, large ozone losses were observed inside the Arctic stratospheric polar vortex.
Photo courtesy of Goddard Space Flight Center

The four-month experiment, which began in November 1999, focused on the puzzling balance of ozone production and loss and its movement in the lower Arctic stratosphere from early winter to spring.

Analysis of ozone and other atmospheric gases will show how the stratosphere's chemical composition changed through the Arctic winter. The SOLVE campaign hoped to identify the processes that control ozone concentrations. In turn, scientists hope to better understand the composition of polar stratospheric clouds (PSCs) and the chemical reactions involved in ozone loss on the surfaces of these cloud particles.

The polar stratosphere temperatures were extremely low over this last winter, and PSCs can only form in these low temperature regions. Browell added that the PSCs' surface serves to convert chlorine gases in the upper atmosphere from a benign or passive state to an active state that contributes to ozone depletion.

"We're documenting the chemical loss of ozone over the Arctic as a result of the PSCs," he said. "So, with the Langley instrument, it helped to show how widespread they are and the clouds' characteristics."

It was also the first time they were allowed to fly in the coldest regions over Russia.

"Until this mission we haven't had permission," Browell said. "But it's critical to have this important data to study these clouds."

The DC-8 flew its first mission over Russia's Franz Josef Land during SOLVE's first phase last December. Another flying laboratory based at NASA Dryden, NASA's high-flying ER-2 (a modified design of Lockheed's U-2) completed its first science flight though Russian airspace in conjunction with the DC-8 in January.

Browell, a NASA Langley employee since 1974, has flown DIAL systems all over the world for 20 years.

"It was an exciting experiment," he added. "We got to see the whole process from start to finish, and we pretty much nailed it. It was a very good mission and timed just right."

Cockpit

Continued from Page 1

Not only does the new system improve crew/orbiter interaction with easy-to-read, graphic portrayals of key flight indicators like attitude, altitude and speed, it also reduces the high cost of maintaining obsolete systems. The system also provides greater backup capability, weighs less and uses less power than the original design.

For these reasons the people who fly and maintain the shuttle fleet are eagerly awaiting the first flight of Atlantis since it was equipped with the new Multifunction Electronic Display System (MEDS).

Honeywell Space Systems was instrumental in designing and producing MEDS.

Astronauts will use the displays to navigate and land Atlantis. The displays operate with the convenience and control of the most advanced commercial and military flat-panel display technology available today. In addition, the liquid crystal displays provide unique performance capabilities that enhance mission safety. Astronauts can easily read important flight data because light sources, including the sun, produce no glare on the screen and the display allows for clear viewing from positions at a wide range of angles from the screen.

The $9 million MEDS, including design and development costs, is perhaps the most visible of several system-wide improvements made to Atlantis during a 10-month major overhaul. Other upgrades were in areas of shuttle main engines, the new Super Lightweight Tank, Integrated Vehicle Health Management System and the Checkout and Launch Control System.

Honeywell is under contract to Boeing North American to provide the new displays for all four Shuttle orbiters.

What Is A "Glass Cockpit?"

The revolution in cockpit design was born of both opportunity and necessity.

Writing in "Airborne Trailblazer: Two Decades with NASA Langley's 737 Flying Laboratory," Lane Wallace said: "Prior to the 1970s, air transport operations were not considered sufficiently demanding to require advanced equipment like electronic flight displays. The increasing complexity of transport aircraft, the advent of digital systems and the growing air traffic congestion around airports began to change that, however."

The $9 million MEDS, including design and development costs, is perhaps the most visible of several system-wide improvements made to Atlantis during a 10-month major overhaul.

What was needed, she explained, were displays that could process the raw aircraft system and flight data into an integrated, easily understood picture of the aircraft situation, position and progress, not only in horizontal and vertical dimensions, but with regard to time and speed, as well.

In response, engineers at Langley worked with key industry partners to develop and test electronic flight display concepts, culminating in an all-important series of flights to demonstrate a full glass cockpit system. Boeing loaned some of its most promising engineers to the project. Rockwell Collins turned the team's concepts into hardware.

The challenges were many and varied. In designing the experimental system, the research team looked at what information pilots needed to have and how it should be presented to them. One unexpected challenge: finding the right balance between what the computerized system should manage and what the pilot should manage. The result: a glass cockpit system with an autopilot that increased safety by reducing pilot workload at peak times, yet kept the pilot "in the loop" at all times to maintain situational awareness.

The success of the NASA-led glass cockpit work is reflected in the total acceptance of electronic flight displays beginning with the introduction of the Boeing 767 in 1982. Airlines and their passengers have benefitted. Safety and efficiency of flight have been increased with improved pilot understanding of the airplane's situation relative to its environment. The cost of air travel is less than it would be with the old technology and more flights arrive on time.

Positions

Continued from Page 1

Engineer of Langley, Director of Langley's Advanced Program Development Division, Technical Assistant to the Associate Administrator of NASA's Office of Space Flight, Director of Special Programs in NASA's Office of Space Flight, Deputy Associate Administrator for Space Flight, Technical Assistant in NASA's Manned-Space Technology Program Office and Acting Program Manager for NASA's Space Technology Shuttle Payloads Program.

Branscome also served on the U.S. House of Representatives' Subcommittee on Space Science and Applications and was Co-Director of the Joint NASA/DOD National Space Transportation and Support Study.

His most recent position was Deputy Associate Administrator For Enterprise Development, a position he held since August 1998. Prior to that, he served as Director of Langley's Space and Atmospheric Sciences Program Group.

"Those Willi

The American Legion Made Its Final, Fateful Test Flight 73 Years Ago

Editor's note: This story is excerpted from a longer story researched and written by Leo C. Forrest Jr., a mechanical engineer at Naval Weapons Station, Yorktown. To obtain a complete copy of his story, write to him at 16 Church Street, Poquoson, Va. 23662 or call him at 868-6043.

By LEO C. FOREST JR.
Special to the Researcher News

Monday, April 25, 1927: Several newspaper reporters are gathered at the main runway at Langley Field this morning. They are questioning two Navy pilots about their test flights in preparation for the first non-stop air crossing of the Atlantic Ocean. Cmdr. Noel Davis and Lt. Stanton Wooster are anxious to begin their historical flight. To date, details of the test flights have been scarce. Today, the winds are unsatisfactory for flying, allowing the pilots a few minutes to answer some questions. They are standing in front of their aircraft, christened the American Legion. Let's listen in as Davis, the pilot of the aircraft, answers some questions and gives an update on the project.

"We are almost ready to get away now, but there is no hurry about the trip. We want to have everything in our favor, and I think the May full moon will give us favorable weather."

He continues with a description of the American Legion: *"All the tests made with the machine have been perfect. I have never piloted a better plane. I and my companions and other officers at Langley Field have been particularly pleased with the manner in which the plane gets up when loaded. Some of us had feared that when the machine was loaded to capacity, as she will be when we start on our long flight, a large field would be necessary for her to get up. The contrary has been proven. The machine rises in less space than is required for some smaller planes. It is the best mechanical bird I have ever seen, and I believe we will make the flight to Paris with few difficulties."*

Cmdr. Noel Davis and Lt. Stanton Wooster
International Newsreel Photo

The atmosphere is filled with excitement. A reporter directs a question to Davis: "Do you really believe these big flying machines, manufactured in this country, are capable and—"

The question is interrupted by Davis: *"A few years ago, we held all the aviation records. We have lost nearly all of them. We make as good planes and as good motors as any country in the world and we have as good pilots. I want to see some prestige in the air return to our country.*

Later, another reporter asks, "Are you ready?"

"We've got her loaded full and are only waiting for a good day to hop off. I think we have licked all our troubles and I guess we will be in Paris as soon as the rest of them. It looks pretty good."

"Are you ready?" Are you kidding? No two aviators are better prepared.

Tuesday, April 26: The airplane on the runway at Langley Field is a modified Keystone "Pathfinder," manufactured by the Keystone Aircraft Corp., Bristol, Pa. It has been modified with several tanks that make up a fuel system of 1,500 gallons, five times the usual capacity. Today, with the modifications, including the fuel, the airplane weight is reported at 16,000 pounds!

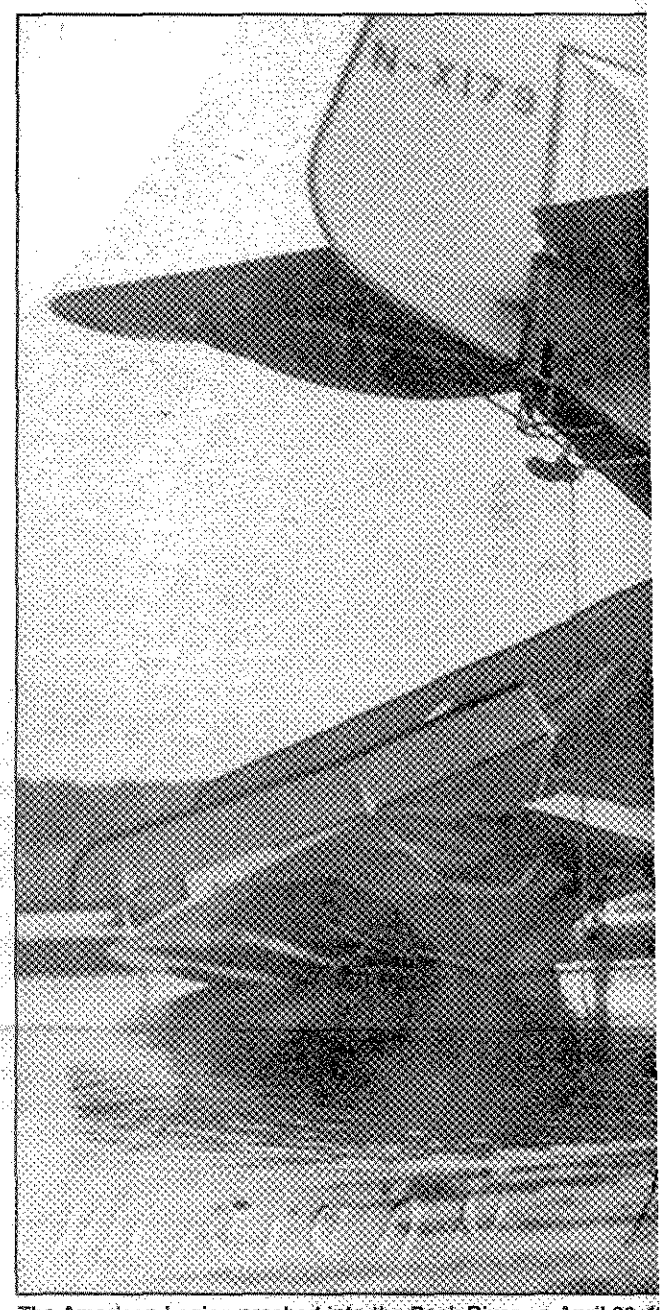
The dimensions of the aircraft are impressive: 45 feet long with a wing span of 67 feet. The total wing area is 1,150 square feet. The American Legion is equipped with three Wright J-5 Whirlwind engines, rated at 220 hp each. One engine is mounted in the nose of the fuselage and one on the upper surface of each lower wing. The fuel is supplied to the engines by gravity feed. If one of the three engines fails during flight, the airplane will be able to continue to fly.

The pilots of the American Legion have been at the airfield at Langley Field for several hours. Both Davis and Wooster have determined that the weather conditions are favorable. The "full-load" test flight will be made today. The final test flight. Then pairs! The morning appears ideal for flying.

When the ground crew reports to Langley Field, they find the three engines running and the large propellers turning. Davis and Wooster have started the engines themselves. Wooster is in the cockpit at the controls of the American Legion. He's bringing the engines to the required operational temperature by warming the three engines up in a sequential pattern. Both of the pilots listen to the engines for the slightest hint of a problem. Everything is operating perfectly. Everything is "go ... go ... go."

Davis meets with the ground crew members for some last-minute instructions. He directs the mechanics to go down the field, spaced far apart so they can measure the takeoff. Yesterday, he pointed out the spot where he had calculated the aircraft would liftoff. If his calculations are incorrect and the takeoff requires more distance, he will abort the takeoff.

A few minutes later, Davis joins Wooster in the cockpit of the American Legion. The airplane is provided with side-by-side seats and controls for the pilots. A removable transparent cover encloses the cockpit and serves as an emergency exit. The cockpit is located behind the center engine.



The American Legion crashed into the Back River on April 26, 1 Cmdr. Noel Davis and Lt. Stanton Wooster, were found still buck crash. Nothing was seen that indicated either pilot had attempte

Instrumentation readings and the wind direction dominate final preflight conversation. With the preflight checks completed, Davis orders the brakes of the airplane to be released.

Wheel chocks have been used to keep the airplane in position. The American Legion immediately begins to tremble as Wooster revs the three engines. The wheels begin to move, and he takes the airplane to the end of the runway. At that location, the movement of the airplane stops as the engines are brought back to a low rpm idle speed. A few minutes go by as the pilots continue takeoff discussions. They're on the main runway of Langley Field, which runs in a south-to-north direction.

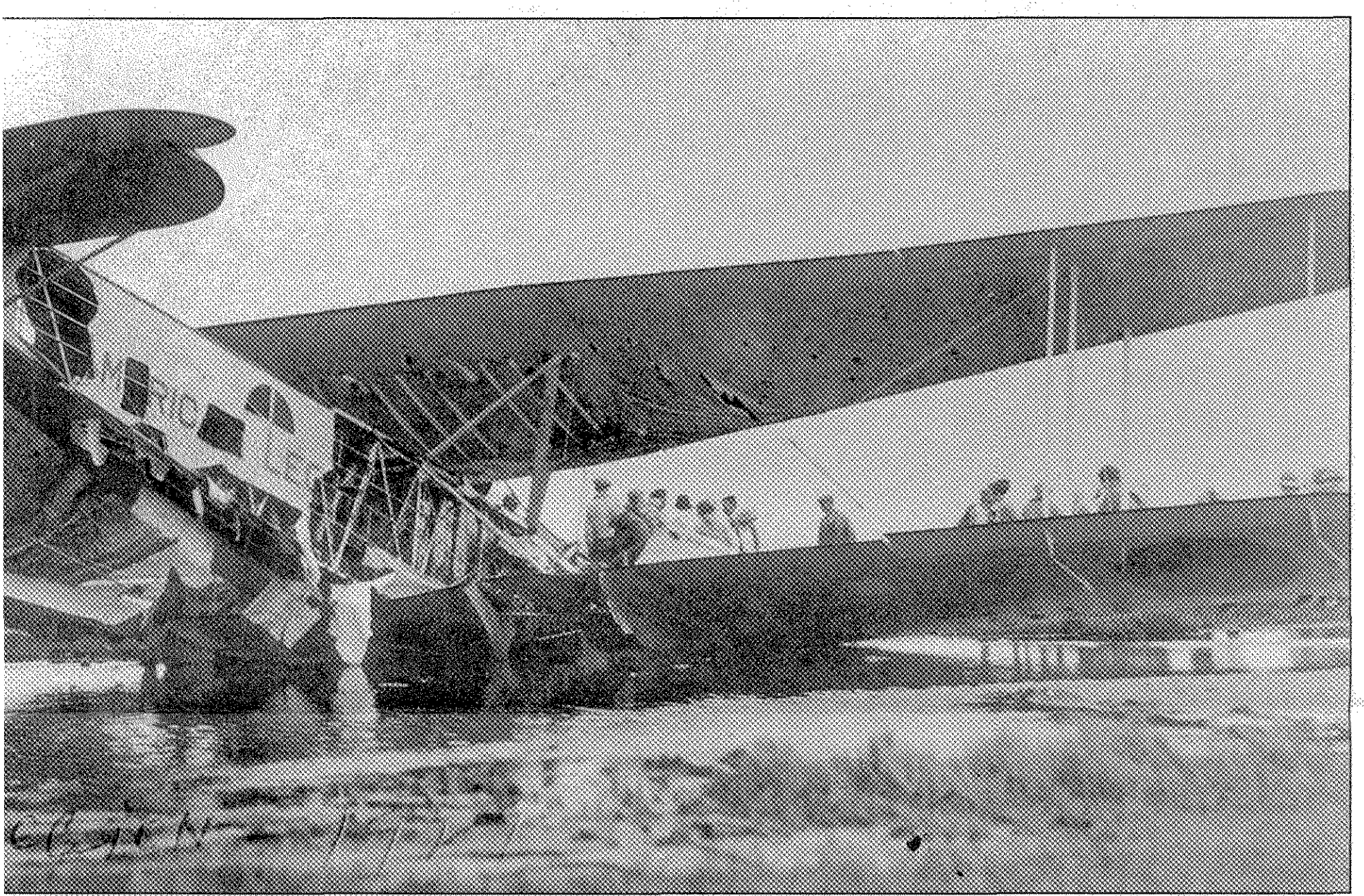
When Wooster increases the speed of the engines, the airplane begins to move again. Near the dirigible hanger, part of the ground crew is standing with a group of Army and Navy officers assigned to Langley Field.

The American Legion is now moving down the runway. After only a short distance, the tail has lifted and is straight out behind. The roaring of the engines continues as the rpm level increases. Wooster begins to pull all of his flying skills together. In the next few minutes, he'll need them — and more.

A few individuals have pocket watches and are timing the takeoff. Ten seconds, 20 ... 30 seconds ... the airplane is not lifting off the runway. The point where Davis thought would be the point for liftoff is passed. The American Legion continues to pass mechanic after mechanic. And,

"All the tests made with the machine have been perfect. I have never piloted a bet

ng To Dare"



following complications during its final test flight. The pilots, in their seats and had died from injuries received during the escape from his seat. The bodies of Davis and Wooster were transported to the Langley Field Hospital. Both aviators were later buried with full military honors ... Davis in Pensacola, Fla., and Wooster in Arlington Cemetery.

International Newsreel Photo

en, finally — wheels off! The American Legion is in the r. The takeoff distance is much longer than normal and ey just miss hitting a thicket of pine trees by only a few et at the end of the runway. This had never presented a oblem before.

The minimum flight speed, under normal conditions, is mph with a climbing speed of 570 feet per minute. From e dirigible hangar, the ground crew and officers watch as ooster keeps the airplane close to the ground. Then it owly lifts. Moments later, the American Legion is over e waters of Back River.

Suddenly, there's a problem. Something is not right. oth pilots are looking at the instrumentation panel, gines and the wing surfaces. Their altitude is no more an 50 feet, an altitude far less than normal at this point in e flight. Something continues to cause the airplane to ider perform. Engine adjustments are not working.

On the present course, the American Legion won't be le to clear the approaching tree line of Back Landing. stinctively, the pilots decide to circle back toward ngley Field. Almost immediately, the airplane side-slips d a decrease in altitude occurs. The American Legion on't make it back to the airfield. The flight will have to aborted.

Within moments, the airplane passes over a small sec- on of shoreline. The right wheel touches first. Then the l and the fuselage hit. All control of the airplane is lost.

For about 125 feet, the plane skids across the marsh while kicking up mud and water. Major damage occurs on impact, especially to the landing gear, engine propellers and port side wing. The American Legion continues to skid across the marsh until it hits a hook-shaped duck pond. When it approaches the other side, the airplane crashes nose down. The center motor is torn from the mounting.

Local Poquoson watermen, working their fishnets in Back River, witness the crash and stop their work. Disregarding the all-too-obvious personal danger, the watermen rush to help the aviators. At the aircraft, the area contains volatile aviation fuel leaking from the fuel tanks, and the engines are smoldering. The watermen retrieve an anchor rope from a nearby boat. Several climb onto the airplane, securing one end of the rope to the tail section. Pulling on the rope in an effort to right the airplane, the rope snaps. A stronger rope is tried, but it also breaks. With the airplane in a vertical position, they cannot gain access to the pilots. Their attempts to right the airplane and reach the pilots are unsuccessful.

In the meantime, Langley Field dispatches rescue personnel to the crash site by both boat and land. Headed by Capt. E. C. Clarke, Capt. R. C. Cocke and Lt. J. K. Nissley, the men provide hawsers (heavy towropes) for the rescue effort. With the additional men and more digging around the embedded sections, the rescuers are now successful in righting the airplane. During this maneuver, however, at least one fuel tank ruptures and floods the area with additional aviation fuel. From the wings, fuel leaks have developed, causing further concern of an explosion or fire with the engines still very hot; the danger is all too real for the rescuers.

The bodies of Davis and Wooster are removed from the aircraft by midmorning. Both pilots had been found still buckled in their seats and had died from injuries received during the crash. Nothing was seen that indicated either pilot had attempted to escape from his seat. The bodies of Davis and Wooster are transported to the Langley Field Hospital. Both aviators are later buried with full military honors, Davis in Pensacola and Wooster in Arlington Cemetery, D.C.

Work to remove the airplane from the marsh begins on April 28, 1927, and requires about a week to complete. The airplane is disassembled in sections. Both trucks and barges are used to remove the sections. Langley Field provides 24 hour-a-day guards at the crash site until the airplane is removed.

Although the first non-stop air crossing was accomplished by another, Davis and Wooster leave their mark on the early years of aviation.

For future generations, they will represent the spirit of all those pioneering pilots who dared lay their lives on the line to reach for new heights in aviation. They were among the first aviators who willingly dared ... who pushed the aviation envelope of progress. They were the early astronauts who reached for the stars.

plane. ... It is the best mechanical bird I have ever seen." — **Cmdr. Noel Davis**

ISS Docks In Hampton

NASA's International Space Station (ISS) Mobile Exhibit rolled into Hampton on April 11. The exhibit, which is housed in two traveling trailers, will be open to the public through May 1 at the Virginia Air & Space Center. For more information, call VASC at 727-0900.

Right: Ed Pritchard, a management analyst in Johnson Space Center's Office of Public Affairs, supervised the exhibit's trip to Hampton.

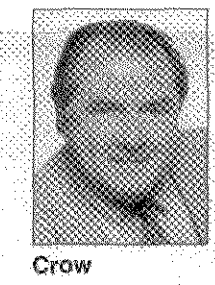
Below: Fred Tarantelli, a VASC museum educator, and Rick Van Doren, manager of VASC's Education Program, walk through the exhibit before it opened to the public on April 12.

Photos by Jeff Caplan

Colloquium and Sigma Series Lectures

Crow On Magnets And 'Floating Frogs'

Jack Emerson Crow will present a Colloquium and Sigma Series Lecture entitled, "Magnet Science and Technology: From Quantum Wells to Floating Frogs," at 2 p.m. May 2 in the H.J.E. Reid Conference Center and at 7:30 p.m. May 2 in the Virginia Air and Space Center.



Crow

Abstract

Magnetism has fascinated man since lodestones were discovered thousands of years ago. The association of magnetism and electricity led to early studies of both in the 17th century, and these subjects continue to capture the interest of researchers today.

Magnets and magnetism are a central aspect of many of today's technologies, including motors and generators, medical diagnostic tools and data storage. In the future, magnets may be the guideways for high-speed trains.

Quantum wells are highly conductive "electron gas" regions at the interface between two semiconductors. Research on quantum wells in a magnetic field has produced new states of matter, resulting in two Nobel prizes.

Magnets can be used to float biological materials, such as a frog, in a weightless state on earth.

Crow's lecture will present the history of magnetism with a focus on its application to science and technology.

Speaker

Crow is the director of the National High Magnetic Field Laboratory (NHMFL) and a professor of physics at Florida State University.

He received his doctorate in physics in 1967 from the University of Rochester. His research focuses on magnetism, superconductivity and magnet-related technologies.

Crow spent six years at the Brookhaven National Laboratory and 16 years at Temple University as the director of the National Science Foundation's Center for Materials Research and of the Ben Franklin Superconductivity Center.

Crow is a member of the U.S. Department of Energy's Basic Energy Sciences Advisory Committee and is also on the board of editors for "Superconductivity Review."

Upcoming Lectures

■ **June 6:** Horst Simon on "The Future of Computers."

■ **July 11:** R. Brad Perry on "Airborne Information Lateral Spacing (AILS)."

■ **Sept. 12:** Bill Dana on "The Lifting Bodies."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Safety Concerns Can Be Reported Via The NSRS

By K.C. JOHNSON
Hernandez Engineering Inc.

The NASA Safety Reporting System (NSRS) is a confidential, voluntary and responsive reporting channel for NASA employees and contractors.

The NSRS provides timely notification to NASA safety officials concerning safety hazards affecting any NASA-related activity. Established by the NASA Administrator in 1987 after the Space Shuttle Challenger mishap, the NSRS has since supported all flights and has been expanded to cover all NASA operations.

The NSRS supplements standard safety reporting channels. All Langley Research Center employees are encouraged to use the reporting mechanisms available at the Center, which are to report safety concerns to your supervisor or the Office of Safety and Facility Assurance.

If no action is taken on a reported concern, if an employee is dissatisfied with the action taken by the Center or if the fear of reprisal prevents and employee from using the standard reporting channels, the safety concern should be reported via the NSRS.

Report any concern that affects the safety of personnel, an Agency mission or an Agency operation. Reports may be submitted by completing a standard reporting form and forwarding it to an independent NSRS contractor analyst.

Pre-addressed, postage-paid NSRS forms are available in the Langley cafeteria, or an electronic version of the form can be downloaded from the NSRS Web page at <http://www.hq.nasa.gov/nsrs>.

The NSRS form is received by Research Planning, Inc. (RPI) in Falls Church, who, under contract to NASA Headquarters, administers the NSRS for the NASA Safety and Risk Management Division (SRMD) of the Office of Safety and Mission Assurance.

The NSRS analyst receives, analyzes and forwards the safety concern to the appropriate NASA office for response. The RPI NSRS Team summarizes the reported concern, removes all means of identification to ensure anonymity of the submitting employee and forwards the report for investigation to the NSRS Chairperson.

The NSRS Chairman then assigns an action to the appropriate Center organization for resolution and response. Upon completion of the action, the Center provides the NSRS Chairperson and the SRMD Director with the response and corrective action taken. The Chairperson and Director will either agree with the action or elevate it to the level required to resolve the matter.

To receive more information on the NSRS, call Janet Edmondson at Langley at ext. 49225 or contact NSRS Chairperson Bill Comer. Comer can be reached at NASA Headquarters, Office of Safety and Mission Assurance, Code QS, 300 E St., SW, Washington, D.C. 20546-0001, (202) 358-0590 or <bill.comer@hq.nasa.gov>.

The NSRS Project Manager can be reached at NASA Safety Reporting System, P.O. Box 6037, Falls Church, Va. 22040-9824, (703) 237-8083.

LAA Briefs

The Langley Activities Association (LAA) will host an **Easter Egg Hunt** for NASA employees and contractors and their families from 2 to 4 p.m. April 22 at the H.J.E. Reid Conference Center and picnic grounds. The event will take place rain or shine.

To make reservations, call ext. 46369.

The LAA will host a **Country Western Dance** on April 29 in the H.J.E. Reid Conference Center. Doors will open at 6:15 p.m., lessons will begin at 7 p.m., and the dance will begin at 8 p.m. Admission is $4. Participants must be at least 16 years old. For more information, call ext. 46369.

The **NASA Basketball Association** (NBA) recently crowned its 2000 league champions. TNT beat No Limit 49-31 to win the A-League championship, and JIAFS beat The Ballers 46-32 to win the C-League championship.

For final league stats, visit the NBA Web page at <http://larc-exchange.larc.nasa.gov/laa/bball/>.

The **Langley Runners' Club** will participate in the following NASA Intercenter Competition races this spring: 10K on May 1, and two-mile on April 26 and May 4. All races start at 5 p.m. on Doolittle Road at the H.J.E. Reid Conference Center parking lot.

The Intercenter Competition is held each spring and fall among the NASA Centers. All Langley employees, retirees and on- or near-site contractors earn points for the Langley team by participating. Runners, joggers and walkers are welcome.

For more information, contact Richard Shearer at ext. 47036, or visit the Langley Runners' Club Web site at <http://larc-exchange.larc.nasa.gov/laa/runners>.

The **LAA Softball League** preseason is already under way. Stop by the ball fields behind the LAA Gym after work to support your favorite teams. An outdoor beverage service will soon be available behind the gym for all outdoor sports.

Langley Basks In Sun 'n Fun

EAA Fly-In Attracts More Than 150,000 Pilots and Enthusiasts

By DONNA G. ROPER
Office of Public Services

Langley Research Center touted its aerospace work at the the 26th annual Experimental Aircraft Association Fly-In. The event, also known as Sun 'n Fun, took place from April 9-15 in Lakeland, Fla., and attracted more than 150,000 people.

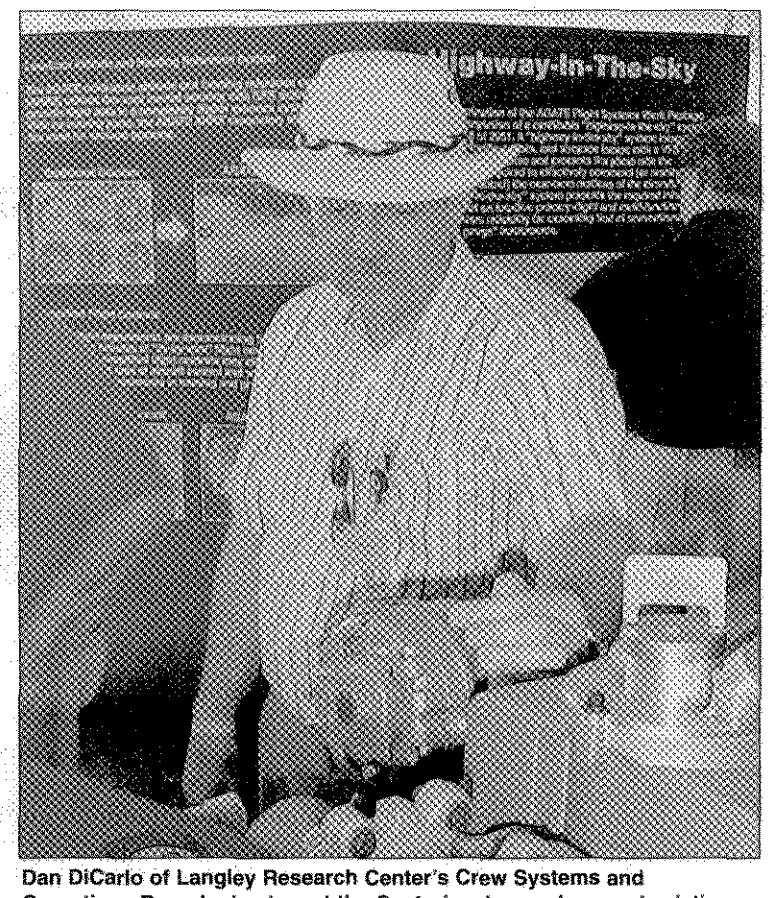
"We view NASA as a national resource and are very pleased to have NASA be part of the Sun 'n Fun EAA Fly-In and Convention, which we consider to have national and international significance," said John Burton, executive director of Sun 'n Fun.

The NASA tent included:

- a 757 cockpit mockup showing footage from recent flight tests of the Synthetic Vision system being developed at Langley;
- panels and a short video highlighting the Advanced General Aviation Transport Experiments (AGATE) program and the Small Aircraft Transportation System (SATS);
- a 14-foot tall Stoddard-Hamilton wing showing how Langley researchers are working to address in-flight icing conditions;
- an interactive wind tunnel display highlighting next-generation design tools developed at Langley; and
- an X-plane exhibit highlighting experimental flight testing.

Langley researchers also presented technical forums throughout the week on general aviation, Hyper-X and the Agency's educational opportunities.

The Sun 'n Fun airshow and convention is the second largest event of its kind in the world.



Dan DiCarlo of Langley Research Center's Crew Systems and Operations Branch checks out the Center's advanced general aviation engine concept at Sun 'n Fun.

Photo by Keith Henry

NASA Establishes Trust Fund Policy

By MEGHAN WOODCOCK
Assistant Researcher News Editor

A new NASA Policy Directive (NPD) has approved the release of more than $640,000 in the Agency's Gifts and Donations Trust Fund.

NPD 1210.1E approves the release of the funds to winning proposals in amounts up to $25,000.

The Gifts and Donations Trust Fund is made up of unsolicited cash donations from the public. Previously, there was no policy regarding the acceptance and use of gifts and donations by the Agency's Centers.

NPD 1210.1E states that NASA may accept and utilize monetary gifts, donations or bequests given as cash, check or money order provided they are unsolicited and offered without conditions on their use.

NASA Center Directors must promptly forward all gifts or donations to the NASA Chief Financial Officer (CFO) for deposit in the monetary gifts, donations and bequests account.

In preparing a proposal for use of these funds, a Center organization should include a description of the proposed project including the project's benefits, a proposed schedule, the amount of funds needed and the personnel involved. The proposed project should have duration of one year or less.

Proposals should be reviewed and approved on the Center level by the CFO, the Office of Chief Counsel, the Technical Director and finally, the Center Director. Written proposals should then be submitted to the NASA CFO.

The NASA CFO will be responsible for acknowledgement of the gift to the donor, approval or denial of all written proposals and compliance.

The CFO also will be responsible for coordinating proposals and obtaining their review by the Director, Financial Management Division, the Office of the General Counsel, the Strategic Enterprises and other appropriate Headquarters' offices.

NPD 1210.1E is available on the Internet at <http://nodis.gsfc.nasa.gov/Library/Directives/NASA-WIDE/Policies/Organization_and_Administration/N_PD_1210_1E.html. NASA>.

For more information, contact David Havrilla in NASA's Financial Management Division at (202) 358-2482.

Disability: It Can Happen To Anyone

By GERRI RANKIN
Office of Equal Opportunity

Creating an awareness of issues faced by employees with special limitations can be an especially challenging endeavor.

When training isn't enough — even mandatory training — what does one do?

We in the Office of Equal Opportunity train ourselves to watch and listen …

- *"No, Mr. Middle Manager, you don't refer to your employee who uses crutches as 'that crippled guy.'"*
- *"Ms. Immediate Supervisor, please understand that mental impairments and psychological disorders are disabilities just like any other. They must be accommodated."*
- *"Be careful, co-worker. If you park your car too far over the sidewalk, wheelchair user may have to double back to get to his desired destination."*

We go to workshops, seminars, conferences and symposia to analyze these behaviors. Ideas are discussed and cataloged, and new strategies are developed. Our enthusiasm gets inflated, and we are ready to return, but to what?

- *"Well, I would hire …"*
- *"Maybe next year I'll consider …"*
- *"But I don't know how to talk to those people."*
- *"Isn't that applicant retarded?"*

What else can be done? There is nothing left, except despair.

A population of 57 million people still waits and waits for behaviors to change, attitudes to be adjusted.

Unlike the other of society's minority population, one can never expect to become a member. But, riding down the interstate, you're observing the speed limit, fully focused, not a care in the world. Suddenly out of nowhere — a drunk driver!

The gene pool in your family lineage gone awry …

"I'm sorry to have to tell you this, but you have …"

And there you are …

"I wish that person would not use the stall designated for disabled. That parking space he parked in is the last one, he's not disabled! Now I can't go in the pharmacy until the rain stops."

AdVentures

CLASSIFIED

MOVING SALE: 8 a.m. to 4 p.m. April 22. 925 Glenrock Drive, Hampton (across from Lindsay Middle School). Wide variety of items. Call 826-1862.

FOR SALE: 1991 Mazda MPV, silver blue, one owner, A1 condition, 104,000 miles, $4,900. Call 596-4742.

FOR SALE: Black Hills gold wedding band set ... engagement ring with with one large diamond and two small inlayed diamonds; bride's band with two inlayed diamonds; groom's band. $500. Call 826-1862.

FOR SALE: One full/twin-size black futon with bottom full-size mattress, $100. One full/twin-size bunk bed, $100. One glass dining room table with chairs, $50. Call 876-1284.

FOR SALE: 50 gallon fish tank, comes with stand and lights, $75 or best offer. Call 867-7591.

FOR SALE: Loveseat, very good condition, brown, gold, rust and black in color, ideal for the traditional decor, $50. Call 865-1211.

The deadline for the May 5 edition of the Researcher News *is April 24. Send submissions to <j.r.roberts@larc.nasa.gov>.*

FWPC Hosting 'Salute To Secretaries'

Langley Research Center's Federal Women's Program Committee (FWPC) will sponsor two programs as part of the Center's "Salute to Secretaries" in April:

- A "Design Your Destiny" seminar by Lee Milteer, a professional speaker from Virginia Beach — will be held from 1 to 2:30 p.m. April 25 in the H.J.E. Reid Conference Center. Use the training J.O. B1005.
- A "Financial Planning Workshop" featuring Sherrie Hurst, an American Express financial planner, will take place from 2 to 3:30 p.m. April 26 in the H.J.E. Reid Conference Center. Use FWPC J.O. B1011.

A formal letter of invitation has been sent to all contractor and civil servant secretaries. For more information, contact Patsy Campbell at ext. 43291.

Alumni Association Meets May 9

The NACA/NASA Alumni Association will meet at 11:30 a.m. May 9 in the private dining room of the Langley Research Center cafeteria. Kevin Fleming of the United Way will deliver the program, "10 Ways to Make Life More Interesting." Details of the June 13 Tangier Island trip also will be discussed.

Safety Course Offered On May 10

Langley Research Center's Office of Safety and Mission Assurance will host a safety course entitled, "Protection," from 8 a.m. to 4:30 p.m. May 10 and 11 in Bldg. 1224T7.

The course establishes an understanding of NASA and OSHA requirements for fall protection and knowledge of systems which can satisfy those requirements. The class will familiarize participants with hardware, procedures and techniques for those who use fall arrest systems.

For more information about the course, call Grant Watson at ext. 43069. To register, send an Application For On-Site Training (NASA Langley Form 24) to DeAnna Lawrence at Mail Stop 309 or fax it to ext. 48543.

AIAA Nominations Due

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for Fellows.

Nomination forms for Fellows are due by **June 15**; references from five AIAA Associate Fellows are due by **May 15**.

Upgrade forms are available on AIAA's Web site at <http://www.aiaa.org/information/professional/upgrades-pdf.html>.

For more information, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

Library Holding Lost Book

Langley Research Center's Technical Library is holding a book that was inadvertently left there. The book is U. Schendel's "Introduction to Numerical Methods for Parallel Computers." The only identifying marks are two handwritten labels on the spine: One is oval-shaped, with the number 612; below that is a rectangle with the capital letter I.

To claim the book, contact Kenneth Carroll at ext. 45079 or <k.g.carroll@larc.nasa.gov> by May 5.

Bridge Club Game Results

The results of the Langley Duplicate Bridge Club's April 12 game were: first place, Marty and Geoff Tennille; second place, Sumi and Ram Prabhu; and third place, John Ferrainolo and S.N.Sankaran.

The club's next game will take place at 5:30 p.m. May 10 in the Langley Room of the H.J.E. Reid Conference Center. For more information, call Marty or Geoff Tennille at 850-1532.

Photo Lab Ends Slide Service

Due to declining production requirements, Langley Research Center's Photo Lab will no longer provide 35mm slide services, effective June 1. E-6 film processing and slides from prints can be purchased from commercial photo labs using a government credit card. For more information, call Rick Hoff at ext. 47939.

Busch Gardens Tickets Available

The Exchange Shop is now selling tickets to Busch Gardens Williamsburg, which opened for 2000 on March 25. New this season is Jack Hanna's Wild Reserve, a new habitat offering up-close encounters with gray wolves, exotic lorikeets and other fascinating animals.

Adult tickets are available for $31, a savings of $6, and children's tickets are available for $24.75, a savings of $5.25. For more information, call ext. 41585 or 47918.

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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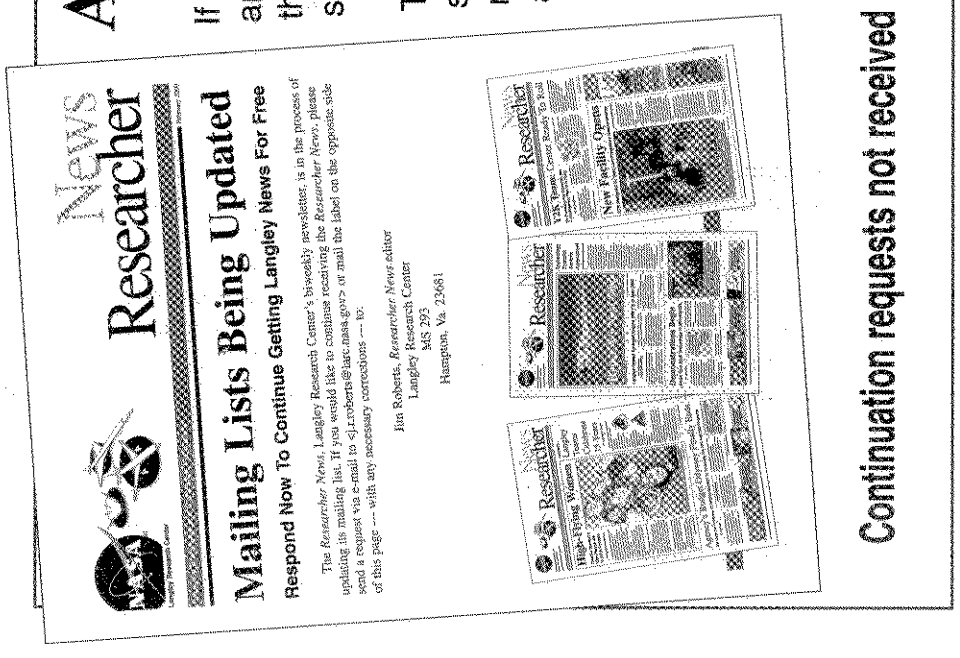
News Researcher



News Researcher

Mailing Lists Being Updated

Respond Now To Continue Getting Langley News For Free

The *Researcher News*, Langley Research Center's biweekly newsletter, is in the process of updating its mailing list. If you would like to continue receiving the *Researcher News*, please send a request via e-mail to <j.r.roberts@larc.nasa.gov> or mail the label on the opposite side of this page — with any necessary corrections — to:

Jim Roberts, *Researcher News* editor
Langley Research Center
MS 293
Hampton, Va. 23681

Attention, Subscribers!

If the first the first two digits on your mailing label are 26 and you did not receive **and** respond to the recent subscription continuation flyer, your subscription is in danger of being terminated.

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Hampton, Va. 23681

Continuation requests not received by May 15 will be deleted from the mailing list.

National Aeronautics and Space Administration
Langley Research Center

Langley News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 9 ❖ May 5, 2000

Terra ... 'Open For Business'

The Clouds and the Earth's Radiant Energy System (CERES) experiment aboard Terra consists of a broadband scanning thermistor bolometer package with extremely high radiometric measurement precision and accuracy. The CERES instrument is managed by Langley Research Center.

Animation still courtesy of Goddard Space Flight Center

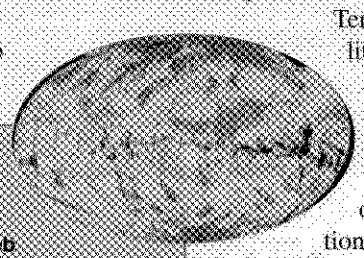
The Mission Provides Daily 'Health' Updates For Earth

By DAVID E. STEITZ
NASA Headquarters

and ALLEN KENITZER
Goddard Space Flight Center

After a picture-perfect launch into space last December, Terra, NASA's premier Earth Observing System (EOS) satellite, has completed on-orbit checkout and verification and is "open for business."

Terra, an international mission and part of NASA's Earth Sciences Enterprise, is opening a new window to the Earth and is providing daily information on the health of the planet. First images from the five instruments aboard Terra were presented during a press briefing on April 19 at NASA Headquarters.



This and other Terra images can be found on the Web at <http://terra.nasa.gov/Gallery/browse.php3>.

Terra is the first satellite to monitor daily — and on a global scale — how the Earth's atmosphere, lands, oceans, solar radiation and life influence each other. Terra's wide array of measurements will give a comprehensive evaluation of the Earth as a system and will establish a new basis for long-term monitoring

Continued on Page 3

Langley's Role ...

Langley Research Center manages the Clouds and the Earth's Radiant Energy System (CERES) instrument, one of five instruments aboard Terra. The team leader is Bruce Barkstrom.

The CERES instrument, which was built by TRW in Redondo Beach, Calif., consists of a broadband scanning thermistor bolometer package with extremely high radiometric measurement precision and accuracy.

The Terra spacecraft carries two identical instruments: one operates in a cross-track scan mode and the other in a biaxial scan mode.

The CERES Terra cross-track scanning data greatly extends the CERES data from the Tropical Rainfall Measuring Mission (TRMM). It adds mid-latitude and polar observations to achieve complete global measurement. TRMM data is restricted by its orbit to roughly cover 40S to 40N. Terra crosstrack data also adds observations

Continued on Page 3

Engineering Feats

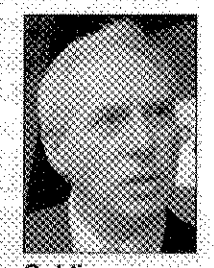
NAE Picks Top 20

Dan Goldin Served On Selection Committee; Neil Armstrong Made The Announcement

The National Academy of Engineering (NAE) recently announced its list of the 20 engineering achievements that have had the greatest impact on quality of life in the 20th century.

Electrification tops the list, which also includes airplane (No. 3), computers (No. 8), space exploration, (No. 12) and high-performance materials (No. 20).

The achievements — nominated by 29 professional engineering societies — were selected and ranked by a distinguished panel of the nation's top engineers, including NASA Administrator Daniel S. Goldin. The committee — chaired by H. Guyford Stever, former director of the National Science Foundation and Science Advisor to the President — worked in anonymity to ensure the unbiased nature of its deliberations.



Goldin

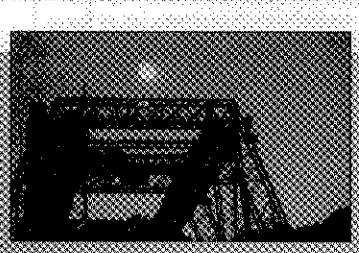
"As we look at engineering breakthroughs selected by the National Academy of Engineering, we can see that if any one of them were removed, our world would be a very different and much less hospitable place," said Neil Armstrong, who made the announcement on behalf of the NAE.

"Almost every part of our lives underwent profound changes during the past 100 years ... changes impossible to

Continued on Page 3

Inside This Issue:

Levine Honored For Her Service To Girl Scouts — Page 2



Test Facility Provides Perfect Setting For Planetary Conjunction — Page 4

News Briefs

Around the Agency

NASA INVESTIGATING FUNGI'S EFFECT ON FORESTS

Tiny fungi that make forests possible are significantly affected by clear-cutting tree stands, perhaps altering forests and plant types that re-grow, according to a recent paper in the Canadian Journal of Botany.

The paper reports on ecological fungi research by NASA at Yellowstone National Park, where scientists used a police technique, "DNA finger printing," to investigate biodiversity and the importance of human changes to ecosystems. An ecosystem is the combination of living things and raw materials, such as water, gases and minerals, that life uses in the environment. Clear-cutting refers to the practice of cutting a stand of trees in its entirety. RELEASE 00-32AR

LANDSAT 7 CELEBRATES FIRST BIRTHDAY

A year after its April 1999 launch, Landsat 7 continues to serve a wide variety of "Earth customers" with its spectacular data. Since being declared operational last July, Landsat 7 has gathered more than 90,000 images, covering most of the Earth's surface multiple times in stunning detail.

Landsat 7 is the latest in a continuous series of Earth observation satellites that began with Landsat 1 in 1972. Unlike its predecessors, Landsat 7 can create global maps of the Earth in record time due to technology advances developed by NASA.

More information on Landsat 7 can be found on the Internet at <http://landsat.gsfc.nasa.gov/> and <http://landsat7.usgs.gov/>. RELEASE: 00-64

NASA TECHNOLOGY STRIPS SHIPS OF PAINT

A new robotic device that safely strips paint from the hulls of ships without polluting the environment is based on NASA robotics technology.

Developed by NASA's Jet Propulsion Laboratory, the Robotics Engineering Consortium at Carnegie Mellon University, and UltraStrip Systems, Inc., the new system consists of an automated robotic device that is magnetized to the ship, a set of high-pressure jet streams and a controller that helps the robot navigate along the surface of the ship. The water is filtered and then reused, while the paint residue is collected in a container and can then be disposed of safely. Using this method, no toxic dust or paint flakes are generated to pollute nearby areas or to be inhaled by system operators. RELEASE: 00-61

NASA DEVELOPS A DRILL FOR THE FUTURE

It's an invention that may eventually end up in the hands of every craftsman and orthopedic surgeon.

Scientists at NASA's Jet Propulsion Laboratory, together with engineers from Cybersonics, Inc., have developed an ultrasonic device that can drill and core very hard rocks and also has medical applications.

Potential medical uses include extracting pacemaker leads and the drilling necessary during surgical or diagnostic procedures involving the human skeletal structure. Future space missions could include drilling for samples using lightweight landers with robotic arms and small rovers that roam the surface of an asteroid or planet.

Further information about the ultrasonic drill and other nondestructive evaluation and advanced actuator technologies is available on the Internet at <http://ndeaa.jpl.nasa.gov>. RELEASE: 00-60

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115; (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Levine Honored By Girl Scouts

Langley Research Center's **Arlene S. Levine** received the 1999 Community Award for service to the Girl Scouts of America at the annual meeting of Girl Scout Council of Colonial Coast on April 15.

Levine, the manager for outreach and education in Langley's Atmospheric Sciences Competency, was recognized for designing and running a series of workshops designed to trigger girls' interest in the Earth sciences.

The series included five workshops, each covering a different component of the Earth system: atmosphere, oceans, land, life and the interactions between the components.

Each workshop consisted of a lecture and a series of demonstrations and experiments designed to illustrate the material presented during the lecture. The lectures were presented by researchers from Langley's Atmospheric Sciences Competency, NASA Headquarters, the College of William and Mary and the Virginia Institute of Marine Sciences (VIMS). Demonstrations were developed and presented by educators from the Virginia Air and Space Center and VIMS.

Denise Frey, left, and Patricia Couser, right, present Arlene S. Levine with the 1999 Community Award for service to the Girl Scouts at the annual meeting of Girl Scout Council of Colonial Coast on April 15.

Photo courtesy of Arlene S. Levine

Retirements

Langley Research Center's Facilities Engineering Branch will host a retirement cookout honoring **Johnny Allred, Bob Faison, Bobby Graham, Carl Horne** and **John Nayadley** from 5 to 9 p.m. May 11 in the picnic area adjacent to the H.J.E. Reid Conference Center.

The cost is $5 per person (no charge for children under 6). Gift donations will be collected separately. For more information, call Keith Knight at ext. 47275, Mike Mastaler at ext. 46931 or Chuck Niles at ext. 46979.

RSVP to Maxie Herrera at ext. 43575 or Patti Davis at ext. 44724.

❖ ❖ ❖

Langley Research Center's Advanced Measurement Diagnostics Branch will host a retirement party for **Carol H. Satterwhite** at 6:30 p.m. June 2 in the main auditorium of the H.J.E. Reid Conference Center.

A cost of $15 per person will cover gift and heavy hors d'oeuvres. RSVP with payment by May 22 to Maxie Herrera at ext. 43575 or Patti Davis at ext. 44724.

Letters

"I want to thank everyone who helped make my transition into retirement a pleasant one. I especially appreciate all of you who took the time to stop by to say good-bye, send a note or come to my retirement luncheon. And the gifts are greatly appreciated ... I was truly overwhelmed! I treasure the time I was able to spend with you during my career at NASA. Thank you again so much for everything ... I miss you all."

Elizabeth F. Buchan

"To all my friends in the former Acquisition Division, a very big thank you for the many thoughtful cards, notes and the beautiful bouquet of flowers. You have a way of perking my days upward, and I do appreciate having you all keeping in touch. God bless."

Patricia Turgeon

In Memoriam

Joy W. Italiano

Joy W. Italiano died on April 20 at the age of 58. Italiano, a native of Rocky Mount, N.C., retired from NASA as a technician after 26 years of service.

Dale A. Babcock

Dale A. Babcock died on April 5 at the age of 48. Babcock, a native of Charlotte, N.C., was an active employee in Langley Research Center's Systems Engineering Competency, where he had worked as a mechanical engineer since 1986.

Babcock was the author/co-author of several technical papers and was recognized for his expertise in process systems controls modeling and combustion processes.

"Dale was a team player who saw the good in tough situations when others struggled to do so," said James Mayhew, assistant head of the Process Systems Branch. "Dale was beloved by his co-workers, and his devotion to family, commitment to community, ever-present smile and kind words serve as an inspiration to all fortunate enough to have known him."

Edgar D. Freeman

Edgar Daniel Freeman died on April 13 at the age of 74. Freeman, a native of Poquoson, served in the Army Air Corps during World War II and went on to work at Langley Research Center as an electronics technician. He retired from NASA in 1980.

A.F. August Hummel III

A. Frank August Hummel III died on April 17 at the age of 75. Hummel, a native of Winona, W.Va., served in the U.S. Air Force and was a veteran of World War II, Korea and Vietnam. He retired as a Chief Master Sergeant in 1970 after 30 years of distinguished service and went on to work as a contract manager for NASA.

Roger J. Malloy

Roger James Malloy died on April 14 at the age of 56. Malloy, a native of Cambridge, Mass., worked for the Hampton Division of Wyle Laboratories for 24 years in support of NASA service contracts.

Malachi McCormick

Malachi McCormick died on April 11 at the age of 69. McCormick, a native of Lakeland, Fla., served in the U.S. Air Force and retired as a master sergeant in 1971. He went on to work as a security guard at Langley Research Center and Langley Air Force Base.

Boeing Will Host Tech Expo

By BEVERLY WEISS
Boeing Phantom Works

Boeing Phantom Works will host a Technology Exposition and Exchange from 8 a.m. to 4 p.m. May 16 and 17 in Langley Research Center's H.J.E. Reid Conference Center.

The theme for the event is "Partnering for the Future." It is designed to exchange partnership ideas with government employees about technologies and systems of the future.

Phantom Works will display scale models, demonstrations and wall posters of advanced technologies, processes and systems that offer greater affordability, quality and performance for current and future products.

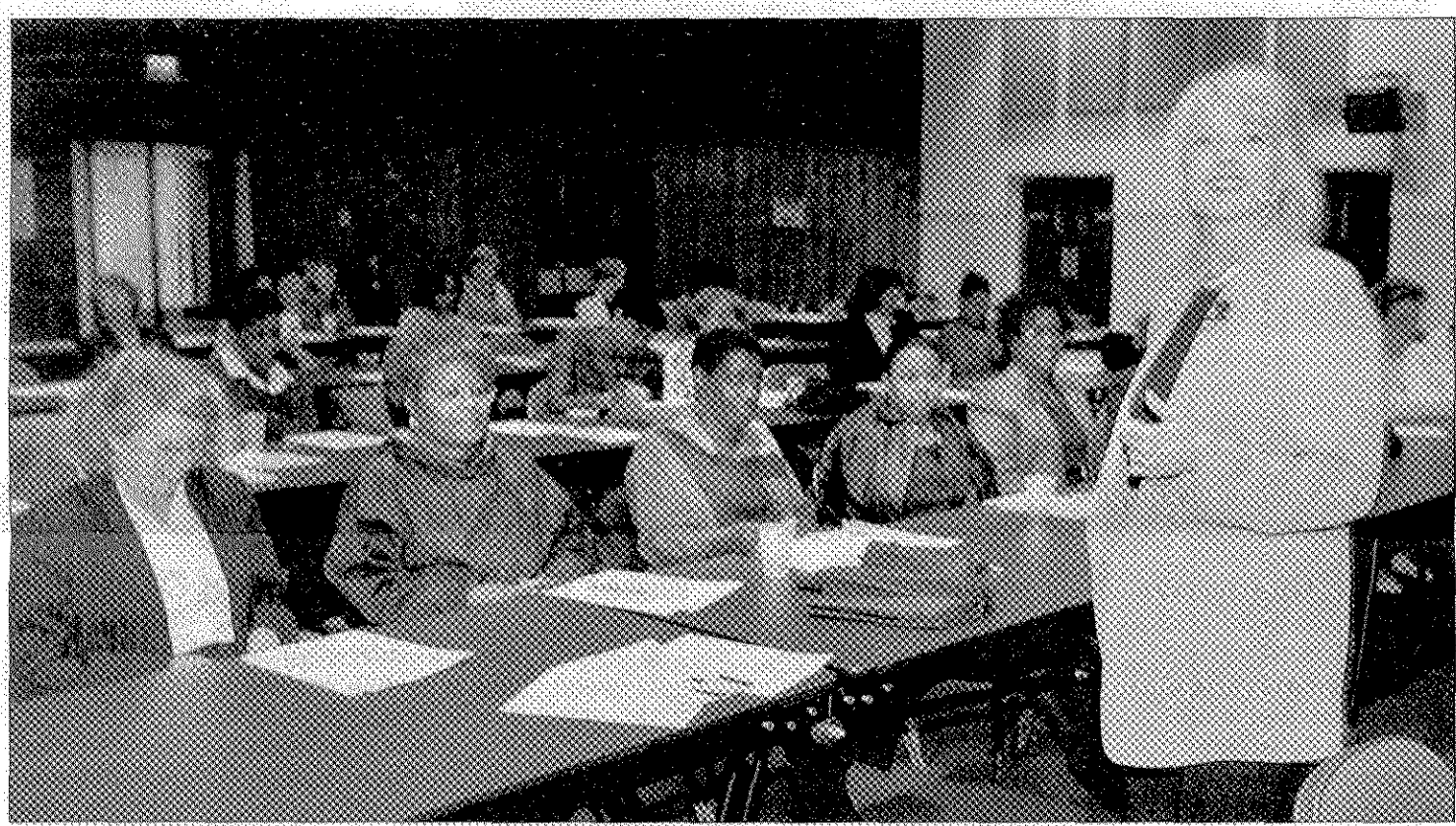
Highlights will include 3-D modeling and simulation processes, structures and vehicle configuration technologies, open systems architectures, advanced manufacturing and prototyping techniques, a laptop portable aviation all-weather system and advanced systems such as hypersonic/space transportation vehicles, blended wing-body aircraft, advanced theater transport and a canard rotor/wing concept.

The Tech Expo will be open to all U.S. government military and U.S. civil service personnel. A valid U.S. government photo ID badge must be presented for admission to the exhibit.

The Technology Exposition and Exchange is part of a series being conducted at customer installations across the country.

For more information about the Tech Expo, call Boeing's Hampton office at 896-1100.

Motivating Langley's Administrative Professionals



Lee Milteer, right, a nationally recognized motivational speaker from Virginia Beach, visited Langley Research Center on April 25 to present a "Design Your Destiny" seminar. The event, which took place in the H.J.E. Reid Conference Center and attracted more than 45 administrative professionals, was one of several activities sponsored by Langley's Federal Women's Program Committee (FWPC) as part of its month-long "Salute To Secretaries."

Photo by Jeff Caplan

Top 20

Continued from Page 1

imagine a century ago," Armstrong said. "People living in the early 1900s would be amazed at the advancements wrought by engineers. ... As someone who has experienced firsthand one of engineering's most incredible advancements — space exploration — I have no doubt that the next 100 years will be even more amazing."

The NAE notes that the top achievement, electrification, powers almost every pursuit and enterprise in modern society. It has literally lighted the world and impacted countless areas of daily life, including food production and processing, air conditioning and heating, refrigeration, entertainment, transportation, communication, health care and computers.

Referring to achievements that may escape notice by most of the general public, NAE President Wm. A. Wulf said, "Engineering is all around us, so people often take it for granted, like air and water. Ask yourself, what do I touch that is not engineered? Engineering develops and delivers consumer goods, builds the networks of highways, air and rail travel, and the Internet, mass produces antibiotics, creates artificial heart valves, builds lasers, and offers such wonders as imaging technology and conveniences like microwave ovens and compact discs. In short, engineers make our quality of life possible."

The National Academy of Engineering's list of the 20 engineering achievements that have had the greatest impact on quality of life in the 20th century:

1. Electrification
2. Automobile
3. Airplane
4. Safe and Abundant Water
5. Electronics
6. Radio and Television
7. Agricultural Mechanization
8. Computers
9. Telephone
10. Air Conditioning and Refrigeration
11. Interstate Highways
12. Space Exploration
13. Internet
14. Imaging Technologies
15. Household Appliances
16. Health Technologies
17. Petroleum and Gas Technologies
18. Laser and Fiber Optics
19. Nuclear Technologies
20. High-Performance Materials

Terra

Continued from Page 1

of the Earth's climate changes.

"Terra is measuring and documenting the Earth's vital signs, many of them for the first time," said Yoram Kaufman, Terra Project Scientist at Goddard Space Flight Center. "Like our taking vital signs to check the state of our own health, these data will help us diagnose several key aspects of the Earth's health.

"The data will help us understand our planet, aid in our distinguishing between natural and human-induced changes, and show us how the Earth's climate affects the quality of our lives."

NASA scientists revealed several stunning images from individual Terra sensors of the North American continent shown in many different layers. Images included global surface temperatures and "spring greening." Other first images range from the Indian sub-continent — showing relationships among population concentrations, air pollution and vegetation — to concentrations of carbon monoxide in the lower atmosphere.

"Terra data, along with other measurements from surface-based and aircraft instruments, provide much-needed inputs for Earth science models," Kaufman concluded. "This ultimately will enable scientists to more accurately predict future climate change."

Many scientists believe that to successfully build predictive computer models of complex Earth interactions they must clearly understand global climatic processes and parameters. The Terra team estimates that the scientific community will complete the first Earth-system models making full use of Terra data by 2005.

The EOS series spacecraft are the cornerstone of NASA's Earth Science Enterprise, a long-term coordinated research effort to study the Earth as a global system and the effects of natural and human-induced changes on the global environment. Terra will use its position in space to observe the Earth's continents, oceans and atmosphere with unprecedented measurement accuracy and capability. This approach enables scientists to study the interactions among these three components of the Earth system, which determine the cycling of water and nutrients on Earth.

NASA plans to encourage widespread use of Terra information to allow citizens, businesses and governments to make more informed decisions on national issues affecting every American — health and safety, economic well-being and quality of life.

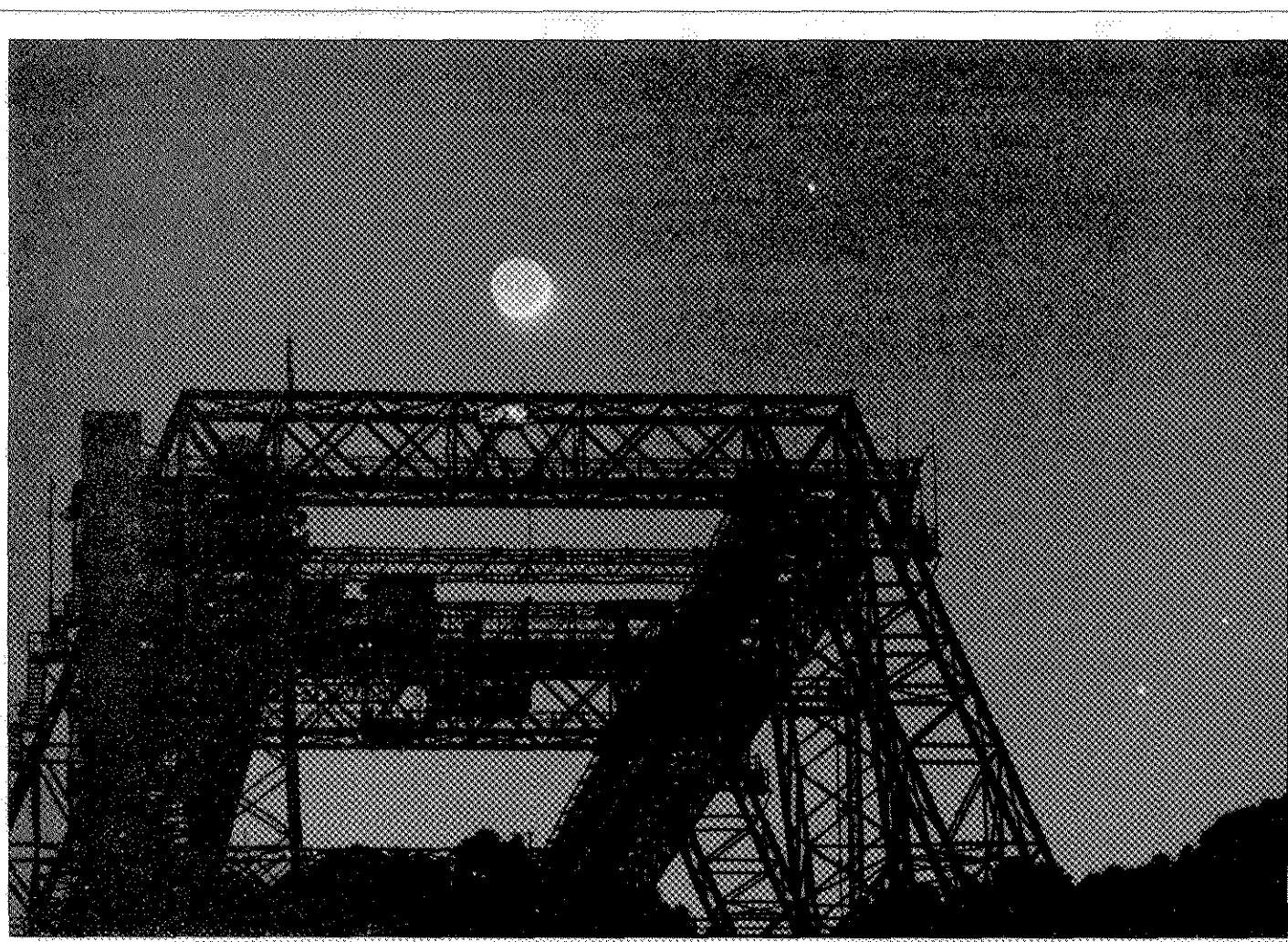
The Earth Science Enterprise goal is to expand knowledge of the Earth system. Earth Science Enterprise data, which will be distributed to researchers worldwide at the cost of reproduction, are critical to informed environmental decisions.

Continued from Page 1

at different times of day than TRMM (and later Aqua) in order to increase the accuracy of measuring the large diurnal cycle of the radiation fields from day to night.

The CERES Terra biaxial scan mode provides new observations of the angular radiation fields in order to greatly improve the accuracy of the final fluxes of solar and thermal energy used to derive the Earth's radiation balance.

For more information, visit the CERES Web Page at <http://asd-www.larc.nasa.gov/ceres/ASDceres.html>.



Astral Wonder

Soon after sunset on the evening of April 6, the skies presented a fine conjunction of the moon, Saturn, Jupiter and Mars, with all of the astral objects appearing in the western sky within a circle of just nine degrees. An appropriate foreground setting for the planetary gathering was Langley Research Center's Impact Dynamics Research Facility, which was used in the 1960s to train the Apollo astronauts for the moon landings.

This picture shows the Impact Dynamics Research Facility in the lower left center with the crescent moon just above. Above and to the right of the moon is Saturn. Jupiter is the bright "star" in the bottom right corner, and Mars is located just to the right and above Jupiter and near the edge of the print.

The photograph was taken with a Minolta SRT 201 and a Vivitar zoom lens set at a focal length of 135 mm and a focal ratio of 5.6. The exposure was 1 second in duration and was taken at 8:15 p.m. using Mystic ASA 200 print film.

Soon after this photograph was taken, an unusually bright red aurora made its appearance in the northern skies. A picture of that event appeared in the April 8 edition of the Daily Press.

Photo by Dave Kratz

Learn To Keep Langley's Water Clean

By CAROLINE DIEHL
SAIC

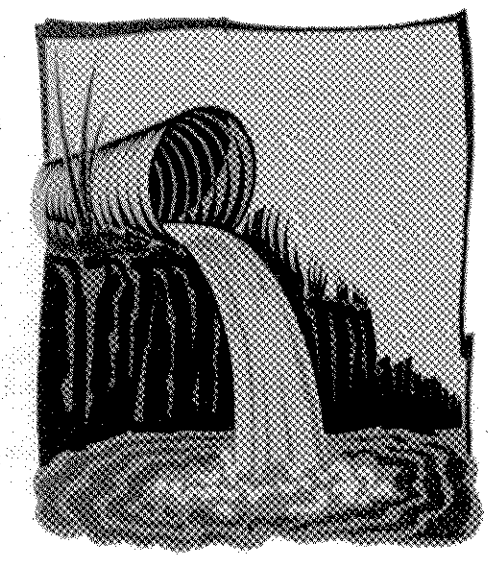
Imagine turning on a faucet to get a drink of water or going to the lake for a swim, only to find that the water is brown and yucky.

Many of us take for granted that our drinking water, ponds, lakes and rivers will be clean. We may not know about or appreciate the many systems, regulations and programs that are in place to keep our water clean. This article includes information about the water program at Langley Research Center and what you can do to ensure that we keep our waters clean.

The Clean Water Act (CWA) is the primary authority to restore and maintain the cleanliness of the nation's waters. Under the CWA, it is illegal for any person, including federal agencies, to discharge pollutants without a permit. State and local agencies are responsible for issuing the permits and conducting monitoring to ensure that water discharges comply with state and federal standards.

Langley operates under two permits that regulate the water that is discharged from the Center: the Hampton Roads Sanitation District (HRSD) Industrial Wastewater Discharge Permit and the Virginia Pollutant Discharge and Elimination System (VPDES) Permit. The Center received renewal of these two permits in the fall of 1999.

The HRSD permit regulates the water and waste that flows from sink drains, floor drains and toilets into the sanitary sewer system at Langley. Wastewater that goes into the sanitary sewer is treated by HRSD at the treatment plant and is then discharged into the James River. HRSD can more effectively treat the wastewater by limiting the amount of pollutants and by knowing what type of pollutants are in wastewater. The Center's HRSD permit requires that Langley obtain weekly samples of its discharge to ensure compliance with the permit limits.



The VPDES permit regulates point source water discharges to surface waters and wetlands. Point sources of water discharges at Langley include rainwater runoff from parking lots and roadways and any other "impervious surface" collected by storm drains, cooling tower and boiler blow-down water, car wash facility runoff and brine backwash from water softeners. Wastewater from these sources is not treated and is discharged directly to surface waters around Langley from 13 outfalls. The Center's VPDES permit requires Langley to conduct periodic sampling at each of these outfalls to ensure compliance with the permit limits.

Many activities at Langley may result in pollutants entering the wastewater stream, and failure to comply with the permit requirements can cause Langley to violate the permit. Violation can result in significant fines and penalties for Langley and/or individuals.

By following the "Water Discharge Do's and Don'ts" listed here, you can help reduce pollutants in Langley's wastewater and help to keep our waters clean.

For more information about clean water and wastewater discharge, call Jan Benson at ext. 43320 or visit one of the following Web sites:

- <http://www.epa.gov/OW/>
- <http://www.hrsd.state.va.us/>
- <http://www.deq.state.va.us/water/>.

Water Discharge Do's And Don'ts ...

- **DO** keep spills to a minimum and contain and clean up spills properly. Refer to the Spill Response Procedures in "LAPG 8800.1, Environmental Program Manual."
- **DO** contain, report and repair leaks immediately. Leaking fluids from machinery and vehicles create the potential for pollutants to be washed into drains.
- **DO** ensure that containment systems and collection pallets do not overflow or drain into floor, storm or sanitary sewer drains.
- **DO** minimize run-off and leakage from stored materials or empty containers by using good housekeeping practices.
- **DO** minimize outside storage of chemicals, oils and other materials that can come into contact with rain which will carry the pollutants into the storm drains. Where possible, store chemicals in covered areas where they will not come in direct contact with rainwater.
- **DO** use best management practices for sediment/erosion control during construction to prevent soil, sediment and debris from washing into storm drains.
- **DO** report spills and accidental discharges immediately to Langley's fire department and Environmental Management Office (EMO). Spills and accidental discharges can affect the status of the Center's wastewater permits.
- **DO** seek disposal alternatives from the EMO where discharge to surface water or sanitary sewer is not permissible.
- **DO** notify the EMO of any processes and/or materials that may change the quantity or components of wastewater. Changes to processes and materials can affect the status of Langley's wastewater permits.
- **DON'T** pour any chemical or substance (except water) down inside or outside drains. This includes oils, grease, antifreeze, paints, solvents, fuels, pesticides, herbicides and other hazardous chemicals.
- **DON'T** throw litter in the storm drains. Properly dispose of trash, cigarette butts, leaves and debris to prevent them from washing into the storm drains.
- **DON'T** assume materials are safe to be disposed of down the drain. If in doubt, call the EMO prior to discharging the material.
- **DON'T** store chemicals outside where they can come into contact with rainwater.

From The Virginia Air & Space Center ...

Plan Now For Summer Science Camp

The Virginia Air & Space Center, Langley Research Center's official visitor center, will offer 13 "Science Camps" for children between the ages of 5 and 14 this summer. Child care will be offered (for an additional fee) before and after all camps, and discounts are available for anyone who registers for two or more camps.

To register, call 727-0900 ext. 780 or visit <www.vasc.org/campregister.html> on the Internet.

Here are the camps being offered:

Jordan's IMAX Film Opens May 5

"Michael Jordan To The MAX," the new IMAX film featuring the basketball star who led the Chicago Bulls to six NBA championships, opens at the Virginia Air & Space Center on May 5.

Jordan said the film "celebrates some of the most triumphant moments of my career and has given me the opportunity to tell my story — not only as an athlete, but as an individual."

"Michael Jordan To The MAX" took two years to make and features a special effects sequence in which Jordan's trademark slam dunk is captured using the "bullet-time technology" developed for the Academy Award-winning movie "The Matrix."

Show times for "Michael Jordan To The MAX" are 2, 4 and 5 p.m. daily and 6:30 and 9:30 p.m. Thursday through Sunday. VASC also continues to show "Amazing Journeys" and "Wolves." Show times for "Amazing Journeys" are 10 a.m., noon and 3 p.m. daily; show times for "Wolves" are 11 a.m. and 1 p.m. daily. A double feature of "Michael Jordan To The MAX" and "Amazing Journeys" shows at 7:30 p.m. Thursday through Sunday. Show times listed are good through May 25.

For more information, call 727-0900.

■ Star Gazers

June 26-30, 9 a.m. to 3 p.m.
Ages 7-12
$120 non-members/$115 members
Includes one field trip

Find out what stars really are and how they are born, live and die. Hear ancient myths and legends that have been passed down for centuries. Meet an astronomer and experiment with different types of telescopes. Take a trip to the Virginia Living Museum's planetarium. Enjoy hands-on craft activities and spend a starlit evening gazing at the stars. Zoom through time and space with the IMAX film "Cosmic Voyage."

■ Cosmic Crafts

June 27-29, 9 a.m. to noon
Ages 5-7
$55 non-members/$50 members

Create astronaut puppets that will travel to the moon and collect moon rocks. Design a space shuttle for a cosmic mission. Take an imaginary trip to the planets by making a planetary mural and constructing a "pinhole planetarium." Explore the night sky and discover the pictures stars make. Use astronomy skills to identify constellations. Work in a team to produce and perform a mini-drama about the stars.

■ Earth Shakers

July 5-7, 9 a.m. to 3 p.m.
Ages 7-12
$75 non-members/$70 members
Includes one field trip

Get down to Earth and discover the mysterious forces that shape the planet. Discover the impact of meteors and asteroids on the Earth and then make an edible meteorite. Create an erupting volcano, weather satellite and terrarium. Visit the hands-on exhibit "Turbulent Landscapes" to experience the important role sandstorms, tornadoes and cloud formations play in Earth changes. Visit Mount Trashmore to see how man affects the Earth. See Earth from space with the IMAX film "Blue Planet."

■ Astronaut Me

July 5-7, 9 a.m. to noon
Ages 5-7
$65 non-members/$60 members
Includes a space toy kit

Find out what it is like to be an astronaut by exploring what it takes to live, work and play in outer space. Work with different space suits and discover why it is so important for astronauts to wear them. Design a space suit and space shuttle. Explore the International Space Station and see how astronauts are building it.

■ Can You Dig It?

July 10-12, 9 a.m. to noon
Ages 5 to 7
$65 non-members/$60 members
Includes one field trip

Find out how archaeologists dig to see how people lived a long time ago. Work with artifacts from different cultures and discover what they say about the past. Research how archaeologists take care of the artifacts they find. Become an archaeologist on a trip to the field for a practice dig. Travel to ancient Egypt to search for artifacts with the IMAX film "Mysteries of Egypt."

■ Older Than Dirt

July 10-14, 9 a.m. to 3 p.m.
Ages 8 to 14
$120 non-members/$115 members
Two field trips included

Find out why archaeologists dig junk from the ground and what kind of junk has been left in space. Explore techniques to excavate, describe and preserve artifacts. See how archaeologists can read dirt to map past landscapes. Explore hidden patterns in landscapes with the interactive "Turbulent Landscapes" exhibit. Examine artifacts from different cultures and time periods at the Hampton University Museum. Make artifacts and then go on a dig at an authentic Colonial site being excavated in Poquoson. Unlock the secrets of the ancient Egyptians with the IMAX film "Mysteries of Egypt."

■ Scream Machines

July 17-21, 9 a.m. to 3 p.m.
Ages 7 to 12
$120 non-members/$115 members
Includes one field trip

Investigate structures on Earth and in outer space. Design and build different types of structures from different kinds of environments and then test the structures for their breaking stress points. Understand the forces that make roller coasters "scream machines" by building a roller coaster and testing it. Experience the twists and turns of roller coasters and motion simulators with the IMAX film "Thrill Ride: The Science of Fun."

■ Astronaut Adventure: Blast Off!

July 24-28, 9 a.m. to 3 p.m.
Ages 7 to 12
$120 non-members/$115 members
Includes one field trip and a model rocket

Blast off into space to find out what it takes to put a space shuttle and the International Space Station into orbit. Test launch bottle rockets, paper rockets and balloon rockets. Build an Estes model rocket and then launch it at Langley Research Center. Take a tour of Langley to see where America's space program began. Work with experiments to see how NASA is researching the effects of the space environment on people and objects.

■ Astronaut Adventure: Robo-Power

July 31-Aug 4, 9 a.m. to 3 p.m.
Ages 7 to 12
$120 non-members/$115 members
Includes a robotics kit

Take an adventure into the world of atoms, energy and robotics. Perform hands-on experiments with electromagnets and explore light spectrums and sound energy. Discover computer-controlled robots and then work with robots that government agencies use to accomplish dangerous and difficult missions—on Earth and in outer space. Investigate how NASA is using robotics to explore outer space and inner space. Construct a computer-controlled robot. Travel into the future to see what it will be like to live and work in space with the IMAX film "L5: First City in Space."

■ Turbulent Planets

August 7-11, 9 a.m. to 3 p.m.
Ages 7-12
$120 non-members/$115 members
Includes two field trips

Find out about the turbulent forces that create and change the solid planets and moons in our solar system including those of Mars and Earth. See how NASA explores the moon and Mars, and then compare and contrast other planets to Earth. Find out what makes Earth unique. Take a field trip to the Virginia Marine Science Museum to see ocean habitats and then travel back in time by examining a fossil pit that was once an ocean. Visit the "Turbulent Landscapes" exhibit and see the IMAX films "Ring of Fire" and "Amazing Journeys."

■ Just Plane Fun

August 14-18, 9 a.m. to 3 p.m.
Ages 8 to 14
$130 non-members/$125 members
Includes two off-site field trips

Discover what it takes to fly while experimenting with lift, thrust and drag in the "Up, Up and Away" exhibit. Design a plane, check the weather, map a course and take a virtual cross-country flight in VASC's "AeroZone" aeronautics lab. Travel to Langley Research Center to work with aviation scientists and visit a flight hangar, a flight simulator and a wind tunnel. Visit the Fort Eustis Transportation Museum and Helicopter Test Flight Facility. Soar through the air with the Blue Angels in the IMAX film "The Magic of Flight."

■ Little Robots

August 15-17, 9 a.m. to noon
Ages 5 to 7
$65 non-members/$60 members
Includes a LEGO kit

Discover how some robots can hear, see and even climb into volcanoes. Help "Andy the Android" walk around the room and have robot races. Discover the different parts of robots and how the same energy that makes lightning can make robots move. Work with a full-size model of NASA's Sojourner Rover that explored Mars and other model robots that are exploring other areas in space.

■ Astronaut Adventure: Launch to the Stars

August 21-23, 9 a.m. to 3 p.m.
Ages 7-12
$70 non-members/$65 members

Explore stars, constellations, planets, asteroids and the moon as you travel through the cosmos. Discover how constellations got their names and see how many you can find in the sky. Find out how a star is born. Visit with an astronomer, learn how to read star charts and find out how to search for stars and planets. Blast off to Mars and Venus in the IMAX film "Destiny in Space."

AdVentures

CLASSIFIED

FOR SALE: Four-bedroom home in Hampton school district, large den, new roof, wood floors, central air, gas heat, oversized shed, huge lot on cul-de-sac. $109,800. Call 826-1862.

FOR SALE: Condo/townhome in Lee's Mill (near Ft. Eustis), two floors, two bedrooms, one and a half bathrooms, 1,167 square feet, fresh paint, new carpet, all appliances convey. Pool, grounds, playground, HOA. Ready to move in. Call 887-5026.

FOR SALE: Tickets for two Washington Redskins exhibition games (Patriots on Aug. 11 and Steelers on Aug. 25). Section 425, Row 28. $125 per game for two tickets and parking pass. Call Chip at 877-3738 or 877-3332.

FOR SALE: Mahogany entertainment center. Two-piece main unit (top and bottom) with two matching speaker cabinets. Made in Spain from solid mahogany (no veneers) 25 years ago. All shelves (including those in the speaker cabinets) are adjustable. Main unit measures approximately 83 inches high, 87 inches wide and 22 inches deep; each speaker cabinet measures 35 inches high and 26 inches wide. $1,000 or best offer. Call 596-6978 after 5 p.m.

Public Service Week May 1-7

The Public Employees Roundtable (PER) is celebrating May 1-7 as Public Service Recognition Week (PSRW). This year's theme is "Public Employees: Working for America."

"I am proud to salute our nation's public employees for their unwavering commitment to fulfilling America's bright promise for all our citizens," said President Bill Clinton, "and I thank them for their many contributions to improving the quality of our national life."

An opening ceremony was held on the National Mall in Washington, D.C., on May 4, and activities will continue through May 7.

For more information about PSRW, visit PER's web site at <http://www.theroundtable.org> or call (202) 927-4926.

Steam Outage Planned May 6-7

Langley Research Center's Steam Plant (Bldg. 1215) will undergo its annual shutdown beginning at 12:01 a.m. May 6. Employees are requested to secure any systems or projects that may be affected by the outage. Steam should be restored by the evening of May 7. For more information, call Ed Shook at ext. 44922.

NARFE Meeting May 8

Chapter 682 of the National Association of Retired Federal Employees (NARFE) will meet at 10:30 a.m. May 8 in the Midtown Community Center in Newport News. Va. Del. Phillip Hamilton will speak about General Assembly news. For more information, call Catherine Askew at 247-1558.

Alumni Association Meets May 9

The NACA/NASA Alumni Association will meet at 11:30 a.m. May 9 in the private dining room of the Langley Research Center cafeteria. Kevin Fleming of the United Way will deliver the program, "10 Ways to Make Life More Interesting." Details of the June 13 Tangier Island trip also will be discussed.

Safety Course Offered On May 10

Langley Research Center's Office of Safety and Mission Assurance (OSMA) will host a safety course entitled, "Protection," from 8 a.m. to 4:30 p.m. May 10 and 11 in Bldg. 1224T7.

The course establishes an understanding of NASA and OSHA requirements for fall protection and knowledge of systems which can satisfy those requirements. The class will familiarize participants with hardware, procedures and techniques for those who use fall arrest systems.

For more information about the course, call Grant Watson at ext. 43069. To register, send an Application For On-Site Training (NASA Langley Form 24) to DeAnna Lawrence at Mail Stop 309 or fax it to ext. 48543.

Risk Analysis Course Being Offered

Langley Research Center's Office of Safety and Mission Assurance (OSMA) will host a "Systems Safety and Risk Analysis" course the week of May 22.

The course will begin with a brief review of fundamental risk management concepts and will continue with an in-depth description of the management doctrine and the two most often used models of the doctrine's application within organizational structures. The course is recommended for managers and engineers whose work involves recognizing and managing system risks.

For more information about the course, call Grant Watson at ext. 43069.

AIAA Nominations Due

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for Fellows. Nomination forms are due by **June 15**; references from five Associate Fellows are due by **May 15**.

Upgrade forms are available on AIAA's Web site at <http://www.aiaa.org/information/professional/upgrades-pdf.html>.

For more information, contact Jeffrey D. Flamm at ext. 45955 or <j.d.flamm@larc.nasa.gov>.

Photo Lab Ends Slide Service

Due to declining production requirements, Langley Research Center's Photo Lab will no longer provide 35mm slide services, effective June 1. E-6 film processing and slides from prints can be purchased from commercial photo labs using a government credit card. For more information, call Rick Hoff at ext. 47939.

Library Holding Lost Book

Langley Research Center's Technical Library is holding a book that was inadvertently left there. The book is U. Schendel's "Introduction to Numerical Methods for Parallel Computers." To claim the book, contact Kenneth Carroll at ext. 45079 or <k.g.carroll@ larc.nasa.gov> by May 5.

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Researcher News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 10 ❖ May 19, 2000

Deep Impact

USGS Will Dig On-Center This Summer

By JOEL S. LEVINE
Atmospheric Sciences Competency

Thirty-five million years ago, a meteor or a comet travelling at a speed of more than 50,000 mph collided with what is now the eastern seaboard of the United States and released energy comparable to 10,000 billion tons of dynamite. (For comparison, the potential energy yield from the world's entire nuclear arsenal is equivalent to around 100 billion tons of dynamite!)

The blast decimated the coastline, sending tsunami waves westward and obliterating plants and animals within 600 miles. The event created a crater 56 miles wide and nearly as deep as the Grand Canyon and sent fractures through the Earth to a depth of at least five miles.

The remnant of the 35-million-year-old impact is clearly visible today: the Chesapeake Bay.

USGS scientists formally announced the discovery in 1994; now, they're coming to Langley Research Center — which is located on the outer rim of the resulting "Chesapeake Bay Impact Crater" — to study the dynamics and geological consequences of the impact. They will do so by drilling a hole some 2,700 feet deep and about four inches in diameter to obtain continuous core samples of the Earth's crust.

The project is being planned, funded and managed by the USGS' Geological Division and Water Resources

Continued on Page 6

David Powars, one of three USGS researchers credited with the discovery of the Chesapeake Bay Impact Crater, digs a test hole at Langley Research Center on Feb. 15. The USGS will return in June to dig a hole 2,700 feet deep to obtain continuous core samples of the Earth's crust.

Photo by Joel S. Levine

REVCON

Langley Will Lead Two New Programs

By MICHAEL BRAUKUS
NASA Headquarters

NASA's Office of Aero-Space Technology has selected nine aeronautical concepts for awards as part of its Revolutionary Concepts (REVCON) program, which accelerates the exploration of high-risk, revolutionary-breakthrough technologies in atmospheric flight.

Langley Research Center will lead two of the programs — Joined-Wing Integrated Structures Flight Demonstration and Smart Vehicle — Advanced Technology Demonstrator — and will participate in four others. One of the programs, Swashplateless Flight, also will include participation by Advanced Technologies, Inc., a Newport News-based company.

The selected projects will receive approximately $300,000 each for Phase I research.

NASA's Dryden Flight Research Center is the lead center for REVCON program, with significant involvement from Langley, Ames Research Center and Glenn Research Center.

The nine winning projects are described below.

■ **Joined-Wing Integrated Structures Flight Demonstration** is a revolutionary airborne surveillance concept consisting of a joined-wing aircraft with radar apertures integrated into the four joined wings. Langley is the lead with partners from Dryden; The Boeing Company, Phantom Works Division, Seattle; Naval Air System Command, Patuxent River, Md.; and the Air Force Research Laboratory, Dayton, Ohio.

■ **Smart Vehicle — Advanced Technology**

Continued on Page 3

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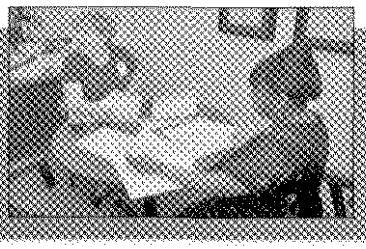

Procurement Staff Improving Lead Time On Simple Acquisitions
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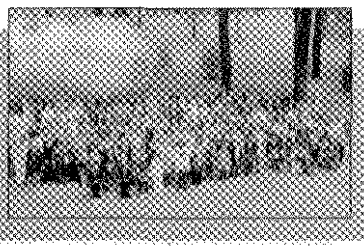

More Than 150 Kids Participate In Take Our Daughters To Work Day
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News Briefs

Around the Agency

TRMM DATA IMPROVES TROPICAL FORECASTS

A microwave imager onboard NASA's Tropical Rainfall Measuring Mission (TRMM) spacecraft can help improve forecasts of hurricanes and severe storms and monitor long-term climate by seeing through clouds, according to new research.

The TRMM Microwave Imager (TMI) represents the first microwave spacecraft sensor capable of accurately measuring sea-surface temperatures through clouds. These findings were reported in Journal Science by TRMM Science Team members Frank Wentz and colleagues at Remote Sensing Systems.

Information and images are available on the Internet at <http://trmm.gsfc.nasa.gov/>, <http://www.gsfc.nasa.gov> and <http://www.remss.com>. RELEASE: 00-75

NEW OFFICE WILL FOSTER HEALTH AND SAFETY

NASA Administrator Daniel S. Goldin recently announced the creation of a new office to increase the Agency's emphasis on health and safety on the ground and in space.

Arnauld Nicogossian will lead the effort as Chief Health and Medical Officer, reporting directly to Goldin. Nicogossian will be responsible for developing the Agency's infrastructure in areas such as best medical practices, professional development and training and improvement. RELEASE: 00-69

HEFFERNAN NAMED NASA CHIEF OF STAFF

Edward J. Heffernan has been named Chief of Staff at NASA Headquarters by Administrator Daniel S. Goldin.

"Ed Heffernan brings a wealth of policy and legislative experience to this important role," Goldin said. "He has been a key advisor and is uniquely suited to this new challenge."

As Chief of Staff, Heffernan will continue in his role as head of the Agency's legislative affairs and also will coordinate all staff activities in the immediate office of the Administrator. RELEASE: 00-57

WETHERILL RECEIVES NAS' SMITH MEDAL

George W. Wetherill, a member of NASA's Astrobiology Institute and a research scientist at the Carnegie Institution of Washington, D.C., received the National Academy of Sciences' J. Lawrence Smith medal on May 1.

The award, which is presented every three years for "recent original and meritorious investigations" of meteorites, was given to Wetherill for his contributions to radiometric dating of events in the history of the Earth and meteorites, and understanding the formation and orbital dynamics of bodies in the solar system. RELEASE: 00-34

NASA DEVELOPING EOS 'INTERNET' SITE

NASA is taking the first steps toward Internet-like connectivity among its future Earth sensing satellites with the funding of 30 research proposals from industry, academia, government and NASA centers in Advanced Information System Technology.

Known as "Sensor Web," this is the first in a series of information technology research initiatives that will help NASA's Office of Earth Sciences solve the massive challenge of collecting, processing, routing and storing Earth science measurement data. A description of the selected proposals can be found on the Internet at <http://earth.nasa.gov/nra>. RELEASE: 00-65

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

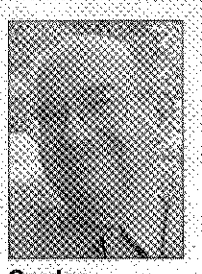
Mitigating Risk

Michael Greenfield, the Deputy Associate Administrator of NASA's Office of Safety and Mission Assurance, presents a "roadshow" on risk management tools for Langley Research Center employees on May 2 in Langley's Pearl Young Theater. Center Director Jeremiah F. Creedon invited Greenfield to speak after seeing him give the presentation at a recent meeting at NASA Headquarters.

Photo by Jeff Caplan

Carden Honored By AMA

Huey D. Carden received the the Aerospace Medical Association's (AMA) A. Harold Hasbrook Award at the AMA's 71st annual Scientific Meeting in Houston. The award is given annually to an individual who has provided noteworthy data or design with respect to safety, survivability or crashworthiness.



Carden

Carden, a graduate of the Tennessee Polytechnic Institute, worked at Langley Research Center for 38 years before retiring in 1998. At the time of retirement, he was in the Structural Mechanics Branch (SMB) of the Structures Division of the Research Technology Group (RTG).

Carden was nominated for the award by former researcher associates at the Civil Aeromedical Institute (CAMI) in Oklahoma City. The award is administered by the Life Sciences and Biomedical Engineering Branch of the AMA.

Leave Donations Being Accepted

Langley Research Center's Personnel Management Branch (PMB) is accepting Voluntary Leave Transfer Program donations for the following employees: **Robert C. Andrews, Timmy T. Kariya, Kim E. Kudlinksi, Lisa C. Simonsen** and **Lawrence W. Taylor III.**

Leave donations should be received on a NASA Langley Form 199, which is accessible on the Langley Forms Web site at <http://lms.larc.nasa.gov>.

Completed forms should be faxed to the PMB at ext. 47899 or mailed to Kay Black at Mail Stop 174. For more information, call Kay Black at ext. 42557.

Retirement

Langley Research Center's Advanced Measurement Diagnostics Branch will host a retirement party for **Carol H. Satterwhite** at 6:30 p.m. June 2 in the main auditorium of the H.J.E. Reid Conference Center.

A cost of $15 per person will cover gift and heavy hors d'oeuvres. RSVP with payment by May 22 to Joyce Hutchinson at ext. 42933 or Patti Davis at ext. 44724.

In Memoriam

Sherwood Hoffman

Sherwood "Woody" Hoffman died on April 23 at the age of 78. Hoffman, a native of Manhattan, N.Y., served in the U.S. Army Corps of Engineers and was a veteran of World War II. In 1948, he began his 35-year career at NACA/NASA, serving first as project engineer of the Pilotless Aircraft Research Program and then as section head of the Vehicle Re-entry Performance Space Program. In the 1970s, Hoffman also managed the stability and control project for the Supersonic Transport Aircraft (SST).

Robert James Harbison

Robert James Harbison died on May 4 at the age of 77. Harbison, a native of Philadelphia, served in the U.S. Air Force and was a prisoner of war during World War II. Harbison retired from the Air Force in 1968 and went on to serve as an engineering technician at NASA.

Robert F. Mayer

Robert F. Mayer died on April 25 at the age of 75. Mayer, a native of New Jersey, served in the U.S. Navy and was a veteran of World War II. After the war, he served as an engineer at Langley Research Center.

H. Arthur Samet

H. Arthur Samet died on April 23 at the age of 88. Samet, a native of Boston, worked for NACA from 1942 to 1953, serving in various administrative roles at the Langley and Edwards facilities.

Samet went on to work for the Hastings Instrument Company, a manufacturer of flow- and vacuum-measuring instruments and precision navigational equipment. He retired as president of Hastings in 1977.

Not As Simple As It Sounds

Procurement Staff Working To Improve Acquisition Process

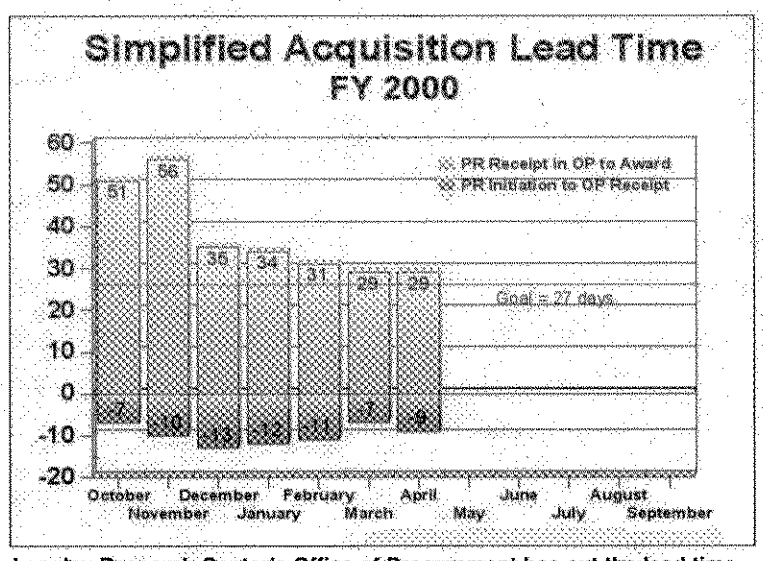
By JIM ROBERTS
Researcher News Editor

Kim Stone, the head of Langley Research Center's Office of Procurement, has a short math lesson she likes to share with those willing to listen, including Langley's Senior Staff and the Strategic Quality Management Council (SQMC): In Fiscal Year '99, her office received approximately 2,600 Simplified Acquisition Purchase Requests (PRs). She has a staff of only seven purchasing agents, meaning each one is responsible for completing about 370 PRs each year, a pace of more than one a day.

"It never stops," Stone said. "It's this stream of PRs that come in every single day."

Add to the equation time away for training and time off for annual and sick leave — not to mention the dozens of phone calls each purchasing agent handles on a weekly basis — and the resulting work conditions are less than desirable.

Stone vowed several months ago to improve the situation and — without hiring more people and without reducing the number of incoming PRs — the Office of Procurement already is experiencing dramatic success. The office has drastically reduced the PR "lead time" and has implemented changes that have resulted in positive customer feedback.



Langley Research Center's Office of Procurement has cut the lead time for Simplified Acquisitions nearly in half in Fiscal Year '00, but it still has yet to meet its goal of 27 days.

Graphic by Mary Deuell

Not So Simple Anymore ...

Simplified Acquisition refers to any purchase — typically for equipment or research — under $100,000.

Many times, Stone said, an employee will need a piece of equipment that costs only $30,000; if that employee already knows whom to buy it from, he or she doesn't realize why it can take up to a month or longer to buy it.

Stone and her staff explain by saying, "It's not so simple anymore."

Procurements over $25,000, for example, must be synopsized on the Internet and in "Commerce Business Daily" for 15 days. The announcements, which enhance competition and result in lower prices, are electronically disseminated to hundreds of thousands of potential offerors.

"People don't realize the volume we're dealing with," she said.

Time For A Change

The first change Stone made was to end the management turnover in the Supply and Simplified Acquisition Contracting Branch by hiring Susan McClain from the U.S. Navy.

Together, Stone and McClain implemented several changes to "sole source" justifications: Approval levels have been reduced, the format has been standardized, and they are leaving approval levels for the initiator's management to the discretion of the initiating organization.

Stone also has in the works a Quarterly Metrics Meeting — in which management will analyze its performance against the NASA Administrator's goals — and a monthly procurement officer review of simplified acquisitions metrics to try to isolate problem areas.

Ultimately, the most effective change has turned out to be the simplest: an e-mail acknowledgement to customers who file PRs. The e-mail tells the customer that the office received the request and that its goal is to have the PR completed within 27 days. The e-mail also tells the customer the name and phone number of the person handling the request.

Since the office implemented the e-mail acknowledgement, many customers have been surprised to learn that PRs are often held up before they ever reach the Office of Procurement. More importantly, there were no customer complaints in February or March.

Stone said one customer responded by saying, "I have been here for 40 years, and this is the first time Procurement has acknowledged my PR. Keep it up."

Working To Be The Best

Stone said she is anxious to lead Langley's Office of Procurement to be the best in the Agency. "We need to find the smartest, fastest way to get the customer what they need," she said.

The Office of Procurement encourages its customers to participate in two upcoming events: an Agency-wide Procurement Customer Survey and an Open House on June 28 in the H.J.E. Reid Conference Center.

For more information about these events or other matters related to the Office of Procurement, contact Kim Stone at ext. 42426 or <k.g.stone@larc.nasa.gov>.

REVCON

Continued from Page 1

Demonstrator consists of an uninhabited technology demonstrator that will showcase innovative, hingeless aerodynamic effectors that will increase the maneuverability and performance of the vehicle with reduced signature. This project will be led by Langley with partners Lockheed Martin Tactical Aircraft Systems, Fort Worth, Texas; Physical Sciences, Inc., Andover, Maine; Tel Aviv University, Israel; Naval Air Systems Command, Patuxent River; and Dryden.

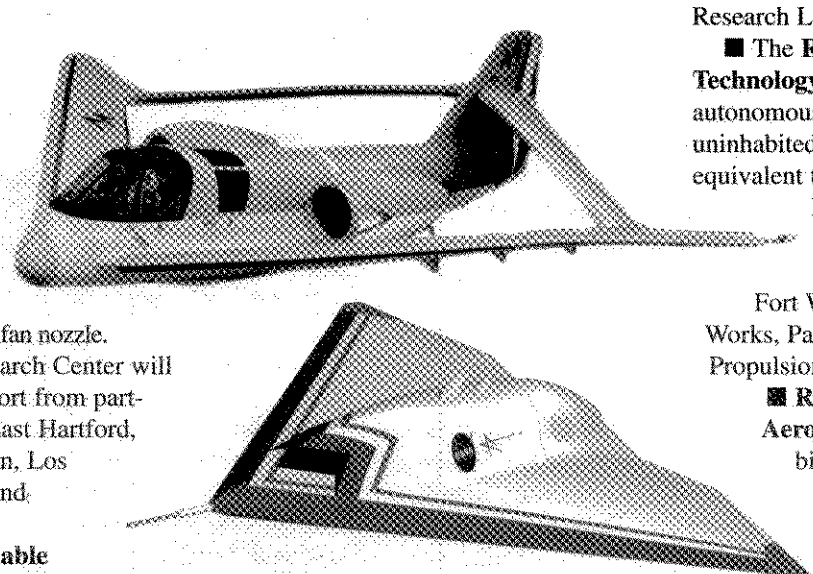
■ **Swashplateless Flight** will be demonstrated by the team of Advanced Technologies, Inc., Newport News; Diversified Technologies, Inc., Bedford, Mass.; Ames; Dryden and Langley. They will integrate an on-the-blade, electromechanical servo-actuator into a civil helicopter and demonstrate primary flight control without using a mechanical swashplate.

■ **APEX** is a highly instrumented, remotely piloted glider air-launched at an altitude of 100,000 feet by a balloon. It will obtain data to validate design and analysis methods for high altitude and high-subsonic speeds. Dryden leads a team that includes Ames, Langley and Glenn.

■ The **Shape Memory Alloy Variable Area Fan Nozzle** project will address the development of smart-material actuation for a variable-area fan nozzle. United Technologies Research Center will lead the project with support from partners, Pratt and Whitney, East Hartford, Conn.; Northrop-Grumman, Los Angeles; Dryden, Glenn and Langley.

■ The goal of the **Variable Diameter Tilt Rotor** flight experiment is to advance the technology readiness of a concept that optimizes the rotor configuration for both hover and cruise flight. This project joins Sikorsky Aircraft Corporation, Stratford, Conn., as the lead with Dryden, Ames and Langley.

■ **Advanced Supersonic Propulsion and Integration Research** aims to validate a two-dimensional, mixed-compression engine inlet for commercial applications. Glenn will lead this project with partners Dryden; Lockheed Martin Skunk Works, Palmdale, Calif.; United Technologies Research Center, East Hartford; General Electric Aircraft Engines, Cincinnati; Techland Research, North Olmsted, Ohio; Gulfstream Aerospace, Cleveland; and the Air Force Research Laboratory, Dayton.



Langley Research Center was chosen to lead the Joined-Wing Integrated Structures Flight Demonstration, top, and the Smart Vehicle — Advanced Technology Demonstrator. The Center also will participate in four other Revolutionary Concepts (REVCON) programs.

Photos courtesy of The Boeing Co. and Lockheed Martin

■ The **Reliable Autonomous Control Technology** project will develop an autonomous management system for uninhabited aircraft to achieve reliability equivalent to current piloted aircraft. Dryden is the team lead, with partners Lockheed Martin Tactical Aircraft Systems, Fort Worth; Lockheed Martin Skunk Works, Palmdale, Calif.; and NASA's Jet Propulsion Laboratory, Pasadena, Calif..

■ **Revolutionary Propulsion for Aeronautical Vehicles** is the combined effort of the lead General Electric Aircraft Engines, Cincinnati, and partners General Electric Corporate Research and Development, Schenectady, N.Y.; Lockheed Martin Tactical Aircraft Systems; Advanced Projects Research, Inc., La Verne, Calif.; Air Force Research Laboratory, Dayton; Glenn and Dryden. This team will design and develop a pulse-detonation technology to integrate with an existing engine and provide increased thrust and fuel efficiency.

More information about REVCON can be found on the Internet at <http://www. dfrc.nasa.gov/Projects/revcon/index.html>.

Bill Smith Retiring After 35 Years

Bill Smith contributed to many of NASA's pioneering projects, including the Orbital Refueling Experiment, the Orbital Maneuvering Vehicle, Lunar Prospector, Mars Pathfinder and Near Earth Asteroid Rendezvous (NEAR).
Photo by Jeff Caplan

By JIM ROBERTS
Researcher News Editor

If Bill Smith gets his wish, his illustrious, 35-year career with NASA will come to a quiet end on June 2.

In an interview on May 8, Smith said he didn't expect a big send-off, and he modestly referred to himself as a "carpet-bagger."

"I've been everywhere and done everything," he said.

Done everything is right. Little did he know as a general science student at the University of Iowa that he would go on to contribute to many of NASA's pioneering projects, including the Orbital Refueling Experiment, the Orbital Maneuvering Vehicle, Lunar Prospector, Mars Pathfinder and Near Earth Asteroid Rendezvous (NEAR).

Smith served in the U.S. Navy after graduating from Iowa and joined NASA in 1965. He served in many positions at NASA Headquarters over the next 35 years, from Manager of Astronaut Protective Systems to Chief of Mission Development and Operations. (Smith did leave the Agency from 1985 to 1991 to work for TRW in Redondo Beach, Calif., and Grumman in Reston.)

The last five years of his career were spent at Langley Research Center. He served as the Deputy Director and Acting Director of the Space and Atmospheric Sciences Program Group from 1995 to 1998 and as the Deputy Director and Acting Director of the Space Access and Exploration Programs Office (SAEPO) from '98 to the present.

"I was very impressed with Langley's science and engineering acumen and ethics," he said.

Smith leaves behind several projects in progress, including X-33, X-34, X-37, Hyper-X and the Mars Sample Return. What does he see in NASA's future? The completion of the International Space Station, a commitment to new aerospace concepts and an integration of human and robotic exploration missions, either to Mars or even back to the moon.

Smith will follow NASA's progress on those and other fronts from his home in Nellysford, near the Wintergreen resort. He said he plans to work as a consultant and try to attract some high-tech jobs to that part of the state.

In Memoriam: John Hedgepeth

He Was A 'Wise And Trusted Counselor'

By MARTIN M. MIKULAS
Special to the Researcher News

When I graduated from college, the chairman of the department had one major piece of advice for our professional careers: He strongly recommended that we adopt a mentor in life.

Not knowing exactly what a mentor was at that time, I looked in Webster's Dictionary. According to Webster's, a mentor is 'a wise and trusted counselor.' Being a young and cocky engineer, I could not help but wonder at the time where one would find such a person.

Shortly thereafter (in April of 1961), I went to work for NASA Langley and kept hearing about this person who had just left Langley to work for the Martin Company in Baltimore. Coincidentally, the first job I was given at Langley was to conduct experiments to validate a major new theory that this person had completed right before he left Langley. All the stories told about this person were incredible ... "This person could do this, this person could do that." I thought to myself about what kind of individual this must be. Could all of these stories be true? After a few months, I had completed the experiments and found that, indeed, the newly developed theory by this person correlated exactly with the tests. In fact, his theory was later recognized as a major development in the field of aerospace structures analysis.

A few weeks later, I was to meet this person as he was coming back to Langley to see if the experiments had been conducted correctly and to his satisfaction. Again, I had to wonder, what is the nature of this person I am about to meet for the first time?

If you have not guessed by now, this person was one Dr. John M. Hedgepeth. Our first meeting was a little like the proverbial "two bulls in a china shop." However, after working with John for a couple of days, I started to become aware of the fact that this person was indeed as unique a person as anyone with whom I had ever associated. It did not take me long to realize that John was the embodiment of what Webster's had defined as a mentor: "a wise and trusted counselor."

So, unlike many young engineers who are not able to identify a mentor, there I was very early in my career knowing whom I wanted. There was one hitch, however: I had to spend the next five years convincing John that I was qualified to be an apprentice of his. I am not sure that I ever completely succeeded in convincing him, but I have had a wonderfully rewarding time with John over the past four decades trying.

John's influence on the aerospace structures community is too deep for any one person to do it justice. John rose from a supervisor at NASA to a Chief Engineer at Martin Co. to the president of ASTRO Research Corp. in Santa Barbara. Several years ago, he retired from ASTRO and became a highly sought-after independent consultant and an adjunct professor at the University of Colorado, where again he unselfishly assisted in mentoring numerous young engineers. Throughout John's career, he pioneered many new theoretical developments and was the architect of numerous advanced concepts for space structures that have had significant impact on deployable satellite design.

John's counsel was highly sought-after by high-level national advisory boards and commercial firms. John was elected as a fellow of the American Institute of Aeronautics and Astronautics. He was bestowed the highest honor an engineer can achieve by being elected into the National Academy of Engineering. John's dedication to the space community will be missed, but his inspiration and contributions that influenced many will live on for generations.

Editor's note: *This text is the eulogy delivered by Martin M. Mikulas at John M. Hedgepeth's recent memorial service.*

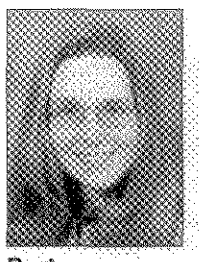
Hedgepeth worked at Langley Research Center from 1948 to 1960, and Mikulas worked at Langley from 1961 until 1991, when he retired from his position as head of the Spacecraft Structures Branch.

Although their tenures at Langley did not overlap, their common interest in structural mechanics and their shared passion for the art of structural design led to the development of a lifelong relationship that exemplifies the true meaning of "mentorship."

Hedgepeth

Hedgepeth and Mikulas devoted their careers to the field of aerospace structures, and both ascended to the pinnacle of engineering achievement by being named to the National Academy of Engineering.

Hedgepeth died on April 25 after a long battle with lung cancer. Mikulas is currently a professor emeritus at the University of Colorado.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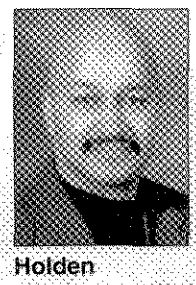
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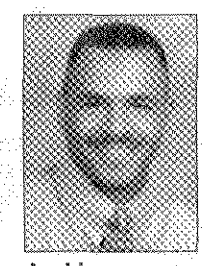
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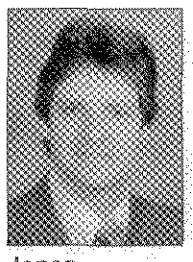
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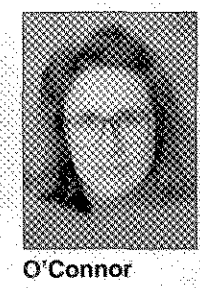
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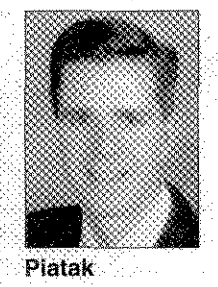
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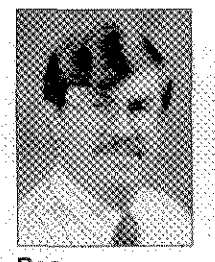
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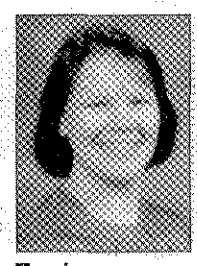
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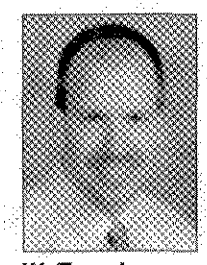
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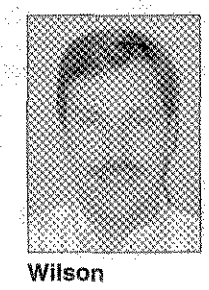

Wilson

Employees Earn Advanced Degrees

Twenty-seven Langley Research Center employees recently earned advanced degrees through the Center's Advanced Study Program.

The program, established in the 1940s, provides Langley engineers, scientists and administrators an opportunity to improve their proficiency in aeronautical and space research and earn graduate credit while at Langley. More than 1,500 employees have earned master's or doctorate degrees through the program.

The following employees earned doctoral degrees:

■ **Jennifer L. Burt** of the Crew/Vehicle Integration Branch earned a doctor of philosophy in industrial and systems engineering from Virginia Polytechnic Institute and State University;

■ **Christopher E. Glass** of the Aerothermodynamics Branch earned a doctor of philosophy in mechanical engineering from Penn State University;

■ **Dana C. Gould** of the Structures and Thermal Analysis Branch earned a doctor of philosophy in mechanical and aerospace engineering from the University of Virginia;

■ **Carl Holden Jr.** of the Electro-Optics and Controls Branch earned a doctor of philosophy in mechanical engineering from Alabama Agricultural and Mechanical University;

■ **Rudolph A. King** of the Flow Physics and Control Branch earned a doctor of philosophy in fluid physics from Massachusetts Institute of Technology; and

■ **Russell A. Wincheski** of the Nondestructive Evaluation Sciences Branch earned a doctor of philosophy in physics from the College of William and Mary.

The following employees earned master's degrees:

■ **Martha C. Brown** of the Aeroacoustics Branch earned a master of science in mechanical engineering from The George Washington University;

■ **Cindy L. Daniels** of the Space Science Support Office earned a master of engineering management from The George Washington University;

■ **Luther N. Jenkins** of the Flow Physics and Control Branch earned a master of science in fluid mechanic and thermal sciences from The George Washington University;

■ **Tom W. Jones** of the Structures and Thermal Sciences Branch earned a master of engineering management from The George Washington University;

■ **Cindy L. Lach** of the Metals and Thermal Structures Branch earned a master of material science and engineering from the University of Virginia;

■ **William S. Luck Jr.** of the Electro-Optics and Controls Branch earned a master of science in optics from the University of Rochester;

■ **Jeffrey M. Maddalon** of the Systems Development Branch earned a master of science in computer science from the College of William and Mary;

■ **Robert A. Marshall** of the Model Systems Branch earned a master of science in aerospace engineering from Old Dominion University;

■ **Anna-Maria R. McGowan** of the Aeroelasticity Branch earned a master of science in aerospace engineering from Old Dominion University;

■ **Troy F. Middleton** of the Hypersonic Airbreathing Propulsion Branch earned a master of business administration from the College of William and Mary;

■ **Laura A.K. O'Connor** of the Engineering Support and Facility Project Branch earned a master of arts business administration from Syracuse University;

■ **David J. Piatak** of the Aeroelasticity Branch earned a master of science in aerospace engineering from Old Dominion University;

■ **Laura L. Rine** of the Crew and Vehicle Integration Branch earned a master of aeronautical science from Embry-Riddle University,

■ **Richard W. Ross** of the Data Acquisition and Information Management Branch earned a master of science in applied physics and computer science from Christopher Newport University;

■ **Odilyn L. Santa Maria** of the Aeroacoustics Branch earned a master of science in acoustics from Pennsylvania State University;

■ **Sandra E. Smalley** of the System Engineering and Control Branch earned a master of engineering in electrical engineering from Old Dominion University;

■ **Karen M. Brown Taminger** of the Metals and Thermal Structures Branch earned a master of science in material science and engineering from Virginia Polytechnic Institute and State University;

■ **Deborah M. Tomek** of the Research Facilities Branch earned a master of aeronautical engineering from The George Washington University;

■ **William G. Tomek** of the Research Facility Branch earned a master of engineering management from The George Washington University;

■ **Lelia B. Vann** of the Radiation and Aerosols Branch earned a master of Science atmospheric science from the University of Arizona; and

■ **William C. Wilson** of the Electronic Systems Branch earned a master of science in applied physics and computer science from Christopher Newport University.

For information on Langley's Advanced Study Program, call George D. Allison at ext. 42594.

Center Revises Tuition Policy

Langley Research Center's Committee On Advanced Study recently announced it will grant exceptions to existing tuition caps.

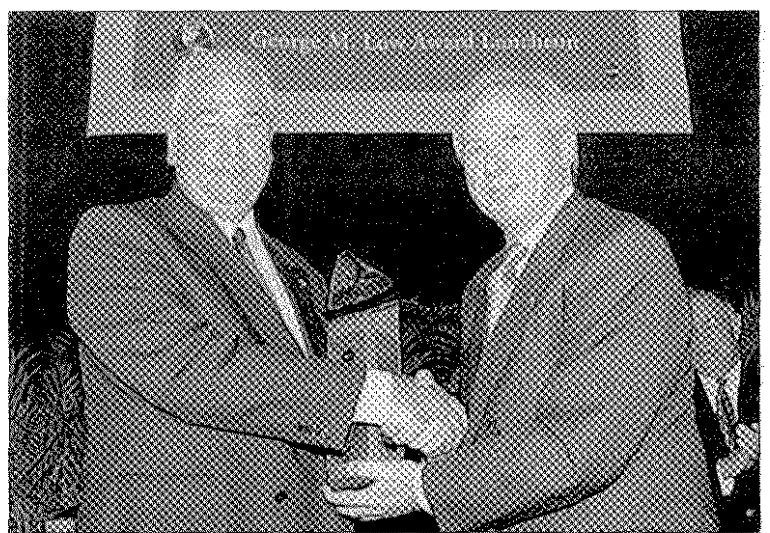
The committee hopes the new policy will encourage employees to conduct research with leading academic institutions which are of high interest to the Center.

The current policy allows students to receive $10,000 for master's-level programs and $25,000 doctoral programs.

Employees will be required to apply for the full-time graduate study tuition and supply supporting documentation regarding the research effort and its benefit to the Center.

For more information on the new tuition policy, call George D. Allison at ext. 42594.

ATI Receives NASA's Low Award



ATI President C. Harry Parkinson, left, accepts the George M. Low Award from NASA Administrator Daniel S. Goldin on April 27.
Photo courtesy of ATI

By SONJA ALEXANDER
NASA Headquarters

Advanced Technologies Inc. (ATI) was one of four U.S. companies to receive the George M. Low Award, NASA's highest honor for quality and technical performance, at the 15th annual NASA Continual Improvement and Reinvention Conference on Quality Management.

NASA Administrator Daniel S. Goldin presented the 2000 Low Awards, the nation's oldest for organizational quality, at the April 27 conference in Alexandria.

"Each of these companies personifies the importance of continuous, quality, customer service and innovative management," Goldin said. "Their commitment to quality and performance has been a great asset to NASA and the nation's industries."

ATI, an employee-owned company based in Newport News, and the winner of Langley Research Center's "Outstanding Small Business Subcontractor" award in 1999, received the award for small-business product.

"To be presented with the George M. Low Award is a reflection of the company's continued improvement and quality programs, and our employee's commitment to exceptional quality and customer satisfaction," said C. Harry Parkinson, ATI's president.

Jackson & Tull's Aerospace Engineering Division received the Low award for small-business service. Computer Sciences Corp.'s NASA Programs Division was this year's winner in the large-business service category, and the Boeing Company's Delta II Launch Division took the award for large-business product.

Take Pride In Langley's Safety Record

Office of Safety and Mission Assurance

Have you ever wondered why NASA and Langley Research Center emphasize safety ... why we have safety meetings ... why we conduct safety training, inspect our facilities and investigate accidents?

The answer is simple: Langley has the responsibility to take care of its employees by providing a safe and healthful work environment.

It is also Langley's responsibility to provide employees with the necessary resources and training to allow them to work safely.

Employees are not expected to take unnecessary risks to get their jobs done. Employees' jobs consist of many individual processes; if the processes and procedures are designed with safety built in, accident risks are minimized.

Safety meetings concern all areas of safety and establish two-way communication between management and employees. The object of safety meetings is to maintain a high level of safety awareness among employees. Safety meetings cover mishaps and close calls that have occurred in the workplace. The discussions result in valuable lessons learned and contribute to the improvement of the Center's safety program. Employees can voice their safety concerns and discuss relevant safety issues relating to Langley, facility operations and job processes. Thus, participation and discussion encourage employee safety awareness.

Training provides the employees with the knowledge of how a job or task should be performed safely in accordance with applicable procedures and regulations. By using the recommended work practices and following applicable procedures, an employee should be able to perform tasks in a safe manner.

If an employee is assigned a task that he or she does not feel qualified to perform safely, he or she should contact a supervisor and request appropriate training.

Training may be obtained in different ways. A supervisor or a co-worker can give instruction about the use of a piece of equipment, and Facility Coordinators and Facility Safety Heads may provide general safety training on general safety elements, such as fall protection, working in confined spaces and the use of hazardous materials. The Office of Safety and Facility Assurance (OSFA) also conducts specialized training to certify personnel in such areas as crane operation and use of respirators.

For more safety news, visit the Office of Safety and Mission Assurance's 'Safety Newsletter' online at <http://safety/OSFAHomePageStuff/ElectronicSNLs/May00/May00.html>.

Langley provides many types of inspections within its facilities to ensure a safe workplace. The OSFA conducts an annual Safety and Health Audit and a Fire and Life Safety Audit, and Industrial Hygiene, Pyrotechnic and Radiation Audits are performed at varying intervals. Facility Coordinators and Facility Safety Heads also conduct quarterly self-inspections. During these audits and inspections, each work area is reviewed, unsafe conditions are identified, and the appropriate corrective actions are implemented to eliminate the hazards. Diligent review of Langley's work areas ensures that employees can continue to work in a safe and healthful environment.

Cooperation and communication are important to the safety effort. Employees are encouraged to participate in the safety effort by promptly reporting injuries, illnesses, equipment or property damage and close-call incidents. Prompt reporting can prevent the recurrence of an incident or the potential for a more serious incident. Each case is investigated to identify its cause and to identify the type of corrective action that is required to minimize a recurrence.

The Office of Safety and Mission Assurance is proud the safety record at Langley. With continued emphasis at all levels of the organization, the Center will continue to find ways to improve its safety program.

Deep Impact

Continued from Page 1

Division. In addition to Langley, other institutions involved in the project include the Virginia Department of Environmental Quality, the Virginia Division of Mineral Resources, the Hampton Roads Planning District Commission and the College of William and Mary.

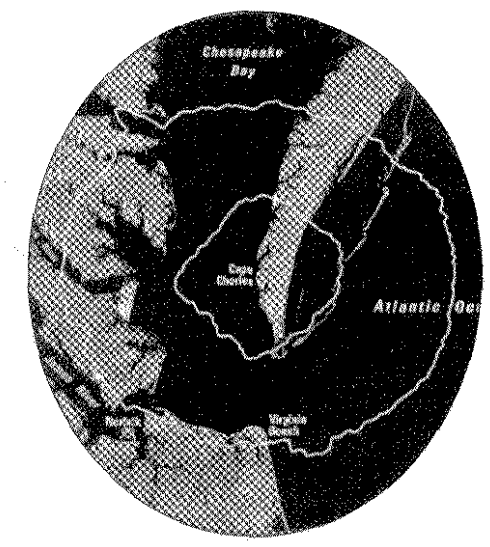
The drilling is scheduled to begin in June and will last about 90 days. The drilling site is located in the field near Bldg. 1190 and can easily be seen from Langley Boulevard.

In addition to providing new and important information about the impact, the research will have more practical implications. The meteor impact altered the groundwater system. The freshwater aquifers that existed before the impact now stop at the crater's outer rim. Within the crater, in place of the freshwater aquifers, a very large reservoir of briny water exists. The drilling at Langley will provide new information for input in the 15-year old regional ground water model being developed by the Virginia Department of Environmental Quality, the Division of Mineral Resources and the Hampton Roads Planning District Commission.

The experiment also may provide researchers from Langley's Atmospheric Science Competency with a unique opportunity of studying the chemical composition of the atmosphere over the last 35 million years by chemically analyzing air that may have been trapped in the core samples. The use of trapped ancient air in core samples has not been used an indicator of the composition of the ancient atmosphere due to the difficulties in extracting uncontaminated air samples.

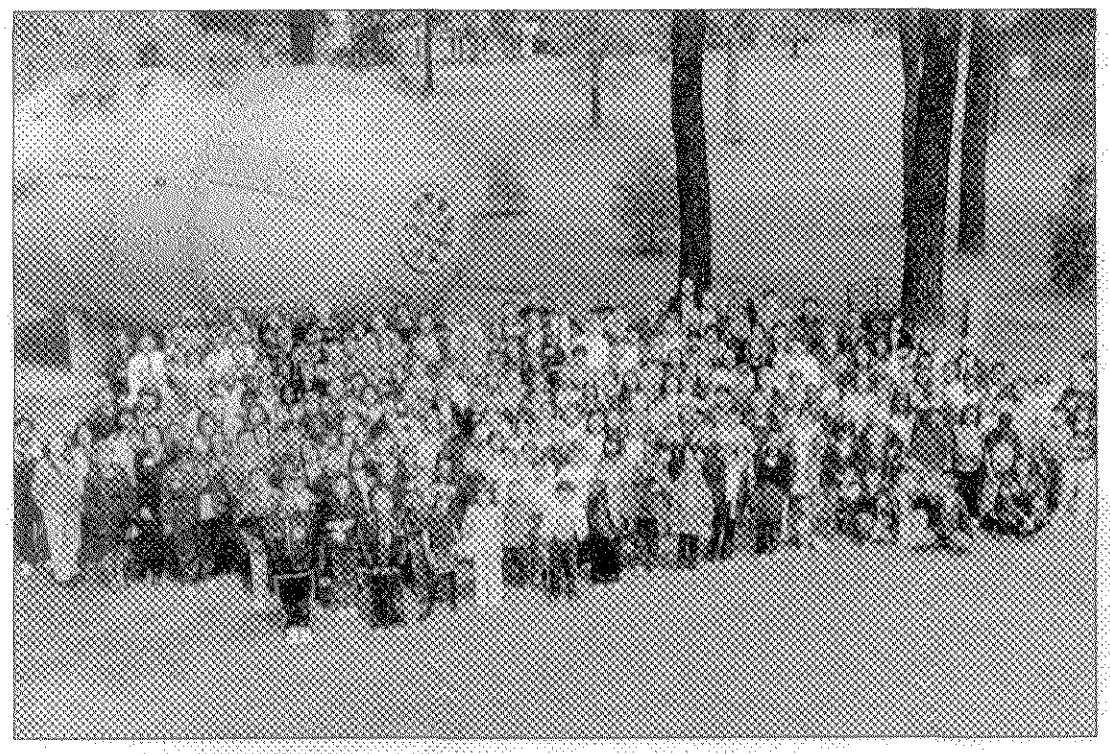
The USGS drilling experiment resulted in an Interagency Agreement (IA) between NASA and the USGS that was signed on May 1 at Langley. John J. Warhol Jr. of Langley's Systems Engineering Competency coordinated the facilities and logistics of the project for Langley, including the IA and the required environmental impact statement.

For more information about the USGS drilling experiment, call Joel S. Levine at ext. 45692.



This USGS map clearly shows the Chesapeake Bay Impact Crater. Langley Research Center is located on the outer rim.
Photo courtesy of the USGS

Take Our Daughters And Sons To Work Day



More than 150 boys and girls between the ages of ages 9 and 15 participated in Langley Research Center's Take Our Daughters and Sons to Work Day program on April 27. The event — which is designed to spark children's interest in math, science and the NASA mission — was sponsored by Langley's Federal Women's Program Committee, Langley's Multi-Cultural Leadership Team, the Newport News branch of the American Association of University Women (AAUW) and the Virginia Space Grant Consortium. Neola Waller, the state president of the AAUW, spoke at the event and said, "Your good efforts will be apparent in a few years when those young people join the work force in unprecedented numbers in engineering, computer science and information technology fields. Thank you for allowing me to be a part of this special day."

Top: This year's participants pose for a group photo outside the H.J.E. Reid Conference Center.
Photo by Peggy Hopkins

Left: Jeffrey Hodge takes participating boys and girls on a tour of the 8-Foot High-Temperature Tunnel. Participants had a choice of 23 workshops and tours hosted by Langley employees.
Photo by Jeff Caplan

Education Briefs

Center Joins In On 'Space Day'

Langley Research Center's Office of Education joined Lockheed Martin and other NASA centers in celebrating "Space Day 2000" on May 4.

A group of students from Yorktown Middle School took a "cyber tour" of the space shuttle trainers and the International Space Station via videoconference at the H.J.E. Reid Conference Center, and **Sam James**, a mechanical engineering technician in Langley's Composite Applications Technology Branch, spoke with high school students from as far away as Puerto Rico using a Web "chat" set up through NASA Quest and the "NASA Classroom of the Future" at Wheeling Jesuit University.

Lockheed Martin created Space Day in 1997 as a "tribute to those endlessly engaging phenomena which constitute our universe — and to the people who, through their space-related work, have contributed so much to science, medicine and everyday life."

For more information, visit Langley's Space Day Web site at <http://edu.larc.nasa.gov/space-day2000/>.

CSC At 'Science Night'

Dave Elliott and **Tim P. Starrin**, Computer Sciences Corp. employees on contract at Langley Research Center, recently participated in the annual "Science and Technology Night" at the Old Donation Center for the Gifted and Talented.

Elliott and Starrin took digital pictures of students in a NASA space suit and registered students' names to be sent to Mars on the 2001 Mars Surveyor Lander mission.

NSIP Winners Announced

Students at Cape Henry Collegiate School in Virginia Beach took first-, second- and third-place awards in a national academic competition sponsored by the NASA Student Involvement Program (NSIP).

Third- and fourth-graders developed a report on their environment, while students in grades five through eight developed a media news report on aeronautics and space. The students won in the categories "Earth Systems in My Neighborhood" and "Aeronautics and Space Science Journalism."

National Asian/Pacific American Heritage Month

Asian/Pacific Americans Recognized In May

Asian/Pacific American Heritage Month, 2000

By the President of the United States of America

A Proclamation

Over the last two centuries, Asian Americans and Pacific Islanders have contributed immeasurably to the richness of our dynamic, multicultural society. Whether recent immigrants or descendants of families who have been here for generations, Asian Americans and Pacific Islanders embody many of our nation's core values, including devotion to family, commitment to hard work and pride in their heritage.

The people of this diverse and rapidly growing community have contributed to every aspect of our national life — from engineering and computer science to government, the arts and sports. For example, Vinod Dahm helped to revolutionize computer technology through the invention of the Pentium chip. Governors Benjamin Cayetano of Hawaii and Gary Locke of Washington have devoted their lives to public service. The talents of novelist Amy Tan have delighted readers across our nation, while architect and sculptor Maya Lin's stirring memorials to the Vietnam War and the Civil Rights movement have uplifted and inspired all who have experienced them. And diver Greg Louganis and football star Junior Seau have thrilled sports fans everywhere with their skill and athleticism.

While many Asian Americans and Pacific Islanders today are thriving, others are still struggling to overcome obstacles. Because of oppression in their countries of origin, some new immigrants have arrived without having completed their education; once here, some have encountered language and cultural barriers and discrimination. Pacific Islanders, too, must overcome barriers to opportunity caused by their geographic isolation and the consequences of Western influences on their unique culture. For these and other reasons, too many Asian Americans and Pacific Islanders face low-paying jobs, inadequate health care and lack of educational opportunity.

To assist this community in meeting these challenges, last June I signed an Executive order establishing the White House Initiative on Asian Americans and Pacific Islanders. The Initiative's goal is to improve the quality of life for Asian Americans and Pacific Islanders by increasing their participation in federal programs — including health, human services, education, housing, labor, transportation, economic and community development programs — which may not have served them in the past.

My administration remains dedicated to building an America that celebrates and draws strength from its diversity. Let us use this month to reflect on the many gifts Asian Americans and Pacific Islanders have brought to our nation and embrace the contributions that Americans of all backgrounds make to our increasingly multicultural society.

To honor the accomplishments of Asian Americans and Pacific Islanders and to recognize their many contributions to our nation, the Congress, by Public Law 102-450, has designated the month of May as "Asian/Pacific American Heritage Month."

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, do hereby proclaim May 2000 as Asian/Pacific American Heritage Month. I call upon the people of the United States to observe this occasion with appropriate programs, ceremonies and activities.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-ninth day of April, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

William J. Clinton

AdVentures

CLASSIFIED

FOR SALE: 1996 Wilderness "fifth wheel" travel trailer and 1995 Ford F-150 truck with full towing package and electrical brakes. Trailer fully equipped with air conditioner, microwave, fridge, shower, etc. Truck mileage: 28,000; trailer mileage: 15,000; $25,000. Call 599-4977.

FOR SALE: Diamond engagement ring, platinum setting, 1 carat, G color, with certification and estimate. $4,250. Call 623-4262.

FOR SALE: Piano, excellent condition, $700. Call 850-3428.

FOR RENT: House in Michael's Woods section of Hampton, 15 minutes from Langley. Four rooms, two and a half bathrooms, two-car garage, appliances, no pets, 10- to 12-month lease, $1,175 per month. Call 826-3833.

WANTED: Guitar/banjo player/singer seeks other musicians. I left my band in Raleigh and need to play. I enjoy bluegrass, country, rock, etc. and love to sing. I play for fun and have played professionally. Call David at 596-0787 after 6 p.m.

The deadline for the June 2 edition of the Researcher News *is May 22. Send submissions to <j.r.roberts@larc.nasa.gov>.*

Equal Opportunity Offices Move

Effective May 19, Langley Research Center's Office of Equal Opportunity Programs (OEOP) will be located in Bldg. 1183, 15 Hunsaker Loop, Mail Stop 478. All staff telephone numbers will remain the same.

LAA Will Host Dances May 20 And 27

Langley Research Center's Activities Association (LAA) will host Country Western Dances on May 20 and 27 in the H.J.E. Reid Conference Center. Doors will open at 6:15 p.m., lessons will begin at 7 p.m., and the dance will begin at 8 p.m. Admission is $4. Participants must be at least 16 years old. For more information, call ext. 46369.

Risk Analysis Course Being Offered

Langley Research Center's Office of Safety and Mission Assurance (OSMA) will host a "Systems Safety and Risk Analysis" course the week of May 22.

The course will begin with a brief review of fundamental risk management concepts and will continue with an in-depth description of the management doctrine and the two most often used models of the doctrine's application within organizational structures. The course is recommended for managers and engineers whose work involves recognizing and managing system risks.

For more information about the course, call Grant Watson at ext. 43069.

VASC Van Tours Resume May 27

The Virginia Air & Space Center's (VASC) van tours of Langley Research Center will resume for the summer on May 27 and continue through Sept. 4.

Tours will run at 11 a.m. and 2 p.m. Saturdays and at 2 p.m. Sundays through June; daily tours will begin on July 1.

Tickets may be purchased at the VASC. For information on how to serve as a tour driver, call Steve Devan at 898-9290.

Computer Lecture On June 2

Horst D. Simon will present a Colloquium and Sigma Series Lecture entitled, " The Future of Computers," at 2 p.m. June 6 in the H.J.E. Reid Conference Center and at 7:30 p.m. June 6 at the Virginia Air and Space Center.

Simon

Simon is the director of the National Energy Research Scientific Computing (NERSC) Division at Lawrence Berkeley National Laboratory in Berkeley, Calif.

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Steam Outage Postponed To June 3

The Langley Research Center Steam Plant outage, originally scheduled to begin on May 6, has been postponed to June 3. Employees are requested to secure any systems or projects that may be affected by the outage. Steam should be restored by 10 p.m. June 4. For more information, call Ed Shook at ext. 44922.

ACT To Host Nano-Biotech Workshop

The University of Virginia Center for Advanced Computational Technology (ACT) will host a two-day workshop on Nano-Biotechnology on June 14 and 15 in Langley Research Center's H.J.E. Reid Conference Center. An online registration form can be found at <http://actuva-www.larc.nasa.gov/register.htm>. Other information about the workshop can be found at <http://actuva-www.larc.nasa.gov/workshop/june00/>.

Co-op Program Seeking Donations

Langley Research Center's Cooperative Education Program is seeking charitable donations of mattresses, furniture, basic kitchenware and other housewares for incoming summer students.

To make a donation, contact William LeFew at ext. 44042 or <w.r.lefew@larc.nasa.gov>.

LCDC Accepting K Applications

Langley Research Center's Child Development Center (LCDC) is accepting applications for next year's kindergarten class. Children entering the class must be 5 years old by Sept. 30; younger children must be tested for readiness and approved to attend by the classroom teacher. For more information, call Kathryn Skinner at ext. 44827.

Disney Applications Available

Langley Research Center's Exchange Shop has applications available for Walt Disney Magic Kingdom Club. For more information, call ext. 41585 or 47918.

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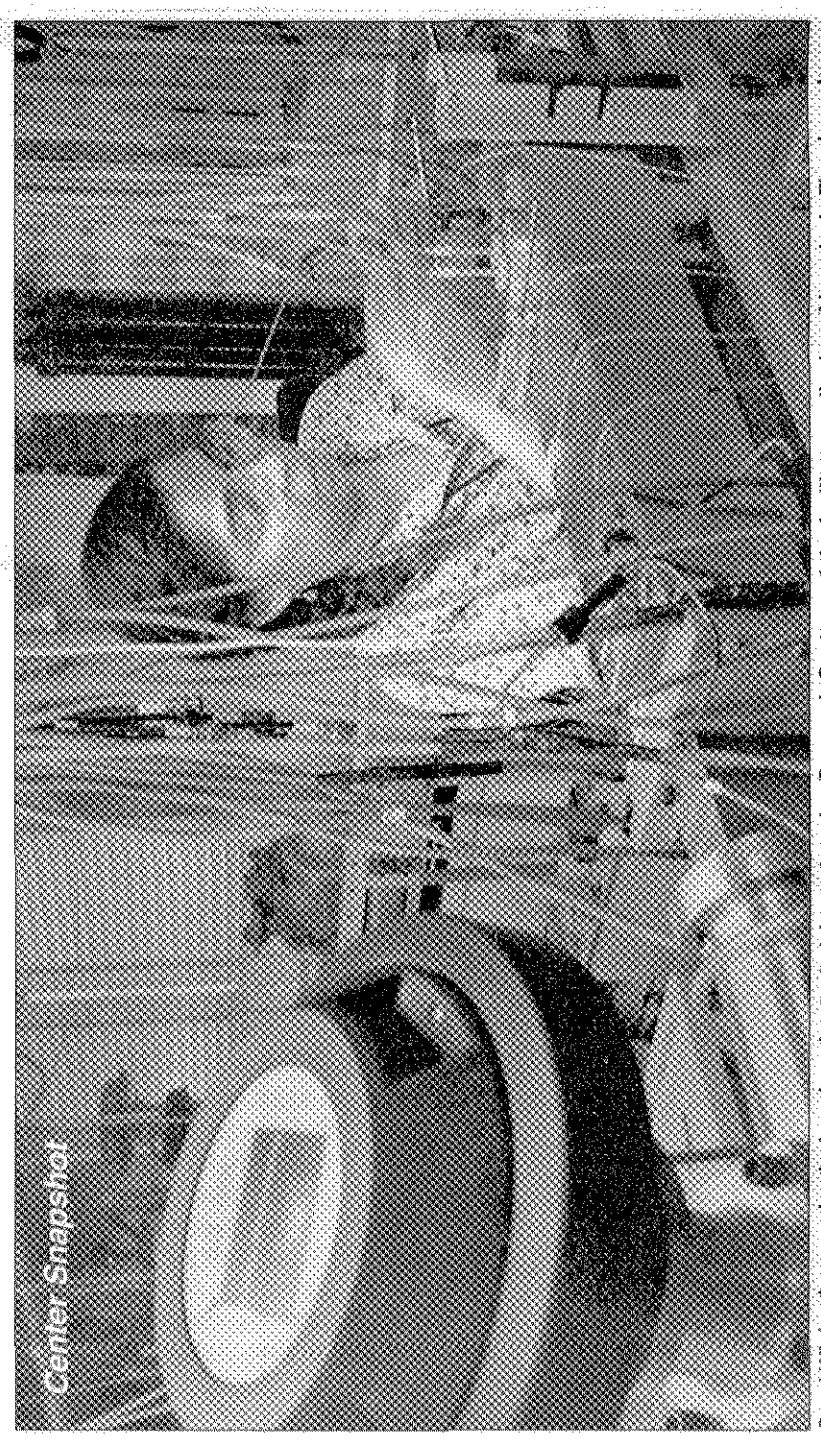


Center Snapshot

Carol Winbush, a mechanical engineering technician at Langley Research Center and the facility coordinator of Langley's Flow Impedance Test lab, is currently working on the Normal Incidence Tube that tests samples of sound-absorbing materials designed to line the nacelle of a jet engine. Winbush grew up in Pittsburgh and now lives in Newport News with her three children. She received her training through Langley's Apprentice School and Thomas Nelson Community College. When not at work, she enjoys singing in her church choir. What does she like most about working at Langley? "When I grow up, I want to be an astronaut," she said.

Photo by Jeff Caplan

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Langley's Employee and Contractor Publication

Volume 14 ❖ Issue 11 ❖ June 2, 2000

Painless Dentistry?

Langley Laser Can Work On Hard And Soft Tissue

By KEITH HENRY
Office of Public Affairs

In the near future, a laser device inspired by NASA may replace the dentist's drill. Flip a switch and it will also replace the dentist's razor-sharp scalpel. And the best part: It's virtually painless and requires no anesthesia for most patients.

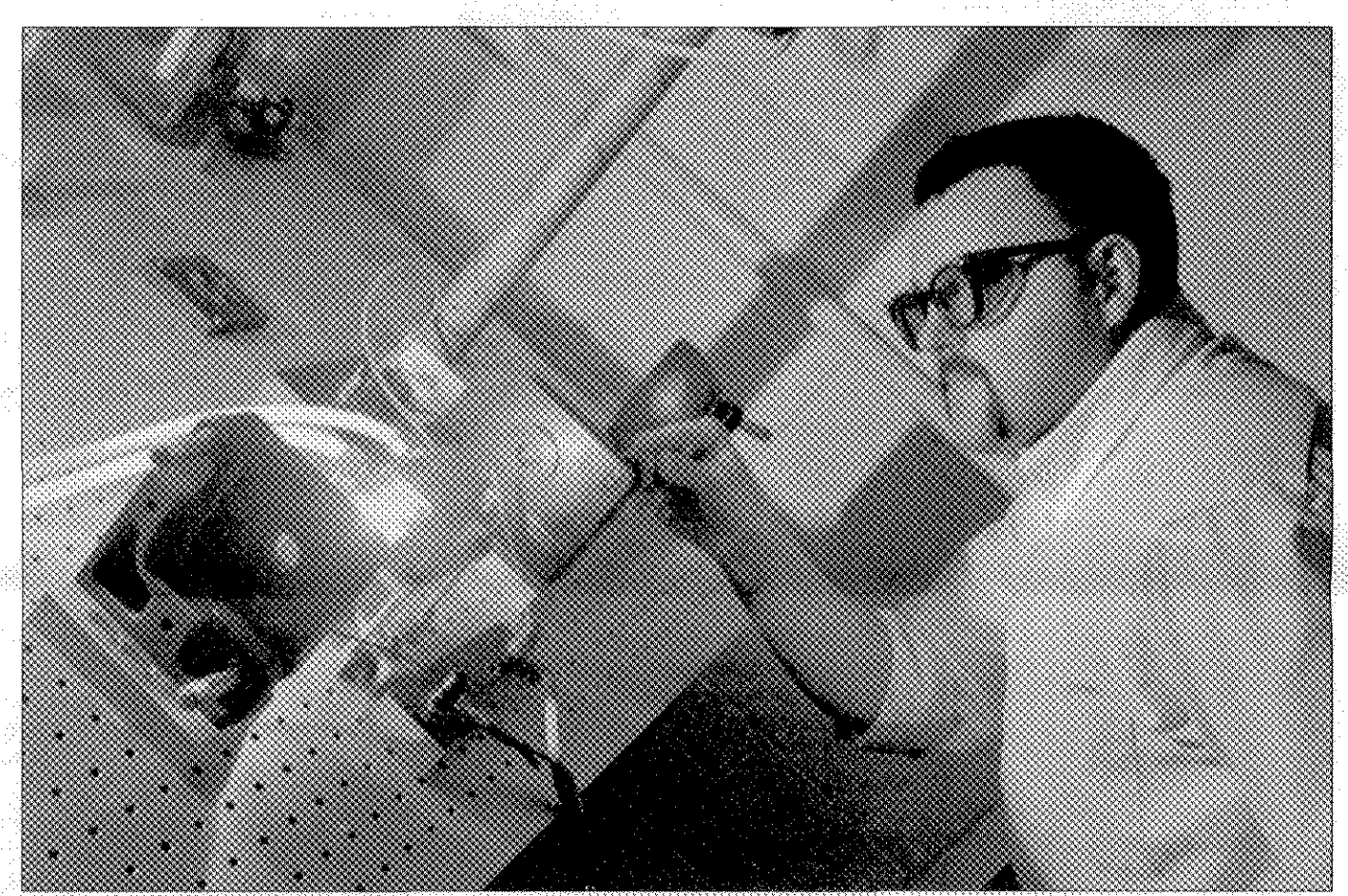
Lasers exist today that work on hard tissue like teeth to prepare the tooth for filling and on soft tissue for gum treatment and oral surgery.

But none do both, and buying two laser systems is an expensive proposition. That is mainly why only five percent of approximately 140,000 practicing dentists in the U.S. use a laser system.

Now, researchers at Langley Research Center have demonstrated that the two laser wavelengths important to dentists can be produced from a single, easy-to-use system.

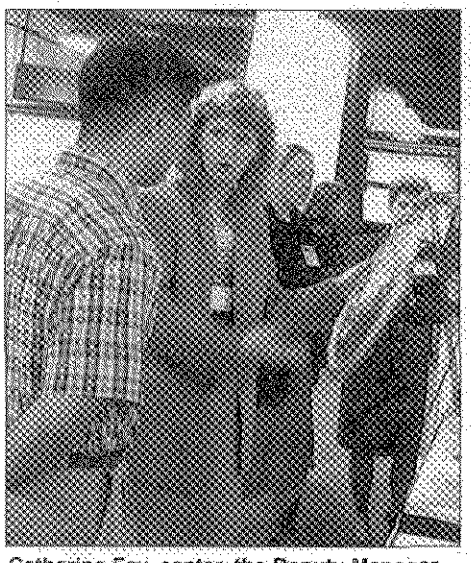
"The system is simple because we've already done all the complex physics in the lab," said Langley laser researcher Keith Murray, one of three inventors of the dental laser technology. The other

Continued on Page 3



Keith Murray of Langley Research Center's Laser Systems Branch checks out the dual-wavelength laser that he and fellow Laser Systems Branch researcher Norman Barnes developed. The laser can be electronically switched between the two laser frequencies important to dentists.

Photo by Jeff Caplan



Catharine Fay, center, the Deputy Manager of Langley Research Center's Advanced Aircraft Materials Project Group, shows a prototype for the Next Generation Space Telescope Sunshield to a visitor at the NASA exhibit at the AIAA Global Air & Space Conference.

Photo by Meghan Woodcock

AIAA Global Air & Space Conference

NASA Touts Defense Work

By MEGHAN WOODCOCK
Assistant Researcher News Editor

NASA showcased its partnership with the Department of Defense (DOD) at the annual American Institute of Aeronautics and Astronautics (AIAA) Global Air & Space Conference, which took place from May 10-12 in Arlington.

The exhibit, "NASA's Contributions to the Military," showed how NASA remains a critical partner with DOD and outlined the three areas in which NASA will continue to work in 2000: technology development, new aircraft development and assistance solving specific problems of operational aircraft.

"The NASA exhibit was a real success," said Langley Research Center's Noel Talcott Jr., who served as the point-of-contact for the development of the exhibit. "It was obvious the NASA booth attracted a bit of attention."

Richard Christiansen, the Programs Director in NASA's Office of Aerospace Technology, wrote in a note to staff, "It has been too long since NASA has publicly displayed its support (and heritage!) to the nation's security and defense.

"The way which this important contribution is portrayed by this exhibit communicates the relevance and innovation of what we do," Christiansen wrote. "It is a critically important element of our future, as it has been in our past."

Visitors to the NASA booth included Langley's Center Director and Deputy Director, Jeremiah F. Creedon and Delma C. Freeman; Glenn Research Center Director Don Campbell; and Gen. Sam Armstrong, Senior Advisor to the Administrator. Other visitors included many retired NASA senior managers and senior or retired aerospace company managers.

Raytheon Company sponsored the AIAA business meeting this year, where the new AIAA Fellows and Honorary Fellows were inducted and the AIAA's most coveted awards were presented.

In The Next Issue: Langley Begins 'Creativity & Innovation' Initiative

News Briefs

Around the Agency

20,000 NEW IMAGES ADDED TO MARS GALLERY

More than 20,000 new images of the planet Mars taken by NASA's Mars Global Surveyor spacecraft are now available in a web-based photo album — the single largest one-time release of images for any planet in the history of solar system exploration. The archive of images can be found at <http://www.msss.com/moc_gallery/>. RELEASE: 00-82

NASA IDENTIFIES OPTIONS FOR MARS MISSIONS

In 2003, NASA may launch either a Mars scientific orbiter mission or a large scientific rover which will land using an airbag cocoon like that on the successful 1997 Mars Pathfinder mission. The two concepts were selected from dozens of options that had been under study. NASA will make a decision on the options, including whether or not to proceed to launch, in early July.

"Our budget will support only one of these two outstanding missions for the 2003 launch opportunity, and it will be a very tough decision to make," said Ed Weiler, Associate Administrator for Space Science at NASA Headquarters. "Following this decision, later in the year we will have a more complete overall Mars exploration program to present to the American public which will represent the most exciting, most scientifically rich program of exploration we have ever undertaken of the planet Mars." RELEASE: 00-81

BOARD FINDS CAUSE OF HESSI MISHAP

The HESSI Mishap Board released its final report today saying that the High Energy Solar Spectroscopic Imager (HESSI) spacecraft was damaged March 21 during pre-flight vibration tests because of a malfunction in the vibration test system at NASA's Jet Propulsion Laboratory in Pasadena, Calif. (The vibration tests simulate the stresses that the spacecraft experiences during the rollout, release and flight to orbit aboard the Pegasus launch vehicle.)

The damage was caused when the test device, called a "shaker," delivered approximately 20 Gs, 10 times the appropriate level for the test, to the spacecraft. (A G is a unit of force equal to the gravity exerted on a body at rest.) As a result, the spacecraft's structure was damaged and three of the four solar arrays were severely damaged. Satellites are routinely subjected to vibration testing as part of preparing them for flight. RELEASE: 00-80

AIRBORNE POLLUTANT RAISES TEMPERATURES

A common pollutant that has been around for thousands of years has been newly identified as a potentially major contributor to global climate change, according to a paper published in the May 12 issue of the journal Science.

Scientists at NASA and the Scripps Institution of Oceanography report that airborne black soot has the capacity to raise regional temperatures far more than carbon dioxide, a major greenhouse gas that also results from combustion. According to the research team, the intense sunlight of the tropics heats the soot present in polluted air. This heating burns off the flat tops of shallow cumulus clouds for hundreds of miles downwind of pollution sources. With less cloud cover reflecting sunlight back to space, there is increased solar energy that reaches the Earth's surface and the lower atmosphere. This can significantly heat the atmosphere and oceans, according to the new findings. RELEASE: 00-37AR

Researcher News

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

Editor ..... Jim Roberts
Science and Technology Corp.

Assistant Editor..... Meghan Woodcock
Science and Technology Corp.

Photographer ..... Jeff Caplan
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Brooks Named AHS Fellow

Thomas F. Brooks, a Senior Research Scientist in Langley Research Center's Aerodynamics, Aerothermodynamics and Acoustics Competency, received an American Helicopter Society (AHS) Fellow Award at the Vertical Flight Grand Awards Banquet Program, which took place on May 3 in Virginia Beach.

Brooks

AHS Fellow Awards are granted to members of the society whose work toward the interests of AHS constitutes an outstanding achievement.

Brooks has worked at Langley for 25 years, contributing to the fundamental understanding, prediction and control of airfoil and rotor blade vortex interaction (BVI) noise. In the 1980s, he defined and quantified for the first time the mechanisms of self-induced flow noise from airfoils and broadband noise for rotorcraft. More recently, he has focused on the prediction and control of blade/vortex interaction noise.

Creedon Serving On Task Force

Langley Research Center Director **Dr. Jeremiah F. Creedon** has been selected to serve as a member of the newly formed State Task Force for Federal Asset Retention.

The task force, which is led by Virginia Secretary of Commerce and Trade Barry DuVal, is a community-based, state-coordinated association committed to supporting Virginia's major R&D facilities.

"This task force is designed to both highlight achievements and to support the development of a network of community support to ensure that your community's facility has a bright future in the Commonwealth," DuVal said.

Retirement

Langley Research Center's Aerospace Vehicles Systems Technology Program Office will host a retirement buffet luncheon honoring **F. William Cazier** at 11:30 a.m. June 9 in the main auditorium of the H.J.E. Reid Conference Center.

The cost is $10 per person. (Gift-only contributions are welcome.) RSVP by June 2 to Sherry Cox or Fran Sabo at ext. 41700 or Helen Terrell at ext. 43863.

In Memoriam

Joseph Henry Barbour

Joseph Henry Barbour died on April 13 at the age of 78. Barbour was a World War II veteran and a graduate of the NASA Apprentice School.

James M. Cubbage Jr.

James M. Cubbage Jr. died on May 21 at the age of 75. Cubbage, a native of Point Marion, Pa., served in World War II and retired from NASA in 1982 after 32 years of service as an aeronautical engineer.

Jess Gladstone Ross

Jess Gladstone Ross died on May 16 at the age of 74. Ross, a native of Fort Worth, Texas, served as an officer in the U.S. Navy and was a veteran of World War II. He retired from the Navy as a captain in 1952 and went on to work for NASA for almost 25 years, retiring in 1986 as the director of the management support division.

Dryden Preparing For NACA Alumni Reunion

By JAY LEVINE
Dryden X-Press Editor

Dryden Flight Research Center will host a National Advisory Committee for Aeronautics (NACA) Alumni Reunion from Sept. 14-17.

The event will mark the 54th anniversary of the High Speed Flight Station (HSFS) Muroc Unit, which is now known as Dryden.

Founded as a support unit for the X-1 rocket plane supersonic research flights, Dryden has evolved from a small desert outpost into the nation's premier flight research facility.

This year also marks the 57th anniversary of the X-Planes specifically designed as flight research tools to provide data that can't be obtained from wind tunnels or simulators.

The reunion committee is looking for names, addresses and/or telephone numbers for anyone who was employed by NACA at Edwards between Sept. 15, 1946, and Oct. 1, 1958. Please mail any information to NACA Reunion IX, P.O. Box 1589, Lancaster, Calif. 93539-1589 or call Dryden's History Office at (661) 258-3458 from 9 a.m. to 3 p.m. Tuesday through Thursday.

For more information about the reunion, call Betty Love at (661) 265-8049 or Pat Kenner at (805) 995-3430.

Correction

A story in the May 19 edition of the *Researcher News* incorrectly identified three Langley Research Center employees who earned advanced degrees through the Center's Advanced Study Program. The employees — **Cindy L. Daniels** of the Space Science Support Office, **Christopher E. Glass** of the Aerothermodynamics Branch and **Dana C. Gould** of the Structures and Thermal Analysis Branch — are correctly identified here.

Daniels

Glass

Gould

Colloquium and Sigma Series Lectures

Simon On 'The Future Of Computers'

Horst D. Simon will present a Colloquium and Sigma Series Lecture entitled, "The Future of Computers," at 2 p.m. June 6 in the H.J.E. Reid Conference Center and at 7:30 p.m. June 6 at the Virginia Air and Space Center.

Simon

Abstract

Scientific computing in the 1990s experienced incredible performance increases. Performance soared a thousand-fold from about 1 billion to 1 trillion floating point operations per second. In 1990, scientific computers were custom-built, vector processors with shared memory; in 2000, they are commodity microprocessors combined into distributed memory machines with thousands of parallel processors.

The lecture will discuss extrapolations of today's trends and several developing projects that promise to deliver another thousand-fold increase in performance by 2010.

With the limit of semiconductor-based devices expected about 2020, the talk will present some of the fundamental physical limits of computation and speculate about the potential replacement technologies. The talk will conclude with some predictions and speculations beyond 2025.

Speaker

Simon is the director of the National Energy Research Scientific Computing (NERSC) Division at Lawrence Berkeley National Laboratory in Berkeley, Calif. NERSC is funded by the Department of Energy and is the principal supplier of production high-performance computing services to the nationwide energy research community.

From 1994 to 1996, Simon was with the Advanced System Division of Silicon Graphics in Mountain View, Calif., where he managed SGI's university and research laboratory programs. From 1987 to 1994, he was with Computer Sciences Corporation at the NAS Division at NASA Ames Research Center.

Simon holds a math degree from the TU Berlin in Germany and a doctorate from the University of California Berkeley.

Upcoming Lectures

■ **July 11:** Charles E. Harris on "Composite Materials for Aerospace Applications: Past, Present and Future"

■ **Aug. 1:** Tom Young on "Mars Program Assessment."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Community Corner

By SANDRA LEMONS
Office of Public Services

Big Brothers Big Sisters of the Peninsula is looking for volunteers to mentor boys and girls from single-parent households.

Volunteers must be at least 18 years old with a car, valid driver's license and insurance and must have lived on the Peninsula for at least three months.

Volunteers also must make a one-year commitment to a child and be willing to spend three to five hours with the child several times per month.

The children served are boys between the ages 6 and 12 and girls between the ages 6 and 15 years. All economic levels, races and religions are represented.

Statistics show that children in the Big Brothers Big Sisters program gain confidence, perform better in school and have better family relationships. They also are less likely to begin using drugs or alcohol, skip school or hit someone.

For more information about the Big Brothers Big Sisters program or to obtain an application, call 827-0110.

All volunteers must complete an interview with a case manager and undergo reference and background checks.

Lemons is a volunteer coordinator at Langley Research Center.

Center Earns Environmental Award

By NICKIE WILLS
SAIC

Langley Research Center received a Silver Award for Pretreatment Excellence in 1999 from the Hampton Roads Sanitation District (HRSD) during an awards ceremony on May 17.

The award honors local businesses and industries within the HRSD service area for their exemplary permit compliance.

HRSD encompasses 13 cities and jurisdictions, has a service area of more than 2,400 square miles and serves approximately 1.5 million customers. To protect the environment and human health, HRSD permits and monitors pretreated wastewater discharged from business and industries within this area.

There were more than 250 industries considered for the Gold and Silver Awards for Pretreatment Excellence. Langley received the Silver Award for a compliance record with one technical/administrative violation.

Langley has long been a leader in pollution prevention within the federal community. The Center's pollution prevention program, which was started in 1992, has been continually improved over the last seven years and is still going strong. Pollution prevention has reduced hazardous waste by 79 percent and non-hazardous waste by 38 percent and cut air emissions from ozone-depleting substances by over 100 tons.

Langley also has an active and comprehensive recycling program. The materials being recycled have increased by approximately one million pounds, nearly four times the amount since 1993.

For more information about Langley's Environmental Program, visit <http://osemant1.larc.nasa.gov> on the Web.

SAIC Project Manager Kristen Poultney, left, and SAIC Senior Environmental Protection Specialist Caroline Diehl accept the HRSD award on behalf of Langley Research Center's Environmental Management Office.
Photo courtesy of SAIC

Laser

Continued from Page 1

inventors are Norman Barnes, also of Langley's Laser Systems Branch and Ralph Hutcheson of Scientific Materials Corp., Bozeman, Mont.

Both wavelengths can be produced using the same hardware, dramatically reducing cost and complexity. Switching between the two wavelengths is accomplished by selecting the amount and rate of energy pumped into the specially-designed laser system. The resulting hardware is about half the size of two distinct laser systems and does not require the laser system to be "tuned" by the operator like typical present-day systems.

A typical hard-tissue laser costs about $38,000, and a soft-tissue laser costs around $25,000. The dual-wavelength unit made possible by this new technology is expected to cost less than 30,000. Each one percent of market share of the American dental market for this technology represents approximately $50 million in sales.

Lantis Laser, Inc., Hewitt, N.J., is working with NASA Langley to refine the performance of the technology to explore its potential as a commercial dental laser product. Under the terms of a Space Act Agreement, a Lantis scientist will perform research in a Langley lab with help from the technology's inventors. Assuming FDA approval of the technology by mid-2001, the goal is to begin sales of the device by the end of 2001.

Dr. Craig Gimbel is a dentist, co-founder of Lantis and a principal investigator for the FDA clinical trails that led to the May 1997 approval of lasers for hard-tissue dentistry. Gimbel believes both patients and dentists would find much to like about a dual-wave dental laser: "Filled teeth can be stronger because a laser removes less of the healthy tooth for filling. And, unique to the NASA technology, a dual-wavelength laser set to oscillate rapidly between the two wavelengths and blend them has tremendous potential as a surgical device — one of the wavelengths could cut the patient's (soft) tissue with precision, while the second wavelength could minimize blood flow by cauterizing the cut.

"The dentist feels more comfortable when the patient feels more comfortable. When I don't have to use a dental drill, or I don't have to use a scalpel, or I don't have to use anesthesia in all procedures, I feel better every day and, of course, my patient does."

In addition to the dual-wavelength laser, Lantis also plans to commercialize another NASA technology — a coherent, light-based imaging system. The imaging system would provide early detection of tooth decay and gum disease, allowing the minimally invasive treatment laser announced today to be used to its best advantage.

The discovery of the two-wavelength technology is a spin-off of work to develop high power lasers for remote sensing of the atmosphere, a key element in NASA's atmospheric sciences mission.

The technology also has been used in aeronautics research, including measurements of winds, wind shear and turbulence in flight and measurement of wake vortices from the ground in airport terminal areas. Those investigations led to the discovery that it is possible to selectively produce two or more useful wavelengths from a single laser source.

For information about business opportunities with NASA, check the Internet at <http://tech-transfer.larc.nasa.gov/>.

AdVentures

Skin Cancer Screenings Planned

Langley Research Center's Occupational Health Clinic will provide free skin cancer screenings for employees from 8 a.m. to 4 p.m. June 2 and 9. To make an appointment, call the clinic at ext. 43195.

For more information on skin cancer, visit the Office of Human Resources Web site at <http://ohr> and click on the Occupational Medicine hyperlink button.

Steam Outage Moved To June 3

The Langley Research Center Steam Plant outage, originally scheduled to begin on May 6, has been postponed to June 3. Employees are requested to secure any systems or projects that may be affected by the outage. Steam should be restored by 10 p.m. June 4. For more information, call Ed Shook at ext. 44922.

Savings Bond Campaign Begins

Langley Research Center's 2000 U.S. Savings Bond Campaign will be held from June 5 to 16.

For nearly 60 years, savings bonds have served as the vehicle for beginning a habit of saving and investing. Savings bonds continue to serve as an easy, convenient way for people to start saving, to build reserves to meet everyday savings needs that can't be met prudently by drawing on a 401(k) or by selling stocks or mutual fund shares, and to build additional capital for future investment.

U.S. Savings Bonds begin to earn interest when half the purchase price is set aside, rather than full price. Series EE Bonds can be tax deferred until they are redeemed and are exempt from state and local income taxes. For education savings, a tax exclusion is available to help pay the tuition and fees of higher education.

For current rate information, call 1-800-4USBOND or visit <www.savingsbonds.gov> on the Internet.

ACT To Host Workshop

The University of Virginia Center for Advanced Computational Technology (ACT) will host a two-day workshop on Nano-Biotechnology on June 14 and 15 in Langley Research Center's H.J.E. Reid Conference Center. An online registration form can be found at <http://actuva-www.larc.nasa.gov/ register.htm>. Other information about the workshop can be found at <http://actuva-www.larc.nasa.gov/workshop/june00/>.

High-Tech Course

Langley Research Center's Employee Development Branch and the Wind Tunnel University will sponsor a course entitled, "High-Technology Marketing and Program Development: What Technical Managers Need to Know" on June 16 and 19.

The course is designed to provide technical managers with the fundamental knowledge they need to understand, interface with and contribute to the business development and selling activities of their organizations. It utilizes lectures, readings and real-world examples, discussions and exercises in applying the principles to the participant's own organizations.

Anyone interested in attending the class should submit a completed "Application for On-site Training" form to DeAnna Lawrence at Mail Stop 309 or fax it to ext. 48543. Participants will be selected on a first-come, first-served basis.

CLASSIFIED

FOR RENT: Timeshare condo on golf course in Kitty Hawk, N.C., June 17-24. Two bedrooms, two bathrooms, covered deck, completely furnished, sleeps six. Across from laundry room and rec room with indoor pool, near outdoor pools, tennis, etc., $800. Call 596-8484.

The deadline for the June 16 edition of the Researcher News *is June 5. Send submissions to <j.r.roberts@larc.nasa.gov>.*

Runners' Club Race Results

The Langley Runners' Club recently announced the results of the Spring 2000 NASA Intercenter Running Competition:

■ Erik Vedeler won Langley's 10K race with a time of 36:55, followed by Chris Slominski at 39:11 and Andrew Culter at 41:29. Caroline Diehl was the first-place woman with a time of 43:58, and Jan Spangler was second at 50:08.

■ Vedeler also won Langley's 2-mile race with a time of 10:56, followed by Scott Bartram at 11:22 and Slominski at 11:34. Spangler was the first-place woman with a time of 14:45, followed by Erica Byrd at 18:23 and Bernice Weinstein at 24:18.

For more information about the Langley Runners' Club, call Richard Shearer at ext. 47036 or visit the club's Web page at <http://larc-exchange.larc.nasa.gov/laa/runners>

Volleyball Registration Open

Online registration for the Langley Volleyball Club's Summer 2000 Season will continue through 4 p.m. June 8.

Play will begin the week of June 12 and run through the end of August on the following schedule: Monday, intermediate doubles; Tuesday, B-league quads; Wednesday, C-league quads; Wednesday, advanced doubles; and Thursday, BB-league quads.

Team fees are $40. For more information, visit the club's Web page at <http://volleyball.larc.nasa.gov/>.

Duplicate Bridge Results

Results of the Langley Duplicate Bridge Club's May 10 game were: first place, Ram and Sumi Prabhu; second place, Bill and Nan Jones; third place, Betty Burnes and Marty Tennille; fourth place, Larry and Joan Bement. David Burnes, president of the Peninsula Duplicate Bridge Club, served as the guest director.

The next game will take place at 5:30 p.m. June 14 in the Langley Room of the H.J.E. Reid Conference Center. For more information, call Geoff or Marty Tennille at 850-1532.

Center Snapshot

Photo by Jeff Caplan

Mary Deuell, a computer specialist in Langley Research Center's Procurement Operations Branch, writes programs and maintains databases for the Office of Procurement. Born and raised in Newport News, she is married with two children and enjoys spending time with her family and being involved with her church. Deuell started her education at Virginia Tech and finished at Old Dominion University with a bachelor's degree in management. She entered NASA as a co-op and has been a civil servant for the past 15 years. What does she like about working at Langley? "The people that I work with are some of my best friends," she said.

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Researcher News

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Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 12 ❖ June 16, 2000

C&I Initiative Begins

Center On A 'Fast-Track' To Identify Creative Thinkers

By DR. JEREMIAH F. CREEDON
Langley Research Center Director

"Man is a singular creature. He has a set of gifts which make him unique among the animals: so that, unlike them, he is not a figure in the landscape — he is a shaper of the landscape."

— Jacob Bronowski

Mathematician, historian and science writer Jacob Bronowski is perhaps most renowned for his book and BBC television series "The Ascent of Man." The author recognized that imagination and reason enable men and women to not merely accept their environment but to change it.

To localize and target Bronowski's view of humankind's place in cultural evolution, the above quote could be paraphrased to read: "Langley employees are singular creatures. Each has a set of gifts which makes him or her unique. Langley employees are not figures in the landscape — each can be a shaper of the future."

The creative people that composed Outreach Team 2 (OT2) recommended an approach to enhance and cultivate innovation at the Center. Today, I am pleased to endorse the Creativity and Innovation (C&I) initiative proposed by OT2. I have selected Joe Heyman, working with Dennis Bushnell, to lead this dynamic opportunity.

C&I will fund up to 30 individuals or teams, giving our employees both the encouragement and the time to explore radical, creative technologies within our mission areas. This initiative is designed to encourage high-risk, researcher-generated breakthroughs to solve society problems. If the effort is not high-risk, high-payoff, the research is not C&I material!

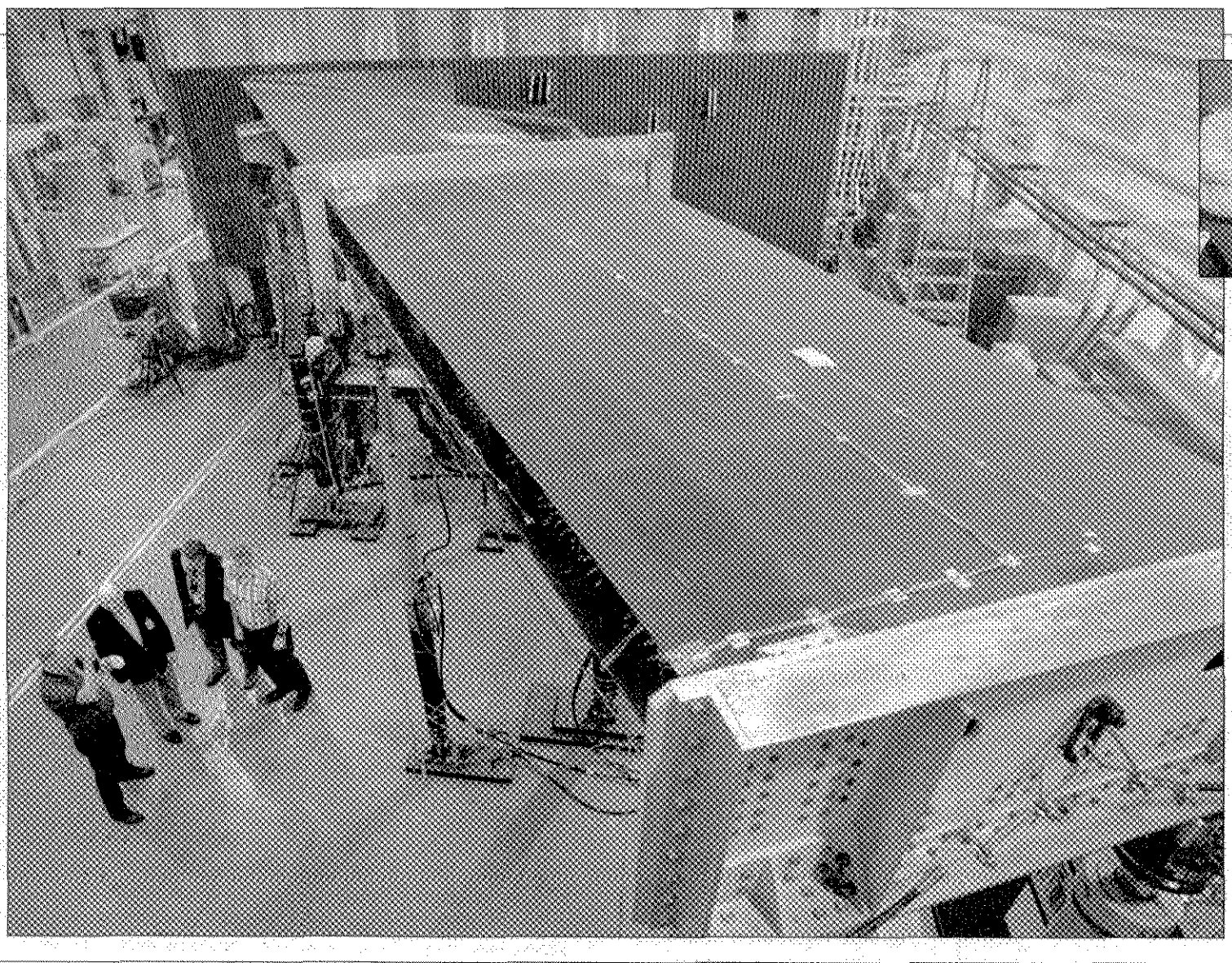
■ Details about the Creativity and Innovation initiative appear on page 3.

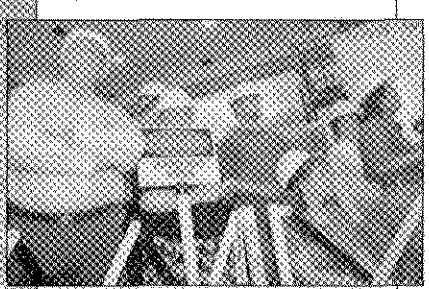
Langley continues to measure its success by the extent to which our aerospace research results improve the quality of life. The expected outcomes of C&I may be potential new programs at the Center; outcomes will certainly be solutions of value to our customers.

Innovation is a hallmark at Langley. For more than 80 years, this Center has been the birthplace of breakthroughs that have enabled aerospace leadership. C&I will channel our employees to explore, take risks, even fail — but, in learning, make a difference to the nation while helping shape the future of the Center.

I encourage each of you to learn more about Langley's C&I process. Draft problems are available on the Web at <http://creativity.larc.nasa.gov>. Your comments on the topics are invited until July 7 using the Web. The topics will be set before July 14 when a Creativity Fair will be held in the H.J.E. Reid Conference Center. Research proposals will be due Aug. 18. Proposals will be reviewed in September and award announcements will be at the end of September.

The Center is on a fast-track to empower creative thinkers to turn their innovative ideas into new efforts for Langley and aerospace solutions for America.





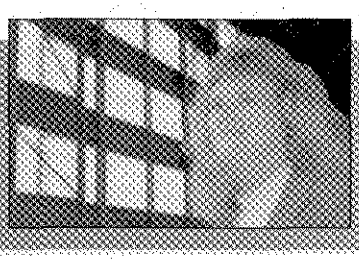
Wing Box Test

On June 1, Langley Research Center's Structures and Materials Competency tested the load of a 42-foot composite "wing box" manufactured by NASA and The Boeing Co. using stitched resin fiber infusion technology, which eliminates the need for rivets or mechanical fasteners. A crowd of Langley employees and corporate officials watched as the wing tip flexed almost four feet past its design load limit. Data is being analyzed now, but the technology is expected to lead to lighter wings and reduce production costs by 20 percent.

Photos by Jeff Caplan

Inside This Issue:

Upcoming Colloquium: Harris On 'Composite Materials For Aerospace' *Page 6*



Former Technician Earns College Degree Through ERI Program *Page 7*

News Briefs

Around the Agency

X-RAY JET POINTS TOWARD ENERGY BOOSTER

NASA's Chandra X-ray Observatory has revealed a spectacular luminous spike of X-rays that emanates from the vicinity of a giant black hole in the center of the radio galaxy Pictor A. The spike, or jet, is due to a beam of particles streaking across hundreds of thousands of light-years of intergalactic space toward a brilliant X-ray hot spot that marks its end point.

The hot spot is at least 800 thousand light-years (eight times the diameter of our Milky Way galaxy) away from where the jet originates. It is thought to represent the advancing head of the jet, which brightens conspicuously where it plows into the tenuous gas of intergalactic space. RELEASE: 00-89

BLACK HOLES SHED LIGHT ON GALAXY

Astronomers are concluding that monstrous black holes weren't simply born big but instead grew on a measured diet of gas and stars controlled by their host galaxies in the formative years of the universe. These results, gleaned from a NASA Hubble Space Telescope census of more than 30 galaxies with its powerful "black hole hunting" spectrograph, are painting a broad picture of a galaxy's evolution and its long and intimate relationship with its giant central black hole.

Though much more analysis remains, an initial look at Hubble evidence favors the idea that titanic black holes did not precede a galaxy's birth but instead evolved with the galaxy by trapping an amazingly exact percentage (0.2 percent) of the mass of the bulbous hub of stars and gas in a galaxy. RELEASE: 00-88

NASA AND VA TO DEVELOP REPORTING SYSTEM

A new system to improve patient safety was initiated recently when senior officials of the Department of Veterans Affairs (VA) and the National Aeronautics and Space Administration (NASA) signed an agreement to create a VA Patient Safety Reporting System to document health-care errors and "close calls" in VA health-care facilities.

The agreement commits both agencies to work together to create a voluntary external patient safety reporting system for VA. That reporting system will be operated by NASA and modeled after the Aviation Safety Reporting System (ASRS) that NASA operates for the Federal Aviation Administration. Ames Research Center will operate the VA Patient Safety Reporting System under a Memorandum of Agreement between the two agencies. RELEASE: 00-44AR

ARCTIC OZONE DEPLETION LINKED TO CLOUDS

A significant decline in ozone over the Arctic last winter was due to an increase in the area and longevity of polar stratospheric clouds (PSCs), according to a group of researchers who participated in a large, international atmospheric science campaign.

The ozone-destroying clouds are made of ice and nitric acid, said University of Colorado at Boulder Professor Owen B. Toon, one of five project scientists heading up NASA's SAGE III Ozone Loss and Validation Experiment (SOLVE). The massive SOLVE project involved satellites, aircraft, balloons and ground-based instruments operated from December 1999 through March 2000 by more than 200 scientists and support staff from the United States, Canada, Europe, Russia and Japan. RELEASE: 00-43AR

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Price Honored By ODU

A. Gary Price, the outgoing head of Langley Research Center's Office of External Affairs, received an outstanding service award from Old Dominion University's College of Engineering and Technology during its annual honors and awards luncheon on May 5.

Price

Price, who retired on June 2 after 30 years of service at Langley, was honored for his commitment to Old Dominion University.

"It was his quiet influence within the center management hierarchy that finally resulted in a negotiated Memorandum of Agreement to allow the College of Engineering to operate the wind tunnel," said Jim Cross, director of the ODU wind tunnel. "He convinced the Center Director that the successful operation was, indeed, in the best interest of the center, NASA and the national technical communities. The tunnel's success is due mainly to the support and enthusiastic advocacy provided by Gary Price."

Speakers Bureau

Thirteen speakers from Langley Research Center's Speakers Bureau gave 16 presentations to 2,288 stakeholders in May. The groups included eight schools, two civic clubs, one church group, one Girl Scout group and one education center.

The speakers were: **Larry Bement, Larry Cooper, Bill Grant, Roger Hathaway, Nancy Holloway, Bruce Jackson, John Micol, Anna Noe, Gaudy Bezos-O'Connor, Joe Posey, Rob Rivers, Beverly Taylor** and **Myra Walton**.

To receive e-mail announcements of speaking opportunities, contact Olin Jarrett at <o.jarrett@larc. nasa.gov>.

Retirement

Langley Research Center's Aeroelasticity Branch will host a retirement social honoring **Robert M. Bennett** from 4:30 to 6:30 p.m. June 29 in the Langley and Hampton Rooms of the H.J.E. Reid Conference Center.

A cost of $10 per person will cover gift and heavy hors d'oeuvres. (Gift-only contributions are welcome.) RSVP with payment by June 20 to Dave Schuster at ext. 42259 or Angela Johnson at ext. 41207.

Letter

"Looking back, it is hard to know where to begin thanking all who made my retirement party a very successful and enjoyable event as I leave my career for a more leisurely lifestyle. I really appreciate all of my friends who were able to share it with me and my family. I understand that it was not possible for some of you to be there due to other commitments.

I will miss each and every one of you and hope to see and hear from you for many years to come."

Carol Satterwhite

In Memoriam

E. Clay Anderson

E. Clay Anderson died on May 21 at the age of 66. Anderson, a native of Ellijay, Ga., served in the U.S. Army and was a senior research engineer in Langley Research Center's Computational Modeling and Simulation Branch at the time of his death.

Anderson was recognized as an international expert on turbulence closure models and their use for the analysis of complex viscous flows. He was also a recognized expert in high-temperature gas flows. He made major contributions to the design of U.S. ground-based test facilities, especially those facilities used in transonic flows to develop supercritical airfoil technology and laminar flow control concepts.

Ryland M. Campbell

Ryland Monroe Campbell died on June 1 at the age of 59. Campbell, a native of Covington, worked as a technical specialist at Wyle Laboratories for 32 years and was an avid participant in the NASA Men's Softball League.

James W. Carr Jr.

James W. Carr Jr. died on May 23 at the age of 61. Carr, a native of of Utica, N.Y., served in the U.S. Air Force for more than 20 years and was a veteran of the Vietnam War. He retired from the Air Force in 1978 and was working for Dyncorp at Langley Research Center at the time of his death.

Russell K. Nevins

Russell K. Nevins died on May 29 at the age of 78. Nevins, a native of Victoria, served in the U.S. Coast Guard during World War II and retired from NASA in 1980 after 32 years of service as an electrical technician.

Wayne C. Simmons

Wayne Carl Simmons died on May 18 at the age of 44. Simmons, a native of the Bronx, N.Y., served in the U.S. Air Force for 20 years as a military police officer and was a veteran of Operation Desert Storm. After retiring from the Air Force in 1995, Simmons worked as a security guard at Langley Research Center.

New Vehicle Decals Being Issued

Langley Research Center will begin issuing new vehicle decals on June 19. All civil servants and contractors will be required to obtain the new decals for their registered vehicles.

To streamline the process, an online registration system has been established at <http://stonewall.larc.nasa.gov/osema/>. Decals for vehicles registered online will be sent to employees' Mail Stops.

Those without online access may obtain decals from the Badge and Pass Office; walk-in registration at the Badge and Pass Office will be offered from 8 a.m. to 3:30 p.m. every Friday up until the deadline of Nov. 1.

To best serve all employees, a schedule will be published by organizational code. All personnel will receive e-mail with dates for their online registration, the online address and any special instructions.

Each employee may request a maximum of four decals for their registered vehicles. The decals are to be placed inside of the windshield in the blind spot behind the rearview mirror, below the tint line. Decals for outside placement are available by request.

For more information, contact the Badge and Pass Office at ext. 42790.

Looking 'Beyond The Horizon'

New, 'High-Risk' Research Proposals Due By Aug. 18

By MEGHAN WOODCOCK
Assistant Researcher News Editor

Langley Research Center rolled out a new initiative called Creativity and Innovation (C&I) on June 9. No, this is not just another process with a flow-chart attached — this is a fresh start to entice far-out thinkers at Langley to push the edge of the envelope for selected aerospace topics. In addition, think-assist tools will be created that will be available to all researchers and engineers from the convenience of their own desks. It promises to be fast, easy, interactive and fun.

That's right, we said "fun."

The Goal?

C&I will encourage researcher-generated creativity and innovation for breakthroughs that solve societal problems. Langley plans to fund up to 100 people, either individually or in teams, and give them time to explore their radical, new, mission-centered technologies.

"Langley has been a mecca for the technologies that have become the future," said Joe Heyman, Langley's Senior Technologist. "It's time for us to continue that future by investing in futurist technology. We want all researchers to be excited about their work."

What is the C&I Initiative?

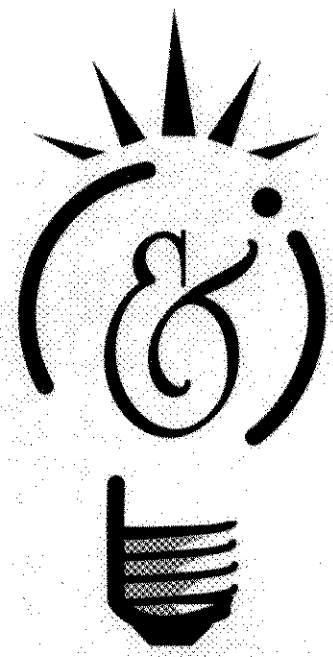
C&I is based on how people think creatively. Yes, all people think creatively! Creative thinking is natural for children and can be for adults as well. Several elements that contribute to a creative-thinking environment are definitive long-term visions, flexibility, lack of fear of failure, fun of exploring the unknown (and hard work), immersion in a sea of information and the main reward for pushing the envelope — discovering what is hidden on the other side!

To help the process, a new Web-based medium will enable all researchers and engineers to share information with the touch of a button — no more piles of paperwork to submit your innovative new ideas. If your ideas don't fit into the proper mold, Heyman said that's OK.

"We are inventing the tomorrow, looking beyond the horizon," he said. "It's OK to do high-risk, exciting research. It's OK to fail, as long as we learn from it."

The new Web-based program is "Slashdot," a freeware tool developed by and for IT enthusiasts. It provides an open forum, like a Web "chat group," for researchers to discuss and discover the future of Langley's work. It will enable information specialists in Langley's library to keep participating employees up to date with access to targeted knowledge. Fundamentally, understanding and navigating the vast, global knowledge base is the birthplace of creativity.

Initial topics will be on the internal Web for Center-wide response. Civil service researchers will log-on and comment on the topics. A Creativity Fair will be held on July 14 for further topic discussions. After the Creativity Fair, they can submit an "Intent" to propose, and finally submit a two-three page proposal. Responding is as easy as a click of a button.



Creativity & Innovation

NASA Langley Research Center

"Far better to dare mighty things, to win glorious triumphs, even those checkered with failure, than to rank with those poor spirits who neither enjoy much nor suffer much, because they live in the gray twilight that knows not victory or defeat."

– Teddy Roosevelt, at the dawn of the 20th century

Proposed Topics

C&I solicits proposals for the topic areas listed below. Your creative ideas will help Langley lead the nation in aerospace technologies and systems. Proposals must represent ideas (big and small) that are high-risk, high payoff, wondrous, different and powerful and might lead to revolutionary changes.

Examples of types of technologies:

- Biomimetics and nanotechnology
- Soft computing
- Self-repairing, self-assembly structures
- Autonomous concepts
- Smart flow
- Integrated measurements, sensors
- Other …

Proposals address technologies and/or system level ideas for the following:

- How can we predict/manage global climate and environmental quality?
- How do we create truly integrated, environmentally friendly transportation?
- What new aerospace configurations are worth studying?
- How do we radically lower cost of space access?
- How can we have more affordable access to the planets more often?
- What personal/national security areas should we investigate?
- Additional ideas, technologies or concepts.
- High-payoff ideas that do not fit other topics but through their barrier-breaking potential just have to be included; specific technologies that enable future options.

Proposal Selection Criteria

- Creativity: 40 percent
- Potential impact if successful: 30 percent
- Ability of proposers to pursue idea: 30 percent

How Do You Join the C&I Initiative?

Read the topics and understand where the Center is trying to go over the next decade. Use Slashdot to comment on the topics if you believe they can be improved. Your input can lead to new or modified topics before the Creativity Fair.

After the Creativity Fair, it will be advantageous to be an early submitter of your Intent. An Intent is a brief, two-line abstract and title. When an employee responds to a topic with an Intent to propose, a natural response group will form on the Web. People will communicate ideas back and forth, enriching the original idea, stating their interest to team with the Intent, thus providing the originator with more information to be used in creating the proposal, perhaps even creating a natural team and team leader, if a team is needed.

Brainstorm, talk to people you know, meet new people, use Langley and external resources such as the NAV Center, Internet and libraries to create a two- to three-page proposal and submit it before the Aug. 18 deadline.

"Langley dreams, investigates, invents and innovates" Heyman said. "We need individuals and/or teams that bring new ideas and disciplines together. We need dreamers who are not constrained by artificial barriers yet understand the world."

Will This Add To The Workload?

No. This will shift the workload through agreements with the Programs and the Competency management. After the proposals are analyzed, negotiated time up to 80 percent will be dedicated for the researcher(s) to work on his or her proposal. Next year, the C&I Fair will start earlier in alignment with regular workforce planning processes.

C&I Deadlines

The first topics are on the Web now at <http://creativity.larc.nasa.gov>. The creativity fair will be held in the H.J.E. Reid Conference Center on July 14. Proposals are due by Aug. 18. The Steering Panel will review proposals and announce awards by Sept. 28. Research is to begin with the new fiscal year on Oct. 1.

The Big Picture

"We want our employees to reach out and bring to Langley the vast knowledge of humankind that is at our gates," Heyman said. "We must cross those gates to gain that knowledge and use that knowledge to lead in our mission technologies."

In Search of Smooth Landings

Researchers Gather Friction Data for Safety Standards

Editor's note: The following story appeared in the May edition of "ASTM Standardization News."

By SUSAN B. COSTELLO
Langley Research Center

Sometimes the term "friction" indicates an undesirable characteristic, but on an airport runway, friction is indispensable. Airport operators monitor runway conditions for friction and contaminants. A runway that has a surface condition other than bare and dry is termed "contaminated," and any amount of contaminant may reduce friction. To maintain acceptable operating conditions, airports use plows, brooms and blowers to remove loose contaminants from pavement surfaces and chemical agents to reduce the effects of runway ice and compacted snow. As an aircraft approaches for landing, the control tower relays information to the pilot about these surface conditions as well as information about current wind, visibility, precipitation and air traffic.

The responsibility for the decision to land or not to land (the "go/no-go" decision), ultimately rests with the pilot. The pilot makes the decision based on the information supplied by the control tower and the pilot's knowledge of the aircraft. Also for consideration in the go/no-go decision are factors such as the distance and accessibility of alternate landing sites, the conditions at those runways and the amount of aircraft fuel remaining. Obviously, this decision can be critical; the pilot needs effective, consistent evaluation of runway conditions and a reliable means for relating those conditions to the aircraft's stopping capabilities.

Painstaking preparation assures accurate monitoring of environmental conditions such as pavement and contaminant temperature.

Courtesy of Tom Yager

Getting the Program off the Ground

Runway water, ice, or snow was a factor in more than 100 aircraft accidents between 1958 and 1993. Inconsistent, ineffective reporting of winter runway conditions to airplane pilots has contributed to a disproportionate number of aircraft ground handling accidents. In spite of advances in technology and operational procedures, safe winter operations remain a challenge for airport operators, air traffic controllers, airlines and pilots, who must coordinate their efforts under rapidly changing weather conditions.

Friction researchers in the aviation field have long campaigned for airport operators to use ground test vehicles to measure runway friction conditions. Although such test vehicles are not currently required, many airports do evaluate runway friction by means of vehicle-mounted or trailer-mounted friction testers. Because different airports use different friction testers, however, values applied to runway friction conditions have not been consistent from one airport to another. And because different types of aircraft behave differently on a given runway friction condition, identifying the stopping capability of an aircraft once the friction value is obtained has not been a clearly defined process.

In 1999, the Federal Aviation Administration (FAA) issued a revision to its guidelines on reporting pavement conditions. The revision states that, along with friction values, the runway condition report should identify by name the type of friction tester used. This additional information, however necessary, places a further burden on pilots: to know how the friction values from different testers relate to their aircraft.

Complicating the winter weather picture is that, for a given contaminated runway condition, criteria for safe operations differ from airport to airport due to differences in runway dimensions and pavement materials and textures. A step toward decreasing ground handling difficulties is to standardize and harmonize friction tester values so airports can provide pilots with uniform and reliable runway condition information that is independent of the type of measuring device.

In today's economic climate, aviation industries are committed to affordable, cost-effective technology for improved safety and profitability. Aligning with this commitment, several government agencies have partnered in the Joint Winter Runway Friction Measurement Program to share cost, expertise and facilities to achieve program objectives with industry's guidance. The National Aeronautics and Space Administration's (NASA's) Langley Research Center and Transport Canada (TC) are leading this study with support from the FAA. Also participating are numerous government and industry organizations from North America and Europe and manufacturers of both aircraft and friction testing equipment.

Consistent, Well-Defined Measurement

The joint program integrates data from manual contaminant analyses, friction tester measurements and aircraft instrumentation. Analysis of these data sets shows the effects of many parameters on aircraft and ground vehicle braking friction under various surface conditions.

The major program objectives are twofold:

- Harmonize friction tester measurements to report consistent friction value, or "index," for similar contaminated runway conditions, and
- Establish reliable correlation between friction tester measurements and aircraft braking performance.

Accomplishing these objectives will give airport operators better procedures for evaluating runway friction and maintaining acceptable operating conditions and will contribute to reducing friction-related aircraft accidents.

The first objective of the Joint Winter Runway Friction Measurement Program involves harmonizing the friction measurements obtained by a variety of friction testers on a wide range of winter runway conditions. Many of these devices and test procedures are described in ASTM standards and practices prepared by ASTM Committee E17 on Vehicle-Pavement Systems. To ensure the accuracy of these different friction testers, Committee E17 formed a task group to prepare a standard that describes an international friction index calibration tester (referred to as the reference vehicle); the prototype underwent initial testing in early 2000.

Relating these harmonized friction tester measurements accurately to aircraft braking performance is the second objective of the program. Since testing began in January 1996, a variety of instrumented test aircraft have been involved.

During program testing, researchers monitor the test area environment and manually record numerous pre-run and post-run conditions: wind speed and direction; ambient temperature; temperatures of pavement surface and snow, slush, or ice; depth of cover material (water, snow, slush, ice); and in the case of snow or slush, specific gravity of cover material to determine density.

Testing thus far has used nine instrumented aircraft and 15 friction testers from Austria, Canada, France, Germany, Norway, Scotland, Sweden, Switzerland and the United States at test sites in Canada, the United States, Norway and Germany. Friction tester manufacturers, aircraft manufacturers, airports, airlines and government agencies of eight countries have participated.

Joint Program Accomplishments

The Joint Winter Runway Friction Measurement Program will contribute significantly toward the reduction of aircraft accidents in adverse weather environments in two ways:

- By providing better tools for airport operators to use in evaluating runway conditions and
- By providing more accurate and reliable runway friction and aircraft stopping data for pilots to use in making their go/no-go decisions.

Joint program testing in the 1996–2000 winter seasons has provided a substantial friction database that includes nearly 400 instrumented aircraft test runs and more than 9000 friction tester runs under bare and dry, rain and artificially wet, artificially flooded, loose and compacted snow, smooth and rough ice, sand-

Continued on Page 5

Friction

Continued from Page 4

ed and chemically treated ice and slush conditions. Six weeks of warm-weather data from NASA Tire/Runway Friction Workshops (1994–1999), involving wet and dry conditions on different pavement materials, textures and roughness, have been combined with the data from 19 weeks of winter testing. Results from the seventh annual NASA Tire/Runway Friction Workshop in May 2000 will be added to the friction database when data analysis is complete.

Data obtained during 1996 and 1997 helped define the methodology for an International Runway Friction Index (IRFI) to harmonize the friction measurements obtained by the different testers. Selected data from the first three years of testing were used to establish a Canadian Runway Friction Index (CRFI), an abbreviated version of the IRFI. Data from testing in 1998–2000 refined and improved the IRFI methodology.

Commercial friction testers can be grouped into three basic types: the fifth-wheel type (a standard automobile with a measuring wheel installed), the metered vehicle type (a standard automobile with a decelerometer installed to measure the vehicle's wheel speed) and the trailer type (a self-contained measuring-wheel system pulled by a vehicle). Under similar runway conditions at the Canadian, United States, Norwegian and German test sites, IRFI data from the different friction testers agreed closely, further substantiating the IRFI methodology. Researchers anticipate that all models of runway friction testers will be tested and harmonized with the IRFI to optimize their effectiveness. The CRFI is presently in use at Canadian airports as an interim measure to help pilots determine their aircraft stopping distance under compacted snow and ice conditions; Transport Canada plans to adopt the IRFI once the standard is approved by ASTM.

Data analysis in progress will further improve the harmonization of friction tester measurements for the IRFI and help determine a suitable Aircraft Friction Index (AFI). The AFI will be based on the stopping distances of different aircraft types for different IRFI values. Data indicate three probable type-categories: commuter aircraft, narrow-body transports and wide-body transports. Primarily, the different types of landing gear and brake systems determine the three categories. Once testing correlates an aircraft's stopping capabilities to the IRFI, pilots will be able to use the AFI to make the go/no-go decision. The expectation is that when the IRFI is accepted and in common use, aircraft manufacturers will want to test all aircraft types to determine aircraft braking performance for different IRFI values. Data from these tests will refine the different AFI categories.

During the aircraft test runs, a determination also has been made on the magnitude of runway contaminant-produced drag on aircraft ground performance. This type of drag results from contaminants thrown up by the aircraft tires during takeoff and landing and can affect aircraft ground handling. While contaminant-produced drag is a function of runway conditions, it does not relate to friction measurements or braking capability. It is, however, a factor of consequence in combination with other takeoff-landing factors: aerodynamic drag, aircraft accelerating-braking capabilities, runway friction and runway length.

Joint program testing in the 1996–2000 winter seasons has provided a substantial friction database that includes nearly 400 instrumented aircraft test runs and more than 9000 friction tester runs under bare and dry, rain and artificially wet, artificially flooded, loose and compacted snow, smooth and rough ice, sanded and chemically treated ice and slush conditions.

Program Impact

The proposed IRFI standard defining test procedures, data analysis methods and accuracy requirements is currently being reviewed for approval by ASTM Committee E17 on Vehicle-Pavement Systems. Acceptance, dissemination and implementation of the approved IRFI (and later, AFI) standard by the aviation community is expected through the guidance and assistance of several organizations, including ASTM, FAA, Transport Canada, the International Civil Aviation Organization, the Joint Aviation Authority, the International Federation of Airline Pilots, the United States and Canadian Airline Pilots Associations, the Air Transport Association and the Airport Council International. Researchers hope the clear, effective standard will encourage more airport operators to heed the ongoing campaign for use of runway friction testers.

Worldwide acceptance of the IRFI would make friction standards consistent throughout the aviation industry. The IRFI will not only standardize runway friction values, but also help airport operators determine when to close a runway and, following treatment to restore friction, when to reopen the runway. In addition to improving aircraft ground operational safety, the overall results from this program are expected to increase the capacity of airports and may also apply to highway vehicle safety where winter conditions are severe.

On the Horizon

Although December 2000 was to mark the end of this ambitious five-year program, the various participating government organizations have agreed to extend the program by five years in order to include different aircraft types and explore more specific runway conditions. For example, a snow-covered runway exhibits different properties and gives a different IRFI value at –10°C than at –30°C. More aircraft and ground vehicle data are needed for slush-covered runway conditions also. And since reversing engine thrust can supplement wheel braking to enhance stopping capabilities, manufacturers and airlines are interested in reverse-thrust performance data. Aircraft braking performance and contaminant drag measurements at speeds from 120 to 170 knots have also been identified as part of future aircraft test run matrices, together with monitoring aircraft wheel brake torque variations during braking efforts.

Future testing in the joint program with new or improved friction testers and with other aircraft types, especially wide-body transports, will further validate the IRFI methodology and help produce an effective AFI to correlate different aircraft braking performance to the IRFI. Two wide-body transports have been committed for testing in the 2001 winter season; efforts are ongoing to enlist other types of aircraft for further winter season testing.

For more detailed information or status on this extensive program, visit <http://sdb-www.larc.nasa.gov/SDB/Research/data/RunwayFriction.html>.

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Summer Scholars

Sheena Patrick, a chemical engineering student from Spelman College, looks over orientation materials at Langley Research Center's Summer Scholars reception on May 30. Patrick, who will spend the summer studying polymer erosion, is a participant in Spelman's Women in Science and Engineering (WISE) program, one of three Summer Scholars programs developed specifically for future engineers from historically black colleges and universities. (Morehouse College and Florida A&M University also participate with their Strategic Preparedness Advancing Careers in Engineering (SPACE) and Increase Minority Access to Graduate Engineering (IMAGE) projects.) Summer Scholars participate in 10-week educational research mentorships at the NASA center of their choice. Langley employees serving as mentors this summer are Sang Choi, Robert L. Fox, Michael Lightfoot, Gerald Pellett, Michael Ruiz, Odilyn Santa-Maria and Olaf Storaasli. The program is funded by NASA Headquarters and hosted by the Office of Equal Opportunity Programs.

Photo by Meghan Woodcock

Award Opportunities

Langley Research Center is seeking nominations for two awards: the Center's annual Equal Employment Opportunity Award and the Women of Color Technology Awards.

EEO Award

The Equal Employment Opportunity Award recognizes civil servants for significant contributions in fostering equal opportunity.

Nominations should be submitted to Karen Ridlon in Langley's Office of Human Resources no later than June 23.

For more information, contact Karen Ridlon at ext. 43194 or <k.e.ridlon@larc.nasa.gov>.

Women of Color Awards

The Women of Color Technology Awards celebrate the superior achievements of minority women in the fields of math, science, technology and engineering. The award program is open to civil servants and contractors.

Nominations should include a description of the nominee's responsibilities, the effect of the achievements on the company, the breadth of community outreach activities and effect on other minorities seeking science and technology careers. Nominations also should include letters of recommendation from managers within the hierarchy of the nominee's place of employment.

The entry deadline is June 30.

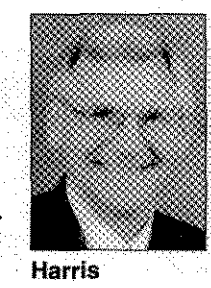
Awards will be presented at the Women of Color Technology Awards Conference, which will take place from Sept. 28-30.

For more information, including a list of the 16 award categories, visit <http://www.blackfamilynet.net/soon/women_of_color_page1.htm> on the Web.

Colloquium and Sigma Series Lectures

Harris On 'Composite Materials'

Charles E. Harris will present a Colloquium and Sigma Series Lecture entitled, "Composite Materials for Aerospace Applications," at 2 p.m. July 11 in Langley Research Center's H.J.E. Reid Conference Center and at 7:30 p.m. July 11 at the Virginia Air and Space Center.


Harris

Abstract

Langley, NASA's "Center of Excellence" for Structures and Materials, has prepared an assessment of the "state of the art" in the design and manufacturing of large composite structures. The background that motivated the assessment was a series of unexpected manufacturing and design problems with the composite structure of the X-33 and X-34 experimental hypersonic vehicles.

The baseline for the assessment is the historical evolution of composites in actual aerospace vehicles. Applications of composites are reviewed for commercial aircraft, military aircraft and space-launch vehicles.

The assessment of the "state of the art" includes a summary of lessons learned, examples of current practices and an assessment of advanced technologies under development.

The assessment concludes with an evaluation of the future technology challenges associated with applications of composites to the primary structure of commercial aircraft and advanced space transportation vehicles.

Speaker

Harris leads the Center of Excellence for Structures and Materials at Langley. The principal functions of the Center of Excellence are to promote the enhancement of the pre-eminent structures and materials technical expertise and facilities distributed throughout NASA and to foster collaboration among the NASA centers. The "Center of Excellence" also conducts technology assessments and advocates for future research and technology development programs.

Prior to joining NASA in 1987, Harris was a professor of aerospace engineering at Texas A&M University and earlier a structural engineer for the Babcock & Wilcox Company.

Harris earned a bachelor's degree and a doctorate from Virginia Tech. He is a registered professional engineer in Virginia.

Upcoming Lectures

- **Aug. 1:** Tom Young on "Mars Program Assessment."
- **Sept. 12:** Kerry A. Emanuel on "Hurricanes."
- **Oct. 3:** Bill Dana on "The Lifting Bodies."
- **Nov. 7:** Ralph Merkle on "Nanotechnology."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

NASA Forms Multimedia Partnership

By PEGGY WILHIDE and BRIAN WELCH
NASA Headquarters

NASA and Dreamtime Holdings, Inc., have formed a partnership that will deliver the adventures of the space frontier through the new technologies of the digital frontier.

The unprecedented agreement was announced on June 2 at Ames Research Center. It includes provisions to provide, for the first time, high-definition television coverage of astronaut activities aboard the International Space Station and on Space Shuttle missions. It will also create an easily accessible, Web-searchable, digital archive of the best of NASA's space imagery.

"Not only does this bring the space program into partnership with Silicon Valley," said NASA Administrator Daniel S. Goldin, "but the partnership also puts NASA at the forefront of the information age. This is innovative government at its best."

The NASA-Dreamtime partnership will provide unprecedented public access to space exploration by creating a state-of-the-art multimedia portal, <www.Dreamtime.com>, that will, with the click of a mouse, open the door to thousands of images, sounds, documents, blueprints and plans from NASA's currently underused archives. Roll-out of the in-depth portal site will begin within the next several months.

The unparalleled space content will be accessible via Web, wireless, TV and interactive TV devices. Shuttle launches will light up hand-held computers, and school children will be able to watch compelling interactive space programming on TV and the Web.

"Our goal of engaging more Americans in the exploration of space will be made possible through this partnership," Goldin said.

"We're proud to be partnered with NASA in this historic undertaking," said Bill Foster, Dreamtime's chairman and CEO. "To us, space is the great adventure, and this is the perfect marriage of high tech and high emotion. The opportunity to educate and excite is at the heart of this venture."

DREAMTIME

The NASA-Dreamtime partnership also will provide the agency with high-definition television capability that will give NASA engineers and scientists the most detailed look ever at Shuttle flight operations and at scientific experiments conducted on the Shuttle and on the International Space Station.

Education plays a prominent roll throughout the agreement. Educational content planned in the documentaries and TV broadcasts will be linked to educational modules in the portal.

"We plan to vividly convey the space experience into classrooms and living rooms across America," Foster said. "This partnership intends to explain the complexities of space in an interesting, entertaining and educational way."

The partnership's first priority will be to create the Dreamtime.com portal, which will offer the latest in interactive technology. The portal will be designed to provide more complete and in-depth access to information about space by combining video, audio, still photographs, high-resolution images, historical documents and three-dimensional views of spacecraft such as the Mars Sojourner and the Hubble Space Telescope.

The U.S. Congress declared commercial utilization to be one of the primary goals of the U.S. Space Program when it passed the 1998 Commercial Space Act and directed NASA to actively seek commercial users for the International Space Station. Congress asked NASA to conduct an independent market study to help identify potential commercial uses.

NASA publicly solicited offers for commercial collaboration from the public in December 1999, stating its intent to partner with the private sector to create new market opportunities in the multimedia arena. Dreamtime was selected from 12 offers based on criteria published in the announcement. The term of the agreement between NASA and Dreamtime is for seven years with a five-year option.

TGIR Awards

Langley Part Of Four Award-Winning Teams

Langley Research Center was a member of four teams that won awards at the 2000 Turning Goals Into Reality (TGIR) Conference, which took place May 18-19 at Marshall Space Flight Center:

- The Tiltrotor Noise Abatement Team won the Aviation Noise Reduction Award.
- The Airborne Information for Lateral Spacing (AILS) Research Team won the Affordable Air Travel Award.
- The High Speed Research Program/Tu-144 Project Team won the Next Generation Experimental Aircraft Award.
- The NASA Intercenter Systems Analysis Team won the Administrator's Award.

The TGIR Awards acknowledge outstanding contributions toward any of the three Program Pillar Goals — Global Civil Aviation, Revolutionary Technology Leaps and Advanced Space Transportation — and exceptional progress toward achieving any of the 10 Program Objectives of NASA's Aerospace Technology Enterprise, including safety, the environment, aviation throughput and technical innovation.

The presentation of the TGIR awards signifies NASA's recognition that each recipient has demonstrated excellence in making outstanding progress toward achieving the Program Goals and/or Objectives.

The Administrator's Award is the most prestigious of the TGIR awards. This year, the Langley-led Intercenter Systems Analysis Team received the award for implementing the annual Three Pillar Goals Assessment, which measures the contribution of technologies toward the Enterprise Goals.

Other recipients from across NASA and the aerospace industry received TGIR awards for aviation emissions reduction, next generation experimental aircraft and low-cost access to space.

A complete overview of the awards, details about the research and a full list of the participating NASA Centers and industry organizations honored is on the Internet at <http://tgir.msfc.nasa.gov>.

For more information about the 2000 TGIR Conference, contact Donna Roper at ext. 42505 or <d.g.roper@larc.nasa.gov>.

Stella Harrison left her job as a technician in Langley Research Center's Operations Engineering Branch four years ago to pursue an electrical engineering degree through the Employee Retraining Initiative (ERI). She graduated from Old Dominion University on May 6 and is now an electrical engineer assigned to the Aviation Weather Information Experiment (AWIN) in Langley's Aviation Safety Program.

Photo by Jeff Caplan

A Dream Realized

Employee 'Engineers' Her Way To A College Degree

By JIM ROBERTS
Researcher News Editor

Even though Stella Harrison graduated from Old Dominion University with a bachelor's degree in electrical engineering on May 6, the feeling hasn't quite sunk in yet. She said she doesn't expect it will until her diploma officially arrives.

"I guess until I have that in my hand, I'm not going to really know it," she said, "I don't feel any different."

She should.

Harrison, a "success story" from Langley Research Center's Employee Retraining Initiative (ERI), left her job as a technician in the Operations Engineering Branch four years ago in the hopes of becoming an engineer. Her dream has finally been realized: She is now an electrical engineer assigned to the Aviation Weather Information Experiment (AWIN) in Langley's Aviation Safety Program.

"The ERI program was a godsend to me," she said.

Harrison distinguished herself from the other ERI participants — not to mention the rest of ODU's "traditional" students — by winning a Faculty Award for being the top electrical engineering graduate in her class and the J. Harold Lampe Award for "overall excellence in engineering."

"I don't feel like I did anything different to receive these awards than anybody else out there," she said. "These guys worked just as hard as I did."

Three of her classmates — who also graduated with honors — disagree:

■ "She is a very hard worker and puts forth the effort to go the extra mile in everything she does," said Ellen Carpenter, who works in the Electrical & Electronic Systems Branch. "The results and accomplishments that she's earned speak for itself. We were all each other's support group."

■ "Stella is a very motivated and determined person," said Mark Frye, who works as an aerospace technologist in Langley's Model Systems Branch. "The ERI program was a major lifestyle adjustment, and for her to have the success she did is truly remarkable. Langley should be proud to have her as an employee."

■ "I really enjoyed working with Stella," said Byron Meadows, who works in the Laser Systems Branch. "Working together gave me a lot more pressure to push myself harder than I probably would have otherwise. She has a way of bringing out the best in people."

In addition to going to class full-time, Harrison served as president of the Eta Kappa Nu Electrical and Computer Engineering Honor Society and was a member of Tau Beta Pi, the Institute of Electrical and Electronics Engineers, not to mention her kids' PTAs. That's right: On top of taking a full courseload since 1997 — and coming back to work part-time last September — she continued to raise her two children: Stephanie, 8, and Christopher, 5.

"They were probably more proud than anyone else out there on graduation day," she said.

Harrison said she couldn't have finished her degree without the support of her ERI classmates, her stepfather and, most of all, her husband, Chris, a Unisys/PSI contractor who also works at Langley.

"It took a lot of juggling," she said. "It took a lot of support from my husband. ... Without my husband, it would have been impossible."

Harrison said she would eventually like to pursue a master's degree, but she's going to enjoy a little bit of a break right now. The only thing that's definitely planned at the moment is a celebratory trip to Disneyland in December.

"We've been planning it for three years," she said.

LAA Briefs

Entertainment Social

Langley Research Center's Activities Association (LAA) will host an entertainment social featuring Gator Allmond and prizes provided by Anheuser-Busch from 4 to 9 p.m. June 23 in Langley's H.J.E. Reid Conference Center. Tickets are $1 in advance and $3 at the door. For more information, call ext. 46369.

Country Western Dance

The LAA will host a Country Western Dance on June 24 in the H.J.E. Reid Conference Center. Doors will open at 6:15 p.m., lessons will begin at 7 p.m., and the dance will begin at 8 p.m. Admission is $4. Participants must be at least 16 years old. For more information, call ext. 46369.

Kings Dominion

Kings Dominion will host "NASA Day" on July 29. Tickets for the one-day event — $27.50 for adults and $22.50 for children — will be available in the LAA office beginning July 3. The ticket price includes an all-you-can-eat buffet in the park's pavilion. For more information, call ext. 46369.

Tennis Club

The Langley Tennis Club offers tournaments, ladder competition, leagues and clinics for beginner, intermediate and advanced players. Annual dues are $10. For more information, call Raul Mejia at ext. 43485 or Tom Yager at ext. 41304 or visit the club's Web site at <http://larc-exchange/laa/tennis/default.htm>.

Karate Club

The Langley Karate Club offers instruction for beginning and experienced martial artists ages 8 and above. The club's instructors are sanctioned by the Cuong Nhu Oriental Martial Arts Association.

Children's classes are offered from 6 to 7 p.m. Mondays and Wednesdays; adult classes are offered from 5 to 7 p.m. Mondays and Wednesdays.

The first month of instruction is free. Local dues are $40 for six months; national dues are $30 per year. Family rates are available.

For more information, call Roy Albang at ext. 46160 or Craig Cleckner at ext. 47048 or visit the club's Web site at <http://members.aol.com/cuongn>.

Bingo

The LAA hosts Bingo games at 7 p.m. every Thursday in the H.J.E. Reid Conference Center. Family members and friends are welcome to participate.

AdVentures

CLASSIFIED

FOR SALE: 98 Lincoln Mark VIII, LSC, excellent condition. Extras include moon roof, 10-disc CD, voice-activated cell phone, bright red metallic, light gray interior. $26,995 or best offer. Call 827-1160 days, 727-0983 evenings or e-mail LMParish@erols.com.

FOR SALE: 1996 Wilderness 'fifth wheel' travel trailer and 1995 Ford F-150 truck with full towing package and electrical brakes. Trailer fully equipped with air conditioner, microwave, fridge, shower, etc. Truck mileage: 28,000; trailer mileage: 15,000. $24,950. Call 599-4977.

FOR SALE: 16-foot Hobie catamaran sailboat and tilt-trailer. McKibbon white/red sails. $1,500. Call 596-6949.

FOR SALE: Two spaces in Peninsula Memorial Cemetery. $1,200 each. Call 596-2155.

FOR SALE: Benchcraft sofa, loveseat and chaise. Buff/natural color. Looks and feels like suede, but very durable. Excellent condition. Paid $1,600 for all three pieces less than one year ago, will sell for $1,000 or best offer. Call Lance or Holly at 826-8816 or e-mail <hdevr001@odu.edu>.

FOR SALE: Piano, excellent condition. $700. Call 850-3428 after 5 p.m.

FOR SALE: Pair of women's Nike Air aerobics shoes. Size 9 with good ankle support, all white leather and soles. Worn once, like new. Paid $70, asking $25. Call 848-9156.

AIAA Branch Selling T-Shirts

The George Washington University (GWU) Student Branch of the American Association of Aeronautics and Astronautics (AIAA) is selling T-shirts.

The branch — which operates through GWU's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center — is a student-run, non-profit organization. The majority of its budget comes from the sale of the T-shirts.

The T-shirt design can be viewed at the AIAA-JIAFS Web site: <http://www.seas.gwu.edu/~aiaa>. Prices are $15 for sizes S-XL and $18 for XXL and bigger.

To place an order, contact Jill Hanna at ext. 48176 or <j.l.hanna@larc.nasa.gov>. Orders will be accepted through June 23.

Procurement Hosting Open House

Langley Research Center's Office of Procurement will host an open house from 10 a.m. to 3 p.m. June 28 in the H.J.E. Reid Center.

Procurement representatives will be on hand to answer questions on a variety of topics, including simplified acquisitions, grants, cooperative agreements, small business goals, market research and the Consolidated Contracting Initiative (CCI). Bank of America also will be present to answer questions about credit cards.

Other outside organizations that will be represented include Federal Prison Industries (UNICOR), the Javits-Wagner-O'Day Act (JWOD) and General Service Administration (GSA). These organizations are required sources for purchasing supplies and services.

At 10 a.m. and 1 p.m., a speaker from GSA will talk about the services available under the MOBIS contract. This contract offers a wide variety of services frequently used at the Center, including consultation, facilitation, and survey services.

For more information, contact the Office of Procurement at ext. 41771.

Procurement Issues PR Deadlines

Langley Research Center's Office of Procurement has established the following deadlines for Fiscal Year 2000 Purchase Requests: Aug. 1 for requirements between $25,000 and $100,000 and Aug. 15 for requirements between $2,500 and $25,000.

Purchase requests not received by the above dates will be processed but may not be obligated by Sept. 30.

For more information, contact the Office of Procurement at ext. 41771.

UML Course Will Be Offered

The Employee Development Branch will offer a "Real-Time Unified Modeling Language (UML)" course from June 19-22. The class will be taught by Bruce Douglas. The three-day course teaches the concepts and techniques of object-oriented software development and provides an introduction to UML.

The first part of the UML course deals with analysis and design, and how the techniques can be applied to real-time systems. The second part of the course provides information on the management, estimation and scheduling of real-time, object-oriented projects for managers and engineers. The one-day segment teaches methods for creating accurate estimates, identifying realistic project goals, developing achievable schedules and tracking object-oriented projects so that mid-course corrections can be applied.

Employees interested in taking either course should fax an "Application For On-Site Training" to DeAnna Lawrence at ext. 48543.

Busch Gardens Tickets Available

The Exchange Shop sells discounted tickets to Busch Gardens Williamsburg. New this season is Jack Hanna's Wild Reserve, a new habitat offering up-close encounters with gray wolves, exotic lorikeets and other fascinating animals.

Adult tickets are available for $31, a savings of $6, and children's tickets are available for $24.75, a savings of $5.25. For more information, call ext. 41585 or 47918.

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The deadline for the June 30 edition of the *Researcher News* is June 19. Send submissions to <j.r.roberts@larc.nasa.gov>.

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Researcher News

National Aeronautics and
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Langley Research Center
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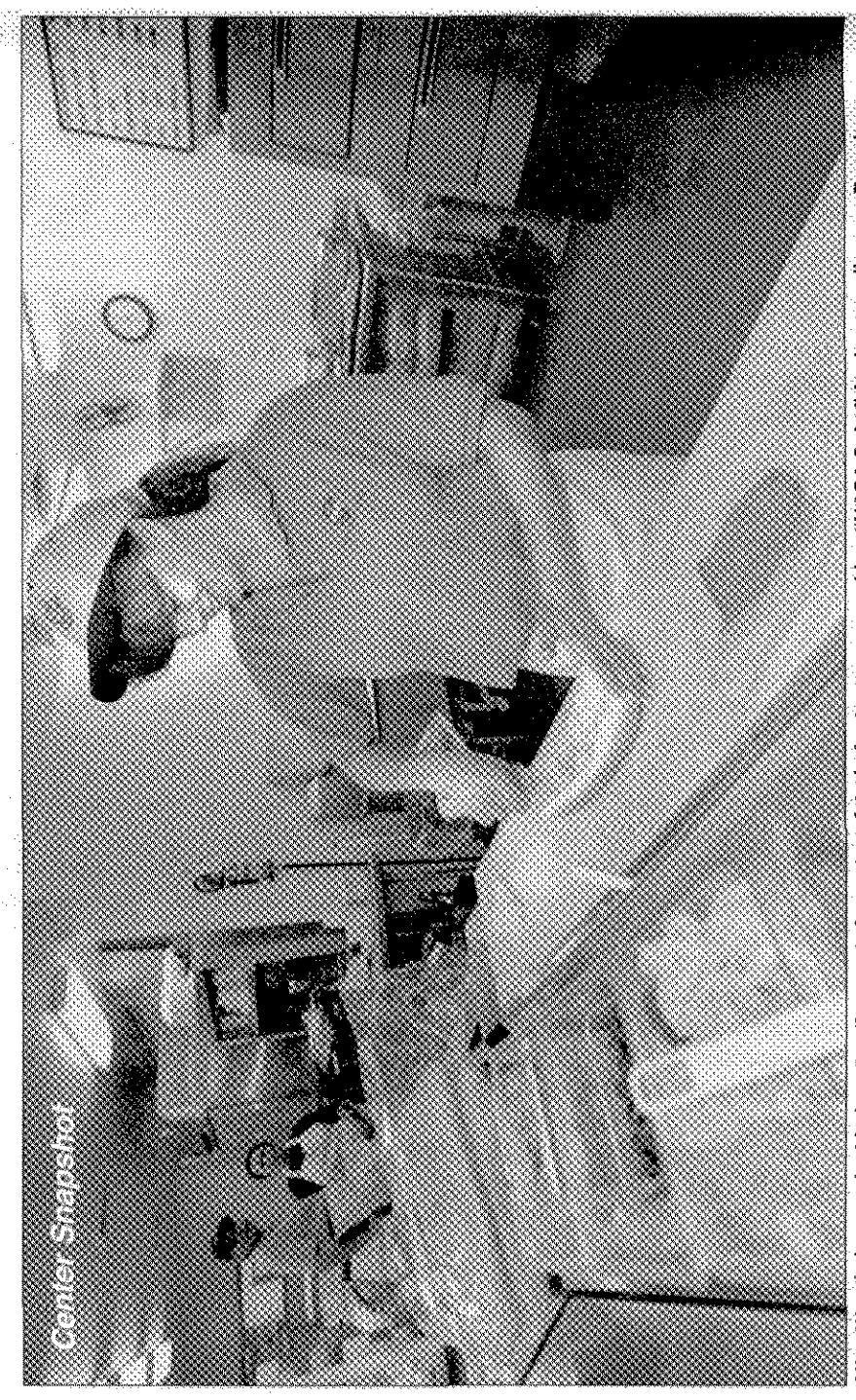

Alice Woods has worked in Langley Research Center's cafeteria for two years, making "NASA Subs" for hungry dinners. Born in Bloomington, Ind., she now lives in Virginia Beach. Outside of work, she enjoys reading, horseback riding and walking her Sheltie, Tamara. What does she like about working at Langley? "It's a comfortable atmosphere," she says, "and I like the people I work with."

Photo by Jeff Caplan

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

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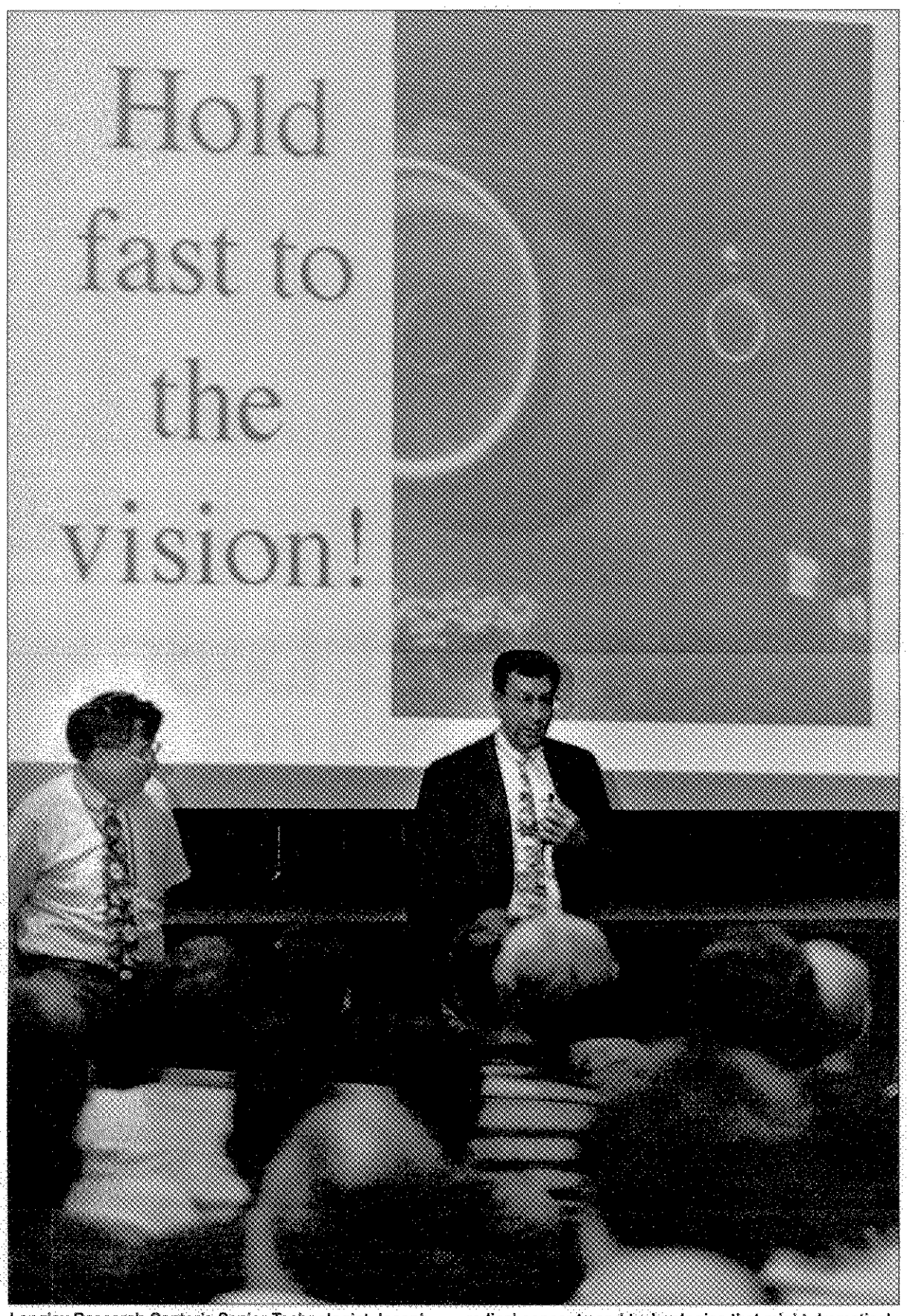
CREATIVITY & INNOVATION



Langley Research Center's Senior Technologist Joseph Heyman, left, and Associate Director for Research and Technology Competencies Doug Dwoyer, right, kicked off the Center's Creativity and Innovation (C&I) initiative in June by briefing employees in the H.J.E. Reid Conference Center. C&I offers employees an opportunity to compete for time, funding and facilities to explore broad topic areas that may create part of Langley's tomorrow. The design of C&I is based on flexibility to stimulate thinking and action for high-payoff, high-risk, radical concepts and technologies that might dramatically alter the future. Center Director Dr. Jeremiah F. Creedon will officially launch C&I at Langley's first Creativity Fair, a new initiative to boldly explore the frontiers of aerospace, on July 14 in the H.J.E. Reid Conference Center. In the meantime, learn more about C&I by reading the June 16 issue of the *Researcher News* or by visiting the C&I Web site at <http://creativity.larc.nasa.gov/>.

Photo by Jeff Caplan

Evidence Of Water On Mars

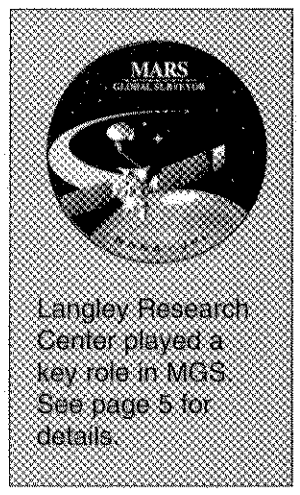
New MGS Images Reveal Gullies And Soil Deposits

By DONALD SAVAGE
NASA Headquarters

and MARY HARDIN
NASA Jet Propulsion Laboratory

In what could turn out to be a landmark discovery in the history of Mars exploration, imaging scientists using data from NASA's Mars Global Surveyor (MGS) spacecraft have recently observed features that suggest there may be current sources of liquid water at or near the surface of the red planet.

The new images show the smallest features ever observed from martian orbit — the size of an SUV. NASA scientists compare the features to those left by flash floods on Earth.



Langley Research Center played a key role in MGS. See page 5 for details.

"We see features that look like gullies formed by flowing water and the deposits of soil and rocks transported by these flows," said Michael Malin, principal investigator for the Mars Orbiter Camera on the Mars Global Surveyor spacecraft at Malin Space Science Systems (MSSS). "The features appear to be so young that they might be forming today. We think we are seeing evidence of a ground water supply, similar to an aquifer. These are new landforms that have never been seen before on Mars."

The findings will be published in the June 30 issue of Science magazine.

"Twenty-eight years ago, the Mariner 9 spacecraft found evidence — in the form of channels and valleys — that billions of years ago the planet had water flowing across its surface," said Ken Edgett, staff scientist at MSSS and co-author of the paper in Science. "Ever since that time, Mars science has focused on the question, 'Where did the water go?' The new pictures from Global Surveyor tell us part of the answer — some of that water went under ground, and quite possibly it's still there."

Continued on Page 5

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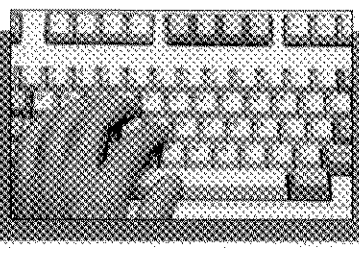
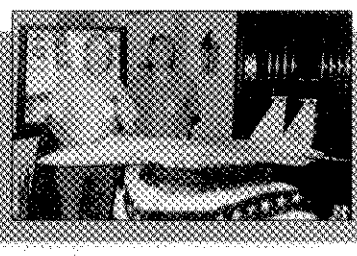


Key Notes, Langley's Computer Column, Makes Its Return — *Page 3*



Wind-Tunnel Models A Hit At Air Force Base's CORONA 2000 Event — *Page 5*

News Briefs

Around the Agency

NASA SELECTED FOR VIRTUAL AIRPORT STUDY

A synthetic airport, created in the computer mind of a two-story NASA simulator, will help San Francisco airport, one of the country's largest and most complex, plan changes to increase its efficiency.

The San Francisco International Airport (SFO) Commission has selected NASA's FutureFlight Central, the world's only walk-in, full-scale, 360-degree airport simulator, to evaluate new tower positions, runway configuration and aircraft movements before new construction begins.

"NASA's FutureFlight Central hopes to save airports costly design errors by permitting them to easily experience different, highly realistic versions of their airport design and, most importantly, observe how real people work inside these future environments," said Paul Kutler, deputy director of the NASA Ames Information Systems Directorate. RELEASE: 00-97

SPACE STORM WARNINGS NOW MORE ACCURATE

The arrival from the Sun of billion-ton electrified-gas clouds that cause severe space storms can now be predicted to within a half-day, a great improvement over the best previous estimates of two to five days.

Scientists at the Catholic University of America and NASA's Goddard Space Flight Center have created a model that reliably predicts how much time it takes for these clouds, called Coronal Mass Ejections (CMEs), to traverse the gulf between the Sun and the Earth, based on their initial speed from the Sun and their interaction with the solar wind.

The new model uses recent observations from the European Space Agency/NASA Solar and Heliospheric Observatory (SOHO) and the NASA WIND spacecraft. The model has been validated and made more accurate using historical observations from the Helios-1 (Germany/NASA), the Pioneer Venus Orbiter (NASA), and the Space Test Program P78-1 (United States Air Force) spacecraft. RELEASE: 00-95

NASA OPENS NEW AERONAUTICS CLASSROOM

The exciting world of science and technology will spring to life at Los Angeles Southwest College's new Aeronautics Education Laboratory.

NASA Administrator Daniel Goldin and Congresswoman Maxine Waters, along with Astronaut Yvonne Cagle, other NASA officials and staff from Los Angeles Southwest College opened the lab doors at a dedication ceremony on the campus of Los Angeles Southwest College. RELEASE: 00-93

NASA GOES FROM PLANTS TO PLANETS

NASA scientists have gone back to the garden, "planting" wireless webs of small sensors in gardens here on Earth in preparation for missions to help monitor biological activity on planets.

Sensor webs like those being tested will help make possible a key NASA goal to establish a virtual presence for exploration throughout the solar system.

NASA's Jet Propulsion Laboratory and the Huntington Library, Art Collections and Botanical Gardens of San Marino, Calif., have joined forces to study micro-climates, placing webs in the various specialized gardens at the Huntington. RELEASE: 00-92

Researcher News

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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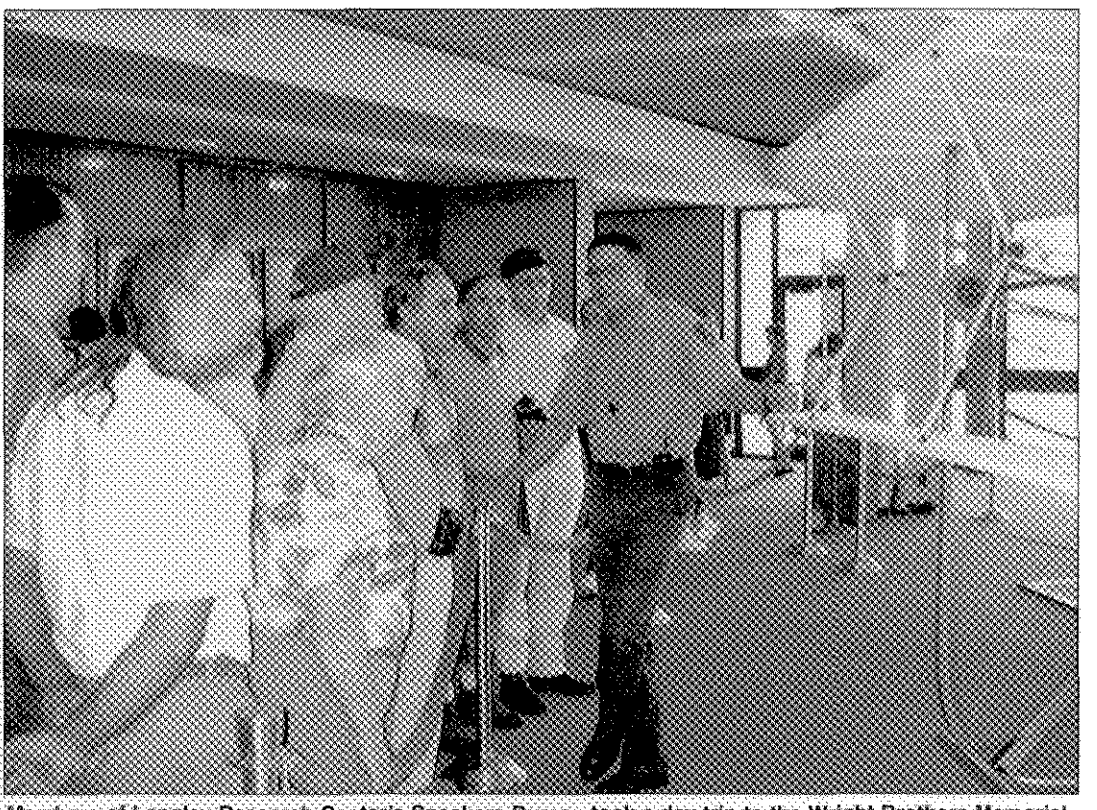
The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Centennial Of Flight

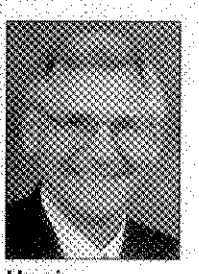


Members of Langley Research Center's Speakers Bureau took a day trip to the Wright Brothers Memorial in Kitty Hawk, N.C., on May 24 to discuss plans for the upcoming "centennial of flight" celebration. While there, the visitors saw the working full-scale 1903 Wright Flyer replica, above, a full-scale replica of the Wright Glider and the original sewing machine used by the Wright brothers to sew the wing material.

Photo by Meghan Woodcock

Harris Will Lecture

Charles E. Harris of Langley Research Center's Director's Office will present a Colloquium and Sigma Series Lecture entitled, "Composite Materials for Aerospace Applications," at 2 p.m. July 11 in Langley Research Center's H.J.E. Reid Conference Center and at 7:30 p.m. July 11 at the Virginia Air and Space Center.



Harris

Harris leads the Center of Excellence for Structures and Materials at Langley. The principal functions of the Center of Excellence are to promote the enhancement of the pre-eminent structures and materials technical expertise and facilities distributed throughout NASA and to foster collaboration among the NASA centers.

The "Center of Excellence" also conducts technology assessments and advocates for future research and technology development programs.

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Retirement

Langley Research Center's Aeroacoustics Branch will host a retirement social for **Jack Preisser** from 5 to 7 p.m. July 14 in the Langley and Hampton Rooms of the H.J.E. Reid Conference Center. Heavy hors d' oeuvres will be served.

RSVP with payment of $8 per person by July 7 to Terrie Myers at ext. 43618 or Maxie Herrera at ext. 43575.

In Memoriam

Harry W. Compton

Harry W. Compton died on June 15 at the age of 79. Compton, a native of Falls Mills, served in the U.S. Army and was a veteran of World War II. Compton graduated from the Newport News Shipbuilding Apprentice School in 1947 and worked as an electronics technician at NASA for 30 years before retiring in 1979.

Jane Irving Druen

Jane Irving Druen died on June 3 at the age of 58. Druen, a native of Hampton, worked as a contract specialist in Langley Research Center's Office of Procurement for 38 years before retiring on March 31.

Paul Foster Hamilton

Paul Foster Hamilton died on June 12 at the age of 91. Hamilton, a native of Oak Park, Ill., served in the U.S. Navy and was a veteran of World War II. He retired from NASA in 1974 after working for 14 years as a contract specialist.

Paul F.M. Shaver Jr.

Paul F.M. Shaver Jr. died in June at the age of 85. Shaver, a native of Toledo, Ohio, graduated from NASA's Apprentice School and served for 35 years as a planning engineer.

New Decals Being Issued

Langley Research Center has begun issuing new vehicle decals to all civil servant and contractor personnel. To streamline the process, an online registration system has been established at <http://stonewall.larc.nasa.gov/osema/>.

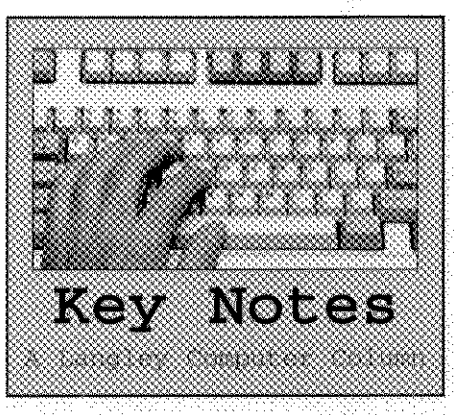
All personnel will receive an e-mail with the dates for their online registration. For more information, call ext. 42790.

Learn How To Secure IT Resources

By GEOFF TENNILLE
Langley IT Security Manager

Office of Management and Budget regulations require periodic security plans for all government information technology (IT) systems. NPG 2810.1, "Security of Information Technology," provides NASA's guidance on how to complete an IT security plan, including a risk assessment and a contingency plan for disaster recovery. At Langley Research Center, LMS-CP-5517 defines the process to complete a risk assessment and prepare the IT security plan.

The planning and risk-assessment process creates a tool that can help you manage your dwindling resources more efficiently within a reduced budget. The effort also facilitates a more rapid return of resources to an operational status after a disaster. It is crucial to acquiring and retaining new business for the Center. Our major product is information, for which protection may be legally mandated. We face many more threats today than five years ago because of the exponential growth of the Internet, economic espionage and terrorist activity.



Planning is the key to effective IT security. First, you must understand the value of your assets. Second, you must understand what threats your assets face, both internally and externally. Third, you must understand vulnerabilities within your system that these threats might exploit. Fourth, you must take appropriate actions to minimize your risk. Finally, you must plan a recovery strategy from disaster, whether it is natural or man-made.

NASA policy requires this planning periodically for all systems and major applications. A system is defined as an interconnected set of IT resources, under the same management control, which share common functionality and require the same level of security. A major application (or special management attention system) is defined as any application (or system) requiring special attention to security due to the risk and magnitude of harm that would result from the loss, misuse or unauthorized access to or modification of the information in the application (or system).

The biggest step is management defining systems. The Center has defined its special management attention systems and IT security plans for those systems are targeted for completion by the end of FY 2000 to meet the NASA metric. Since the planning is required at least every three years or whenever there is a significant change, the granularity of system definition is crucial. The IT security staff is available to provide assistance to organization managers. If each branch or office defines its own systems, the IT security staff can provide that organization with detailed information about known vulnerabilities and actions to fix the problems. These solutions are usually at minimal cost and effort to the organization. The general information required to define a system includes:

- unique system identification including the organization;
- function of the system and type of information processed; and
- a list of resources that comprise the system.

There is a Web-based training module on risk management available online at < http://solar.msfc.nasa.gov>. The training is mandatory for line managers and is recommended for system administrators, Computer Security Officials and program/project managers. To use the course, you must obtain a login identification and password the first time you access the site. More information on this training will be coming from the Training Office.

For more information about the IT security planning process, visit the Langley IT Security Web site at <http://computer-security.larc.nasa.gov> and click on the "IT Security Planning" link. To arrange a meeting to discuss your organization's system definition, contact Geoff Tennille at ext. 45786 or <g.m.tennille@larc.nasa.gov>.

SHARP Program Reaches 20th Year

By SONJA ALEXANDER
NASA Headquarters

NASA's Summer High School Apprenticeship Research Program (SHARP) is celebrating its 20th anniversary.

SHARP is an intensive science and engineering apprenticeship program specifically designed to attract and increase under-represented students' participation and success rates in mathematics, science and engineering courses, and to encourage career paths that help build a pool of underrepresented science and engineering professionals in the workplace.

The eight-week summer program is sponsored by NASA's Education Division and participating NASA installations and administered by Modern Technology Systems, Inc. (MTSI) of Riverdale, Md. This year's program began on June 5 and will continue through Aug. 18.

Although the program is primarily for under-represented groups such as women, African-Americans, Native Alaskans, Native Americans, Hispanics, Pacific Islanders and persons with disabilities, NASA seeks diversity in all student support programs. Consequently, all eligible, talented high school students are encouraged to apply to the program.

Since 1980, approximately 2,914 SHARP Apprentices have participated in the program, and more than 3,300 NASA employees have served as SHARP mentors. Participating students are assigned to work with a NASA mentor in a specific area of science or technology, gaining hands-on research experience and earning a salary.

SHARP incorporates NASA's education goals and objectives for education excellence by involving the educational community in endeavors to inspire America's students, create learning opportunities and enlighten inquisitive minds.

NASA and MTSI have selected 200 high school students to work at 11 participating NASA field installations in the 2000 SHARP program. Walt Darden, an MTSI employee who has coordinated Langley Research Center's SHARP program since its inception in 1980, said Langley has 42 participants this year, more than any other participating Center.

For more information about the SHARP program, visit <www.mtsibase.com/sharp> on the Internet.

Big Brother For The Day

Langley Research Center employees Bert Senter, Larry Petway and Dwight Elliott volunteered as "Big Brothers for the Day" for Kris Menne, 6, Kenneth Johnson, 9, and Malik Lawrence, 11, on June 19. The program was held to raise awareness for Big Brothers Big Sisters, which recruits and coordinates volunteers to mentor children from single-parent households on the Peninsula. Menne, Johnson and Lawrence are among the 60 children on the Peninsula waiting to be matched with a permanent Big Brother. For more information about Big Brothers Big Sisters, call 827-0110.

Photo by Jeff Caplan

From the Office of Safety And Mission Assurance

'Have A Safe Trip' ... Literally

NASA is concerned about everyone's safety, both on and off the job. Safe driving is certainly more than a workplace issue.

"Have a safe trip" and "Drive carefully" are two phrases used frequently as you, your friends and your family start a vacation trip or even a short trip to work or the grocery store. Concerns about the driving habits of those you care about are routinely expressed to them. However, you may not think about good driving habits when you are operating a motor vehicle.

As the summer season begins, it is important to do a self-assessment of your driving habits. The habits apply not only to the long vacation trip but also to the day-to-day operation of your own or a government-owned vehicle.

The National Highway Traffic Safety Administration (NHTSA) reported that in 1997, 41,967 people lost their lives in motor vehicle traffic crashes. That's one fatality every 13 minutes. Nearly two-thirds of the occupants were not wearing a seatbelt. Also, 3,399,000 people were injured in vehicle accidents. For the same year, the number of vehicle crashes involving only property damage was 4,542,000.

No one intentionally plans to be in an accident. The best way to avoid the risk of an accident is to establish and always follow safe driving habits. Remind yourself that there are risks associated with the operation of motor vehicles and boats. Some of the risks can be totally controlled, and others can be minimized with good habits.

If you are like most people, you believe that you have safe driving habits. You are concerned for your safety and the safety of others. Take a few moments and review whether driving safely is a continuous habit or just an occasional thought while you are behind the wheel. The following lists some examples of good driving habits.

■ Slow down.

Observe roadway speed limits. Believe your speedometer rather than your senses to reduce your speed for curves. Excessive speed causes many accidents and contributes to greater injuries and damage in accidents.

Do not drive too fast or too slow. Some road and weather conditions may call for speeds lower than the posted limit. Adjust speed according to road and weather conditions. Slow down under these conditions: heavy traffic, rough road surfaces, construction activity, ice, rain, snow and fog.

■ Stay at a safe distance behind the vehicle in front of you.

Be prepared for the unexpected and watch for mistakes by other drivers. Leave at least a two-second space between your vehicle and the vehicle in front of you. Pick out a spot coming up along the road ahead, such as a utility pole. When the vehicle in front of you passes that mark, count two seconds. Your vehicle should not pass that point until two full seconds have elapsed. Always increase this distance in bad weather and other hazardous conditions. Also, remember that hauling a trailer or driving a heavy vehicle requires a longer distance to stop.

■ Obey traffic signals and signs.

If you make it a habit to read all warning signs, curves and traffic lights will not appear out of nowhere and surprise you. You will expect a curve or light because a sign told you one was coming.

Do not rush your acceleration when the light turns green, and do not speed through a caution light. When you approach an intersection where the light has been green for some time, expect it to change.

Pass only in a passing zone and only when it is all clear to pass. When you do decide to pass another vehicle, remember to look for oncoming traffic. Do not pass under these circumstances: on hills, curves, bridges, viaducts or curbs; at intersections or railway crossings; in posted no-passing zones; or when a solid line is painted on your side of the center line. Check your blind spots and signal before passing; remember to signal when you return to your own lane.

■ Wear your seatbelt.

Statistics show that seatbelts reduce injuries and fatalities in a motor vehicle crash. Insist all occupants of the vehicle buckle up. Do not use seatbelts for long highway trips only. Most accidents happen at low speeds on short trips. Make sure headrests are adjusted correctly because they are designed to reduce whiplash neck injuries.

■ Take rest breaks on long trips.

Make sure you are alert and energetic before driving. Fatigue and falling asleep while driving are common causes of traffic accidents. Take regular rest breaks and get out and stretch. Keep the driver's side well ventilated with fresh air. Avoid heavy foods before traveling. If you drive as part of your job, get some rest after eight hours of travel; otherwise, your risk for accidents is nearly twice the usual rate.

■ Drive cautiously in inclement weather and darkness.

Increase your following distance in wet conditions. Do not tailgate another vehicle. Rain and fog increase day driving hazards, so adjust your driving to accommodate these conditions. Keep windows and lights clean, and use the high beams when necessary. (Note: In Virginia and many other states, the law requires headlights on when it is raining.)

Be extra careful driving at night. You are three times more likely to have an accident. Because dusk and sunrise are the most difficult times to be seen, turn on full headlights and slow down.

■ Be prepared for the unexpected.

Always expect other drivers to do the unexpected. Be prepared for other drivers to run red lights, pass when unsafe, swerve into your lane, or slam on the brakes. Continually update your "emergency plan" in case the other driver makes a wrong move.

Before you drive anywhere, put your worries out of your mind. Calm down if you are angry. Your only task now is to drive in a safe and professional manner.

■ Don't engage in "road rage."

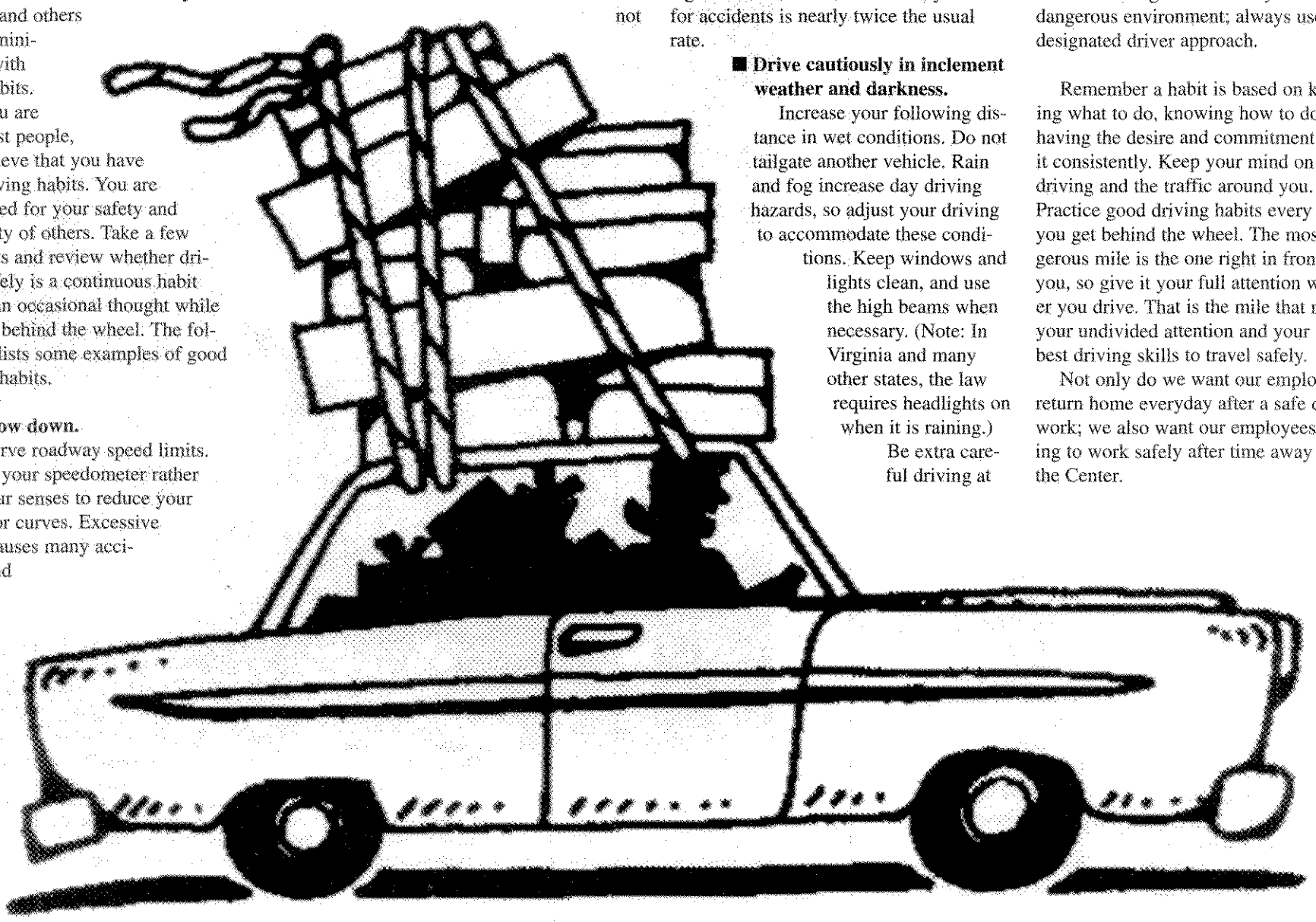
Getting even after an inadvertent or willful traffic incident is senseless. Two enraged drivers may escalate an avoidable minor incident into a fatal one. Enraged drivers are proved to commit irrational acts. Don't lose your cool. Respond to such incidents with courtesy or simply ignore them.

■ Never drive under the influence of alcohol or drugs.

Alcohol and drugs can cause drowsiness, hallucinations, dizziness, poor judgment and poor coordination. Many accidents have been caused by the use of prescription drugs and over-the-counter medications. Getting into a motor vehicle with a drinking driver is truly entering a dangerous environment; always use the designated driver approach.

Remember a habit is based on knowing what to do, knowing how to do it and having the desire and commitment to do it consistently. Keep your mind on your driving and the traffic around you. Practice good driving habits every time you get behind the wheel. The most dangerous mile is the one right in front of you, so give it your full attention whenever you drive. That is the mile that needs your undivided attention and your very best driving skills to travel safely.

Not only do we want our employees to return home everyday after a safe day's work; we also want our employees returning to work safely after time away from the Center.



Models A Hit At CORONA 2000

By DONNA G. ROPER
Office of Public Services

Langley Research Center wind-tunnel models served as the centerpiece exhibits for the capstone social event of the CORONA TOP 2000 Conference held June 12-16 at Langley Air Force Base (LAFB).

"The Langley models helped make the Heraldic Dinner a huge success," said Colonel Terry Young, who coordinated the event. "We had four-star generals commenting on how great they looked."

The conference, hosted by LAFB Chief of Staff Gen. Mike Ryan, is a major forum for the commanders of the Air Force to focus on issues of national importance. Attendees included Secretary of the Air Force Whit Peters, Commander of the Air Combat Command Gen. John Jumper and other commanding generals from around the globe.

When LAFB asked NASA Langley to support the event, Bill Fogle and Ron Barnes of the Composites Applications Technology Branch spruced up five research models to showcase.

"Having authentic wind-tunnel models along with historical photographs highlighted Langley's heritage from the inception of air power through our future missions," Col. Young said. "It also underscored the great working relationship that LAFB and NASA enjoy on a daily basis."

Bill Fogle and Ron Barnes of Langley Research Center's Composites Applications Technology Branch set up the F-15 centerpiece display in the Langley Air Force Base Officers Club.

Photo courtesy of Ronald Clark Hall

The F-15, painted to look like the Base Commander's aircraft complete with fighter squadron decals and the name Spirit of the Virginia Peninsula, was the centerpiece display.

Also included were Langley's F-16 boasting a camouflage pattern, B-1 painted black and F-22 in military grey. One of Langley's oldest wind-tunnel models, the F-86, was showcased in the Korean War display that was part of the historical military exhibits.

"Most people don't realize how much NASA Langley technology has contributed to military aircraft over the years," said Noel Talcott Jr., who oversees NASA Langley's projects that directly support military research.

"It's nice that the Air Force recognizes the importance of our technology contributions by including us in an event of such national importance."

500th School Signs On With S'COOL

By CHRIS RINK
Office of Public Affairs

If the forecast is cloudy, there will be a chance of learning at Ramstein American Middle School.

The school, located at Ramstein Air Base in Germany, is the 500th site to register as part of a global cloud-measuring project. It teams students with NASA scientists so they can figure out how clouds affect the Earth's energy balance.

The Students' Cloud Observations On-Line (S'COOL) activity is part of a satellite experiment in conjunction with Langley Research Center's Clouds and the Earth's Radiant Energy System (CERES) instruments. Langley researchers are training students worldwide to observe clouds. There are currently 378 U.S. schools involved in the project. S'COOl schools take field notes in all 50 states (90 in Virginia) including Washington, D.C., Puerto Rico, Guam, in 37 other countries and on all continents except Antarctica.

The Ramstein students will learn how to observe clouds and send their data to a NASA computer. The students' observations then will be compared to those from orbiting CERES instruments. CERES uses its vantage point from space to provide global data on the Earth's energy balance and how clouds change it. CERES instruments are currently aboard he Tropical Rainfall Measuring Mission (TRMM) and Terra satellites.

For more information on-line about S'COOL, CERES, TRMM or Terra visit the following web sites: <http://asd-www.larc.nasa.gov/SCOOL>, <http://asd-www.larc.nasa.gov/ceres/ASDceres.html>, <http://trmm.gsfc.nasa.gov/> and <http://terra.nasa.gov/>.

Water

Continued from Page 1

"For two decades, scientists have debated whether liquid water might have existed on the surface of Mars just a few billion years ago," said Ed Weiler, NASA's Associate Administrator for Space Science. "With today's discovery, we're no longer talking about a distant time. The debate has moved to present-day Mars. The presence of liquid water on Mars has profound implications for the question of life not only in the past, but perhaps even today. If life ever did develop there, and if it survives to the present time, then these landforms would be great places to look."

The gullies observed in the images are on cliffs — usually in crater or valley walls — and are made up of a deep channel with a collapsed region at its upper end (an "alcove") and at the other end an area of accumulated debris (an "apron") that appears to have been transported down the slope. Relative to the rest of the martian surface, the gullies appear to be extremely young, meaning they may have formed in the recent past. "They could be a few million years old, but we cannot rule out that some of them are so recent as to have formed yesterday," Malin said.

Because the atmospheric pressure at the surface of Mars is about 100 times less than it is at sea level on Earth, liquid water would immediately begin to boil when exposed at the martian surface. Investigators believe that this boiling would be violent and explosive. So how can these gullies form? Malin explained that the process must involve repeated outbursts of water and debris, similar to flash floods on Earth.

"We've come up with a model to explain these features and why the water would flow down the gullies instead of just boiling off the surface. When water evaporates it cools the ground — that would cause the water behind the initial seepage site to freeze. This would result in pressure building up behind an 'ice dam.' Ultimately, the dam would break and send a flood down the gully," said Edgett.

The occurrence of gullies is quite rare: Only a few hundred locations have been seen in the many tens of thousands of places surveyed by the orbiter camera. Most are in the martian southern hemisphere, but a few are in the north.

"What is odd about these gullies is that they occur where you might not expect them — in some of the coldest places on the planet," Malin indicated. "Nearly all occur between latitudes 30 degrees and 70 degrees, and usually on slopes that get the least amount of sunlight during each martian day."

"This latest discovery by the Mars Global Surveyor is a true 'watershed'—that is, a revolution that pushes the history of water on Mars into the present," said Jim Garvin, Mars Program Scientist, NASA Headquarters.

"To follow up on this discovery we will continue the search with Mars Global Surveyor and its rich array of remote sensing instruments, and in 2001, NASA will launch a scientific orbiter with a high spatial resolution middle-infrared imaging system that will examine the seepage sites in search of evidence of water-related minerals.

"Furthermore, NASA is in the process of evaluating two options for a 2003 mission to Mars, both of which could provide independent information concerning the remarkable sites identified by Malin and Edgett."

The Mars Global Surveyor images are available online at <http://www.msss.com/mars_images/moc/june2000/>.

Langley Played A Key Role In MGS

A team from Langley Research Center and The George Washington University Joint Institute for Advancement of Flight Sciences (JIAFS) performed aerodynamic and heating analyses of the Mars Global Surveyor (MGS) aerobraking maneuver.

MGS was the first planetary mission to use the friction of the atmosphere flowing past the spacecraft to slow itself, also known as aerobraking, as its primary means of achieving orbit around another planet. The benefit of aerobraking is that it allows a mission to carry much less fuel. Since fuel is one of the heaviest items on board most space missions, leaving a significant amount of it at home means a spacecraft can carry more scientific instruments to its destination.

Jet Propulsion Laboratory (JPL) mission engineers used results from the accelerometer data provided by the JIAFS team to determine how well the aerobraking maneuver was working and to make adjustments to the spacecraft's aerobraking orbit. The accelerometer data was critical to engineers to ensure that the spacecraft did not experience excessive heating during its aerobraking maneuver.

The JIAFS team of students and senior researchers, led by principal investigator Gerald Keating, also documented changes in the density of Mars' upper atmosphere by monitoring near real-time data from the accelerometers on board the MGS. Ultimately, the JIAFS team's work resulted in a to produce a "map" of Mars' atmospheric density. — *Robert D. Allen*

AdVentures

CLASSIFIED

FOR SALE: Oceanfront time-share in Nags Head, N.C. Two bedrooms, sleeps six. Week 40, red time. $2,995. Call 868-9558.

FOR SALE: 1986 Chevrolet Nova, five speed, A/C, cassette, well maintained, many parts less than one year old, such as exhaust system, water pump, belts, hoses, plugs, wires and distributor cap/rotor. 136,000 miles. $1,150 or best offer. Call 864-5375.

FOR SALE: Child-Craft solid pine sleigh bed crib with Simmons "Baby Slumber" crib mattress. Excellent quality and in excellent condition. $250 for both. Call 827-7515.

FOR SALE: Area rugs: green with pink/ivory floral design, $30; white with light pink/green/purple design, $15. Call 827-7515.

FOR SALE: Keyboard, 49 mid-size keys, 10 instruments, 10 rhythms, other features. Great for kids. Portable. Includes AC adapter. $20. Call 865-1211.

❖ ❖ ❖

The deadline for the July 14 edition of the *Researcher News* is July 3. Send submissions to <j.s.roberts@larc.nasa.gov>.

Club Will Host Beekeepers Meeting

Langley Research Center's Apiculture Club will host the Virginia State Beekeepers Association's summer meeting on July 7 and 8 at Thomas Nelson Community College in Newport News. This summer's meeting is called "Production, Packing and Peddling."

Speakers from Virginia Tech, Mary Washington College and the University of Delaware will cover various topics of interest to beekeepers, including bears, exotic bees, label-making, pollination and beeswax. Beekeeping supplies will be available from vendors on July 8.

Anyone interested is invited to attend. Registration is $15. For more information, contact George Maddrea at ext. 42674.

Luncheon Planned For Volunteers

Langley Research Center will host a Dutch-treat luncheon for the tour host volunteers at 11:30 a.m. July 18 in the private dining room of the Cafeteria. The guest speaker, Joel Levine, will begin his talk, "A Hotter Earth," at noon. For more information, contact Sandra Lemons at ext. 43957.

Honor Awards Ceremony July 19

Langley Research Center's annual Honor Awards Ceremony will be held at 2 p.m. July 19 in the H.J.E. Reid Conference Center Auditorium. John W. Young, the Associate Director of Johnson Space Center, will be the guest speaker.

Presentations will be made to 34 individuals and nine teams for various awards. Recipients of the 1999 H. J. E. Reid Award, the Paul F. Holloway Non-Aerospace Technology Transfer Award and the Richard T. Whitcomb Aerospace Technology Transfer Award will also be recognized.

A reception will follow the ceremony.

All civil servants and contractors are invited to attend, but seating will be limited. Time spent in attendance should be charged to Job Order B1001.

For more information, contact Karen Ridlon at ext. 43194.

Hydrogen Safety Course Offered

Langley Research Center's Safety and Facility Assurance Office will offer two "Hydrogen Safety" courses in August: one on Aug. 1 and 2, one on Aug. 3 and 4. The courses will be taught in Bldg. 1224T7 by Harold Beeson.

The target audience for the course includes: safety, reliability, quality and maintainability professionals; payload, spacecraft and facility design engineers; test team personnel for test operations using hydrogen; and supervisors of and anyone working around systems using hydrogen.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543 by July 7. For more information about the course, contact Grant Watson at ext. 43069 or <g.m.watson @larc.nasa.gov>.

Project Management Course Offered

Langley Research Center's Employee Development Branch will offer a "Project Management for the Office Professional" course from 8 a.m. to 4:30 p.m. Aug. 8 to 10 in Bldg. 1224T7.

The course is recommended for office professionals at the GS-5 level and higher who are working with special projects and need to sharpen their project management skills.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

VASC Looking For ERC Assistant

The Virginia Air and Space Center, Langley Research Center's official visitor center, is looking for someone to serve as an assistant to the manager of the NASA Educator Resource Center.

The person selected will provide administrative assistance and educational technology support to the ERC. A bachelor's degree in science, mathematics, computer science or technology instruction is required, and teaching or administrative certification preferred.

The position is part-time with hours Friday through Monday. Send a letter of interest and resume to VASC's Office of Human Resources, 600 Settlers Landing Road, Hampton, Va. 23669.

Duplicate Bridge Results

Results for the Langley Duplicate Bridge Club's June 14 game were: first place, S. Balakrishna and Vijaya Jalaiah; second place, Ram and Sumi Prabhu; third place, Betty Pauls and Juanita Strawn; and fourth place, Jay Robinson and Tom Norum tied with Larry Bement and Buddy Young.

The next game is tentatively scheduled for July 12. For more information, call Geoff or Marty Tennille at 850-1532.

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Researcher News

Photo by Jeff Caplan

Center Snapshot

Hoa Luong, who has worked at Langley Research Center for 11 years, recently transferred from the Composite Processing Labs to the Applied Technologies and Testing Branch. Luong emigrated to the United States from Vietnam in 1979 and has lived in Hampton ever since. He came to work at NASA through the Thomas Nelson Apprentice School. Outside of work, he enjoys working on cars and all things mechanical. Luong and his wife have a 3-year-old daughter and are expecting another child soon. What does he like about working at Langley? "The people," he says. "It's the skills you learn from working with them."

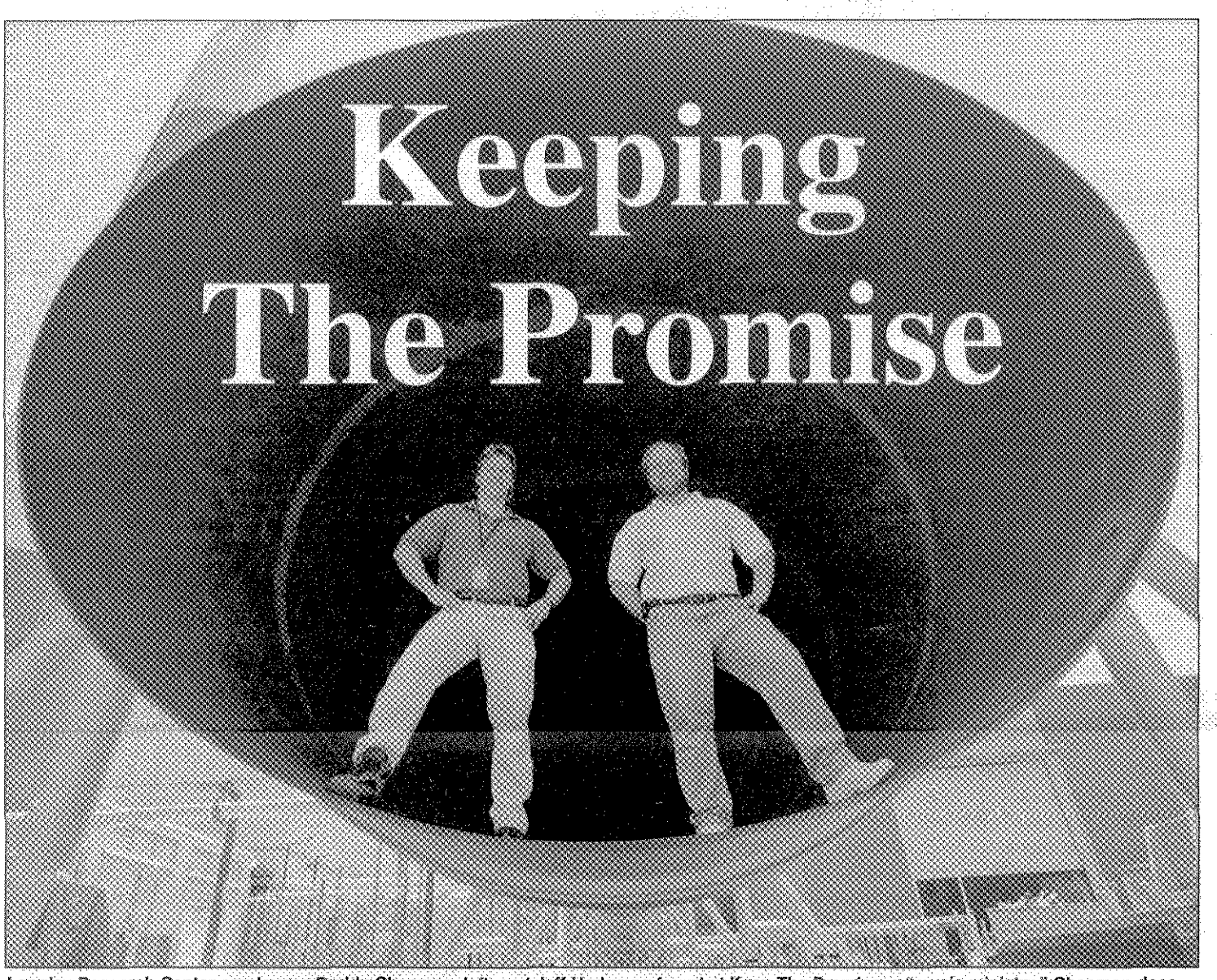
The C&I Creativity Faire is July 17! For Details, See Page 5

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 14 ❖ July 14, 2000



Langley Research Center employees Buddy Chapman, left, and Jeff Hodge co-founded Keep The Promise, a "music ministry." Chapman does all the musical work; Hodge does all the behind-the-scenes, management-type work.

Photo by Jeff Caplan

Langley Employees Launch Music Ministry

By JIM ROBERTS
Researcher News Editor

As employees in Langley Research Center's 8-Foot High-Temperature Tunnel, Buddy Chapman and Jeff Hodge have supported testing for the Hyper-X Flight Engine/Vehicle Flowpath Simulator, the X-33 thermal protection system, the Navy Standard Missile and the National Aero-Space Plane Concept Demonstrator Engine.

But the project they're most proud of — and the one that's encouraging people all over the world to reach for the heavens — is Keep The Promise, a "music ministry" they co-founded outside of work.

"It gives me energy," said Chapman, a technician with Diversified Technology on contract to Langley. "It's exciting to be a part of it."

"It's not just something we do on the weekend," said Hodge, the tunnel facility manager. "This is what we live."

Keep The Promise formed after Hodge asked Chapman to perform some songs at Buckroe Baptist Church in Hampton. Chapman, who had gained a certain amount of notoriety playing guitar and singing in local rock 'n' roll groups like Southern Thunder, Stakeout and Lace & Thunder, said he accepted Jesus Christ as his personal savior in 1995 and started writing and performing Christian music in 1997.

The rest, as they say, is history.

"From that," Chapman said, "I'd never dream the doors the Lord has opened."

After Chapman played at Hodge's church, they decided to combine their resources and launch Keep The Promise: Chapman does all the musical work; Hodge does all the behind-the-scenes, management-type work. (Though Hodge has been known to sing back-up on a few songs.) Hodge also designed the Keep The Promise Web site, <www.keepthepromise.org>, which makes the ministry accessible around the world. In fact, radio stations in Australia and Romania discovered the site, requested copies of Chapman's new CD and have been playing his songs.

Keep The Promise borrows its name from the first Christian-inspired song

Continued on Page 4

Langley TV Show Wins 3 Awards

By SUSAN HURD
NCI Information Systems

"NASA CONNECT," the TV series produced by Langley Research Center's Office of Education, recently won two Capitol Region Emmy Awards and the first-place "Golden Camera" Award at the International Film and Video Festival.

The office received the Emmy Awards on June 17 — for the episodes "The Measurement of All Things: Tools of the Aeronautics Trade" and "Geometry of Exploration: Water Below the Surface of Mars?" — at the 42nd annual National Academy of Television Arts and Sciences Ceremony in Washington, D.C.

The office received the "Golden Camera" Award on June 15 for the "Geometry of Exploration: Eyes Over Mars" episode. The presentation cited "NASA CONNECT" for "outstanding creativity in the production of audiovisual communications in international competition."

Samuel E. Massenberg, Director of Langley's Office of Education, applauded "NASA CONNECT" for its successful outreach. "The series has provided Langley with national exposure in terms of its education and outreach program that has affected the entire nation in a positive manner," he said.

"NASA CONNECT" is an innovative, standards-based, instructional, distance-learning program for students in grades 4 through 8 that airs nationally five times a year on 80 public television stations. In each program, Jennifer Pulley and Van Hughes lead students, teachers and parents through such con-

Continued on Page 4

In The Next Issue: Coverage Of The July 19 Honor Awards Ceremony

News Briefs

Around the Agency

HACKER NEVER ENDANGERED ASTRONAUTS

News reports that a computer hacker endangered the lives of Space Shuttle astronauts during a 1997 mission are wrong. A report from the British Broadcasting Corporation said a hacker compromised NASA computers, endangering the lives of American astronauts.

NASA's Inspector General's office found that during the STS-86 mission in September of 1997, the transmission of routine medical information was slightly delayed due to a computer hacker. However, the transmission was successfully completed.

At no time was communication between NASA and the astronauts compromised. The communication interruption occurred between internal ground-based computer systems. RELEASE: 00-102

NASA AIRPORT SIMULATOR WINS SAFETY AWARD

A two-story NASA airport simulator that can evaluate planned airport changes recently won an award for the most significant contribution to aviation safety and efficiency in the western United States.

The simulator, called "Future Flight Central," can create "virtual airports" in its computer mind to permit air traffic controllers and planners to test new airport designs and modifications of future and existing airports. The facility is a walk-in, full-scale, 360-degree simulator that can realistically test runways, landings, ground traffic and many other airport factors in a realistic, computerized world.

More FutureFlight information is on the Internet at <http://ffc.arc.nasa.gov>. RELEASE: 00-48AR

TEAM WILL REVIEW SPACE SHUTTLE INCIDENT

Robert Sackheim, assistant director and chief engineer for propulsion at NASA's Marshall Space Flight Center, will lead a team to review the automatic shutdown of a recent Space Shuttle Main Engine test at NASA's Stennis Space Center.

At about five seconds into the planned 200-second test of a new high-pressure fuel turbopump configuration, higher than expected test temperatures caused the Shuttle Main Engine to shut itself down using its own internal safety mechanisms.

The engine being tested was not a flight configuration. It is a development unit used to validate the engine's capability to operate at higher-than-normal temperature levels. The test used a main combustion chamber smaller than those currently flown on the Shuttle, which increases temperatures in the pumps to test for different temperature limits. RELEASE: 99-100

SATELLITE READY TO SERVE NEW PROJECTS

NASA is poised to launch the first of three of the most advanced communications satellites ever designed, to replenish the existing on-orbit fleet that has served the space community since 1983. The newest generation Tracking and Data Relay Satellites (TDRS) will provide vital communication links with the Space Shuttle, International Space Station, Hubble Space Telescope and other spacecraft and launch vehicles.

"The average age of the existing fleet is more than 10 years, which is beyond the mission design lifetime," said Anthony Comberiate, TDRS Project Manager at NASA's Goddard Space Flight Center. "The new series will replenish our existing fleet and allow users to migrate to the new Ka-band," allowing a threefold increase in data throughput. RELEASE: 00-98

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

Photographer ..... Jeff Caplan
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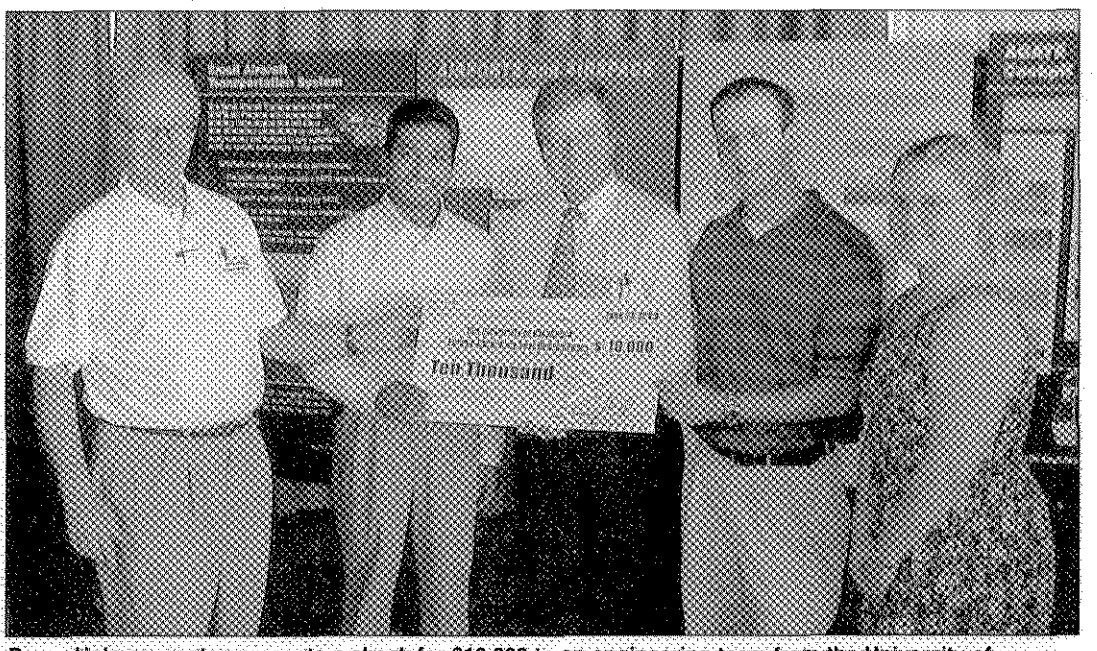
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

General Aviation Design Competition



Bruce Holmes, center, presents a check for $10,000 to an engineering team from the University of Oklahoma for its winning entry in the annual National General Aviation Design Competition. Professor Karl Bergey, left, and team members Aruna Dhammika, Steve Lindo and Amy Walker accepted the award at the recent Western Oklahoma Small Aircraft Transportation System (SATS) Expo in Weatherford, Okla.

Photo by Rebecca Clark/Moto Photo

Speakers Bureau Has Active Month

Sixteen speakers from Langley Research Center's Speakers Bureau gave 20 presentations to 2,299 stakeholders in June. The groups included 12 public schools, two university groups, two day-care facilities, one city summer program, one Cub Scout Pack, one church group and one civic club.

The speakers were: **Larry Cooper, Sharon Crockett, Dick Davis, Melvin Ferebee, Jane Hogge, Larry Huebner, Hank Jarrett, Luther Jenkins, Robert Mack, Daniel Mazanek, Dan Moerder, Fernandus Rattliff, Rob Rivers, Joe Stassi, Myra Walton** and **Thomas Yager.**

To receive e-mail announcements of speaking opportunities, contact Olin Jarrett at <o.jarrett@larc. nasa.gov>.

Retirement

Langley Research Center's Electromagnetic Research Branch will host a retirement social honoring **Fred Beck, Thomas Campbell** and **Bert Cockrell** from 6 to 9 p.m. Aug. 4 in the H.J.E. Reid Conference Center's main auditorium.

A cost of $12 per person will cover gift and heavy hors d'oeuvres. (Gift-only contributions are welcome.) RSVP with payment by July 21 to Delores Williams at ext. 41772, Carolyn Eby at ext. 41692, Erik Vedeler at ext. 41825 or Robin Cravey at ext. 41819.

Letters

"Many thanks to all who planned, contributed to and attended my retirement luncheon. Even though I was initially reluctant to have one, I had such a marvelous time. The time was just too short to adequately visit with each one. You are very special people. I cherish the many friendships that have developed over my years at Langley. Since Penny and I will remain in the area, we hope to see you at various times in the future. God bless and thanks for a wonderful beginning to my retirement years."

Bill Cazier

"As I leave the Center, I would like to take a few minutes of your time to thank everyone I worked with while here at Langley.

My job, in inventory, brought me in contact with a lot of very good people here at NASA. I have enjoyed working with each of you and will miss everyone greatly. My job was not always the most pleasant of things to do, but necessary.

I have met some of the best people in the world here. I feel as if I have a great big extended family, please take care of yourself and your 'equipment.' Thanks for all the help during the scanning of your equipment.

May God bless each and everyone of you. I will miss everyone."

Joyce Harrell

In Memoriam

Hezekiah T. Hudgins Jr.

Hezekiah Thomas Hudgins Jr. died on June 30 at the age of 78. Hudgins, a native of Mathews County, served in the U.S. Navy and was a veteran of World War II and a former chapter president and state chairman of the Pearl Harbor Survivors Association.

Hudgins retired from NASA as an engineering technician in 1974 after more than 30 years of service.

Correction

A photo caption in the June 30 edition of the *Researcher News* incorrectly identified the participants in a May 24 day trip to the Wright Brothers Memorial in Kitty Hawk, N.C. The trip's participants were members of the Langley Research Center's Tour Host Volunteers, not Langley's Speakers Bureau.

New Decals Being Issued

Langley Research Center has begun issuing new vehicle decals to all civil servant and contractor personnel. To streamline the process, an online registration system has been established at <http://stonewall.larc.nasa.gov/ osema/>.

All personnel will receive an e-mail with the dates for their online registration. For more information, call ext. 42790.

From the Office of Safety And Mission Assurance

Learn The Four Steps Of Safety

When an activity is described as "risky," there is a chance that an individual may suffer some type of injury or illness. It also means that it may be hazardous or dangerous. At Langley Research Center, risks are encountered every day, but proper use of risk management keeps accidents and mishaps from happening.

The four steps of risk management are: hazard recognition; hazard assessment; hazard control; and oversight.

Hazard recognition involves the ability to recognize hazards that an employee may encounter on or off the job. A hazard is a condition that could result in injury, health impairment, property damage or even death. Hazards typically involve the unintentional release of some kind of energy. Types of energy include electrical, thermal, pneumatic, hydraulic, chemical, mechanical, solar, nuclear, kinetic and potential.

One way to look at hazards is to ask, "How can I get hurt if I come in contact with the hazard?" Examples of potential responses include the following:

Struck by — I can be struck by a falling, flying or moving object.

Struck against — I can strike against a stationary object or a moving object.

Caught in, between or under — I can be caught between a moving and a stationary object, between moving objects or under some load.

Slip/trip/fall — I can slip on or trip over something in my walkway and fall.

Fall from elevation — I can fall from a height.

Contact with — I can come into contact with electricity, hazardous material, noise or some other physical or chemical stressor.

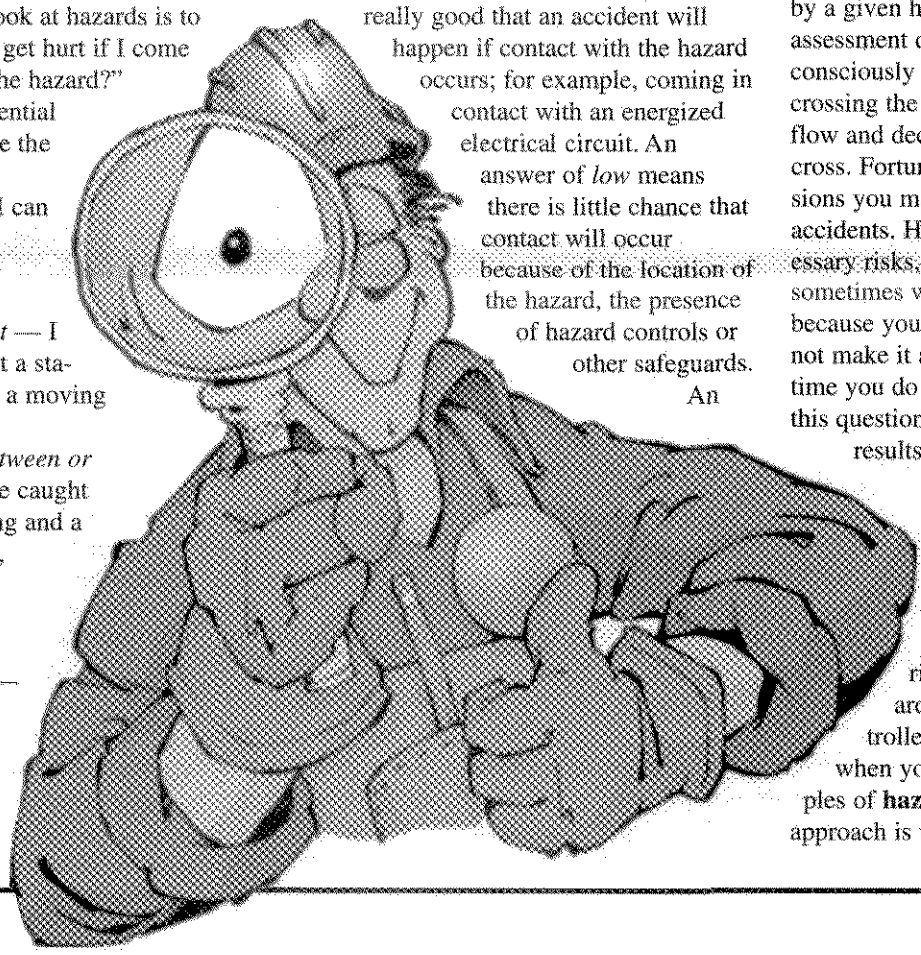
Overexertion — I can place too great a strain on my body by lifting an object or by working in extreme temperatures.

Once you have the ability to recognize a hazard, you can proceed to **hazard assessment**, the next step in the risk management process. Hazard assessment involves answering two questions.

1. What is the probability or likelihood that anyone will be exposed to the hazard?

2. What will be the extent of injury, illness or property damage that is likely to occur if anyone is exposed to the hazard?

You can answer the first question by saying the probability is *high, medium* or *low*. *High* means that the chances are really good that an accident will happen if contact with the hazard occurs; for example, coming in contact with an energized electrical circuit. An answer of *low* means there is little chance that contact will occur because of the location of the hazard, the presence of hazard controls or other safeguards. An answer of *medium* means the probability is somewhere in the middle; it could happen but probably will not.



The four steps of risk management:

- Hazard recognition
- Hazard assessment
- Hazard control
- Oversight

Potential answers to the second question range from death or catastrophic loss to no injury or loss; i.e., a near miss. The emphasis here is on the most likely outcome. A fall from a stepladder may result in death, but it usually results in minor injury or no injury.

These two questions do not have a right answer. The answers represent an individual's assessment of the risk posed by a given hazard. Everyone makes an assessment during the day without really consciously thinking about it. Before crossing the street, you look at the traffic flow and decide whether you can safely cross. Fortunately, most of the risk decisions you make are sound, and you avoid accidents. However, if you accept unnecessary risks, you are in effect gambling, sometimes with your own life. Just because you escape time and again does not make it a good risk decision. The next time you do something risky, ask yourself this question, "Can I live with the results?"

Sometimes after assessing the hazard, you will decide that you can accept the level of risk involved and act accordingly. However, other times, you decide that the risk is too great unless the hazard can be eliminated or controlled to some extent. That is when you need to apply the principles of **hazard control**. A hierarchical approach is used when attempting to control hazards.

The first goal is to eliminate the hazard by some engineered solution, by isolation or by substituting a less hazardous way of performing a function. These approaches actually remove the hazard or allow exposure to the hazard to be controlled.

If the hazard cannot be eliminated that way, then administrative controls are applied. These include training, use of operating procedures, hazard warning signs or devices and control times in hazardous atmospheres. These controls do not eliminate the hazard, but they lessen the likelihood that inadvertent contact will occur.

Finally, if the hazard still exists, the last line of defense, Personal Protective Equipment (PPE), is used. Safety glasses, hard hats and steel-toed shoes are all that stand between you and contact with a hazard. To be effective, PPE must be worn properly and must be maintained.

All hazards must be controlled in some fashion. The decision to use a given method of hazard control is driven by many factors. These include the probability of exposure and expected loss, should an exposure occur, and the cost to implement controls.

Once a control is chosen and implemented, the last phase of risk management is put in place. The last phase involves **oversight** of the control by managers and workers who are potentially exposed to the hazard. Oversight ensures that the control has actually eliminated or at least reduced the danger posed by the hazard. If the control is not effective or is somehow overridden, such as removing a machine guard, then additional management action is required.

Hazard recognition, hazard assessment, hazard control and oversight result in a safer and more healthful work environment for all to enjoy. Make the four steps of risk management a safety priority and encourage others to make the same commitment to safety.

From the Office of Human Resources

Fellowship Applications Being Accepted

Langley Research Center's Employee Development Branch is accepting applications for NASA-sponsored fellowships at some of the nation's best schools.

Management fellowships offer employees an opportunity to study at Carnegie Mellon University, Harvard University, the Massachusetts Institute of Technology (MIT), Penn State University, Simmons College, Stanford University or Syracuse University for periods ranging from two weeks to one year.

Following a recent analysis of the fellowship programs, NASA also has added five new programs this year on a pilot basis. The programs include opportunities at the University of California at Los Angeles, the University of Michigan, the University of North Carolina, the University of Tennessee and the University of Texas.

The fellowships are available for managers and non-managers from GS-12 to SES. NASA also offers, in conjunction with the National Space Club and MIT, fellowships which are open specifically to non-management employees. Several allow recipients to pursue research at any institution in the United States where a faculty sponsor is found.

In addition to the NASA fellowships, Langley sponsors one or more fellowships for the College of William and Mary's Executive Master of Business Administration program. Applications for the Langley-sponsored William and Mary fellowship will be accepted along with the NASA fellowship applications.

Belinda Adams, Langley's representative on the Agency's Executive Development Panel, and Elaine Gause of Langley's Employee Development Branch will help candidates and supervisors match fellowship programs with development goals.

Full descriptions of fellowship programs can be found on the Internet at: <http://www.hq.nasa.gov/office/codef/codeft/fellowshipdesc.html>. Anyone interested in the opportunities should call Elaine Gause at ext. 47318.

Langley Research Center's NASA Fellowship recipients for 2000 are:

- **Richard A. Foss**, "Leading with Impact: Linking People, Strategy, Results" at Penn State University;
- **Ivatury S. Raju**, "Program for Management Development" at Harvard University; and
- **Regina L. Spellman**, "Summer Session" at International Space University.

Details about their fellowships will appear in future editions of the *Researcher News*.

People & Places

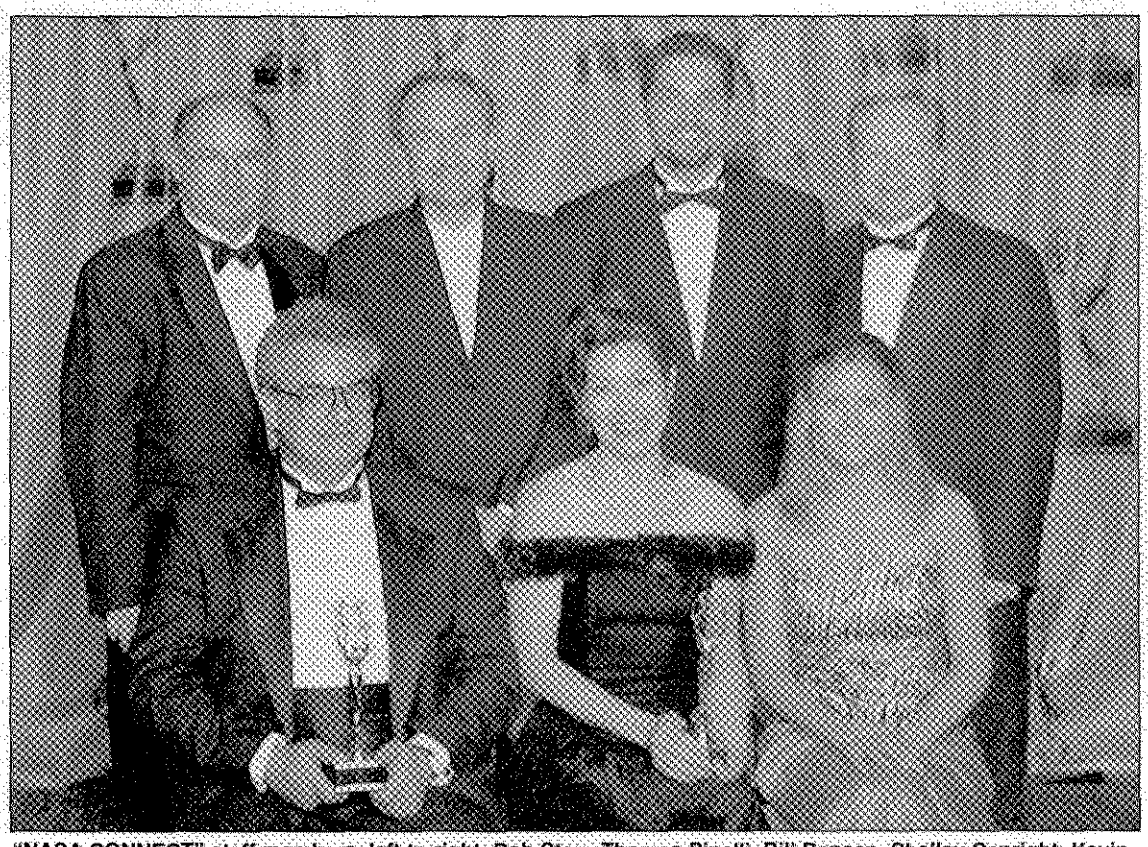
Awards

Continued from Page 1

cepts as measurement, ratios, proportion, scales, data collection and analysis, inference and prediction.

The distance-learning initiative uses NASA research, projects, facilities and researchers to increase the mathematics, science and technology proficiencies and competencies of students and teachers. More than 125,000 educators and 5.8 million students use "NASA CONNECT."

Langley's educational specialists also create free printed lesson guides for teachers, students and parents to supplement each "NASA CONNECT" television program, and Langley researchers provide expert scientific and technical advice for the series, often appearing as guests on the program, along with local, regional, and national experts. "NASA CONNECT" creators encourage parental involvement in the lessons and programs. The national mathematics, science and technology standards are built into each program guide.



"NASA CONNECT" staff members, left to right, Bob Starr, Thomas Pinelli, Bill Bensen, Shelley Canright, Kevin Krigsvold, Jennifer Pulley and Steve King accept two Emmy Awards at the 42nd annual National Academy of Television Arts and Sciences Ceremony in Washington, D.C.

Photo courtesy of Thom Pinelli

Behind the scenes of "NASA CONNECT" is a cadre of educational specialists, graphic designers, database managers, Web site managers, editorial and technical experts, and television production specialists.

The "NASA CONNECT" production team includes Bill Bensen, Producer; Jennifer Pulley, Coordinating Producer; Bob Starr and Shelley Canright, Technology Segment Producers; Kevin Krigsvold, Associate Producer; Steve King, Video Editor; Ron Beard and Franklin Fitzgerald, Camera/Audio; Chris James, Bob Postel, and Martha Jones, Animation/Graphics; Phil Peters, Sound; and Thomas Pinelli, Executive Producer. Langley employees Mike Logan and Hector Soto appeared in "The Measurement of All Things," and Langley employee Robert Mitcheltree and former employee Israel Taback appeared in "Geometry of Exploration."

The "NASA CONNECT" team has created a new series of five programs for 2000-2001 that promises another rewarding season of instructional adventures for students, teachers and parents.

The 2000-2001 "NASA CONNECT" Web site enhances the series' tremendous value to the educational community, contains information about the series and provides Web users opportunities for participating in online activities.

To learn more about "NASA CONNECT" and to see what's scheduled for the new season, visit <http://edu.larc.nasa.gov/connect> on the Web.

Ministry

Continued from Page 1

Chapman wrote. As the story goes, one of Chapman's fans contacted him after he was diagnosed with cancer to pass along a simple request: "Keep playing that guitar." Chapman was so moved by the experience that he wrote "Keep The Promise," not to mention nine other songs that he later released as a cassette of the same name.

"It just seems like the songs just keep coming," Chapman said. "The more I put into it, the more things continue to open up. People are just hungry for this."

Chapman's second album, "Search Your Soul," was just released in CD-only format. It includes 10 new original songs, including "A Better Way," "Hello Jesus," "Step By Step" and "Louder Than Words." (The CD is available in the Langley Exchange Shop for $8.)

Now, Chapman and Hodge take Keep The Promise on the road to local churches, youth groups, Christian coffeehouses ... anyone willing to listen, and no group is too small. In one case, Chapman ended up playing for about 20 people at an event billed to attract thousands. But they didn't flinch.

> *"We are getting paid in ways that no money can accomplish. ... God gets all the glory in what we do. It's only through his grace and mercy that these things have been obtained."*
>
> **Buddy Chapman**

"We made some friends, some good contacts," Chapman said. "We're willing to go anywhere. We've never said no to anybody."

And they do it for free. They do accept donations for performances and for the CDs, but all the money raised goes right back into the ministry and to local charities and churches.

"It's all about getting the message out," Chapman said. "We are getting paid in ways that no money can accomplish. ... God gets all the glory in what we do. It's only through his grace and mercy that these things have been obtained."

Chapman will perform from 10 to 11 p.m. July 15 at Shadrach's Coffee House in Newport News, and "Shine Your Light 2000," a free concert featuring Keep The Promise, Vessels of Honor, Acquitted and Saving Sam, will take place from 3 to 8 p.m. Aug. 12 at the Buckroe Beach Pavilion in Hampton. For more information, visit <www.keepthepromise.org> on the Web.

If you are a Langley employee involved in something outside of work that other employees might be interested in reading about, contact Jim Roberts at ext. 48150 or <j.r.roberts@larc.nasa.gov>.

Telecommuting Technology Could Eliminate 'Bad Hair Days'

By MICHAEL BRAUKUS
NASA Headquarters

and NANCY LOVATO
NASA Jet Propulsion Laboratory

Think you must dress for success even in the bold new world of telecommuting? Maybe not, even if your employer has a videophone to display your image.

A digital human-image animation computer system under development at NASA's Jet Propulsion Laboratory (JPL) can use the smallest units of speech, called phonemes, to manipulate a person's facial movements in an image. The system is driven by language rather than by manual animation controls.

While development is in the early stages at this point, the eventual result will be photo-realistic animation of a person speaking.

"This is voice-driven, so the image morphs in response to a voice or equivalent input," said principal investigator John Wright of JPL. "Real-time animation is a key step in our development process. Unlike cartoon morphs, this technology uses video and facial movements of real people as its building blocks."

The system, called Digital Personnel, will make it possible to use an image of any human face and make it appear to be speaking naturally. With a videophone, it would be possible to have the option of always portraying the image you wish — no more "bad hair days." A celebrity figure appearing to speak might be another option for an image.

Communication capabilities are being designed for this technology to allow Digital Personnel to work efficiently over telephone as well as data lines. Lower bandwidth — the rate of data transmission, or bits per second — will be used by this system, compared to the bandwidth required to transmit real video images. This will allow broader use of the technology while also preserving the appearance of reality in the image.

One application of the system might be an on-line help desk — a live voice projecting through a digital person would assist the user. The real support representative, while speaking, could leaf through documents with his or her head down. The web image would be the digital person looking at and "speaking" to the user.

Digital Personnel could also enhance e-commerce by providing a user-friendly presence. Product demonstration, promotion and celebrity representation interaction would be possible with online customers.

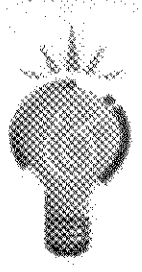
"We are excited about the acquisition of this technology and about our collaboration with JPL on future development," said Cristian Ivanescu, chairman and CEO of Graphco Technologies, Inc. "The Digital Personnel technology complements our market offerings for secure database and information-sharing systems for law enforcement, government and industry."

Graphco Technologies, Inc., has acquired the exclusive worldwide rights to Digital Personnel, a patent-pending technology that makes it possible to synthesize photo-realistic talking individuals for e-commerce and e-support.

The Deadline

July 17, 2000

Anticipating 100 individuals or teams to be funded at the $30K-$300K level, with up to 80% of their time dedicated to this new activity.



Creativity & Innovation

NASA Langley Research Center

An initiative to boldly explore the frontiers of aerospace

Place your comments on the Web site!

http://creatvity.larc.nasa.gov

You should have already received an e-mail containing your password for the Web site.

C&I proposals to be submitted by civil servant employees only.

Come to the Creativity Faire!

July 17th at the H.J.E. Reid Conference Center

Discussions at the Faire will illuminate the research topics and resources available to help employees compete for awards and perform research.

Creativity is happening all over Langley; it's the birthplace of many breakthrough ideas. C&I offers employees an opportunity to concentrate on new ideas, potentially long-term, to compete for time, funding and facilities to explore broad topic areas that may create part of Langley's tomorrow. C&I is designed to stimulate non-incremental thinking and action for high pay-off, high-risk, radical concepts and technologies to dramatically alter the future. If the proposed work is technically successful, its impact must lead to improved quality-of-life. C&I awards will be made to coincide with the beginning of FY-01.

As a starting point, topics will be placed on the Web for comment prior to the Creativity Faire. Discussions at the Faire will illuminate the research topics and resources available to help employees compete for awards and perform research. C&I will be a fast-track path for those ready to RUN (not walk) with exciting new efforts!

Are you ready?! If so, we'll see you at the Faire, July 17th at the H.J.E. Reid Conference Center.

NASA LaRC Building and Room Locator

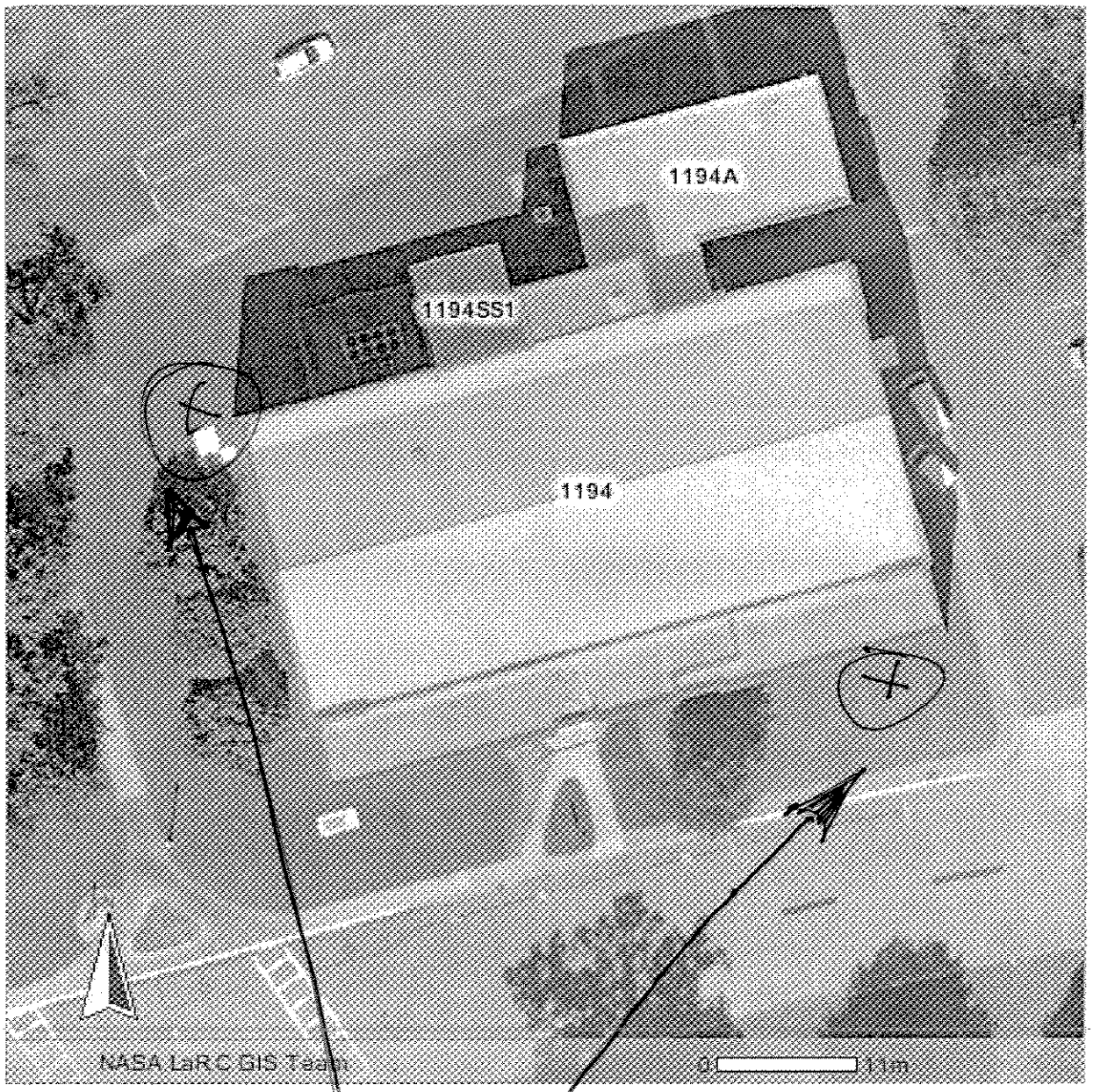
Click on map to :

Zoom In 2x

Area Of Interest :

Zoom To ...

NASA LaRC Building and Room Locator



Click on map to

Zoom In 2x

Area Of Interest :

Zoom To ...

AdVentures

CLASSIFIED

FOR SALE: House in Hampton. 4BR, 1.5 BA, family room, dining room, eat-in kitchen, hardwood floors, large shed, full attic, new roof, fresh paint throughout. $104,800. Call 826-1862 or visit <http://www.angelfire.com/va2/glenrockgang/index.html> on the Web.

FOR RENT: Townhouse in Poquoson. 4 BR, 2.5 BA, three stories, large living room, dining room, spacious kitchen, large loft area, fenced-in back yard, single-car garage, attic. One-year lease, available Aug. 30. $995 per month with $995 deposit. Call 868-0267 or 868-3809.

FOR SALE: 1990 Plymouth Grand Voyager Van. V6, AC, AM/FM cassette, power locks, seats and windows, tires like new, luggage rack, current inspection, one owner, good condition, 125k miles. $3,300. Call 857-6986.

FOR SALE: Diamond ring. Marquis cut, almost 1 carat, M color, SI2 clarity, set in solid 18K gold and platinum. Appraised at $2,000, will sell for $1,500. Call 827-7515 or visit <www.members.tripod.com/cooka> on the Web.

FOR SALE: Piano and bench. Bremen spinet with mahogany finish. Good condition. $950. Call 838-1797.

FOR SALE: Craftsman wood lathe with branch, tools and duplicator. Excellent condition. $125. Call 357-6986.

FREE TO GOOD HOME: Old upright piano. Needs repair and tuning. Call 898-9290.

New IMAX Film Opening At VASC

The Virginia Air & Space Center (VASC) will host a family cookout commemorating the opening of "Journey of Man," the new IMAX film featuring Cirque Du Soleil, from 6 to 9 p.m. July 14. Tickets are $15 for adults, $10 for VASC members and $8 for children.

VASC will continue to show the IMAX films "Michael Jordan To The MAX" and "Amazing Journeys" through Sept. 7. For showtimes or more information, call 727-0900 or visit <www.vasc.org> on the Web.

Luncheon Planned For Volunteers

Langley Research Center will host a Dutch-treat luncheon for the Center's Tour Host Volunteers at 11:30 a.m. July 18 in the private dining room of the Cafeteria. The guest speaker, Joel Levine, will begin his talk, "A Hotter Earth," at noon. For more information, contact Sandra Lemons at ext. 43957.

Honor Awards Ceremony July 19

Langley Research Center's annual Honor Awards Ceremony will be held at 2 p.m. July 19 in the H.J.E. Reid Conference Center Auditorium. John W. Young, the Associate Director of Johnson Space Center, will be the guest speaker.

Presentations will be made to 34 individuals and nine teams for various awards. Recipients of the 1999 H. J. E. Reid Award, the Paul F. Holloway Non-Aerospace Technology Transfer Award and the Richard T. Whitcomb Aerospace Technology Transfer Award also will be recognized.

A reception will follow the ceremony.

All civil servants and contractors are invited to attend, but seating will be limited. Time spent in attendance should be charged to Job Order B1001.

For more information, contact Karen Ridlon at ext. 43194.

Hydrogen Safety Course Offered

Langley Research Center's Safety and Facility Assurance Office will offer two "Hydrogen Safety" courses in August: one on Aug. 1 and 2; one on Aug. 3 and 4. The courses will be taught in Bldg. 1224T7 by Harold Beeson.

The target audience for the course includes: safety, reliability, quality and maintainability professionals; payload, spacecraft and facility design engineers; test team personnel for test operations using hydrogen; and supervisors of and anyone working around systems using hydrogen.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543. For more information about the course, contact Grant Watson at ext. 43069 or <g.m.watson@larc.nasa.gov>.

EDB Offering Courses In August

Langley Research Center's Employee Development Branch will offer the following courses in August:

- "Project Management for the Office Professional" will be taught from 8 a.m. to 4:30 p.m. Aug. 8 to 10 in Bldg. 1224T7.
- "Cardiopulmonary Resuscitation (CPR)" will be taught from 9 a.m. to 3 p.m. Aug. 9 in Bldg. 1222.
- "CPR Recertification" will be taught from 9 a.m. to noon Aug. 10 in Bldg. 1222.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

Daily VASC Van Tours Continue

The Virginia Air & Space Center's (VASC) daily van tours of Langley Research Center will continue at 11 a.m. and 2 p.m. Monday through Saturday and at 2 p.m. Sunday through Labor Day.

Tickets may be purchased at the VASC. For information on how to serve as a docent or tour driver, call Steve Devan at 898-9290.

Updated EEO Book Available

FPMI Communications recently re-published one of its best-sellers, "The Federal Employee's Guide to EEO," incorporating the latest Equal Employment Opportunity Commission (EEOC) regulations concerning alternative dispute resolution. The 44-page handbook answers questions that federal employees are likely to have about EEO, including: "What is discrimination, and when is it prohibited?" and "Who will help you with an EEO problem?"

The handbook is available for $11.95 (plus shipping and handling). To place an order, call FPMI at (256) 539-1850 or visit <http://www.fpmi.com/Catalog/> on the Web.

Center Snapshot

Nettie Orie, the data acquisition systems manager in Langley Research Center's 14-by-22-Foot Wind Tunnel, has worked her entire 30-year career at Langley. Orie, a Newport News native, received a bachelor's degree in math from Fisk University in Nashville, Tenn., in 1968. Outside of work, she enjoys being active in her sorority, Delta Sigma Theta, and her church, Wesley Grove United Church of Christ. What does she like most about working at Langley? "The challenges and the personal accomplishment," she says. "You have the opportunity to go as high as you want."

Photo by Jeff Caplan

Researcher News

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Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

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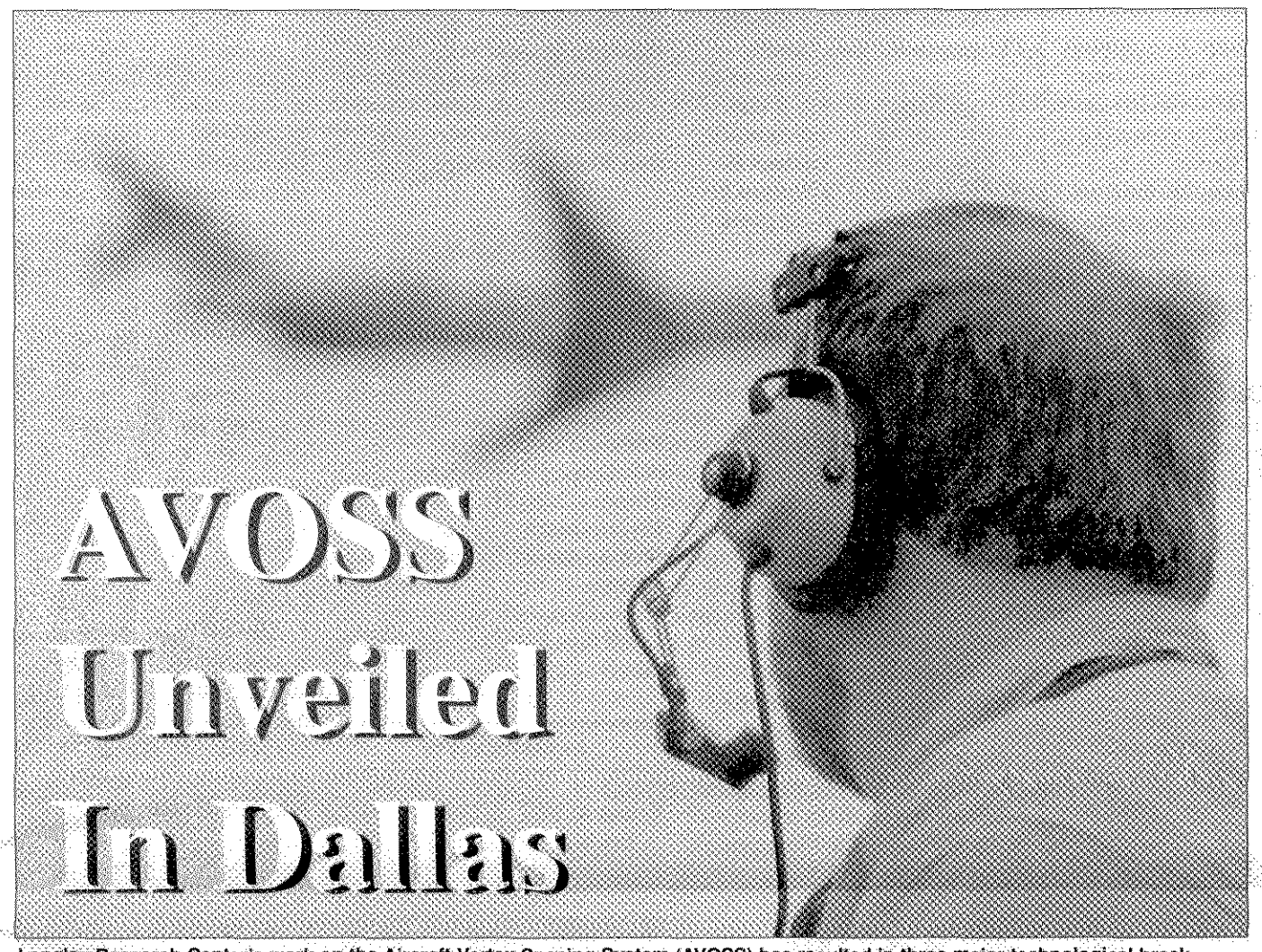
Volume 14 ❖ Issue 15 ❖ July 28, 2000



Langley Research Center's work on the Aircraft Vortex Spacing System (AVOSS) has resulted in three major technological breakthroughs: vortex modeling, planetary boundary layer measurements and prediction and wake vortex detection algorithms.

Photo by Jeff Caplan

Team Demonstrates Wake Vortex Spacing System

By KATHY BARNSTORFF
Office of Public Affairs

Airline passengers frustrated with delays at airports may be able to reach their destinations faster because of a revolutionary new technology developed at Langley Research Center.

NASA researchers have designed a system to predict aircraft wake turbulence on final approach, so airliners can be spaced more safely and efficiently. The technology, called Aircraft Vortex Spacing System (AVOSS), determines how winds and other atmospheric conditions affect the wake vortex patterns of different types of aircraft.

AVOSS uses a sort of laser radar or lidar technology to confirm the accuracy of those forecasts. All of the information is processed by computers, which can then provide safe spacing criteria automatically.

> *"With a system like AVOSS installed at DFW Airport, we would have the capability to increase runway safety, while improving runway capacity by as much as 15 percent."*
> **Jeff Fegan**

The AVOSS work resulted in three major technological breakthroughs: vortex modeling, planetary boundary layer measurements and prediction and wake vortex detection algorithms.

NASA demonstrated a prototype wake vortex spacing system from July 17-20 at Dallas-Fort Worth International Airport (DFW) to news media, Federal Aviation Administration officials and other government and aviation industry representatives.

"All aircraft produce wake vortices … sort of like two small, horizontal tornadoes trailing behind the wing tips," says AVOSS principal investigator David Hinton. "The larger and heavier the plane, the stronger the wake."

That means small aircraft that follow larger ones can encounter turbulence if they're not kept far enough apart. That turbulence can be severe enough to

Continued on Page 7

Instant Exhaust Analysis

New Gas Sensor Will Help Reduce Auto Air Pollution

By H. KEITH HENRY
Office of Public Affairs

Cities and states may soon have a new high-tech tool in the battle against automotive air pollution, thanks to Langley Research Center satellite technology originally developed to track global greenhouse gases and the Earth's protective ozone layer.

As envisioned, Langley's atmospheric remote sensing technology will be adapted to an autonomous roadside system to monitor motor vehicle emissions. Cars and trucks will pass through a low-power light beam, without stopping or slowing down. Space-age sensor technology will instantly analyze vehicle exhaust pollutants important to local and state governments working to meet federally mandated air quality standards.

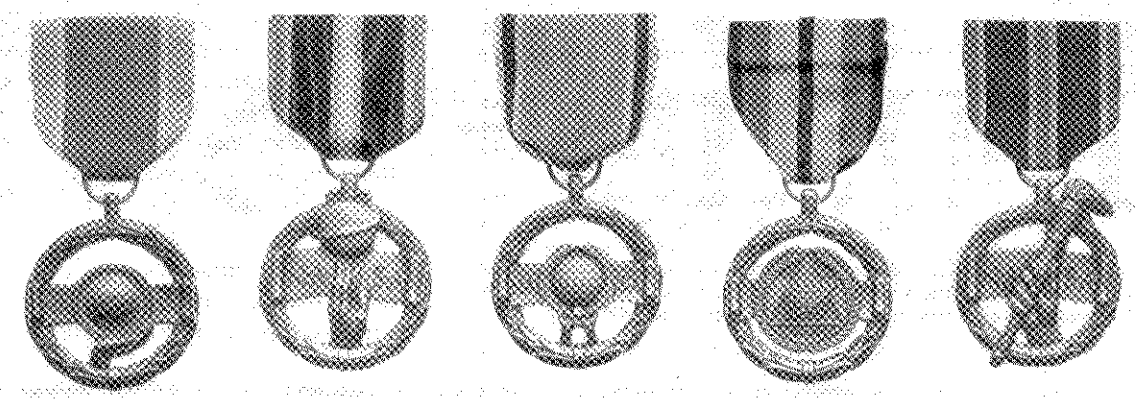
> ■ Three of the "Remote Gas Sensor" inventors were among the 42 employees honored at Langley Research Center's 2000 Inventor Awards ceremony.
> **See page 6.**

"Taking an accurate reading of several exhaust products as a car passes by is a formidable challenge," said Glen Sachse, senior research scientist in the Sensor Systems Branch. "We want to take a measurement of all the gases of interest every one-thousandth of a second over a period of a half-second. Fortunately, our

Continued on Page 2

Inside: A Special Honor Awards Pull-Out Section

Starting On Page 3



News Briefs

Around the Agency

CUDDLING UP IN A QUILT OF GAMMA-RAY STARS

The Compton Gamma Ray Observatory is gone, but its memory lives on — in a quilt museum located in a rural Virginia town. A retired couple in Elkwood took two gamma-ray images their son received from NASA, back in 1993, and turned them into spectacular coverlets.

One image, of the Crab and Geminga pulsars, is on display through Sept. 18 at the Virginia Quilt Museum in Harrisonburg. The second, of a gamma-ray quasar called 3C 279, will have its first public viewing during a symposium on the Compton mission July 19 at NASA's Goddard Space Flight Center.

"I can't say I know much about quilt-making, but these are fabulous reproductions of the original Compton images, right down to the smallest detail, or data point," said Neil Gehrels, a Goddard astrophysicist and project scientist for the mission. "We could use them as viewgraphs at meetings if the electricity should ever fail." RELEASE: 00-110

TELESCOPE SKY SURVEY "GIVES YOU THE STARS"

Your home computer can become a portal to a wonderland of stars, thanks to a massive release of images from an infrared sky survey sponsored by NASA and the National Science Foundation.

"Any computer with a Web browser can be transformed into a desktop observatory," said Michael Skrutskie of the University of Massachusetts, principal investigator of the sky survey, which has scanned the nighttime sky and produced an online image potpourri of half a million galaxies and 162 million stars.

"The general public can see a menagerie of objects in infrared wavelengths that they couldn't see in any other way," said project scientist Roc Cutri. The 1.9 million images would fill 6,000 CD-ROMs, equivalent to 4,000 gigabytes or four terabytes of computer hard disk space.

The images were gathered by the Two-Micron All Sky Survey (2MASS), the most thorough census of stars ever made. The survey detects infrared wavelengths that are beyond the red light in the rainbow of visible colors. Infrared light penetrates the gas and dust in our galaxy and is particularly effective for detecting the heat of very cool objects not visible with optical telescopes. For more information, visit <http://www.ipac.caltech.edu/2mass/gallery/second/> on the Web. RELEASE: 00-108

CHANDRA CAPTURES FLARE FROM BROWN DWARF

NASA's latest observatory, designed to see the most violent and stunning cosmic phenomena, captured something unexpected. The Chandra X-ray Observatory, orbiting in space about one-third of the way to the moon, saw the first-ever flare from what's known as a brown dwarf, or failed star.

"We were shocked," said Dr. Robert Rutledge of the California Institute of Technology (Caltech) in Pasadena, Calif., the lead author on the discovery paper which appears in the July 20 issue of Astrophysical Journal Letters. "We didn't expect to see flaring from such a lightweight object. This is really the mouse that roared."

The study of the bright X-ray flare will increase understanding of the explosive activity and origin of magnetic fields of extremely low-mass stars. RELEASE: 00-103

Researcher News

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Finneran Named Head Of OEA

Langley Research Center's Associate Director for Business Management **Lana Couch** announced on July 7 the selection of **Michael P. Finneran** as Head of the Office of External Affairs. He will be responsible for managing the Office of Public Affairs and the Office of Public Services and will report directly to Couch.

Finneran

Finneran began his NASA career in 1993 as a public affairs specialist at Goddard Space Flight Center. One year later, he accepted a similar position at Langley and in 1996 was named head of Langley's Office of Public Affairs.

Prior to working for NASA, Finneran earned a bachelor of arts degree in English from the University of Massachusetts and held editing positions at the Miami Herald, The Virginian-Pilot, the (Bergen) Record in Hackensack, N.J., and the Fitchburg Sentinel in Fitchburg, Mass., and the *Researcher News*.

He succeeds **A. Gary Price**, who retired in June after more than 30 years of service.

Price Named New LMS Representative

Langley Research Center's Office of the Director announced on July 20 that **Douglas B. Price** will be reassigned as the new Langley Management System (LMS) Management Representative. The outgoing Management Representative, **Cynthia C. Lee**, will remain in her position until Sept. 5, at which time Price will officially take over the duties.

In Memoriam

Erwin A. Fox Jr.

Erwin A. Fox Jr. died on July 14 at the age of 80. Fox, a native of Huntington, W.Va., served in the U.S. Merchant Marine and was a veteran of World War II. He retired from Newport News Shipbuilding as a material support supervisor in 1982 after 28 years of service and was a member of the NASA Langley Apiculture Club.

Gary D. Mabe

Gary D. Mabe died on July 18 at the age of 53. Mabe, a native of Hampton, served in the U.S. Navy and was a Vietnam veteran. He worked for EG&G at Langley Research Center and retired as a foreman after 25 years of service.

Claudia Chappell Pierce

Claudia Chappell Pierce died on June 24 at the age of 86. Pierce, a native of Union City, Tenn., worked as a mathematician at Langley Research Center, where she met her husband, Harold, who preceded her in death.

Sensor

Continued from Page 1

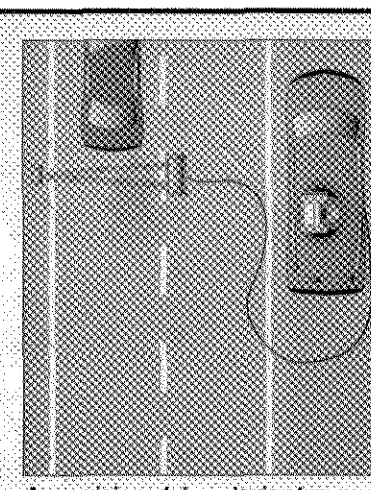
newest remote sensing technology has that capability." Sachse is one of six team members who invented the highly sensitive electro-optical system at the core of the technology.

Other inventors are Liang-Guo Wang, formerly of the College of William & Mary; Peter LeBel and Tommy Steele, retired from Langley's Sensor Research Branch; Mauro Rana of Federal Data Corp.; and Charles Harwood of SAIC, which supports Langley's Sensor Research Branch.

Langley and SPX Service Solutions of Warren, Mich., have jointly announced that the patented NASA technology has been exclusively licensed to SPX for use in developing a new remote sensing device to monitor motor vehicle exhaust.

"Remote testing of vehicle exhaust will provide governments around the world with a fast, efficient and low-cost method to identify and reduce motor vehicle air pollution and greenhouse gases, which account for approximately one-half of all air pollution," said Craig Rendahl, remote sensing business leader for SPX Service Solutions.

"With the number of vehicles on the road increasing every year, we believe there is a significant global market for technology of this nature," Rendahl said. "SPX will offer a basic unit which will be available at the end of 2000. With the help of NASA, we expect to begin manufacturing a highly enhanced remote sensing device before the end of 2001. This second-generation product will contain many other features, including the capability to test heavy-duty diesel vehicles."


As envisioned, Langley's atmospheric remote sensing technology will be adapted to an autonomous roadside system to monitor motor vehicle emissions. Cars and trucks will pass through a low-power light beam, without stopping or slowing down. Space-age sensor technology will instantly analyze vehicle exhaust pollutants important to local and state governments working to meet federally mandated air quality standards.
Graphic by Tim Cooper for SPX

The U.S. Clean Air Act mandates that a certain percentage of the U.S. fleet of vehicles be measured each year. The act allows for remote sensing as an option.

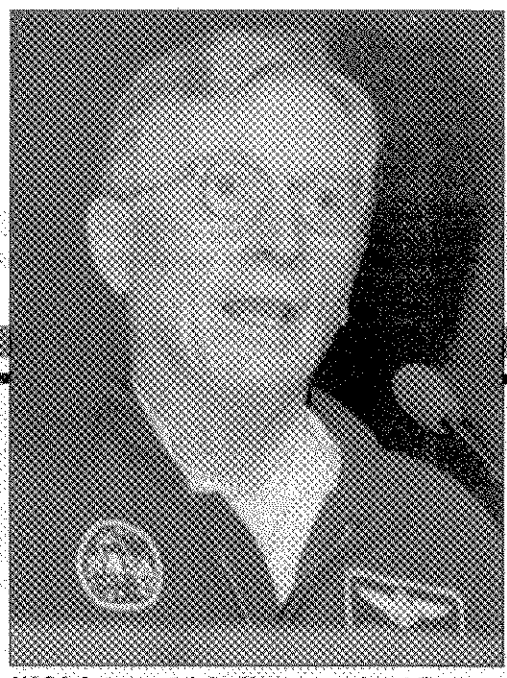
In a process called "clean screening," drivers who formerly took their vehicles in for an annual emissions inspection would receive a notice in the mail certifying that their vehicle has passed twice in a 12-month period and that they do not have to submit to an emissions test — at least that's the expected outcome for most drivers. As individual roadside exhaust measurements are taken, the vehicle's license plate would be photographed and the data would be transmitted to a central collecting point.

Those drivers whose vehicles passed would save both time and money. Drivers whose vehicles failed or gave marginal readings would be identified for additional testing and possible emissions-related repairs.

In space, NASA uses remote sensing devices mounted on satellites and backlighting from the sun to take global atmospheric measurements as part of its Earth Science Enterprise program. The program is aimed at expanding knowledge of the Earth's environment in order to provide the scientific basis for sound policy decisions on environmental matters.

Michael Braukus of NASA Headquarters and Jeri Collins and Craig Rendahl of SPX Service Solutions also contributed to this story.

Honor Awards



NASA Astronaut John Young speaks at the annual Honor Awards Ceremony on July 19.
Photo by Jeff Caplan

Langley Research Center held its annual Honor Awards Ceremony on July 19, recognizing two teams, 10 groups and 37 individuals for their outstanding accomplishments. NASA Astronaut John Young spoke at the event, which concluded with Center Director Dr. Jeremiah F. Creedon telling the honorees, "You are to be commended. ... Take a minute to exult. Feel proud about it. You earned it, and you deserve it."

H.J.E.Reid Award

Merski

The **H.J.E. Reid Award** recognizes an outstanding publication, refereed journal article, or other formal NASA archival media first-authored by a Langley Research Center employee or group of employees.

The H.J.E. Reid Award is presented to: **Norman R. Merski Jr.** For Outstanding Paper entitled "Global Aeroheating Wind-Tunnel Measurements Using Improved Two-Color Phosphor Thermography Method."

Distinguished Honor Awards

Presidential Rank Award

Freeman

Garrido

Presidential Rank Awards are bestowed annually by the President to a very small number of career Senior Executive Service members for sustained accomplishments in carrying out Government-wide goals and policies.

Meritorious

Delma C. Freeman Jr. and **Humberto T. Garrido**

NASA Honor Awards

The National Aeronautics and Space Administration bestows its highest honor in recognition of achievements made by the following groups and individuals.

Cross

Distinguished Public Service Medal

Ernest J. Cross, Old Dominion University

For outstanding scientific and engineering contributions and leadership to NASA and the aerospace industry over the past four decades.

Technology Transfer Awards

The **Paul F. Holloway Non-Aerospace Technology Transfer Award** and the **Richard T. Whitcomb Aerospace Technology Transfer Award** recognize technical contributions of the development/new technology, participation in technology transfer processes, and the significance of the technical contributions and/or participation in technology transfer processes.

The Paul F. Holloway Non-Aerospace Technology Transfer Award is presented to the Carbon-Carbon (C-C) Piston Technology Team: **Robert C. Andrews, Gaudy Bezos-O'Connor, Philip H. Glaude, G. Burton Northam, Philip O. Ransone, H. Kevin Rivers, Allan H.Taylor (deceased)** and **Rosa C. Webster (retiree)**.

The Richard T. Whitcomb Aerospace Technology Transfer Award is presented to the LaRC TM –CP1 and LaRC TM -CP2 Team: **Molly O. Dix, Catharine C. Fay, Lois A. Forbes, George F. Helfrich, Gregory S. Manuel, Gilda A. Miner, Kenneth M. Proctor, Anne K. St. Clair, Terry L. St. Clair, Diane M. Stoakley** and **William P. Winfree**.

Carbon-Carbon (C-C) Piston Technology Team

Andrews

Bezos-O'Connor

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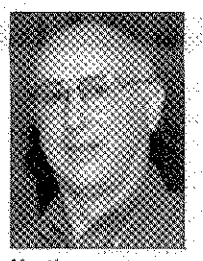
Glaude



Northam

Ransone

Rivers

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Taylor

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Webster

LaRC TM-CP1 and LaRC TM-CP2 Team

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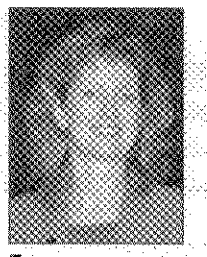

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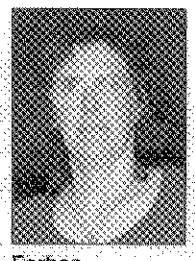
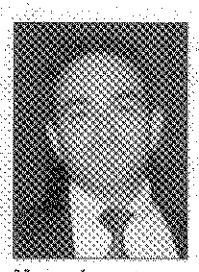


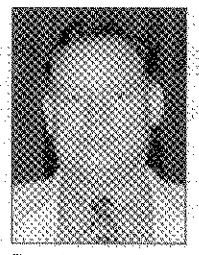
Forbes

Helfrich



Manuel

Miner



Proctor

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A.K. St. Clair

T.L. St. Clair

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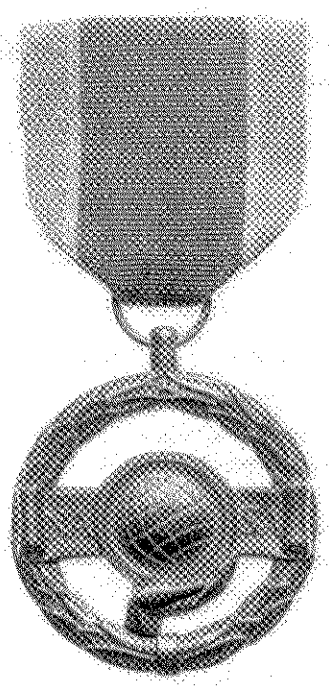
Stoakley

Winfree

Honor Awards 2000



Public Service

Applin

Braun

Brewer

Burns

Corliss

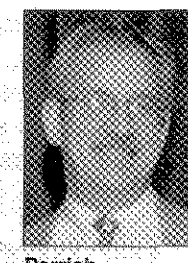
Dunnington

Gallagher

McClinton

Noll

Palumbo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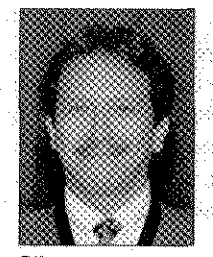
Raju


Silva

Skora

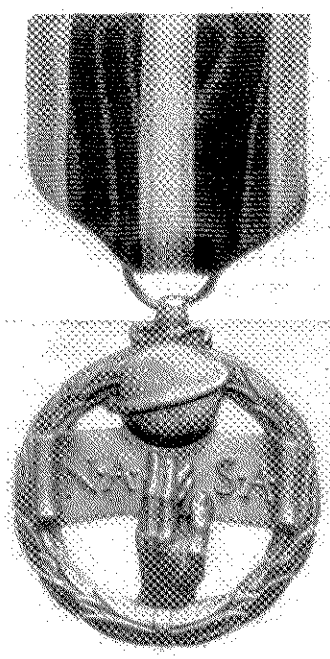
Stough

Szatkowski

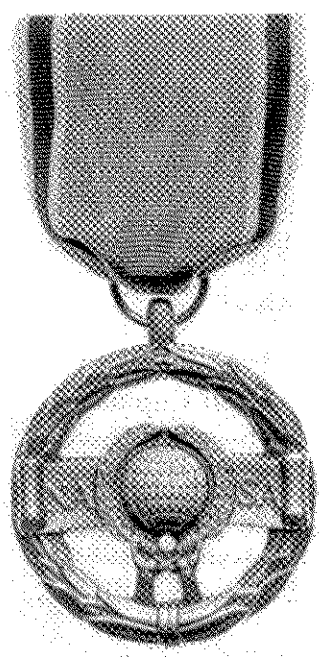
Talay

Thibeault

Warren



Exceptional Scientific Achievement



Exceptional Service

Group Achievement Awards

■ **Active Structural Acoustic Control Flight Demonstration Team** accepted by **Daniel L. Palumbo**
For conducting creative and pioneering studies of active noise control in flight.

■ **Aviation Weather Information (AWIN) Systems Solicitation, Selection, and Implementation Team** accepted by **Harry P. Stough III**
For outstanding efforts in planning and executing innovative techniques to develop critical aviation weather information systems.

■ **Evaluation of Space Environment and Effects on Materials (ESEM) Project Team** accepted by **Junilla I. Boatwright Applin**
For extraordinary accomplishment in the design, development, integration, validation, flight operations, and retrieval of the ESEM experiment, part of the highly successful National Space Development Agency of Japan Manipulator Flight Demonstration Experiment.

■ **High-Speed Research eXternal Visibility System (XVS) Team** accepted by **Russell V. Parrish**
For significant contributions to success of the High-Speed Research eXternal Vision System development which is vital to future High-Speed Civil Transports.

Public Service Group Achievement Award

■ **Research Triangle Institute** accepted by **Doris J. Rouse**
In appreciation for continued excellence in technology assessment and commercialization.

Exceptional Scientific Achievement Medal

■ **Ellis E. Remsberg**
For outstanding contributions to the assessment of the global vertical distribution of water vapor in the stratosphere leading to the development of a global water vapor climatology.

■ **Mars Microprobe Aeroshell Design and Analysis Team** accepted by **Robert D. Braun**
For design of an innovative aeroshell system satisfying the unique entry, descent, and impact requirements of the Mars Microprobe mission.

■ **Office of Procurement Quality Improvement Team** accepted by **Sandra S. Ray**
For significant improvements to the operations, performance, and customer service of Langley's Procurement Office.

■ **Stratospheric Aerosol and Gas Experiment III (SAGE III) Instrument Team** accepted by **Lorelei S. Szatkowski**
For exceptional contributions to the development and delivery of three Stratospheric Aerosol and Gas Experiment (SAGE III) flight instruments to Langley Research Center.

■ **Transonic Dynamics Tunnel (TDT) Heavy Gas Conversion Project Team** accepted by **James M. Corliss**
For outstanding engineering, construction, and shakedown accomplishments in converting the NASA Langley Transonic Dynamics Tunnel from R-12 operation to R-134a operation.

■ **Tu-144 Structure/Cabin Noise Experiment Team** accepted by **Stephen A. Rizzi**
For planning, design, and execution of the Tu-144 Structure/Cabin Noise Experiment.

■ **Gwendolyn B. Leach**
For exceptional service, sustained performance, and outstanding support of spaceflight projects.

■ **James F. Pike**
For sustained distinguished service in the support and advancement of welding and fabrication technology at Langley Research Center.

■ **Joseph F. Powers**
For outstanding service in the design and development of unique and complex test articles in support of NASA/LaRC missions and programs.

■ **Thelma J. Reavis**
For exceptional sustained service to the Chemistry and Dynamics Branch in support of its atmospheric science program.

■ **Lee R. Rich**
For significantly increas
tionship with a broad range
and other national decision

■ **Mary M. Skora**
For exceptional service i
value to stakeholders—nati
industry partners, and the g

■ **Theodore A. Talay**
For exceptional career s
Transportation Program as
leader, and mentor.

Exceptional S

■ **William D. Brewer**
For exceptional contribu
metal matrix composites an

■ **Thomas J. Burns**
For 14 years of distingui
fabrication technology and
Research Center.

■ **Patricia L. Dunningt**
For exceptional service
of NASA's information tec
tiatives.

■ **Charlie Haynes Jr.**
For 26 years of exceptio
and application of fabricati
mission of NASA.

Exceptional Ach

■ **Shawn T. Gallagher**
In recognition of outstan
assistance critical to the suc
LaRC's business initiatives.

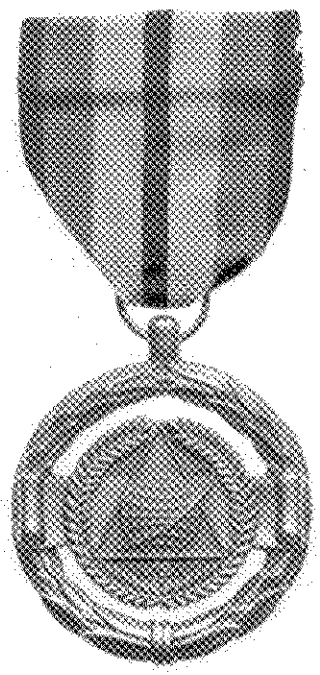
■ **H. Harris Hamilton**
For outstanding develop
ing prediction methodologi
transportation systems.

Honor Awards 2000

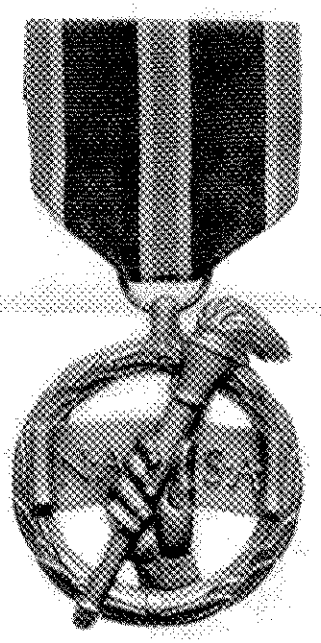
Hamilton Harrison Haynes Johnson Leach Massenberg

Ray Reavis Remsberg Rich Rizzi Rouse Shuart

:h White Williams Wynkoop Yetter Zawodny Zoby



Exceptional Achievement



Outstanding Leadership

ASA Langley's rela-
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ement Medal

egal support and
f a wide variety of

f advanced aeroheat-
application to space

■ **Joycelyn S. Harrison**
For outstanding achievements in Smart Materials.

■ **Stuart K. Johnson**
For the successful development of a full-scale revolutionary, full-scale advanced propulsion integration system for survivable aircraft.

■ **Samuel E. Massenberg**
For exceptional leadership and significant contributions in administering a full continuum of education programs ranging from precollege to postdoctorate.

■ **Sheila A.Thibeault**
For outstanding service in advancing space materials for NASA missions.

■ **John B. Warren**
For exceptional technical contributions and outstanding support to high-pressure air operations across the Langley Research Center.

■ **Sharon S.Welch**
For outstanding leadership in helping define the future direction for Space Transportation Technology.

■ **John J.White II**
For sustained outstanding leadership and technical contributions to major NASA aeronautics research programs and projects.

■ **Mark W. Wynkoop**
In recognition of exceptional technical contributions to the advancement of flight research capabilities at Langley Research Center.

■ **Jeffrey A.Yetter**
For outstanding contributions to NASA's cooperative programs to support the development of high performance aircraft critical to national defense.

Outstanding Leadership Medal

■ **Carl E. Gray Jr.**
For outstanding contributions to the Center and Agency in providing exemplary technical and administrative leadership.

■ **Charles R. McClinton**
For outstanding leadership of Hyper-X program and NASA hypersonic research and technology activities.

■ **Thomas E. Noll**
For outstanding technical leadership in aeroelasticity and aeroservoelasticity leading to critical technology transfer of key research results and product-specific results to the aerospace community.

■ **Mark J. Shuart**
For outstanding leadership of the structures and materials research organizations and programs that have resulted in significant contributions to NASA's research program goals.

■ **Alan T. Pope**
For exceptional achievement in pioneering applications of biocybernetics technologies.

■ **Ivatury S. Raju**
For exceptional contributions to the fields of computational fracture mechanics and damage tolerance of metallic and composite materials for aircraft and spacecraft structures.

■ **Walter A. Silva**
For outstanding achievements leading to the development of a computationally efficient methodology that provides nonlinear unsteady aerodynamic models for aircraft design.

■ **Reuben A.Williams**
For exceptional achievements in the development of the High Intensity Radiated Fields Laboratory for assessing electromagnetic effects on flight critical systems.

■ **Joseph M. Zawodny**
For exceptional achievements in the development of NASA's next-generation remote sensing hardware and software technologies.

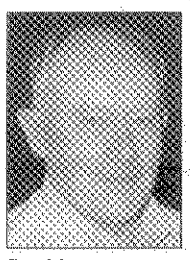
■ **Ernest V. Zoby**
For outstanding contributions to advancement of aerothermodynamic technologies and application to the design/development of Earth and other planetary entry vehicles.

The *Researcher News* would like to thank the following people for making this awards section possible:

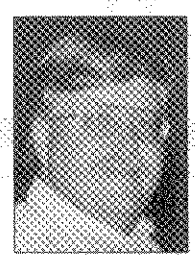
Paul R. Bagby,
Jeff Caplan,
Rebecca A. Hayes,
Ricky L. Hoff,
Margaret P. Hopkins,
Karen E. Ridlon,
Sherry L. Sullivan,
and
Percival J. Tesoro.

Banks

Bauer


Buckley

Cantrell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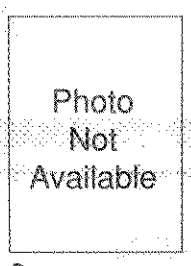

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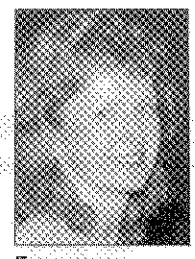
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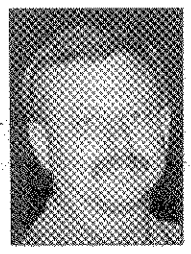
Fox

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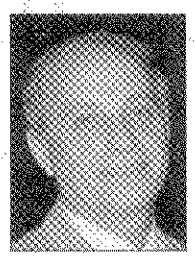
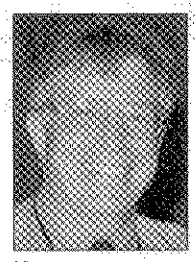
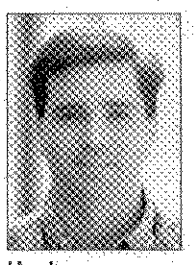

Gilinsky

Harrison

Hellbaum


Heyman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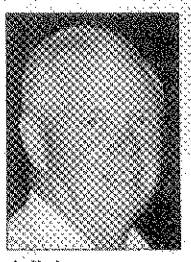
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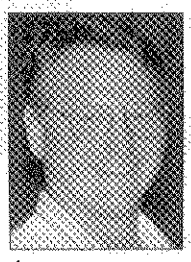
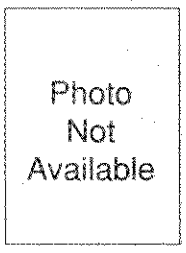

Jensen

Jobson

Katzberg



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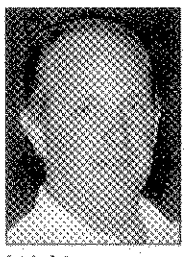
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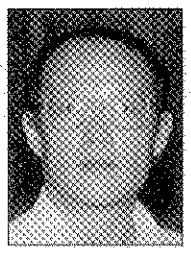
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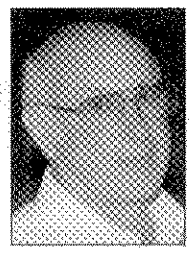
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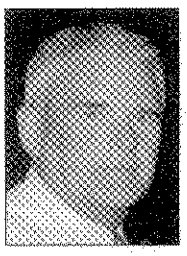
Powers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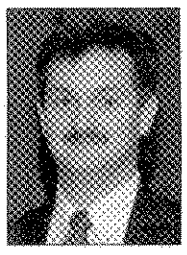
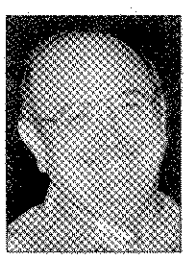

Rivers

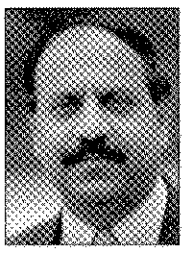
Rohrbach

Sachse

A.K. St. Clair


T.L. St. Clair

Schryer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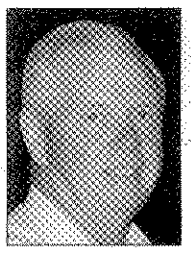
Seiner


Steele

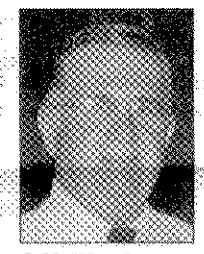
Sun

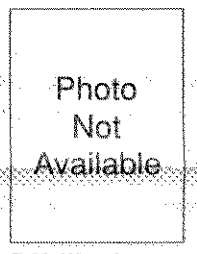
Upchurch

Weiser

Wincheski

Winfree


G.M. Wood



R.M. Wood

Woodell

Yost

42 Inventors Honored

Langley Research Center's Technology Commercialization Program Office (TCPO) presented Patent Awards on July 10 to the 42 Center employees who secured patents in 1999.

The speaker at the event was Center Director Dr. Jeremiah F. Creedon. He presented the awards with Linda Blackburn, TCPO's patent counsel.

The award-winners were:

■ **Brian J. Jensen**, "Copolyimides Prepared from 3,4' Oxydianiline and 1,2-Bis (3-Aminophenoxy) Benzene With 3,3', 4,4'-Biphenylcarboxylic Dianhydride."

■ **Antony Jalink Jr., Richard F. Hellbaum** and **Wayne W. Rohrbach**, "Ferroelectric Stirling-Cycle Refrigerator."

■ **G. Burton Northam**, "Integral Ring Carbon-Carbon Piston."

■ **Catharine C. Fay** and **Anne K. St. Clair**, "Dimensionally Stable Ether-Containing Polyimide Copolymers."

■ **Stephen J. Hughes**, "Combination Space Station Handrail Clamp and Pointing Device."

■ **Philip O. Ransone, G. Burton Northam** and **H. Kevin Rivers**, "A Method of Making Carbon-Carbon Piston Architectures."

■ **G. Burton Northam, Philip O. Ransone** and **H. Kevin Rivers**, "Process for Making Carbon-Carbon Turbocharger Housing Unit for Intermittent Combustion Engines."

■ **Richard M. Wood**, "Serrated-Planform Lifting-Surfaces."

■ **Daniel W. Banks, Steven X.S. Bauer** and **Richard M. Wood**, "Control and Augmentation of Passive Porosity Through Transpiration Control."

■ **G. Burton Northam, Philip O. Ransone** and **H. Kevin Rivers**, "Carbon Fiber Reinforced Carbon Composite Rotary Valves for Internal Combustion Engines."

■ **Joycelyn S. Harrison** and **Terry L. St. Clair**, "Thermally Stable, Piezoelectric And Pyroelectric Polymeric Substrates & Method of Making Thermally Stable, Piezoelectric and Pyroelectric Polymeric Substrates."

■ **John D. Buckley** and **Robert L. Fox**, "Inductive Systems for Bonding and Joining."

■ **Mikhail M. Gilinsky** and **John M. Seiner**, "Jet Nozzle Having Centerbody for Enhanced Exit Area Mixing."

■ **G. Burton Northam, Philip O. Ransone** and **H. Kevin Rivers**, "Lightweight Exhaust Manifold and Exhaust Pipe Ducting for Internal Combustion Engines."

■ **G. Burton Northam, Philip O. Ransone** and **H. Kevin Rivers**, "Carbon Fiber Reinforced Carbon Composite Valve for an Internal Combustion Engine."

■ **Min Namkung** and **Russell A. Wincheski**, "Radially Focused Eddy Current Sensor for Detection of Longitudinal Flaws in Metallic Tubes."

■ **G. Burton Northam, Philip O. Ransone** and **H. Kevin Rivers**, "Method of Fabricating Chopped-Fiber Composite Piston."

■ **Billy T. Upchurch, George M. Wood Jr., Bradley D. Leighty** and **David R. Schryer**, "Solid State Carbon Monoxide Sensor."

■ **Stephen J. Katzberg** and **James L. Garrison Jr.**, "Method and System for Producing Images of an Object."

■ **John J. Chapman, Qamar A. Shams** and **William T. Powers**, "Cryogenic High Pressure Sensor Module."

■ **Antony Jalink Jr., Richard F. Hellbaum** and **Wayne W. Rohrbach**, "Ferroelectric Fluid Flow Control Valve."

■ **Brian J. Jensen**, "Method of Preparing Polymers with Low Melt Viscosity."

■ **Joseph S. Heyman** and **Kuen J. Sun**, "Method and Apparatus for Evaluating Multilayer Objects for Imperfections."

■ **Anne K. St. Clair**, "Substrate Material for Holographic Emulsions Utilizing Fluorinated Polyimide Film."

■ **Glenn A. Woodell** and **Daniel J. Jobson**, "Method of Improving A Digital Image."

■ **Erik S. Weiser** and **Terry L. St. Clair**, "Hollow Polyimide Microspheres."

■ **K. Elliott Cramer** and **William P. Winfree**, "Method and Apparatus for the Portable Identification of Material Thickness and Defects Using Spatially Controlled Heat Application."

■ **William T. Yost** and **John H. Cantrell Jr.**, "Method of and Apparatus for Histological Human Tissue Characterization Using Ultrasound."

■ **Glenn W. Sachse, Tommy C. Steele** and **Peter J. LeBel**, "Multi-Gas Sensor."

Colloquium and Sigma Series Lectures

Young On 'Mars Program Assessment'

Thomas Young will present a Colloquium and Sigma Series Lecture entitled, "Mars Program Assessment — Findings and Recommendations," at 2 p.m. Aug. 1 in Langley Research Center's H.J.E. Reid Conference Center. There will not be a Sigma Series lecture at the Virginia Air and Space Center.

Young

Abstract

Following the unsuccessful Mars Polar Lander and Deep Space 2 missions, NASA Administrator Daniel Goldin appointed Young to head the Mars Program Independent Assessment Team to independently assess current and future Mars programs. The team started work on Jan. 7 and delivered its final report to NASA in March.

The team's charter was to review and analyze successes and failures of recent missions to determine why some succeeded and some failed; examine the relationship between and among NASA Headquarters, the Jet Propulsion Laboratory (JPL), the California Institute of Technology and industry partners; assess the involvement of scientists; identify lessons learned from successes and failures; review the Mars Surveyor Program to assure lessons learned are utilized; oversee Mars Polar Lander and Deep Space 2 failure reviews; and evaluate the risk management process.

Young will describe the team's findings in which everyone worked toward the same goal: finding ways to make the Mars program successful.

Speaker

Young retired as executive vice president of Lockheed Martin in 1995. He previously served as president and chief operating officer of Martin Marietta. He also served as Director of Goddard Space Flight Center, Deputy Director of Ames Research Center, Director of NASA's Planetary Programs and Mission Director of the Viking Project at Langley, for which he was awarded the NASA Distinguished Service Medal.

Young received bachelor's degrees from the University of Virginia and a master's in management from the Massachusetts Institute of Technology, which he attended as a Sloane Fellow.

He is a member of the NASA Advisory Council and chairman of the National Academy of Engineering Committee on Technology Literacy.

Upcoming Lectures

- **Sept. 12:** Kerry A. Emanuel on "Recent Progress in Understanding Hurricanes."
- **Oct. 3:** Bill Dana on "The Lifting Bodies."
- **Nov. 7:** Ralph Merkle on "Nanotechnology."
- **Dec. 5:** Ronald Greeley on "The Galileo Mission to Jupiter."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

From The Office of Equal Opportunity

FWPC Recruiting New Representatives

Langley Research Center's Federal Women's Program (FWP) is seeking employees to replace outgoing representatives.

The FWP is authorized under the provisions of Presidential Executive Order 11478 to enhance the employment and advancement opportunities for women. The FWP Committee representatives assist the FWP Manager in implementing a program at Langley by accomplishing the following duties:

- advising the FWP Manager on special equal opportunity efforts for women;
- drafting and annually updating a Center-level FWP Work Plan to implement the goals and objectives of the NASA-wide FWP Strategic Plan;
- assessing Center processes and systems to identify and eliminate barriers to meeting the objectives of Presidential EO 11478 and improving the status of women employed at the Center;
- assisting in planning and implementing programs and seminars to inform employees of the need for equal opportunity for women;
- recommending training programs to meet the needs and objectives of all employees, especially women;
- working on special project subcommittees as appointed by the chairperson; and
- informing Organizational Units of FWP activities.

The FWPC meets to develop specific recommendations for implementation. There are regularly scheduled monthly meetings, an annual training retreat and other subcommittee or special activities. There is also an opportunity to attend national recruiting and training conferences that address women's issues, such as Society of Women Engineers and Federally Employed Women.

Representation on the FWPC will require approximately 5 percent of an employee's time, and the membership term is two years, beginning on Oct. 1 and ending on Sept. 30. All Organizational Units are requested to provide membership at a rate of 1 representative for every 150 employees. General meetings are scheduled for the third Wednesday of every month in the H.J.E. Reid Conference Center.

Anyone interested in serving on the FWPC should contact his or her first line supervisor and request that he or she fill in a nomination form and send it to the FWPC Manager, Patsy Campbell, at Mail Stop 478 or via fax to ext. 48832 by Aug. 15.

All membership requests will be carefully and confidentially evaluated on the criteria for diversity (cross-section of divisions, skill codes, ethnicity, sex, supervisory experience, etc.).

For more information about FWPC, visit <http://oeop.larc.nasa.gov/fwp> on the Web.

AVOSS

Continued from Page 1

cause a plane to crash.

Weather plays a big part in the motion and decay rate of these trailing twisters. There has been no system to accurately predict wake vortex patterns and quantify the spacing needed for safety. This lack of information forces air traffic controllers to use rigidly fixed distances to separate different classes of aircraft during bad weather, causing air traffic delays that disrupt flight schedules and increase costs.

AVOSS can provide that information. The system was installed at DFW three years ago and has undergone development and testing since then.

Initial test results show that AVOSS can increase individual runway capacity as much as 15 percent depending on weather conditions and the number of "heavy" aircraft arriving.

"With a system like AVOSS installed at DFW Airport, we would have the capability to increase runway safety, while improving runway capacity by as much as 15 percent," said Jeff Fegan, the airport's executive director. "DFW operations average nearly 2,300 flights per day. Increasing the amount of planes that can land every hour means fewer delays for our passengers."

AVOSS was developed by Langley under the Terminal Area Productivity Project led by Ames Research Center. NASA also worked with the FAA, the Massachusetts Institute of Technology Lincoln Laboratory, Transport Canada, Volpe National Transportation Center and others to develop AVOSS.

Hinton said Langley is now ready to support transfer of AVOSS technologies to the FAA and industry for use in the national air transportation system.

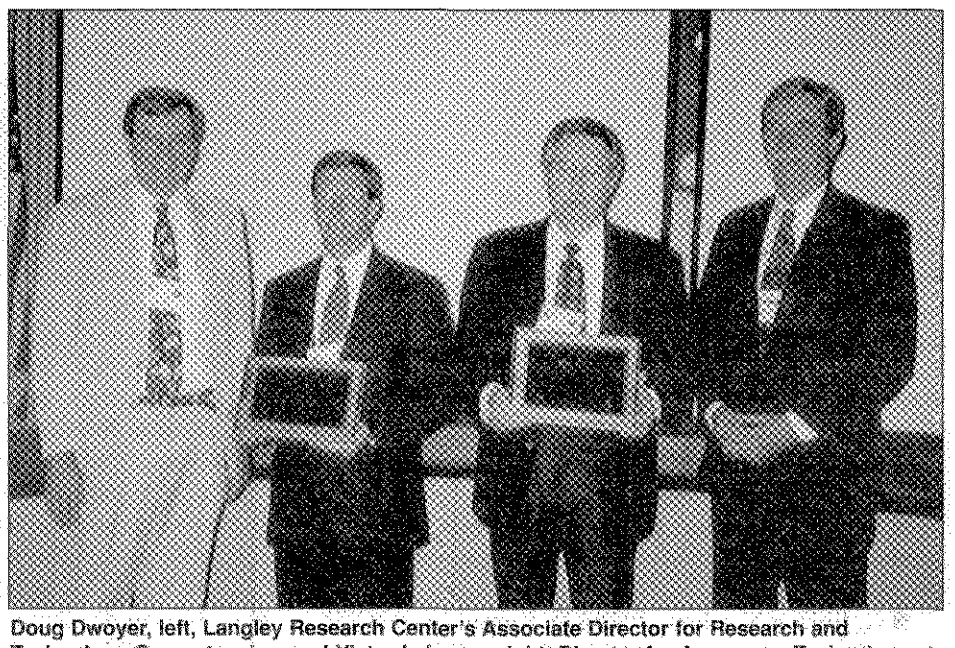

Doug Dwoyer, left, Langley Research Center's Associate Director for Research and Technology Competencies, and Victor Lebacqz, right, Director for Aerospace Technology at Ames Research Center, present plaques to Jim Crites, the Executive Deputy Director of Dallas-Fort Worth (DFW) International Airport, and Ross Schulke, Manager of DFW's Air Traffic Control, for their significant contributions to the success of the AVOSS project and technology demonstration.

Photo by Donna Roper

AdVentures

CLASSIFIED

FOR SALE: Penthouse unit timeshare in Orlando. Red week #35, 3 miles from Disney World, sleeps 6-8, full kitchen and many other amenities. $9,000 negotiable. Call 868-9619.

FOR SALE: '87 Kawasaki 454LTD, low seat height, good condition, 6,400 miles, $1,400. Call 826-1862.

FOR SALE: Drapes, copper colored, floor length, lined, 9 panels, red/gold/copper tiebacks, like new, $500. Call 858-8548.

FOR SALE: Baldwin spinet organ with 13 foot pedals, $400. Call 898-8463.

FOR SALE: Perception Torrent sit on top kayak. Whitewater, ocean surf, lake chop. Great whitewater trainer for rivers up to Class IV, great in moderate sea swells. $300. Call 627-1175.

FOR SALE: Motorola Dynasty Gold cell phone, three batteries and A/C D/C chargers, $35. Call 898-8463.

❖ ❖ ❖

The deadline for the Aug. 11 edition of the *Researcher News* is July 31. Send submissions to <j.r.roberts@larc.nasa.gov>.

Reminder Of New PR Deadlines

Langley Research Center's Office of Procurement has established the following deadlines for Fiscal Year 2000 Purchase Requests: Aug. 1 for requirements between $25,000 and $100,000 and Aug. 15 for requirements between $2,500 and $25,000.

Purchase requests not received by the above dates will be processed but may not be obligated by Sept. 30.

For more information, contact the Office of Procurement at ext. 41771.

Hydrogen Safety Course Offered

Langley Research Center's Safety and Facility Assurance Office will offer two "Hydrogen Safety" courses in August: one on Aug. 1 and 2; one on Aug. 3 and 4. The courses will be taught in Bldg. 1224T7 by Harold Beeson.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543. For more information about the course, contact Grant Watson at ext. 43069 or <g.m.watson@larc.nasa.gov>.

Alumni Association Meets Aug. 8

The NACA/NASA Alumni Association will meet at 9:45 a.m. Aug. 8 aboard the "Miss Hampton" during a cruise around Hampton Roads. For more information, call call Charlotte Tyeryar at 898-4553 or George Brooks at 868-6013.

EDB Offering Courses In August

Langley Research Center's Employee Development Branch will offer the following courses in August:

- "Project Management for the Office Professional" will be taught from 8 a.m. to 4:30 p.m. Aug. 8 to 10 in Bldg. 1224T7.
- "Cardiopulmonary Resuscitation (CPR)" will be taught from 9 a.m. to 3 p.m. Aug. 9 in Bldg. 1222.
- "CPR Recertification" will be taught from 9 a.m. to noon Aug. 10 in Bldg. 1222.

To register, fax an "Application For On-Site Training" (Langley Form 24) to DeAnna Lawrence at ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

JIAFS Registration Open Aug. 14-25

George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center offers master's, engineer's and doctorate degrees in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the fall 2000 semester are Aug. 14-25. For a course schedule or more information, contact the JIAFS office at ext. 41982 or <jiafs@larc.nasa.gov> or visit <http://www.seas.gwu.edu/seas/jiafs/fall.html> on the Web.

Fitness Center Adds New Class

The Langley Research Center Fitness Center's Aerobic Program is offering a new class called "Mat Enrichment." The class takes place from 11:30 a.m. to 12:15 p.m. Tuesdays and Thursdays in the LAA Gymnasium.

"Mat Enrichment" is a combination of mind/body relaxation techniques taken from base forms of Yoga and dance therapy conditioning.

The class is free and open to all NASA employees. (New Fitness Center member, will be required to complete a health history questionnaire and informed consent release.) For more information, call Joanne Edmonds at ext. 46387.

Participants Sought For Diversity Day

Langley Research Center's Multicultural Leadership Team (MCLT) is seeking employees to participate in the Center's first Diversity Day, which will take place from 11 a.m. to 3 p.m. Sept. 22.

Organizers are seeking a variety of foods, demonstrations and presentations from cultures from around the world. To sign up to participate, contact Ledora Akanni at ext. 42532 or <l.r.akanni@larc.nasa.gov> or James Fields at ext. 45565 or <j.fields@larc.nasa.gov> by Aug. 1. Employees who participate in Diversity Day may charge their time to J.O. B1000.

Updated EEO Book Available

FPMI Communications recently re-published one of its best-sellers, "The Federal Employee's Guide to EEO," incorporating the latest Equal Employment Opportunity Commission (EEOC) regulations concerning alternative dispute resolution. The 44-page handbook answers questions that federal employees are likely to have about EEO, including: "What is discrimination, and when is it prohibited?" and "Who will help you with an EEO problem?"

The handbook is available for $11.95 (plus shipping). To place an order, call FPMI at (256) 539-1850 or visit <http://www.fpmi.com/Catalog/> on the Web.

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Researcher News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23681-0001

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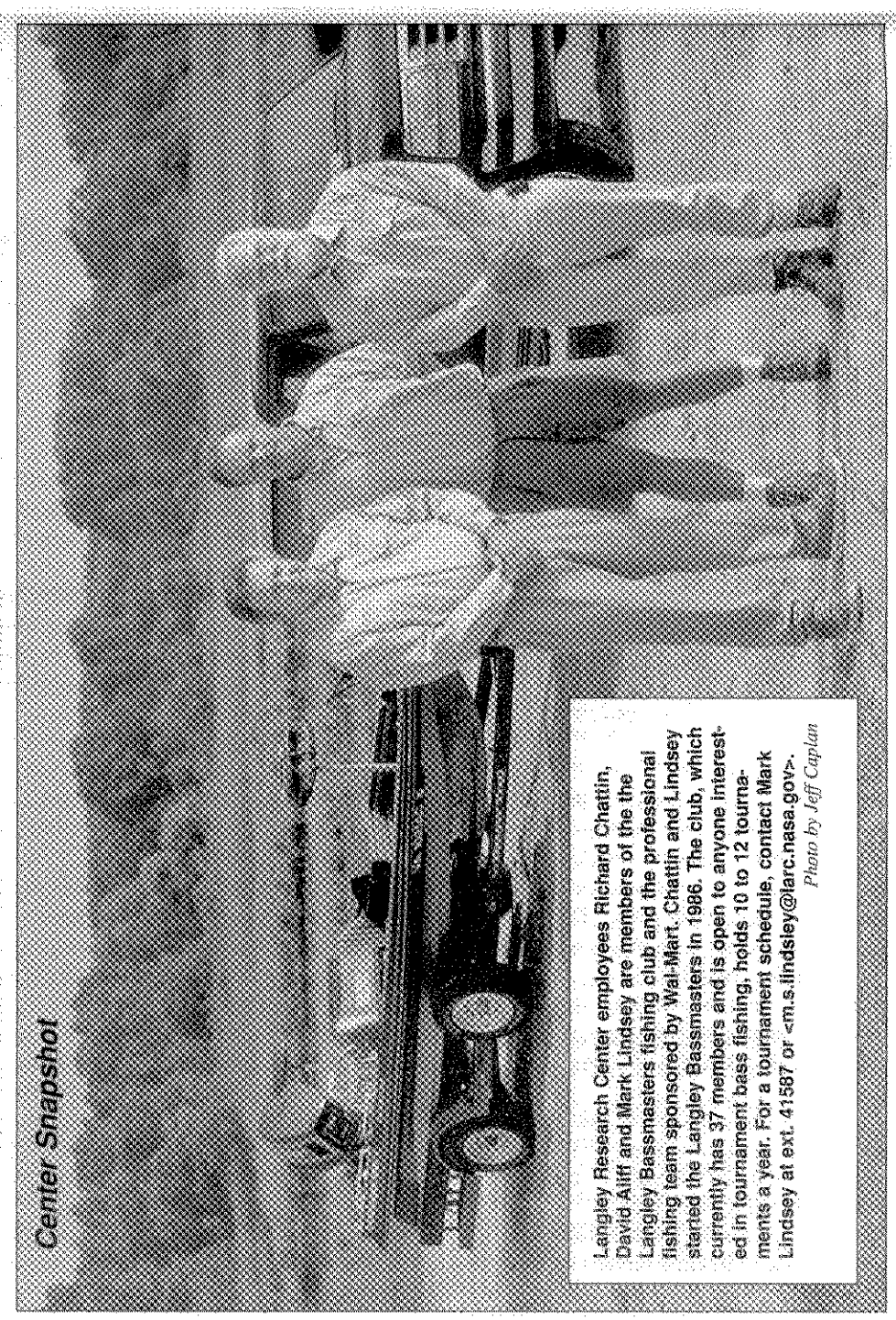


Center Snapshot

Langley Research Center employees Richard Chattin, David Aliff and Mark Lindsey are members of the the Langley Bassmasters fishing club and the professional fishing team sponsored by Wal-Mart. Chattin and Lindsey started the Langley Bassmasters in 1986. The club, which currently has 37 members and is open to anyone interested in tournament bass fishing, holds 10 to 12 tournaments a year. For a tournament schedule, contact Mark Lindsey at ext. 41587 or <m.s.lindsley@larc.nasa.gov>.

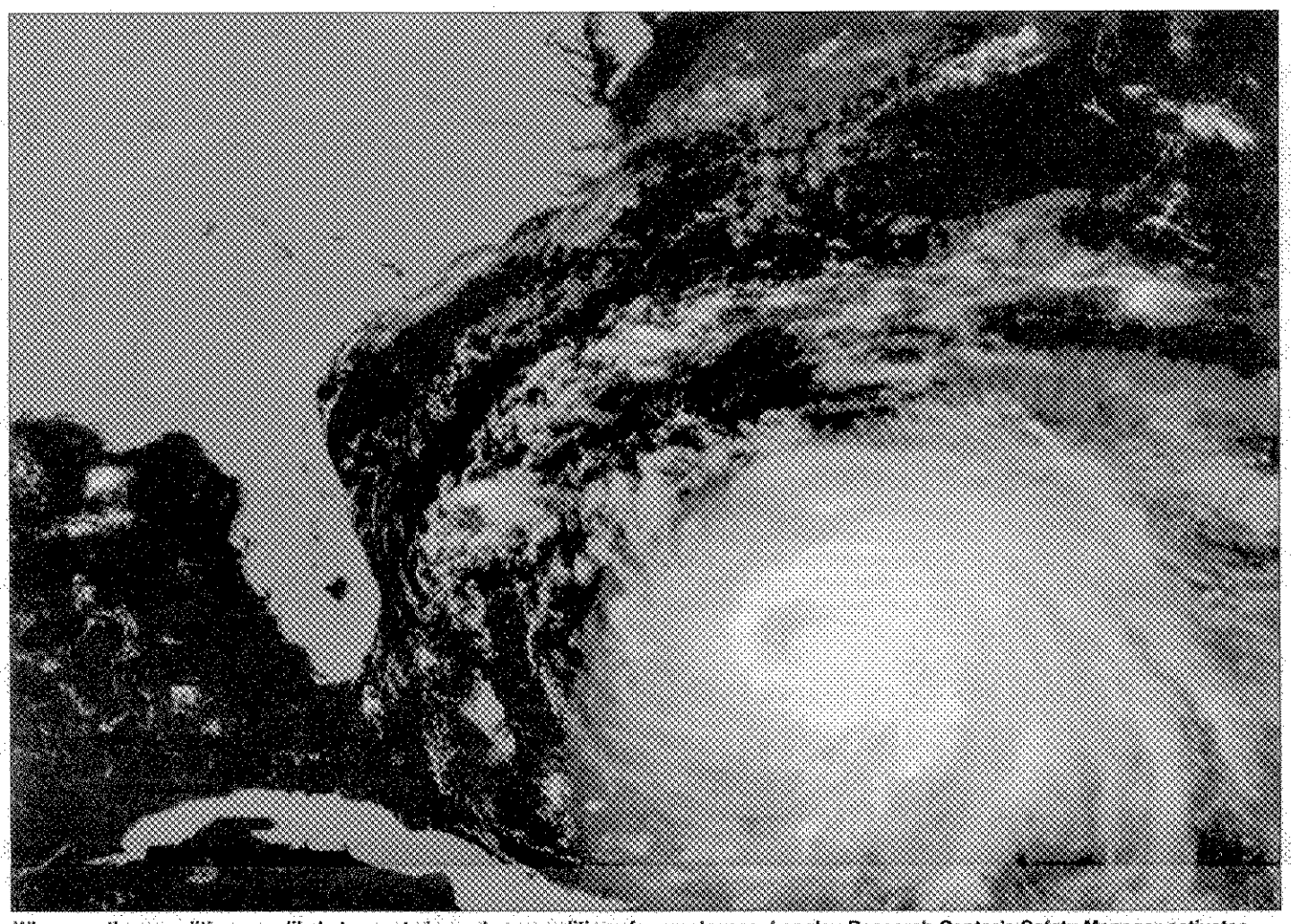
Photo by Jeff Caplan

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 16 ❖ Aug. 11, 2000



When weather conditions are likely to create hazardous conditions for employees, Langley Research Center's Safety Manager activates the Emergency Operations Center (EOC) to monitor initial storm and weather activity with other agencies.

Image courtesy of Goddard Space Flight Center

Unpredictable

How Is Langley Prepared For Bad Weather?

The Office of Safety and Mission Assurance

One of the unpredictable factors in our lives is weather forecasting. While forecast accuracy has significantly improved in recent years, it is still not perfect.

When weather conditions are likely to create hazardous conditions for employees, Langley Research Center's Safety Manager activates the Emergency Operations Center (EOC) to monitor initial storm and weather activity with other agencies. Safety personnel operate the EOC equipment located in Bldg. 1162 to monitor the approaching hurricane. If weather conditions worsen, the EOC provides 24-hour coverage of the storm. The EOC can properly advise the Safety Manager of inclement and hazardous weather conditions and their impact on the Center.

■ "Procedures To Delay Work Hours Or Close Center." See **page 3** for details.

■ September's Colloquium and Sigma Series lectures will be about "Recent Progress in Understanding Hurricanes." See **page 3** for details.

Hurricanes are described as cyclones that develop over the warm tropical oceans with sustained winds in excess of 64 knots (74 miles per hour). As many of us have witnessed, these storms can produce dangerous winds, torrential rains and flooding, all of which may result in tremendous property damage and loss of life in coastal populations.

Center Hurricane Categories

The slow movement of hurricanes usually provides time to assess wind velocities and tidal surge heights and to evacuate non-essential personnel from the Center. As a hurricane approaches the east coast, Langley categorizes hurricane conditions to determine the potential impact on safe working conditions at the Center. The hurricane categories are identified as:

Hurricon 4: 72 hours before the arrival of sustained 50-knot winds.

Continued on Page 3

AirVenture 2000

Design Contest Won By VT Team

By MARY SANDY
Virginia Space Grant Consortium

In an idea reminiscent of something in George Jetson's fleet, a student team has designed an airplane that can double as a car, to offer true door-to-door service.

NASA and the FAA recognized this and other university student teams on July 29 for their innovative designs by presenting the 1999-2000 National General Aviation Design Competition awards at a ceremony at AirVenture 2000, the Experimental Aircraft Association's Annual Convention and Fly-In at Oshkosh, Wis.

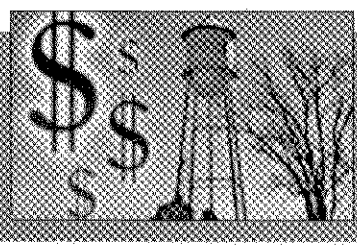
■ Keith Henry looks back on AirVenture 2000. See **page 6**.

The first place award was presented to a 28-student team from Virginia Tech and its collaborating partner, Loughborough University in the United Kingdom. The award provides $3,000 to Virginia Tech's design team members and a $5,000 award to Virginia Tech's department of aerospace and ocean engineering.

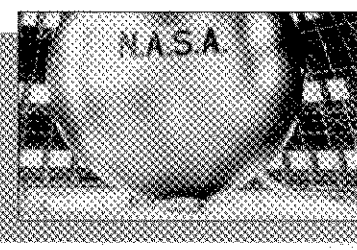
The team, which dubbed its design "Pegasus," undertook the challenge of designing an aircraft that would be "roadable" — capable of both ground and air travel. The ability to switch from aircraft to car-like operation allows such a vehicle to effectively utilize small airports. The team recognized that the cost to actually produce such an aircraft would exceed today's typical general aviation aircraft cost; however, the students believed the additional cost

Continued on Page 6

Inside This Issue:



Simple Solutions Lead To Major Water Savings On-Center — *Page 6*



Project Echo Celebrates Its 40th Anniversary — *Page 7*

News Briefs

Around the Agency

OAT PUBLISHES FIRST ONLINE NEWSLETTER

NASA's Office of Aerospace Technology (OAT) has published its first online newsletter at <http://www.aerospace.nasa.gov/curevent/news/>. The issue includes articles about Synthetic Vision, the Composite Wing Box test and the Collaborative Arrival Planning (CAP) display system and a column by Samuel L. Venneri, NASA's Associate Administrator for Aerospace Technology. To receive online notices of new issues or provide feedback, contact Glenn Smith at <glenn.smith@hq.nasa.gov>.

FLYING LAB BEGINS PACIFIC RIM EARTH STUDIES

The most volcanically active region in the world — the Pacific Rim — is center stage for a comprehensive Earth-observing mission being conducted by NASA and a team of scientists from several research institutions over the next two and a half months.

The ambitious program to collect data in more than 15 countries around the Pacific Ocean got underway July 31 with the deployment of NASA's DC-8 Flying Laboratory from Dryden Flight Research Center. Operated by the Airborne Science Directorate at NASA Dryden, the highly-modified aircraft is carrying a suite of precision instruments to document geographic and atmospheric factors throughout the Pacific Rim area on its scientific odyssey.

Information about the Airborne Science Program of the DC-8 is available online at <http://www.dfrc.nasa.gov/airsci/index.html>. RELEASE: 00-53AR

NASA PLANS A MARS ROVER MISSION IN 2003

In 2003, NASA plans to launch a relative of the now-famous 1997 Mars Pathfinder rover. Using drop, bounce and roll technology, this larger cousin is expected to reach the surface of the Red Planet in January of 2004 and begin the longest journey of scientific exploration ever undertaken across the surface of that alien world.

Edward Weiler, NASA's Associate Administrator for Space Science announced that the Mars Rover was his choice from two mission options which had been under study since March.

"I am announcing that we have selected the Mars Exploration Program Rover rather than the orbiter option, which was an extremely difficult decision to make," Weiler said. "At the same time, we want to look into what could be an amazing opportunity, as well as a challenge, by sending two such rovers to two very different locations on Mars in 2003 rather than just one." RELEASE: 00-119

NASA DETECTS THINNING OF GREENLAND'S ICE

Scientists who want to monitor the state of our global climate may have to look no farther than the coastal ice that surrounds the Earth's largest island.

A NASA study of Greenland's ice sheet reveals that it is rapidly thinning. In an article published in the July 21 issue of "Science," Bill Krabill, project scientist at Goddard Space Flight Center's Wallops Flight Facility, reports that the frozen area around Greenland is thinning, in some places, at a rate of more than three feet per year. Any change is important since a smaller ice sheet could result in higher sea levels.

Information on the mapping project is available online at <http://aol.wff.nasa.gov/aoltm.html>. RELEASE: 00-112

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@langley.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

Assistant Editor ..... Meghan Woodcock
Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

NASA Scholarships

NASA dependents Derek Kato Juang (left, with plaque) and Natalie Teresa Yip (right, with plaque) accept NASA Scholarships at Langley Research Center in July. Juang's father, Jer-Nan, is a Principal Scientist in Langley's Structural Dynamics Branch, and Yip's father, Long, works in Langley's Aerospace Vehicle Systems Technology Program Office. Also pictured are Juang's mother, Lily, and Yip's mother and brother, Linda and Eric. Juang, a rising sophomore at Duke University, is studying biomedical and electrical engineering; Yip, a 2000 graduate of Tallwood High School in Virginia Beach, plans to study medical research at Duke or Harvard University. The scholarships, awarded by NASA since 1982, are worth $2,000 per year and are renewable for up to four years.

Photo by Peggy Hopkins

OHR Announces Reassignments

Patricia L. Dunnington, the Acting Head of Langley Research Center's Office of Human Resources, announced the following personnel reassignments on July 24:

■ **Charles E. Harris** has been selected as Deputy Director of the Structures and Materials Competency (pending OPM approval).

■ **Jerome T. Kegelman** has been selected as Deputy Director of the Facilities and Test Techniques, Aerodynamics, Aerothermodynamics and Acoustics Competency (pending OPM approval).

■ **John B. Malone** is reassigned to the position of Deputy Director for Strategic Planning in the Structures and Materials Competency.

■ **Jerrold M. Housner** is reassigned as Senior Technologist for Langley's role as the Agency Structures and Materials Center of Excellence (S&M COE).

■ **Wilson T. Lundy** is reassigned as Director of the Intelligent Synthesis Environment (ISE) Program Office.

■ **Robert D. Braun** is reassigned as Chief Engineer of the ISE Program Office.

■ **Blair B. Gloss** has been selected as Facility Group Director for the Aerospace Technology Enterprise (pending OPM approval), reporting directly to the Deputy Associate Administrator for Aerospace Technology, but will remain a Langley employee.

Yorktown Man Included In New Astronaut Class

Lt. Cmdr. **Stephen G. Bowen**, a resident of Yorktown, Va., is one of the 17 men and women selected for the astronaut candidate class of 2000.

Bowen currently serves as the executive officer of USS Virginia in Groton, Conn.

This year's astronaut candidate class consists of seven pilot and 10 mission specialist candidates. Of the 17 class members, 14 are male and three are female.

A complete list of the candidates and their biographical information can be found online at <http://www.nasa.gov/newsinfo/astro2000.pdf>.

Six Employees Eligible For VLTP

The following Langley Research Center employees are approved recipients in the Center's Voluntary Leave Transfer Program (VLTP): **R. Jean Eley, Timmy T. Kariya, Carole D. Moore, James E. Roberts, Lisa C. Simonsen** and **Joan T. Wright**.

To donate leave, complete a NASA Langley Form 199 and mail it to Kay Black at Mail Stop 174 or fax it to ext. 47899. The form is available online at <http://lms.langley.nasa.gov>.

For more information, call Kay Black at ext. 42557.

In Memoriam

John H. Belveal

John H. Belveal died on July 19 at the age of 69. Belveal, a native of Brush, Colo., served in the U.S. Air Force for seven years and retired from NASA in 1986 after 30 years of service.

Elizabeth M. Gillis

Elizabeth M. Gillis died on June 15 at the age of 83. Gillis, a native of Salisbury, Md., retired from NASA after working in Langley Research Center's Scout Project Office.

Lewis C. Rilee

Lewis C. Rilee died on July 20 at the age of 87. Rilee, a native of Gloucester County, retired from NASA in 1973.

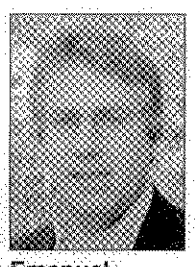
Corrections

Due to a layout error in the July 28 issue of the *Researcher News*, about half of the award-winners from the 2000 Honor Awards ceremony were credited with earning the wrong medals. The names and photos of the medal-winners are republished in this issue on pages 4 and 5.

Colloquium and Sigma Series Lectures

Emanuel On 'Understanding Hurricanes'

Kerry Emanuel will present a Colloquium lecture entitled, "Recent Progress in Understanding Hurricanes," at 2 p.m. Sept. 12 in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture, "Hurricanes in History and Science," will follow at 7:30 p.m. at the Virginia Air and Space Center.


Emanuel

Abstract

The last few decades have seen substantial progress in understanding and predicting hurricanes. In his Colloquium lecture, Emanuel will review what is known about the basic physics underlying hurricane genesis, development and maintenance, and will emphasize some developments from recent research. This research indicates that the hurricane's eyewall is an example of an atmospheric front, that the eye subsidence is driven by turbulence produced mechanically in the eyewall, and that the response of the upper ocean to the hurricane's wind field causes a substantial, and sometimes fatal, feedback on the storm's intensity.

The talk will conclude with an exposition of a new theory that suggests that hurricanes may drive the oceans' thermohaline circulation, which strongly modifies the earth's climate.

Speaker

Emanuel attended the Massachusetts Institute of Technology (MIT), earning a bachelor's degree in earth science in 1976 and a doctorate in meteorology in 1978.

After graduating, he accepted an assistant professorship at the University of California at Los Angeles, where he remained for three years. In 1979, he took time off in 1979 to serve as a postdoctoral fellow at the Cooperative Institute for Mesoscale Meteorological Studies in Norman, Okla.

In 1981, Emanuel returned to MIT, joining the faculty of the department of meteorology and physical oceanography. He has remained on the faculty since that time.

Emanuel is the author or co-author of about 85 refereed publications, and he wrote a textbook entitled, "Atmospheric Convection," published by Oxford University Press.

He has served on the UCAR Board of Trustees and the Council of the American Meteorological Society (AMS), to which he was elected in 1999. He is a recipient of the Meisinger Award and a co-recipient of the Banner Miller Award, both from the AMS, and is a fellow of the AMS.

Emanuel lives with his wife and son in Lexington, Mass.

Upcoming Lectures

- **Oct. 3:** Bill Dana on "The Lifting Bodies."
- **Nov. 7:** Ralph Merkle on "Nanotechnology."
- **Dec. 5:** Ronald Greeley on "The Galileo Mission to Jupiter."
- **Jan. 9, 2001:** Alan Epstein on "MicroEngines."

For more information about the lecture series, visit <http://shemesh.langley.nasa.gov/Lectures/> on the Web.

Weather

Continued from Page 1

Hurricon 3: 48 hours before the arrival of sustained 50-knot winds.

Hurricon 2: 24 hours before the arrival of sustained 50-knot winds.

Hurricon 1: 12 hours before the arrival of sustained 50-knot winds.

Hurricon Red: 50-knot winds occurring. (All non-emergency response personnel shall be notified to vacate the Center before the occurrence of sustained 50-knot winds.)

All Clear: Severe weather conditions have dissipated.

Flood Conditions

Another threat associated with hurricanes is flooding. Langley's east side facilities are prone to flooding. Two flood conditions are used to alert personnel to potential flooding:

Flood Condition 2: The predicted tidal flooding is up to 5 feet 6 inches above mean sea level. Personnel may remain in their facilities. The parking lots and approach roads may become covered with water but are passable. Park vehicles in areas that will not be flooded.

FLOOD Condition 1: The predicted tidal flooding is higher than 5 feet 6 inches above mean sea level. Personnel are to evacuate the East Area because roads preclude access by emergency response personnel and equipment.

Langley cablevision, channel 11, broadcasts the evacuation time for East Side facilities and the time when conditions are safe to return.

Procedures To Delay Work Hours Or Close Center

Occasionally, severe weather affects Langley Research Center's normal operations hours. Center management makes announcements through the appropriate channels, as specified in the following:

■ Any decisions to delay work hours or to close the center are made as early as possible; except for unforeseen circumstances, decisions are made before 5 a.m. on the day in question.

■ A message announcing the decision is placed on the NASA Langley Emergency Announcement Telephone System (864-2111 or 1-888-664-2111) by 5 a.m. This information is provided to the media (television and radio) *only* if the Langley phone system is inoperable.

■ Any delay in opening the Center is announced by specifying the time of day the Center is expected to open. Additionally, the time of the next announcement update is also indicated. For example, "NASA Langley Research Center is closed for normal operations. It is anticipated that flood areas will be cleared to allow the Center to reopen at 10 a.m. on Tuesday, September 2. The next scheduled update of the NASA Langley Emergency Announcement Telephone System will be at approximately 9 a.m. on Tuesday, Sept. 2."

■ Decisions relative to the second and third shifts (if applicable) are made on the affected date and are posted on the NASA Langley Emergency Announcement Telephone System. To ensure that employees have enough time to travel to the Center, these announcements are made well in advance of the expected time of opening.

■ If weather or road conditions change, a second decision concerning delayed work hours may be made, but no more than one change will be made on any day. For administrative leave purposes and to ensure equity for all employees, the Center uses a standard opening time of 8 a.m. when operations are interrupted by weather.

Langley Research Center's East Area is pone to flooding and is evacuated when roads become impassable and preclude access to facilities by emergency response personnel and equipment.

Photo by Jeff Caplan

■ Employees are responsible for monitoring the NASA Langley Emergency Announcement Telephone System for changes to the Center's operational status. Employees may also monitor local television and radio if the Center's Emergency Announcement Telephone System becomes inoperable. Employees not complying with announced changes to the Center's operational status will be charged appropriate leave to cover their absence.

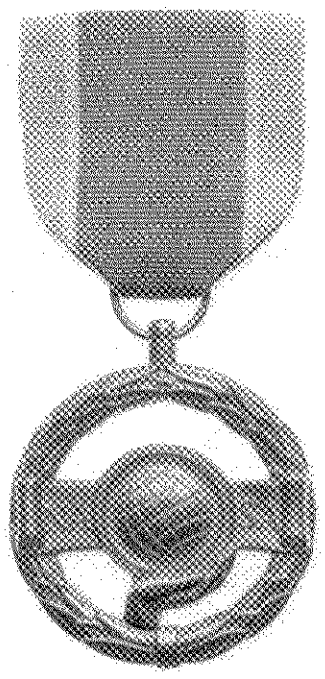
It is realized that many employees live relatively far from the Center and that it is necessary for these individuals to leave home earlier than usual when weather has created potentially hazardous driving conditions.

When such weather conditions occur, the Center and all supervisors will recognize a liberal annual leave policy. Management will strive to announce Center opening schedules as quickly as possible.

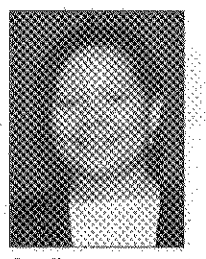
Fortunately, these unique weather conditions do not occur frequently. When such situations do develop, employees should call the NASA Langley Emergency Announcement Telephone System (864-2111 or 1-888-664-2111 or listen to local television and radio media for the latest information if the Center's Emergency Announcement Telephone System becomes inoperable).

You are urged to become familiar with and use the information sources available from Langley, the National Weather Service, and other agencies. It is important to be prepared for hurricanes and other hazardous weather conditions. Respond immediately to warnings and directions to ensure your safety. Safety for you and your family is NASA's highest priority.

Honor Awards 2000



Public Service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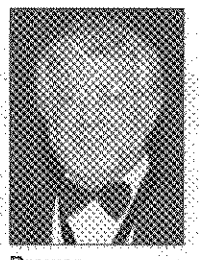
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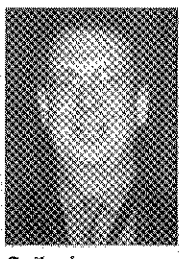
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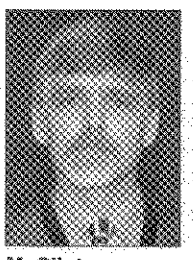
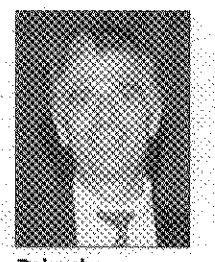

McClinton

Noll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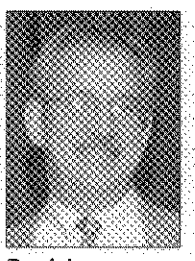
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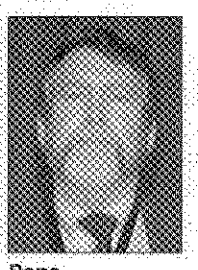
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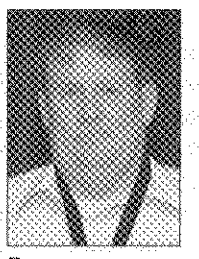
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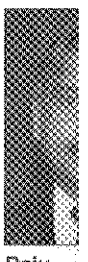
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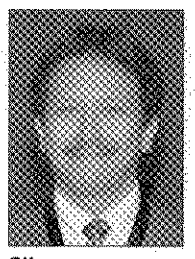
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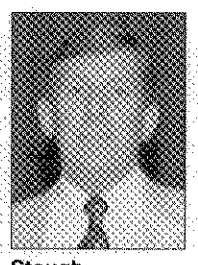
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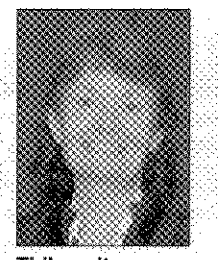
Talay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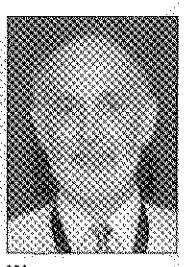
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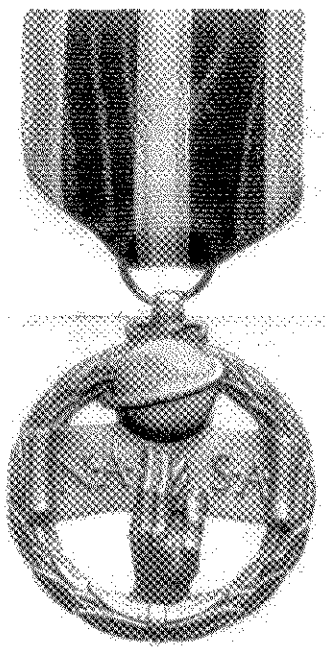
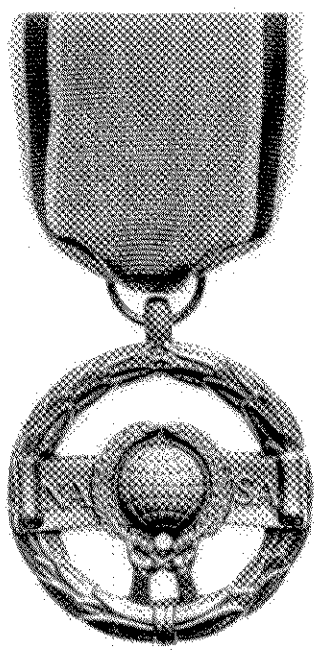


Exceptional Scientific Achievement



Exceptional Service

Group Achievement Awards

■ **Active Structural Acoustic Control Flight Demonstration Team** accepted by **Daniel L. Palumbo**
For conducting creative and pioneering studies of active noise control in flight.

■ **Aviation Weather Information (AWIN) Systems Solicitation, Selection, and Implementation Team** accepted by **Harry P. Stough III**
For outstanding efforts in planning and executing innovative techniques to develop critical aviation weather information systems.

■ **Evaluation of Space Environment and Effects on Materials (ESEM) Project Team** accepted by **Junilla I. Boatwright Applin**
For extraordinary accomplishment in the design, development, integration, validation, flight operations, and retrieval of the ESEM experiment, part of the highly successful National Space Development Agency of Japan Manipulator Flight Demonstration Experiment.

■ **High-Speed Research eXternal Visibility System (XVS) Team** accepted by **Russell V. Parrish**
For significant contributions to success of the High-Speed Research eXternal Vision System development which is vital to future High-Speed Civil Transports.

■ **Mars Microprobe Aeroshell Design and Analysis Team** accepted by **Robert D. Braun**
For design of an innovative aeroshell system satisfying the unique entry, descent, and impact requirements of the Mars Microprobe mission.

■ **Office of Procurement Quality Improvement Team** accepted by **Sandra S. Ray**
For significant improvements to the operations, performance, and customer service of Langley's Procurement Office.

■ **Stratospheric Aerosol and Gas Experiment III (SAGE III) Instrument Team** accepted by **Lorelei S. Szatkowski**
For exceptional contributions to the development and delivery of three Stratospheric Aerosol and Gas Experiment (SAGE III) flight instruments to Langley Research Center.

■ **Transonic Dynamics Tunnel (TDT) Heavy Gas Conversion Project Team** accepted by **James M. Corliss**
For outstanding engineering, construction, and shakedown accomplishments in converting the NASA Langley Transonic Dynamics Tunnel from R-12 operation to R-134a operation.

■ **Tu-144 Structure/Cabin Noise Experiment Team** accepted by **Stephen A. Rizzi**
For planning, design, and execution of the Tu-144 Structure/Cabin Noise Experiment.

Public Service Group Achievement Award

■ **Research Triangle Institute** accepted by **Doris J. Rouse**
In appreciation for continued excellence in technology assessment and commercialization.

Exceptional Scientific Achievement Medal

■ **Ellis E. Remsberg**
For outstanding contributions to the assessment of the global vertical distribution of water vapor in the stratosphere leading to the development of a global water vapor climatology.

Exceptional Service Medal

■ **William D. Brewer**
For exceptional contributions to the development of metal matrix composites and light metal alloys.

■ **Thomas J. Burns**
For 14 years of distinguished dedicated service to fabrication technology and the goals of the Langley Research Center.

■ **Patricia L. Dunnington**
For exceptional service contributing to the success of NASA's information technology programs and initiatives.

■ **Charlie Haynes Jr.**
For 26 years of exceptio
and application of fabricati
mission of NASA.

■ **Gwendolyn B. Leacl**
For exceptional service,
outstanding support of spa

■ **James F. Pike**
For sustained distinguis
and advancement of weldi
gy at Langley Research Ce

■ **Joseph F. Powers**
For outstanding service
ment of unique and compl
NASA/LaRC missions and

■ **Thelma J. Reavis**
For exceptional sustaine
and Dynamics Branch in s
science program.

■ **Lee R. Rich**
For significantly increas
tionship with a broad rang
and other national decision

■ **Mary M. Skora**
For exceptional service
value to stakeholders—nat
industry partners, and the g

■ **Theodore A.Talay**
For exceptional career s
Transportation Program as
leader, and mentor.

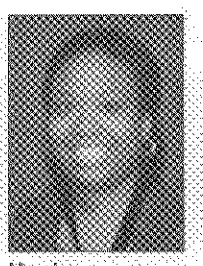
■ **Sheila A.Thibeault**
For outstanding service
als for NASA missions.

■ **John B. Warren**
For exceptional technic
standing support to high-p
the Langley Research Cent

■ **Sharon S.Welch**
For outstanding leadersl
future direction for Space T

Honor Awards 2000

Hamilton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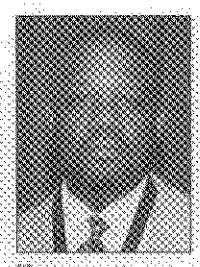
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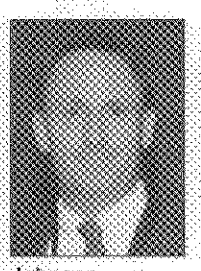
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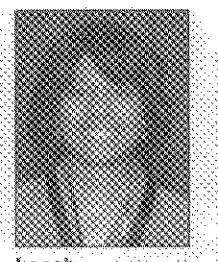
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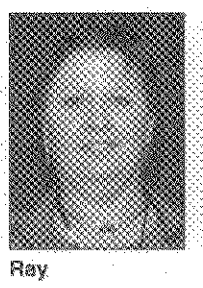
Massenberg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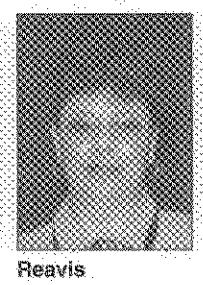
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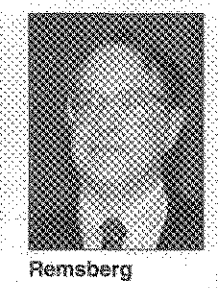
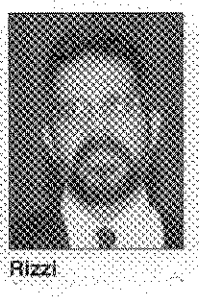

Remsberg

Rich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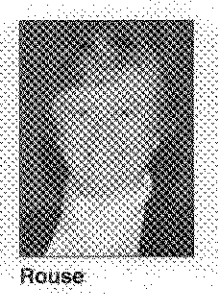
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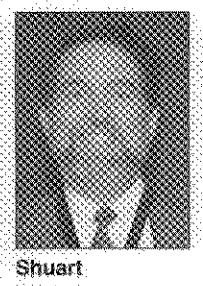
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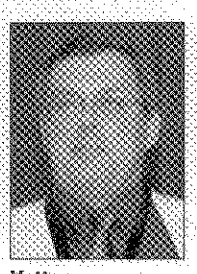
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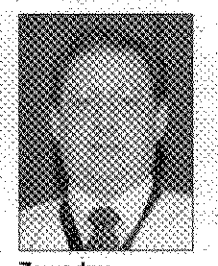
Zawodny

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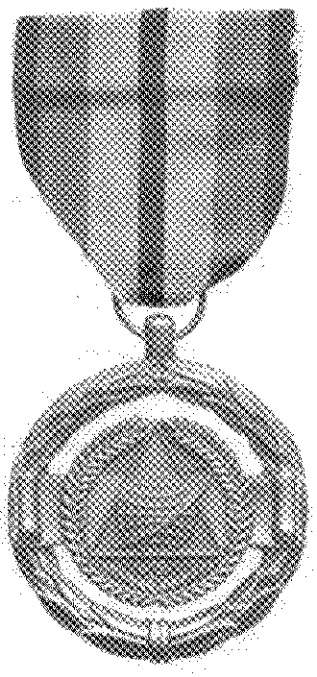
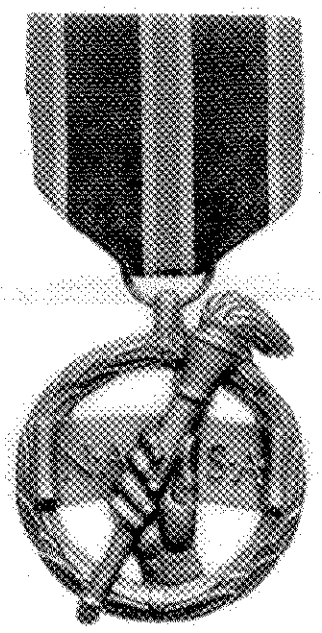


Exceptional Achievement



Outstanding Leadership

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■ **John J.White II**
For sustained outstanding leadership and technical contributions to major NASA aeronautics research programs and projects.

■ **Mark W. Wynkoop**
In recognition of exceptional technical contributions to the advancement of flight research capabilities at Langley Research Center.

■ **Jeffrey A.Yetter**
For outstanding contributions to NASA's cooperative programs to support the development of high performance aircraft critical to national defense.

Exceptional Achievement Medal

■ **Shawn T. Gallagher**
In recognition of outstanding legal support and assistance critical to the success of a wide variety of LaRC's business initiatives.

■ **H. Harris Hamilton II**
For outstanding development of advanced aeroheating prediction methodologies and application to space transportation systems.

■ **Joycelyn S. Harrison**
For outstanding achievements in Smart Materials.

■ **Stuart K. Johnson**
For the successful development of a full-scale revolutionary, full-scale advanced propulsion integration system for survivable aircraft.

■ **Samuel E. Massenberg**
For exceptional leadership and significant contributions in administering a full continuum of education programs ranging from precollege to postdoctorate.

■ **Alan T. Pope**
For exceptional achievement in pioneering applications of biocybernetics technologies.

■ **Ivatury S. Raju**
For exceptional contributions to the fields of computational fracture mechanics and damage tolerance of metallic and composite materials for aircraft and spacecraft structures.

■ **Walter A. Silva**
For outstanding achievements leading to the development of a computationally efficient methodology that provides nonlinear unsteady aerodynamic models for aircraft design.

■ **Reuben A.Williams**
For exceptional achievements in the development of the High Intensity Radiated Fields Laboratory for assessing electromagnetic effects on flight critical systems.

■ **Joseph M. Zawodny**
For exceptional achievements in the development of NASA's next-generation remote sensing hardware and software technologies.

■ **Ernest V. Zoby**
For outstanding contributions to advancement of aerothermodynamic technologies and application to the design/development of Earth and other planetary entry vehicles.

Outstanding Leadership Medal

■ **Carl E. Gray Jr.**
For outstanding contributions to the Center and Agency in providing exemplary technical and administrative leadership.

■ **Charles R. McClinton**
For outstanding leadership of Hyper-X program and NASA hypersonic research and technology activities.

■ **Thomas E. Noll**
For outstanding technical leadership in aeroelasticity and aeroservoelasticity leading to critical technology transfer of key research results and product-specific results to the aerospace community.

■ **Mark J. Shuart**
For outstanding leadership of the structures and materials research organizations and programs that have resulted in significant contributions to NASA's research program goals.

The *Researcher News* would like to thank the following people for making this awards section possible:

Paul R. Bagby,
Jeff Caplan,
Rebecca A. Hayes,
Ricky L. Hoff,
Margaret P. Hopkins,
Karen E. Ridlon,
Sherry L. Sullivan,
and
Percival J. Tesoro.

Water Conservation Pays Off

LB&B Initiative Will Save Center Millions Of Gallons Every Year

By CAROLINE DIEHL
SAIC

The federal government is the nation's largest energy consumer. Estimates indicate that federal expenditures for water and sewer run up to $1 billion annually and that the government could save as much as $240 million per year by installing conservation measures.

Expenditures and potential savings will increase as the cost of water continues to rise; rates have already increased between 100 and 400 percent in major cities over the last 10 years, and this trend is expected to continue.

Conserving water has been an integral part of Langley Research Center's comprehensive energy conservation and management program. The program has been in place since the early 1970s and is managed by the Center's Utility Manager.

Currently, the Center's average annual water bill is $50,000 for consumption of approximately 166 million gallons. Not only does the Center pay for the water supplied; it also pays for the wastewater discharged to the sanitary sewer.

Conservation measures result in more savings than just the initial cost.

Last winter, personnel at Langley's Steam Plant initiated two water conservation projects that will save the Center a substantial amount of water and money.

Dan McGowan, the project manager for LB&B (the utility contractor responsible for the operation and maintenance of systems at the Steam Plant), asked the maintenance mechanics to look into all systems that utilized water for cooling purposes and determine whether those systems could be improved.

Jim Henry, an LB&B steamfitter, questioned the design for cooling the boiler air pre-heater bearings. Treated cooling tower water supplied to the bearings was normally dumped to the sanitary sewer system after one pass.

Henry designed a way that the cooling tower water could be returned to the cooling tower from the bearings. His design, which required $80 in materials and 16 man-hours of labor, will save the Center 2.6 million gallons of water every year. Langley is also saving the cost of chemicals used to treat the cooling tower water.

Another water conservation project at the Steam Plant was designed by Mike Edberg, an LB&B equipment mechanic. He suggested using cooling tower water rather than city water as the cooling medium for the boiler's sample coolers. The boiler water must frequently be sampled to check the water quality. Poor quality can affect the boiler's performance.

Since the water in the boilers is 436 degrees, a sample cooler is used to reduce the temperature. In the past, city water was used to cool the samples and then the city water was dumped to the sanitary sewer.

Edberg designed a way to use cooling tower water rather than city water and return it to the cooling tower. This modification will save the Center approximately 50,000 gallons of water annually. He also suggested centrally locating the nine sample coolers, which will make gathering samples more timely for the Water Analyst.

Congratulations to the LB&B staff for taking the initiative on these projects. These are only two examples of small changes that can make a big difference in the Center's consumption of water.

Take a look at the systems or operations in your facility that use water. Is there a better or more efficient design that will conserve water?

If you have ideas or questions about water conservation on-Center, contact Utilities Manager Alan Henderson at ext. 43721.

Contest

Continued from Page 1

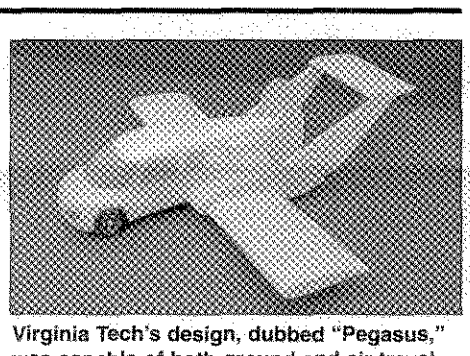
should readily be offset by the convenience of not having to have a car for ground transportation.

Second place honors went to a seven-student team from Purdue University for the "Silairus 490," a six-passenger, high-performance piston engine aircraft with an Air Cushion Landing System (ACLS) in lieu of traditional landing gear. The design offers the capability of surface-independent takeoff and landing, permitting the vehicle to access off-airways communities, thus shortening door-to-door travel time. The Silairus 490 features a high-tech, electronically data-linked cockpit with a comfortable cabin adaptable for many client applications. The second place award provides a $2,000 prize to the student team.

The Purdue team also won the Best Use of Air-Force-Developed Technology award for its incorporation of the ACLS, developed by the United States Air Force. For this award, the team will share a $3,000 prize from the Air Force.

Third place was awarded to Pennsylvania State University. The team's design, called "Alnighter," is a modern, composite general aviation aircraft. The six-place, single-engine, propeller-driven vehicle has a conventional layout. It features sophisticated aerodynamics and advanced systems and avionics. For third place, the ten-student team will share a $1,000 prize. Penn State has the distinction of having won a place-award in each year of the competition.

The Best Retrofit Design Award was presented to a four-student, University of Oklahoma team for development of an innovative, multi-mode tuned-exhaust system that offers noise reduction while improving the airplane's performance. The design was undertaken as a part of a larger aircraft design project to show how an older aircraft can be retrofitted with more modern technologies for increased performance and safety. A $500 award was presented to the student team by the award's sponsor, the Aircraft Owners and Pilots Association Air Safety Foundation.



Virginia Tech's design, dubbed "Pegasus," was capable of both ground and air travel. The ability to switch from aircraft to car-like operation allows such a vehicle to effectively utilize small airports.

Now in its sixth year, the competition calls for individuals or teams of undergraduate and graduate students from U.S. engineering schools to participate in a major national effort to rebuild the U.S. general aviation sector. For the purpose of the contest, general aviation aircraft are defined as single or twin engine (turbine or piston), single-pilot, fixed-wing aircraft for 2 to 6 passengers. The competition seeks to raise student awareness of the importance of general aviation by having the students address design challenges for a small aircraft transportation system. NASA and the FAA hope to stimulate breakthroughs in technology and their application in the general aviation marketplace.

The competition is managed for NASA and the FAA by the Virginia Space Grant Consortium. Guidelines can be requested from msandy@odu.edu or at 757/865-0726.

Keith Henry of Langley Research Center, Michael Braukus of NASA Headquarters and Tony Molinaro of the FAA Great Lakes Region also contributed to this story.

A 'Personal' Look At Airventure 2000

By KEITH HENRY
Office of Public Affairs

There we were — Bob Baals, Dave Reubush, Cheryl Cleghorn, Steve Yaros — and dozens of other NASA people standing outside the Appleton, Wisc., Hampton Inn, waiting to be "rescued." It was midnight. Some of us had our shoes on, others didn't — waiting for the firemen to come, declare the building safe and turn that blasted fire alarm off. Seems that someone had burned popcorn in the lobby, then took it into the elevator.

It had been a long, busy day at the air show. And, now, a short night was getting shorter.

But everyone seemed to take the adventure in good humor and, after working side-by-side in the circus called AirVenture 2000 for several days, they seemed to be comfortable in each other's company, regardless of the circumstances.

Nearly a million people were expected during the seven-day run of the largest fly-in the world. A good share of those people visited one of the NASA exhibit buildings. And a good share of those people had reason to come into contact with NASA people. Whether it was the folks from NASA Johnson who brought their two-trailer space station exhibit or the hypersonic (X-43) contingent from Langley, education information specialists or the craftsmen from the "aero" centers, people really enjoyed our people.

Some visitors just came to see the air show. Some visitors came because they love to fly. Some visitors came to do business. Some visitors came because they were curious.

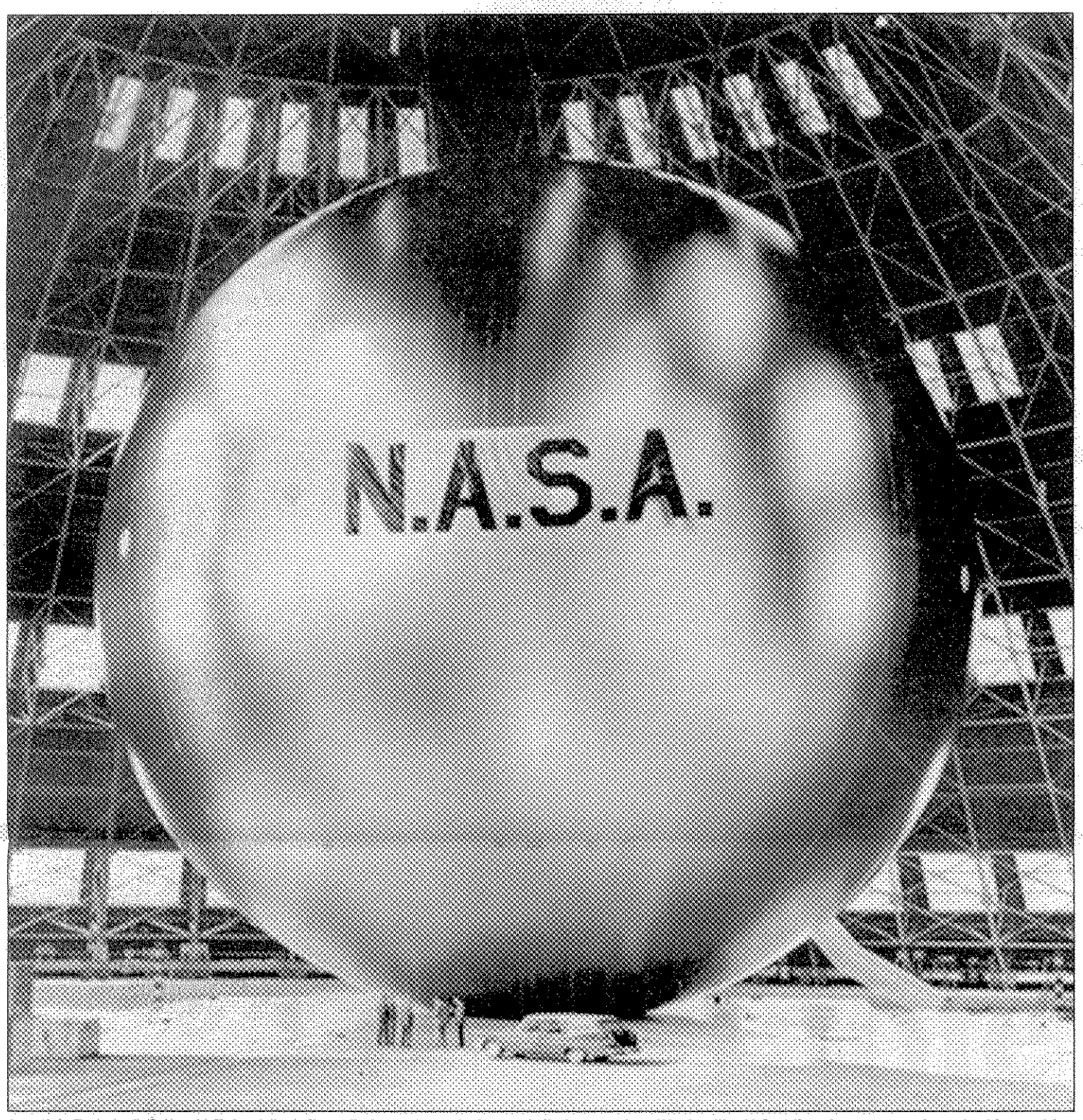
Some of each visited the NASA general aviation exhibit building and, as reward, were treated to the latest ideas from NASA and our growing family of general aviation industry partners.

NASA Glenn and the TCM Corp. proudly displayed proven concepts for economical and reliable turboprop engines, by example. A host of innovative companies work through the agency's Small Business Innovation Research program to develop technologies to make small aircraft safer, more efficient and more affordable. And they were there in force.

It was 1982, I believe, when Seth Anderson of NASA Ames gave the first NASA forum talk at "Oshkosh." Now, NASA forum talks are a regular feature of AirVenture and a popular attraction.

There we were, standing around our respective gates at Chicago's O'Hare, waiting to be rescued. Larry Huebner was at my gate. He was holding a bookcase carton full of stuff and handling it like he could have held it all afternoon, which is good because that's about how long we there waiting for the weather to yield our flight attendants. Larry was wearing his NASA Langley shirt and he was talking and smiling with a stranger, while other people were grumbling about this and that. Made me want to say, "I know that guy."

Happy 40th, Echo!



Langley Research Center's Echo 1 "satelloon," shown here during an inflation test in a Weeksville, N.C., blimp hangar, was launched into orbit on Aug. 12, 1960, aboard a Thor-Delta No. 2 rocket from Cape Canaveral, Fla. Approximately two hours after launch, Echo 1 relayed its first message by reflecting a radio signal from California to Bell Labs in New Jersey: "This is President Eisenhower speaking. ... This is one more significant step in the United States' program of space research and exploration being carried forward for peaceful purposes." The telecommunications satellite was 100 feet in diameter and had a 31,416 square-foot surface of Mylar plastic covered smoothly with only four pounds of vapor-deposited aluminum. The Mylar, inflating chemicals and two radio-tracking beacons (packed with 70 solar cells and five storage batteries) combined to give the sphere a total weight of 132 pounds. Echo 1, which continued to orbit for eight years, marked the first major step in satellite communications. In December of 1960, the U.S. Post Office issued a commemorative four-cent stamp in honor of the Echo balloon.

Langley Research Center archives

Mayor To Speak At FWPC Ceremony

By PATSY CAMPBELL
Office of Equal Opportunity

Langley Research Center's Federal Women's Program Committee (FWPC) will host its annual Awards Ceremony from 1 to 2:30 p.m. Aug. 24 in the H.J.E. Reid Conference Center. The FWPC will present the Supervisor and Employee of the Year awards at the event.

Locke

Hampton Mayor Mamie E. Locke will be the guest speaker.

Civil servants can charge their time to J.O. A5006.

Locke is a professor of political science and the dean of the School of Liberal Arts and Education at Hampton University.

She received a bachelor's degree in history/political science from Tougaloo College in 1976 and her master's and doctorate degrees in political science from Atlanta University in 1978 and 1984, respectfully.

Locke is a member of the National Conference of Black Political Scientists, the American Political Science Association, the Organized Section of Women and Politics Research, the Southern Political Science Association, the Committee on the Status of Women, and the American Council on Education.

From The Office of Safety and Mission Assurance

Agency Develops 'Lessons Learned' Web Site

"We conscientiously investigate, document and track all our successes and failures. Yet all of that work is meaningless if we fail to learn from and incorporate these experiences into our ongoing and future programs, projects and operations."

NASA Administrator Daniel Goldin

NASA recently developed an online database, the Lessons Learned Information System (LLIS), to protect against the recurrence of past mistakes and provide a vehicle for the promulgation of best practices.

The LLIS, which is accessible to civil servants and contractors, consists of about 700 different lessons. It can be found online at <http://llis.nasa.gov/>.

The LLIS also includes NASA's "Best Practices," which recently earned the Institute of Electrical & Electronic Engineers' "Document of the Year" award.

"LLIS is designed to collect and make available for use the NASA lessons learned from over 40 years in the aeronautics and space business. The LLIS enables the knowledge gained from past experience to be applied to current and future projects in order to avoid the repetition of past failures and mishaps. Through this resource, NASA seeks to facilitate the early incorporation of safety, reliability, maintainability and quality into the design of flight and ground support hardware, software, facilities and procedures."

NASA seeks to facilitate the early incorporation of sound project management principles into programs and projects through the use of the LLIS. NPG 7120.5A, "NASA Program and Project Management Processes and Requirements," contains the following requirements for the application of lessons learned:

- Each program and project should review and apply significant lessons learned from the past throughout the program/project life cycle, where appropriate.
- The LLIS should be consulted prior to major milestones.
- Throughout a project's life cycle, each project manager shall document and submit any significant lessons learned to the LLIS in a timely manner.

Employees are encouraged to submit lessons learned data for inclusion on the Web site. Data submitted via the online form will be forwarded to Bob Wallace, Langley's Data Manager, who will then review it and send it to NASA Headquarters' for consideration.

For more information, contact Bob Wallace at ext. 43357 or <r.w.wallace@langley.nasa.gov.>

AdVentures

NARFE Luncheon Aug. 14

Chapter 682 of the National Association of Retired Federal Employees (NARFE) will host its annual luncheon at 11:30 a.m. Aug. 14 at the Boulevard Restaurant in Newport News. For more information, call Catherine Askew at 247-1558.

JIAFS Registration To Open

George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center offers master's, engineer's and doctorate degrees in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the fall 2000 semester are Aug. 14-25. For a course schedule or more information, contact the JIAFS office at ext. 41982 or <jiafs@ langley.nasa.gov> or visit <http://www.seas.gwu.edu/seas/jiafs/fall.html> on the Web.

Fellowship Deadline Extended

Langley Research Center's Employee Development Branch recently announced that the deadline for fellowship nominations has been extended to Aug. 18.

Full descriptions of fellowship programs can be found on the Internet at: <http://www.hq.nasa.gov/office/codef/codeft/fellowshipdesc.html>. For more information, call Elaine Gause at ext. 47318.

Fitness Center Adds New Class

The Langley Research Center Fitness Center's Aerobic Program is offering a new class called "Mat Enrichment." The class takes place from 11:30 a.m. to 12:15 p.m. Tuesdays and Thursdays in the LAA Gymnasium.

"Mat Enrichment" is a combination of mind/body relaxation techniques taken from base forms of Yoga and dance therapy conditioning.

The class is free and open to all NASA employees. (New Fitness Center member, will be required to complete a health history questionnaire and informed consent release.) For more information, call Joanne Edmonds at ext. 46387.

CLASSIFIED

FOR SALE: House on Lake Prince in Suffolk. Custom-built retirement home on 1.59 acres, two master suites with private entrances, wrap-around porch and deck, kitchen, living room, dining room, sunroom, pier, boathouse with two boats; detached garage with furnished apartment, many extras. $259,000 firm. Call 255-0901 or visit <http://7thheaven.acmecity.com/mary/270/index.html>.

FOR SALE: House in Briarfield/Aberdeen area of Hampton. Four bedrooms, living room, dining room, eat-in kitchen, large lot, oversize shed. Reduced to $95,000. Call 826-1862 or visit <http://www.angelfire.com/va2/glenrockgang/index.html>.

FOR SALE: House on Briar Drive in Hampton. 1,600 square-foot brick ranch, three bedrooms, one bathroom, fenced yard, detached garage. $88,000. Call 868-4501 or email <burks@visi.net>.

FOR SALE: Cessna 210E, immaculate condition, new paint, custom leather interior, all new windows, full IFR, extended-range fuel tanks, three-bladed propeller, low overall airframe time and low time since last engine overhaul. Hangared at Newport News. Call 804-642-0943.

FOR SALE: '97 BMW Z3, 2.8 liter, black with tan convertible top, fully loaded, 43,000 miles, 12-disc JVC CD changer, JVC cassette deck 40 watt x 4 subwoofer, excellent condition, $25,400. Call 596-3991.

FOR SALE: '91 Honda Accord LX, two-door, five-speed, A/C, power windows and locks, AM/FM cassette, 30-plus mpg, 126,000 miles, $4,100. Call 481-7587.

FOR SALE: '87 Kawasaki 454LTD, low seat height, good condition, 6,400 miles, $1,400. Call 826-1862.

FREE: Puppies, Labrador mix. Call 867-7510.

Updated EEO Book Available

FPMI Communications recently republished one of its best-sellers, "The Federal Employee's Guide to EEO," incorporating the latest Equal Employment Opportunity Commission (EEOC) regulations concerning alternative dispute resolution. The 44-page handbook answers questions that federal employees are likely to have about EEO, including: "What is discrimination, and when is it prohibited?" and "Who will help you with an EEO problem?"

The handbook is available for $11.95 (plus shipping). To order, call FPMI at (256) 539-1850 or visit <http://www.fpmi.com/Catalog/> on the Web.

Sign Up Now For Day Of Caring

Langley Research Center's Office of Public Services is recruiting volunteers to participate in the 2000 Community Day of Caring on Sept. 15.

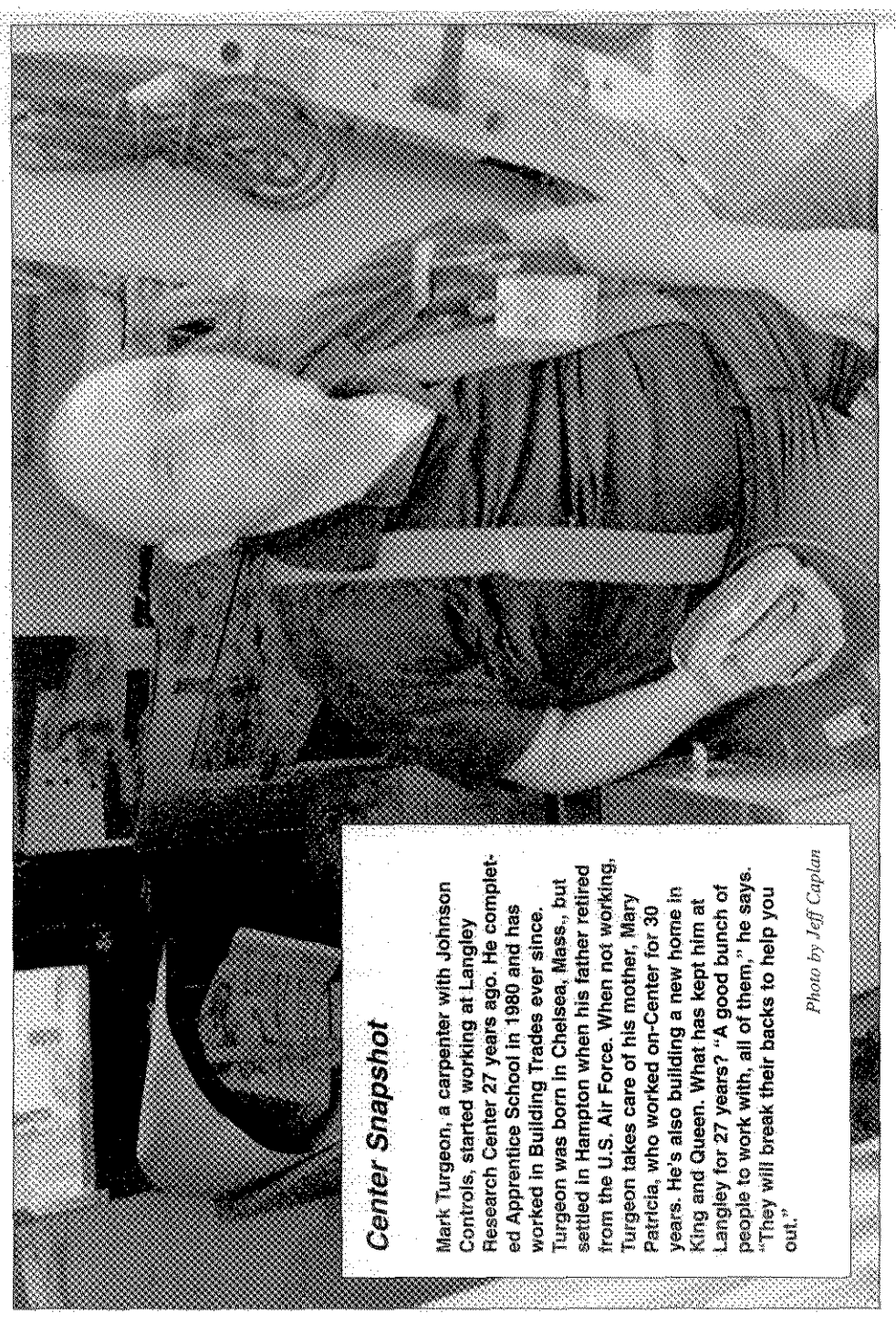
Volunteer assignments range from painting and planting to constructing playgrounds for children and houses for families. Special talents are needed for plumbing, electrical, air conditioning, landscaping, carpentry and computer projects. Volunteers also do general clean-up, fix-up chores, help with day camps and stock food pantries. There is something for everyone. No talent is unappreciated.

Center Director Jeremiah F. Creedon has approved up to eight hours administrative leave for Langley civil service employees; those interested in participating should e-mail Krystal Bishop at <k.g.bishop@larc.nasa.gov> for a volunteer participation form.

Contractors who wish to participate should contact their corporate office. As always, retirees are invited and encouraged to participate.

LAA Seeking Nominations

Langley Research Center's Activities Association (LAA) is seeking nominations for the following positions: secretary/treasurer, chairperson (socials, arts and crafts) and chairperson (clubs and leagues). For more information, call the LAA office at ext. 46369.



Center Snapshot

Mark Turgeon, a carpenter with Johnson Controls, started working at Langley Research Center 27 years ago. He completed Apprentice School in 1980 and has worked in Building Trades ever since. Turgeon was born in Chelsea, Mass., but settled in Hampton when his father retired from the U.S. Air Force. When not working, Turgeon takes care of his mother, Mary Patricia, who worked on-Center for 30 years. He's also building a new home in King and Queen. What has kept him at Langley for 27 years? "A good bunch of people to work with, all of them," he says. "They will break their backs to help you out."

Photo by Jeff Caplan

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Researcher

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Langley Research Center

Langley Researcher News

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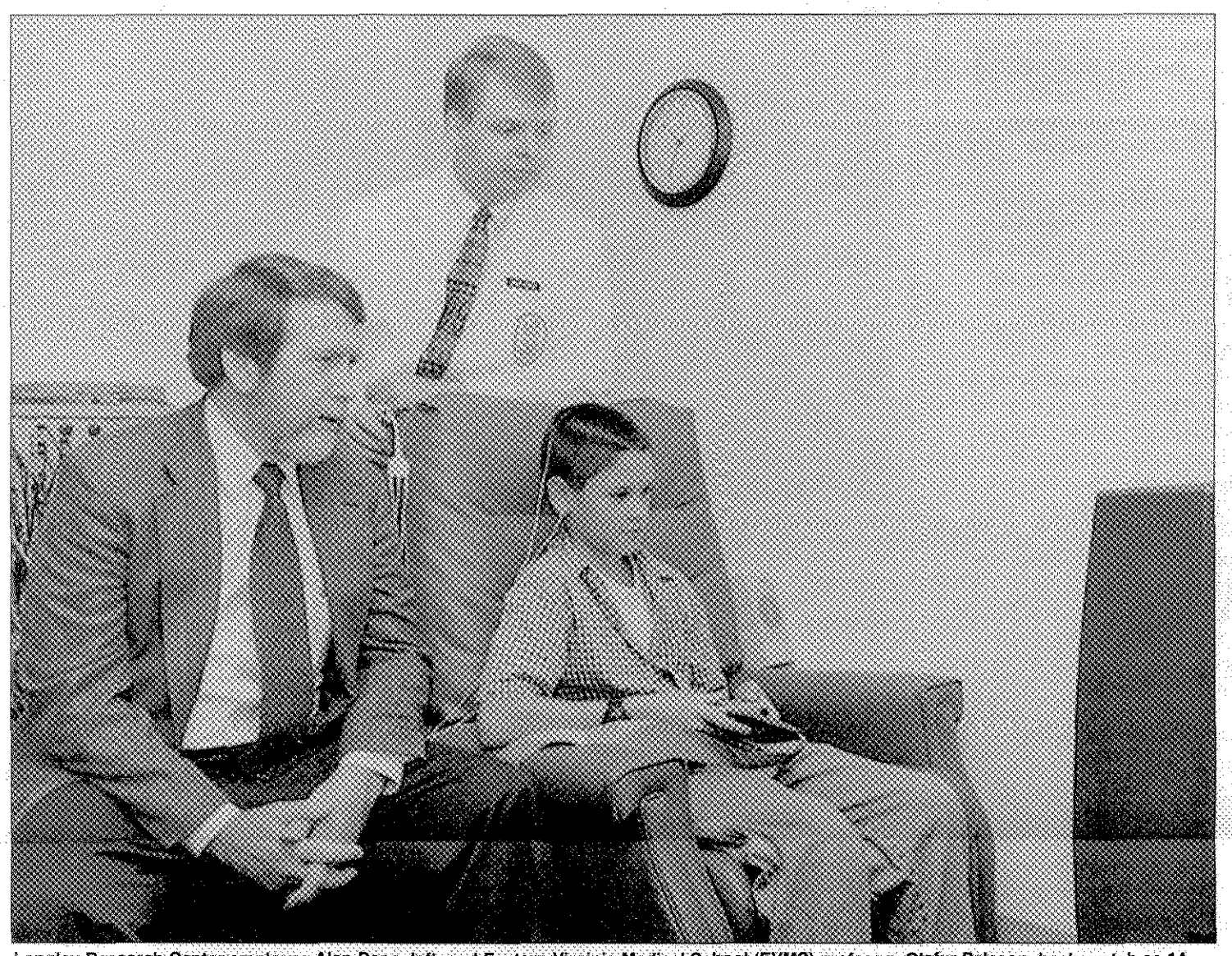

Langley Research Center employee Alan Pope, left, and Eastern Virginia Medical School (EVMS) professor Olafur Palsson, back, watch as 14-year-old Jordan plays a video game using an interactive biofeedback system they invented. The system, based on Langley's Crew/Vehicle Integration Branch research that measures the brain activity of pilots in flight simulators, trains people with a variety of health problems to change their brainwave activity or other physiological functions while playing off-the-shelf video games.

Photo by Kathleen Payne/EVMS

Attention-Getter

Video Games May Improve Mental And Physical Health

By KEITH HENRY
Office of Public Affairs

For decades doctors have used biofeedback as a way to help control stress and tension. Now NASA technology adds a new twist by combining this mind-over-matter technique with the hand-eye coordination of video games.

According to researchers at Langley Research Center, the results may actually improve and protect a player's mental and physical health.

This unique interactive system, tested at Eastern Virginia Medical School (EVMS) in Norfolk, trains people to change their brainwave activity or other physiological functions while playing popular off-the-shelf video games. This is accomplished by making the video game respond to the activity of the player's body and brain.

"Thirty years of biofeedback research has shown that by training specific brainwave changes, or reductions in other abnormal physiological signals, people can achieve a wide variety of health-enhancing outcomes," said Olafur Palsson, an assistant professor of psychiatry and family medicine at EVMS who co-invented the system. "With this new technology, we have found a way to package this training in an enjoyable and inherently motivating activity."

Signals from sensors attached to the player's head and body are fed through a signal-processing unit to a video game joystick or other control device. As the player's brainwaves come closer to an optimal, stress-free pattern, the video game's joystick becomes easier to control. This encourages the player to produce these patterns or signals to succeed at the game.

In this way, recreational video games have the potential to help both children and adults with a variety of health problems — from concentration difficulties to physical stress.

Unlike earlier biofeedback methods, which tended to be monotonous and sim-

Continued on Page 3

'My Langley'

On The Way ... A Web Portal

By JIM ROBERTS
Researcher News editor

Wouldn't it be nice if there were a single place where Langley Research Center employees could go for all of the information they need?

Soon there will be.

Langley is in the early stages of implementing "Web portal" technology. It will work much like My Yahoo! (<http://my.yahoo.com/>), My Netscape <http:// my.netscape.com/>) and other customizable Web sites that harvest information from various sources and present it in a consistent, browser-based format.

The portal, which is tentatively known as "My Langley," is the result of months of work done by the Center's Internal Communications (IC) Team. Lana Couch, Langley's Associate Director of Business Management, chartered the team last year to evaluate the Center's current communication methods and recommend ways to improve the way information is disseminated to Center employees.

The heart of the recommendation is "My Langley," which will take the relevant information, organize it and allow receivers to customize the presentation of the information in a way that is meaningful to them. "My Langley" could provide constantly updated information from a multitude of internal and external content providers and databases.

The IC Team's strategy is to develop "quasi-channels" to correct immediate problems by January and to develop a full

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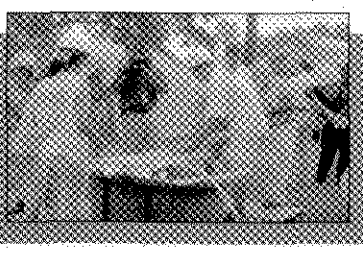
Inside This Issue:



USGS Drilling Continues On-Center
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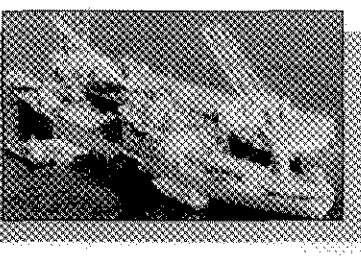

SmartCrane Signs Major Contract ... More HRTI News
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News Briefs

Around the Agency

DEEP SPACE 1 SPACECRAFT STILL GOING . . .

It has the little engine that could, and the pint-sized power plant on board NASA's Deep Space 1 probe has been doing it longer and more efficiently than anything ever launched. The spacecraft, designed to test new technologies, has run its unique propulsion system for more than 200 days.

"The ion propulsion engine on Deep Space 1 has now accumulated more operating time in space than any other propulsion system in the history of the space program," said John Brophy, manager of the NASA Solar Electric Propulsion Technology Applications Readiness project at NASA's Jet Propulsion Laboratory (JPL).

Unlike the fireworks of most chemical rockets using solid or liquid fuels, the ion drive emits only an eerie blue glow as ionized (electrically charged) atoms of xenon are pushed out of the engine. Xenon is the same gas found in photo flash tubes and many lighthouse bulbs. RELEASE: 00-125

NASA SCIENTISTS ON 'SAFARI' MISSION

African smog and its role in global change are under study by NASA and international scientists who are now tracking the movement of air pollution in the southern part of the continent. The southern African atmosphere is particularly vulnerable to air pollution due to a persistent high-pressure system there. African smog is a soup of smokes from industry, mining, agricultural burning and other sources.

NASA researchers are among more than 100 scientists who are now conducting extensive and varied field studies as part of the Southern African Regional Science Initiative (SAFARI 2000) that has been underway for more than a year, and will continue into September. Flights and science activities are based in Pietersburg, Republic of South Africa.

NASA PLANS TO SEND ROVER TWINS TO MARS

The traffic on Mars is expected to double in the near future. NASA recently announced plans to launch two large scientific rovers to the red planet in 2003, rather than the original plan for just one, said Ed Weiler, NASA's Associate Administrator for Space Science.

Both Mars rovers currently are planned for launch on Delta II rockets from Cape Canaveral Air Force Station. The first mission is targeted for May 22, with the second launch slated for June 4. After a seven-and-a-half month cruise, the first rover should enter Mars' atmosphere Jan. 2, 2004, with the second rover bouncing to a stop on the Martian surface Jan. 20.

The rovers will be exact duplicates, but that's where the similarities end. Relatives of the highly successful 1997 Sojourner rover, these 300-pound mobile laboratories may look and act alike, but they're going to different locations. RELEASE: 00-124

HUBBLE DISCOVERS MISSING PIECES OF COMET

To the surprise and delight of astronomers, NASA's Hubble Space Telescope has discovered a small armada of "mini-comets" left behind by what some astronomers had assumed was a total disintegration of the explosive comet LINEAR.

Johns Hopkins University astronomer Hal Weaver said he was stunned when the Hubble image popped up on his computer screen. "My first thought was Hubble Space Telescope does it again! We caught the fish! This is amazing, very exciting, very neat." RELEASE: 00-122

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@langley.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Day Of Caring

Volunteers from Langley Research Center helped reclaim, sort and pack 30,000 pounds of food for distribution to the hungry during last year's Day of Caring. This year's community event is scheduled for Sept. 15. Center Director Jeremiah F. Creedon has approved up to eight hours administrative leave for Langley civil service employees; those interested in participating should contact Krystal Bishop at ext. 46528 or <k.g.bishop@larc.nasa.gov>. Contractors who wish to participate should seek approval from their corporate offices. As always, retirees are invited and encouraged to participate.

Photo by Jeff Caplan

AIAA Calls For Award Nominations

The Hampton Roads Section (HRS) of the American Institute of Aeronautics and Astronautics (AIAA) is seeking nominations for the 2001 "Engineer of the Year" award.

The annual award recognizes one member of the HRS for distinguishing himself or herself in some facet of aerospace engineering practice.

The nominee should be an AIAA member who has made a recent significant contribution to the art and science of aerospace engineering. Members of the AIAA HRS Council are not eligible.

The AIAA HRS nominating committee will select one individual from the pool of candidates. The selectee will be required to deliver the annual Matson Lecture, presented each year by AIAA HRS during National Engineers Week.

Past winners of the prestigious local award were Steven X. Bauer (2000), John C. Lin (1999) and Kathy Abbott (1998).

Nominations should consist of a write-up of no more than two pages detailing the nominees recent contributions to aerospace engineering and three letters of reference from AIAA members. Nominations must be received by Oct. 3. Send nomination packages to Jamshid A. Samareh, AIAA HRS Honors and Awards Chair, at Mail Stop 159.

For more information, call ext. 4-5776, e-mail <j.a.samareh@larc.nasa.gov> or visit <http://www.seva.net/~aiaa/awards.html> on the Web.

OPM Will Observe 'Friendly Leave Act'

Langley Research Center's Office of Personnel Management (OPM) has expanded the use of sick leave for family care purposes based on a request by the President.

The "Family Friendly Leave Act" allows employees to use up to 12 weeks of personal accrued sick leave each leave year to care for a family member with a "serious health condition." The amount of leave available to a part-time employee would be pro-rated based on the regularly scheduled administrative workweek.

For more information, call OPM at ext. 42558 or visit the Office of Human Resources' Web site at <http://ohr.larc.nasa.gov>. Select the Work and Family Life icon, then select Family Friendly Leave Act.

In Memoriam

Clyde D. Hall

Clyde D. Hall died on Aug. 11 at the age of 90. Hall retired from NASA in 1974.

Charles E. Schnell

Charles Edward Schnell died on Aug. 9 at the age of 79. Schnell, a native of Wheeling, W.Va., served in the Army Air Corps and was a veteran of Pearl Harbor. He worked at NACA and NASA for 30 years as an electronics tech supervisor.

Corrections

Jalink

Due to incomplete information supplied by Langley Research Center's Technology Commercialization Program Office (TCPO), Langley employee Nurul Abedin was not credited with earning a Patent Award in the July 28 issue of the *Researcher News*. Abedin earned the award for his patent, "Method and Apparatus for Evaluating Multilayer Objects for Imperfections."

Also, in the same story, a photo of Patent Award-winner Tommy C. Steele appeared twice but was misidentified the first time as Antony Jalink Jr. The correct photo of Jalink appears here.

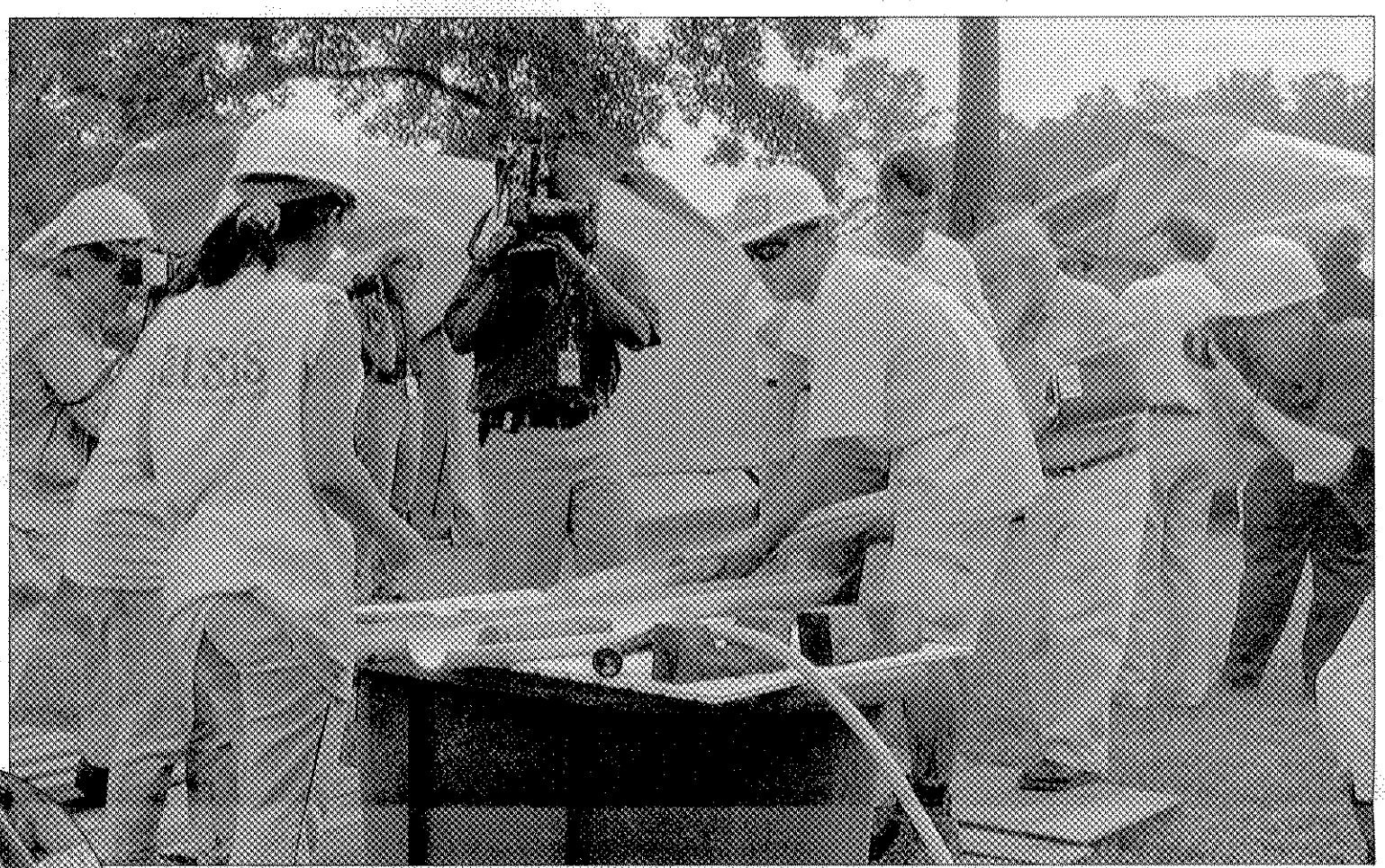
Follow-up

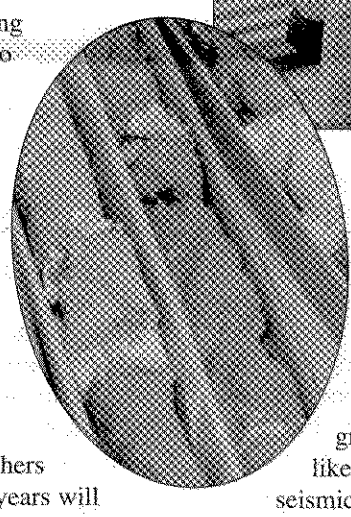
The Drilling Continues

NASA Collaborating With USGS On Impact Crater Project

By CHRIS RINK
Office of Public Affairs

and MARION FISHER
United States Geological Survey





Langley Research Center and the United States Geological Survey (USGS) hosted a "media day" on Aug. 3 to publicize the drilling associated with Chesapeake Bay Impact Crater Project. Scientists, technicians and representatives of local, state and federal agencies involved in the project were on hand for the event. Left: Core samples from the drilling, which began on July 23 and will continue throughout the summer.

Photos by Jeane Shanks

This summer, the United States Geological Survey (USGS) is drilling a big hole in NASA's backyard. As it turns out, Langley Research Center sits near the edge of a 51-mile-wide impact crater created 35 million years ago when a meteor or comet slammed into the ocean near the present-day mouth of the Chesapeake Bay.

"People living in southeastern Virginia are affected by this ancient cataclysm daily," said Greg Gohn, chief of the USGS' Chesapeake Bay Impact Crater Project. "The impact severely disrupted the rock units that today are important aquifers providing drinking water to the Hampton Roads area.

"We believe that large areas within the crater are unsuitable for future water-supply development," Gohn said. "Drilling this exploratory bore hole and others in the next few years will help in understanding how to best develop and manage the region's ground-water supply."

This USGS research effort, hosted by NASA, involves drilling a 2,700-foot-deep hole in the Earth, bringing up a core (underground sediment and rock) for analysis, and setting off underground, firecracker-like blasts to perform a seismic reflection survey across the crater's margin. Drilling associated with the crater project began on July 23 and will continue throughout the summer. The seismic survey began in mid-August.

Some of the data gathered by the scientists will be incorporated into the regional groundwater flow model that was developed by USGS water resources specialists in Virginia.

Results of the project, which is supported and partially funded by the Hampton Roads Planning District Commission (HRPDC) and the Virginia Department of Environmental Quality (VA DEQ), will assist local and state water resources managers in making better decisions concerning the availability and use of groundwater, an important water supply in southeastern Virginia.

Joel S. Levine, a senior research scientist at Langley, looks forward to the shared science and agency cooperation at the local, state and federal levels.

"The USGS drilling project will permit a detailed investigation of a very significant event in the history of our planet that affected all four components of the Earth system — the atmosphere, ocean, land and biosphere," Levine said. "We're working closely with USGS scientists to assess what we can learn about the Earth's early atmosphere from analysis of the cores obtained from drilling."

For more information on the Chesapeake Bay Impact Crater, visit the following Web sites: <http://woodshole.er.usgs.gov/epubs/bolide/> and <http://marine.usgs.gov/fact-sheets/fs49-98/>.

Game

Continued from Page 1

plistic, this technology adapts to today's most popular games, giving players a healthful side effect while fully preserving the high-tech entertainment value.

"This technology is a spin-off of NASA research where we measure the brain activity of pilots in flight simulators," said co-inventor Alan Pope of Langley's Crew/Vehicle Integration Branch. "Flight simulators are essentially very sophisticated video games." Pope is an adjunct research assistant professor at EVMS.

In addition, in what could be called a "spin-back" application, NASA is studying ways to use the technology for pilot training.

> *"Thirty years of biofeedback research has shown that by training specific brainwave changes, or reductions in other abnormal physiological signals, people can achieve a wide variety of health-enhancing outcomes. With this new technology, we have found a way to package this training in an enjoyable and inherently motivating activity."*
>
> **Olafur Palsson**

Early results from a video game biofeedback study suggest that the technology is effective. In the first test, to be completed this fall, the technology is being applied as a treatment for attention deficit hyperactivity disorder (ADHD). Children with ADHD, between the ages of 9 and 14, either play popular video games or receive more traditional brainwave biofeedback treatment. Both forms of treatment help the children's symptoms, but the video game treatment seems to have distinct advantages.

"The main difference we see between the groups so far is in motivation -- the children in the video game group enjoy the sessions more and it is easier for the parents to get them to come to our clinic," Palsson said.

"This technology could be in homes all over the country within the next two or three years," said David Shannon of Langley's Technology Commercialization Program Office. "Several companies have applied for a license to produce training systems for the general public."

Michael Braukus of NASA Headquarters and Jane Gardner of Eastern Virginia Medical School also contributed to this story.

Community Corner

By SANDRA LEMONS
Office of Public Services

The damage caused by a disaster may severely restrict or overwhelm a community's emergency response resources, communications, utilities and transportation. This damage may leave individuals and neighborhoods cut off from outside support.

The Federal Emergency Management Agency's (FEMA) Community Emergency Response Team (CERT) program is intended to teach citizens steps they can take before, during and after a disaster. These actions are designed to allow them to survive for up to three days without the aid of emergency services.

Hampton is the only city in Virginia to establish a CERT program. CERT is sponsored by the City of Hampton Division of Fire and Rescue, and training is offered to all Peninsula residents at no charge.

Training is given one night a week over a seven-week period and is structured to be practical, interesting and fun. Emergency Services instructors give all instruction, and classes are about 2-1/2 hours in length. The class covers all disasters; however, emphasis will be given to situations more likely to occur in our geographical area.

While the program is interactive, there are no special physical requirements to participate, and children 12 and older may participate with parent(s).

Course curriculum includes disaster preparedness, disaster fire suppression, disaster medical operations, light search and rescue operations and disaster psychology and team organization.

To register for the next class, which begins on Sept. 12, contact Jerry Blankenberg at ext. 45762 or at 850-1871 after 4 p.m. Information is also available by visiting the City of Hampton's Fire Department Web site at <http://hamptonfire.tni.net>.

Lemons is a volunteer coordinator at Langley Research Center.

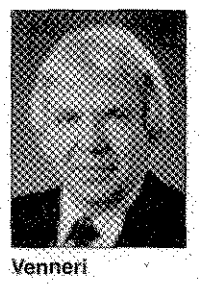
The Changing Face of NASA

Editor's note: *This column originally appeared on the NASA Office of Aerospace Technology (OAT) online newsletter, which can be found at <http://www.aerospace.nasa.gov/curevent/news/>.*

By SAMUEL L. VENNERI
NASA Headquarters

NASA's Office of Aerospace Technology (OAT) has published its first online newsletter at <http://www.aerospace.nasa.gov/curevent/news/>. The issue includes articles about Synthetic Vision and the Composite Wing Box test. To receive online notices of new issues or provide feedback, contact Glenn Smith at <glenn.smith@hq.nasa.gov>.

NASA's aerospace research programs have always been at the forefront in the advancement of technology. Working with our industry and academic partners, we have made our nation a leader in commercial and military aircraft and space operations and exploration, but I believe there are still many exciting horizons to explore. The rate of technological advancement in a number of fields — information technology, biotechnology and nanotechnology — will provide critical and enabling stepping stones that will enable us to reach those new horizons.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To be successful in our endeavors, we must pioneer a revolution in technology and engineering. To create the air and space transportation systems of the future, as well as other highly complex civil and military systems, we need to develop a new approach to engineering; one that puts safety, reliability and mission assurance first. Critical to unlocking this capability are high-fidelity, collaborative tools and environments with intuitive human interfaces. This will allow us to simulate an entire product life-cycle in virtual space; we can complete our evaluations before cutting the first piece of hardware. Technology innovation will also enable new characteristics such as intelligence, rapid self-repair and adaptability to be built into our advanced systems.

Our lifeline is our budget. So that you will have the latest news regarding the ongoing budget process, I want to pass on what is happening right now. On May 23, The House HUD-VA-Independent Agencies Appropriations Subcommittee marked up NASA's appropriation bill. NASA received a mark of $13,713.6 million which is $321.7 million below the President's request for FY 2001 but $112.8 million above the enacted FY 2000 number.

The subcommittee reduced the Aerospace Technology by $333.1 million from the requested level. The subcommittee eliminated the $290 million for the Space Launch Initiative, effectively terminating the X-34 and X-37 and possibly the X-33 programs. The subcommittee also eliminated $49.1 million from the Aviation Systems Capacity program and $9 million from the new Small Aircraft Transportation System (SATS) initiative, effectively eliminating both programs. The subcommittee added $15 million to the Ultra-Efficient Technology (UEET) program.

In the full House Appropriations Committee markup on June 7, there was an unsuccessful attempt to restore most of the NASA funding previously cut by the subcommittee. By a very close vote of 23 to 22, an amendment attempting to restore the funding failed. The bill now goes to the House floor.

As an aid to continuing our successful partnership with the aerospace industry and academia, I have inaugurated this special newsletter to bring first hand news to you of the progress we are making in a wide variety of aerospace research programs. This newsletter is composed of bite-sized pieces of news with links to a NASA Web site for those wishing to know more. The newsletter will be sent every few months initially and eventually will be sent monthly.

I am vitally interested in your comments on this newsletter and am committed to doing whatever I can to make it useful to you. Please contact me with any comments by sending them to <glenn.smith@hq.nasa.gov>.

Venneri is NASA's Associate Administrator for Aerospace Technology and Chief Technologist.

IC Team

Continued from Page 1

portal at Langley within the next two years by leveraging the portal development being done at NASA's Jet Propulsion Laboratory (JPL).

The IC team was led by Office of Chief Information Officer (OCIO) employee Manjula Ambur, who also oversaw the Center's Y2K project, and facilitated by OCIO employee Karen Freidt. The cross-organizational team included the following representation of content senders, method providers and receivers: Larry Allen, Ruth Amundsen, Cathy Clark, Faye Collier, Peter Covell, George Cowley, Annabelle Durand, Michelle Ferebee, Simone Foretich, Karen Freidt, Whitney Harris, Keith Henry, Robin Land, Pat Link, Jill Marlowe, Duane Melson, Dave Miller, Ed Prior, Donna Speller, Olaf Storaasli and Carolyn Wells.

"The team's advocacy of their recommendations resulted in approval of all recommendations by Lana Couch, who also provided resources for Phase I implementation," said Cathy Mangum, Langley's acting CIO.

"The team undertook the difficult challenge as a collateral to their normal responsibilities and proved that motivation, creativity and commitment are critical factors to successfully tackle a complex and long standing problem," Mangum said.

Ambur added, "The IC Team's recommendations are expected to significantly improve Center productivity through the use of new Web/intranet technologies."

Before making its recommendations, the IC Team evaluated the pros and cons of each of Langley's communication mediums, obtained input from Langley employees by conducting focus groups, and benchmarked corporations' and other NASA centers' internal communication methods and practices.

E-mail was determined to be the most used communication method and the quickest way to "push" information, but it is also "overused" and "lacks policies." Similarly, the team found that LaRC This Week "lacks policies," is "repetitive" and is not used very much. The team said the *Researcher News* is the only medium offering "in-depth" information, but it lacks electronic access, and many readers disagree on its content focus. Other forms of printed media have developed processes but are not widely used.

Obviously, each medium has its pros and cons. However, what was most alarming to the IC Team is that most of them do not have a set of strict policies and procedures. Moreover, the people responsible for the respective mediums work independently of each other, and most are as dissatisfied with the state of internal communications as their users.

The IC Team concluded that the Web had the potential to be a dynamic and effective communications tool, but it is "underused" and "fragmented," and much of what is on Langley's intranet is outdated.

Where are we now?

Michael O'Hara, fresh from a stint with Outreach Team 2, has been charged with implementing the IC Team's recommendations. Joining him on a part-time basis are fellow OCIO employees Robin Land and Harriet Machie, Rose Mustain of the Clerical and Administrative Systems Technology Office (CASTO), and Arlyene Lusk of NCI.

The Phase I recommendations being implemented include:

- Consolidating Center-wide e-mails as a single electronic newsletter;
- Improving and updating Langley's intranet (Lantern);
- Developing a research communication tool (supporting the Creativity and Innovation effort);
- Publishing an electronic version of the *Researcher News*;
- Formulating and communicating procedures and guidelines; and
- Providing customer awareness tools and training.

The new system will integrate four essential components for effective communication: adequate management attention, dynamic and relevant content, extensive customer awareness and education, and incorporation of new technologies/tools.

Over the next six months, the implementation team expects to have a "first-step" Langley Web portal in place; within the next two years, the final, customizable version should be up and running.

"We will be keeping the Center informed on the IC implementation team's progress," O'Hara said. "Langley needs to do business the way business is doing business. It is time for us to get in the game."

HRTI

The Hampton Roads Technology Incubator (HRTI), located in the NASA Langley Research Park, is working closely with Langley Research Center's Technology Commercialization Program Office (TCPO) to license Langley-developed technologies.

"We're in business to help commercialize the technologies that have been and are being developed here at Langley," Marty Kaszubowski, HRTI's director, said last year. "By doing so, we'll be growing technology companies and generating jobs that benefit everyone in the Hampton Roads region."

For more information about HRTI, contact Marty Kaszubowski at 865-2140 or <martinka@hrtc.org>, or visit the HRTI Web site at <http://www.HR-Incubator.org>.

SmartCrane Signs Major Contract

By NANCY N. SHEEHAN
PhoTech Ltd.

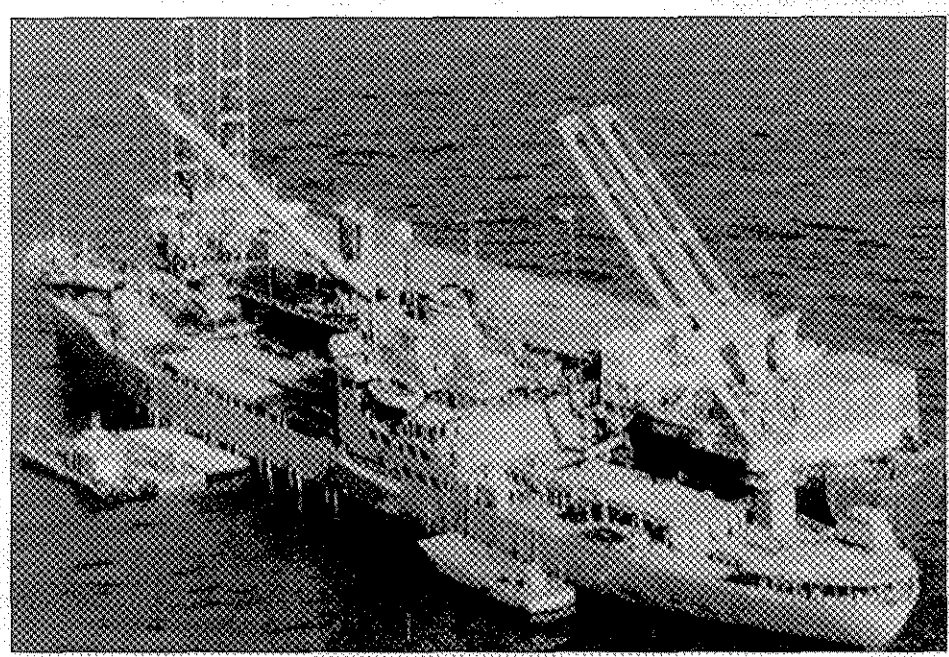
SmartCrane, Inc., a division of Daniel H. Wagner Associates, achieved an early and significant milestone when German-based Mannesmann Dematic AG Gottwald signed a five-year contract to employ SmartCrane's automation technology on its line of mobile harbor cranes.

The contract represents about $1 million in annual revenues for SmartCrane.

"This is a watershed deal for us because the confidence of a large company like Mannesman and the guarantee of a five-year revenue stream will make attracting capital that much easier," said Joseph H. Discenza, the vice president of Wagner and prospective CEO of Smartcrane.

SmartCrane's product line addresses an immediate need in the container terminal market. Funded by various sponsors in government and private industry, the technology includes automatic sway control for moving loads, sensors to monitor the crane and load position and touch-panel displays for operator control. The operator simply selects a destination on the touch screen in the crane cab and controls the hoisting.

This approach enables all crane operators to move containers expeditiously, especially in gusty environments or on moving platforms, as with vessels at sea. The SmartCrane approach evens out the skill set by factoring in conditions and automatically compensating at each stage in the container transfer. The potential for a SmartCrane unit is up to 50 percent more loads per hour than by operator action alone.



SmartCrane enables crane operators to move containers expeditiously, especially in gusty environments or on moving platforms, as with vessels at sea. The SmartCrane approach evens out the skill set by factoring in conditions and automatically compensating at each stage in the container transfer. The potential for a SmartCrane unit is up to 50 percent more loads per hour than by operator action alone.

Photo courtesy of PhoTech Ltd.

Under the terms of the agreement, Gottwald products will be the only mobile harbor crane featuring SmartCrane technology, which Gottwald expects will increase its competitive position in this specialized market. Gottwald presently sells about 50 cranes a year, mostly to markets outside the US, and has 500 units in service around the world, 43 production facilities and 122 sales locations.

In return, Gottwald will purchase a specified number of licenses per year during the contract period. It plans to market SmartCrane's automation technology as a standard option on new cranes as well as retrofit systems for its installed base.

SmartCrane was established in May to market technology developed at Wagner's consulting divisions, which are essentially applied mathematics "think tanks." Discenza was a consulting division manager and an expert in computer-aided decision making, especially for problems involving search for lost objects. Wagner Associates is planning to spin off the crane automation business as soon as SmartCrane is fully capitalized. Discenza will leave Wagner for SmartCrane at that point also.

After its initial capitalization, SmartCrane will occupy office and laboratory space in the Hampton Roads Technology Incubator.

"SmartCrane's a sure winner," said Marty Kaszubowski, HRTI's director. "We're just helping make a few connections to expedite that success."

For more information, contact Daniel H. Wagner Associates, Inc. at 727-7700 or visit <www.smartcrane.com> on the Web.

Williamsburg Cashing In With Varuna.Net

By NANCY N. SHEEHAN
PhoTech Ltd.

Varuna.Net, a Hampton based e-business consulting group, recently launched an Internet ticketing and reservations Web site for its client, the Williamsburg Hotel and Motel Association (WHMA). In its first two months of operation, $1.4 million in business has been booked from the Web site.

"We just couldn't be happier for our customer," said Dale Bennis, Varuna.Net's chief executive officer. "This is exactly what we want to do: help our clients establish themselves as leaders in their markets by tapping into the Internet."

According to Forrester Research, tourism dollars being spent on the Web are expected to grow to $32 billion by 2004. "Williamsburg is a top travel destination and our goal is to serve the visitor," said Cathy Waltrip, WHMA's executive director. "Now that hotel accommodations and access to our area's attractions can easily be booked in real time online, we do that a lot better now. Varuna has us all very excited."

Potential visitors to the Williamsburg area have the capability to plan almost every aspect of their vacation by going to <www.williamsburghotel.com>. Web site visitors can look up events for the entire Hampton Roads area; purchase tickets to Williamsburg area attractions such as Busch Gardens and Colonial Williamsburg; comparison shop for lodging that is convenient, affordable, and has the desired amenities; and securely make reservations confirmed with a credit card.

To keep the ever-changing information current, Varuna developed a sophisticated yet easy to use "back office" and a database that is integrated with the Web site. "The biggest problem with most travel Web sites is that their content is dated. This is usually because you have to go through a Web master to get information out there," Bennis said. "We've flattened the process and removed the Web master."

Varuna.Net, a Hampton Roads Technology Incubator client, provides e-Business solutions, database and software design, Web site design and Web site hosting services. Varuna has customers throughout the U.S., Canada and England. The Williamsburg Hotel and Motel Association is the official reservation center for over 75 hotels, motels and bed and breakfasts in the Williamsburg area.

For more information, contact Dale Bennis at 766-8342 or <dbennis@varuna.net>.

Company's CEO Elected To YEO Board

Dale Bennis, the chief executive officer of Hampton-based Varuna.Net, has been elected to the board of the recently established Hampton Roads chapter of the Young Entrepreneurs Organization (YEO). The YEO comprises highly motivated and focused men and women who are founders, co-founders or controlling shareholders of companies with at least $1 million in annual revenues and who are aged 44 or younger. The YEO strives to be the premier peer-to-peer global community and resource for young entrepreneurs. Members learn the basic tenets of success while focusing on maintaining a healthy family relationship and minimizing undue stress.

Terry E. Riley, Executive Director of the Hampton Roads Technology Council, and Marty Kaszubowski, Director of the Hampton Roads Technology Incubator, both enthusiastically endorse YEO as a valuable addition to the area. According to Kaszubowski, "I'm impressed by what these folks bring to Hampton Roads. We get direct exposure to a global vision and access to successful CEOs who understand what a small business owner endures."

AdVentures

CLASSIFIED

FOR SALE: 97 Chrysler Sebring. Dark green with tan convertible top, automatic, A/C, tan leather interior, ABS, 6-disc CD changer, power windows locks and top, alloy wheels, 48,000 miles, great condition. $14,990. Call 440-8090.

FOR SALE: Diamond ring. Marquis cut, almost 1 carat, M color, SI2 clarity, set in solid 18K gold and platinum. Appraised at $2,000; will sell for $1,500. Call 827-7515 or visit <www.members.tripod.com/cooka> on the Web.

FOR SALE: GE washing machine, heavy duty, extra large capacity. Ten years old, like new. $125. 851-7795.

FOR RENT: Lighthouse-style cottage near Boothbay Harbor, Maine. Sleeps five. $750 per week through September; $600 in October. Call 220-2421.

FREE TO A GOOD HOME: Abandoned puppy found in dumpster; appears to be a golden Lab mix with grey eyes, about six weeks old. Very friendly, has had flea and tick bath. Call 826-0367.

❖ ❖ ❖

The deadline for the Sept. 8 edition of the Researcher News is Aug. 28. Send submissions to <j.l.roberts@larc.nasa.gov>.

Hurricane Lectures on Sept. 12

Kerry Emanuel, an American Meteorological Society fellow and professor of meteorology the Massachusetts Institute of Technology, will present a Colloquium lecture entitled, "Recent Progress in Understanding Hurricanes," at 2 p.m. Sept. 12 in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture, "Hurricanes in History and Science," will follow at 7:30 p.m. at the Virginia Air and Space Center.

Emanuel

For more information about the lecture series, visit <http://shemesh.langley.nasa.gov/Lectures/> on the Web.

Alumni Association To Meet Sept. 12

The NACA/NASA Alumni Association will meet at 11:30 a.m. Sept. 12 in the private dining room of the Langley Research Center cafeteria. Corp. Leo P. Flibotte Jr. of the Hampton Police Department will speak about "Stealing Your Identity." For more information, call George Brooks at 868-6013.

Wind Tunnel University Offers Class

Langley Research Center's Wind Tunnel University will offer the course, "Statistical Quality Control for Measurement Assurance — Applications to Ground Testing," from 8 a.m. to 3 p.m. Oct. 2-5 in Bldg. 1194A, Room 206. The instructor will be Michael J. Hemsch.

To view a course description and register for the course online, visit <http://class.larc.nasa.gov/cgi-bin/wtu/wturegular/index.cgi?aio>.

JIAFS Registration Still Open

George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center offers master's, engineer's and doctorate degrees in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Late registration dates for the fall 2000 semester are Aug. 28 through Sept. 1. For a course schedule or more information, contact the JIAFS office at ext. 41982 or <jiafs@langley.nasa.gov> or visit <http://www.seas.gwu.edu/seas/jiafs/fall.html> on the Web.

Duplicate Bridge Club Results

Results for the Langley Research Center Duplicate Bridge Club's Aug. 9 game were: first place, S. Balakrishna and Vijaya Jalaiah; second place, Bill and Nan Jones; third place, Judy Ferris and Tom Finley.

The next game will be played at 5:30 p.m. Sept. 13 in the Langley Room of the H.J.E. Reid Conference Center. For more information, call Geoff or Marty Tennille at 850-1532.

Volleyball Registration Open

Online registration for the Langley Research Center Volleyball Club's Fall 2000 Season will continue through 4 p.m. Sept. 6.

Co-ed play will begin the week of Sept. 11, on the following schedule: Tuesday, BB and C league; Wednesday, Open league; Wednesday, B league. Games will begin at 6:30 p.m. on Tuesdays and Thursdays and 7:15 p.m. on Wednesdays.

For more information, visit the club's Web page at <http://volleyball.larc.nasa.gov/>.

LAA Seeking Nominations

Langley Research Center's Activities Association (LAA) is seeking nominations for the following positions: secretary/treasurer, chairperson (socials, arts and crafts) and chairperson (clubs and leagues). For more information, call the LAA office at ext. 46369.

Centennial Of Flight Web Site Debuts

The Centennial of Flight Commission recently unveiled its Web site with a starting suite of information for aviation enthusiasts, educators, students and all those who may be planning projects and activities to help the country celebrate the 100th anniversary of the Wright Brothers' first powered flight on and around Dec. 17, 2003. The Web address is <http://centennialofflight.gov/>.

Updated EEO Book Available

FPMI Communications recently re-published one of its best-sellers, "The Federal Employee's Guide to EEO," incorporating the latest Equal Employment Opportunity Commission (EEOC) regulations concerning alternative dispute resolution. The 44-page handbook answers questions that federal employees are likely to have about EEO.

The handbook is available for $11.95 (plus shipping). To order, call FPMI at (256) 539-1850 or visit <http://www.fpmi.com/Catalog/> on the Web.

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Researcher News

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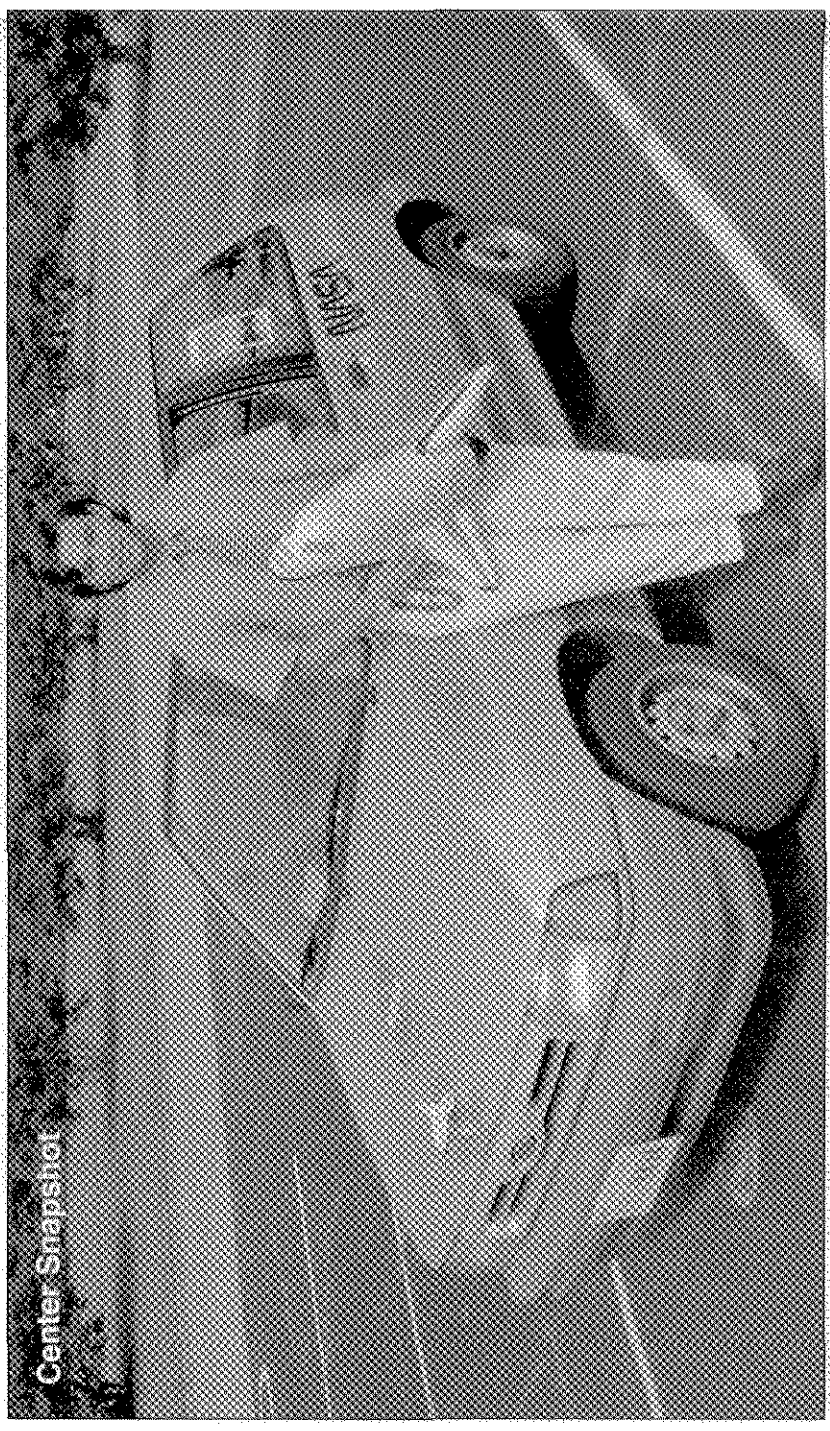
Center Snapshot



Eugene Kitamura, a Langley Aerospace Research Summer Scholars (LARSS) student from James Madison University, commemorated his time at Langley Research Center by decorating his 1990 Ford Festiva with NASA "meatballs" to a memorabilia, everything from NASA "meatballs" to a Space Shuttle hood ornament. (He even used stick-on letters to plug the ongoing Creativity and Innovation initiative.) Kitamura, who worked in the Instrumentation Systems Design Branch (ISDB), said he decorated the car "to have a good time."

Photo by Jim Roberts

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 18 ❖ Sept. 8, 2000

ODIN Contract Set To Begin

By ROBERT D. ALLEN
Office of Public Affairs

NASA's Office of Aerospace Technology recently announced the selection of The Intellisource Group, Inc., under the Outsourcing Desktop Initiative for NASA (ODIN).

Intellisource, which was recently acquired by Affiliated Computer Services, will partner with Science Applications International Corp. (SAIC) of San Diego to provide information technology (IT) services to the four Aerospace Technology Enterprise Centers: Ames Research Center, Dryden Flight Research Center, Glenn Research Center and Langley Research Center.

SAIC will be the primary performing contractor at Langley, and SAIC representatives have started working with Langley's Office of the Chief Information Officer (OCIO).

"We are very excited about the ODIN award to the Intellisource/SAIC team," said Cathy Mangum, Langley's Deputy CIO, "and we're looking forward to beginning their transition."

According to Mangum, Langley employees will soon notice an increasing SAIC presence as the company begins implementing its ODIN outreach program.

The total value for the four delivery orders is estimated at $123.7 million, including optional infrastructure upgrades. The breakdown by Center is: $27.2 million for Ames; $15.8 million for Dryden; $43.3 million for Glenn; and $37.4 million for Langley.

The services will be ordered under the existing ODIN master contract, which is administered by NASA's Goddard Space Flight Center. They include comprehensive desktop computer, server, local area network, telephone, local video, administrative radio, remote communication and public address services.

There will be four firm fixed-priced delivery orders, one for each Aerospace Technology center. The period of performance is 36 months beginning Oct. 1 at Glenn and Dryden; Nov. 1 at Langley; and Dec. 1 at Ames.

In Memoriam: Robert Rowe Gilruth

A Pioneer Of The Space Program

By BOB JACOBS
NASA Headquarters

and ED CAMPION
Johnson Space Center

Robert Rowe Gilruth, a former assistant director of the Langley Laboratory and pioneer of the American space program during the glory days of Mercury, Gemini and Apollo, died on Aug. 17 after a lengthy illness. He was 86.

During his 40-year career with NASA and its predecessor, the National Advisory Committee for Aeronautics (NACA), Gilruth led many of the nation's leading flight research and human space flight operations.

In 1961, Gilruth was named director of the Manned Spacecraft Center (MSC) in Houston. That complex would later become known as the Lyndon B. Johnson Space Center.

"Gilruth's management style developed the best minds in the space program into the finest organization of its time," said Christopher Kraft Jr., who served as deputy director of the MSC and director of Flight Operations during Gilruth's tenure.

"There were many heroes during the early days of the space program, but Bob Gilruth was the most respected of them all and, particularly, by those who knew what it took to reach the goals that were established. Personally, I had a higher regard for Gilruth than any other person in my lifetime."

A specialist in flight research, Gilruth organized an engineering team in 1945 to investigate experimental rocket-powered aircraft, which later became the Pilotless Aircraft Research Division (PARD) and led to the creation of NACA's Wallops Island launching range.

In 1952, Gilruth was appointed assistant director of the Langley Laboratory responsible for investigations in high-temperature structures and dynamics loads, and for hypersonic aerodynamics research at Wallops Island.

Gilruth's focus suddenly shifted from rocket-powered planes to spacecraft when the Soviet Union launched the world's first satellite, Sputnik, in 1957. "I can recall watching the sunlight reflect off of Sputnik as it passed over my home on the Chesapeake Bay in Virginia," Gilruth said in 1972. "It put a new sense of value and urgency on things we had been doing. When one

Continued on Page 3

Robert R. Gilruth, left, shows President John F. Kennedy a model of the Apollo Command Module in 1962. During his 10-year tenure as the director of the Manned Spacecraft Center, the predecessor to the Johnson Space Center, Gilruth directed 25 manned space flights, including Alan Shepard's first Mercury flight in 1961, the first lunar landing by Apollo 11 in 1969, the dramatic rescue of Apollo 13 in 1970, through the Apollo 15 mission in 1971.

Photo courtesy of Johnson Space Center

The September Colloquium Lecture Has Been Cancelled. See Page 4 For Details.

News Briefs

Around the Agency

NEW VIEW ON CLIMATE CHANGE PUBLISHED

Since climate change affects everyone on Earth, scientists have been trying to pinpoint its causes. For many years, researchers agreed that climate change was triggered by what they called "greenhouse gases," with carbon dioxide from burning of fossil fuels such as coal, oil and gas, playing the biggest role. However, new research suggests fossil fuel burning may not be as important in the mechanics of climate change as previously thought.

NASA funded research by James Hansen of the Goddard Institute for Space Studies and his colleagues suggests that climate change in recent decades has been mainly caused by air pollution containing non-carbon dioxide greenhouse gases, particularly tropospheric ozone, methane, chlorofluorocarbons (CFCs) and black carbon (soot) particles.

More information on the paper can be found online at <http://www.pnas.org/papbyrecent.shtml>. RELEASE: 00-133

PLANTS MAY SHED NEW LIGHT ON DROUGHTS

NASA has a new tool designed to keep a close watch over our plants. What we see in the reflection of the vegetation may help researchers do a better job of monitoring and, one day, predicting periods of drought.

A new Multi-spectral Drought Index measures the impacts of too little water or too much rainfall on vegetation. The index also will be used to verify other existing drought-monitoring products.

"What makes this data set unique is its unprecedented detail, which provides a resolution four times that of current drought prediction maps, and it is based on a 20-year data record," said Compton Tucker, the research scientist leading the project at Goddard Space Flight Center. RELEASE: 00-132

POSSIBLE WATER WORLD UNDER EUROPA'S CRUST

NASA researchers have the strongest evidence yet that one of Jupiter's most mysterious moons hides a fermenting ocean of water underneath its icy coat. This evidence comes from magnetic readings by NASA's Galileo spacecraft, reported in the Aug. 25 edition of the journal Science.

Europa, the fourth largest satellite of Jupiter, has long been suspected of harboring vast quantities of water. Since life as we know it requires water, this makes the moon a prime target for the search of exobiology — life beyond Earth. RELEASE: 00-131

HUBBLE GETS COUNT OF BROWN DWARF STARS

Astronomers using NASA's Hubble Space Telescope have taken attendance in a class of brown dwarfs and found indications that these odd and elusive objects also tend to be loners.

The Hubble census — the most complete to date — provides new and compelling evidence that stars and planets form in different ways.

"Because the brown dwarfs bridge the gap between stars and planets, their properties reveal new and unique insights into how stars and planets form," said Joan Najita of the National Optical Astronomy Observatory (NOAO) in Tucson, Ariz.. Her study with fellow NOAO researcher Glenn Tiede and John Carr of the Naval Research Laboratory in Washington, D.C., will appear in the October issue of the Astrophysical Journal. RELEASE: 00-130

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@langley.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

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Planners Collaborative/
Science and Technology Corp.

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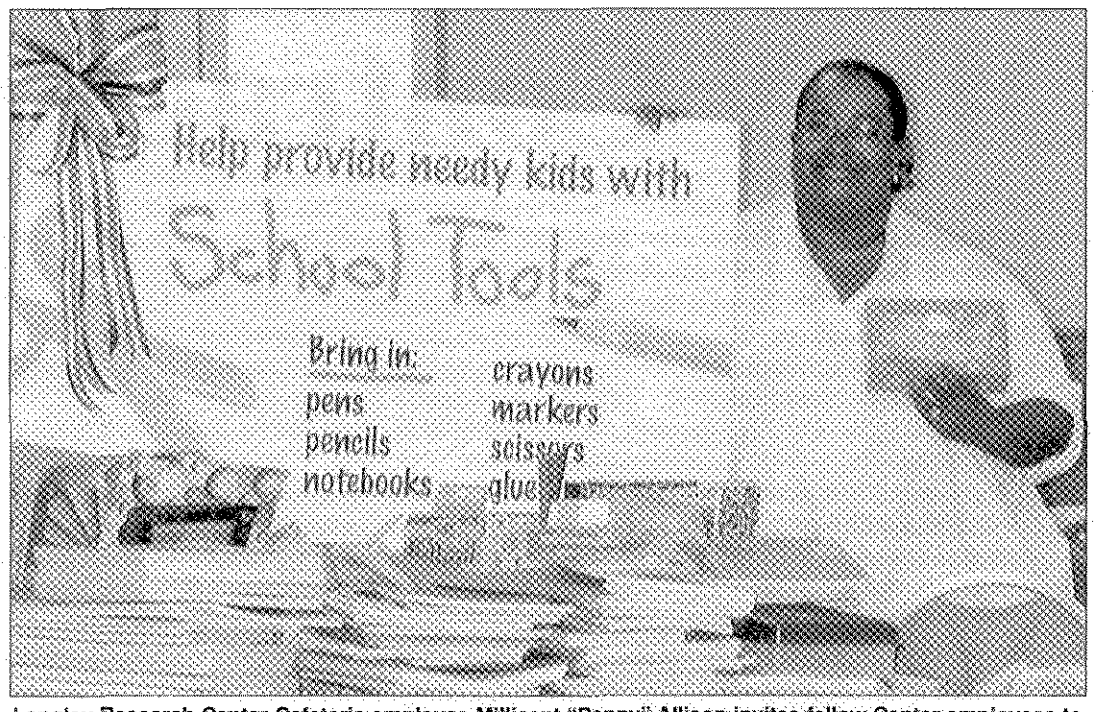
Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

'School Tools' Drive



Langley Research Center Cafeteria employee Millicent "Penny" Allison invites fellow Center employees to donate school supplies to this year's "School Tools" drive. On Sept. 15, the same day as the annual "Day Of Caring," the supplies collected in the Cafeteria and in the AeroDyner will be distributed to the Department of Social Services in York County, Newport News and Hampton as well as the homeless shelters on the Peninsula. The "School Tools" drive is co-sponsored by Langley's Office of Public Services and the Cafeteria.

Photo by Marny Skora

Volunteers Needed For State Fair

Langley Research Center is recruiting volunteers to staff exhibits at the Virginia State Fair. Shifts will run from 10 a.m. to 3 p.m. and from 3:30 to 8:30 p.m. from Sept. 21 through Oct. 1. The opportunity is available to civil servants, contractors and retirees.

A volunteer training session will be held from 10 a.m. to 11:30 a.m. Sept. 14 in the Langley Room of Langley's H.J.E. Reid Conference Center. Transportation and free admission tickets will be provided for volunteers.

To register online, go to <http://larcpubs.larc.nasa.gov/StateFair/> on the Web.

Speakers Bureau Makes July Report

Eleven speakers from Langley Research Center's Speakers Bureau gave 14 presentations to 584 stakeholders in July. The groups included three after-school programs, two Kiwanis clubs, two preschool organizations, one professional organization, one college group, one public school, one historical society, one church and one public library.

The speakers were: **Ledora Akanni, Larry Bement, Walt Darden, Bruce Fisher, Larry Gilbert, Jane Hogge, Mary Ann Smith, Beverly Taylor, Darryl Tenney, Michael Uenking** and **Myra Walton**.

To receive e-mail announcements of speaking opportunities, contact Jim Gardner at <j.e.gardner@larc.nasa.gov>.

In Memoriam

Edna W. Bartlett

Edna W. Bartlett died on Aug. 20 at the age of 91. Bartlett worked as a mathematician at Langley Research Center for 17 years.

David R. Bump Sr.

David Russell Bump Sr. died on Aug. 26 at the age of 52. Bump, a native of Lawrence, Mass., served in the U.S. Navy for 23 years, advancing to the rank of Botswainmate Chief Petty Officer. For the last five years, Bump worked as an Administrative Division Chief with NCI Information Systems at Langley Research Center.

Robert R. Gilruth

Robert Rowe Gilruth died on Aug. 17 at the age of 86. Gilruth, a native of Nashwauk, Minn., worked at NACA and NASA for 40 years, serving as assistant director of the Langley Laboratory and director of the Manned Spacecraft Center in Houston, which would later become Johnson Space Center.

A full story about Gilruth's contributions to NASA appears on page 1.

Robert P. Faust

Robert P. Faust died on Aug. 20 at the age of 71. Faust, a native of Philadelphia, retired from NASA as a professional engineer after 40 years of service. He was a member of the Institute of Electrical Electronics Engineers.

Daniel R. Hayes

Daniel Riddick Hayes died on Aug. 27 at the age of 86. Hayes, a native of Gatesville, N.C., served in the U.S. Navy and was a veteran of World War II. After retiring from the Navy, Hayes worked at Langley Research Center, retiring as Division Chief of the Fabrication Division in 1976 after 30 years of service. Hayes was involved in four major space programs — Mercury, Gemini, Apollo and Viking — and was best known for his expertise in Computer Aided Manufacturing.

Patrick H. Shea

Patrick H. Shea died on Aug. 17 at the age of 89. Shea, a native of New York City, served as an officer in the U.S. Navy and was a veteran of World War II. Shea served as an engineer at Fort Eustis and Langley Research Center, developing structures, towers and cables used in the rocket programs.

George H. Smith

George H. Smith died on July 27. Smith was a Langley Research Center retiree.

Retirees Included In Re-Decal Effort

By JIM ROBERTS
Researcher News editor

Langley Research Center has reversed an earlier decision to not issue new vehicle decals to retirees.

The original decision was made to reduce the burden on the Badge and Pass Office, which is in the process of "re-decaling" the entire Center. Retirees do not need decals for access to the Center; they are granted full access by simply showing an ID badge at the gate.

Bill Tennis, who retired in 1997 after more than 36 years of service, was one of several retirees who were vocal about the decision. "It would have taken away a lot of pride," he said. "I still take pride when I park my car somewhere and they see that NASA Langley Research Center sticker."

Tennis also said that a decision to not issue decals to retirees would have "driven a wedge" between retirees and the Center and possibly even caused conflict between NASA and the Air Force base.

"It's like just keeping the family together," Tennis said. "We're just maintaining that relationship."

Retirees are welcome to apply for new vehicle decals between 8 a.m. and 3:30 p.m. Monday through Friday at the Badge and Pass Office.

Meanwhile, the Center is about 75 percent finished with its re-decal effort, which will end on Oct. 31.

Civil servant and contractor personnel may register up to four privately owned vehicles online at <http://stonewall.larc.nasa.gov/osema/>. Those without Web access may register in person at the Badge and Pass Office.

For more information, call the Badge and Pass Office at ext. 42790.

It's Time For A Refresher On Password Policy

By GEOFF TENNILLE
Langley IT Security Manager

As Langley Research Center personnel become more and more dependent on information technology (IT) resources to get their jobs done, the need for adequate IT security has escalated.

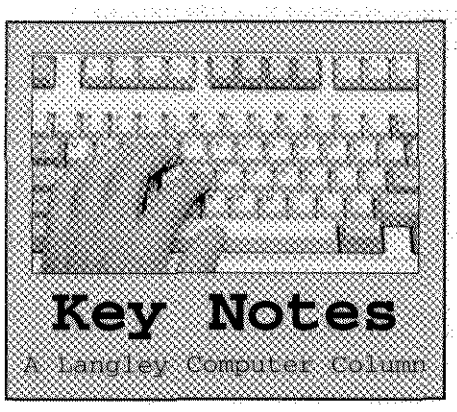
A major element of IT security is the proper use of passwords. This column is a reminder to all Langley computer-users about NASA password policy.

In accordance with Appendix A of NASA Procedures and Guidelines (NPG) 2810.1, all systems must have passwords that are at least eight characters in length and contain characters from at least three of the following character sets:

- upper-case letters
- lower-case letters
- numerals
- special characters

There are also limitations based on the length of time that a password is valid, as well as on password reuse.

These limitations are based on the type of information stored or processed on the system and are described in Appendix A of NPG 2810.1 as well.



To review NPG 2810.1, go to the LMS Home Page, click on "External Documents" and follow the links "NASA Policies and Procedures" and "Legal Policies" to the NPG.

A particular computer may impose stricter password requirements than NPG 2810.1, but not weaker. For example, passwords that are dictionary words or proper names are never permissible.

Passwords of seven or fewer characters or passwords that do not use at least three of the character sets are permissible only if the computer does not accept passwords as long as eight characters or if it is not capable of two or more of the following actions:

- distinguishing between upper- and lower-case letters in a password;
- permitting the use of special characters in a password; or
- permitting the use of numerals in a password.

Note that this exception is not the same as accepting any password just because the system can not place any automatic restrictions on password selection.

Enforcement of the password policies described above is a regular duty of the System Administrator (SA). Employees who have accounts with passwords which are not in compliance with NASA policy as outlined above should make the appropriate adjustments.

Employees who need assistance and do not have an SA should call the Langley Help Desk at ext. 44900.

PKI Is On The Way

Two new Langley Management System (LMS) procedures for Public Key Infrastructure (PKI) certificates, LMS-CP-5630 and LMS-CP-5631, were posted in August. The postings were just the first step in deploying PKI to the Center.

PKI is the software infrastructure to securely manage pairs of public/private encryption keys and provide the capability of secure e-mail, file encryption and digital (non-reputable) signatures to Center personnel. Further information on PKI, including training details, will be forthcoming.

In the meantime, for more information, visit the NASA PKI Web site at <http://pki.nasa.gov>.

The deployment of PKI will be on an organizational basis, based on priorities set by the NASA Chief Information Officer.

Gilruth

Continued from Page 1

month later the dog, Laika, was placed in orbit in Sputnik II, I was sure that the Russians were planning for man-in-space."

When NASA was chartered in 1958, Gilruth became director of the Space Task Group at Langley.

That group comprised Gilruth and 34 other Langley employees. They worked in seemingly ad hoc fashion during the next three years but, according to Gilruth, came up with all the basic principles of Project Mercury, including the conical, blunt-ended capsule, qualifications for astronauts, launch criteria and mission operation procedures.

Later, at the MSC, more than 1,400 employees worked in a dozen locations around Houston, including shopping centers, apartment complexes and vacant stores, while a 1,600-acre cattle pasture south of the city was transformed into what Gilruth called, "the free world's largest and most advanced research and development center devoted to manned space flight."

During his 10-year tenure as MSC director, Gilruth directed 25 manned space flights, including Alan Shepard's first Mercury flight in 1961, the first lunar landing by Apollo 11 in 1969, the dramatic rescue of Apollo 13 in 1970, through the Apollo 15 mission in 1971.

"There is no question that without Bob Gilruth there would not have been a Mercury, Gemini or an Apollo program," George Low, director of the Apollo lunar landing program, once commented during an interview. "He built in terms of what he felt was needed to run a manned space flight program. ... It is clear to all who have been associated with him that he has been the leader of all that is manned space flight in this country."

"His courage to explore the unknown, his insistence on following strict scientific procedures, and his technical expertise directly contributed to the ultimate success of the American manned space program and the landing of a man on the moon," said NASA Administrator Daniel S. Goldin.

After retiring as MSC director in January 1972, he served as director of key personnel development at NASA Headquarters in Washington, D.C. When he retired in December 1973, he became a consultant for the space agency.

Gilruth was born Oct. 8, 1913, in Nashwauk, Minn. He received his bachelor's degree in aerospace engineering in 1935 and a master's degree in 1936 from the University of Minnesota. He joined NACA after graduation.

> *"Gilruth's management style developed the best minds in the space program into the finest organization of its time. ... Personally, I had a higher regard for Gilruth than any other person in my lifetime."*
> **Christopher Kraft Jr.**

He was a member of the National Academy of Engineering and the National Academy of Sciences. Gilruth was named an honorary fellow in the American Institute of Aeronautics and Astronautics, a fellow in the American Astronautical Society, an honorary fellow of the Royal Aeronautical Society, and a member of the International Academy of Astronautics.

Gilruth has been honored with the highest awards given by the aerospace industry and academia — most notable are the Sylvanus Albert Reed Award from the Institute of Aerospace Sciences, U.S. Chamber of Commerce Great Living American Award, the Daniel and Florence Guggenheim International Astronautics Award of the International Academy of Astronautics, American Society of Mechanical Engineers Award, the City of New York Medal of Honor, Spirit of St. Louis Medal by the American Society of Engineers, several NASA Distinguished Service Medals and the President's Award for Distinguished Federal Service.

Gilruth also received the prestigious Goddard Memorial Trophy of the National Rocket Club, the Louis W. Hill Space Transportation Award, the Reed Aeronautics Award and the National Aeronautical Association and National Aviation Club's Robert J. Collier Trophy for "the greatest achievement in aeronautics and astronautics in America."

He was awarded honorary doctorate degrees from the University of Minnesota, the Indiana Institute of Technology, George Washington University, Michigan Technological University, and New Mexico State University. Gilruth became one of the first people installed in the National Space Hall of Fame.

AdVentures

CLASSIFIED

FOR SALE: Johnson V-6 outboard motor, 175 horsepower, stainless steel propeller, 362 hours, all controls, cables, wiring, etc. $2,500. Call 566-4421 or e-mail <gusscoff@widowmaker.com>.

FOR SALE: Bose 901 Series VI speakers with equalizer and pedestal stands. $725 or best offer. Call 766-2415 after 6 p.m.

FOR SALE: Kenmore washer and dryer, 11 years old, $250. Heavy duty string trimmer, $75. Five horsepower push mower, $75. Call 357-2340.

FOR SALE: Deluxe set of four lug, 14 inch mag wheel rims, very good condition, each in a box. $100 for the set of four. Call 865-1211.

FOR SALE: Brother Intellifax fax machine. Automatic cutter, redial and many other features. Includes original instruction manual and new roll of paper. $40. Call 868-9819.

WANTED: Room in a house or apartment within a few miles of Langley for a non-smoker two or three nights a week. Kitchen, phone and cable privileges not needed. Call 804-564-3892.

FREE TO GOOD HOME: Puppies. Labrador mix. Call 857-7510.

Colloquium Lecture Cancelled

The Colloquium lecture scheduled for Sept. 12 at Langley Research Center, "Recent Progress in Understanding Hurricanes," has been cancelled.

Emanuel

Kerry Emanuel, an American Meteorological Society fellow and professor of meteorology the Massachusetts Institute of Technology, will present the Sigma Series lecture, "Hurricanes in History and Science," as scheduled at 7:30 p.m. Sept. 12 at the Virginia Air and Space Center.

For more information about the lecture series, visit <http://shemesh.langley.nasa.gov/Lectures/> on the Web.

Alumni Association To Meet Sept. 12

The NACA/NASA Alumni Association will meet at 11:30 a.m. Sept. 12 in the private dining room of the Langley Research Center cafeteria. Corp. Leo P. Flibotte Jr. of the Hampton Police Department will speak about "Stealing Your Identity." For more information, call George Brooks at 868-6013.

Employees Invited To Techfest 2000

International Communications Corporation has invited Langley Research Center employees to attend Techfest 2000, which will take place Sept. 27-28 at the Sheraton Waterside Hotel in Norfolk.

The event will include a variety of speakers, including Mark Imbriaco, vice president of HTML.com, who will speak about "Building High Performance Web Environments" and Chuck Popelka of the General Services Administration (GSA), who will speak about "Strategic Acquisitions with GSA's Ultimate Awards."

Employees wishing to attend should contact DeAnna Lawrence at ext. 42594. Time spent at the conference should be charged to J.O. B1005.

Wind Tunnel University Offers Class

Langley Research Center's Wind Tunnel University will offer the course, "Statistical Quality Control for Measurement Assurance — Applications to Ground Testing," from 8 a.m. to 3 p.m. Oct. 2-5 in Bldg. 1194A, Room 206. The instructor will be Michael J. Hemsch.

To view a course description and register for the course online, visit <http://class.larc.nasa.gov/cgi-bin/wtu/wturegular/index.cgi?aio>.

Musicians Needed For CFC Event

Langley Research Center's Combined Federal Campaign (CFC) Committee is recruiting musicians to perform during this year's weeklong kickoff. Musicians are needed to perform for one-hour periods at special lunchtime events planned the week of Oct. 2-6. To volunteer, contact James Fields at ext. 45565 or <j.fields@larc.nasa.gov>.

CPR Recertification

Langley Research Center's Employee Development Branch will offer a CPR recertification course from 9 a.m. to noon Oct. 23 in the Hampton Room of the H.J.E. Reid Conference Center.

To register, submit an Application For On-Site Training (NASA Langley Form 24) to DeAnna L. Lawrence at Mail Stop 309 or to fax ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

LAA Seeking Nominations

Langley Research Center's Activities Association (LAA) is seeking nominations for the following positions: secretary/treasurer, chairperson (socials, arts and crafts) and chairperson (clubs and leagues).

The persons elected to the positions will serve two-year terms on the LAA Executive Board. The LAA Board meets formally twice a month and typically meets informally or in committees weekly to conduct business and operations of the LAA and its organizations.

Nomination forms and position descriptions are available at the LAA Office in Langley's H.J.E. Reid Conference Center. Nominations must be returned to the LAA office no later than Oct. 6. Voting ballots will be mailed to all employees on Nov. 3, and election results will be announced on or about Dec. 8. For more information, call the LAA office at ext. 46369.

Centennial Of Flight Web Site Debuts

The Centennial of Flight Commission recently unveiled its Web site with a starting suite of information for aviation enthusiasts, educators, students and all those who may be planning projects and activities to help the country celebrate the 100th anniversary of the Wright Brothers' first powered flight on and around Dec. 17, 2003. The Web address is <http://centennialofflight.gov/>.

Center Snapshot

Jannie Davis has worked at Langley Research Center for six years, most recently as a technical information specialist in the Technical Library. She grew up in Georgetown, S.C., and worked as a base librarian at U.S. Air Force libraries in Germany and Italy before coming to Langley. Davis is an active member of Langley's Federal Women's Program Committee, the Virginia Special Libraries Association, the American Libraries Association and several community organizations. In her free time, she enjoys the theater, reading, gardening, traveling and photography. What does she like about working at Langley? "Langley has the best scientific resources in library science that I have ever experienced," she says. "Employees at NASA are also given an opportunity to pursue their education in various careers."

Photo by Jeff Caplan

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Researcher News

Longtime Langley Supporter Rep. Herbert Bateman Passes Away ... Story On Page 6

National Aeronautics and Space Administration
Langley Research Center

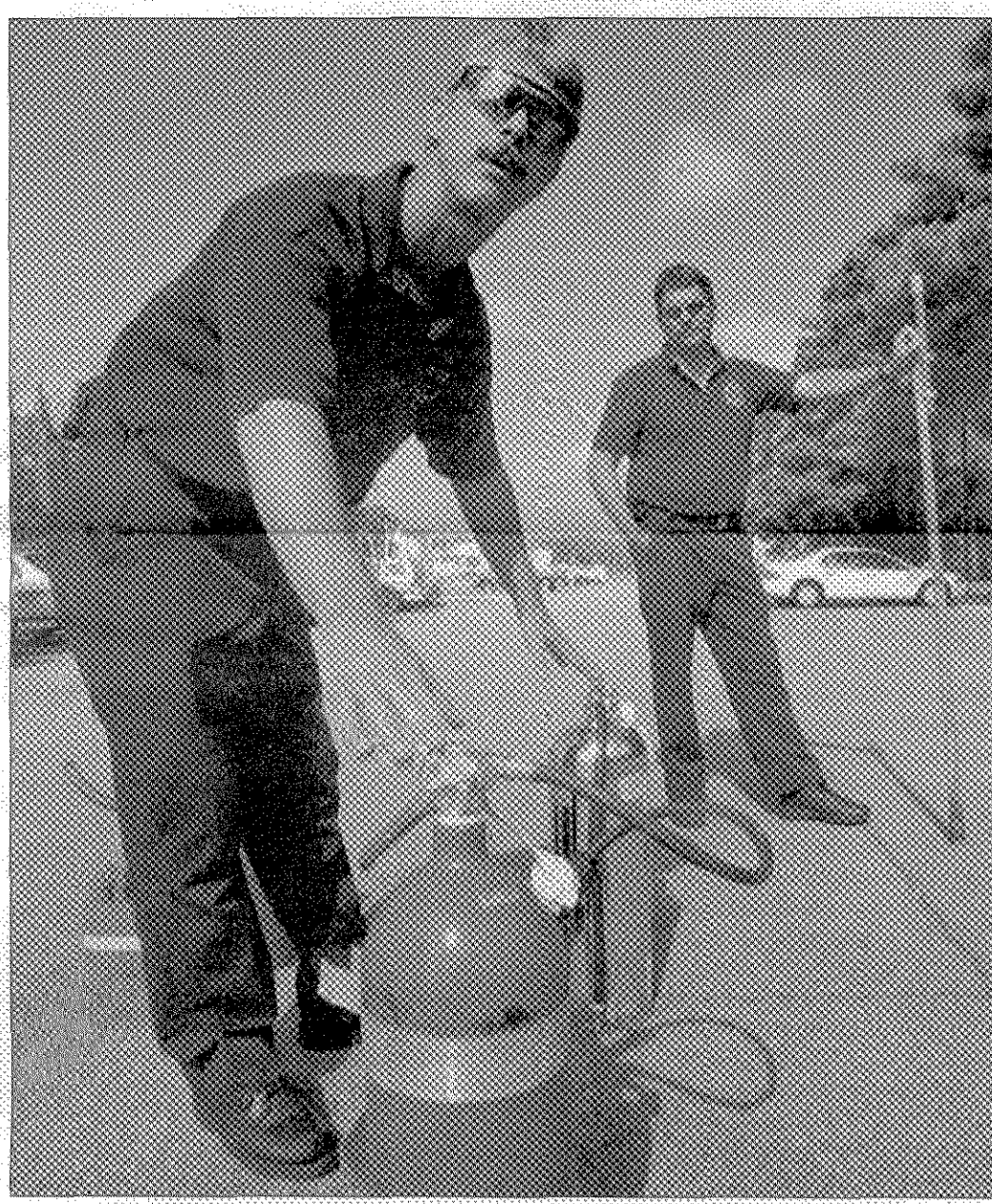
News Researcher

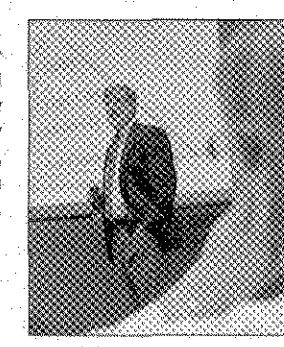
Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 19 ❖ Sept. 22, 2000

Safety Stand Down

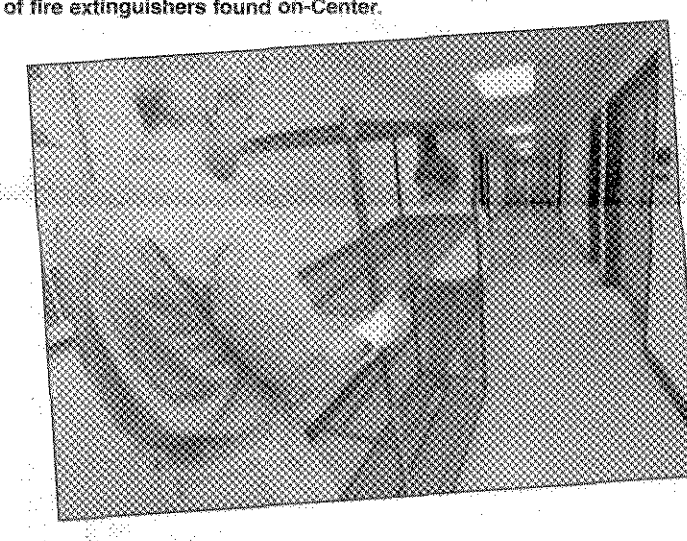
Center Commits Sept. 12 To A Variety Of Safety Activities

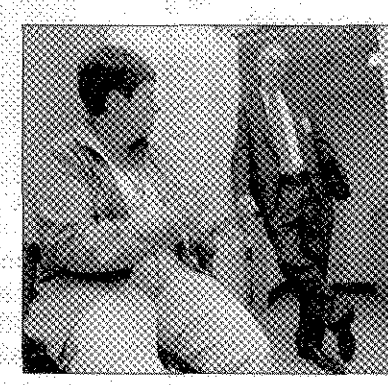




Right: Langley Research Center Director Dr. Jeremiah F. Creedon kicks off the Center's Safety Stand Down Day activities in the H.J.E. Reid Conference Center. Creedon was followed by John Casper, the Director of Safety, Reliability and Quality Assurance at Johnson Space Center, who spoke about the International Space Station and safety culture at DuPont.

Left: James Csuhta and David Page, firefighters from the Hampton Fire Department assigned to Langley, demonstrate how to use the three types of fire extinguishers found on-Center.





Above: Structures and Materials Competency employees James Dezern and Crystal Topping carry a metal shelf back inside Bldg. 1293C after taking it outside to be cleaned.

Left: Alan Phillips, the Head of Langley's Office of Safety and Facility Assurance, listens to some safety issues Ann Bare has about her Research Facilities Branch workplace during his afternoon tour of the Center.

Photos by Jeff Caplan

Sept. 22 Is Diversity Day

Langley Research Center's Multicultural Leadership Team (MCLT) will host the Center's First "Diversity Day" from 11 a.m. to 3 p.m. Sept. 22.

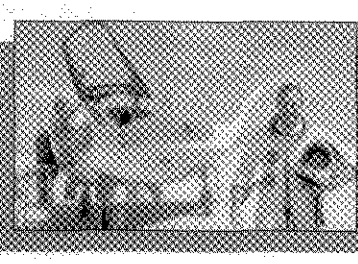
The celebration will highlight the diverse ethnic cultures that comprise Langley's workforce and will include performances by various cultural groups, a cultural attire fashion show, information booths, crafts displays and free samples of ethnic foods.

Lee Beech, a former Deputy Director of Langley, will kick off the activities at 11 a.m. in the H.J.E. Reid Conference Center.

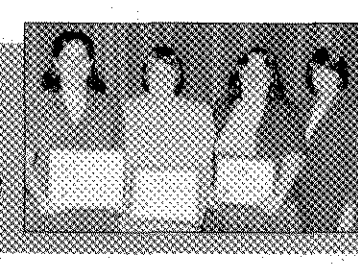
Employees who attend any "Diversity Day" activities can charge their time to B1000. For more information, contact James Fields at ext. 45565.

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

Inside This Issue:



William Dana To Deliver October's Colloquium *Page 3*



FWPC Hosts Annual Awards Ceremony *Page 3*

News Briefs

Around the Agency

QUIKSCAT SATELLITE WILL IMPROVE FORECASTING

Tropical storms churning into potentially dangerous hurricanes often hide behind a cloak of clouds. But NASA has given forecasters a new way to peek under the covers and identify storms much faster.

Scientists traditionally rely on satellite pictures to study the telltale swirl of clouds of a forming storm. However, the SeaWinds instrument aboard the QuikSCAT satellite can look through the cloud cover and measure winds at the ocean's surface.

According to a new study by National Oceanic and Atmospheric Administration (NOAA) and NASA researchers expected to be published in a major scientific journal, SeaWinds can detect the closed circle of winds that characterize a tropical depression up to 46 hours sooner than conventional means.

QuikSCAT data are available from NOAA's National Environmental Satellite and Information Service on the Internet at <http://manati.wwb.noaa.gov/quikscat/>. Information on NASA's Oceanography program can be found at <http://oceans.nasa.gov>. RELEASE: 00-139

COMPUTER REVEALS JUPITER'S HOT SPOT WINDS

Waves of up-and-down winds that span great ranges in air pressure may explain the surprisingly clear, dry areas near Jupiter's equator, new research based on data from NASA's Galileo entry probe indicates.

Scientists have been trying to understand the stability of these clear "hot spots" ever since the probe plunged into one of them nearly five years ago.

Images of a Jupiter hot spot and information on the Galileo mission are available at <http://www.jpl.nasa.gov/pictures/jupiter>. RELEASE: 00-138

LARGEST-EVER OZONE HOLE OBSERVED

A NASA spectrometer has detected an Antarctic ozone "hole" (what scientists call an "ozone depletion area") that is three times larger than the entire land mass of the United States — the largest such area ever observed.

The "hole" expanded to a record size of approximately 11 million square miles on Sept. 3, 2000. The previous record was approximately 10.5 million square miles on Sept. 19, 1998.

TOMS ozone data and pictures are available on the Internet at <http://jwocky.gsfc.nasa.gov/TOMSmain.html>. RELEASE: 00-137

NASA COULD SAVE VANISHING LANGUAGES

The most up-to-the-minute language-instruction technology, used in the space program, may come to the rescue of some venerable old languages and cultures.

Native American educators are looking at technology from Johnson Space Center in their efforts to preserve and teach their peoples' languages. Johnson's Language Education Center, one of the largest and most advanced of its kind, teaches astronauts, Russian cosmonauts and others English, Russian and Japanese.

Vernon Finley and Johnny Arlee, language instructors at Salish Kootenai College on the Flathead Indian Reservation at Pablo, in northwestern Montana, recently visited the language center. RELEASE: 00-135

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

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Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

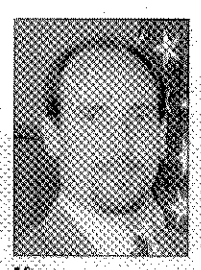
Professional Development Program Graduates

NASA Administrator Daniel S. Goldin (center) congratulates Langley Research Center's 2000 Professional Development Program (PDP) graduates during a recent ceremony at NASA Headquarters. The Langley graduates are (left to right) Sandra Smalley, Wendell Ricks, Joan Funk and Charles Monroe Jr. The goal of the PDP is to provide future NASA leaders with a broader perspective of NASA and an understanding of the impact of its programs. Participants in the PDP are competitively selected by their Centers and engage in a year-long intensive leadership development process that combines developmental work assignments, leadership development workshops, briefings by NASA leadership, targeted training opportunities and individual coaching. More information about the PDP is available online at <http://www.hq.nasa.gov/office/codef/codeft/pdp/>.

Photo by Bill Ingalls/NASA Headquarters

Moses Receives NAMRAD Award

Robert Moses of Langley Research Center's Aeroelasticity Branch recently received an International Group Achievement Award from the Subcommittee on Non-Atomic Military Research and Development (NAMRAD).



Moses

As the lead NASA engineer for buffeting alleviation investigations, Moses played an instrumental role in the joint U.S. Air Force/The Technical Cooperation Program (TTCP) F/A-18 full-scale buffeting alleviation ground test program. Moses was a member of an international team with members from the U.S., Canada and Australia, whose objective was to demonstrate the application of active piezoelectric actuators to suppress unwanted aircraft structural response.

Center Seeks Medal Nominations

Langley Research Center is seeking nominations for the National Medal of Technology, the highest honor bestowed by the President of the United States to America's leading innovators.

Since 1985, the National Medal of Technology has been awarded annually to individuals, teams or companies for accomplishments in the innovation, development, commercialization and management of technology as evidenced by the establishment of new or significantly improved products, processes or services.

The purpose of the National Medal of Technology is to recognize technological innovators who have made lasting contributions to enhancing America's competitiveness and standard of living. The medal highlights the national importance of fostering technological innovation based upon solid science, resulting in commercially successful products and services.

Nomination packages are available online at <www.ta.doc.gov/MEDAL>. Langley nominations should be submitted to Sherry Sullivan at Mail Stop 200 by Dec. 1. For more information about the award, contact Sullivan at ext. 42556 or <s.l.sullivan@larc.nasa.gov>.

Retirement

Langley Research Center's Model Systems Branch will host a retirement social honoring **Judy Ferris** at 6:30 p.m. Oct. 2 at Ryan's Family Steakhouse in Newport News.

The cost of $15 per person includes dinner, dessert and a gift contribution. (Gift-only contributions are welcome.) RSVP with payment by Sept. 22 to Ray Rhew at ext. 44705, Joanna Clark at ext. 44649 or Tom Finley at ext. 44660.

Retirement album signature sheets are available in Bldg. 1230 Room 127B.

In Memoriam

Winnie McLean Askew

Winnie McLean Askew died on Sept. 8 at the age of 74. Askew, a native of North Carolina, was a NASA retiree.

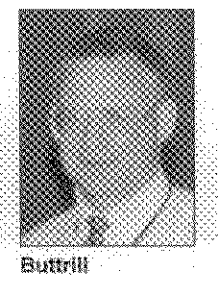
Clyde Leslie Tillotson

Clyde Leslie Tillotson died on Aug. 31 at the age of 91. Tillotson, a native of Overton, Neb., retired from NASA as an electronic technician in 1971 after 30 years of service. He was the recipient of the NASA Apollo Achievement Award and the Langley Research Center Honorary Suggestion Award.

FWPC Honors Five Employees

By PATSY L. CAMPBELL
Office of Equal Opportunity

Amer


Buttrill

Langley Research Center's Federal Women's Program Committee (FWPC) hosted its Women's Equality Day Program and annual Awards Ceremony on Aug. 24 in the the H.J.E. Reid Conference Center.

The recipient of FWPC Employee of the Year Award was Tahani Amer, an aerospace technologist in the Instrumentation Systems Development Branch. She was nominated by Michael Mitchell.

The other nominees were: Nancy M. Holloway of the Electronics Applications Technology Branch and Josephine L. Sawyer of the Management Support Office.

The recipient of the FWPC Supervisor of the Year was Carey S. Buttrill, head of the Systems Development Branch. He was nominated by Debbie Martinez.

The other nominees were: Lois H. Breen of the Facilities Technical Support Branch, Peggy W. Harmon of the Electronics Applications Technology Branch, Jill M. Marlowe, of the Structural and Thermal Analysis Branch, and William C. Salyer of the Library and Media Services Branch.

Three FWPC representatives also were recognized for their exemplary service to the Center and the FWPC: Debbie Martinez, Catherine Morris and Sandra Zumbrun received Outstanding FWPC Representative of the Year Awards.

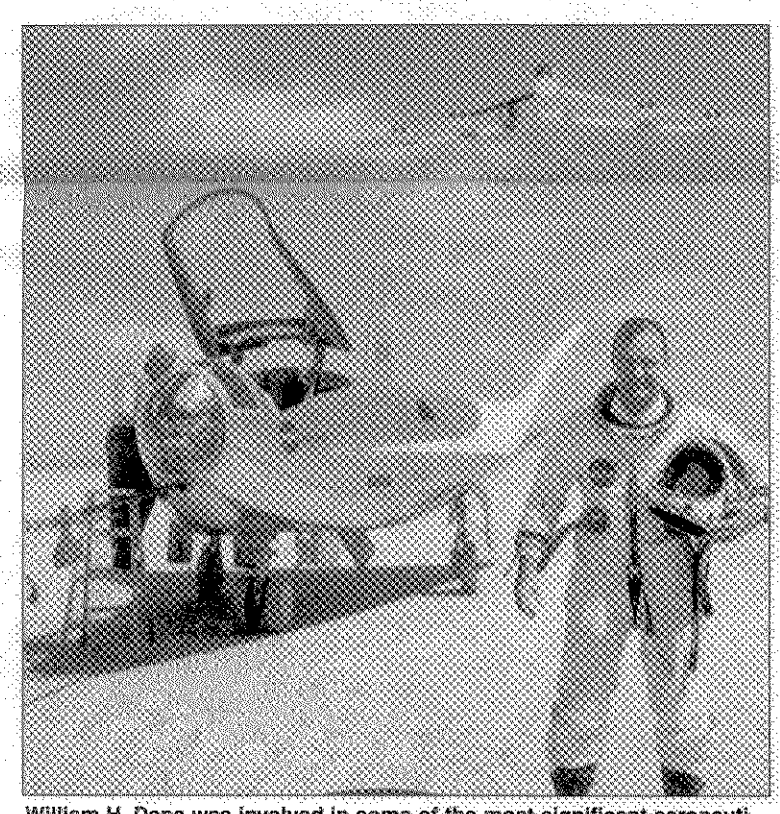
The Hon. Mamie E. Locke, mayor of the City of Hampton and a dean at Hampton University, was the guest speaker at the event.

Federal Women's Program Manager Patsy Campbell (right) presents the Outstanding FWPC Representative of the Year Award to Debbie Martinez, Catherine Morris and Sandra Zumbrun.

Photo by Sandie Gibbs

Colloquium and Sigma Series Lectures

William Dana On 'The Lifting Bodies'


William H. Dana was involved in some of the most significant aeronautical programs carried out at Dryden Flight Research Center, including the X-15 hypersonic research aircraft, the F-100 variable stability research aircraft and the F-18 High Angle of Attack research program.

William H. Dana will present a Colloquium lecture entitled, "The Lifting Bodies," at 2 p.m. Oct. 3 in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center.

The Talk

The manned lifting body program, which flew several versions of the wingless vehicles, produced data that helped in development of the Space Shuttle. Dana's talk will use slides and videos to describe the development of lifting bodies from their origins in the 1960s to current concepts.

Dana will describe the advocacy and flight test of the first piloted lifting body, a lightweight plywood version of the Ames Research Center-designed M2 shape. The talk also will document the flight test of the heavyweight M2 and of the NASA Langley lifting body, the HL-10, and the formation of a joint NASA/U.S. Air Force lifting body test force which tested the Air Force lifting bodies, the X-24A and X-24B.

The current Johnson Space Center lifting body, the X-38, and the Lockheed Martin X-33 also will be discussed.

The Speaker

Dana was Chief Engineer at Dryden Flight Research Center when he retired in 1998 after almost 40 years of service to NASA. During his career as a research pilot, Dana was involved in some of the most significant aeronautical programs carried out at Dryden, including the X-15 hypersonic research aircraft, the F-100 variable stability research aircraft and the F-18 High Angle of Attack research program. He was a project pilot on the manned lifting body program.

Upcoming Lectures

- **Nov. 7:** Ralph Merkle on "Nanotechnology."
- **Dec. 5:** Ronald Greeley on "The Galileo Mission to Jupiter."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

Dana received numerous awards for his contributions, including NASA's Distinguished Service Medal in 1997.

Dana received a bachelor's degree from the U.S. Military Academy and a master's degree in aeronautical engineering from the University of Southern California. He is a member of the Society of Experimental Test Pilots.

Web Database Makes Chemical Inventory Easier

By CHERYL HAWKINS
SAIC/Office of Security and Environmental Management

The Chemical Material Tracking System (CMTS) is an interactive, Web-based database developed for Langley Research Center to automate, consolidate and streamline the chemical material inventory process.

The primary mission of CMTS is to assist the Center in regulatory compliance and pollution prevention through enhanced chemical inventory control. CMTS is user-friendly, easily accessible and designed to assist in the day-to-day management and tracking of chemicals used at Langley.

Under CMTS, every chemical container, bottle, tube or drum requires its own container identification number and a corresponding CMTS record. These records will allow CMTS users to reconcile inventory, record and track the quantities of chemicals used and provide information to the Office of Security and Environmental Management Office for use in preparing environmental reports.

Since its inception, CMTS has continually made enhancements and improvements to better service its customers. Some of the latest improvements, based on customer comments and suggestions, have been in the Inventory Reports page. There are two report categories: Customize Reports and Quick Reports.

"Customize Reports" allows the user to create a report based on the information chosen. The user can select what information to search by and what fields will be displayed and in what order they will be displayed.

Under "Quick Reports" there are seven variations to choose from:

- **Inventory Reports** displays a report of your current or used inventory;
- **Summary By Location** displays the report by location;
- **Cylinder Inventory** displays only cylinder inventory items;
- **Bulk Container Inventory** displays only bulk container inventories;
- **MSDS's for Chemicals** displays inventory items by product or vendor;
- **RMP Summary** displays a Risk Management Plan Summary report; and
- **Audit Trail Report** displays the history of an inventory item.

All of the reports can be printed using an Internet browser's print option after the report has been created.

For help with these reports or to answer any of your CMTS questions, contact the CMTS helpdesk at ext. 49200.

Combined Fe

Campaign Will Tak
Langley's Goal Fo

With the arrival of September, many of us have sent children off to kindergarten, elementary school, high school or college, or maybe even to their first job. Many also eagerly anticipate those beautiful, crisp fall days that arrive in Tidewater with October.

Here at Langley Research Center, with the arrival of October, we also look forward to the annual Combined Federal Campaign (CFC). Each year, through our designated payroll deductions, the CFC enables us to give generously to our favorite health, emergency or community support groups — often with minimal impact to our biweekly take-home pay. The Campaign this year will run during the month of October, and our enhanced electronic pledge capability will again be available for your convenience.

The CFC Committee has selected a goal this year of $302,000 with an accompanying slogan of "Show the World Your Heart — Give Smart Through CFC."

As Chair of this year's Campaign, I solicit the support of each Langley employee in making this campaign the most successful ever!

With an overhead of just 11 percent, the CFC consolidates our many giving opportunities, validates participating groups or agencies and affords us the opportunity to give through payroll deductions.

During the 1999 Campaign, 54 percent of Langley's employees contributed an average of $252 each, just under $10 per pay period. These dollars flowed through the CFC to researchers around the country who are making progress against the many illnesses and chronic health problems that affect so many of our loved ones. They flowed to the community agencies that give support to those who have nowhere else to turn.

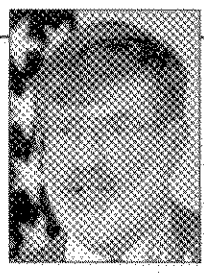
The kickoff for this year's campaign is planned during lunch at the cafeteria on Oct. 3. Cafeteria regulars and "not so regulars" are invited to share in picnic fare, have a slice of cake on the CFC and take a few minutes to speak with several of the CFC agencies that will have exhibits.

We invite you to also look for announcements for additional fund-raising activities that may occur to benefit the CFC during October. Proceeds from these activities will be undesignated.

Finally, we are all busy, and even though our intentions are good, we often forget to access the CFC electronic site to pledge — or see our key worker. Each week during October, the CFC Committee will send a friendly reminder through the Center's e-mail distribution — just in case your notice is under that stack of papers.

Again, we thank you for your support, and we look forward to working with each of you to make the Langley "October 2000" CFC Campaign the greatest yet!

Christine Darden
Langley CFC Chair



In my job as Director, I spend a lot of time talking about the outstanding contributions NASA Langley employees are making to the aerospace industry.

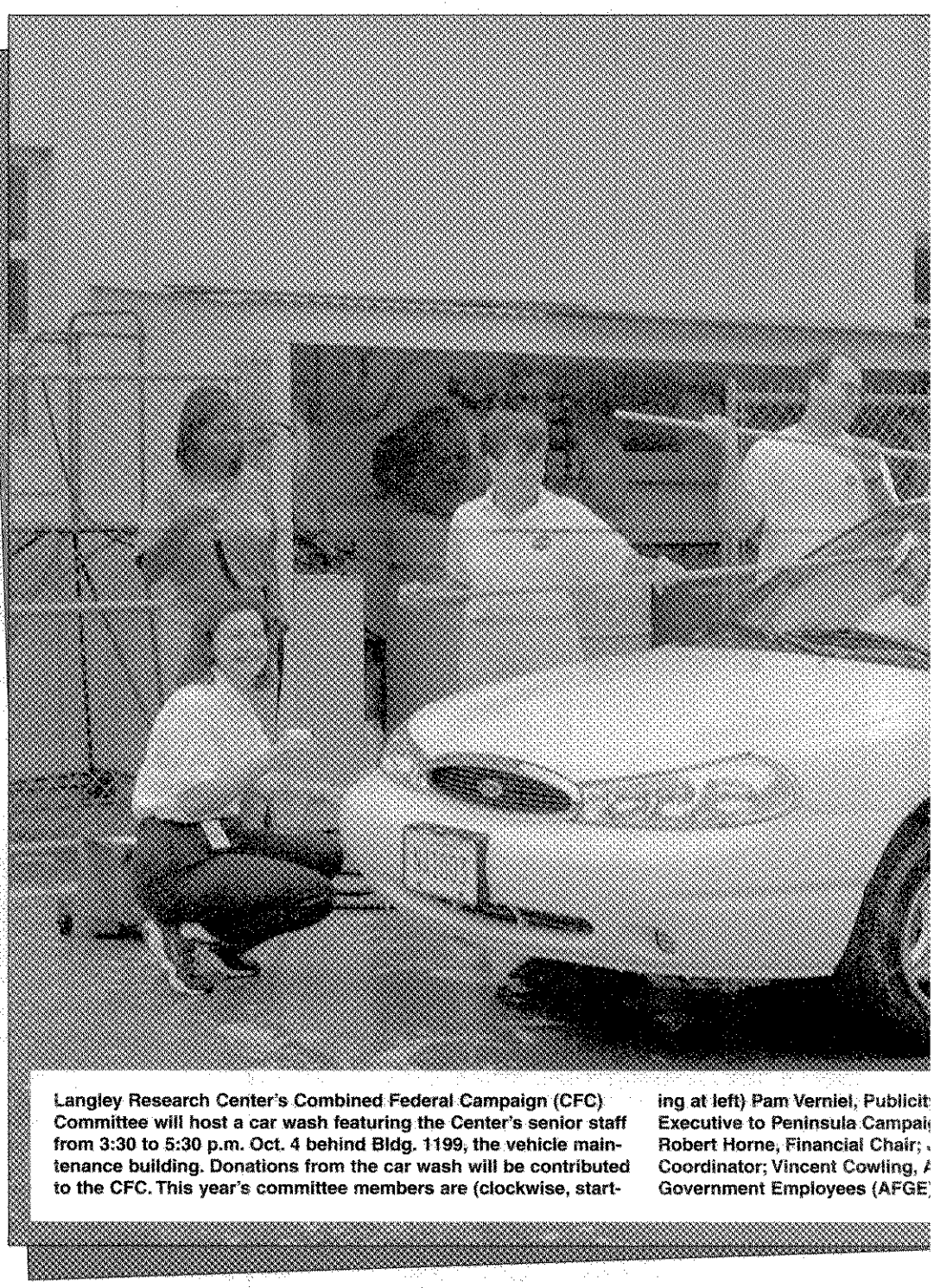
I realize, though, that the work done here on Center is just part of the very full lives you lead.

Many of you are leaders in your communities. Whether your involvement is in local government, school activities, church projects or civic organizations, one thing characteristic of Langley employees is your concern for others — for your families and friends, for your neighbors and co-workers, for those you don't even know personally but who need help. Earlier this month, more than 200 of you helped area citizens and non-profit agencies during the Day of Caring. I was extremely pleased with the Center's response to this call for help, but not surprised about your outpouring of generosity.

Through technology advancements, Langley employees have contributed to raising the quality of life for Americans and for people all over the world. I challenge each of you to join me this year to help raise the personal quality of life for those who need help. This is easily done by participating in the Combined Federal Campaign (CFC).

This year's goal of $302,000 is challenging. We at Langley have a history of thriving on challenges. This year's theme is aptly chosen: " Show the World Your Heart — Give Smart Through CFC." If you have never participated in the CFC, consider what can be accomplished if each of us gives a little. If you always participate in the CFC, I urge you, again, to join me and give as generously as you can.

Dr. Jeremiah F. Creedon
Center Director



Langley Research Center's Combined Federal Campaign (CFC) Committee will host a car wash featuring the Center's senior staff from 3:30 to 5:30 p.m. Oct. 4 behind Bldg. 1199, the vehicle maintenance building. Donations from the car wash will be contributed to the CFC. This year's committee members are (clockwise, starting at left) Pam Verniel, Publicit Executive to Peninsula Campai Robert Horne, Financial Chair; Coordinator; Vincent Cowling, A Government Employees (AFGE

Employees Encouraged To

http://cfc.la

The mission of the Combined Federal Campaign (CFC) is to support and promote philanthropy through a program that is employee-focused, cost-efficient and effective in providing all federal employees the opportunity to improve the quality of life for all.

The CFC is the only authorized solicitation of employees in the federal workplace on behalf of charitable organizations. **All federal employees have the right to contribute or not to contribute to the CFC.**

Through your designation, you ensure that your donation goes to meet those needs that you feel are most important. You may make your choice by designating up to five organizations as listed in the electronic pledge brochure. If you choose not to designate to a specific agency, your contribution will still be accepted. Funds contributed to the CFC but not designated to a specific organization or federation will be distributed to all organizations in the CFC brochure in the same proportion they received in des-

eral Campaign

Place In October; 2000 Is $302,000

; Angela Mason, Loaned
istine Darden, Chair;
Fields, Musician
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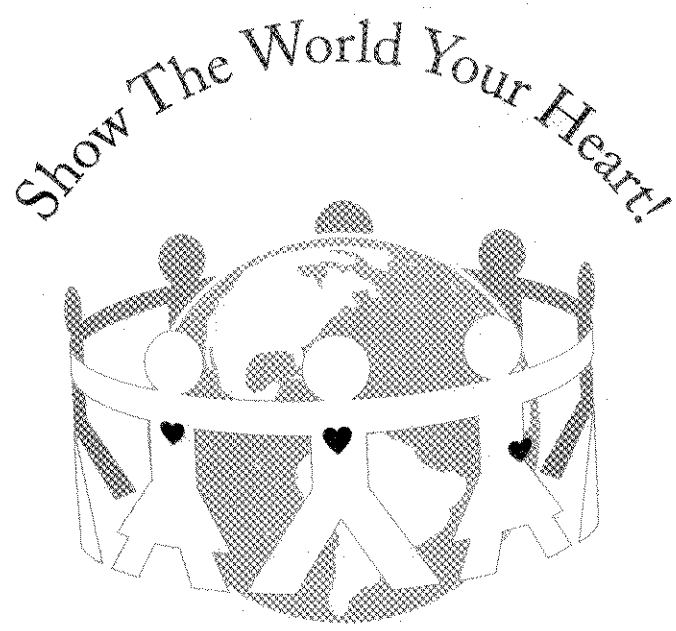
sentative; Richard Bennett, International Association of Machinists (IAM) Representative; Fran Sleigher, Information Systems Lead; Kathy Kurke, Vice Chair; and Marcella Hogge, Recorder. Karen Credeur, the liaison to the Peninsula CFC, was not present for the photo.

Photo by Peggy Hopkins



Give Smart

■ The CFC Kickoff, "Picnic on the Patio," will take place from 11 a.m. to 1 p.m. Oct. 3 on the grounds of the Langley Cafeteria. A $5 meal will include grilled chicken, choice of two side dishes (baked beans, cole slaw, potato salad and corn cobbettes), choice of beverage (soft drinks or bottled water) and ice cream. A portion of the proceeds will be donated by the Cafeteria to the CFC.

Complimentary cake also will be served in the Cafeteria, and 15 CFC agencies will be represented.

The rain date for the Kickoff is Oct. 4.

■ The following musical acts will perform during the CFC Kickoff Week: Oct. 3, Langley employees **James Fields, Clyde Gumbert, Nick Kepics** and **Mike O'Hara**, collectively known as the Red Shift Jazz Band, from 11 a.m. to noon, and an act to be announced from noon to 1 p.m.; Oct. 4, Langley employee **Mark Calvin** from 11 to 11:30 a.m., Langley employee **David Hamilton** from 11:30 a.m. to noon, and the U.S. Continental Amy Band Jazz Combo from noon to 1 p.m.; Oct. 5, Langley employees **Jeff Hinkey** and **Kevin O'Brien** from 11 to 11:30 a.m., and keyboardist Steve Kolb from 11:30 a.m. to 1 p.m.; Oct. 6, Steve Kolb from 11:00 a.m. to noon, and an act to be announced from noon to 1 p.m.

■ The CFC videotape will be shown at 4, 6 and 10 a.m., noon, and 1, 2, 4 and 7 p.m. Oct. 2 through 31 on Channel 7. The video is six minutes long. Key workers should use this videotape as an introduction during their meeting with employees to explain how contributions can be made electronically to the CFC.

■ A CFC car wash will take place from 3:30 to 5:30 p.m. Oct. 4 behind Bldg. 1199.

Messages From The IAM and AFGE Unions ...

The International Association of Machinists Union strongly supports the Combined Federal Campaign and recognizes all of its community assistance programs.

The union has always endorsed the services provided by the CFC. Each and every agency fills an important need. Therefore, the IAM membership has collectively agreed to 100 percent participation.

Richard W. Bennett
President,
International Association of Machinists, Local 2829

The American Federation of Government Employees has always proudly endorsed the Combined Federal Campaign at Langley Research Center. This year is no exception to that tradition.

Just as it is an American tradition to help one another in times of need, through the CFC, we can work together to make a real difference in the lives of people in the Tidewater area. AFGE would like to urge everyone to give generously and from the heart to this year's CFC.

Marie F. Lane
Vice President,
AFGE, Local 2755

Pledge Using Online Form

nasa.gov/

ations.
CFC key people in each organization will be
ilable to answer questions and will coordinate
lection of pledge forms output from the system.
curity is not a risk. Only Langley employees can
ess the online pledge form. Employees will be
en the option of entering either a badge number or
ial security number to identify their pledges.
The Peninsula CFC has also worked with local businesses to provide an additional incentive for employees to contribute to the campaign this year. A "GiveSmart" card will be issued at the end of the campaign to anyone who contributes a minimum of $100. The card offers discounts on food, entertainment and personal services. More than 80 local businesses are participating with discounts valid through Dec. 31, 2001.

The CFC brochure and pledge form will be available electronically during the month of October. Your organization's CFC key worker will provide instructions at that time for accessing the system.

In Memoriam: Herbert H. Bateman

'He Was A Good Friend To Langley'

Editor's note: *U.S. Rep. Herbert H. Bateman, whose failing health prompted him to announce his retirement from Congress this year upon the completion of his ninth term, died on Sept. 11 at the age of 72.*

Bateman, who graduated from Newport News High School, the College of William and Mary and Georgetown University Law Center, served in the U.S. Air Force during the Korean War and was discharged as a first lieutenant in 1953.

Before being elected to Congress, Bateman served in the Virginia Senate for 15 years. Throughout his career, Bateman was renowned for his support of NASA, particularly Langley Research Center, and the area's military installations.

By LEE RICH
Office of External Affairs

"America's First District" was the proud way U.S. Rep. Herbert H. Bateman always described the long Virginia mid-coastal region — from Fredericksburg to Newport News — he represented in Congress for 18 years.

Bateman felt a deep responsibility to take care of the First: its shipyard, its military forces and, with special affection, Langley Research Center, where his wife Laura worked years ago. And take care of the people and institutions of the First he did, right up to the time of his death.

Hard work was part of his character, as was civility and dignity. When faced with such possibilities as local base closures, loss of shipyard contracts or decreases in Langley funding, he would chart his course and comment, "Not if I have anything to say about it."

His high success rate in defending the First speaks for itself.

One year ago, when NASA's FY 2000 budget request was being savaged on Capitol Hill and Langley's very existence seemed threatened, Bateman used his considerable influence to play a major role in keeping Langley open and operating.

U.S. Rep. Herbert H. Bateman (left) is joined by fellow U.S. Rep. Bobby Scott during one of their frequent visits to Langley Research Center. Scott said of his late colleague, "Herb worked hard at being a good legislator. Most members now work hard at being good politicians."

File photo

Asked to comment following Bateman's death, Center Director Dr. Jeremiah F. Creedon said, "Herb Bateman was a good friend to NASA Langley. He understood the importance of our work and often took the initiative to champion our efforts."

'All of us here have reason to be greatly indebted to Bateman.

Third District Representative Bobby Scott said of his late colleague, "Herb worked hard at being a good legislator. Most members now work hard at being good politicians."

Expressions of respect for Bateman — his integrity, his loyalty, his grasp of complex issues, his willingness to do all he could when the cause was just, his love of family, his good heart, his dignified gentlemanly manner — have come from all those who knew him. We at Langley were fortunate to be counted among his friends.

Lee Rich is Langley's Congressional Affairs Officer.

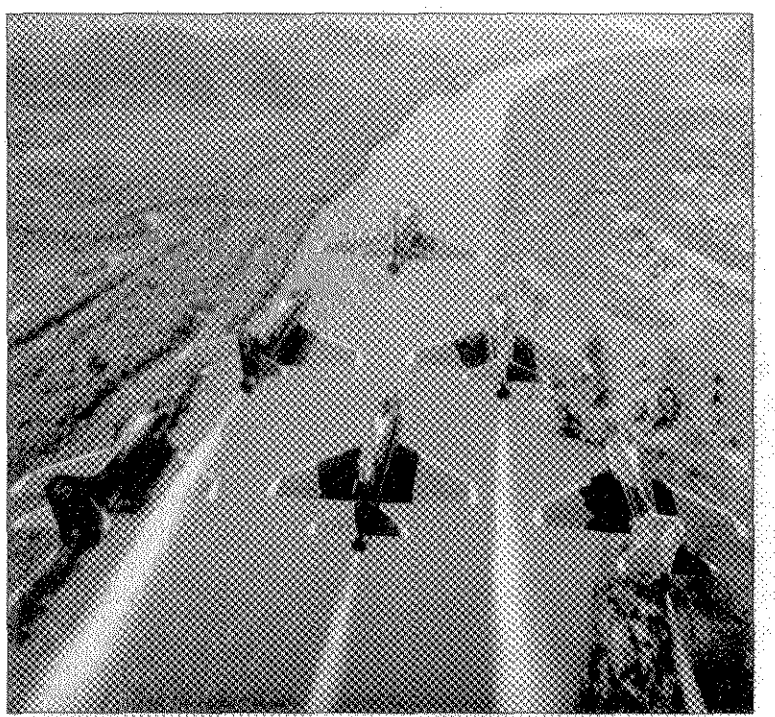
"I am personally saddened, as is the entire NASA family, to learn of the passing of Congressman Herb Bateman.

"Congressman Bateman was devoted to America's air and space program. It was my honor as NASA Administrator to work with him for nearly a decade. Herb Bateman was always there for the nation's aeronautics and space program. He consistently placed the interest of America above all else. He was an ardent supporter of the important aeronautics and space programs conducted by the NASA Langley Research Center. He was a strong advocate for aggressive efforts to improve aircraft safety, efficiency and performance, with benefits ranging from individual aircraft to the entire airspace system. During this Congress, he provided the leadership supporting a decision by the House Transportation and Infrastructure Subcommittee on Aviation to hold an unprecedented hearing on the future of aerospace transportation, which provided an opportunity for the Committee, industry and the public to understand the goals and challenges in developing long-range technology to meet this nation's aerospace transportation requirement.

"Congressman Herb Bateman devoted constant time and energy working to improve America's aerospace capabilities. He will be sorely missed by the Langley Research Center, NASA and America."

Daniel Goldin
NASA Administrator

VASC Hosting 16-Week IMAX Fall Film Festival



The Blue Angles are featured in the IMAX film "To Fly," which will show as a double feature with "The Magic of Flight" from Oct. 26-29 at The Virginia Air and Space Center.

The Virginia Air and Space Center (VASC), Langley Research Center's official visitor center, will close out 2000 with the 16-week IMAX Fall Film Festival.

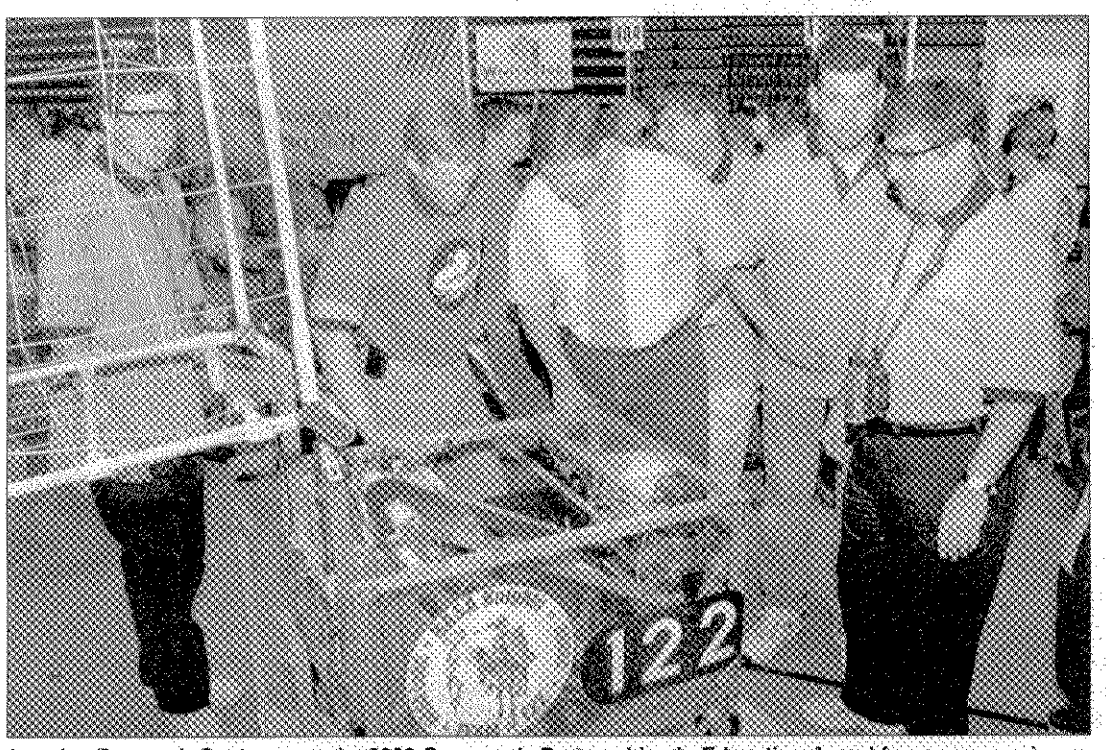
Now through Dec. 31, VASC will present a double feature at 7:30 p.m. every Thursday, Friday, Saturday and Sunday.

The festival began on Sept. 14 and already featured "Ring of Fire" and "Fires of Kuwait." The remaining schedule is:

- Sept. 21-24, "Stormchasers" and "Everest."
- Sept. 28-30 and Oct. 1, "Titanica." ("Titanica" is 90 minutes long and is considered a double feature.)
- Oct. 5-8, "Grand Canyon: The Hidden Secrets" and "Mysteries of Egypt."
- Oct. 12-15, "SolarMax" and "Cirque du Soleil: Journey of Man."
- Oct. 19-22, "Amazon" and "Alaska: Spirit of the Wild."
- Oct. 26-29, "To Fly" and "The Magic of Flight."
- Nov. 2-5, "Special Effects" and "Thrill Ride: The Science of Fun."
- Nov. 9, 10 and 12, "Wolves" and "Speed." (There will be no show on Nov. 11.)
- Nov. 16-19, "Africa: The Serengeti" and "Alaska: Spirit of the Wild."
- Nov. 23-26, "Titanica."
- Nov. 30 and Dec. 1-3, "Fires of Kuwait" and "Ring of Fire."
- Dec. 7-10, "Grand Canyon: The Hidden Secrets" and "Mysteries of Egypt."
- Dec. 14-17, "Michael Jordan to the Max" and "To The Limit."
- Dec. 21-23, "SolarMax" and "Cirque du Soleil: Journey of Man." (There will be no show on Dec. 24)
- Dec. 28-31, "Alaska: Spirit of the Wild" and "Everest."

Visitors will be given a "frequent viewer card" that will be punched each time they see a double feature that is part of the IMAX Fall Film Festival. Viewers will receive free popcorn after attending four double features and a free IMAX T-shirt after attending 10 double features.

Tickets for each double feature in the the film festival are $9 for adults and $7.50 for children. Senior citizens, military personnel and NASA employees will receive a 50-cent discount. Advance tickets may be purchased by calling 727-0900, ext. 703. For more information, visit <www.vasc.org>.



Langley Research Center earned a 2000 Governor's Partnerships in Education Award for co-sponsoring a robotics competition from March 23-25 at Virginia Commonwealth University in Richmond. Langley employee Jeff Seaton (second from left) was one of the people who led Langley's participation in the robotics competition.

Photo by Peggy Hopkins

Langley Receives Governor's Award

Center Shares Honor With Partners From March Robotics Competition

By ROBERT D. ALLEN
Office of Public Affairs

Langley Research Center received a 2000 Governor's Partnerships in Education Award on Sept. 19.

The Governor's Partnerships in Education Awards recognize the best partnership practices designed to improve students' academic achievement.

Langley, which shared the award with Virginia Commonwealth University's (VCU) School of Engineering and For Inspiration and Recognition of Science and Technology (FIRST), won for sponsoring a robotics competition from March 23-25 at VCU's Siegel Center in Richmond.

Eleven partnerships in five categories were selected for awards. The Langley-VCU-FIRST partnership won a Technology Partnership Award, which recognizes "exemplary local or regional partnership that supports the integration of technology into area schools in an effective, economical and sustainable way."

"Receiving the news of the Governor's award certainly made my day," said Jeff Seaton of Langley's Aerospace Systems, Concepts and Analysis Competency, one of the people who led Langley's participation in the robotics competition.

"This is great recognition of what NASA is doing to inspire our nation's next generation of inventors, scientists and engineers," Seaton said. "But the success of all those students last March was what really made all the hard work worthwhile for us."

Thirty-nine teams and their industry mentors came from as far away as Brazil to compete at the Richmond event, which was one of 10 FIRST regional events nationwide. The event was widely covered by media and broadcast on NASA TV.

Student robots from the March competition will be on display at the Virginia State Fair, which began on Sept. 21 and will continue through Oct. 1. According to Seaton, fair organizers asked to feature robots in the technology pavilion of this year's fair after seeing the March competition.

As a result, a scaled-down version of the arena will be constructed at the fair, and various teams from the competition will exhibit their machines each day. Langley and VCU sponsors will staff the exhibit and conduct demonstrations every two hours.

"Two things make this partnership successful," Seaton said. "One is the nature of the event — high school teams creating, inventing, problem-solving, engineering — it's remarkable. You have to be there to believe it.

"Secondly, this really is a partnership, no one carries the load alone," he said. "All of the people involved continue to put in amazing efforts to ensure that the NASA Langley-VCU regional event is one of the best in the country and exposes these kids to real-world engineering."

Seaton credits Langley's Aerospace Systems Concepts and Analysis Competency and the Aero-Performing Center Program Office for "making the regional competition happen."

Funding for the program came from the NASA Headquarters Office of Space Science's Robotics Education Project, led by David Lavery, who also delivered the keynote address at the competition.

'Here's Mud In Your Eye'

Local Girl Scouts Get Dirty In Hands-On Crater Program

By JULIA COLE
SAIC/Atmospheric Sciences Competency

More than 200 Girl Scouts attended the Chesapeake Bay Impact Crater Program on Aug. 25 at Langley Research Center. Designed to pique girls' interest in geology and in pursuing a career in the earth sciences, the day's activities were a joint outreach program of Langley, the U.S. Geological Survey, the Virginia Department of Environmental Quality (DEQ) and the College of William and Mary.

"We hope that this will lead to more women in the environmental and atmospheric sciences workforce," Len McMaster, director of Langley's Atmospheric Sciences Competency, said during the introductory presentation at the H.J.E. Reid Center.

The highlight of the program was a demonstration in which DEQ geologist Scott Bruce simulated a meteor or comet's collision with the Earth's surface by throwing ice clumps into a mud-filled child's swimming pool. As ice blasted into the mud layers, mud splashed on the Girl Scouts and spectators surrounding the pool.

The girls also viewed parts of the core that contained evidence of a fault, geologic contacts and numerous fossils important for determining ages.

"The live demonstration created a greater impact than only seeing a graphical depiction," said Arlene Levine, director of Outreach and Education for Langley's Atmospheric Sciences Competency.

> *"Females are an under-represented minority in the science workforce, especially in atmospheric science, and Girl Scouts presents a nurturing environment for girls to explore non-traditional studies."*
> **Arlene Levine**

"NASA, USGS and the VA DEQ all feel that informing and educating the public is important," Levine said. "Females are an under-represented minority in the science workforce, especially in atmospheric science, and Girl Scouts presents a nurturing environment for girls to explore non-traditional studies."

Organizers and volunteers used a combination of hands-on activities and discussions to engage the girls' participation and explain the events surrounding the Chesapeake Bay Impact Crater. In the initial presentation, Greg Gohn, Chief of the USGS' Chesapeake Bay Impact Crater Project, and Gerald Johnson, a geology professor at William and Mary, presented the historical geology of the Virginia Coastal Plain to provide background information for the impact.

Scott Bruce, a geologist with the USGS, throws ice into a mud-filled swimming pool, simulating the collision of the meteor or comet that created the Chesapeake Bay Impact Crater about 35 million years ago.

Photo by Sandie Gibbs

AdVentures

LAA Will Host TGIF Party Sept. 22

Langley Research Center's Activities Association (LAA) will host a TGIF Party from 4 to 8 p.m. **Sept. 22** at After Burners in the H.J.E. Reid Conference Center. The Country Ravens will perform, and representatives of Coors will be present with games and giveaways. For more information, call the LAA office at ext. 46369.

Astronaut To Speak At Langley

Astronaut Gus Loria, the Capsule Communicator on the most recent Space Shuttle mission, will give a Colloquium lecture on the construction of the International Space Station (ISS) at 2 p.m. **Sept. 25** in the H.J.E. Reid Conference Center.

Loria, a major in the U.S. Marine Corps, graduated from the U.S. Naval Academy and is currently pursuing a master's degree in aero engineering. He graduated first in all phases of flight training and was named Naval Test Wing Atlantic Test Pilot of the Year for '95-'96. He has more than 2,000 hours of flight time in more than 35 aircraft, including the X-31 and the F/A-18 High Alpha Research Vehicle. He also participated in physiology testing for the F-16XL program.

Loria is a member of the Society of Experimental Test Pilots, the Experimental Aircraft Association and the Aircraft Owners & Pilots Association.

Employees Invited To Techfest

International Communications Corporation has invited Langley Research Center employees to attend Techfest 2000, which will take place **Sept. 27-28** at the Sheraton Waterside Hotel in Norfolk.

The event will include a variety of speakers, including Mark Imbriaco, vice president of HTML.com, who will speak about "Building High Performance Web Environments," and Chuck Popelka of the General Services Administration (GSA), who will speak about "Strategic Acquisitions with GSA's Ultimate Awards."

Employees wishing to attend should contact DeAnna Lawrence at ext. 42594. Time spent at the conference should be charged to J.O. B1005.

Center Offering Measurement Class

Langley Research Center's Wind Tunnel University will offer the course, "Statistical Quality Control for Measurement Assurance — Applications to Ground Testing," from 8 a.m. to 3 p.m. **Oct. 2-5** in Bldg. 1194A, Room 206. The instructor will be Michael J. Hemsch.

To view a course description and register for the course online, visit <http://class.larc. nasa.gov/cgi-bin/wtu/wturegular/index.cgi?aio>.

CPR Recertification Offered

Langley Research Center's Employee Development Branch will offer a CPR recertification course from 9 a.m. to noon **Oct. 23** in the Hampton Room of the H.J.E. Reid Conference Center.

To register, submit an Application For On-Site Training (NASA Langley Form 24) to DeAnna L. Lawrence at Mail Stop 309 or to fax ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

CLASSIFIED

FOR SALE: 97 Chrysler Sebring. Dark green with tan convertible top, automatic, A/C, tan leather interior, ABS, 6-disc CD changer, power windows, locks and top, alloy wheels, 49,000 miles, great condition. $13,900. Call 440-8090.

FOR SALE: Johnson V-6 outboard motor, 175 horsepower, stainless steel propeller, 362 hours, all controls, cables, wiring, etc. $2,500. Call 566-4421 or e-mail <gusscott@widomaker.com>.

FOR RENT: Condo, first-floor unit with one bedroom and one bathroom. Available Oct. 2. $460 per month plus $200 security deposit. Call 827-6073.

LAA Turkey Shoot Planned Oct. 28

Langley Research Center's Activities Association (LAA) will host its annual Turkey Shoot from 9 a.m. to 1 p.m. **Oct. 28** behind the H.J.E. Reid Conference Center. The event will be open to all NASA and Air Force base employees and contractors and their families and friends. For more information, call the LAA office at ext. 46369.

Earned Value Management Classes

Langley Research Center's Employee Development Branch will offer two Earned Value Management courses in November:

■ "Earned Value Management Data Analysis" will be taught by Mary Clark of Goddard Space Flight Center from 1 to 4:30 p.m. **Nov. 12,** 8 a.m. to 4:30 p.m. **Nov. 30** and 8 a.m. to noon **Dec. 1** in Bldg. 1224 T7. The course will provide an in-depth, integrated approach to the use of earned value information and is targeted at specialists with a primary task of evaluation earned value management.

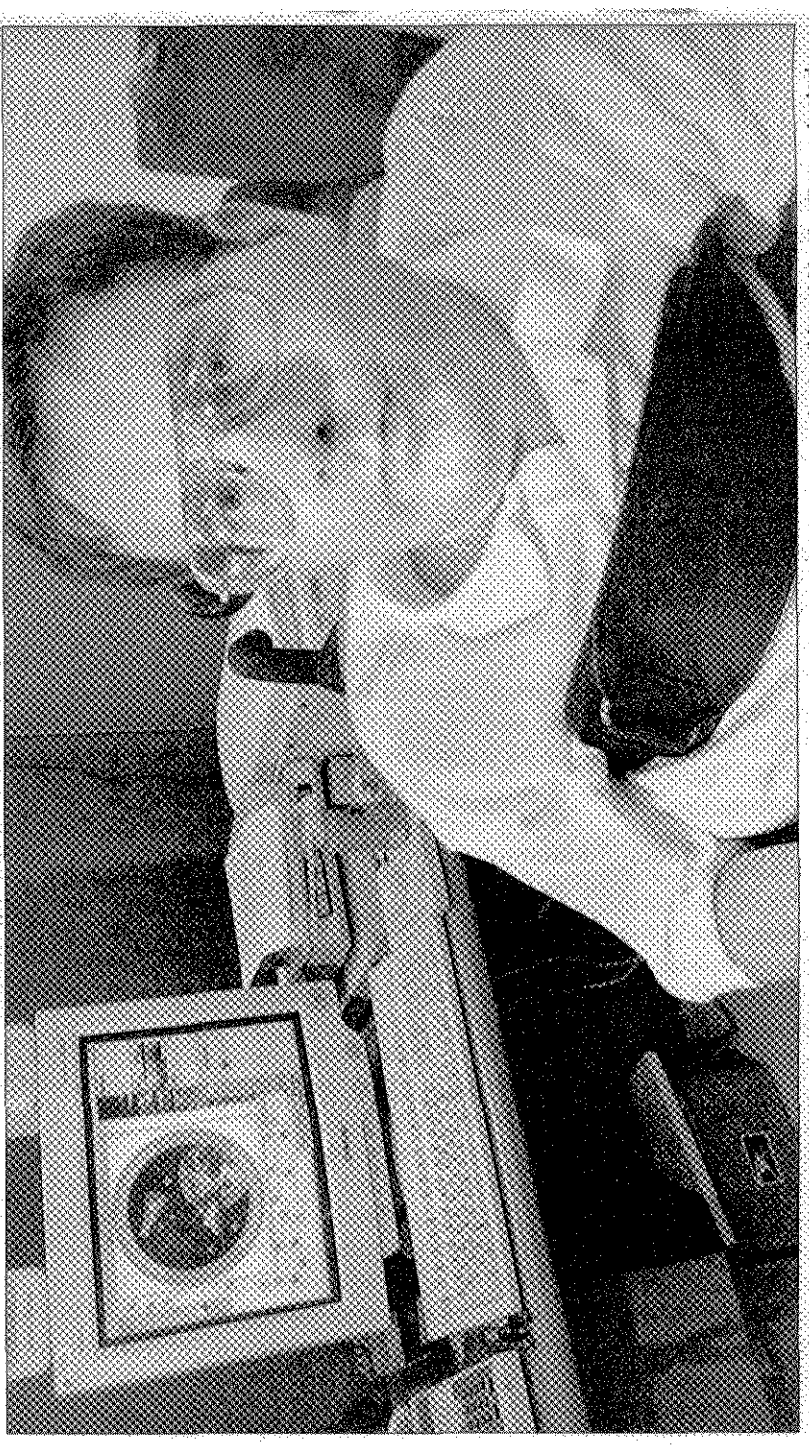
■ "Earned Value Management Basic Principles and Implementation" will be offered from 1 to 4:30 p.m. **Nov. 27,** 8 a.m. to 4:30 p.m. **Nov. 28** and 8 a.m. to noon **Nov. 29** in Bldg. 1224 T7. The course will introduce the concepts and principles of earned value management and the normal implementation processes for an organization.

To register for either course, submit an Application For On-Site Training (NASA Langley Form 24) by Oct. 4 to DeAnna L. Lawrence at Mail Stop 309 or to fax ext. 48543.

Bridge Club Announces Results

Results for the Langley Research Center Duplicate Bridge Club's Sept. 13 game were: first place, Bill and Nan Jones; second place, Ram and Sumi Prabhu; and third place, Judy Ferris and Tom Finley.

The next game will be played at 5:30 p.m. **Oct. 11** in the Langley Room of the H.J.E. Reid Conference Center. For more information, call Geoff or Marty Tennille at 850-1532.



Scott Warrington has worked at Langley Research Center for 11 years, most of them as a contractor for Lockheed Martin. He graduated from Old Dominion University with an associate's degree in computer science and took a co-op job at Langley Air Force Base doing dBaseIV programming. He is currently working as an illustrator for the Structures and Materials Competency. In his free time, the Poquoson resident enjoys collecting die-cast NASCAR models, watching science-fiction movies and surfing the Internet. What does he like most about working at Langley? "Good people to work for and always dealing with different things," he says.

Photo by Jeff Caplan

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 20 ❖ Oct. 6, 2000

R&D 100 Awards

Winning Teams This Year Raise Langley Tally To 33

By H. KEITH HENRY
Office of Public Affairs

Two Langley Research Center inventions — one, a dramatic improvement in aerospace materials; the other, a dramatic improvement in control of aerospace structures — have been named among the 100 most significant new technical products of 2000.

In different ways, each invention will lengthen the life and improve the performance of spacecraft or aircraft and promise to further improve quality of life on Earth through future consumer products.

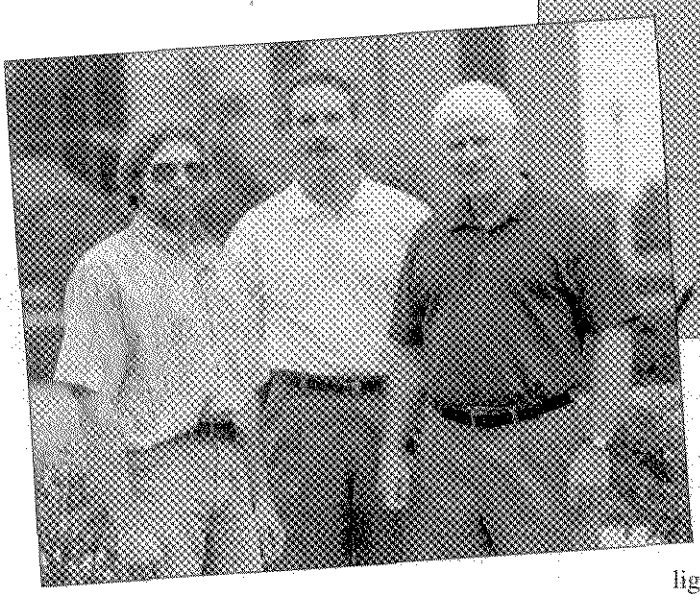
The inventors of the atomic-oxygen resistant TOR Polymers and the LaRC Macro-Fiber Composite actuator were awarded R&D 100 Awards from Research and Development Magazine on Sept. 27 at the Chicago Museum of Science and Industry.

Cosmic Protection

One of the Langley inventions is a class of aerospace materials that is highly resistant to the harsh extremes of low Earth orbit where an increasing number of satellites are being placed. These superplastics — called polymers — will provide an effective coating to spacecraft surfaces and protect them against erosion by atomic oxygen and damage from space radiation. This resistance translates to spacecraft components with longer lifetimes and reduced cost.

Langley's commercial partner, Triton Systems, Inc. of Chelmsford, Mass., has developed processing and fabrication techniques for the materials and manufactures them in the form of powder, adhesive tape, solution, fiber, thread, fabric and film. The fibers are twisted into thread that can be used to sew multi-layer thermal insulation blankets, woven into fabric and braided to make tethers. Large films can be metallized and used for solar arrays or inflatable space structures.

Triton markets its product under the TOR tradename. The materials have been selected for use on two NASA space missions scheduled for launch in the winter of 2000. They are presently under evaluation for several electronic applications because of inherent resistance to high voltage and arcing. The inventors of the atomic-oxygen resistant TOR Polymers are John Connell (principal inventor), Paul Hergenrother and Joseph Smith. Ross Haghighat and Peter Schuler of Triton Systems also contributed.



Above: The inventors of the LaRC Macro-Fiber Composite actuator are (front row, left to right) Keats Wilkie, Richard Heilbaum and Robert Fox; (back row, left to right) Antony Jalink Jr., James High, Paul Mirick, Robert Bryant and Bruce Little.
Left: The inventors of the atomic oxygen-resistant TOR Polymers are (left to right) Joseph Smith, John Connell and Paul Hergenrother.

Photos by Jeff Caplan

Smart Wings and Things

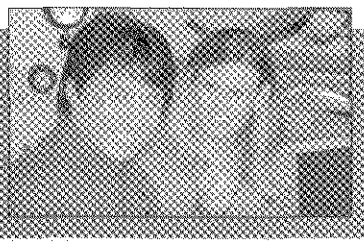
The second Langley invention is a super-sensitive actuator that has at least a dozen potential applications but is presently being evaluated for the control of vibrations in very large, flexible space structures. As envisioned, the lightweight composite actuators would be embedded in the framework of giant antennae or telescope mirrors. When low voltages are automatically applied, the actuators would eliminate vibrations and unwanted distortions in the shape of the deployed structure. With this technology, telescope mirrors would theoretically be large enough and stable enough to see planets orbiting other stars.

Closer to home, the same technology could allow airplanes to mimic birds by instantly reshaping the wing surface while in flight. A series of embedded actuators could adjust to flight conditions, improving performance and fuel efficiency of future aircraft.

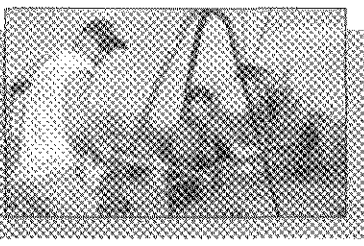
Similar actuators can be retrofitted to existing aircraft, naval, automotive or civil engineering structures for vibration damping and to increase structural life. They can also be integrated into aircraft passenger compartments, engine nacelles

Continued on Page 2

Inside This Issue:



Jackie Chan Visits To Tape 'CONNECT' Page 2



200 Employees Work At 2000 Day Of Caring Pages 4 and 5

News Briefs

Around the Agency

PHOTONS COULD PROMISE FASTER COMPUTERS

Defying traditional laws of physics, researchers may have found a way to blast through imminent roadblocks on the highway to faster and smaller computers.

Using modern quantum physics, a research team from NASA's Jet Propulsion Laboratory and the University of Wales in the United Kingdom has discovered that entangled pairs of light particles, called photons, can act as a single unit, but perform with twice the efficiency.

Using a process called "entanglement," the research team proposes that existing sources of laser light could be used to produce smaller and faster computer chips than current technology allows. RELEASE: 00-149

FOUNTAINS OF FIRE ILLUMINATE SOLAR MYSTERY

Giant fountains of fast-moving, multimillion-degree gas in the outermost atmosphere of the Sun have revealed an important clue to a long-standing mystery: the location of the heating mechanism that makes the corona about 300 times hotter than the Sun's visible surface.

Scientists discovered an important clue while observing immense coils of hot, electrified gas, known as coronal loops. These fiery, arching fountains now appear in unprecedented detail with NASA's Transition Region and Coronal Explorer (TRACE) spacecraft.

For images and more information, visit <http://www.gsfc.nasa.gov/GSFC/SpaceSci/sunearth/tracecl.htm> on the Internet. RELEASE: 00-146

EROS YIELDS SECRETS FROM BEFORE EARTH

The asteroid Eros is so ancient it could have witnessed the formation of the Earth, according to published findings from NASA's Near Earth Asteroid Rendezvous (NEAR) Shoemaker spacecraft.

Four scientific papers published in the Sept. 22 issue of the journal Science represent the largest one-time release of scientific data about Eros since the mission began. The NEAR Shoemaker spacecraft has been in orbit around the primitive Manhattan-sized asteroid since last February.

The NEAR Shoemaker Web site, <http://near.jhuapl.edu>, contains the latest results and high-resolution images and information. N00-045

NASA SIGNS BIOTECHNOLOGY AGREEMENT

NASA has entered into a groundbreaking agreement with the private sector to explore a new frontier in biotechnology, focusing on infectious disease research and developing a liver assist device for patients in need of transplant surgery.

Inspired by a news article on NASA's efforts to commercialize space activities, H. Fisk Johnson, president of the Wisconsin-based, private venture capital company Fisk Ventures, Inc. (FVI), approached the Agency about a partnership which culminated in an agreement to develop commercial medical products using NASA's Bioreactor technology.

"This is a great deal for the American people," said NASA Administrator Daniel S. Goldin. "It's a symbol of the success that can be achieved when government, private industry and academia work together on the exploration of new frontiers for scientific, technological and economic growth." RELEASE: 00-143

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

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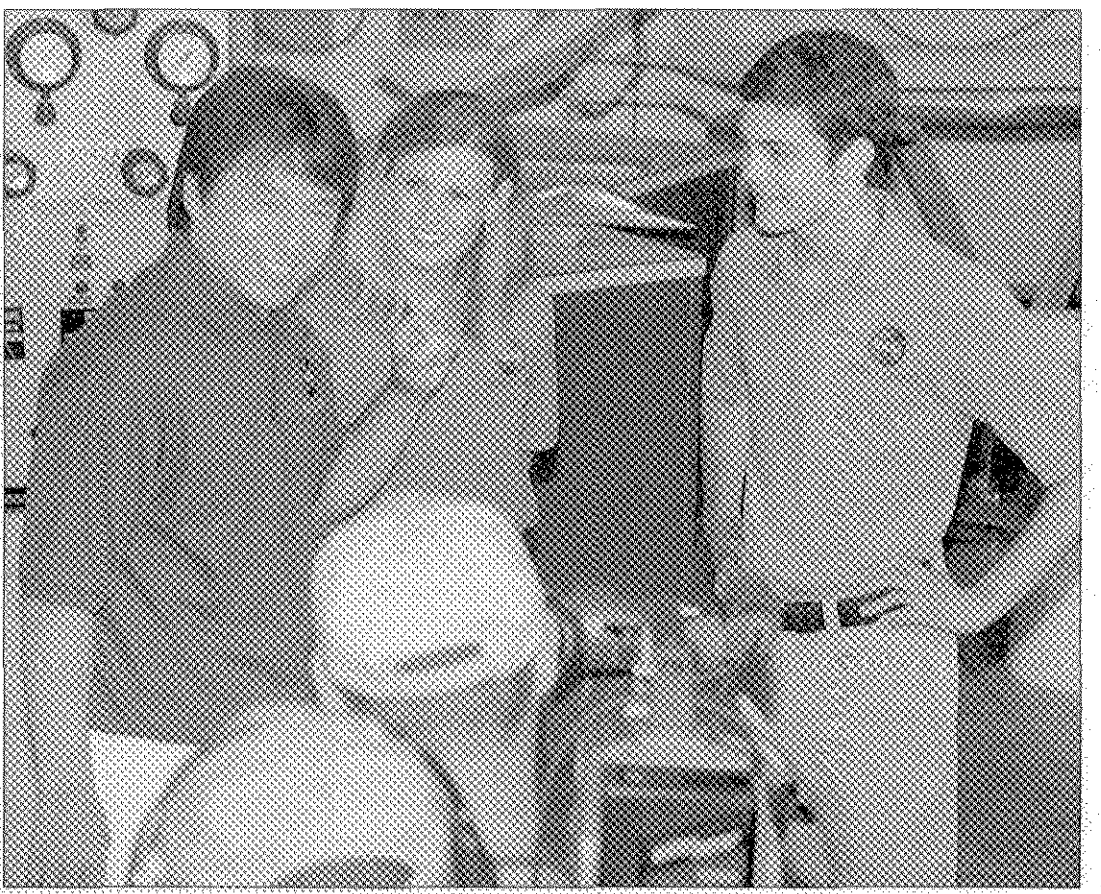
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Jackie Chan Visits



Film star Jackie Chan (left) visits Langley Research Center's 7-by-10 High-Speed Wind Tunnel on Sept. 25 to tape a "NASA CONNECT" episode with the show's co-hosts, Jennifer Pulley (center) and Van Hughes. The episode, "Geometry and Algebra: Glow With The Flow," will air on PBS stations around the country on Nov. 16.

Photo by Sandie Gibbs

HRS Earns Six AIAA Awards

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) recently announced that it has won six Section Awards for 1999-2000.

The Section Awards honor particularly notable performances made by a section of the Institute working as a unit and are intended to formally underscore the AIAA conviction that intellectually stimulating section activity is fundamental to a healthy Institute. A cash award and certificate are presented to each of the winning sections: first place, $400; second place, $200; third place, $100.

The first-place winners will be honored at the award luncheon of the 39th AIAA Aerospace Sciences Meeting and Exhibits on Jan. 9, 2001, in Reno, Nev.

The winners from the Hampton Roads Section of AIAA are:

- **John C. Lin**, first place, "Young Professional Activity Award."
- **Paresh C. Parikh**, first place, "Outstanding Section Award."
- **Marilyn E. Ogburn**, second place, "Career Enhancement Award."
- **Jeffrey J. Kelly**, third place, "Pre-college Outreach Award."
- **Lee R. Rich**, third place, "Public Policy Award."
- **Gautam H. Shah**, third place, "Communications Award."

In Memoriam

Thomas E. Clements

Thomas Etheridge Clements died on Sept. 12 at the age of 77. Clements, a native of Gloucester County, served in the U.S. Army Air Corps-U.S. Air Force from 1940 until 1970 and was a veteran of World War II and the Korean War.

After retiring from the Air Force, he served NASA in the Aeronautical Programs Branch at Wallops Station for 15 years, retiring in 1985.

William E. Hutcheson

William Edwin Hutcheson died on Sept. 12 at the age of 81. A native of Portsmouth, he served as a procurement officer for NASA until 1976.

R&D

Continued from Page 1

and helicopter blades to reduce noise levels.

Called the LaRC Macro-Fiber Composite, the actuator device is proving to be low-cost, have high performance and endurance, and be conformable. It may be used as an integral part of virtually any composite structure.

The inventors of the LaRC Macro-Fiber Composite actuator are Keats Wilkie (principal inventor), Robert Bryant, Robert Fox, Richard Hellbaum, James High, Antony Jalink Jr., Bruce Little and Paul Mirick.

In the 33 years of Langley's participation in the R&D 100 competition, 33 NASA Langley developments have been selected.

The R&D 100 Awards are presented annually by Research and Development Magazine to the innovators of the 100 most technologically significant new products of the year from around the world. Selections are made by a panel of distinguished scientists and engineers.

Silver Snoopys Awarded

Seven Langley Research Center employees received "Silver Snoopy Awards" during a special ceremony held on Sept. 25 in the H.J.E. Reid Conference Center.

Silver Snoopy Awards are given to non-management employees who have significantly contributed beyond their normal work output to the Space Shuttle and/or International Space Station (ISS) programs.

Astronaut Christopher J. "Gus" Loria presented the awards after delivering a special Colloquium lecture about the construction of the ISS.

The Silver Snoopy Award recipients were:

■ **William Alexander Jr.**, an aerospace engineer in the Structures and Thermal Analysis Branch, who was recognized for his work on the Fiber Optics Sensor System (FOSS), an experiment which was designed to sense hydrogen fuel leakage in the Space Shuttle cargo bay and launched on STS-96 in May 1999.

■ **Gregory J. Brauckmann**, an aerospace engineer in the Aerothermodynamics Branch, who was recognized for providing the first solid experimental evidence for the cause of hypersonic pitch-up anomaly encountered on the Space Shuttle.

Astronaut Christopher J. "Gus" Loria, who has more than 2,000 hours of flight time in more than 35 aircraft, sits in the cockpit of Langley Research Center's T-38 aircraft during his Sept. 25 visit. Loria, who served as the Capsule Communicator on the most recent Space Shuttle mission, also delivered a Colloquium lecture on the construction of the International Space Station (ISS) and handed out Silver Snoopy Awards to seven Langley employees.

Photo by Peggy Hopkins

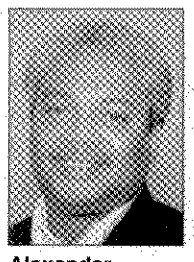
■ **Laura M. Brewer** of the Spacecraft and Sensors Branch, who was recognized for her support of the ISS program as well as the development of innovative advanced engineering environments for enhancing the assessments of ISS utilization and contingency scenarios.

■ **Brooks A. Childers**, an electronics engineer in the Non-destructive Evaluation Sciences Branch, who was recognized for successfully developing the hydrogen sensing health-monitoring system that was launched on STS-96.

■ **S. Janet Dail**, an engineering technician in the Metals Application Technology Branch, who was recognized for her manufacturing and administrative support for Materials In Devices as Superconductors (MIDAS), which deployed aboard STS-79 and was retrieved aboard STS-81; the Mir Environmental Effects Payload (MEEP), which deployed aboard STS-76 and was retrieved aboard STS-86; and the Fiber Optic Sensing System (FOSS) flight projects.

■ **Jeffrey J. Pierro**, a mechanical engineering technician assigned to Langley's Test and Development Branch, who was recognized for his role in the integration and test phases of Space Shuttle flight experiments. Pierro also was a key contributor to the Photogrammetric Appendage Structural Dynamics Experiment (PASDE) flown on STS-74.

■ **Judy L. Shinn**, a senior research scientist in the Analytical and Computational Methods Branch, who was recognized for organizing a research team to validate the Langley computational codes in Space Shuttle flight measurements. The research resulted in validation of the HZETRN code used in estimation of astronaut risks. The codes are now being applied to developing health risk reduction on the ISS by redesign of the Habitat module.



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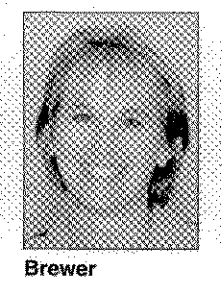
Brauckmann



Brewer

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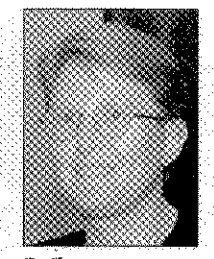

Dail

Pierro

Shinn

Levine Honored By WIA

Langley Research Center employee Arlene Levine received Women in Aerospace's Aerospace Educator Award at the organization's 15th annual Awards Reception.

Levine, the Outreach and Education Manager for Langley's Atmospheric Sciences Competency, received the award for developing science workshops and other programs for the Girl Scouts of the United States of America. Levine, herself a former Girl Scout, created a lecture series focused on different aspects of Earth science studies: atmosphere, oceans, land, life and their interacting effects.

Levine

Researchers from Langley, NASA Headquarters, the College of William and Mary and the Virginia Institute of Marine Sciences (VIMS) presented the lectures, and the Virginia Air and Space Center and VIMS developed the demonstrations.

Center Director Dr. Jeremiah F. Creedon was on hand to present the award at the reception, which took place on Sept. 26 in the Russell Senate Office Building in Washington, D.C.

Combined Federal Campaign

I have been a member of the Langley Research Center community for five years now, and each day I am more and more impressed with the people here and your dedication to public service!

You, as employees of Langley, continually give of yourselves as public servants. You tirelessly work at your jobs ensuring that the taxpayers' money is spent wisely and for the better good. Your public service has been heartfelt and has resulted in tangible contributions that are critical to the future of this country. You have served the public by taking the previously unachievable, and you have delivered to America. Your dreams and ideas all directly contribute to the scientific, technological and economic well-being of the nation. Your intellectual contributions have improved the quality of life for Americans and all people on earth. You understand that the purpose of government is to do what needs to be done for everyone's welfare but cannot be done through individual effort. You deserve to feel proud of Langley's contributions to the greater good.

NASA's highly visible success stories don't even begin to tell the story of your individual contributions to public service and our community. Every day I see the people at Langley give their hearts to those around them. I've observed how you can be supportive to each other and rally around those you know who are ill or in need. The Combined Federal Campaign (CFC) gives you an opportunity to provide help to those whose needs are not well known to you. The CFC provides financial assistance to thousands of organizations that can meet the needs of people you otherwise could not help on your own.

I am honored to serve as the vice chair of the first CFC of the millennium. This month we at Langley will confirm once again why we can be so proud to call ourselves public servants. By opting to contribute to others through the CFC, we demonstrate that we are interested in participating in an effort to improve the quality of life for all through an effective and cost-efficient teaming of our resources.

Langley's CFC theme this year, "Show The World Your Heart," already epitomizes your daily effort. "Give Smart Through CFC" is your chance to make a more direct impact on your neighbors by supporting organizations you care about. Now is your opportunity to "Show The World Your Heart." Please give generously.

Kathy Ann Kurke
Langley CFC Vice Chair

Langley's CFC continues through October. Give online at <http://cfc.larc.nasa.gov/>.

Day Of Ca

More Than 200 Employees V

Langley Research Center's Day of Caring Volunteers

CIVIL SERVANTS
Cindy Albertson
Cheryl Allen
Ginger Arrington
Melody Avery
Scott Bartram
Felecia Berry
Ted Biess
Glanice Boone
Tesa Boots
Denny Botkin
Angela Brown
Sherilyn Brown
Sal Buccallato
Richard Bulle
Rick Buonfigli
Mark Cagle
Patsy Campbell
Susan Campbell
Carolyn Carey
Jim Cassidy
William D. Castle
Lin Chambers
Brian Cheshire
Velma Clark
Jeff Conover
Larry Cooper
Ginger Cordle
Tammy Cottee
George Cowley
Vincent Cowling
Robin Cravey
Elaine Crawford
Karen Credeur
Charlie Davidson
Angela Davis
Pamela Davis
Cynthia Dea
Lance Deaver
Les Devers
Kathleen Devol
Russell DeYoung
Harriett Dismond
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Cathy Dunn
Carolyn Eby
Alice Eley
Gloria Evans
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Julie Fowler
Dion Fralick
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Wes Goodman
Linda Goodwin
Queenella Gray
Jennifer Guerin
Marie Hamann
David Hamilton
Joann Harris
Joycelyn Harrison
Larry Harvey
James Hassell
Lisa Hawks
Becky Hayes
Kelly Hayhurst
Lynn Heimerl
Marcella Hogge
Bill Hollingsworth
Meg Holloman
Nancy Holloway
Drew Hope
Stephanie Horvath
June Howell
Larry Huebner
Janis Hunt
Jesse James
Blanche Johnson
Connie Jones
Marian Jones
Octavia Judge
Christal Kellam
Sandra Keyes
Bill Kimmel
Edward Kirby
Roberta Knight
Neil Kuhn
John Lamar
Robin Land
Tiana Lane
Allen Langford
Mark Langford
Nita Langford
Vince LeBoffe
Jane Leffel
Jo Legette
Artistine Lethcoe-Reid
Carlos Liceaga
Lee Lillard
Sharon Lowther
Gin Marks
Angela Mason
Jennifer McCardell

By MARNY M. SKORA
Office of Public Affairs

Not even early morning thunder-boomers could dampen the enthusiasm of more than 200 Langley Research Center volunteers who participated in the eighth annual Day of Caring. Luckily, the weather held out, and it was a beautiful day ... for a number of reasons.

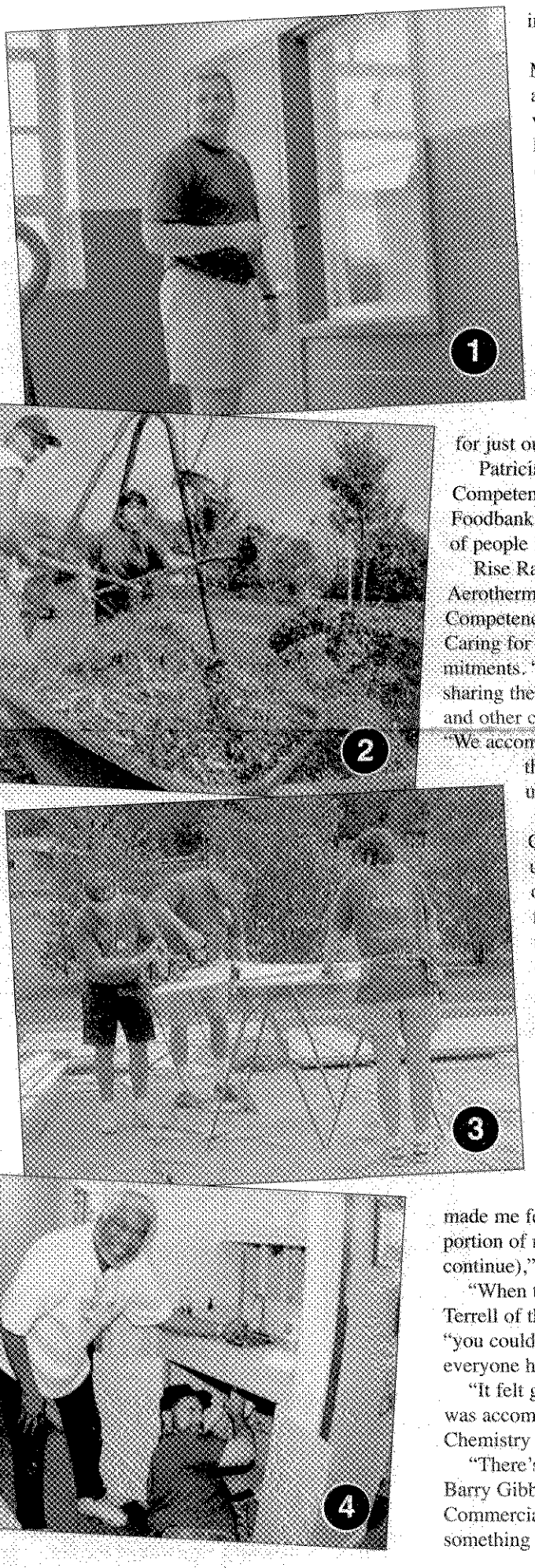
A Habitat House was closer to occupancy. Residents at the Veterans Administration Hospital enjoyed a change of pace and talked to willing listeners. More than 52,000 pounds of food was salvaged for distribution to the hungry all over the Peninsula. A Civil War cemetery took on a new and more respectful look. And more than 650 children were helped with needed back-to-school supplies.

"The Day of Caring volunteers help with projects that often go to the bottom of the list when it's a budget choice between people being helped and facilities that need repair," said Elyse Brown, executive director of The Volunteer Center. Brown coordinates the massive effort, matching willing volunteers with community needs.

For one day a year, Langley employees en masse turn off their computers, leave their air-conditioned offices and face a full day of painting, landscaping, filing, carpentry and a host of other jobs. They fan out as far north as Child Development Resources in Williamsburg and southwest to Maryview Nursing Care Center in Suffolk, as well as to nearby agencies, including Big Brothers/Big Sisters, the American Red Cross and YMCAs in Hampton, Newport News and Smithfield.

Volunteers from the Model Systems Branch worked as a team at Child Development Resources. They even named a "foreman," Mark Cagle, who designed the project, scoped out the materials needed and led the effort. The team worked well past quitting time — not finishing until 8 p.m. — and then returned on the weekend to complete the two play stations they had begun constructing. "The children were very excited," Mike Sorokach said. "I am confident they will enjoy the fruits of our labor."

Long-time volunteer Penny Williams of the Management Support Office helped other community volunteers clean-up Union Cemetery, a Civil War burial ground in Hampton. Volunteering for the Day of Caring "really helps me count my blessings," she said.



Virginia Cordle, head of the Management Support Office, was assigned to the spinal cord injury ward at the VA Hospital. The ward houses about 60 para- and quadraplegic patients. "We assisted them in playing games, dominoes being a favorite," she said. "There was spirited competition with volunteers making the plays directed by the patients."

Nita Langford of the PICASSO-CENA Project Office echoed the joy at spending the day with the veterans: "It was a great feeling to see the thanks expressed by some for just our being there."

Patricia Williams of the Airborne Systems Competency said, "Working with the Foodbank really opened my eyes to the needs of people in my community."

Rise Ramsey of the Aerodynamics, Aerothermodynamics and Acoustics Competency hadn't participated in the Day of Caring for a couple of years due to work commitments. "I didn't realize how much I missed sharing the duties with those in other offices and other community organizations," she said. "We accomplished a lot (at the Foodbank), and the agency really communicated to us how important we were to them."

Janis Hunt of the Office of the Chief Information Officer summed up the day's efforts by saying, "Not only does this experience make me feel good to be able to give back to my community, it gives me the opportunity to work with people I probably would never otherwise meet."

Patsy Campbell of the Office of Equal Opportunity said she values meeting fellow employees as well as other community-minded citizens. "I built allegiances in my community and learned something about non-profit organizations that made me feel even better about contributing a portion of my salary (to ensure those services continue)," she said.

"When the day was over," said Helen Terrell of the Management Support Office, "you could look back and see the difference everyone had made."

"It felt great knowing I was a part of what was accomplished," said Lance Deaver of the Chemistry and Dynamics Branch.

"There's no better feeling," concluded Barry Gibbens of the Technology Commercialization Project Office, "than doing something for someone else."

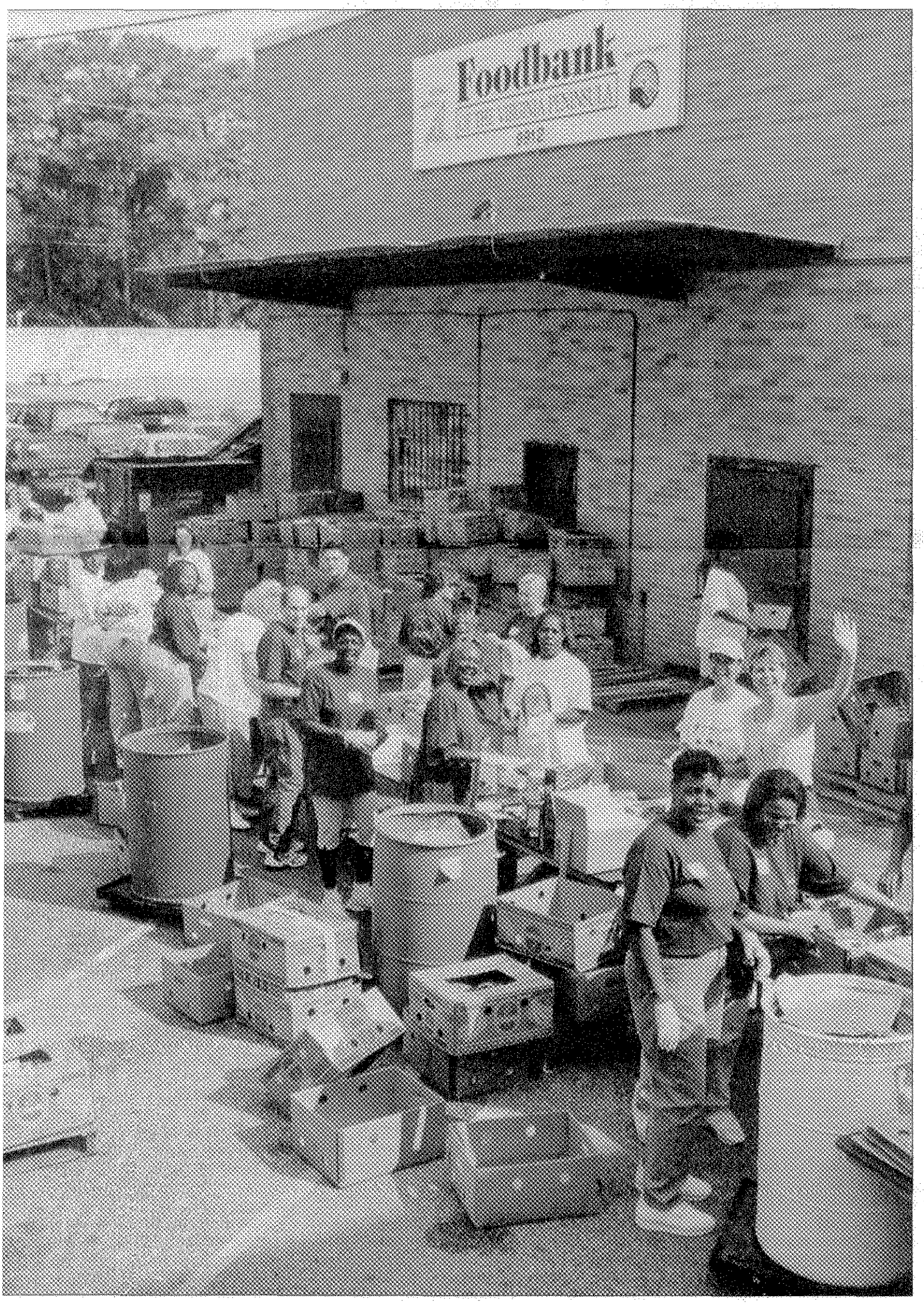
Among the Langley Research Center employees who volunteered during the 2000 Day of Caring were: 1. David Burnette, a Johnson Controls contractor who painted at the Williamsburg YMCA; 2. Pam Stacy, who helped Dominion Virginia Power employee Tom Hensberger spread mulch at the 29th & Oak Mini Park in Newport News; 3. Charlie Davidson, Bill Hollingsworth and Susan Palmer, who assembled a play loft at the Child Development Resource Center in Williamsburg; and 4. Larry Harvey and Vincent Cowling, who repaired plumbing at Newport News LINK. Langley employees (right) also helped other Day of Caring volunteers salvage more than 52,000 pounds of food at the Foodbank of the Virginia Peninsula.

Photos by Marny Skora(1), Jeff Caplan (2 and 4), Meghan Woodcock (3) and Peggy Hopkins (right)

"There's no better feeling than doing some

ring 2000

olunteered At Annual Event



hing for someone else." — Barry Gibbens

Langley Research Center's Day of Caring Volunteers

CIVIL SERVANTS, continued
Donna McIntosh
Raul Mejia
Mike Mitchell
Tom Mitchell
Christina Mohorn
John Molloy
Gene Monroe
C.T. Moore
Chris Moore
Michelle Moore
Allen Morris
Mark Motter
Terrie Myers
Bessie Nicholson
Effie Nicosia
Clifford Obara
Michael Oliver
Erik Olson
Patricia Pahlavani
Susan Palmer
Sam Pollard
Gale Poulson
Susan Price
William Prosser
Terry Quayle
Rise Ramsey
Geraldine Rankin
Ray Rhew
Arthur Ritter
Kevin Rivers
Margaret Robbins
Melanie Robinson
Patricia Robinson
Jim Rogers
Christopher Rumsey
Chris Sandridge
Jo Sawyer
Raymond Scholz
Kim Seitz
Nancy Sessoms
Donna Settles
David Sheldon
Nancy Shields
Stan Smeltzer
Connie Smith
Laura Smith
Marshall Smith
Mike Sorokach
Sharon Stack
Pamela Stacy
Shirley Stephenson
Louise Sykes
Gail Temple
Helen Terrell
John Teter
Jim Thomas
Crystal Topping
Ronald Topping
Carmen Torres-Nisbet
Geraldine Tucker
Nicole Turner
Tony Tyler
Michael Uenking
Robert Wallis
Myra Walton
Butch Watkins
Bernice Weinstein
Dina Weiss
Ramona White
Carol Wieseman
Dunes Wijayratne
Alesia Williams
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Penny Williams
Renee Williams
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JoAnne Woodcock
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Deborah Cooper, Federal Aviation Administration

RETIREE
George Brooks

SPOUSE
Jean Devers

From The Office of Safety And Mission Assurance

Most Accidents Can Be Prevented

Awareness Is The Key To Avoiding Accidents

Many people have the attitude that accidents are bound to happen. Others think accidents happen only to other people.

Safety awareness is the key to avoiding an accident. Most accidents can be avoided by being aware of what is going on around you.

Accident Statistics

Statistics show that many accidents could have been prevented by the victim or by a coworker. This year at Langley Research Center, 59 accidents or incidents have occurred because of human factors (i.e., poor judgment, failure to acknowledge situations, lack of awareness toward surroundings). This number translates to 42 percent of all accidents for 2000. An insurance company study showed that for every 330 incidents of the same type, 300 produced no injuries, 29 produced minor injuries and one produced a major injury.

On-Center Accidents

The following examples describe accidents at Langley that might have been prevented.

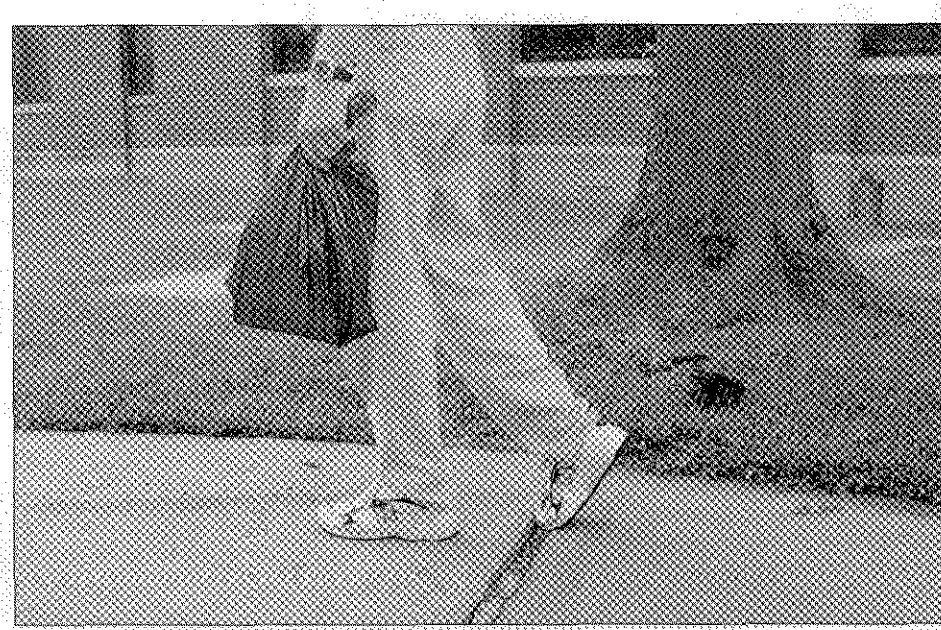
■ An employee was distracted by a passing car and stepped into a pothole. The employee experienced a fall and an injured knee.

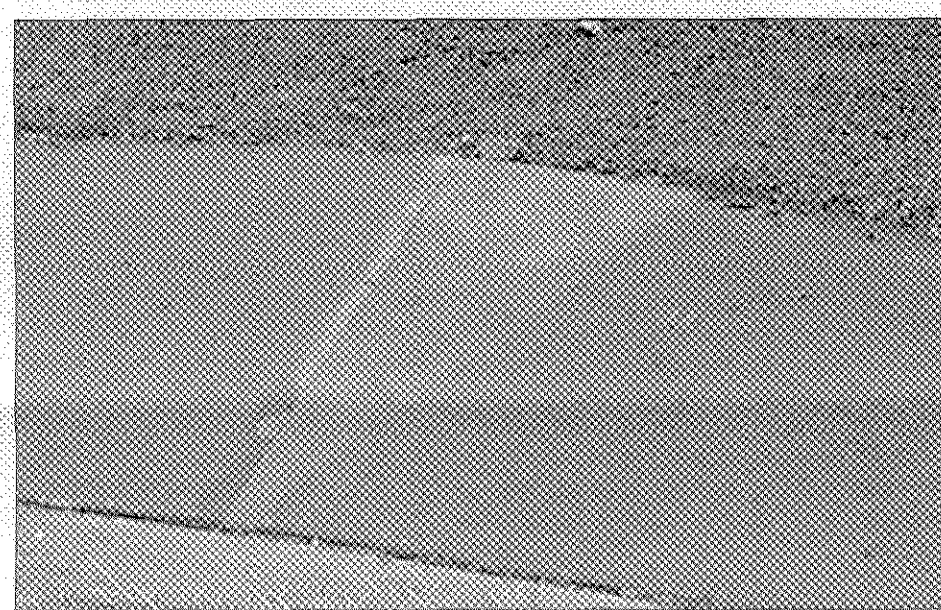
■ An employee tripped and fell in a hallway. No impediments were in the hall, and the carpet was not frayed or damaged.

■ An employee was walking down a staircase and reading at the same time. The individual missed the last two steps. Fortunately, the employee was holding onto the handrail and only suffered an abrasion on a thumb from a spur on the railing.

■ In a lab area, an employee tripped on a bunched-up mat in front of a door and landed on both knees. The mat had been poorly laid before work began, and the condition had not been corrected.

■ In a parking lot, an employee was distracted by some aircraft overhead and consequently tripped over a parking block. The employee fell and scraped both hands.





These photos illustrate how an unsafe situation at Langley Research Center, an uneven sidewalk, was corrected, thereby reducing the risk of an accident.

Photos courtesy of the Office of Safety and Mission Assurance

Off-Center Accidents

On three occasions within the last fiscal year, Langley employees have been involved in accidents that occurred outside the Center. The following examples illustrate the importance of remembering safety when traveling.

■ During a flight experiment, a laser that was being aligned struck an employee in the eyes. The individual was not wearing the prescribed eye protection for laser use.

■ While attending a conference, an employee suffered severe swelling and inflammation from an insect bite.

■ An employee tripped in an airplane while on a flight to another Center. The result was a broken foot.

Close Calls

Look closely at those accidents that "almost" happen. Close calls are warnings. Heed these warnings and look for the cause to prevent future accidents. The pictures show a situation that could be easily reported and then corrected. Moreover, the pictures stress the need for awareness of the areas where we work and walk. More than 19 accidents occurred this year from tripping or falls on the same level.

Seven Ways To Prevent Accidents

1. Make accident prevention a part of your daily routine. Plan in advance. Be aware of your surroundings, even when outside the confines of the center or your office area. Be cognizant of changing situations.

2. Report unsafe acts or conditions to your supervisor. Follow the steps outlined on pages 33 and 34 of the Employee Safety Pocket Guide and fill out a LaRC Form 164, "Report of LaRC Safety/Health Concerns." If you see someone committing an unsafe act, warn that person in a friendly way.

3. Avoid horseplay. In many areas, you can be easily injured if you don't remain focused on your work.

4. Follow instructions and procedures. Shortcuts and failure to follow procedures accounted for many accidents this year alone.

5. Make suggestions. If you have a more efficient procedure, review it to ensure it can be done safely. If you see a safer way to do something, bring it to the attention of your supervisor, the Facility Safety Head or the Office of Safety and Facility Assurance (OSFA) at ext. 4-SAFE.

6. Practice good housekeeping. Trash or excessive materials around walking and working areas can result in trips, falls and fires.

7. Dress for the situation. In addition to wearing protective equipment for certain tasks, make sure your attire accommodates the surroundings. Loose clothing or jewelry that can get caught or become entangled in machinery should not be worn. Wear shoes or boots that are appropriate for where you are walking.

Safety Responsibility

All Langley employees are charged with the responsibility for ensuring a safe and healthful workplace.

'Study Buddies' Recruiting Volunteer Tutors

By PATRICK A. COSGROVE
Spacecraft and Sensors Branch

Langley Research Center's "Study Buddies" program is recruiting civil servants and contractors to volunteer to tutor students at Machen Elementary School in Hampton.

Last school year, the first for of the program, was a great success, with 22 employees working with 39 students in support of 15 teachers. From March through June, Study Buddies provided more than 18 hours of support per week for a total of 216 hours of education outreach in the local community.

Langley's Study Buddies program made such a difference last school year that Machen has incorporated it in its School Improvement Plan for 2000. Machen teachers and administrators worked over the summer to establish a plan to maximize the positive impact of NASA's participation.

This year, the Study Buddies will focus on third-graders to enable Standards of Learning-based tutoring and effectiveness tracking. There will be a smaller need to work with first-graders.

Participation as a Study Buddy will require approximately one hour per week of an employee's time for the remainder of the school year. Machen teachers will have a lesson planned and ready for the volunteer tutor to maximize the value of the hour to the student.

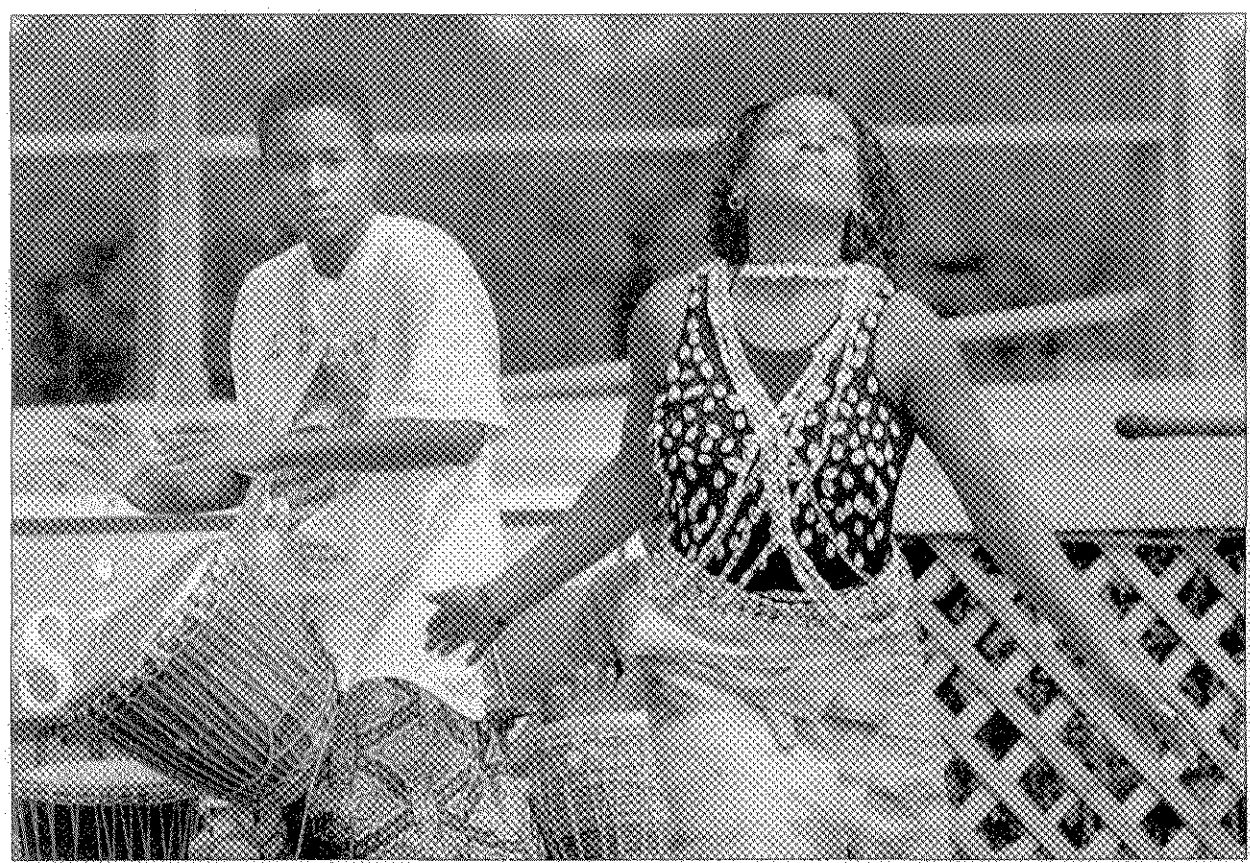
Study Buddies will begin in mid-October following a one and a half-hour training session.

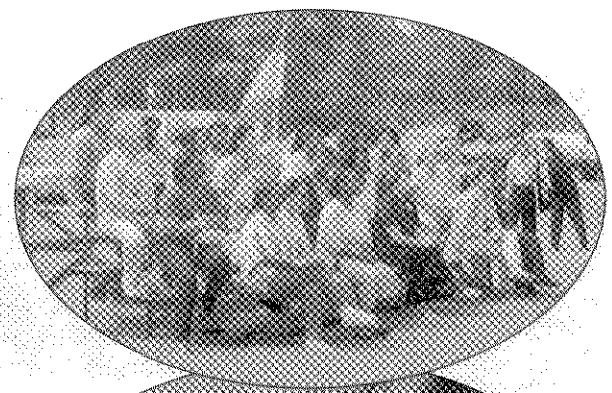
Employees interested in volunteering should contact their supervisor or organizational unit manager and have him or her authorize their participation by sending the employee's name, phone number, organizational unit and a brief statement in support of the nomination to Pat Cosgrove by Oct. 10.

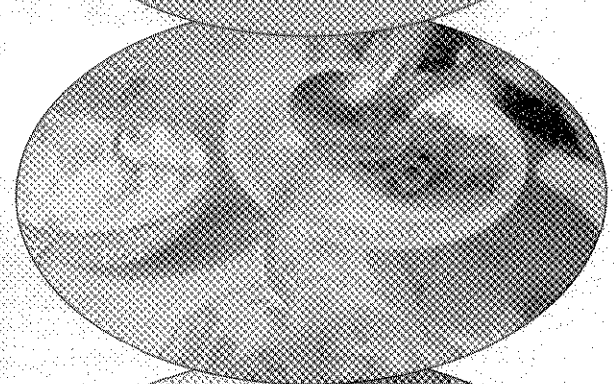
The Study Buddies Program is in alignment with NASA's mission and was created in coordination with the Office of Education. Participating civil servants will be given an Education Outreach charge number when they sign up.

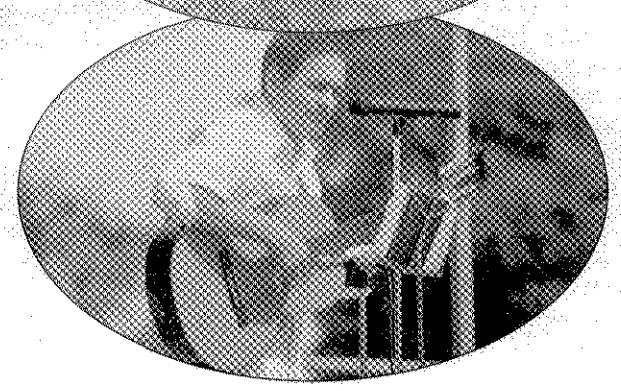
For more information, contact Pat Cosgrove at ext. 42031 or Bill Williams at ext. 49728.

Diversity Day









Suwabi African Ballet members Oji Aboila and Tonya Cole (above) perform at Langley Research Center's first-ever Diversity Day on Sept. 22. The event, which was sponsored by Langley's Multicultural Leadership Team (MCLT), attracted hundreds of employees to the grounds of the H.J.E. Reid Conference Center (top right), where members of the MCLT served various ethnic foods, including pierogies (center right), a Polish dish made of mashed potatoes and cheese. Spanish guitarist and Langley employee Raul Mejia (bottom right) also was among the performers.

Photos by Jeff Caplan

National Hispanic Heritage Month

Celebrate The Heritage Of Hispanic Americans

National Hispanic Heritage Month, 2000

By the President of the United States of America

A Proclamation

American society today embraces a remarkable breadth of cultures, and Hispanics are an integral part of this diversity. The Hispanic American community is a collage of distinct groups, including people with roots in Central and South America, Mexico, the Caribbean and Spain. Hispanics have been an important part of the history and heritage of the Americas since the earliest days of European colonization, and today Hispanic Americans are the youngest and fastest-growing minority community in our Nation. Devoted to family, faith, country and hard work, they bring unique perspectives and experiences to our national community and character.

The vibrant Hispanic influence can be seen in all aspects of American life and culture, from distinctive cuisine to colorful festivals, and from the rhythms and melodies of traditional music to the contagious beat of today's most popular songs. Throughout our nation, Hispanic men and women have distinguished themselves in every endeavor and, with our cultural and linguistic ties to our trading partners throughout the Western Hemisphere, Hispanic Americans are crucial to maintaining our nation's competitiveness and prosperity in the global economy of the 21st century.

Langley Will Host Keynote Speaker Fred Soto On Oct. 17

Fred Soto will present the keynote address for Langley Research Center's observance of Hispanic Heritage Month at 10 a.m. Oct. 17 in the Pearl Young Theater.

Soto, the founder and co-host of the National Diversity Symposium and the executive director for the Institute of Applied Leadership, has been a keynote speaker and seminar leader for more than 300 conferences and hundreds of leading organizations. His strategies for change have been presented in the White House Conference Center, the Equal Employment Opportunity Commission and the Smithsonian Institute.

Soto will remain on Center to present a workshop entitled, "Diversity: The Path to Unity," from 1:30-3:30 p.m. The workshop is open to all Langley employees, but members of the Office of Equal Opportunity's advisory groups (the Multicultural Leadership Team, the Federal Women's Program Committee, etc.) will receive priority consideration.

Both programs are open to civil servants and contractors. Civil servants may charge their time to I.O. A5006.

For more information, contact Patsy Campbell at ext. 43391.

Not long ago, I had the privilege of awarding the Presidential Medal of Freedom, our nation's highest civilian honor, to Cruz Reynoso, a man who has devoted his life to promoting civil rights and championing equal opportunity for all our people. A son of Mexican immigrants, he has lived the American Dream, going to college and working his way up to become the first Hispanic American to serve on the California Supreme Court. A force for positive social change in our nation, he is just one of many talented Hispanic Americans enriching our national life.

Cruz Reynoso's success underscores what we already know: education and equal opportunity are the keys to ensuring that people of Hispanic heritage can take full advantage of America's promise. My administration has focused on improving educational opportunities for Hispanic children through the Hispanic Education Action Plan, as well as by reducing class sizes across our nation, greatly expanding the Head Start program, working to turn around failing schools and making college more affordable through tax incentives and scholarships. By expanding the Earned Income Tax Credit, raising the minimum wage and moving people from welfare to work, my administration has also helped expand economic opportunity for Hispanic American working families. We have brought the Hispanic unemployment rate to its lowest level on record and the Hispanic poverty rate to a 20-year low. We have also worked hard to create an administration that truly reflects America, with the most Hispanic appointees and the most Hispanic judicial nominees in our nation's history.

Even as Hispanic Americans grow in number and influence in our country, they have not forgotten their roots; they have not forgotten the pain of discrimination, of being ignored or left behind. Instead, millions of courageous and compassionate Hispanic men and women across our country are working to create a just and equal society, uniting around a firm commitment to build One America in this new century.

In honor of the many contributions that Hispanic Americans have made and continue to make to our nation and culture, the Congress, by Public Law 100-402, has authorized and requested the President to issue annually a proclamation designating Sept. 15 through Oct. 15 as "National Hispanic Heritage Month."

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, do hereby proclaim Sept. 15 through Oct. 15, 2000, as National Hispanic Heritage Month. I call upon all Americans to observe this month with appropriate programs, ceremonies and activities.

IN WITNESS WHEREOF, I have hereunto set my hand this fourteenth day of September, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

William J. Clinton

AdVentures

CLASSIFIED

FOR SALE: House in Coventry area of York County. Three bedrooms, two and a half bathrooms, cathedral ceilings, skylights, brick fireplace and airy octagon kitchen bay; master suite features two-person shower and large, walk-in closet; two-car garage and shaded decks and patio; many extras. $150,000. Call 865-7866.

FOR SALE: House in Briarfield/Aberdeen area of Hampton. Four bedrooms, living room, dining room, eat-in kitchen, large lot, oversized shed. $95,000 (seller will pay closing costs). Call 826-1862. For pictures and room sizes, visit Web site at <http://www.angelfire.com/va2/glenrockgang/index.html>.

FOR SALE: '93 Ford Escort station wagon, 132,000 miles, five-speed, excellent condition, recently detailed, champagne color, one owner, $1,900 or best offer. Call 596-7936.

FOR SALE: '87 Kawasaki 454 LTD, low seat height, good condition, 6,400 miles. $1,400. Call 826-1862.

FOR SALE: IBM Notebook 760 CD Pentium, 90 mhz, diskette and CD drives, Windows 98. $275. Call 898-8463.

NARFE Meeting Oct. 9

Chapter 682 of the National Association of Retired Federal Employees (NARFE) will recognize "National Chapter Meeting Month" at its October meeting, which will take place from 10 a.m. to 1 p.m. **Oct. 9** in the Midtown Community Center in Newport News. Margaret Baptiste, NARFE's vice president, will be the guest speaker. For more information, call Catherine Askew at 247-1558.

Alumni Association To Meet Oct. 10

The Langley Research Center Alumni Association will meet at 11:30 a.m. **Oct. 10** in the private dining room of the Langley Cafeteria. Jim Moore of Christopher Newport University will be the guest speaker. For more information, call George Brooks at 868-6013.

OSMA Offering LN2 Safety Course

Langley Research Center's Office of Safety and Mission Assurance will offer "Safe Handling of Liquid Nitrogen" training courses from 8 a.m. to noon **Oct. 11, Oct. 18** and **Nov. 8** in Bldg. 1224T7.

To register, submit an Application For On-Site Training (NASA Langley Form 24) to DeAnna L. Lawrence at Mail Stop 309 or to fax ext. 48543. For more information about the course, call Rick Vogel at ext. 47061.

PSP Workshop Scheduled Oct. 16-19

Langley Research Center will host the eighth annual Pressure-Sensitive Paint (PSP) Workshop from **Oct. 16-19** at the H.J.E. Reid Conference Center. Presentations will cover all areas of PSP development and application, particularly those focused on advancing the state of the art in PSP measurement technology.

Registration is available online at <http://amdb.larc.nasa.gov/psp_workshop.html>. The registration fee for Langley participants is $15.

For more information, contact Clifford Obara at ext. 43941 or Jeff Jordan at ext. 45067.

CPR Recertification Offered

Langley Research Center's Employee Development Branch will offer a CPR recertification course from 9 a.m. to noon **Oct. 23** in the Hampton Room of the H.J.E. Reid Conference Center.

To register, submit an Application For On-Site Training (NASA Langley Form 24) to DeAnna L. Lawrence at Mail Stop 309 or to fax ext. 48543. For more information about the course, contact Lillian Ross at ext. 42657 or <l.c.ross@larc.nasa.gov>.

Langley Taking Part In Clothing Drive

Langley Research Center is partnering with Langley Air Force Base to participate in the Tidewater Clothing Drive. The drive, sponsored by Tuskegee Airmen, Inc., will benefit the H.E.L.P Homeless Shelter, the Children's Hospital of The King's Daughters, the Virginia Council of Domestic Violence and the Peninsula Association for Sickle Cell Anemia. A collection box will be located in the Langley Cafeteria through **Oct. 27**.

LAA Turkey Shoot Planned Oct. 28

Langley Research Center's Activities Association (LAA) will host its annual Turkey Shoot from 9 a.m. to 1 p.m. **Oct. 28** behind the H.J.E. Reid Conference Center. The event will be open to all NASA and Air Force base employees and contractors and their families and friends. For more information, call the LAA office at ext. 46369.

OHR Hosting Retirement Seminars

Langley Research Center's Office of Human Resources will host two "Planning for Retirement" seminars: one from 8:30 a.m. to 3:30 p.m. **Nov. 13** and one from 8:30 a.m. to 3:30 p.m. **Dec. 4**. Both seminars will be taught by Government Retirement & Benefits, Inc. in Langley's H.J.E. Reid Conference Center.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@larc.nasa.gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.

SAIC Seeking Intern Applications

SAIC is seeking undergraduate and graduate students to participate in its 2001 Summer Intern Program at Langley Research Center.

Candidates should have a degree or be seeking a degree in one of the following fields: atmospheric science, mathematics, physics, scientific computer programming and electrical or mechanical engineering.

Applicants must be United States citizens or permanent U.S. resident aliens. To request an application form or obtain more information, call 825-0001, fax 825-4968 or e-mail <saic+intern@larc.nasa.gov>. SAIC is an Equal Opportunity Employer.

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Researcher News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23681-0001

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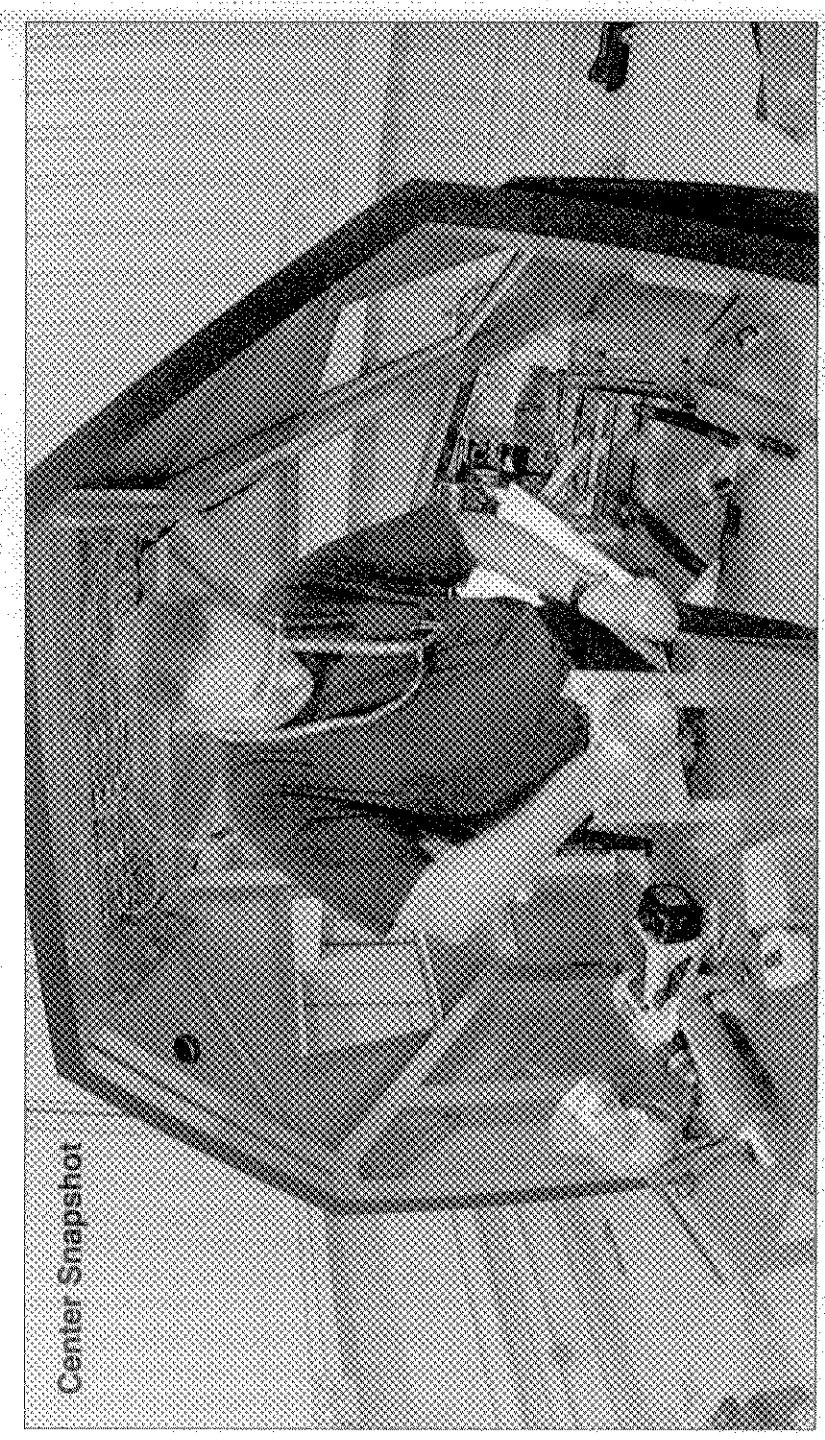
Center Snapshot



Cliff Gentry retired from Langley Research Center in 1995 after 31 years as a civil servant. After a year off, he returned to work with PSI International Inc. as a contractor supporting the Systems Technology Branch in the Cockpit Motion Facility. He is currently working on the air conditioning system for the Integrated Flight Deck in Bldg. 1268. Born in Phoebus, Gentry now resides in York County with his wife. He enjoys riding his bike and hiking in the western part of the state. What brought him back to Langley? "It was a nice opportunity to come back to work at NASA Langley to continue doing what I have enjoyed doing my whole career," he said.

Photos by Jeff Caplan

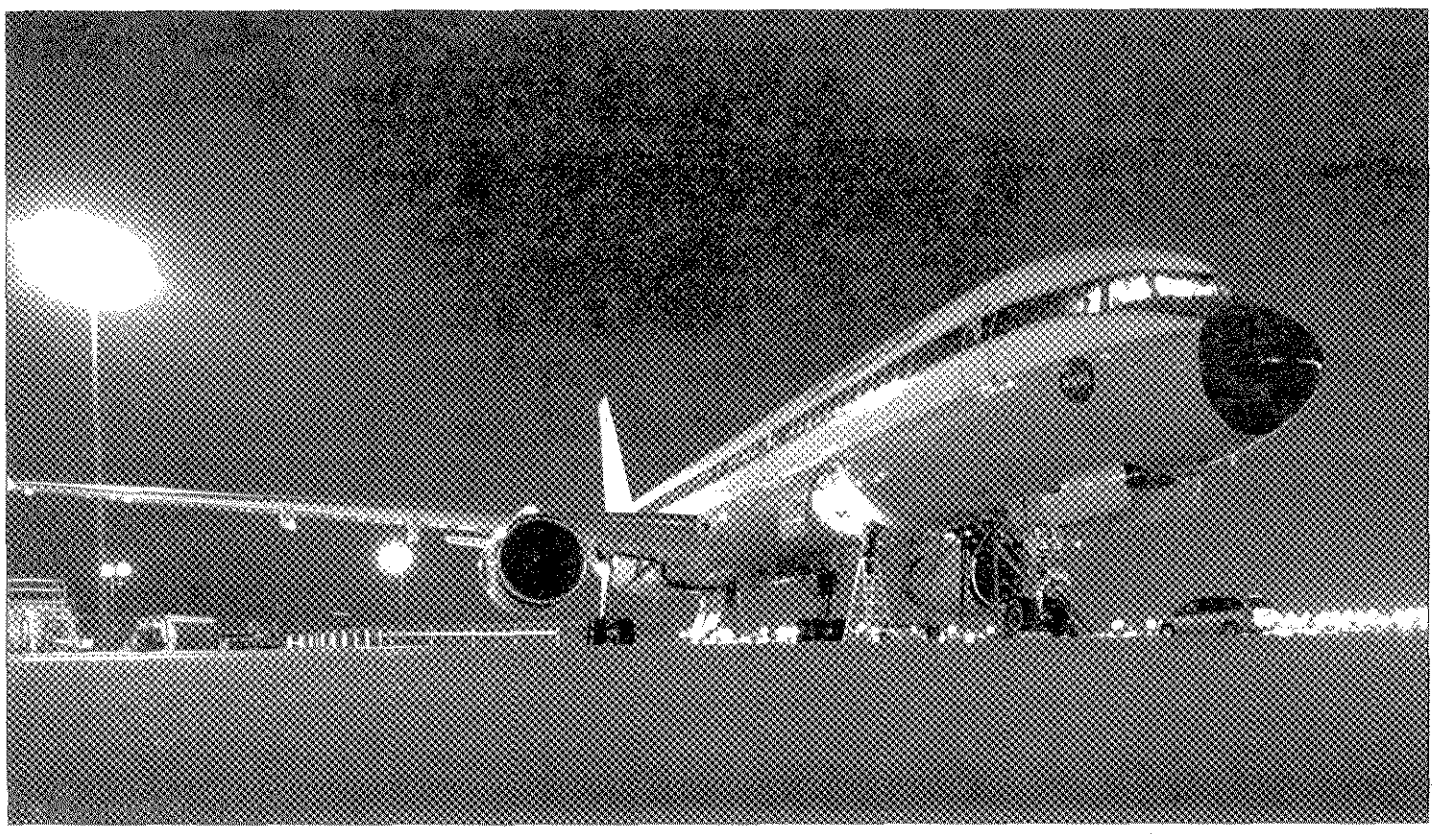
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 21 ❖ Oct. 20, 2000

Avoiding Close Calls



NASA and airline pilots made a number of overnight flight tests at the Dallas-Fort Worth International Airport in September and October to evaluate three flight deck technologies developed at Langley Research Center: the Runway Incursion Prevention System (RIPS), Synthetic Vision and a Hold Short Advisory Landing Technology (HSALT). The pilots' observations will be used to help refine the technologies for possible use in airliners.

Photo by Jeff Caplan

New Displays Being Tested At DFW Airport

By KATHY BARNSTORFF
Office of Public Affairs

NASA's Aviation Safety Program will demonstrate an advanced cockpit display system from Oct. 24-26 at the Dallas-Fort Worth International Airport (DFW) to news media, Federal Aviation Administration officials and other government and industry representatives.

Three flight deck technologies developed at Langley Research Center — the Runway Incursion Prevention System (RIPS), Synthetic Vision and a Hold Short Advisory Landing Technology (HSALT) — could help prevent runway incursion incidents and near accidents on airport runways, taxiways and ramps.

NASA and airline pilots made a number of overnight flight tests at DFW in

Continued on Page 5

'Solar Max' Heats Up VASC's Schedule

Breathtaking New IMAX Film Includes Images From NASA's SOHO Satellite

"Solar Max," a new IMAX film that explores the history of the sun, opened at the Virginia Air & Space Center on Oct. 13 and will run through Dec. 31.

Visitors will witness never-before-seen satellite footage and close-up views of the sun that reveal the true glory of the glowing sphere at the center of our solar system.

The startling imagery and awe-inspiring visuals seen in "Solar Max" are particularly amazing because they are all completely real. Filming was done at various locations around the globe, from the Caribbean to South America to Europe. Scenes of the sun's surface were captured using the technology of NASA's Solar and Heliospheric Observatory (SOHO) satellite, located one million miles from Earth in the exact orbit where the sun's gravitational pull is equal to the Earth's.

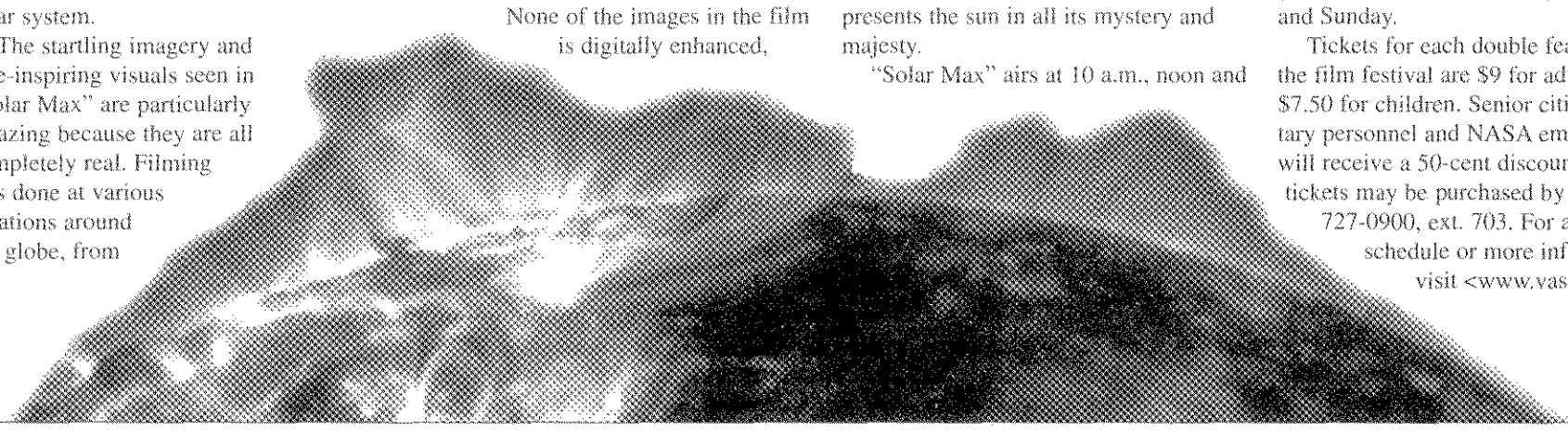
None of the images in the film is digitally enhanced, including the breathtaking vistas of violent solar landscapes erupting with energy surges equivalent to the explosions of hundreds of thousands of hydrogen bombs.

With amazing images, informative narration, and a theme of the triumph of knowledge over ignorance, "Solar Max" presents the sun in all its mystery and majesty.

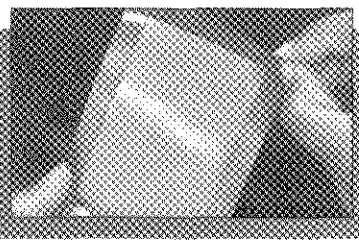
"Solar Max" airs at 10 a.m., noon and 2 p.m. Monday through Thursday and at 10 a.m., noon, 2 p.m. and 4 p.m. Friday through Sunday. For tickets or more information, call 727-0900, ext. 703.

Don't forget: VASC's IMAX Fall Film Festival continues through Dec. 31. VASC presents a double feature at 7:30 p.m. every Thursday, Friday, Saturday and Sunday.

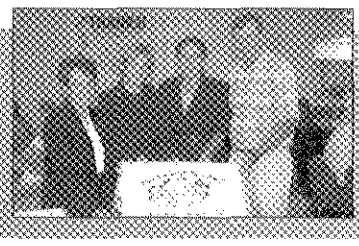
Tickets for each double feature in the the film festival are $9 for adults and $7.50 for children. Senior citizens, military personnel and NASA employees will receive a 50-cent discount. Advance tickets may be purchased by calling 727-0900, ext. 703. For a film schedule or more information, visit <www.vasc.org>.



Inside This Issue:



Langley Invention Earns Additional R&D Award *Page 3*



CFC Continues Through October *Page 4*

News Briefs

Around the Agency

NASA CREATES NEW BIOLOGY ENTERPRISE

NASA announced on Sept. 29 a restructuring of the Office of Life and Microgravity Sciences and Applications to strengthen the Agency's ability to meet the challenges brought about by the growth in areas such as molecular biology, nanotechnology, information technology and genomics.

The reorganization is consistent with NASA Administrator Daniel S. Goldin's vision to create an interdisciplinary research program focused on biology, bringing together physics, chemistry, biology and engineering.

"Through this new enterprise, the best and brightest from across the sciences and across the country, can focus their talents on meeting the challenges NASA faces in our future missions," Goldin said. RELEASE: 00-158

NASA, LOCKHEED MARTIN AGREE ON X-33 PLAN

NASA and Lockheed Martin have agreed on a plan to go forward with the X-33 space plane program, to include aluminum fuel tanks for the vehicle's hydrogen fuel, a revised payment schedule and a target launch date in 2003. The launch date is contingent on Lockheed Martin's ability to compete and win additional funding under the Space Launch Initiative. NASA and Lockheed believe it is critical to continue work to solve the last remaining barrier to low-cost, reliable access to space.

The restructured plan focuses on providing milestone payments to Lockheed Martin's industry team for completed testing and delivery of their hardware and software systems this year. Additionally, the plan includes greater emphasis on mission safety and more ground demonstration of critical technology prior to actual flight. These steps are being taken by NASA to ensure quality and mission success. RELEASE: 00-157

NASA UNVEILS '2001 MARS ODYSSEY' PLANS

As NASA's next spacecraft to the red planet begins a crucial round of testing in preparations for launch next year, the mission has been given a new name: 2001 Mars Odyssey.

"The year 2001 has a special significance to many of us who recall the thrill of reading the book and watching the movie '2001: A Space Odyssey.' We looked forward to the exciting future of space exploration that the year 2001 promised," said Scott Hubbard, Mars Program Director at NASA Headquarters.

Hubbard added that Arthur C. Clarke, author of "2001: A Space Odyssey," enthusiastically endorsed the new mission name. RELEASE: 00-155

SCIENTIST PREDICTS LESS CLIMATE COOLING

Don't count on clouds to come to the rescue if the Earth's current climate-warming trend continues. That's according to new NASA research published in the Oct. 1 issue of the American Meteorological Society's Journal of Climate.

Heating and cooling of the Earth are influenced by cloud cover. Clouds can act as a natural sun shield by reflecting light back into space. But clouds can also coat the skies like a blanket, trapping warmth.

Precisely how these competing attributes will change in response to a warmer atmosphere is not well understood. Anthony Del Genio of NASA's Goddard Institute for Space Studies in New York City, analyzed three years of observations of low clouds over land, a type of cloud thought likely to contribute to future cooling. RELEASE: 00-151

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-6150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

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Planners Collaborative/
Science and Technology Corp.

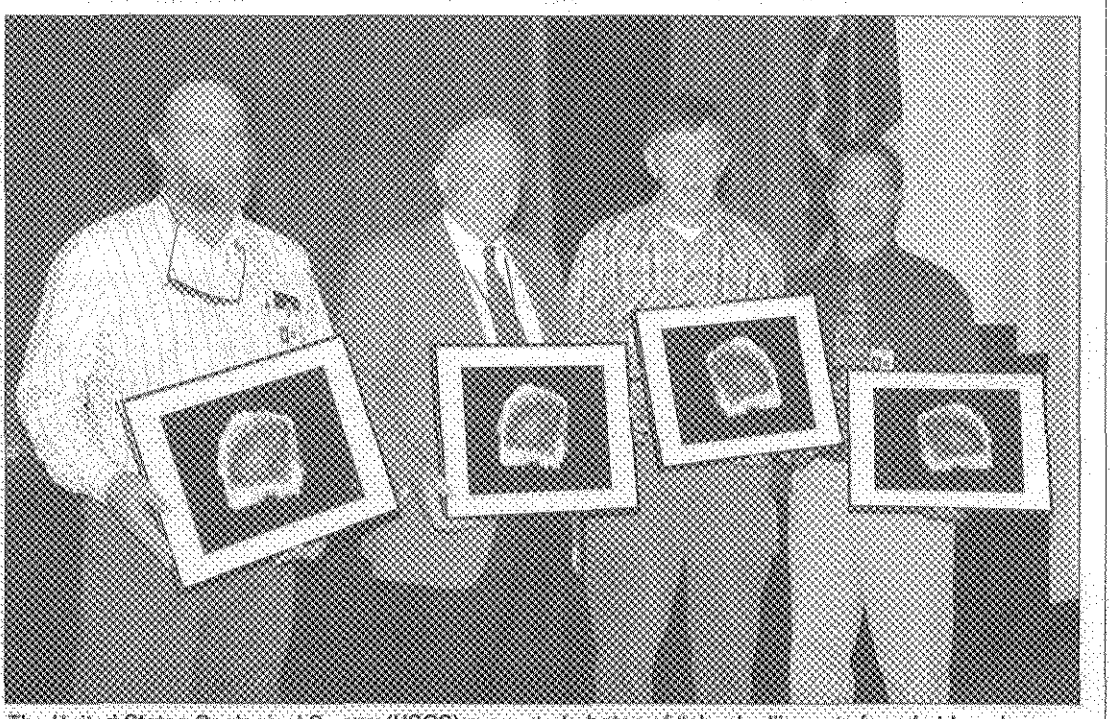
Assistant Editor ..... Meghan Woodcock
Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Capian
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Shocking Proof!



The United States Geological Survey (USGS) presented photos of "shocked" quartz found at Langley Research Center to (left to right) Terry Wagner of the Virginia Department of Environmental Quality, Langley Deputy Director Delma C. Freeman Jr., USGS Director Charles Groat and Ron Harris of the Newport News Waterworks on Sept. 28 at the H.J.E. Reid Conference Center. Wagner, Groat and Harris were at Langley to visit the USGS' Chesapeake Bay Impact Crater Project drill site. Langley, host to the USGS since July, sits on the edge of the huge crater formed almost 35 million years ago by a comet or meteor. The enlarged photos of the 0.13-millimeter quartz grain were taken from a core sampled at 820.6 feet within the crater wall — geological proof of the extraterrestrial event.

Photos by Peggy Hopkins

VASC Fills Education Post

The Virginia Air and Space Center, Langley Research Center's official visitor center, recently named **Richard Byles** its director of education.

Byles graduated from the University of Central Florida with a bachelor's degree in science and the College of William and Mary with a doctorate in marine science. Byles, a former museum educator, has more than 15 years of experience in science education and project management.

Center Seeks Medal Nominations

Langley Research Center is seeking nominations for the National Medal of Technology, the highest honor bestowed by the President of the United States upon America's leading innovators.

Since 1985, the National Medal of Technology has been awarded annually to individuals, teams or companies for accomplishments in the innovation, development, commercialization and management of technology as evidenced by the establishment of new or significantly improved products, processes or services.

The purpose of the National Medal of Technology is to recognize technological innovators who have made lasting contributions to enhancing America's competitiveness and standard of living. The medal highlights the national importance of fostering technological innovation based upon solid science, resulting in commercially successful products and services.

Nomination packages are available online at <www.ta.doc.gov/MEDAL>. Langley nominations should be submitted to Sherry Sullivan at Mail Stop 200 by Dec. 1. For more information about the award, contact Sullivan at ext. 42556 or <s.l.sullivan@larc.nasa.gov>.

In Memoriam

Vernon P. Gillespie

Vernon Patrick Gillespie died on Sept. 29 at the age of 64. Gillespie, a native of Urbana, Ill., retired from Langley Research Center in 1995 after 33 years of service.

Ronald W. Weade Sr.,

Ronald William Weade Sr. died on Sept. 27 at the age of 86. Weade, a native of Staunton, retired from Langley Research Center in 1978 after 36 years of service.

Space Education Directory Available Online

NASA's Office of Space Science recently announced the release of the Space Science Education Resource Directory, an Internet on-ramp to top-quality educational resources produced by NASA's Space Science Education and public Outreach programs.

The Web-based directory provides easy access to high-quality, online space science educational resources for teachers and students from kindergarten through high school.

This first release of the directory contains more than 100 electronic resources, including lesson plans, educator guides, student activities, Web sites and space science imagery such as auroras, comets, the birth place of stars and colliding galaxies. Educators, resource developers and space scientists have worked together to design a system that is scientifically accurate and easy to use. The directory will be updated continually with new top-quality resources. Future plans include providing access to printed materials, CD-ROMS, videos and posters.

To review the directory's collection, visit the Web site at <http://teachspacescience.stsci.edu>.

R&D Awards Follow-up

Honors Continue

Actuator Receives An Editors' Award

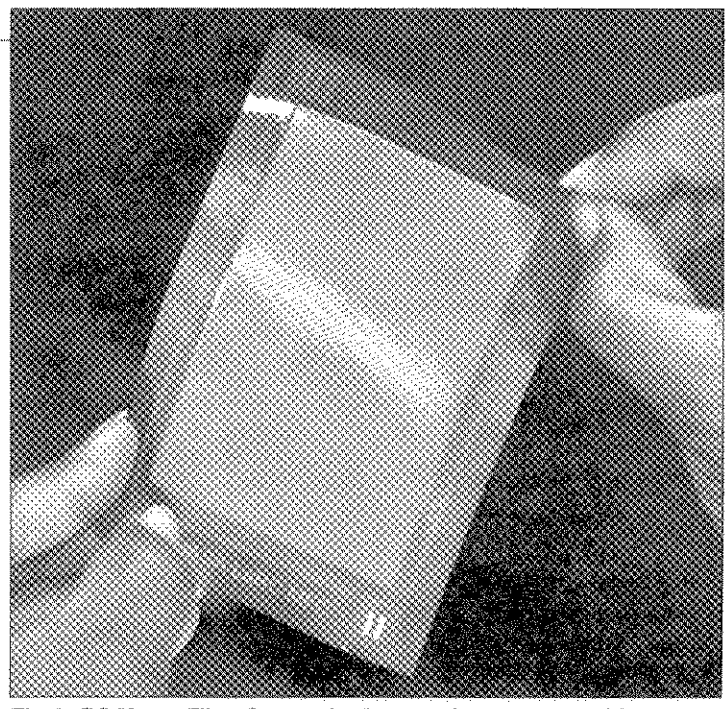
Langley Research Center's Macro-Fiber Composite Actuator, which was featured in the Oct. 6 edition of the *Researcher News* for winning an R&D 100 Award, earned an additional honor at the Sept. 27 awards ceremony: an Editors' Award.

The LaRC Macro-Fiber Composite Actuator was one of three inventions to receive an Editors' Award for being deemed the "Most Promising New Technology." Glenn Research Center also received an Editors' Award.

The 38th annual R&D 100 Awards Ceremony was held at the Museum of Science and Industry in Chicago. The Chicago Tribune has called the awards the "Oscars of Invention." Others have referred to the R&D 100 Awards as the "Nobel Prizes of Applied Research."

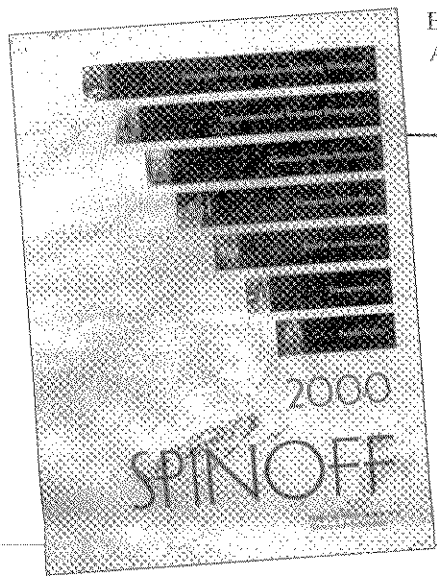
The inventors of the LaRC Macro-Fiber Composite actuator are Keats Wilkie (principal inventor), Robert Bryant, Robert Fox, Richard Hellbaum, James High, Antony Jalink Jr., Bruce Little and Paul Mirick.

Details about the winning products are available on the Internet at <http://www.rdmag.com/rd100/100award.htm>.



The LaRC Macro-Fiber Composite Actuator is a super-sensitive actuator that has at least a dozen potential applications but is presently being evaluated for the control of vibrations in very large, flexible space structures.

Photo by Jeff Caplan



Agency's 2000 'Spinoff' Publication Now Available

Langley Research Center's Technology Commercialization Office recently received copies of NASA's 2000 "Spinoff" publication.

The application of NASA Technology helps the United States meet international competitive challenges and stay at the leading edge of technical innovation. The return benefits, "spinoffs," represent a significant dividend to the taxpayer and the nation's investment in aerospace research.

"Spinoff" documents the outcome of NASA's spinoff successes.

This year's publication includes three sections:

- Aerospace and Development,
- Technology Transfer and
- Commercial Benefits.

To obtain copies of "Spinoff," send an e-mail to <d.j.almony@larc.nasa.gov>.

Colloquium and Sigma Series Lectures

Ralph Merkle On 'Nanotechnology And Space'

Ralph Merkle will present a Colloquium lecture entitled, "Nanotechnology And Space," at 2 p.m. Nov. 7 in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center.

The Talk

Manufactured products are made from atoms. The properties of those products depend on the arrangement of those atoms.

Today's manufacturing methods arrange atoms statistically, without control over the placement of individual atoms. In the future, nanotechnology will let us inexpensively manufacture arrangements of atoms that are consistent with physical law, enabling us to make (among many other things) molecular computers and new materials of remarkable strength and lightness.

Materials with a strength-to-weight ratio more than 50 times that of steel or aluminum alloy have major implications for reducing the weight and increasing the payload of spacecraft. Further, the reduced size and weight of molecular computers and sensors will usher in a new era in the exploration and use of space.

The Speaker

Merkle received a doctorate in 1979 from Stanford University, where he co-invented public key cryptography. He joined Xerox PARC in 1988, where he pursued research in computational nanotechnology until 1999. He is now a principal fellow at Zyvex, where he continues to pursue research in nanotechnology.

Merkle chaired the fourth and fifth Foresight Conferences on Nanotechnology, is on the executive editorial board of the journal Nanotechnology and was a co-recipient of the 1998 Feynman Prize for Nanotechnology.

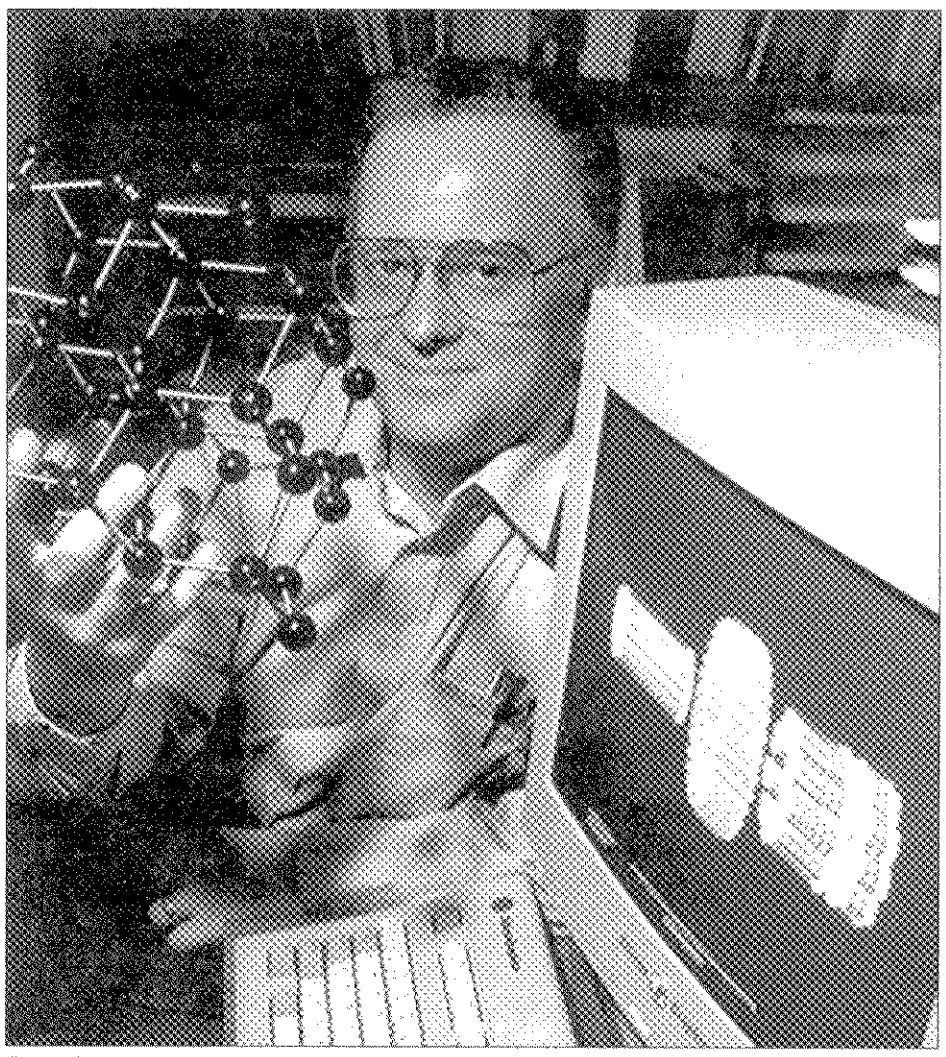
He also was a co-recipient of the ACM's Kanellakis Award for Theory and Practice and the 2000 RSA Award in Mathematics.

Merkle has published and spoken extensively and has eight patents. His home page is at <www.merkle.com>.

Upcoming Lectures

- **Dec. 5:** Ronald Greeley on "The Galileo Mission to Jupiter."
- **Jan. 9, 2001:** Alan Epstein on "MicroEngines."
- **March 6, 2001:** K.R. Sridhar on "Oxygen Production on Mars."

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.



Ralph Merkle joined Xerox PARC in 1988, where he pursued research in computational nanotechnology until 1999. He is now a principal fellow at Zyvex, where he continues to pursue research in nanotechnology.

Photo courtesy of Ralph Merkle

Combined Federal Campaign

Hospitality House Benefits From CFC

Editor's note: *Langley Research Center's Combined Federal Campaign (CFC) continues through Oct. 31. This story highlights one of the hundreds of agencies that benefit from CFC donations.*

By PAM VERNIEL
Office of Public Services

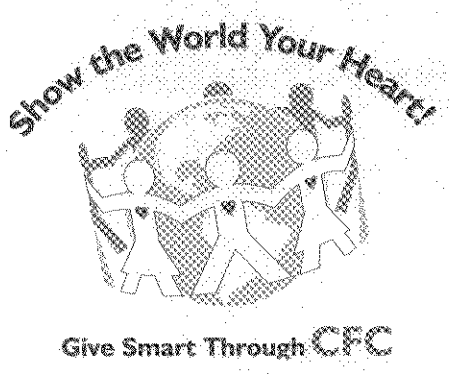
Have you ever had a family member in the hospital far from home for an extended period of time? Then you know how important it is to have a place to stay near your loved one.

Not only is it important to have a place close by, but also one that is affordable. I can speak from experience. In one year's time, my father had two surgeries at the Medical College of Virginia (MCV) in Richmond. So my family could be by his side, we stayed at The Hospital Hospitality House of Richmond, Inc. (HHH).

The HHH is a private organization that provides lodging and emotional support to families in medical crisis. It is available to family members as well as patients receiving treatment at more than 10 Richmond hospitals.

The HHH is a 121-room, non-profit facility and is one of the largest in the country. Since its inception in 1983, HHH has provided lodging to almost 50,000 people from all 50 states and 17 foreign countries. Although a voluntary donation of $10 per person per night is requested, approximately 40 percent of those who stay pay nothing.

Formerly a Days Inn Hotel, the HHH has a number of features that are different from ordinary lodging, such as:

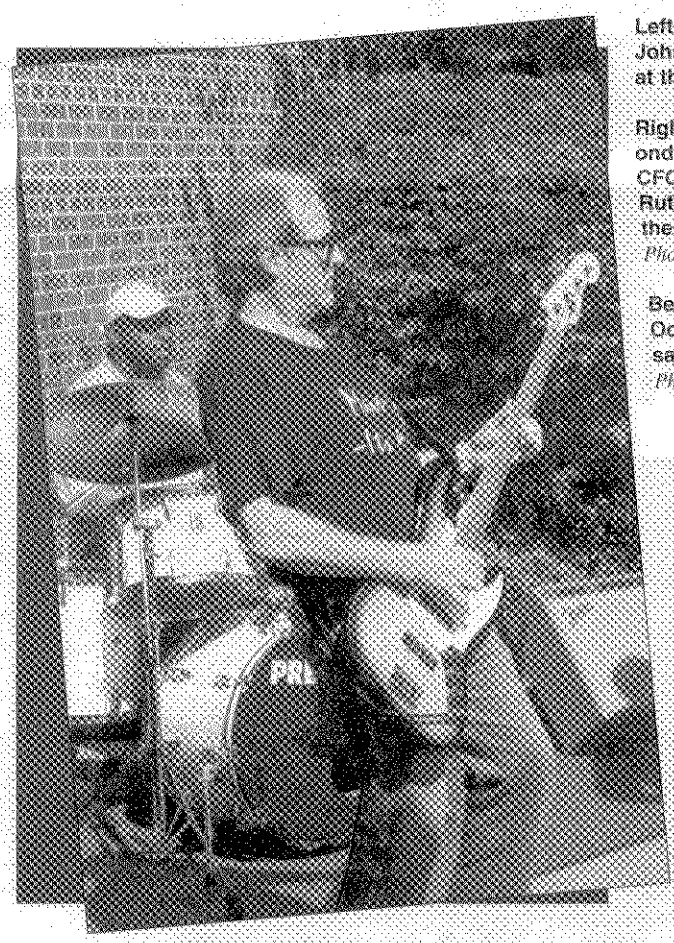


- a non-denominational chapel;
- a "hat room" where cancer patients may select a soft hat when chemotherapy has caused hair loss;
- four kitchen pods, available to guests 24 hours a day, seven days a week;
- a large "family room" off the lobby and TV lounges on each floor where guests can watch television or interact with each other;
- an exercise room;
- a floor dedicated to transplant patients during part of their recovery;
- a 2,500-volume library of donated books; and
- shuttle bus service to and from the hospitals.

The HHH depends on donations to cover every aspect of its operation. Donations made through the Combined Federal Campaign truly help keep the HHH running.

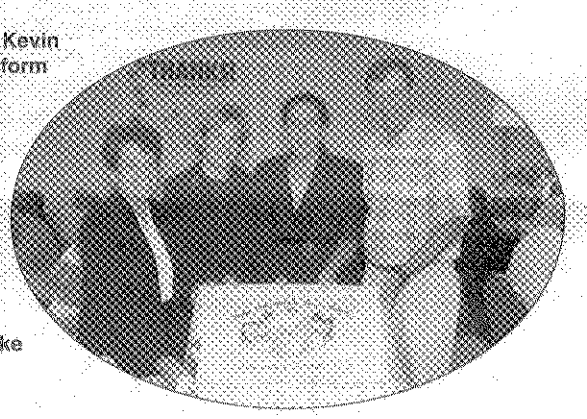
The best part of having the HHH is not just the lodging, it is the emotional support provided by those staying there. It changes your outlook to watch people day after day face incredible obstacles with courage and hope.

As of Oct. 13, Langley Research Center employees had pledged $159,000 to the CFC. That amount represents 53 percent of the $302,000 goal and a 21 percent participation rate. Give online through Oct. 31 at <http://cfc.larc.nasa.gov/>.

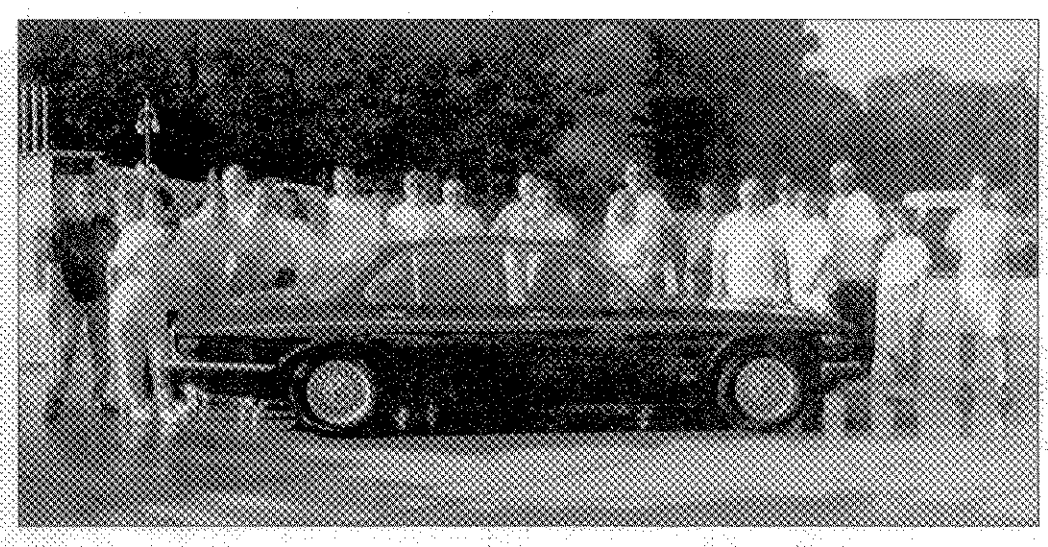


Left: Langley employees Lloyd Binger (on bass) and Kevin Johnson (on drums) of the Apollo 18 Blues Band perform at the CFC Kickoff on Oct. 3.

Right: Christine Darden (left) and Kathy Kurke (second from left), the chair and vice chair of Langley's CFC committee, are joined by Associate Directors Ruth Martin and Doug Dwoyer for the cutting of the CFC cake at the CFC Kickoff.
Photos by Peggy Hopkins



Below: Langley's senior staff washed 45 cars on Oct. 4, raising $510 for the CFC. A simultaneous bake sale raised an additional $55.
Photo by Sandie Gibbs



Reuse Facility Has Saved Langley Nearly $14,000

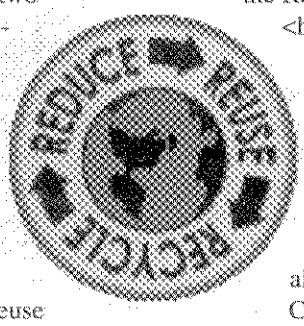
By DAVE STEIGERWALD
SAIC/Office of Environmental Management

Langley Research Center's Office of Environmental Management (OEM) is always seeking new ways to reduce the amount of waste generated on-Center. Excess chemical materials with expired shelf lives were a substantial source of waste generation, prompting OEM to start up a Reuse Facility in 1996.

The Reuse Facility serves as a clearinghouse for excess chemical or hazardous materials that could be reused by different facilities throughout the Center.

Civil servants and contractors can use the Reuse Facility. There are two keys to maintaining a successful Reuse Facility: submitting excess chemicals or hazardous materials that have not expired and checking the Reuse Facility inventory before purchasing new chemicals or hazardous materials.

When personnel use the Reuse Facility, the Center saves money.



Turning in and getting materials from the Reuse Facility is easy. Simply go to the Reuse Facility Home page at <http://osemant1.larc.nasa.gov/cmts/reuse/>. The Web site location will take you step by step through procedures for turning in and getting materials from the Reuse Facility. A current inventory of the facility is also available at this site.

Center personnel that are issued chemicals out of the Reuse Facility will not be charged for the chemicals. All requests submitted for items usually are filled within four working days.

Since the implementation of the Reuse Facility, the Center has saved approximately $14,000 in procurement and disposal costs of chemicals and hazardous materials.

With simple procedures and quick responses to requests, there's no reason not to make the Reuse Facility your first stop in chemical and hazardous material shopping.

Tennis Team Wins PTPA Event

Trophy On Display In The LAA Building

Langley Research Center's tennis team won the Peninsula Tennis Patrons Association's 2000 Center vs. Center Tennis Doubles Tournament.

The annual tournament, which was held from Sept. 29 through Oct. 1 at Huntington Park in Newport News, is a fund-raiser for junior tennis on the Peninsula.

Matches consisted of men's, ladies' and mixed doubles contests. Players competed against each other based on their respective skill levels as defined by the United States Tennis Association's 7.0 point scale. (A 1.0 player is a beginner; a 7.0 player is a professional with a world ranking.) Players with ratings between 3.0 and 5.0 competed in PTPA event.

In the dual round robin play on Sept. 29 and 30, Langley defeated Hampton Tennis Center and Riverside Wellness and Fitness Center and tied McCormack-Nagelson Tennis Center. Langley went on to defeat Kiln Creek Tennis Center and Hampton Tennis Center in the semifinal and final matches by the same score: 8-4.

Langley's tennis team includes Langley employees, retirees and spouses and guest members from other government installations. The NASA-related players are: David Chan, Chris Currey, William Dressler, Paul Gelhausen, Sharon Graves, Wayne Melton, Latunia Pack, Don Petrine, Joanne Re, Bill Shinn, Judy Shinn, Eli Siman-tov, Michael Smart, Dottie Taylor, Steve Taylor, Scott Willard, Susan Willard, and Joseph Zalameda. Judy Shinn and Willard served as the co-captains.

The tournament victory was the team's first since the event started eight years ago. The trophy will placed on display in the Langley Activities Association (LAA) building for a year.

Langley Research Center's tennis team won the Peninsula Tennis Patrons Association's 2000 Center vs. Center Tennis Doubles Tournament. Judy Shinn (far left) and Willard (far right) served as the co-captains.

Photo courtesy of Judy Shinn

Displays

Continued from Page 1

September and October to evaluate the technologies. Their observations will be used to help refine the displays for possible use in airliners.

Harry Verstynen, the chief pilot from Langley, said the RIPS display, which is designed to give pilots and air traffic controllers an early warning if another plane or ground vehicle is about to intrude onto the runway, has multiple uses.

"Even for the large percentage of the time that you are not having a runway incursion," he said, "the displays that are being developed as part of this project will give the pilot significant improvements in situational awareness on the airport and taxiing in low visibility conditions."

Airline pilots have also given the system high marks.

"We have made several recommendations on some changes, but overall it's a well-thought out system," said John Penney, Advanced Maneuvers Program Manager and Standards Captain B-757/767 of United Airlines. "With a few minor adjustments, I think it's something commercial industry and aviation industry should take and grab hold of."

RIPS integrates several advanced technologies into a surface communication, navigation and surveillance system for flight crews and air traffic controllers. It combines a head-down display of an electronic moving map of airport runways and taxiways with a head-up screen that gives the pilot real-time guidance. The system shows and sounds an alert if another plane or vehicle is about to encroach onto the runway. RIPS also uses specially developed computer software, GPS signals and ground technologies developed by the FAA's Runway Incursion Reduction Program.

RIPS is one component of an advanced flight deck display system that would provide flight crews with vital airborne and ground information, including terrain, ground obstacles, air traffic, landing and approach patterns and detailed airport surface maps. The system would improve aviation safety and efficiency by:

- alerting pilots to conflicting traffic in the air and on runways, taxiways and ramps;
- allowing more aircraft to land on time in bad weather;
- improving communication between pilots and air traffic control; and
- virtually eliminating more than 60 percent of aviation fatalities.

Other technologies being tested in Dallas include Synthetic Vision and HSALT.

Synthetic Vision combines Global Positioning System (GPS) signals, three-dimensional terrain databases and sensors to give pilots revolutionary cockpit information. Synthetic Vision would offer flight crews a clear electronic picture of what's outside, no matter what the weather or time of day. NASA engineers and industry partners are testing display sizes and concepts to determine which synthetic vision system configurations will be most effective in preventing accidents caused by limited visibility.

HSALT is a guidance system that would increase the safety of land and hold short operations. That's when air traffic controllers ask pilots who are about to land to come to a stop before a specific runway intersection. On approach to landing, HSALT computes and displays information on a head-up and head-down display that can help a pilot decide if the plane can decelerate in time. The system also gives the pilot information after touchdown to help safely stop the plane before the hold-short location.

The Aviation Safety Program, headquartered at Langley, is a partnership with the FAA, the Department of Defense, aircraft manufacturers, airlines and universities. The partnership supports a national goal to reduce the fatal aircraft accident rate by 80 percent in 10 years and by 90 percent in two and a half decades. Researchers at four NASA field installations are working with the FAA and industry to develop advanced, affordable technologies to make flying safer: Langley, Ames Research Center, Dryden Flight Research Center and Glenn Research Center.

For more information on NASA's Aviation Safety Program, visit <http://avsp.larc.nasa.gov> on the Internet.

Lynda Kramer (left) and Trey Arthur of Langley Research Center's Crew/Vehicle Integration Branch monitor Synthetic Vision hardware during a recent flight tests at the Dallas-Fort Worth International Airport.

Photo by Jeff Caplan

LAA Calendar

Langley Research Center's Activities Association (LAA) will host a Country Western Dance on **Oct. 21** in the H.J.E. Reid Conference Center. Doors will open at 6:15 p.m., lessons will begin at 7 p.m., and the dance will begin at 8 p.m. Admission is $4. Participants must be at least 16 years old. For more information, call ext. 46369.

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The NASA Basketball Association will hold a meeting to organize the 2001 season at 4 p.m. **Oct. 26** in the Wythe Room of H.J.E. Reid Conference Center. All teams planning to participate should send a representative, and anyone else wishing to help run the league is invited to attend. For more information, call Dana Gould at ext. 47747.

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The LAA will host its annual Turkey Shoot from 9 a.m. to 1 p.m. **Oct. 28** behind the H.J.E. Reid Conference Center. The event will be open to all NASA and Langley Air Force Base employees and contractors and their families and friends. For more information, call the LAA office at ext. 46369.

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The LAA will host a Halloween Bash from 9 p.m. to 1 a.m. **Oct. 28**. The bash will feature a costume contest with cash prizes, music by DJ EZ-D and a free nacho and taco salad bar. Tickets are $6 in advance and can be purchased at the LAA office. For more information, call ext. 46369.

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The Langley Karate Club offers instruction for beginning and experienced martial artists. Children's classes (age 8 and above) are offered from 6 to 7 p.m. **Mondays** and **Wednesdays**; adult classes are offered from 5 to 7 p.m. **Mondays** and **Wednesdays**.

The first month of instruction is free. Local dues are $40 for six months; national dues are $30 per year. Family rates are available.

For more information, call Roy Albang at ext. 46160 or Craig Cleckner at ext. 47048 or visit the club's Web site at <http://members.aol.com/cuongn>.

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The LAA Aerobics Club offers classes for $2 every **Tuesday, Thursday** and **Saturday**. For more information, call Kim Tatum at ext. 48454 or Pat Link at ext. 48102.

AdVentures

CLASSIFIED

FOR SALE: 94 Oldsmobile 88 Royale. Grey exterior 72,000 miles, security lock system, four new tires. Excellent condition, garage kept, oil changed every 2,000 miles. $7,000 or best offer. Call 868-9637.

FREE FIREWOOD: White oak, red oak, beech, pine. All on ground; some cut to length, some needs further cutting. You cut, split and haul with your tools, etc. Call 565-1849 between 6 and 8 p.m.

BOOK GROUP: I would like to start a book discussion group at Langley, perhaps a weekly brown-bag lunch group. The following are some candidate books to start with: the "Ishmael" series, "The Ecology of Commerce," "Going Local—Creating Self-Reliant Communities in a Global Age," "If the Gods Had Meant Us to Vote They Would Have Given Us Candidates," "The Red Queen (Sex and the Evolution of Human Nature)," "Stolen Harvest: The Hijacking of the Global Food Supply," and "The Continuum Concept." If you're interested, call 858-8546 or e-mail <seaduck1@aol.com>.

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The deadline for the Nov. 3 edition of the *Researcher News* is Oct. 23. Send submissions to <j.r.roberts@larc.nasa.gov>.

SAIC Seeking Intern Applications

SAIC is seeking undergraduate and graduate students to participate in its 2001 Summer Intern Program at Langley Research Center.

Candidates should have a degree or be seeking a degree in one of the following fields: atmospheric science, mathematics, physics, scientific computer programming and electrical or mechanical engineering.

Applicants must be United States citizens or permanent U.S. resident aliens. To request an application form or obtain more information, call 825-0001, fax 825-4968 or e-mail <saic+intern@larc.nasa.gov>. SAIC is an Equal Opportunity Employer.

WTU Offering Courses

Langley Research Center's Wind Tunnel University will offer the following courses:

■ "Paint Dot Oil Flow Visualization," from 9 to 11 a.m. **Oct. 24** and **25.** The instructor will be Dan Cler.

■ "Wind Tunnel Enterprise Status Briefing" from 1 to 3 p.m. **Oct. 25** and from 9:30 to 11:30 a.m. **Oct. 26** in Bldg. 1194A, Room 206. The instructor will be Ajay Kumar.

■ "Aerospace Test Facilities," from 8 a.m. to 12:30 p.m. from **Oct. 30** through **Nov. 13** in Bldg. 1194A, Room 206. The instructor will be Colin Britcher. (The Old Dominion University graduate-level course is being offered on-site in a condensed format and is worth three credit hours.)

■ "Videogrammetry for Aerospace Applications" from 8 to 10 a.m. **Dec. 4 and 5**. The instructor will be Al Burner.

To view course descriptions and register for courses online, visit <http://class.larc.nasa.gov/cgi-bin/wtu/index.cgi>.

AIAA Oyster Roast On Oct. 25

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will host its annual Oyster Roast at 4:30 p.m. **Oct. 25** at the picnic area adjacent to Langley Research Center's H.J.E. Conference Reid Center.

The menu will include crabs, oysters, fried chicken, hamburgers, hot dogs, potato salad, cole slaw, chips, soft drinks and beer. The cost is $8 for members and their guests, $10 for non-members, $5 for student members and $3 for children between 6 and 12. Children under 6 will be admitted at no charge. Anyone joining AIAA at the Oyster Roast will be admitted at no charge along with one guest.

For reservations or more information, contact Robin Hardy at ext. 47159 or <r.c.hardy@larc.nasa.gov> or Mohammad Takallu at ext. 47671 or <m.a.takallu@larc.nasa.gov>.

PBS Courses Being Offered

Langley Research Center's Employee and Organizational Development Branch has contracted to receive several programs over the PBS Business and Technology Network. The following courses will be broadcast over LaRC TV Network Channel 16:

■ "Accounting Fundamentals Series" will continue from 1:30 to 2:30 p.m. **Oct. 25** and **Nov. 1**. (The first two courses in the series aired on Oct. 11 and 18.)

■ "Creating a Business Plan" will air from 1:30 to 2:30 p.m. **Oct. 26**.

■ "Managers as Mentors" will air from 1 to 3 p.m. **Nov. 8**.

■ "Oral Presentation of Technical Information" will air from 11 a.m. to 5 p.m. **Nov. 15**.

Online registration is available at <http://class/cgi-bin/edb/index.cgi>. For support materials, call Maury Bonner at ext. 42325 between 8 a.m and noon. Support materials will be available four days prior to each broadcast.

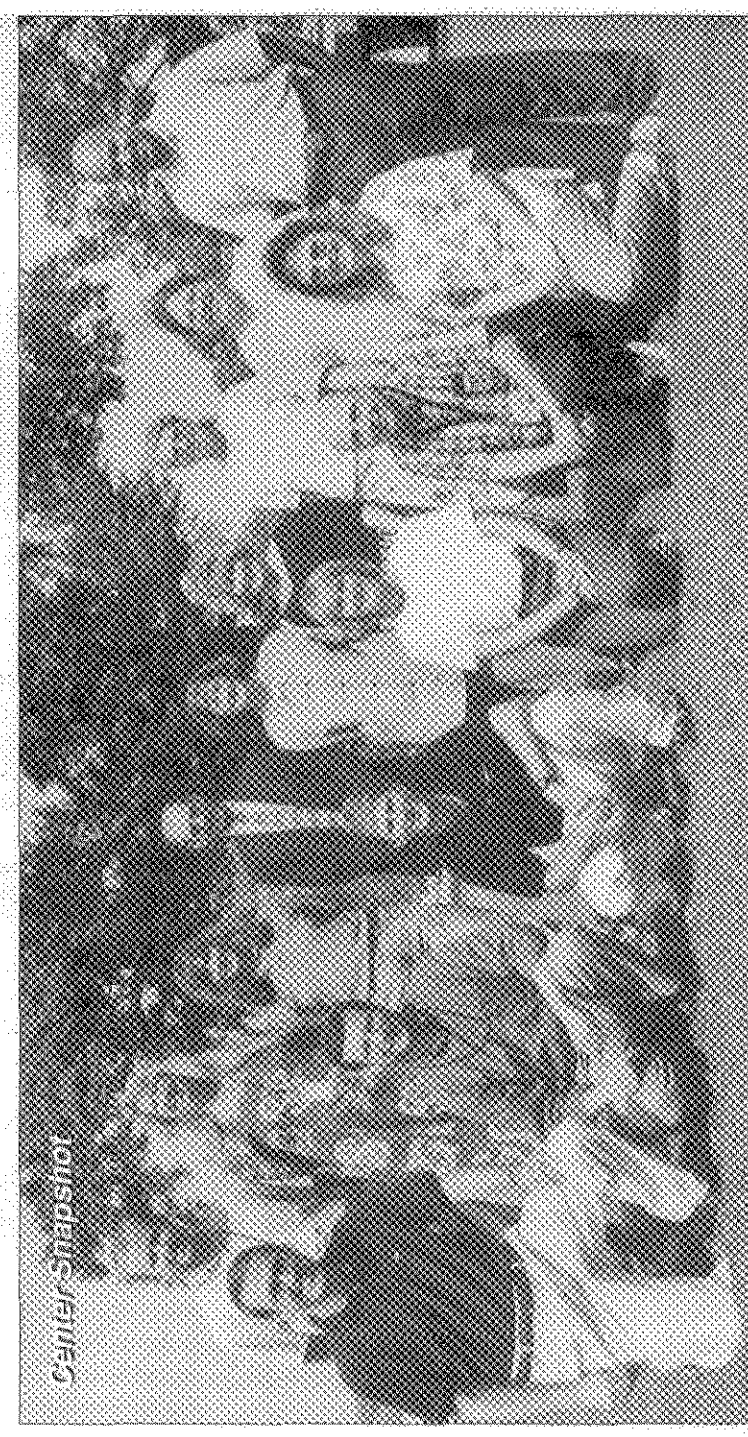
Langley Taking Part in Clothing Drive

Langley Research Center is partnering with Langley Air Force Base to participate in the Tidewater Clothing Drive. The drive, sponsored by Tuskegee Airmen, Inc., will benefit the H.E.L.P Homeless Shelter, the Children's Hospital of The King's Daughters, the Virginia Council of Domestic Violence and the Peninsula Association for Sickle Cell Anemia. A collection box will be located in the Langley Cafeteria through **Oct. 27**.

OHR Hosting Retirement Seminars

Langley Research Center's Office of Human Resources will host two "Planning for Retirement" seminars: one from 8:30 a.m. to 3:30 p.m. **Nov. 13** and one from 8:30 a.m. to 3:30 p.m. **Dec. 4**. Both seminars will be taught by Government Retirement & Benefits, Inc. in Langley's H.J.E. Reid Conference Center.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@larc.nasa.gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.



Langley Research Center's "Study Buddies" program is recruiting civil servants and contractors to volunteer to tutor students at Machen Elementary School in Hampton. For more information, contact Pat Cosgrove at ext. 42031 or Bill Williams at ext. 49728. Last year's Study Buddies were (top row, left to right) David Sheldon, Linda Goodwin, Lisa Hendricks, Machen Elementary School Principal Lowell Thomas, Machen Study Buddy Sponsor Chris Giovannelli, Betty Lane, Jo Sawyer, Mary Ann Steuck, Carl Holdon, (bottom row, left to right) Pat Cosgrove, Jeff Antol, Dan Mazanek, Laura Brewer, Otto Youngblutt and Susan Jernigan. Study Buddies not pictured were Paul Aronsohn, Marcus Billings, Ginger Cordle, George Curran, Enette Doswell, Pam Haley, Donna Jones, Yvette Lawson, Gwen Leach, Jim Miller, Dave Sniadak, Doug Stoddard, Kevin Vipavetz and Connie Webb.

Photo courtesy of Pat Cosgrove

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 22 ❖ Nov. 3, 2000

$240M Contract Awarded

Swales and Associates, Inc., Will Support Langley For Five Years

SWALES AEROSPACE

By MARNY M. SKORA
Office of Public Affairs

Langley Research Center has selected Swales and Associates, Inc., of Beltsville, Md., to provide research and development support services. The contract is valued at a maximum of $240 million over the next five years.

Specific work areas include support in full-spectrum aerodynamics, gas dynamics, fluid dynamics, aerothermodynamics, acoustics and aeroacoustics, metallic and non-metallic structures and materials, and space and airborne systems.

Work is expected to begin Jan. 2, 2001, and will be performed primarily on-site.

NASA's Cross-Enterprise Technology Development Program

Langley Proposal Selected

By MICHAEL BRAUKUS
NASA Headquarters

and JIM ROBERTS
Researcher News editor

A Langley Research Center proposal is one of 111 selected by NASA to receive funding through the Agency's Cross-Enterprise Technology Development Program.

Over the next one-to-three years, principal investigators in 30 states, chosen from a field of more than 1,200 applicants, will explore promising new ideas that could lead to the agency's achieving many of its long-range goals in space science, Earth science and human exploration of space. Forty-nine percent of the selected proposals are from universities.

The broad range of studies, to be conducted by universities, industry and private and government laboratories will address 10 general technology areas. For example, new sensors will be developed for the gathering of previously unavailable science data from remote sources. The automation of spacecraft functions will be studied to enable complex new missions with greatly reduced human intervention. New component technologies including advanced materials, microdevices and support systems will be developed that can significantly reduce the mass, cost and on-board resource needs of future spacecraft.

The Cross-Enterprise Technology Development Program is a primary NASA vehicle for identifying and developing revolutionary space technologies to enable future missions and stimulate new concepts for missions not yet conceived.

Langley's proposal, "Efficient, Multiple Use Lidar Transmitter For Remote Sensing Of Planet Earth and Other Planets," was submitted by Norm Barnes and Jirong Yu of Langley's Laser Systems Branch.

> *"Currently, there is no narrow-linewidth, high-energy, tunable laser source available in this wavelength range."*
> **Jirong Yu, Principal Investigator**

"This system can be used in a differential absorption lidar to measure water vapor, carbon dioxide, carbon monoxide, methane, ammonia and other applications," Yu said. "Currently, there is no narrow-linewidth, high-energy, tunable laser source available in this wavelength range (between 2.6 and 9.5 microns)."

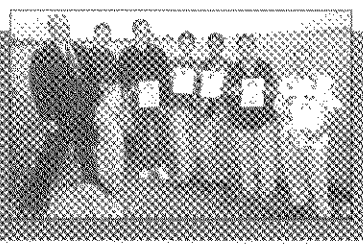
Yu said his proposal was the only one of 16 Langley submissions to make it through the eight-month selection process. The proposed work is a three-year effort with total funding more than $1 million.

A complete list of selected proposals is available on the Internet at <http://www.aerospace.nasa.gov/programs/xenterprise>.

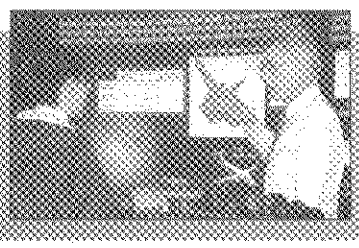
Langley Research Center employees Jirong Yu (left) and Norm Barnes (right) will receive more than $1 million through NASA's Cross-Enterprise Technology Development Program to develop a multiple-use lidar transmitter.

Photo by Jeff Caplan

Inside This Issue:



JtAFS Students Win In AIAA Design Contest *Page 3*



Langley Exhibits At Annual WAC *Page 4*

News Briefs

Around the Agency

TWIN ENGINE TESTS FOR X-33 TAKE SHAPE

Two unique engines designed to propel America's X-33 into high-speed, suborbital flight in 2003 have been mounted side by side in a Mississippi test stand for qualification firings, now slated for later this year.

At NASA's Stennis Space Center, tandem test firings of X-33's Linear Aerospike XRS-2200 engines will begin with short bursts and will eventually lead to full firings for durations needed to send the unpiloted vehicle from a launch pad in California to landings in either Utah or Montana. RELEASE: 00-169

SPACECRAFT DOUBLE-TEAM KING OF PLANETS

Two NASA spacecraft are teaming up to scrutinize Jupiter during the next few months to gain a better understanding of the planet's stormy atmosphere, diverse moons, faint rings and vast bubble of electrically charged gas.

The joint studies of the solar system's largest planet by the Galileo and Cassini spacecraft will also resemble the passing of a baton from the durable veteran to the promising rookie, say mission controllers at NASA's Jet Propulsion Laboratory.

Galileo has been running laps around Jupiter since December 1995, continuing to produce scientific discoveries after surviving more than double the orbital time and triple the radiation exposure originally intended. It will pass close to Jupiter's largest moon, Ganymede, on Dec. 29. RELEASE: 00-168

SPACE SHUTTLE INSPECTION TEAM REWARDED

NASA Administrator Daniel S. Goldin recognized members of the Space Shuttle ice and debris inspection team on Oct. 18 at Kennedy Space Center for their keen safety observations prior to the recent launch of Space Shuttle Discovery.

Gregory N. Katnik and Jorge E. Rivera of NASA received the Agency's Exceptional Achievement Medal, while Michael Barber, John B. Blue and Thomas F. Ford of United Space Alliance and D. Scott Otto of Lockheed Martin Space Services Company received the NASA Public Service Medal.

On Oct. 10, the team found a stray 4-inch pin near the shuttle's external fuel tank while using binoculars to scan launch pad 39A several hours before the launch of STS-92. The discovery delayed the shuttle mission 24 hours, allowing the team to retrieve the pin and clear the shuttle for a safe launch. If not removed, the pin could have damaged the space shuttle's thermal protection system or could have been sucked into one of the main engines during launch, causing damage there. RELEASE: 00-165

NOBEL PRIZE LAUREATE APPOINTED TO NASA

NASA Administrator Daniel S. Goldin named Dr. Baruch Blumberg, director of NASA's Astrobiology Institute and winner of the 1976 Nobel Prize for Physiology or Medicine, as senior advisor to the Administrator, effective Oct. 16.

As senior advisor, Blumberg will provide guidance for NASA's newly created enterprise, the Office of Biological and Physical Research in its efforts to develop an interdisciplinary research program focused on biology, bringing together physics, chemistry, biology and engineering. Blumberg also will continue in his role as director of the Astrobiology Institute. RELEASE: 00-164

Researcher News

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor ..... Keith Henry

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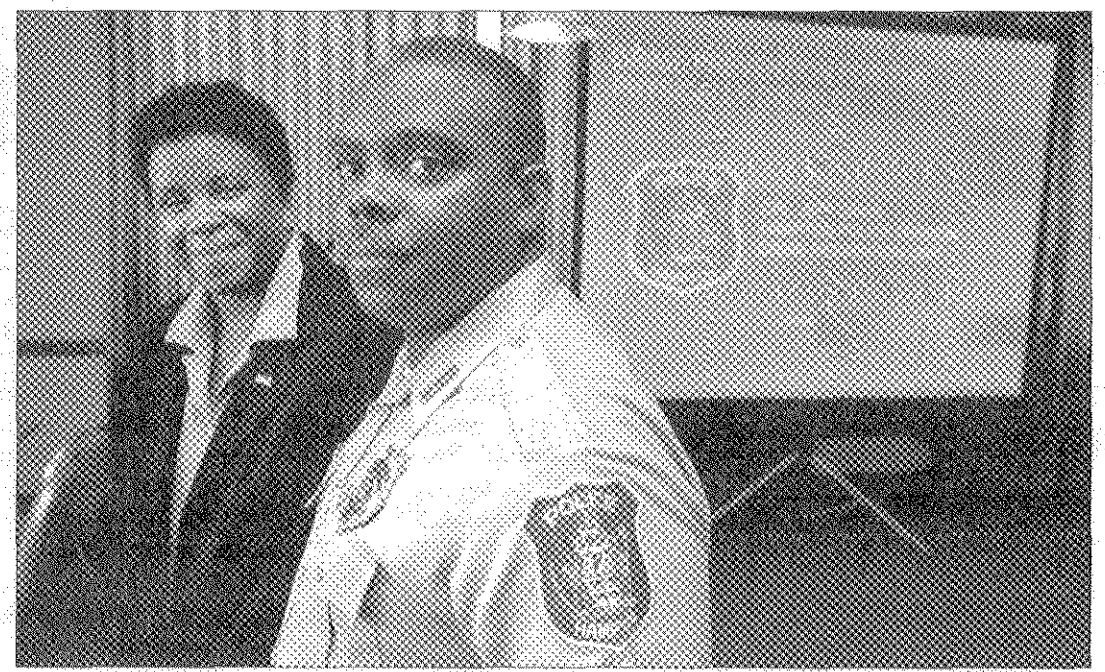
Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Disability Awareness Month



Gerri Rankin (left) of Langley Research Center's Office of Equal Opportunity joins Cpt. Jeff Davis of the Hampton Police Department before Davis' brown-bag lunch presentation on Oct. 25. Davis spoke in the private dining room of the Langley cafeteria about "Personal Safety And Crime Prevention For People With Physical Disabilities" as part of the Center's observance of Disability Awareness Month.

Photo by Jeff Caplan

Employees' Suggestions Wanted

Langley Research Center's Office of Human Resources is soliciting ideas to improve NASA and its operations. Employees are encouraged to use the Employee Suggestion Program to submit ideas that will significantly improve product quality, devise new tools or equipment, reduce cost of materials, and directly increase effectiveness of NASA operations.

Each year, employees have earned recognition and monetary awards by turning their ideas into winning suggestions.

Ideas should be submitted on Langley Form 167 (now available on the Langley Forms System) and forwarded to Karen Ridlon at Mail Stop 174. For more information, call Karen Ridlon at ext. 43194.

In Memoriam

John H. Chess

John "Joe" Hart Chess died on Oct. 17 at the age of 79. Chess, a resident of Williamsburg, retired from NASA as an electronic engineering technician after 30 years of service.

Patricia G. Coats

Patricia Gloria Coats died on Oct. 13 at the age of 62. Coats, a native of Hampton, retired from NASA after 18 years of service.

Merrick D. Creech

Merrick Donnell Creech died on Oct. 10 at the age of 62. Creech, a native of Johnston County, N.C., worked as a contractor at Langley Research Center, retiring from EG&G in 1999 after 24 years of service.

Terrance R. Davis Sr.

Terrance Richard Davis Sr. died on Oct. 20 at the age of 52. Davis served in the U.S. Navy for 25 years and was a member of Langley Research Center's Beekeeper Association.

Lilburn C. Jones

Lilburn Clifton Jones died on Oct. 20 at the age of 84. He was a NASA retiree.

Ernest Sutton Jr.

Ernest Sutton Jr. died on Oct. 13 at the age of 69. Sutton, a native of Goldsboro, N.C., served in the U.S. Army and retired from NASA in 1992 after 25 years of service.

William A. Thompson

William Allen Thompson died on Oct. 10 at the age of 81. Thompson, a native of Atlanta, served as an officer in the U.S. Merchant Marine and retired from NASA as an electrical engineer after 30 years of service.

Raymond J. Ward

Raymond J. Ward died on Oct. 15 at the age of 75. Ward, a resident of Windsor, served in the U.S. Navy and was a veteran of World War II. He retired from NASA in 1980.

Quiz

What do the inventors of the following have in common?

1. Rabies vaccination
2. Radium
3. Nuclear Fission
4. Meningitis Serum
5. Trigger for underground nuclear testing
6. Apgar Score
7. Radioactivity
8. Smallpox inoculation
9. Terramycin
10. COBOL

The answer appears on page 6.

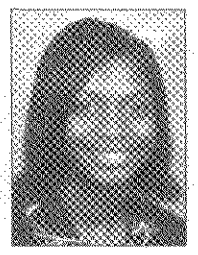
Correction

In the Day Of Caring coverage in the Oct. 6 edition of the *Researcher News*, the name of Langley Research Center employee Mike Langford was misspelled.

Combined Federal Campaign

Langley's Employees Make A Difference

By ANGELA J. MASON
Structural Dynamics Branch



I would like to thank Langley Research Center for affording me the wonderful opportunity to serve as the Center's "Loaned Executive" for the 2000 Combined Federal Campaign (CFC).

When I was asked to serve, I said yes, but I was not aware of all of the details of the three-month assignment.

Since September of this year, I have been working closely with Mary Fleck, CFC's program director, and Doug Ashby, director of the Principal Combined Fund Organization, along with 33 other government agencies on the Peninsula. I have also learned about several recipient agencies that are listed in the CFC 2000 brochure. Our Langley community is doing so much to reach and help people.

Working as the Loaned Executive has subsequently caused me to reflect on the ways I have been personally impacted by the CFC. From the time I was about 10 years old and through my teen-age years, the CFC and the United Way played a major role in my life. Just around the corner from my house in Delaware was the Christiana Cultural Arts Center. I can remember when I was in the fifth grade, attending the center almost everyday after school. I took music lessons and studied ballet, ceramics and sewing. I even made my little white graduation dress when I graduated to the sixth grade.

I never thought about how that organization was funded until recently when my mother told me that it was an organization funded by outside sources like the CFC.

When I was 15, I also worked at the Fletcher Brown Boys Club, another agency funded by the CFC. As you can see, the CFC has educated and influenced me in many inconceivable ways.

I imagine that if you take some time to reflect, you will discover that the CFC has personally impacted your life as well.

Imagine ...

- everyone has adequate food and shelter;
- every person is safe from violence and abuse;

- every individual is healthier in significant, measurable ways;
- everyone has a drug-free future;
- every individual is valued and respected as a unique human being;
- every child becomes a happy, well-educated, productive adult;
- every elderly person lives a dignified life;
- every individual with a physical or mental challenge develops to full potential; and
- family life is enhanced for all of us.

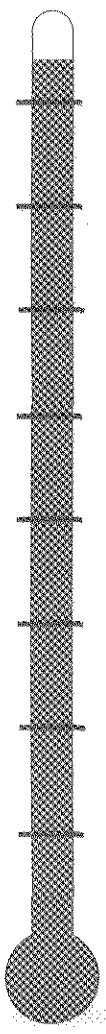
This is the CFC vision. I am sure this vision may sound impossible to reach, but because of your contributions and those of many others, the CFC is able to perform and accomplish its mission.

In recent newspaper articles, headlines have stated: "Math SATs At Highest In 30 Years," "Violent Crime Down Sharply In '99 Survey" and "Teen Births Drop To Lowest Rate Since Stats Kept." Also, unemployment was at its lowest in July.

Langley is making a difference.

Last year, Langley gave $331,616 out of the $218 million raised across the nation. I want to express my sincere gratitude to you for your contributions. Langley has always been a government agency that gives back to the community in many different ways.

Let's continue to carry the torch of giving and surpass our CFC goals. "Show the World Our Heart! Give Smart Through CFC."



***As of Oct. 27, Langley Research Center employees had pledged $285,956 to the CFC. That amount represents 95 percent of the $302,000 goal. The final amount pledged will be published in the next edition of the* Researcher News.**

Two JIAFS Teams Win AIAA Contest ... Again

'Guardian' And 'Cyclops' Hypersonic Strike Fighters Place Second And Third

For the third straight year, student teams from George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center won two of the top three awards in the American Institute of Aeronautics and Astronautics (AIAA) Foundation Graduate Team Aircraft Student Design Competitions.

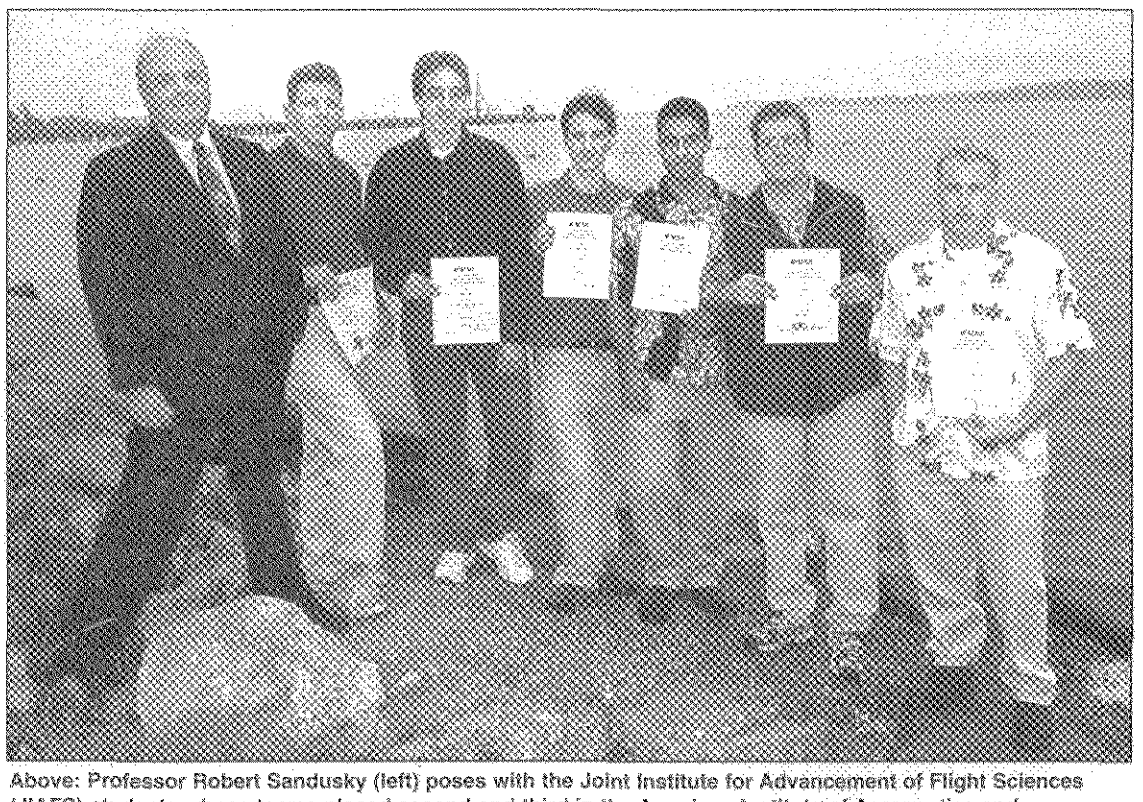
Govinda Haines, Jason P. Hundley and Jeff Walters placed second — and won a cash prize of $1,500 — for their design, "The Guardian," and Troy Altus, Byron Monzon and Jason Prince placed third — and won a cash prize of $1,000 — for their design, "The UXF-25 Cyclops."

This year's design problem was a Hypersonic Strike Fighter (HSF). Since threat reaction times make it difficult to destroy time-critical, high-value targets, the students were challenged to explore the feasibility and affordability of HSF equipped with high-speed missiles.

Both air-to-air and air-to-ground weapons were required. The aircraft also were required to deploy from bases a "safe" distance from theater ballistic missiles. The tech availability date was assumed to be 2010.

The students' projects were undertaken as part of an Aircraft Design course series taught by JIAFS professor Robert Sandusky. The first semester covers conceptual design and is offered in the spring semester.

The second semester covers more detailed methods of preliminary design, including the fabrication and wind tunnel testing of a model of their design.



Above: Professor Robert Sandusky (left) poses with the Joint Institute for Advancement of Flight Sciences (JIAFS) students whose teams placed second and third in the American Institute of Aeronautics and Astronautics (AIAA) Foundation Graduate Team Aircraft Student Design Competitions: (from left to right) Jason Hundley, Jeff Walters, Govinda Haines, Byron Monzon, Troy Altus and Jason Prince.
Left: A model of JIAFS' second-place design, "The Guardian," will be tested in Langley Research Center's Subsonic Basic Research Tunnel.

Photo by Jeff Caplan/Illustration courtesy of JIAFS

The competition, which is judged by members of the AIAA Technical Committees, seeks to increase the practical skills of aerospace engineering undergraduate and graduate students in both individual and team conditions. Specific Requests for Proposal (RFP) are issued, and teams of three to 10 or individual students compete to devise the best design to fit the RFP in a given time period.

A rigorous series of requirements and design objectives must be adhered to, and the final report must accommodate not only the design itself, but the organization and management of the project.

'The Year 2020 And Beyond'

World Aviation Congress Focuses On Future Of Aeronautics

By MARNY M. SKORA
Office of Public Affairs

The annual World Aviation Congress (WAC) was held Oct. 10-12 in San Diego. This year's theme was "Looking At The Year 2020 And Beyond."

This year's WAC "was intended to make people in the industry look further into the future needs and challenges we will all have to face," said general chair Phil Rose, a director of new business development for BFGoodrich Aerospace. "We got a challenging perspective from the very top leaders in the business."

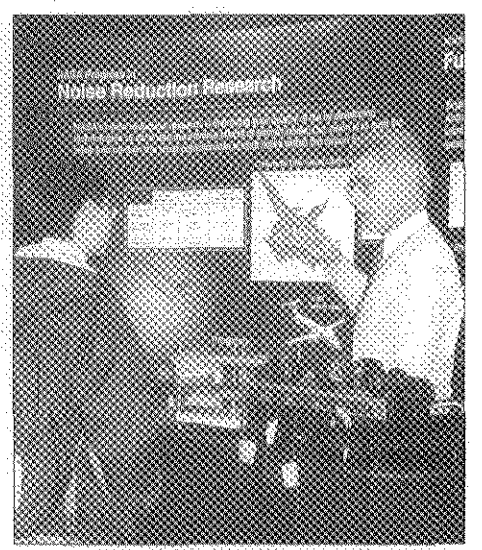
Keynote speakers included Tom Lagow, general partner of Rampart Group; John W. Douglass, president and chief executive officer of Aerospace Industries Association, and James Womack, founder and CEO of Lean Enterprise Institute. Keynote addresses were followed by panels of distinguished authorities in the fields of commercial aerospace, military aerospace and infrastructure management.

"Attendees represented all the major U.S. and many European aerospace companies, government organizations and the military," Rose said.

In addition to technical presentations and discussion, WAC presented exhibition opportunities. Langley Research Center's exhibit highlighted the Center's contributions to military aircraft, noise reduction technologies, hypersonic research, advanced vehicle concepts and materials development. Langley attendees participating in panels and delivering technical papers also staffed the exhibit.

"Conference attendees and exhibitors commented on the quality of the exhibit, the expertise of the staffers and the value of the information shared," said Jerry Hefner, a senior technologist at Langley and WAC founding father. "The display represented the kinds of things we are doing that are important to our stakeholders, product-users and funders."

WAC, a joint venture of the Society of Automotive Engineers and the American Institute of Aeronautics and Astronautics, provides an international forum for exchanging new and significant technical information. The Congress focuses on aviation technology, engineering and operations.



Joe Posey (right), the Head of Langley Research Center's Aeroacoustics Branch, explains NASA's noise reduction goals for a visitor at the World Aviation Congress in San Diego.

Photo by Marny Skora

From The Office Of Human Resources

Leave Scheduling And Exigencies

The current leave year ends on Jan. 13, 2001. It is the joint responsibility of supervisors and employees to plan and to schedule annual leave throughout the leave year. Supervisors must approve annual leave if work load permits. However, if the leave must be denied, the supervisor and the employee should work together to reschedule the leave to the satisfaction of the employee and still meet mission requirements.

Approval of an exigency of the public business must be obtained prior to cancellation or denial of leave if the leave is subject to forfeiture. "Use or lose" annual leave may be restored only when the leave is forfeited due to an exigency of the public business — not for the convenience of the employee. For such leave to be considered for restoration, it must be scheduled and approved before the beginning of the third pay period prior to the end of the leave year or not later than Dec. 2. A properly executed Standard Form (SF) 71, "Application for Leave," satisfies this requirement.

A key element in the leave restoration process is line management's determination that a sufficiently critical problem or situation exists to declare an exigency. Such exigencies should be rare events having significant program cost or schedule impact or involving safety considerations. Approval of an exigency of the public business must be obtained prior to canceling or denying leave in the "use-or-lose" category.

For individual employees who are requesting an exigency that is not affiliated with a project or team, the request for exigency must be processed through organization channels to Group level and must include the following:

- a complete description of the exigency;
- the reason why the employee cannot use scheduled annual leave and the reason why the leave cannot be rescheduled prior to the end of the leave year;
- the proposed beginning and ending dates of the exigency; and
- a completed SF 71 for the employee affected by the exigency dated before Dec. 2.

Employees who are members of a project or team should check with their line management to ensure that their project or team has been submitted as a group by your Group Director. The procedure for project(s)/team(s) is as follows:

> *"Use or lose" annual leave may be restored only when the leave is forfeited due to an exigency of the public business — not for the convenience of the employee.*

- employees associated with a project/team execute an SF 71 requesting leave use of use-or-lose annual leave;
- Group Directors respond to request from the Office of Human Resources (OHR) to identify project(s)/team(s) for consideration of an exigency.
- Office of Director line-item vetoes or approves requests for project/team exigencies;
- OHR notifies appropriate offices of approved project(s)/team(s);
- supervisors deny use of use-or-lose annual leave for the employees associated with the approved project(s)/team(s);
- Forward *copies* of properly executed SF 71s to the OHR by Feb. 9, 2001.

Note: For employees affiliated with an approved project/team, in order for the SF 71 to be considered properly executed, it must contain the following additional information:

- name of project/team employee is associated with;
- number of hours *actually* lost, as well as number of hours scheduled; and
- employee's and supervisor's signatures are dated *before* Dec. 3.

"Use-or-lose" annual leave may be denied or canceled only if the Office of the Director determines that an exigency of the public business of major importance exists. Exigency requests should be routed through appropriate organizational channels to OHR at Mail Stop 120.

"Use-or-lose" annual leave which cannot be used by the end of the leave year may be donated to approved leave recipients in the Voluntary Leave Transfer Program. This program permits federal employees to donate annual leave to other federal employees who are experiencing personal or family medical emergencies.

Mammograms Offered On-Center Starting In December

Langley Research Center's Management and Employee Support Branch will host mammographic exams on Dec. 20 and 29, on Jan. 17, 22, 23, 29 and 30, 2001, and on March 8, 21 and 26, 2001.

The exams will be administered by Riverside Mammography Van Services on-Center in the parking area between the Clinic and the Cafeteria. Each appointment is scheduled to last 30 minutes and will include the mammography screening and instructions on self-examination. The results of the mammogram will be mailed directly to the patient and the designated physician.

Langley employees, contractors and retirees — and their family members — are eligible for the exams. To schedule an appointment, call the Riverside Diagnostic Center at 594-3900. Time spent at the exam may be charged to J.O. B1008.

The cost is $75. Payment may be made by cash, check or Visa/MasterCard.

Women filing under their health benefits should bring insurance cards. Anyone with coverage under an HMO that requires pre-certification from a physician should have that documentation available on the day of the mammogram. (Most health benefit plans cover only one mammogram per year, so it is important to verify your plan's particular coverage and requirements, and then schedule your next mammogram accordingly.)

The American Cancer Society recommends the following guidelines for mammography:

- A one-time "baseline" mammography is recommended for women between ages 35 and 40.
- Mammograms are recommended every one to two years for women between ages 40 and 50.
- Annual mammograms are recommended for women age 50 and older.

For more information, call Langley's Management and Employee Support Branch at 864-3194.

Course Work

Langley Research Center's Employee and Organizational Development Branch has contracted to receive several programs over the PBS Business and Technology Network. The following courses will be broadcast over LaRC TV Network Channel 16:

■ **"Managers as Mentors"** will air from 1 to 3 p.m. Nov. 8.

■ **"Oral Presentation of Technical Information"** will air from 11 a.m. to 5 p.m. Nov. 15.

Online registration is available at <http://class/cgi-bin/edb/index.cgi>. For support materials, call Maury Bonner at ext. 42325 between 8 a.m and noon. Support materials will be available four days prior to each broadcast.

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Langley Research Center will host **training classes for the new, Web-based Task Agreement System** from 9 to 11 a.m. Nov. 9, from 1:30 to 3:30 p.m. Nov. 13 and from 1:30 to 3:30 p.m. Nov. 16 in the Pearl Young Theater.

The Web-based Task Agreement System replaces the old RTA/COP System. All employees involved in the preparation of Task Agreements are encouraged to attend.

Online registration is available at <http://class.larc.nasa.gov> under the "General Classes" link. For more information, contact John Costulis at ext. 47174 or Delores Poupard at ext. 46098.

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Langley Research Center's Office of Human Resources will host two **"Planning for Retirement"** seminars: one from 8:30 a.m. to 3:30 p.m. Nov. 13 and one from 8:30 a.m. to 3:30 p.m. Dec. 4. Both seminars will be taught by Government Retirement & Benefits, Inc. in Langley's H.J.E. Reid Conference Center.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@larc.nasa. gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.

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Langley Research Center's Employee and Organizational Development Branch will host the course, **"LabWindows/CVI Basics I and II"** from Nov. 13-17. The course is intended for employees who have completed the Basic Labview course and need additional training.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@larc.nasa. gov>.

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Langley Research Center's Office of Safety and Mission Assurance will offer the course, **"Laboratory Safety and Health,"** from 8 a.m. to 4 p.m. Nov. 14-16 in Bldg. 1194A, Room 206. The course will focus on the implementation of the Occupational Safety and Health Administration's "Laboratory Standard 29 CFR 1910.1450" and is intended for safety professionals and anyone that works in a laboratory environment.

The course is worth two Continuing Education Units.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@larc.nasa. gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.

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Langley Research Center's Wind Tunnel University will offer the following courses:

■ **"Wind Tunnel Model Systems Criteria Overview,"** from 8 to 11 a.m. Nov. 15 in Bldg. 1194A, Room 206. The instructor will be Charlie Davidson.

■ **"Videogrammetry for Aerospace Applications"** from 8 to 10 a.m. Dec. 4 and 5. The instructor will be Al Burner.

To view course descriptions and register for courses online, visit <http://class.larc.nasa.gov/cgi-bin/wtu/index.cgi>.

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Langley Research Center employees can pursue graduate study from a variety of institutions at the **Virginia Consortium of Engineering and Science Universities** (VCES).

VCES, located at 303 Butler Farm Road in Hampton, is made up of the College of William and Mary, Old Dominion University, the University of Virginia, Virginia Polytechnic Institute and State University and two affiliate universities, Christopher Newport and Norfolk State.

For more information, call 865-4830 or visit the VCES Web page at <http://vces.larc.nasa.gov>.

From The Office Of Safety And Mission Assurance

Chemical Safety

Data Sheets Provide Useful Summary Of Information For Hazardous Materials

Langley Research Center's workforce encounters chemicals every day. Chemicals are essential in our research and help us accomplish our mission, but we must be aware of the health and safety issues associated with their use.

Hazard Communication Standard

To reduce the risks of working with chemicals, practice safe work habits and procedures. Know and understand the potential hazards of the chemical products in your work area.

Material Safety Data Sheets (MSDSs) provide a summary of the health, safety and toxicological information for chemicals or other hazardous materials. It should be standard procedure to read MSDSs before working with any chemicals.

The Occupational Safety and Health Administration (OSHA) developed the MSDS as part of the Hazard Communication Standard, also known as the "Right to Know" regulation. The intent of the Hazard Communication Standard is to make sure every employee has the facts about the chemicals present in his/her workplace.

MSDS Information

MSDSs are usually divided into eight sections. Be familiar with the type of information in each section, and you will be able to use any type of MSDS to protect yourself.

■ **Section 1**, "Manufacturer's Name, Address And Emergency Telephone Number," tells how to contact the chemical manufacturer to obtain additional information and gives the date the MSDS was prepared.

■ **Section 2**, "Hazardous Ingredients/Chemical Identity," lists the common names of hazardous components and gives the OSHA Permissible Exposure Limit (PEL). The PEL is the maximum airborne level of a chemical that a worker can be exposed to in an eight-hour shift to ensure that no adverse health effects occur.

■ **Section 3**, "Physical/Chemical Characteristics," lists information such as boiling point, pH, vapor pressure, appearance and odor.

■ **Section 4**, "Fire and Explosion Hazard Data," lists the flash point, which is the minimum temperature where vapors from a liquid can ignite. It also lists what type of fire extinguisher is necessary (foam, CO2) and explains any special fire-fighting procedures that may be required.

■ **Section 5**, "Reactivity Data," describes what can happen if the chemical is combined with other chemicals, water or air. This information is useful in determining where and how to store substances that could have dangerous reactions if accidentally combined.

■ **Section 5**, "Health Hazard Data," lists routes of entry; for example, inhalation, ingestion and skin contact. It also gives the signs and symptoms of exposure, such as headaches, dizziness or skin rashes. It tells whether the chemical may make an existing health condition like asthma worse. This section also explains whether the chemical is a suspected or confirmed carcinogen.

■ **Section 7**, "Precautions For Safe Handling And Use," explains what to do if there is a spill, leak or accidental chemical release. Other information in this section identifies the proper chemical handling, storage and disposal procedures for the chemical.

■ **Section 8**, "Control Measures," covers the work and hygiene practices and protective equipment that may be needed to reduce the potential for exposure. It also lists the types of personal protective equipment that may be necessary; for example, gloves and respirators.

Acute Effects and Chronic Effects

Chemicals can enter the body through skin and eye contact, inhalation or ingestion. The MSDS will identify potential routes of entry and describe the effects from exposure. Acute effects are those that show up immediately. Chemical burns or sudden illness are examples of acute effects. Chronic effects from chemical exposure may take a long period of time to develop, ranging from a few weeks to many years. Some cancers may take as long as 40 years to develop.

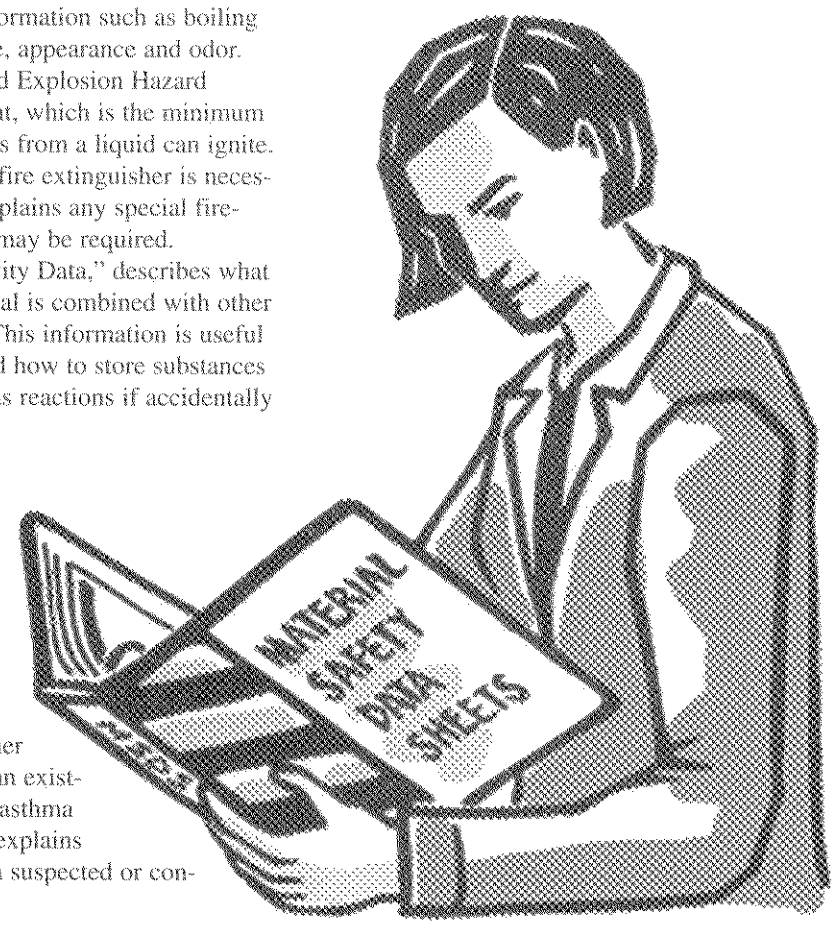
MSDSs on File for Each Chemical

Every Langley facility is required to have MSDSs on file for each chemical present. MSDSs are kept in a binder in a central location so they can be readily available to all personnel. If you have questions about any of the information found on an MSDS, contact your supervisor.

Facilities maintain an online inventory of chemicals and their MSDSs on Langley's Chemical Material Tracking System (CMTS) at <http://osemant1.larc.nasa.gov/cmts/>.

MSDS Training Class

The Office of Safety and Facility Assurance offers an MSDS training class. To schedule a class, call Chip Quinn at ext. 48743.



AdVentures

CLASSIFIED

FOR SALE: '93 Honda Civic DX hatchback. Green with 66,500 miles. $6,000. Call 623-0930.

FOR SALE: Cemetery plot. One space in Parklawn Memorial's "Garden of Brotherly Love." $900. Call 898-3442.

FOR SALE: Buck Stove fireplace insert. Great shape, comes with cord of wood. $250. Call 868-9558.

FOR SALE: Hot Point refrigerator. White, 18 cubic feet, ice-maker, five years old, excellent condition. $175. Call 874-3121 or e-mail <telatax@juno.com>.

WANTED: Dorm-, office- or apartment-size refrigerator. Must be in good condition. Call 480-5929.

❖ ❖ ❖

The deadline for the Nov. 17 edition of the *Researcher News* is Nov. 6. Send submissions to <j.r.roberts@larc.nasa.gov>.

Nanotechnology Lectures On Nov. 7

Ralph Merkle, a principal fellow at Zyvex and the co-recipient of the 1998 Feynman Prize for Nanotechnology, will present a Colloquium lecture entitled, "Nanotechnology And Space," at 2 p.m. **Nov. 7** in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center. For more information about the lecture series, visit <http://shemesh. larc.nasa.gov/Lectures/> on the Web.

Merkle

Bridge Club Announces Results

Ram and Sumi Prabhu were the winners of the Langley Research Center Duplicate Bridge Club's Oct. 11 game. Tying for second place were the teams of Tom Norum and Jay Robinson and Judy Ferris and Tom Finley.

The next game will be played at 5:30 p.m. **Nov. 8** in the Langley Room of the H.J.E. Reid Conference Center. For more information, call Geoff or Marty Tennille at 850-1532.

Alumni Association To Meet Nov. 14

Langley Research Center's Alumni Association (LAA) will meet at 11:30 a.m. **Nov. 14** in the private dining room of the Center cafeteria. Joe Street of the Newport News Commissioner of Revenue will speak about "Real Estate Taxes: How Decided, How Much."

Luncheon Planned For Tour Hosts

Langley Research Center's Office of Public Services will host a luncheon for the Center's volunteer tour hosts on **Nov. 21** in the private dining room of the Center cafeteria. Edwin Prior, the Deputy Director of Langley's Office of Education, will speak about "Advanced Aircraft."

For more information, contact Sandra Lemons at ext. 43957 or <s.c.lemons@larc.nasa.gov>.

AIAA Dinner Meeting On Dec. 13

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will sponsor a dinner meeting on **Dec. 13** in the H.J.E Reid Conference Center Auditorium. A social will start at 6 p.m., dinner will be served at 6:30 p.m., and the program — featuring Rick Fleeter, president of AeroAstro and author of "The Logic of Microspace," speaking about "Can Space Matter? The Search For Extraterrestrial Utility" — will begin at 7:30 p.m.

The cost is $10 for members and their guests, $12 for non-members and $8 for student members. Non-members joining the AIAA at the dinner will receive a complimentary dinner.

Reservations are required by Dec. 6. For reservations, contact Robin Hardy at ext. 47159 or <r.c.hardy@larc.nasa.gov> or Mohammad Takallu at ext. 47671 or <m.a.takallu@larc.nasa.gov>.

Wright Bothers Lecture On Dec. 14

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will host the 2000 Wright Brothers Lecture at 1 p.m. **Dec. 14** in Langley Research Center's H.J.E. Reid Conference Center. Former NASA Administrator James M. Beggs will speak about "America's Stake in Aeronautics Research."

Quiz Answer

Answer to the quiz on page 2: They were all women!

1. Anna Wessel Williams
2. Marie Curie
3. Lise Meitner
4. Hattie Elizabeth Alexander
5. Dr. Marguerite Shue-Wen Chang
6. Dr. Virginia Apgar
7. Marie Curie
8. Lady Mary Montagu
9. Gladys Hoppy
10. Grace Hopper

Quiz submitted by Langley Research Center's Office of Equal Opportunity.

SAIC Seeking Intern Applications

SAIC is seeking undergraduate and graduate students to participate in its 2001 Summer Intern Program at Langley Research Center.

Candidates should have a degree or be seeking a degree in one of the following fields: atmospheric science, mathematics, physics, scientific computer programming and electrical or mechanical engineering.

To request an application form or obtain more information, call 825-0001, fax 825-4968 or e-mail <saic+intern@larc.nasa.gov>.

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Researcher News

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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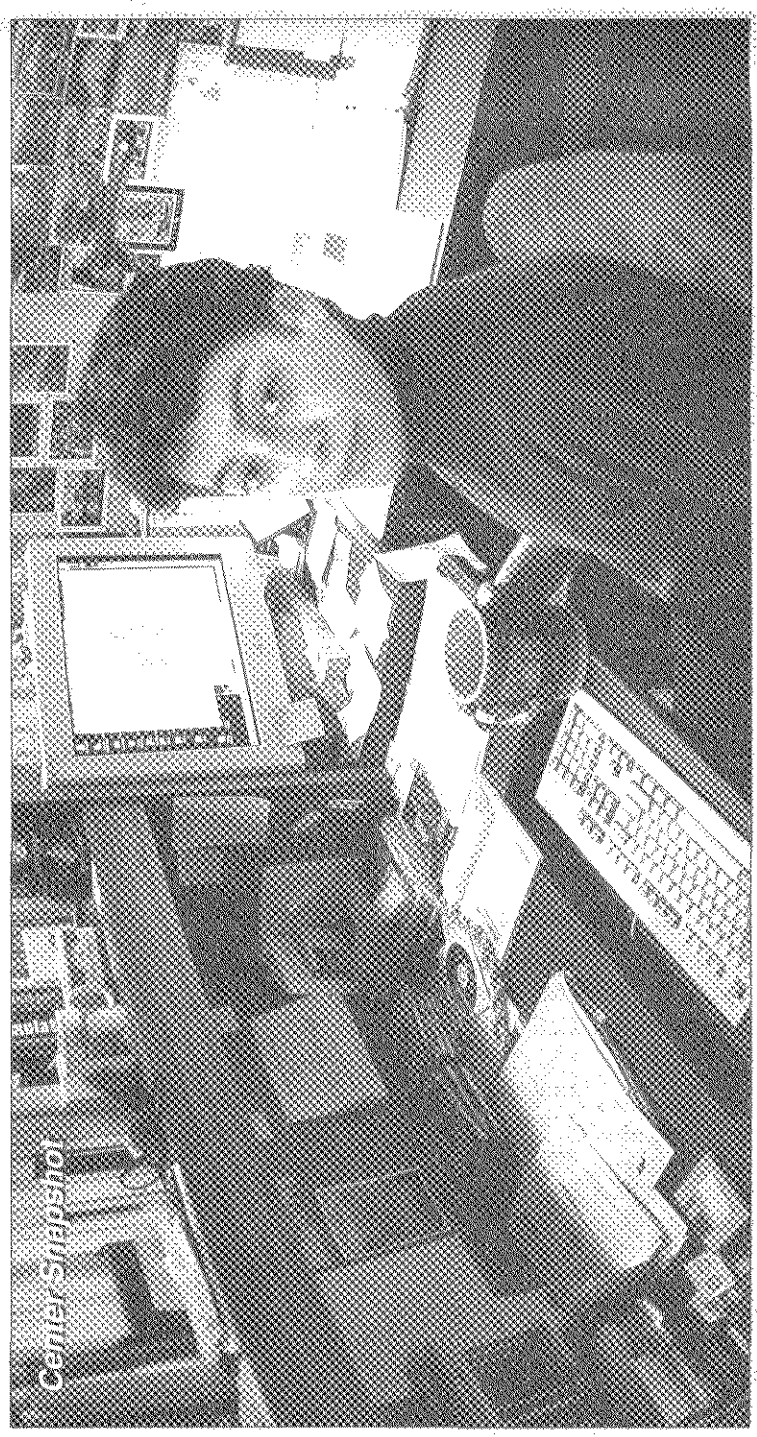


Irene Gregory celebrates her 10-year anniversary as a civil servant this month. She currently works in Langley Research Center's Dynamics and Control Branch, doing research in control systems for advanced aircraft. She also works part-time with the Aviation Safety Program. Gregory graduated from the Massachusetts Institute of Technology with bachelor's and master's degrees in aeronautical engineering, and she is working toward a doctorate in control and dynamics systems from the California Institute of Technology. Born in Baltimore, she now resides in Coventry and enjoys volleyball, ballroom dancing and photography. What does she like about working at Langley? "The campus-like atmosphere, the people I work with, and relative freedom to pursue interesting research," she says.

Photo by Jeff Caplan

National Aeronautics and Space Administration
Langley Research Center

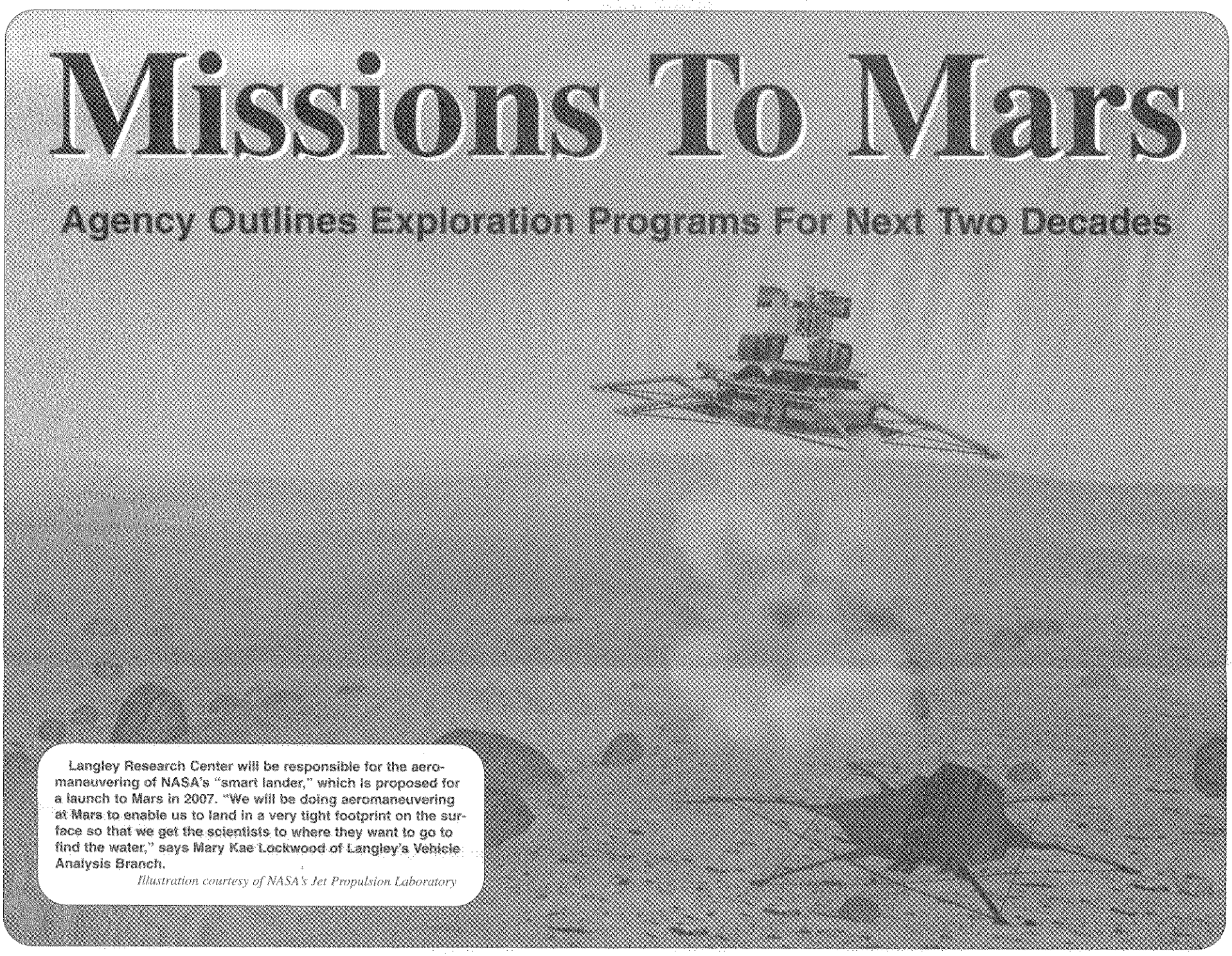
News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 23 ❖ Nov. 17, 2000

Missions To Mars

Agency Outlines Exploration Programs For Next Two Decades



Langley Research Center will be responsible for the aeromaneuvering of NASA's "smart lander," which is proposed for a launch to Mars in 2007. "We will be doing aeromaneuvering at Mars to enable us to land in a very tight footprint on the surface so that we get the scientists to where they want to go to find the water," says Mary Kae Lockwood of Langley's Vehicle Analysis Branch.

Illustration courtesy of NASA's Jet Propulsion Laboratory

By DONALD SAVAGE
NASA Headquarters

By means of orbiters, landers, rovers and sample return missions, NASA's revamped campaign to explore Mars, announced today, is poised to unravel the secrets of the Red Planet's past environments, the history of its rocks, the many roles of water and, possibly, evidence of past or present life.

Six major missions are planned in this decade as part of a scientific tapestry that will weave a tale of new understanding of Earth's sometimes enigmatic and surprising neighbor.

The missions are part of a long-term Mars exploration program which has been developed over the past six months. The new program incorporates the lessons learned from previous mission successes and failures and builds on scientific discoveries from past missions. The NASA-led effort to define the program well into the next decade focused on the science goals, management strategies, technology development and resource availability in an effort to design and implement missions which would be successful and provide a balanced program of discoveries.

International participation, especially from Italy and France, will add significantly to the plan. The next step will be an 18-month programmatic systems engineering study to refine the costs and technology needs.

In addition to the previously announced 2001 Mars Odyssey orbiter mission and the twin Mars Exploration Rovers in 2003, NASA plans to launch a powerful scientific orbiter in 2005. This mission, the Mars Reconnaissance Orbiter, will focus on analyzing the surface at new scales in an effort to follow the tantalizing hints of water from the Mars Global Surveyor images and to bridge the gap between surface observations and measurements from orbit. For example, the Reconnaissance Orbiter will measure thousands of Martian landscapes at 8-to-12-inch resolution, good enough

Continued on Page 3

Langley Will Have Major Role

By IVELISSE GILMAN
Office of Public Affairs

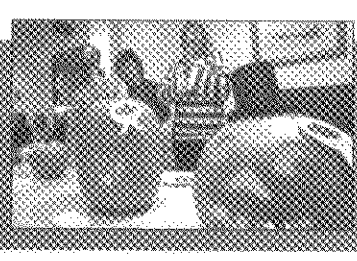
When Mary Kae Lockwood talks about Langley Research Center's role in NASA's plans to explore Mars, her excitement fills the room.

"To be involved in a real flight mission, a real science mission to determine whether or not there was life previously on Mars, is just fascinating," she says.

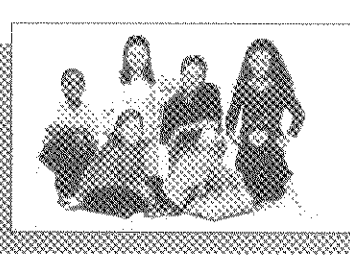
Lockwood, the "Planetary Team" Lead in Langley's Vehicle Analysis Branch (VAB), is part of a group of 40 to 50 engineers from across the Center who will be involved in the exciting research adventure. For the next two decades, a series

Continued on Page 3

Inside This Issue:



Center Hosts First-Ever Pumpkin-Carving Contest *Page 2*



"NASA 'Why' Files" Series Makes Debut *Page 5*

News Briefs

Around the Agency

NEW NASA OFFICE OF SECURITY ESTABLISHED

NASA has established a new organization, the NASA Office of Security Management and Safeguards, to focus and advance the Agency's efforts in all aspects of NASA security. The new office will formulate policy for and ensure the effectiveness of NASA's primary security objectives: to protect the Agency's employees (including on-site contractors) and visitors, as well as its critical national assets, vital information and physical property. The new organization, which reports directly to NASA Administrator Daniel S. Goldin, will serve as the single point of focus on security matters for the agency and also will represent NASA at the national level on security policy. RELEASE: 00-177

JOINT JAPAN-U.S. ASTEROID MISSION CANCELED

NASA has canceled development of a miniature rover, which would have been part of the U.S. contribution to a Japanese mission to an asteroid. The primary reasons for the cancellation were rising costs and weight.

"The decision ... was difficult and distasteful; it certainly represents lost opportunities," said Jay Bergstralh, NASA's Acting Director of Solar System Exploration. "In the end, however, there was no viable alternative." RELEASE: 00-175

SATELLITE DUO ON TARGET FOR NOV. 18 LAUNCH

NASA is set to embark on a mission that could change the way we look at satellite technology, as well as change the way we look at the Earth. Launch for this important satellite duo is scheduled Nov. 18 from Vandenberg Air Force Base, Calif.

The Earth Observing 1 (EO-1) satellite and SAC-C, an international cooperative mission between NASA and the Argentine Commission on Space Activities (CONAE), are scheduled to soar into orbit at 1:24 p.m. EST.

In 1996, NASA started the New Millennium Program (NMP), designed to identify, develop and flight validate key instrument and spacecraft technologies that can enable new or more cost-effective approaches to conducting science missions in the 21st century. The first of three New Millennium Program Earth-orbiting missions is EO-1, an advanced land-imaging mission that will demonstrate new instruments and spacecraft systems. RELEASE NO: 00-174

CHANDRA CAPTURES GAMMA-RAY AFTERGLOW

The Chandra Observatory's sharp-eyed X-ray vision has detected something never before seen. The discovery may help find the origin of what many researchers believe are the most powerful explosions in the Universe.

The clues are found in the afterglow of a gamma-ray burst (GRB), and could strengthen the case for a "hypernova" model, where massive collapsed stars generate these mysterious blasts of high-energy radiation.

An international team of scientists used Chandra to observe iron emission lines from ejected material surrounding one such burst known as GRB991216. This is the first time emission lines associated with GRBs have been unambiguously detected and their properties precisely measured at X-ray wavelengths. RELEASE: 00-173

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

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Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

Halloween Party

Paula Sidell, Effie Nicosia and Jo Sawyer, employees in Langley Research Center's Management Support Office, take part in the Halloween party hosted by the various organizations in Bldg. 1244. Sawyer won a prize for her "jailbird" costume, and fellow Management Support Office employee Tim Warner (not pictured) won the grand prize in the pumpkin-carving contest.

Photo by Jeff Caplan

AIAA Names Engineer Of The Year

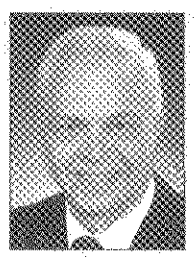
The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) recently announced that Langley Research Center employee **Robert A. Mitcheltree** is the recipient of the section's 2001 "Engineer-of-the-Year" award.

Mitcheltree

Mitcheltree, who works in Langley's Mars Earth Entry Vehicle Project Office, is a principle national asset in the design and development of planetary entry systems and has made world-class technical contributions to five different planetary space missions. He is currently the Lead Design Engineer for the Earth Entry Vehicle that will bring back Mars samples in the NASA's premier Space Science mission.

Houbolt Receives ASME Medal

Langley Research Center retiree **John C. Houbolt** received the American Society of Mechanical Engineers' Spirit of St. Louis Medal during the 2000 International Mechanical Engineering Congress and Exposition, which was held Nov. 5-10 in Orlando.



Houbolt

The Spirit of St. Louis Medal was established in 1929 and is awarded annually for meritorious service in the advancement of aeronautics and astronautics.

Houbolt, who worked for NASA from 1942 to 1963 and from 1976 to 1985, was recognized for his contributions to aeroelasticity and for the Lunar Orbit Rendezvous concept.

Interim ESSPO Leaders Named

Ruth M. Martin, Langley Research Center's Associate Director for Program Integration, announced that she will serve as Acting Director of the Earth and Space Science Program Office (ESSPO) until a new director is selected. Day-to-day operations will be handled by Acting Deputy Directors **Stephen P. Sandford** (Nov. 5 through Feb. 28, 2001) and **Barry D. Meredith** (March 1, 2001, through June 30, 2001).

Runners' Club Announces Results

Langley Research Center's Runners' Club recently announced the results of the 2000 NASA Fall Intercenter Races:

■ **Andrew Culter** was the top runner in the 10-kilometer race with a time of 39:57. He was followed by **Scott Bartram** at 40:51 and **David Witte** at 42:33. **Allison Roberts** was the first-place woman with a time of 46:01. She was followed by **Kathy Powell** at 46:46 and **Michelle Calloway** at 53:02.

■ **Culter** was also the top runner in the 2-mile race with a time of 11:52. He was followed by **Witte** at 11:56 and **Michael Smart** at 12:59. **Thea Ganoe** was the first woman with a time of 15:19. She was followed by **Calloway** at 15:54 and **Angela Teter** at 21:04.

The NASA Intercenter Races are held twice a year. For the fall 2000 races, 27 employees took part in the 10-kilometer race and 30 in the 2-mile race. The Langley times will be combined with times from the other NASA Centers for the overall results.

For more information about the Langley Runners' Club, contact Richard Shearer at ext. 47036 or visit the club's Web page at <http://larc-exchange.larc.nasa.gov/laa/runners>

In Memoriam

Louis Phillip Buldain

Louis Phillip Buldain died on Oct. 24 at the age of 85. Buldain, a native of Kerrville, Texas, served in the U.S. Navy during World War II and in the U.S. Army during the Korean and Vietnam Wars. He retired as a colonel in 1969 and went on to work as an accountant at Langley Research Center until 1987.

Missions

Continued from Page 1

to observe rocks the size of beach balls.

NASA proposes to develop and to launch a long-range, long-duration mobile science laboratory that will be a major leap in surface measurements and pave the way for a future sample return mission. NASA is studying options to launch this mobile science laboratory mission as early as 2007.

This capability will also demonstrate the technology for accurate landing and hazard avoidance in order to reach what may be very promising but difficult-to-reach scientific sites. NASA also proposes to create a new line of small "Scout" missions which would be selected from proposals from the science community, and might involve airborne vehicles or small landers, as an investigation platform.

Exciting new vistas could be opened up by this approach either through the airborne scale of observation or by increasing the number of sites visited. The first Scout mission launch is planned for 2007.

In the second decade, NASA plans additional science orbiters, rovers and landers, and the first mission to return the most promising Martian samples to Earth. Current plans call for the first sample return mission to be launched in 2014 and a second in 2016.

Options which would significantly increase the rate of mission launch and/or accelerate the schedule of exploration are under study, including launching the first sample return mission as early as 2011. Technology development for advanced capabilities such as miniaturized surface science instruments and deep drilling to several hundred feet will also be carried out in this period.

Mars missions can be launched every 26 months during advantageous alignments — called launch opportunities — of the Earth and Mars, which facilitate the minimum amount of fuel needed to make the long trip.

The Agency's Mars Exploration Program envisions significant international participation, particularly by France and Italy. In cooperation with NASA, the French and Italian Space Agencies plan to conduct collaborative scientific orbital and surface investigations and to make other major contributions to sample collection/return systems, telecommunications assets and launch services. Other nations also have expressed interest in participating in the program.

"We have developed a campaign to explore Mars unparalleled in the history of space exploration. It will change and adapt over time in response to what we find with each mission. It's meant to be a robust, flexible, long-term program that will give us the highest chances for success," said Scott Hubbard, Mars Program Director at NASA Headquarters. "We're moving from the early era of global mapping and limited surface exploration to a much more intensive approach. We will establish a sustained presence in orbit around Mars and on the surface with long-duration exploration of some of the most scientifically promising and intriguing places on the planet."

"The scientific strategy developed for the new program is that of first seeking the most compelling places from above, before moving to the surface to investigate Mars," said Jim Garvin, NASA Mars Exploration Program Scientist at Headquarters. "The new program offers opportunities for competitively selected instruments and investigations at every step, and endeavors to keep the public informed on each mission via higher bandwidth telecommunication on the Web."

"NASA's new Mars Exploration Program may well prove to be a watershed in the history of Mars exploration," said Ed Weiler, NASA's Associate Administrator for Space Science. "With this new strategy, we're going to dig deep into the details of Mars' mineralogy, geology and climate history in a way we've never been able to do before. We also plan to 'follow the water' so that in the not-to-distant future we may finally know the answers to the most far-reaching questions about the Red Planet we humans have asked over the generations: Did life ever arise there, and does life exist there now?"

Langley Research Center's "Planetary Team" will support NASA's series of robotic missions looking for evidence of past or present life on Mars. Langley will contribute aerodynamics, aerothermodynamics, atmospheric flight simulation, guidance and control research ... everything that is required to make a successful flight through the atmosphere of Mars.

Photo by Jeff Caplan

Langley

Continued from Page 1

of robotic missions made up of orbiters, landers and rovers will explore the Red Planet looking for evidence of past or present life.

Langley will contribute aerodynamics, aerothermodynamics, atmospheric flight simulation, guidance and control research ... everything that is required to make a successful flight through the atmosphere of Mars.

John Paulson, Head of the VAB, is one of the technical leaders and contributors to the effort. "We have had a history of doing this kind of work," he said. "We have grown from being in a supportive role to being the leaders. We are in the critical path of making these vehicles successful."

Langley will perform a 70-day simulation of aerobraking around Mars for the Mars Odyssey Orbiter, scheduled for launch in April 2001. One of the Center's jobs will be to figure out how deep the orbiter should go on each pass. If the passes are too deep, the solar panels could burn up; if the passes are too shallow, the mission could end up in a useless orbit.

"We have a very talented, very high-energy group of people here at Langley who are working closely together with other centers to make these missions a success."

Mary Kae Lockwood, 'Planetary Team' Lead of Langley Research Center's Vehicle Analysis Branch

"These are very challenging and exciting missions," said Dick Powell, a flight mechanics engineer in the VAB who is in charge of Langley's aerobraking operations for the 2001 mission.

"There are many uncertainties about Mars," Powell said. "The atmosphere is primarily carbon dioxide while the earth's atmosphere is primarily nitrogen. So we have to figure out a way to modify all our computational tools to be applicable for these vehicles. Also, there is no infrastructure, no global positioning satellites, no meteorological satellites ... so you have to allow a great deal of margin in these spacecraft to handle the unknown."

For the 2003 Mars Exploration Rovers, Langley is developing the end-to-end flight simulation and aerodynamic database for flight from atmospheric interface all the way to touchdown on the surface of Mars.

But one of the biggest challenges for Langley will be the 2007 "Smart Lander." Just how smart this lander will be will depend on its ability to do a very precise landing on the surface of the planet.

"For the first time we will be doing aeromaneuvering at Mars to enable us to land in a very tight footprint on the surface so that we get the scientists to where they want to go to find the water," Lockwood said.

In fact, engineers are looking for a landing footprint to within 3 kilometers. Typically, a ballistic entry is something on the order of 100 to 200 kilometers. The "Smart Lander" also will be equipped with hazard detection and avoidance sensors, so it can keep away from craters and large rocks and land safely on the surface.

"We have a very talented, very high-energy group of people here at Langley who are working closely together with other centers to make these missions a suc-

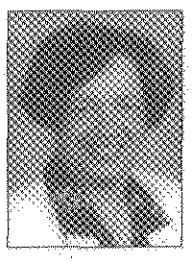
"We have developed a campaign to explore Mars unparalleled in the history of space exploration. ... It's meant to be a robust, flexible, long-term program that will give us the highest chances for success,"

Scott Hubbard, Mars Program Director at NASA Headquarters

Combined Federal Campaign

Congratulations! And Thank You!

Congratulations to all of the Langley Research Center employees who worked exceedingly hard and reached deep into their pockets to make the 2000 Combined Federal Campaign (CFC) a success! You can be extremely proud of your gifts back to the community.



Langley exceeded its goal by 14 percent and surpassed last year's donations by 4 percent. These tremendous gains were made because of the increased generosity of the participants. The average gift this year is $270 compared to $203 in 1997!

As Chair of the 2000 Campaign, I wish to thank the members of the CFC Committee for their excellent service and support: Kathy Kurke, Vice Chair; Marcella Hogge, Secretary; Robert Horne, Financial Chair; Pamela Verniel, Publicity; Fran Sleigher, Electronic Web Site; Richard Bennett, Logistics; Vincent Cowling, Logistics; Angela Mason, Loaned Executive; and Karen Credeur, Liaison to the Peninsula Local Federal Coordinating Committee (LFCC).

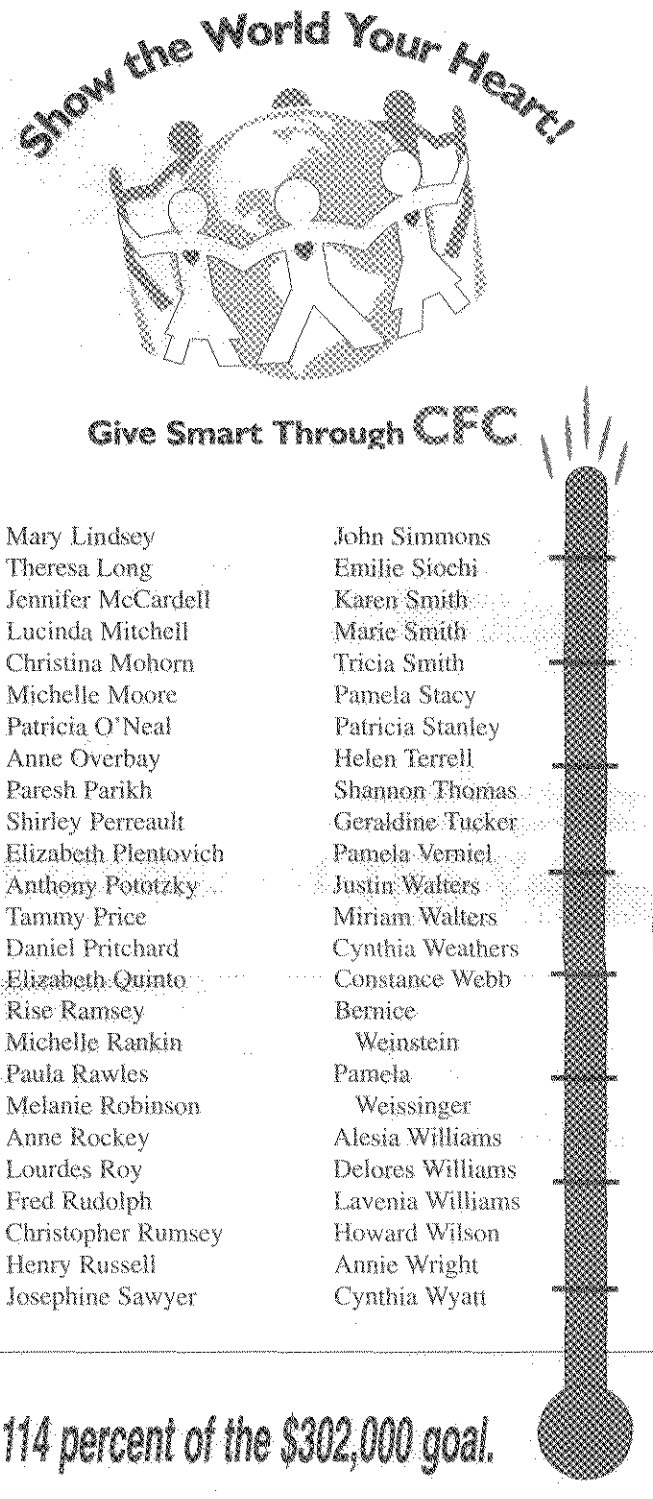
Thanks also to the many others who helped with the car wash, the music and the kick-off cookout. Finally, success of the campaign ultimately depends on the dozens of Keyworkers and Coordinators who personally contact each employee. Thank you for your diligence and commitment.

Finally, I wish to address one disturbing trend in Langley's CFC campaign over the past four years: The steady decline in the percentage of employees who participate. In 1997, 63 percent of the employees gave. This year, only 50 percent participated. Let me in closing again urge everyone to remember the worthy causes and people that benefit in many ways — directly and indirectly — from the dollars we share.

Christine Darden
Langley CFC Chair

Langley's 2000 CFC Keyworkers

David Aliff
Diane Andrews
Sherry Araiza
Keisha Armistead
Suzanne Barnes
Larren Beacham
Willie Beckett
Cynthia Belsches
W. Belvin
Felecia Berry
Glanice Boone
Kelvin Boston
Kay Brinkley
Althea Brown
Doriann Brown
Karen Brown
Lori Brown
Tracey Brown
Crystal Carr
Deborah Cartas
Sandra Chaney
Patricia Christian
Joanna Clark
Lorenzo Clark
Velma Clark
Lawrence Cooper
Tammy Cottee
Jessica Dail
Angela Davis
Lisa Davis
Norma Davis
Mary Deuell
Kathleen Devol
Enette Doswell
Debbie Doucet
Carolyn Eby
Alice Eley
James Elliott
Mary Erwin
Candice Evans
Gloria Evans
Charlene Farquharson
Carol Ficklen
Lois Forbes
Shirley Forrest
Carol Fowler
Steven Gayle
Jeanette George
Queenella Gray
Sharon Harper
Whitney Harris
Larry Harvey
Lisa Hawks
Rebecca Hayes
Maxie Herrera
Marcella Hogge
Patricia Howell
Judith Hoyle
Jennifer Hubble
Janis Hunt
Tracy Hunter
Sandra Hurst
Joyce Hutchinson
Pamela Idlett
Van Johansen
Carlie Johanson
Blanche Johnson
James Johnson
Janice Johnson
Sandra Johnson
Vicki Johnson
Connie Jones
Nicholas Kepics
Cheryl Kitts
Ruth Koren
Yvette Lawson
Jane Leffel
Amanda Levy
Mary Lindsey
Theresa Long
Jennifer McCardell
Lucinda Mitchell
Christina Mohorn
Michelle Moore
Patricia O'Neal
Anne Overbay
Paresh Parikh
Shirley Perreault
Elizabeth Plentovich
Anthony Pototzky
Tammy Price
Daniel Pritchard
Elizabeth Quinto
Rise Ramsey
Michelle Rankin
Paula Rawles
Melanie Robinson
Anne Rockey
Lourdes Roy
Fred Rudolph
Christopher Rumsey
Henry Russell
Josephine Sawyer
John Simmons
Emilie Siochi
Karen Smith
Marie Smith
Tricia Smith
Pamela Stacy
Patricia Stanley
Helen Terrell
Shannon Thomas
Geraldine Tucker
Pamela Verniel
Justin Walters
Miriam Walters
Cynthia Weathers
Constance Webb
Bernice Weinstein
Pamela Weissinger
Alesia Williams
Delores Williams
Lavenia Williams
Howard Wilson
Annie Wright
Cynthia Wyatt

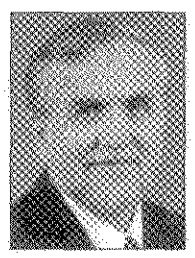


Langley employees pledged $343,761 to the 2000 CFC. That amount represents 114 percent of the $302,000 goal.

Colloquium and Sigma Series Lectures

Ronald Greeley On 'The Moons Of Jupiter'

Ronald Greeley will present a Colloquium lecture entitled, "The Moons of Jupiter: Fire and Ice in the Extreme," at 2 p.m. Dec. 5 in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center.


Greeley

The Talk

NASA's Galileo spacecraft has been orbiting Jupiter since 1995. Thousands of pictures and other data have been returned from Jupiter and its array of bizarre moons. Two of these moons, Io and Europa, are the focus of the lecture.

Io is about the size of Earth's moon and is made of rocky material. However, unlike our dead moon, Io is the most volcanically active object known to humankind.

Europa is slightly smaller and is mostly rock, but it has an outer water shell about 150 kilometers thick with an ice surface. Compelling evidence suggests the past existence of a subsurface liquid ocean, which could even exist today. The volcanoes of Io are extremely huge with very hot eruptions, not seen on Earth for more than 2 billion years. Europa also is heated internally, which might fuel subocean volcanism.

The lecture also will review current plans for joint observations of the Jupiter system by Galileo and the Cassini spacecraft in early 2001.

The Speaker

Greeley received his doctorate in geology in 1966 from the University of Missouri at Rolla and is now a Regents Professor of Geology at Arizona State University.

His current research is focused on gaining an understanding of planetary surface processes and geological histories. The approach involves a combination of spacecraft data analysis, laboratory experiments and geological field studies on Earth of features analogous to those observed on the planets.

Greeley has served on various NASA and National Academy of Science panels to assess space science and planetary geology activities.

His current planetary mission involvement includes science team membership on the Galileo Jupiter mission and the European Space Agency Mars Express mission.

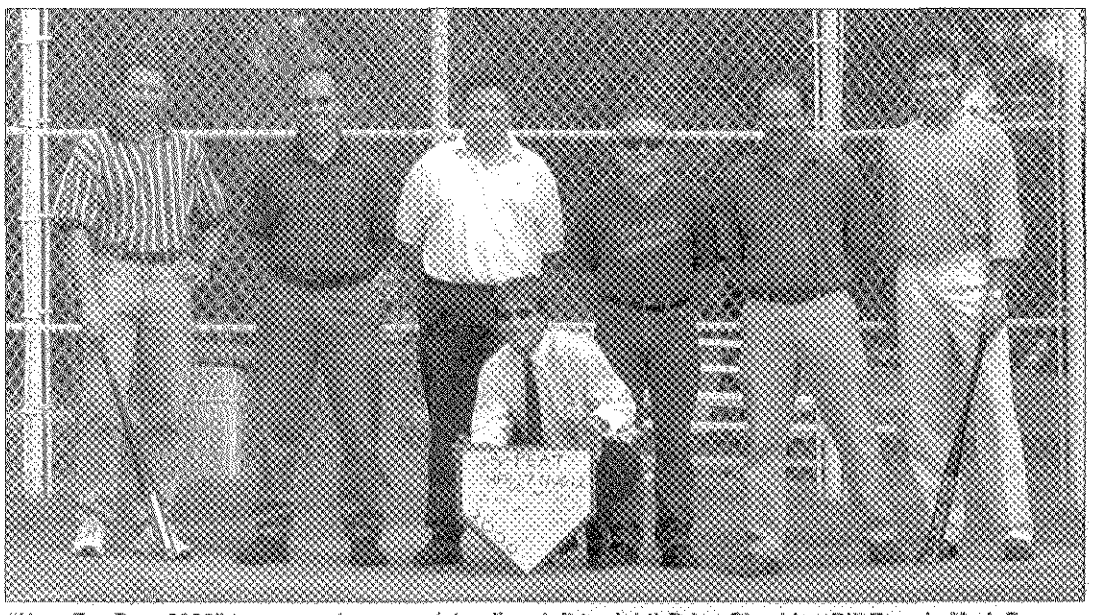
Upcoming Lectures

- **Jan. 9, 2001:** Alan Epstein on "Microengines."
- **Feb. 6, 2001:** Cindy Lee Van Dover on "The Ecology of Deep-Sea Hydrothermal Vents."
- **March 6, 2001:** K.R. Sridhar on "Oxygen Production on Mars."

For more information about the lecture series, visit <http://hennesh.larc.nasa.gov/Lectures/> on the Web.

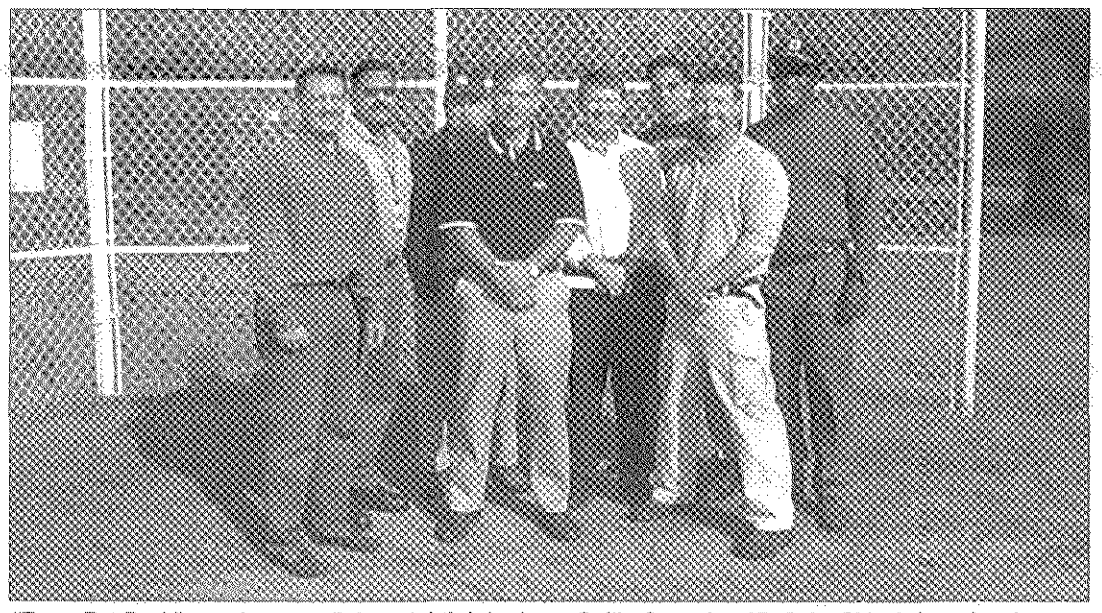
Softball League Champions Announced

Langley Research Center's Softball Association recently announced its 2000 season champions: "Here For Beer 2000" won its third-straight A-league championship; "Team Rat Pack" won the B-league championship; and "The Misfit-Puppies" won the C-league championship. The Softball Association is open to all Langley civil servants, contractors and retirees and their immediate families. The 2001 season will begin with exhibition games in April and regular season games in May. For more information, visit the Softball Association's Web site at <http://larc-exchange.larc.nasa.gov/laa/softball/>.



"Here For Beer 2000" team members are: (standing, left to right) Brian Cheshire, Bill Tomek, Mark Frye, Steve Harris, Tommy Jordan and Sean Kenney; and (kneeling) Lou Glaab. Not pictured are Mike Blythe, Mike Brewer, Pat Cosgrove, John Costulis, Donald Day, Nick Heiner, Dutch Myers, Bryan Perez, Steve Sandford, Scott Sealey, John Swartzbaugh and Joe Vega. "Honorable alumni" not present are Tim Alberta, Pete Hogge and Steve Young.

Photo courtesy of Lou Glaab



"Team Rat Pack" members are (left to right) John Inge, Guillo Gonzalez, Kit Cain, Skip Schroeder, Joe Fleck, Ted Wilz, Scott Colbert and Gary Willis. Not pictured are Ray Ballard, Tim Elliot, Brian Luoto, Chris Schroeder, Renay Shafer, Regina Spellman and Henry Wright.

Photo by Meghan Woodcock

"The Misfit-Puppies" team members are: (standing, left to right) Bill Leath, Eric Nielsen, Karen Taminger, Rob Sothcott, Max Blosser, Joel Alexa, Paul Miner, Phil Robinson, Ben DiVito, Tommy King, Mark Dunn, Noel Talcott, Neil O'Connor, Greg Keat, Lillianne Troeger, Ralph Gherki and Clay Claytor; and (kneeling, left to right) Keith Bird, Otto Youngbluth, Jim Baughman, Don Rieger and Robert Edahl. Not pictured are Phil Gamble, Dave Hahne, Paul McClung, Daniel Morgan, Mike Stubbs and Dave Troeger.

Photo courtesy of Karen Taminger

'The Truth Is Out There'

"'Why?' Files" Solves Mysteries With Mathematics And Science

By KATRINA TOWNES
Office of Education

"The X-Files" TV show features FBI agents Fox Mulder and Dana Scully. "The NASA 'Why?' Files" TV show has "tree house detectives," six ethnically diverse, inquisitive children between the ages of 8 and 12.

"The X-Files" is fiction based on scientific fact. "The NASA 'Why?' Files" is non-fiction based on scientific inquiry and problem-based learning.

"The NASA 'Why?' Files" is a new, standards-based, technology-focused distance learning initiative produced by Langley Research Center's Office of Education. The series premiered in October throughout the United States, Canada, Puerto Rico and the U.S. Virgin Islands to a registered audience of nearly 87,000 educators and two million students in grades three through five.

The series, which features student "detectives" who use mathematics, science, technology and NASA research to solve everyday mysteries, is the result of a unique partnership with the American Institute of Aeronautics and Astronautics Foundation; Busch Gardens, Williamsburg; Hampton City Public Schools; Langley's Aerospace Vehicles Systems Technology Program Office; and Langley's Learning Technologies Project.

The 2000-2001 "'Why?' Files" series consists of four fast-paced, 60-minute video programs. In each program, the "tree house detectives" encourage their student audience to join them as they construct meaning and direction that will lead to a solution:

- In **"The Case of the Unknown Stink,"** which aired on Oct. 11, the detectives discovered that an unknown stink was "right under their noses."
- In **"The Case of the Barking Dogs,"** which aired Nov. 8, the detectives used "sound" reasoning.
- In **"The Case of the Electrical Mystery,"** which will air on Feb. 14, 2001, the detectives learn that every problem is not an "open" and "closed" case.
- In **"The Case of the Challenging Flight,"** which will air on March 14, 2001, the detectives will design and build an "egg-stra-ordinary" airplane.

Each program is divided into four 15-minute, teachable segments designed to integrate and enhance the teaching of real-world mathematics, science and technology.

"The exceptional series integrates a Web site, free educator lesson guides and the educational video program," said Shannon Ricles, the show's coordinating producer. "Although there are many educational books, videos and Web sites, 'The NASA 'Why?' Files' incorporates all three elements into each program."

"The NASA 'Why?' Files" is broadcast via satellite on NASA TV and more than 80 PBS member stations, including WHRO in Norfolk. It also is Web-cast on NASA's Technologies Learning Channel.

For more information about "The NASA 'Why?' Files," visit <http://whyfiles.larc.nasa.gov>.

The "tree house detectives" use mathematics, science, technology and NASA research to solve everyday mysteries on "The NASA 'Why?' Files" TV series.

Photo courtesy of the Office of Education

AdVentures

CLASSIFIED

FOR SALE: 97 Dodge Ram 1500 pick-up truck, extended cab, 6.5-foot bed, fully loaded, $49,500 miles, $17,000. Call 868-4391.

FOR SALE: High-end UNIX workstations: SGI Indigo II, 1 GB main memory, 4 GB internal and 2 GB external memory, CD-ROM and tape drives, serial and parallel ports, 19-inch monitor, $5,000; SUN UltraSparc, 200 MHz, 1 GB main memory, 9 GB external and 2 GB internal memory, CD-ROM, 20-inch monitor, $4,000. For more information, call 766-8695 workdays before 3 p.m.

FOR SALE: '93 Ford Escort wagon, 5-speed, 132,000 miles, one owner, good condition, "champagne" color (beige), no repairs required, very reliable, runs great. Asking $1,900. Call 596-7936.

FOR SALE: Sleeper sofa, color in "country rose," $200; Lange XRI ski boots, heated, $150. Call 867-6797.

FOR SALE: Graco baby swing, only used a few hours, $25. Call 565-1869 or e-mail <motter@widomaker.com>.

❖ ❖ ❖

The deadline for the Dec. 1 edition of the *Researcher News* is Nov. 20. Send submissions to <p.r.roberts@larc.nasa.gov>.

Tour Host Luncheon On Nov. 21

Langley Research Center's Office of Public Services will host a luncheon for the Center's volunteer tour hosts on **Nov. 21** in the private dining room of the Center cafeteria. Edwin Prior, the Deputy Director of Langley's Office of Education, will speak about "Advanced Aircraft."

For more information, contact Sandra Lemons at ext. 43957 or <s.c.lemons@ larc.nasa.gov>.

VASC Will Host NASA Day On Dec. 2

The Virginia Air and Space Center (VASC) will offer several "holiday gifts" to Langley Research Center civil servants, contractors and retirees and their immediate families on **Dec. 2**. In addition to offering free admission to the museum, the benefits will include: $3 admission to matinee IMAX film showings; $10 off the purchase of a VASC membership; a 20-percent discount on purchases made in the museum store; and $20 off the purchase of "engraved pavers," the memorial bricks displayed on the grounds outside the museum. A NASA badge must be shown to take advantage of the benefits. For more information call Sharon Gates at 727-0900, ext. 718.

Retirement Seminar On Dec. 4

Langley Research Center's Office of Human Resources will host a "Planning for Retirement" seminar from 8:30 a.m. to 3:30 p.m. **Dec. 4**. The seminar will be taught by Government Retirement & Benefits, Inc. in Langley's H.J.E. Reid Conference Center.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@ larc.nasa.gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.

Course Work

Langley Research Center's Wind Tunnel University will offer the following courses:

- **"Wind Tunnel Service Activity Briefing"** from 9 to 11 a.m. Nov. 29 in Bldg. 1194A, Room 206. The instructor will be Pete Jacobs.
- **"Videogrammetry for Aerospace Applications"** from 8 to 10 a.m. Dec. 4 and 5. The instructor will be Al Burner.
- **"Statistical Quality Control for Measurement Assurance — Applications to Ground Testing"** from 8 a.m. to 3 p.m. March 5-8, 2001 in Bldg. 1194A, Room 206. The instructor will be Mike Hemsch.

To view course descriptions and register for courses online, visit <http://class. larc.nasa.gov/cgi-bin/ wtu/index.cgi>.

LAA Christmas Luncheon On Dec. 12

Langley Research Center's Alumni Association (LAA) will host its annual Christmas luncheon on **Dec. 12** at the Langley Air Force Base Non-Commissioned Officers Club. Doors will open at 11:30 a.m., and lunch will begin at noon. The price (including tax and gratuity) is $10.55 per person.

Reservations must be made by Dec. 5. For reservations or more information, call George Brooks at 868-6013.

AIAA Dinner Meeting On Dec. 13

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will sponsor a dinner meeting on **Dec. 13** in the H.J.E Reid Conference Center Auditorium. A social will start at 6 p.m., dinner will be served at 6:30 p.m., and the program — featuring Rick Fleeter, president of AeroAstro and author of "The Logic of Microspace," speaking about "Can Space Matter? The Search For Extraterrestrial Utility" — will begin at 7:30 p.m.

The cost is $10 for members and their guests, $12 for non-members and $8 for student members. Non-members joining the AIAA at the dinner will receive a complimentary dinner. Reservations are required by Dec. 6. For reservations, contact Robin Hardy at ext. 47159 or <r.e.hardy@larc.nasa.gov> or Mohammad Takallu at ext. 47671 or <m.a.takallu@larc.nasa.gov>.

Wright Bothers Lecture On Dec. 14

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will host the 2000 Wright Brothers Lecture at 1 p.m. **Dec. 14** in Langley Research Center's H.J.E. Reid Conference Center. Former NASA Administrator James M. Beggs will speak about "America's Stake in Aeronautics Research."

Center Snapshot

Clyde Medley (left), an electrical engineering technologist in Langley Research Center's Aeroacoustics and Hypersonic Propulsion Support Section, was surprised on Nov. 7 by his supervisors (standing, left to right) Barry Hogge, Lynn Curtis and Robert Baals, who presented him with an award for completing the "configuration management electrical drawings" for Bldg. 1208 to 100 percent field verification. Medley, a Chesapeake native, graduated from Norfolk State University and started working at NASA as a civil servant in 1987. What does he like about working at Langley? "I always have something different to do," he says.

Photo by Jeff Caplan

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Researcher News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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National Aeronautics and Space Administration
Langley Research Center

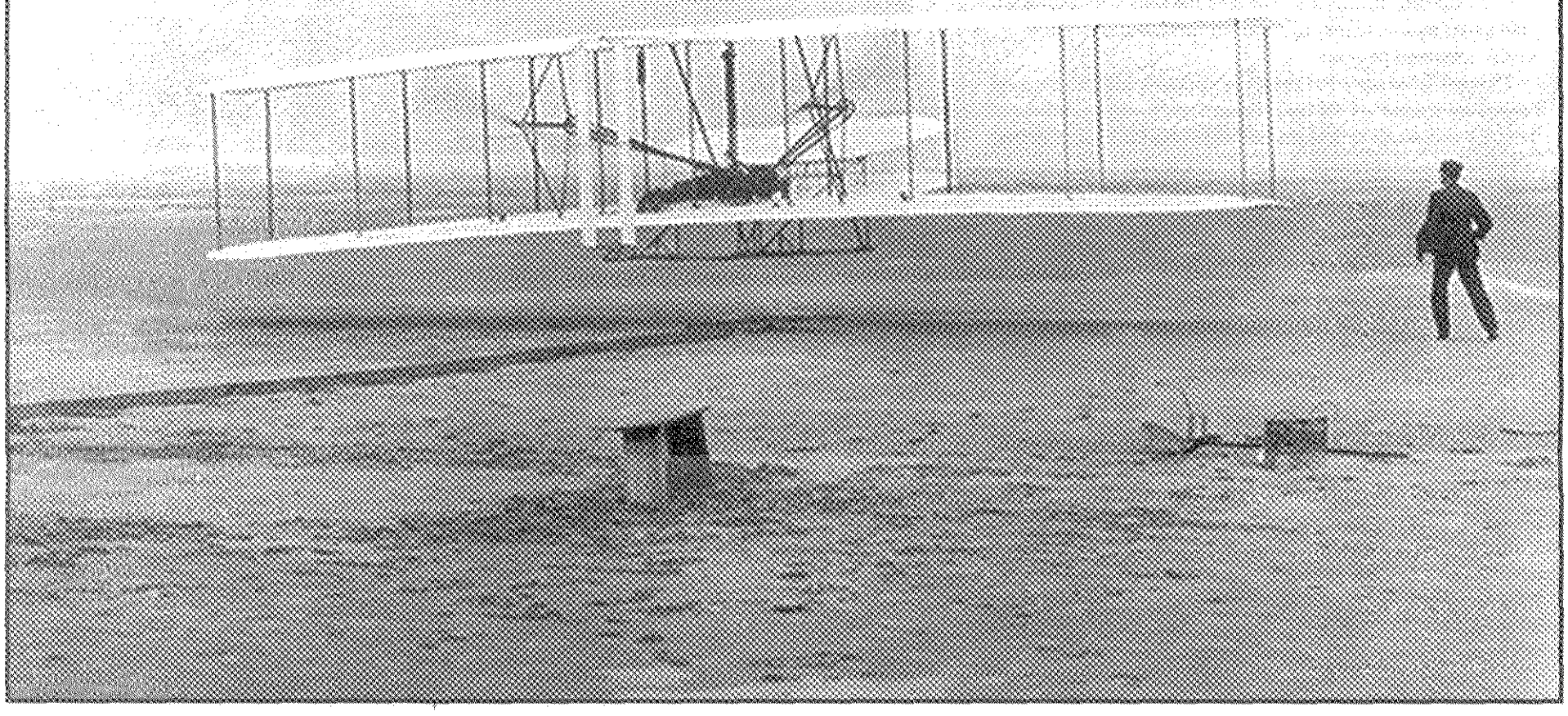
News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 24 ❖ Dec. 1, 2000

'T-Minus Three Years'

Langley Prepares For 2003 Centennial Of Flight Celebrations



By MEGHAN WOODCOCK
Researcher News assistant editor

On Dec. 17, 1903, Orville and Wilbur Wright made history when they accomplished the first sustained flight of an engine-powered, heavier-than-air airplane across the sand dunes in Kill Devil Hills, N.C.

Now, just three years away from the centennial of that event, nearly every museum and organization related to flight — including Langley Research Center — is planning feverishly for the big celebration in 2003.

Langley is planning several celebratory events, including a 2003 open house and a time capsule. Information about these events will be available at a Langley-based "Centennial Of Flight" Web set to debut in January. The site will link from Langley's main page at <http://www.larc.nasa.gov>.

Langley and its official visitor center, the Virginia Air and Space Center (VASC), also will participate in the Virginia Aviation Trail. Coordinated by the Virginia Aviation Museum in Richmond, the trail will highlight important aviation museums and historical sites along the I-95/I-64 corridor between the National Air and Space Museum in Washington, D.C., and the Wright Brothers National Memorial in Kill Devil Hills. Each site will be marked with a sign along the highway and will be included in travel brochures and links from the Virginia Aviation Museum's Web page at <http://www.smv.org/ wvamhome.html>.

All events are subject to change over the next three years. For more information on Langley activities, visit the Web site listed above or contact Pam Verniel at ext. 42449.

Former NASA Administrator To Deliver AIAA's Wright Brothers Lecture Dec. 14

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will host the 2000 Wright Brothers Lecture at 1 p.m. Dec. 14 in Langley Research Center's H.J.E. Reid Conference Center. Former NASA Administrator James M. Beggs will speak about "America's Stake in Aeronautics Research."

Other Centennial Of Flight Activities Will Include ...

Aviation World's Fair

Mark your calendars for April 7-27, 2003! The Newport News/Williamsburg International Airport won a bid to host the 2003 Aviation World's Fair (AWF).

The first week of the AWF will be reserved for business-to-business interchange. The last two weeks will be open to the public, offering one- to two-hour air shows each day. The air shows will be scheduled so as not to disturb the regular commercial flying traffic out of the airport.

"We have a lot of undeveloped land that we plan to use for research and maintenance bases," said Jim Evans of the Peninsula Airport Commission. " A lot of businesses like Boeing will be exhibiting. This is a tremendous opportunity to showcase the airport and the Peninsula region."

Fair organizers are planning for attendance between 30,000 and 50,000 people per day. Evans said committees are already working to determine appropriate traffic and parking plans during the event.

The VASC will act as the official visitor center for the AWF and will promote the fair with special exhibits and promotional activities over the next few years.

Fair managers invite Langley employees to join them in planning activities for the fair, whether it's serving on a committee or just submitting an idea. For more information about the AWF or to volunteer, visit the AWF Web site at <http://www.aviation-worlds-fair.com/> or e-mail <info@aviation-worlds-fair.com>.

First Flight Centennial Commission

North Carolina, which is famous the world over for the Kitty Hawk sand dunes used by the Wright brothers in accomplishing the first flight, has established the First Flight Centennial Commission to oversee the various

Continued on Page 4

In The Next Issue: Langley Selects 41 'Creativity & Innovation' Proposals

News Briefs

Around the Agency

EXTREME ULTRAVIOLET LIGHT MISSION TO END

After eight years on orbit, more than twice its planned lifetime, NASA will terminate operations of a bantam astronomy explorer in December that returned unprecedented results.

The Extreme Ultraviolet Explorer (EUVE) spacecraft surveyed the universe by observing extreme ultraviolet (EUV) light. "We opened a new window on the cosmos with EUVE," said Alan Bunner, Science Director for the Structure and Evolution of the Universe program at NASA Headquarters. "No one had thoroughly explored the heavens in the extreme ultraviolet before, and EUVE filled significant gaps in our understanding."

Eventually, aerodynamic drag on the 7,000-pound spacecraft will cause it to reenter the Earth's atmosphere. Current predictions put EUVE's re-entry sometime in late 2001 or early 2002. RELEASE: 00-181

NASA HELPING PATIENTS REACH FOR THE STARS

Brain-injured patients are exploring the stars with a click of a computer mouse, thanks to a special hands-on, interactive NASA education program.

Through Telescopes In Education, sponsored by NASA's Jet Propulsion Laboratory (JPL), patients are no longer limited by their physical barriers, and are free to stretch their imaginations.

In May, a dozen patients who suffered severe head injuries, took control of a science-grade reflecting telescope located at the Mount Wilson Observatory, high above the Los Angeles basin in the San Gabriel Mountains. Using the Internet, patients at Delta Rehabilitation Facility for the Severely Head-Injured in Snohomish, Wash., downloaded digital images of nine deep space objects, including several galaxies and star clusters. RELEASE: 00-180

SMART SURGICAL PROBE TO FIGHT CANCER

A Silicon Valley start-up company has obtained a license to develop, produce and market an innovative diagnostic device for early breast cancer detection based on technology originally developed by NASA researchers.

San Jose-based BioLuminate, Inc. plans to develop a commercial version of the "Smart Surgical Probe" originally developed at Ames Research Center. The probe is a small disposable needle with multiple sensors. It has the potential to enable physicians to diagnose tumors without surgery, thereby dramatically reducing the number of breast biopsies that women undergo annually. RELEASE: 00-179

HUBBLE DISCOVERS LONE NEUTRON STAR

Several hundred million of them may be found in our galaxy, but the world's most powerful telescope has captured the one thought to be closest to Earth. NASA's Hubble Space Telescope has caught up with a runaway neutron star believed to be 200 light years away.

The object known as RX J185635-3754 is expected to swing by the planet at a safe distance in about 300,000 years. A neutron star is the remnants left behind after a supernova explosion, as the material at the core collapses into a dense mass of neutrons. The star has the mass of the sun packed into an area about 12 miles in diameter. RELEASE: 00-176

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Planners Collaborative/
Science and Technology Corp.

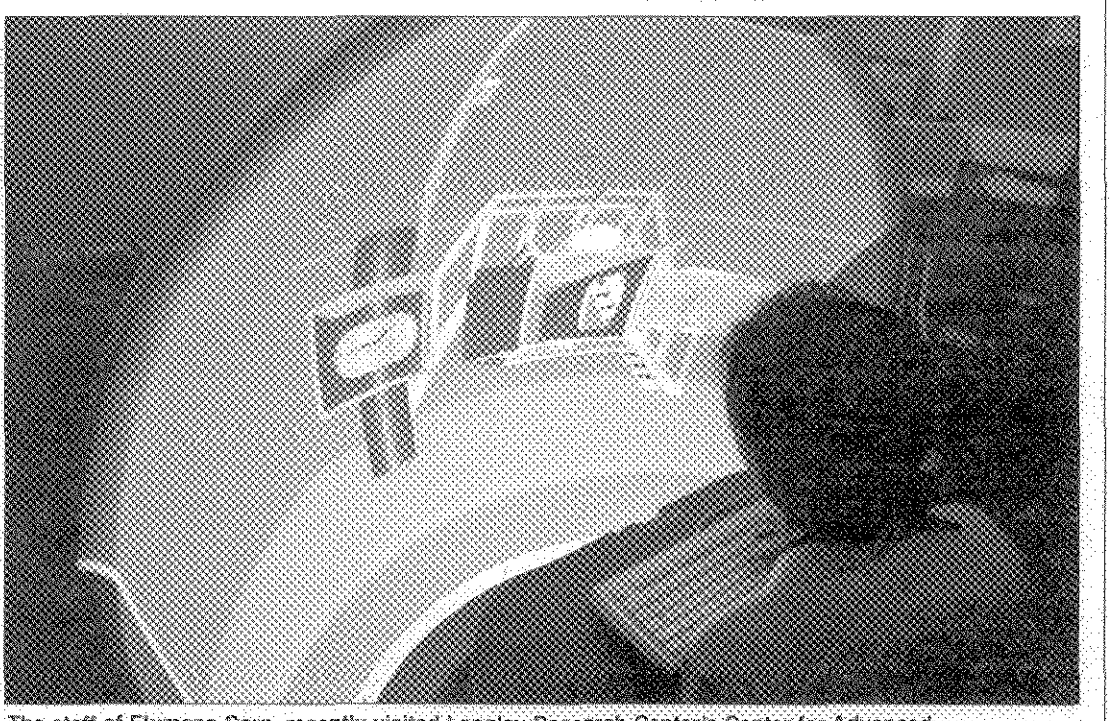
Assistant Editor ..... Meghan Woodcock
Planners Collaborative/
Science and Technology Corp.

Photographer ..... Jeff Caplan
Planners Collaborative/
Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

VisionStation



The staff of Elumens Corp. recently visited Langley Research Center's Center for Advanced Computational Technology to demonstrate the new VisionStation (VS) virtual reality facility. The VisionStation is a fully immersive, collaborative, portable, affordable, plug-and-play device with many existing 3-D visualization software and imagery programs. "This is a technology that can be very useful for Langley in future activities including advanced design and learning environments," said Ahmed Noor, director of the Center for Advanced Computational Technology. For more information about VS, visit <www.elumens.com> on the Web.

Photo by Jeff Caplan

Competencies Announce Personnel Reassignments

Douglas L. Dwoyer, Langley Research Center's Associate Director for Research and Technology Competencies, announced the following personnel reassignments on Nov. 15:

- **Sammie D. Joplin** is reassigned as the Office of Director's Deputy for Facility Strategy (pending approval from NASA Headquarters).
- **Glenn R. Taylor** is reassigned as Director of the Systems Engineering Competency (pending approval from NASA Headquarters). Taylor also will serve as Acting Deputy Director for Flight Systems in the Systems Engineering Competency until a Deputy Director is selected.
- **Carl E. Gray** is reassigned as Deputy Director of the Systems Engineering Competency.
- **John B. Malone** is reassigned as Deputy Director for Information Technology of the Systems Engineering Competency.

OHR Deputy Goes To Dryden

Catherine Waldal, the Deputy Head of Langley Research Center's Office of Human Resources, recently left Langley after five years of service to serve as the Director of Dryden Flight Research Center's Office of Human Resources.

In Memoriam

Nathan Dee Watson

Nathan Dee Watson died on Nov. 15 at the age of 65. Watson, a native of Mount Airy, N.C., served in the U.S. Air Force for four years and at NASA for 30 years. He retired in 1990 as head of Langley Research Center's Spacecraft Systems Section and Spacecraft Design Branch.

During his tenure, Watson developed more than 30 experiments vital to space and atmospheric research, including the Shuttle Infrared Leeside Temperature Sensing Experiment. Watson received NASA's Exceptional Engineering Achievement Medal in 1984 and the Agency's Exceptional Service Medal in 1990.

Jesse Lee Arnett Sr.

Jesse Lee Arnett Sr. died on Nov. 10 at the age of 81. Arnett, a native of New Orleans, served in the U.S. Army for 22 years and was a veteran of World War II and the Korean War. He retired in 1965 as a staff sergeant and went on to work as a security guard at Langley Research Center.

Corrections

Due to an editing error, the last three words of the story, "Langley Will Have Major Role," were omitted from the Nov. 17 edition of the Researcher News. The last paragraph in is entirety should have read:

"We have a very talented, very high-energy group of people here at Langley who are working closely together with other centers to make these missions a success," Lockwood said.

Also, a photo caption in the Nov. 17 edition indicated that the pumpkin-carving contest held in Bldg. 1244 on Halloween was the first ever at Langley Research Center. It was, in fact, the first in that building. The employees in Bldg. 1195 have held a pumpkin-carving contest for the last 13 years.

Langley Team Wins SAE Medal

Another Employee Receives Educator Award At World Aviation Congress

A team from Langley Research Center received the Society of Automotive Engineers' (SAE) Wright Brothers Medal at the World Aviation Congress in October.

Jaroslaw Sobieski, Robert Sandusky and **Jeremy Agte** won the award for their paper, "Supersonic Business Jet Design Through Bi-Level Integrated System Synthesis."

Sobieski

Sandusky

Agte

Sobieski is the Leader of the Computational Aerospace Sciences Team in Langley's Aerospace Systems, Concepts and Analysis Competency; Sandusky is a professor at George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley; and Agte, now a lieutenant in the U.S. Air Force, is a former JIAFS student.

The Wright Brothers Medal recognizes the author or authors of the best paper presented at the SAE meetings each year, relating to the invention, development, design, construction or operation of an aircraft or spacecraft.

The last recipients from Langley were **Charles P. Blankenship** and **R. Hayduk** in 1987.

Also at the World Aviation Congress, **Ahmed K. Noor** received SAE's Distinguished Probabalistic Methods Educator Award. Noor, a professor at the University of Virginia and the director of Langley's Center for Advanced Computational Technology, won for "Demonstrated Excellence in Probabilistic Methods Research and Innovative Paradigms in Learning."

Noor

Effective Jan. 1, 2001, Noor will become an aerospace engineering professor at Old Dominion University and the director of Langley's Center for Advanced Engineering Environments.

Leave Transfer Donations Due To MESB By Dec. 22

By KAREN RIDLON
Office of Human Resources

Langley Research Center employees may donate annual leave to eligible employees through the Center's Voluntary Leave Transfer Program.

The following employees are currently eligible to receive leave donations: **Henry J. Fitzgerald Jr., Nancy M. Hornung, Timmy T. Kariya, Lori P. Ozoroski, James E. Roberts, Lisa C. Simonsen** and **Connie A. Smith**. (Approved leave recipients also are listed on the "LaRC This Week" Web site: <http://ltw.larc.nasa.gov>).

How to donate annual leave:

▪ Employees may retrieve a leave donation form by accessing the Langley Forms System Web site at <http://lms.larc.nasa.gov> and downloading Langley Form 199, "Request to Donate Annual Leave."

▪ Employees must indicate the number of hours of annual leave and the name of the recipient they wish their leave to be transferred to on the form.

▪ Please note the following limitations for transferring annual leave:

1. Employees may *not* donate to their immediate supervisor.

2. Employees may *not* donate more than one-half of the total annual leave accrued during the one leave year (i.e., if you earn eight hours biweekly, you would accrue 208 hours for the leave year, allowing you to donate a maximum of 104 hours of annual leave).

3. Employees who are projected to have annual leave that otherwise would be subject to forfeiture at the end of the leave year ("use or lose") may *not* donate more than the lesser of: one-half of the total annual leave accrued during the leave year *or* the number of hours *remaining* in the leave year (as of the date of the transfer) that the leave donor is scheduled to work and receive pay (excluding holidays).

▪ Employees who are interested in donating *restored* annual leave should indicate "restored" next to the number of hours to be donated on the form in the "Amount of Annual Leave to be Transferred (Donated)" Block.

▪ Completed forms should be faxed to the Management and Employee Support Branch (MESB) at ext. 47899 or mailed to Kay Black at MS-129 by Dec. 22. (Note: Please use only *one* of the above methods.)

For more information about the VLTP, call Kay Black at ext. 42557.

Course Work

Langley Research Center's Wind Tunnel University is offering the following courses:

▪ **"Videogrammetry for Aerospace Applications"** from 8 to 10 a.m. Dec. 4 and 5. The instructor will be Al Burner.

▪ **"Statistical Quality Control for Measurement Assurance — Applications to Ground Testing"** from 8 a.m. to 3 p.m. March 5-8, 2001, in Bldg. 1194A, Room 206. The instructor will be Mike Hemsch.

To view course descriptions and register for courses online, visit <http://class. larc.nasa.gov/cgi-bin/wtu/index.cgi>.

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Langley Research Center employees may take graduate-level courses at a number of colleges and universities without leaving the area. Course listings for the 2001 spring semester can be found at the following Web sites:

▪ **Christopher Newport University**: <http://www.cnu.edu/admin/regis/cadmin/>

▪ **College of William and Mary**: <http://worcs.wm.edu/GENINFO.html>

▪ **Commonwealth of Graduate Engineering Program**: <http://www.eng.odu.edu/webroot/ orgs/Engr/colengineer.nsf/pages/ CGEPindex>

▪ **Florida Institute of Technology**: <http://www.segs.fit.edu/Graduate_Centers/graduate_centers.html>

▪ **George Washington University's Joint Institute for Advancement of Flight Sciences**: <http://www.seas.gwu.edu/~jiafs/spring.html>

▪ **Hampton University**: <http://www.hamptonu.edu/>

▪ **Old Dominion University**: <http://web.odu.edu/home/secondary/class_schedule.html>

▪ **Troy State University**: http://www.tsuar.edu/schedules/schedules.html>

▪ **University of Virginia's Commonwealth Graduate Engineering Program**: <http://watt.seas.virginia.edu/~rfk2u/s99cal.html>

▪ **Virginia Consortium of Engineering and Science Universities**: <http://vcesu.larc.nasa.gov/>

Employees wishing to enroll in a course should forward Langley Form 490, "Application for Graduate Study," to Mail Stop 309. Employees must have management support and must make sure their request is included in their organization's 2001 Training Plan.

For more information, contact George Allison at ext. 42594.

'Angel Tree' Provides Gifts For Needy Children

By SANDRA LEMONS
Office of Public Services

Langley Research Center's Office of Procurement and Office of Public Services are again challenging employees to "earn their wings" by participating in the Angel Tree Program sponsored by The Salvation Army and WVEC-TV.

For the eighth year, Langley's Angel Tree will be set up in the cafeteria and will be decorated with white and blue tags. The tags carry the first name, age and size information of a needy child on the Peninsula. Because The Salvation Army guarantees a toy for every child, the emphasis is on warm clothing — jeans, sweatshirts, hats, mittens, boots, etc.

Please consider pulling a tag from the Angel Tree to ensure a needy child is warmer and happier this season.

Here's how you can help:

▪ Choose a tag from the tree in the cafeteria.

▪ Pick up a clear plastic bag from under the tree.

▪ Purchase a gift of new clothing; **do not** remove the price tag.

▪ Put your unwrapped purchase in the clear bag and affix the Angel tag.

▪ Place your gift under the Angel Tree by Dec. 14.

Gifts will be delivered to The Salvation Army on Dec. 15.

For more information on the Angel Tree program, call Sandra Lemons at ext. 43957.

Volunteers Needed

The Salvation Army needs more than 200 volunteers from Dec. 18-22 to help with the set up, distribution and breakdown of its Toy Store.

The schedule is as follows:

▪ **Dec. 18-19:** 25 people are needed for set up;

▪ **Dec. 20-21:** 50 people are needed each morning and each afternoon for distribution; and

▪ **Dec. 22:** 30 people are needed for two to three hours to clean up.

To volunteer, contact Patty Dixon, coordinator of The Salvation Army's Toy Store, at 247-5465.

2003

Continued from Page 1

centennial celebrations across the state.

Apollo astronaut Buzz Aldrin is serving as the commission's aviation adviser.

Upcoming First Flight events include:

- an annual celebration of the first flight on Dec. 17 at the Wright Brothers National Memorial in Kill Devil Hills;
- an exhibition at the Sun-N-Fun Fly-In from April 8-14, 2001, in Lakeland, Fla.;
- a "History of Flight" symposium from Oct. 22-25, 2001, at North Carolina State University; and
- an international symposium on Dec. 17, 2002, in Raleigh to kick off a year's worth of celebration plans, finishing up with a grand celebration and re-creation of the original flight on Dec. 17, 2003.

For more information about North Carolina's First Flight events, visit <http://www.firstflightnc.com/> on the Web.

'Celebration Central'

Big plans are also underway in Dayton, Ohio, the Wright brothers' hometown. The state's centennial commission, Inventing Flight, made plans for the summer of 2003, with events running from July 4-20.

"Celebration Central" will be a gathering place set up at Deeds Park in Dayton, where tourists can get information and memorabilia. The theme will be "Aviation, Innovation and the American Spirit."

The state is planning a display of nearly every type of flying contraption. As current plans have it, tourists will have the opportunity to view:

- a Wright Flyer Replica Show at Huffman Prairie Flying Field (one of the Wright brothers' test fields);
- the Dayton International Air Show, a civil aviation Fly-In at Wright Patterson Air Force Base; and
- National Aviation Hall of Fame Ceremonies, with plans to invite all living enshrinees back to Dayton for a "Who's Who" gala.

"Celebration Central" activities also will include an aviation art show, a flight film festival, an international blimp meet, a hot air ballooning spectacle, glider events and a "back-to-basics" kite-flying event.

The Dayton Cycle Club also is planning to sponsor the "Great Ohio Bike Adventure" for cycling enthusiasts to pay tribute to the Wright brothers' cycling studies and designs, which helped in their study of flight characteristics. For more information about Ohio activities, visit <http://www.inventingflight.com/>.

Wright Flyer Replica

The Wright Brothers transferred their bicycling design theories into some incredible aeronautical engineering. Their early propeller designs were the world's most efficient for the first decade of powered flight. So how did two bicycle makers get such great results in flight?

A project called The Wright Experience has been underway for years, gathering information about the Wrights and their design theories. Co-founded by Ken Hyde, founder of Virginia Aviation and Machine LC in Warrenton, the project is working to create in painstaking detail an exact replica of the 1903 Wright Flyer in an effort to "reverse engineer" the Flyer and also to test and define its true capability.

The Experimental Aircraft Association (EAA) commissioned the Wright Flyer reproduction as the highlight of their "Countdown to Kitty Hawk" activities that will include flying the replica at Kill Devil Hills on Dec. 17, 2003, in what promises to be a moving experience.

However, before the Flyer makes it to North Carolina, it will undergo testing in Old Dominion University's Full-Scale Tunnel. The tunnel, a national historic landmark, reopened under ODU's direction in 1997 after the university entered into an operating agreement with Langley. It is the world's largest commercially available wind tunnel, boasting a 30- by 60-foot test section. The large test section is ideal for the 40-foot wingspan of the Wright Flyer replica.

A replica of the 1910 Wright Flyer bent-end propeller has already been tested at the tunnel. The 1910 Model B Flyer will be tested in the tunnel next summer. The 1903 Wright Flyer replica is scheduled for testing early 2003.

For more information about the Wright Flyer replica, visit the EAA Web site at <http://www.countdowntokittyhawk.com/>.

Mary Doll of the National Park Service; Tom Poberezny, president of the Experimental Aircraft Association; Ken Hyde of The Wright Experience; and Gen. John Dailey, director of the National Air And Space Museum, stand with a bicycle designed by Wilbur and Orville Wright under the Wright Flyer at the Smithsonian Institution's Air and Space Museum. Each of the organizations will participate in various 2003 Centennial of Flight activities.

Photo courtesy of the Experimental Aircraft Association

National Air And Space Museum

The National Air And Space Museum (NASM) has planned to move the aircraft collection at the Garber Restoration Facility in Suitland, Md., to a new museum facility at the Washington Dulles International Airport in northern Virginia.

In honor of its major donor, the new facility has been named the "Steven F. Udvar-Hazy Center." A groundbreaking ceremony was held Oct. 25, and the doors are slated to open to the public in December 2003. Visitors will see many historic aviation and space artifacts and will be able to watch skilled restoration specialists at work.

The design calls for a building more than 700,000 square feet on 176 acres of land. The Smithsonian and the Metropolitan Washington Airports Authority signed a long-term lease for the property. There will be exhibit hangars, collections storage, classrooms, archives, a large-format theater, restaurants, gift shops and an observation deck from which visitors can watch arriving and departing Dulles air traffic.

More than 180 aircraft and 100 spacecraft will be on display, including the Space Shuttle Enterprise, an SR-71 Blackbird reconnaissance plane, the Dash 80 prototype of the Boeing 707, the B-17 Flying Fortress named "Swoose", a F-4 Phantom fighter, the B-29 Superfortress "Enola Gay," and the de Havilland Chipmunk aerobatic plane. Many aircraft will be hung from the arches that support the building's roof. Visitors will be able to see engines, rockets, satellites, helicopters, airliners, ultra-lights and experimental flying machines for the first time in a museum setting.

To find out more information about the new facility visit <http://www.nasm.edu/nasm/ext/> on the Web.

AIAA Symposium

The American Institute of Aeronautics and Astronautics (AIAA), along with The Boeing Company, GE Aircraft Engines, Lockheed Martin Corporation, Raytheon Company, Rockwell Collins and Snecma, will sponsor special events for the centennial celebration under a campaign called "Evolution of Flight." One major offering will be the International Symposium and Exposition in Celebration of 100 Years of Powered Flight. The symposium will be held from July 14-17, 2003, in Dayton.

AIAA also has formed a Class of 2003 Ambassador Program.

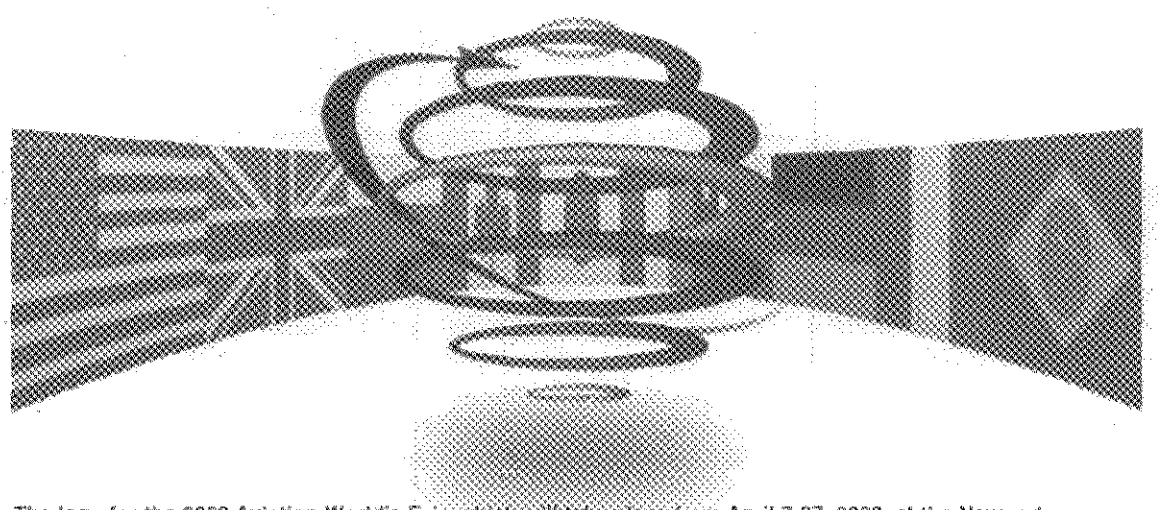
The program, created for students who will graduate from high school in the year 2003, will motivate them to carry the centennial message and their experiences back to their classmates and communities. AIAA will organize up to two field trips per year for the ambassadors, provide young professional mentors for each ambassador and encourage them to participate in local section events whenever possible.

More information about the Class of 2003 Ambassador Program is available on the Web at <http://www.flight100.org/activities/ambassador.html>. For AIAA commemorative merchandise and publications, visit <http://www.flight100.org> on the Web.

'Classes of 2003'

North Carolina's First Flight Centennial Commission and Ohio's Inventing Flight commission also have organized "Classes of 2003." The North Carolina and Ohio classes visited Langley in August for a five-day experience of Hampton Roads which included visits to Langley and its wind tunnel facilities, Langley Air Force Base, the VASC, Busch Gardens, Water Country and Colonial Williamsburg. While at Langley the students had the chance to see the B-2 dedication ceremony.

For more information about the North Carolina Class of 2003, go to <http://www.firstflightnc.com/pr_class2003.htm>.



The logo for the 2003 Aviation World's Fair, which will take place from April 7-27, 2003, at the Newport News/Williamsburg International Airport.

From The Office Of Safety And Mission Assurance

Home Safety

Make It Your Number One Priority

True or false: More serious injuries occur at work than at home.

The answer is false. More serious injuries occur at home than on the job. Over the course of the next few minutes, 90 people will suffer a serious accidental injury at home, and at least one of them will die as a result of that injury.

Off the job, there is one death every 26 minutes, one disabling injury every 10 seconds, and 27 million injuries per year.

As you make plans for the holidays, make home safety the number one priority.

Home Vs. Work Safety

When you are at home, you do not consciously think about safety until an accident or a near-accident happens. When you are at work, you see and hear a variety of safety reminders, such as posters, signs, warning lights and horns. When you are at home, no one is there to remind you to use a stepladder instead of a chair when you need to get something from a high shelf. No one tells you to wear personal protective equipment when working in the yard or workshop. You have to think about safety on your own. Most home accidents can be avoided by following basic safety rules.

Awareness of Hazards

Slips, trips and falls ... Almost one-third of accidental deaths around the home happen by falling. Take a safety inventory in your home to make sure that:

- carpeting on steps is firmly attached;
- stairways are properly illuminated;
- handrails are used when going up or down steps;
- walkways have proper lighting;
- non-skid pads and grab rails are in bathtubs;
- non-skid carpet is on the bathroom floor; and
- spills are cleaned up immediately.

Electrical hazards ... Be aware of the potential dangers before you tackle an electrical problem. If you do not use electricity safely, it can have shocking results. Cover unused outlets and teach young children not to touch plugs, cords or outlets.

Inspect the cords on appliances. If you find a worn plug or cord, it should be replaced or repaired immediately.

Keep appliances in dry places. If your hands are wet, dry them thoroughly before plugging in or unplugging an electrical device. When you need to unplug an item, the safe way is to pull the plug out. Do not grab the cord and pull on it to unplug an appliance.

Accident prevention for young children ... Unquestionably, never leave young children alone. If you have young children at home, make sure your home is childproof. Do not leave small items lying around that can be picked up and swallowed. If you have stairs in your home, put up a gate to keep children from climbing up or down. If you are cooking and the children are playing in the kitchen, make sure the pot handles are turned in so they cannot be grabbed and become a potential accident. Use the back burners whenever possible. Certainly you should keep medicines and cleaning supplies in locked cabinets.

Household fires ... Fire kills 4,000 people every year and injures thousands more. Do not smoke in bed, and empty the ashtrays just before going to bed. Do not overload outlets. Store flammable liquids in the proper containers. Do not leave them near heat sources, which could allow them to spontaneously combust.

In addition, develop an escape plan and then practice it with your family. Hold fire drills to ensure that everyone knows where to go in case of an emergency. Other precautions are to install smoke alarms, and then check the alarms on a routine basis to make sure they are working properly. Keep a fire extinguisher on hand. Check to see whether it will handle all potential fires and make sure it is properly charged. Look for the letters ABC, which indicate that it is multi-purpose. Use the fire extinguisher if you should have a small grease or electrical fire. Do not use water because it will spread a grease fire, and it can potentially shock you if it is an electrical fire.

Holiday safety in the home ... The holiday tree and lights are potential safety hazards. A dry tree and unsafe lights are a dangerous combination. After you get the tree home, keep it in a bucket of water so it will stay healthy until you decorate it. Before putting it in the stand, cut the trunk at a 45 degree angle, approximately two inches from the bottom. Replace a string of lights if the wires are worn or frayed. It is also important not to overload outlets.

If you have young children in the home, do not put fragile or sharp ornaments near the bottom of the tree. Two other safety rules to follow concern candles and the fireplace. Always keep lighted candles out of the reach of children, and because it may give off toxic fumes, do not burn wrapping paper in the fireplace.

Home Inspection

Now is the time to inspect your home for safety hazards. Go to <http://www.aomc.org/cvhnpartners/HOMESAFE.html> and print out the home safety checklist. Use the checklist to make a thorough safety inspection. Then follow the process to completion by practicing safety in the home during the holidays and throughout the year.

Holiday Travel

If you are planning to travel during the holidays, take a few minutes to plan your route and check the weather. Take extra blankets and food in case you become stranded. Get plenty of rest before a long trip. If you have to travel through rain or snow, allow extra time to reach your destination. When packing the car, do not obstruct your view.

News Researcher

2001 Publication Schedule

Issue	Publication Date	Submission Deadline
1	Jan. 12	Jan. 2
2	Jan. 26	Jan. 16
3	Feb. 9	Jan. 29
4	Feb. 23	Feb. 12
5	March 9	Feb. 26
6	March 23	March 12
7	April 6	March 26
8	April 20	April 9
9	May 4	April 23
10	May 18	May 7
11	June 1	May 21
12	June 15	June 4
13	June 29	June 18
14	July 13	July 2
15	July 27	July 16
16	Aug. 10	July 30
17	Aug. 24	Aug. 13
18	Sept. 7	Aug. 27
19	Sept. 21	Sept. 10
20	Oct. 5	Sept. 24
21	Oct. 19	Oct. 8
22	Nov. 2	Oct. 22
23	Nov. 16	Nov. 5
24	Nov. 30	Nov. 19
25	Dec. 14	Dec. 3

AdVentures

CLASSIFIED

FOR SALE: '97 Dodge Ram 1500 pick-up truck, extended cab, 6.5-foot bed, fully loaded, $49,500 miles, $17,000. Call 868-4391.

FOR SALE: High-end UNIX workstations: SGI Indigo II, 1 GB main memory, 4 GB internal and 2 GB external memory, CD-ROM and tape drives, serial and parallel ports, 19-inch monitor, $6,000; SUN UltraSparc, 200 MHz, 1 GB main memory, 9 GB external and 2 GB internal memory, CD-ROM, 20-inch monitor, $4,000. For more information, call 766-8695 workdays before 3 p.m.

FOR SALE: '93 Ford Escort wagon, 5-speed, 132,000 miles, one owner, good condition, "champagne" color (beige), no repairs required, very reliable, runs great. Asking $1,900. Call 896-7936.

FOR SALE: TUSA SCUBA diving regulator with primary second stage, octopus and B.C. hose. Excellent condition; only 17 dives since last annual inspection/servicing. $75. Call 867-7319 after 5 p.m.

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The deadline for the Dec. 15 edition of the *Researcher News* is Dec. 4. Send submissions to <j.roberts@larc.nasa.gov>.

VASC Will Host NASA Day Dec. 2

The Virginia Air and Space Center (VASC) will offer several "holiday gifts" to Langley Research Center civil servants, contractors and retirees and their immediate families on **Dec. 2**. In addition to offering free admission to the museum, the benefits will include: $3 admission to matinee IMAX film showings; $10 off the purchase of a VASC membership; a 20-percent discount on purchases made in the museum store; and $20 off the purchase of "engraved pavers," the memorial bricks displayed on the grounds outside the museum. A NASA badge must be shown to take advantage of the benefits. For more information call Sharon Gates at 727-0900, ext. 718.

Retirement Seminar On Dec. 4

Langley Research Center's Office of Human Resources will host a "Planning for Retirement" seminar from 8:30 a.m. to 3:30 p.m. **Dec. 4**. The seminar will be taught by Government Retirement & Benefits, Inc. in Langley's H.J.E. Reid Conference Center.

To register, contact DeAnna L. Lawrence at ext. 42584 or <d.l.lawrence@ larc.nasa.gov>. For more information about the course, call Linda Park at ext. 42605 or Lillian Ross at ext. 42657.

Foreign Travel Briefing Dec. 5

Langley Research Center's Office of Security and Environmental Management will conduct its monthly "Foreign Travel Briefing" from 1:30 to 2:30 p.m. **Dec. 5** in the Pearl I. Young Theater. NASA employees and contractors planning to travel overseas should attend the briefing. Anyone planning to attend should contact John Leo at ext. 48037 or <j.leo@larc.nasa.gov>.

Colloquium Lecture On Dec. 5

Ronald Greeley, a Regents Professor of Geology at Arizona State University, will present a Colloquium lecture entitled, "The Moons of Jupiter: Fire and Ice in the Extreme," at 2 p.m. **Dec. 5** in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center.

Greeley

For more information about the lecture series, visit <http://shemesh.larc.nasa.gov/Lectures/> on the Web.

LAA Christmas Luncheon Dec. 12

Langley Research Center's Alumni Association (LAA) will host its annual Christmas luncheon on **Dec. 12** at the Langley Air Force Base Non-Commissioned Officers Club. Doors will open at 11:30 a.m., and lunch will begin at noon. The price is $10.55 per person.

Reservations must be made by Dec. 5. For reservations or more information, call George Brooks at 868-6013.

AIAA Dinner Meeting On Dec. 13

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) will sponsor a dinner meeting on **Dec. 13** in the H.J.E Reid Conference Center Auditorium. A social will start at 6 p.m., dinner will be served at 6:30 p.m., and the program — featuring Rick Fleeter speaking about "Can Space Matter? The Search For Extraterrestrial Utility" — will begin at 7:30 p.m.

The cost is $10 for members and their guests, $12 for non-members and $8 for student members. Non-members joining the AIAA at the dinner will receive a complimentary dinner. Reservations are required by Dec. 6. For reservations, contact Robin Hardy at ext. 47159 or <r.c.hardy@larc.nasa.gov> or Mohammad Takallu at ext. 47671 or <m.a.takallu@larc.nasa.gov>.

'Ole-Timers' Get-Together On Dec. 16

Langley Research Center's "Ole Timers" will hold their annual get-together from 9 to 11:30 a.m. **Dec. 16** in Bldg. 1244, Room 121. Doughnuts and coffee will be provided. For more information, contact Calvin Chandler at 864-3900 or 864-3906.

Exchange Shop Holding Sale

Langley Research Center's Exchange Shop has extended its hours to accommodate holiday shopping. The shop, which is regularly open from 7:30 a.m. to 2 p.m., will be open from 7 a.m. to 6 p.m. every Wednesday through Dec. 20. The shop also will hold the following sales:

- **Dec. 4 - 8:** 15 percent off all regularly priced merchandise.
- **Dec. 11-15:** 10 percent off all regularly priced merchandise.
- **Dec. 18-22:** Draw an envelope for a variety of special discounts.
- **Dec. 26-29:** All holiday merchandise on sale.

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Researcher News

National Aeronautics and
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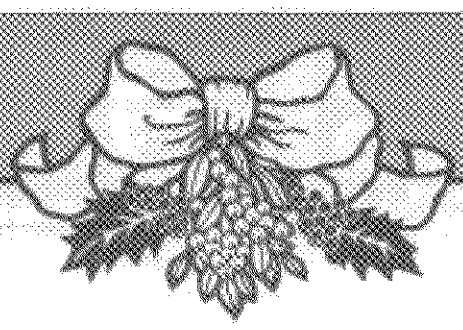


In celebration
of the holiday season,
the Director of
Langley Research Center,
Dr. Jeremiah F. Creedon,
cordially invites all
NASA civil service/contractor
employees and retirees
to attend a reception at the
H.J.E. Reid Conference Center
Friday, Dec. 15, 2000,
from two-thirty to four o'clock.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 14 ❖ Issue 25 ❖ Dec. 15, 2000

C&I Proposals Selected

Nearly 50 'Ideas' Will Split $7 Million In 2001

By JIM ROBERTS
Researcher News editor

Imagine: an airplane runway the length of a driveway … emission-free aircraft … spacecraft that morph into smaller vehicles before re-entry into the Earth's atmosphere … a synthetic "brick" that can be flown into space and molded into a structure as big as a football field.

These are just a few of the breakthrough technologies that could be developed at Langley Research Center through a new initiative called "Creativity & Innovation."

"C&I will give our employees both the encouragement and the time to explore radical, creative technologies within our mission areas," Center Director Jeremiah F. Creedon said when C&I launched last summer. "This initiative is designed to encourage high-risk, researcher-generated breakthroughs to solve society problems."

Or, in the words of Joseph Heyman, Langley's Senior Technologist: "We're taking science fiction and making science fact."

Heyman, who is responsible for implementing the program, solicited proposals from Langley's researchers last summer and announced the selected proposals in November. In all, about 50 proposals will share $7 million in funding in 2001. In subsequent years, new proposals will be funded.

"If they are fruitful, dig deeper," Heyman said. "If they are not fruitful,

Continued on Page 5

Web Portal Set To Debut

@LaRC Completed Usability Survey And Will Be Unveiled In February

Wouldn't it be great to go to one location for all of your electronic information needs?

Ready or not, here it comes.

Langley Research Center is about to transform its varied electronic information streams into one concise and unique system called @LaRC. Lantern, "LaRC This Week" and e-mail distribution are about to announce their respective retirements after a long and successful tenure as the electronic communication mediums of choice to Center employees.

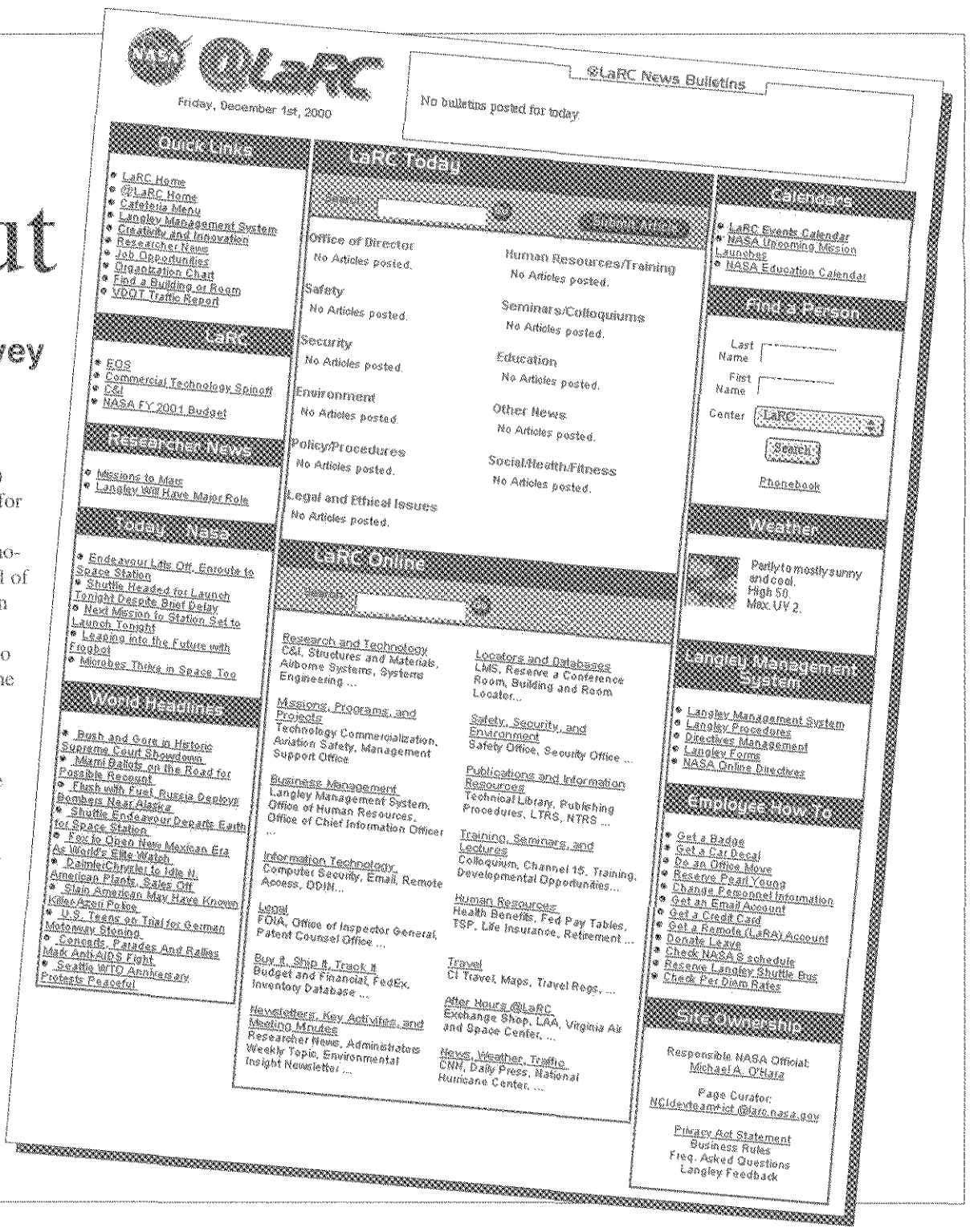
Langley's Electronic Communication Implementation Team (ECIT) is set to launch a new information and communication system on-Center. @LaRC is scheduled for the first phase of a two-phase implementation plan the first week of February.

"What the Center will see in February is the front end of a portal system," said Mike O'Hara, an employee in Langley's Office of Chief Information Officer (OCIO) who is serving as the Lead for the ECIT. "We have to start somewhere, and we have chosen to give the look and feel of a true portal environment. In this way, the Center will encounter minimal change to the look and taxonomy of the site when we proceed with portal capabilities.

"The team and I have been afforded a very unique opportunity to develop and formulate an entirely new infrastructure for communicating and relaying information electronically to the Center," O'Hara said.

Once the @LaRC system is launched, it is recommended that Langley personnel configure their Web browsers' default configuration to the @LaRC site to have

Continued on Page 5



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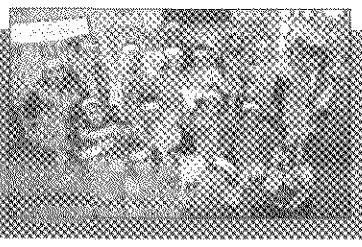

Langley CDC Holds 'International Feast' Page 2

Upcoming Colloquium: Alan Epstein On 'The MIT MicroEngine Project' Page 4

News Briefs

Around the Agency

EVIDENCE OF MARTIAN LAKES DISCOVERED

In what ultimately may be their most significant discovery yet, Mars scientists say high-resolution pictures showing layers of sedimentary rock paint a portrait of an ancient Mars that long ago may have featured numerous lakes and shallow seas.

"We see distinct, thick layers of rock within craters and other depressions for which a number of lines of evidence indicate that they may have formed in lakes or shallow seas. We have never before had this type of irrefutable evidence that sedimentary rocks are widespread on Mars," said Michael Malin, principal investigator for the Mars Orbiter Camera on NASA's Mars Global Surveyor spacecraft at Malin Space Science Systems (MSSS) in San Diego. "These images tell us that early Mars was very dynamic and may have been a lot more like Earth than many of us had been thinking."

Such layered rock structures where there were once lakes are common on Earth. The layers of sediment compressed and cemented to form a rock record of the planet's history.

The regions of sedimentary layers on Mars are spread out and scattered around the planet. They are most common within impact craters of Western Arabia Terra, the inter-crater plains of northern Terra Meridiani, the chasms of the Valles Marineris and parts of the northeastern Hellas Basin rim. RELEASE: 00-190

ENGINEERS ABLE TO SEE AIRFRAME NOISE

Bright, computer images of landing gear wind noise are enabling NASA engineers to pinpoint loud and preventable aircraft flight sounds more easily than in the past, raising the prospect of quieter take-off and landings.

In a series of tests conducted at NASA's Ames Research Center, the sounds have been depicted as colored images on a computer screen. These new test data provide critical visual information to aircraft designers concerned about possible enforcement of stricter aircraft noise rules.

"Some airports are imposing nighttime curfews on noisy take-offs and landings, encouraging aircraft manufacturers to make quieter planes," said Paul Soderman, leader of the Ames aeroacoustics group. "If U.S. airplane makers can't meet the new noise rules, those manufacturers may well have difficulty selling their aircraft, both domestically and in foreign markets," he speculated. RELEASE: 00-189

TEAM CHOSEN FOR INTERFEROMETRY MISSION

NASA has selected a science team for the Space Interferometry Mission (SIM), an innovative space system that will hunt for Earth-sized planets around other stars and provide new insights into the origin and evolution of our Galaxy.

The mission, scheduled for launch in 2009, will also precisely measure the locations and distances of stars throughout our Milky Way Galaxy, and study other celestial objects.

SIM is part of NASA's Origins Program, a series of missions that will help us answer two fundamental questions: How did we get here? Are we alone? The newly selected team consists of 10 Principal Investigators, leading key science teams, and five mission specialists.

Additional information on the Space Interferometry Mission is available online at <http://sim.jpl.nasa.gov>, and additional information on the Origins program is available online at <http://origins.jpl.nasa.gov>. RELEASE: 00-178

News Researcher

The Researcher News is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-2199. It is published every other Friday in the interest of all Langley staff, contractors and retirees and has a circulation of approximately 8,100. It is distributed to all Langley civil service employees, contractors, retirees and on-site university personnel, with limited distribution to NASA Headquarters, other NASA centers and, by special request, to other non-NASA individuals and organizations. Questions related to the content and distribution of the Researcher News should be addressed to Keith Henry, Mail Stop 115, (757) 864-6120. Submit contributions/SDL 26, 55, 110 changes to the editor via e-mail <j.r.roberts@larc.nasa.gov>, fax (757) 864-6477, telephone (757) 864-8150 or Mail Stop 293. Articles, photos and announcements are due at noon the Monday following the date of this issue.

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Science and Technology Corp.

The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

People

'International Feast'

The kindergarten class in Langley Research Center's Child Development Center (CDC) celebrated Thanksgiving with an "International Feast" on Nov. 21. The event was organized by kindergarten teacher Linda Clampitt and assistant Mattie Rouse.

Photo by Jeff Caplan

Tech Transfer Awards Announced

Langley Research Center's Technology Commercialization Program Office recently announced the winners of its two Technology Transfer Awards.

The Richard T. Whitcomb Aerospace Technology Transfer Award goes to the Langley's Advanced Materials and Processing Branch for its Atomic Oxygen Resistant (TOR) Polymer Technology. Team members are Team Leader **John W. Connell, Joseph G. Smith Jr.** and **Paul Hergenrother** and Triton Systems, Inc. contractors **Ross Haghighat and Peter Schuler**.

The Paul F. Holloway Non-Aerospace Technology Transfer Award goes to the Langley's Biocybernetics Team for its unprecedented contributions in the development and application of aerospace biocybernetic technologies in driving safety, medical and educational problems. Team members are Principal Researcher **Alan Pope**, Commercialization Specialists **Marisol Garcia** and **David Shannon** and Patent Attorneys **Robin Edwards** and **Helen Galus**.

The winners will be formally recognized at the 2001 Honor Awards Ceremony, which will take place next summer.

Retirement

Langley Research Center's Airborne Systems Competency will host a retirement party for **Jon Sweet**, a Lockheed Martin contractor, at 11:30 a.m. Jan. 3, 2001, at the Fortune Garden Restaurant on Big Bethel Road in Hampton. RSVP to Patricia Hunt at ext. 44043 or <p.j.hunt@larc.nasa.gov> or Eddie Ford at ext. 41813 or <e.d.ford@larc.nasa.gov> no later than Jan. 2. Gift donations are welcome.

In Memoriam

Richard Paul Hartman

Richard Paul Hartman died on Nov. 25 at the age of 64. Hartman, a native of West Virginia, served in the U.S. Army for 27 years and was an active employee in Langley Research Center's 14 - By 22- Foot Wind Tunnel at the time of his death. He served as an engineering technician at NASA for 20 years and was the recipient of numerous Letters of Commendation and NASA Service Awards.

Benjamin F. Price

Benjamin F. Price died on Nov. 18. Price, a native of Stuart, retired from NASA after 33 years of service.

Gerald Soffen

Gerald Soffen died on Nov. 22 at the age of 74. Soffen, a native of Cleveland, served as project scientist of the Viking Mars Project while at Langley Research Center and later was instrumental in the establishment of the NASA Astrobiology Institute. *(For a complete story about Soffen's career, see page 5.)*

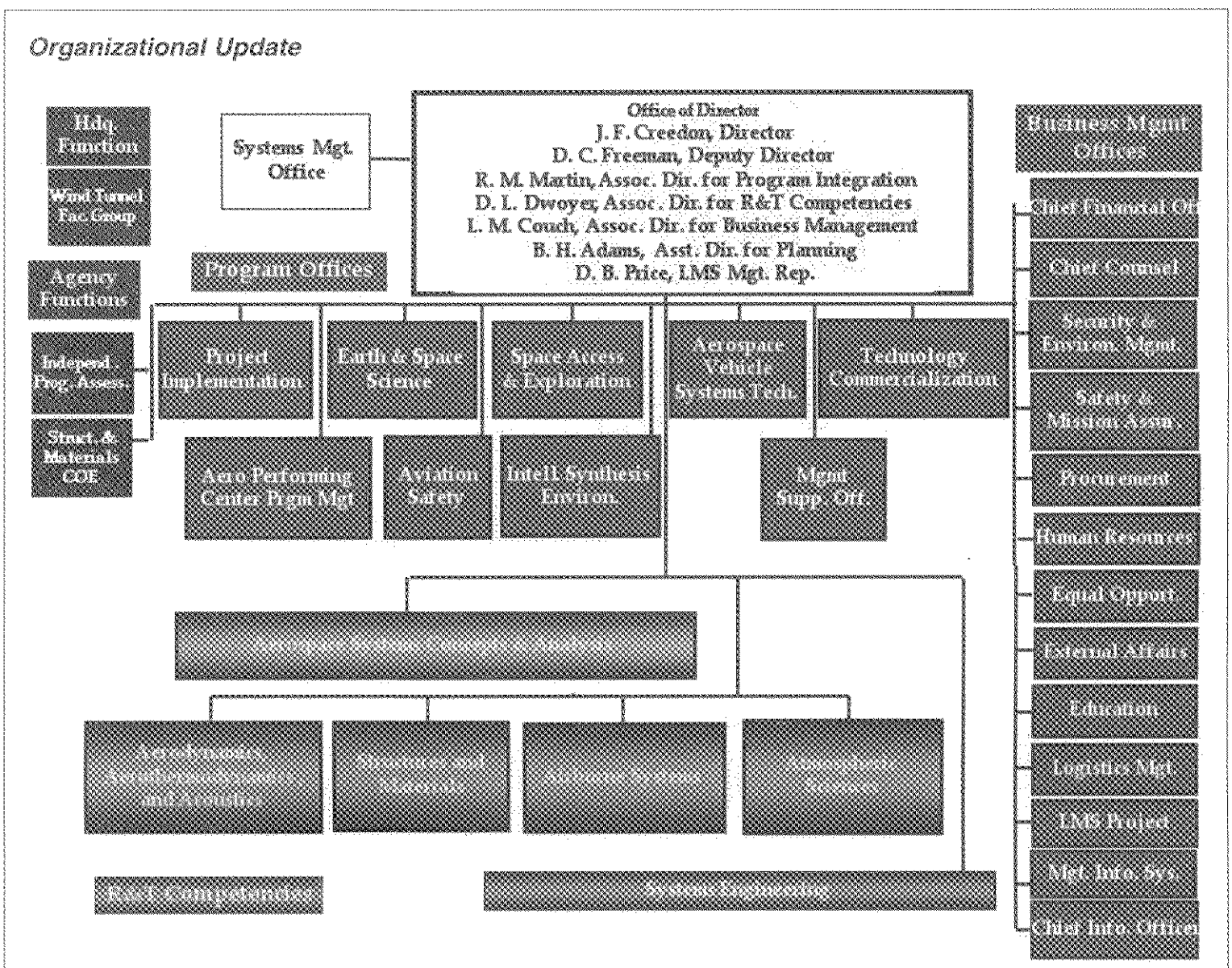
Brian D. Welch

Brian D. Welch died of a heart attack on Nov. 24 at the age of 42. Welch, a native of Fulton, Kent., was NASA's Director of Media Services. He began his NASA career as a public affairs cooperative education student at Langley Research Center in 1979.

"All of us at NASA are stunned and saddened by this tragic loss," said NASA Administrator Daniel S. Goldin. "Brian's love and enthusiasm for space flight and exploration was infectious. He approached his job with a passion and a purpose and truly embodied the spirit of this agency."

H. Andrew Wallio

H. Andrew "Drew" Wallio died on Nov. 24 at the age of 58. Wallio, who was born in Panama and grew up in Hampton, served as a scientist at NASA for 37 years.



Changes Abound In 2000

Center's Organizational Structure Always In Flux

By JIM ROBERTS
Researcher News editor

What a difference a year makes! Many significant changes have taken place since the *Researcher News* launched a series outlining Langley Research Center's "new" organizational structure in the summer of 1999. Some of the changes have been reported in the *Researcher News*, others weren't.

This story summarizes the major changes in the Center's organizational structure in the last calendar year.

Office of Director

Aside from **Delma C. Freeman** succeeding **Wallace C. Sawyer** as Deputy Director, one major change took place: The Systems Management Office, headed by **Alan W. Wilhite**, was added to the Office. Additionally, **Douglas B. Price** was named to serve as the Langley Management System (LMS) Management Representative, and **Sammie D. Joplin** was reassigned as the Office of Director's Deputy for Facility Strategy (pending approval from NASA Headquarters).

Program Offices

Several personnel changes have taken place in the Program Offices: **Wilson T. Lundy** was named Director of the Intelligent Synthesis Environment Program Office; **Darrell Branscome** was named Director of the Space Access and Exploration Program Office; and **Jerry R. Newsom** was named Director of the recently formed Project Implementation Office (PIO).

The PIO, which was formed in September, will be responsible for the execution of the major Langley flight or experimental hardware projects, including the Space Projects Office's projects, the Blended Wing Body Project and all approved Construction of Facilities projects. The Hyper-X Project also will be assigned to the office after completion of first flight.

Newsom's former position, Director of the Earth and Space Science Program Office, is vacant, but day-to-day operations are being handled by Acting Deputy Directors **Stephen P. Sandford** (Nov. 5 through Feb. 28, 2001) and **Barry D. Meredith** (March 1, 2001, through June 30, 2001).

Research and Technology Competencies

The following personnel reassignment was announced in the Dec. 1 edition of the *Researcher News* and was effective on Nov. 15:

■ **Glenn R. Taylor** was reassigned as Director of the Systems Engineering Competency (pending approval from NASA Headquarters).

Business Management Offices

One major change took place: The Office of Safety and Mission Assurance split into two separate offices: Security and Environmental Management (OSEM) and Safety and Mission Assurance (OSMA). **John W. Lee** is head of the OSEM; **Lana Couch** is the Acting Director for OSMA.

Other personnel changes that have taken place in the Business Management Offices:

■ **Joseph Struhar**, the Chief Financial Officer (CFO), retired, and **Kenneth Winter**, the former Deputy CFO at NASA Headquarters, has been selected as his successor.

■ **Patricia L. Dunnington**, the Chief Information Officer (CIO), is serving as the acting Head of the Office of Human Resources.

■ **Michael P. Finneran** was named Head of the Office of External Affairs after **A. Gary Price** retired.

■ **Howard R. Puckett** was named Head of the Office of Logistics Management.

■ **Cathy H. Mangum** is serving as the acting Chief Information Officer.

Agency Functions

Two major changes took place: The Wind Tunnel Facilities Group has been changed from an Agency Function to a Headquarters Function, and **Jerrold M. Housner** was named Chief Technologist for Structures and Materials Center of Excellence.

Jean M. Laneave of the Office of Director contributed to this story.

OSMA Seeking QASAR Nominees

Langley Research Center's Office of Safety and Mission Assurance (OSMA) is soliciting nominations for NASA's Quality And Safety Achievement Recognition (QASAR) Award Program.

The QASAR Awards promote safety, quality and continuous improvement throughout NASA. The awards recognize civil servants and contractors who have demonstrated exemplary performance in contributing to the quality and/or safety of products, services, processes, management programs and activities or the working environment.

Annually, one person is selected as the "Best of the Best" QASAR Award recipient in each of following categories:

■ most significant safety or mission assurance (SMA) contribution from within the NASA SMA organization;

■ most significant safety or quality improvement, service improvement or initiative from a NASA employee external to the SMA organization;

■ most significant safety or quality product improvement, service improvement or initiative from a non-NASA government employee; and

■ most significant safety or quality product improvement, service improvement or initiative from a prime or subcontractor employee.

OSMA will review Langley's nominations and forward one for each category to the QASAR Award Board. NASA Administrator Daniel Goldin will present the QASAR Awards on May 10, 2001, at the 16th annual NASA Continual Improvement and Reinvention Conference.

Any NASA or NASA contractor employee may nominate an eligible individual to receive a QASAR Award. The award nomination should be no more than one page in length.

Langley's QASAR representative, Henk Roelant, should receive completed nomination forms no later than Jan. 5, 2001, in order to meet NASA Headquarters' deadline for submitting nominations.

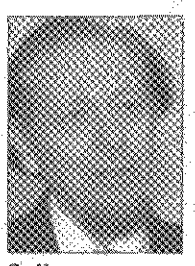
For more information, contact Roelant at ext. 41741 or <h.a.roelant@larc.nasa.gov> or visit <http://www.hq.nasa.gov/qasar> on the Web.

In Memoriam: Gerald Soffen

'Space Has Lost One Of Its True Adherents'

By MICHAEL FINNERAN
Office of External Affairs

NASA scientist Gerald Soffen, who led the Viking science team that performed the first experiments on Mars, died on Nov. 22 at George Washington University Hospital in Washington, D.C. He was 74.


Soffen

Soffen served as project scientist of the Viking Mars Project during his tenure at Langley Research Center.

More recently, as a close advisor to NASA Administrator Daniel S. Goldin, Soffen helped shape NASA's astrobiology program — the study of life in the universe. Soffen also was instrumental in the establishment of the NASA Astrobiology Institute dedicated to studying the origin, evolution, distribution and destiny of life in the universe.

"Dr. Soffen brought a vision and passion to space exploration that was remarkable," Goldin said. "His pioneering work on the Viking missions paved the way for the creation of our astrobiology effort. Gerry's lasting legacy to us is he helped usher in a new era of discovery that will bring a new understanding of fundamental life processes on Earth and throughout our universe."

Twin robot landers, launched in 1975, touched down on Mars a year later — the first missions to perform unmanned experiments on the surface of the planet.

Soffen was responsible for all of the scientific investigations, directing the activities of more than 70 scientists throughout the United States.

Later at Langley, Soffen served as the chief environmental scientist, developing theoretical models, laboratory experiments, ground-based measurements and remote sensing by satellite.

"Space has lost one of its true adherents," Langley Director Dr. Jeremiah F. Creedon said of Soffen's death.

Soffen had been planning the 25th anniversary celebration of the Viking landings, said A. Gary Price, a former NASA Langley senior manager who worked with Soffen on the Mars mission.

"But even then his emphasis was not on the past but on doing something to inspire and excite the youth and the next generation of young leaders and scientists to carry on his dream," Price said. "He cared immensely about others and never tired of pursuing his passion, the search for extraterrestrial life and the understanding of our universe."

Soffen was born in Cleveland on Feb. 7, 1926. He received his doctorate in biology in 1961 from Princeton University. He earned his master's of science degree from the University of Southern California and bachelor's degree from the University of California, Los Angeles.

He is survived by his wife, Kazuko, and a sister, Nancy Guy, who lives in California. Soffen was buried on Nov. 26 at the Park Lawn Memorial Park in Hampton.

Colloquium and Sigma Series Lectures

'The MIT MicroEngine'

Alan H. Epstein will present a Colloquium lecture entitled, "The Massachusetts Institute of Technology (MIT) MicroEngine Project," at 2 p.m. Jan. 9, 2001, in Langley Research Center's H.J.E. Reid Conference Center. A Sigma Series lecture will follow at 7:30 p.m. at the Virginia Air and Space Center.

Epstein

The Talk

MIT is embarked on an effort to develop micro-electro-mechanical systems-based gas turbine engines, turbogenerators and rocket engines. These engines-on-a-chip, which can be fabricated in large numbers in parallel using semiconductor manufacturing techniques, are based on micro-high speed rotating machinery with power densities approaching those of their more familiar, full-sized brethren.

The MIT micro-gas turbine is a 1-centimeter diameter by 3-millimeter thick silicon heat engine designed to produce 10-20 watts of electric power (or 10-20 grams of thrust). Later versions may produce up to 100 watts.

The thumbnail-sized MIT rocket engine is fueled with a bi-propellant and is designed to produce three to five pounds of thrust at a chamber pressure of 1,800 psi.

Applications for the rocket motors range from satellites to kinetic kill vehicles to very small launch vehicles. The principle advantage of this engine-on-a-chip approach is the modularized thrust and power that offer advantages in cost, redundancy and standardization. This technology extends to other applications such as coolers, pumps and fans on-a-chip.

The Speaker

Epstein is the R.C. Maclaurin Professor of Aeronautics and Astronautics, head of the division of propulsion and energy conversion and director of the Gas Turbine Laboratory at MIT. He received all of his degrees in aeronautics and astronautics from MIT and has been on the faculty there since 1980.

Epstein's technical interests focus on energy conversion, propulsion and turbomachinery, including micro heat engines, unsteady flow in turbomachinery, turbine heat transfer, advanced instrumentation, hydroacoustics, the application of active control to aeropropulsion systems. He has more than 70 technical publications in these fields.

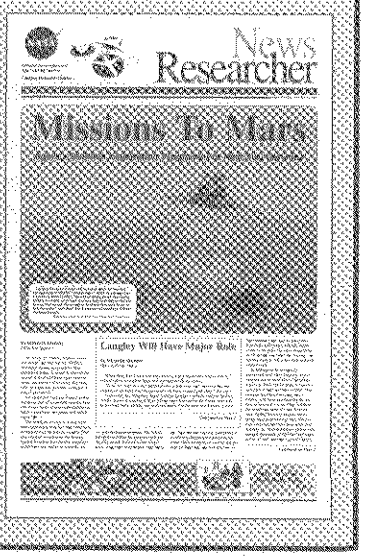
Epstein is an active consultant to the gas turbine and aerospace industries. His awards include four best paper awards from the International Gas Turbine Institute and the ASME Gas Turbine Award.

Epstein is an American Institute of Aeronautics and Astronautics Fellow and a member of the National Academy of Engineering.

News Researcher

2001 Publication Schedule

Issue	Publication Date	Submission Deadline
1	Jan. 12	Jan. 2
2	Jan. 26	Jan. 16
3	Feb. 9	Jan. 29
4	Feb. 23	Feb. 12
5	March 9	Feb. 26
6	March 23	March 12
7	April 6	March 26
8	April 20	April 9
9	May 4	April 23
10	May 18	May 7
11	June 1	May 21
12	June 15	June 4
13	June 29	June 18
14	July 13	July 2
15	July 27	July 16
16	Aug. 10	July 30
17	Aug. 24	Aug. 13
18	Sept. 7	Aug. 27
19	Sept. 21	Sept. 10
20	Oct. 5	Sept. 24
21	Oct. 19	Oct. 8
22	Nov. 2	Oct. 22
23	Nov. 16	Nov. 5
24	Nov. 30	Nov. 19
25	Dec. 14	Dec. 3



@LaRC

Continued from Page 1

ready access to current Center information.

"I am certain if Center employees give the site a chance they will be very pleased with the ease and convenience of information flow that will be available to them," O'Hara said.

@LaRC will be accessible only to registered hosts in the <larc.nasa.gov> domain. Pages linked to and from @LaRC will not be restricted to the same domain. Any Center employee with an authenticated Langley Remote Access (LaRA) account will have access to @LaRC when stationed off-site.

The ECIT has followed the guidelines and recommendations of the Internal Communications (IC) Team, a yearlong effort headed by OCIO employee Manjula Ambur. Lana Couch, Langley's Associate Director of Business Management, chartered the IC Team to evaluate the Center's current communications methods and recommend ways to improve the way information is disseminated to the Center employees.

"I want to assure the IC Team that we have followed their recommendations as close as possible, and I feel this product is a strong representation of the work and effort that was put into their proposal," O'Hara said.

Some employees already have had the opportunity to use the site and provided constructive criticism during the initial Usability Testing. Michael D. Uenking and Monica F. Hughes of the Crew/Vehicle Integration Branch (CVIB) created and conducted the tests during November. Lance Prinzel and Jennifer Burt, also of the CVIB, served as advisor and heuristic evaluator to help ensure that the usability testing tasks were complete and thorough.

"Employees from across the Center were brought in to use the Web-based system, critique and answer questions on the site's layout and navigation," Uenking said.

"The site needed minor tweaking," Hughes added, "but overall, users were positive with the capabilities and ease of use."

A final usability testing with the changes and recommendations incorporated will occur in mid-December.

So what is @LaRC?

The @LaRC site is a single point of information for employees incorporating various components or subject channels, which include:

- **@LaRC Today** — the consolidation of Centerwide e-mails into a single electronic newsletter;
- **@LaRC Online** — an improved and updated version of the current Lantern pages;
- **@LaRC News Bulletins** — an instantaneous bulletin board system for emergencies and urgent matters;
- **Quick Links** — high-traffic bookmark points of information for employees;
- **World Headlines** — highlights of news and worlds events;
- **Researcher News Online** — an electronic version of the *Researcher News*;
- **Today @ NASA** — highlights from around the Agency;
- **Hot @LaRC** — Hot topic items relating to Langley;
- **Calendars** — Langley events, NASA mission launches, and the NASA Education happenings;
- **Find a Person** — Agency directory;
- **Weather**;
- **Langley Management System** — reference center; and
- **Employee How To** — helpful links to aide Center employees.

@LaRC is expected to significantly improve Center productivity through the use of new Web and intranet technologies.

"The customer's information needs and personal interests are well reflected in the layout and design of this site," said Rose Mustain, the Sub-Team Lead for Customer Services. "The Team will be providing product familiarization classes to the Center in mid-January. Our aim is to make people as comfortable as possible with the new @LaRC System."

Harriet Machie of the Library and Media Services Branch is serving as the Sub-Team Lead for Content. "At first I found the content issue overwhelming," she said. "The @LaRC taxonomy essentially is a culmination of Lantern and 'LaRC This Week' with new customer-oriented links for the benefit of Langley personnel. The beauty of the @LaRC system is that we can add or take away information channels as deemed appropriate."

The design and layout of the @LaRC page is representative of Web portal technology. The ECIT Phase 2 plan calls for a full transition to portal capabilities and will work much like My Netscape (<http://my.netscape.com>) and other customizable Web sites that harvest information from various sources and present that information in a consistent, browser-based format.

"The plan from the start was to get this site up and running and develop a consistent look and feel for the employees," said Robin Land, the Lead of Technology Sub Team who is overseeing the development of the system. "I would anticipate a switch to portal capabilities within a six- to 12-month period. We are following the direction of JPL who is Lead Center for portal development in the Agency. We are hopeful and confident JPL will assist us with their expertise as we make our transition here at Langley."

C&I

Continued from Page 1

recognize that it is time to get out. ... It's OK to do high-risk, exciting research. It's OK to fail, as long as we learn from it."

Given the high-risk nature of the research, Heyman estimated that only a few proposals will lead to the development of full-fledged programs. One idea, though, has the potential to radically change the future.

"Langley has been a mecca for the technologies that have become the future," said Joe Heyman, Langley's Senior Technologist. "It's time for us to continue that future by investing in futurist technology.

"We want our employees to reach out and bring to Langley the vast knowledge of humankind that is at our gates," he said. "We must cross those gates to gain that knowledge and use that knowledge to lead in our mission technologies."

A partial list of the selected proposals for 2001:

Multi Applications

- "An Innovative and More Precise Method of Non-Intrusively Detecting Early Stages of Cancer Growth Located within the Human Body," Curtis R. Regan
- "Computing on Wire: Massively Parallel Computation with Arrays of Quantum Dot Cellular Automata," Curtis D. Armstrong
- "Creation of FEL-Synthesized Carbon Nanotube Materials Directly from a Carrier Gas," Michael W. Smith
- "Data Swarming: A Metaphor for Discovery of Emergent Patterns among Qualitative and Quantitative Data," Kurt Severance
- "Dense Autonomous Methods for Flow Simulation," Harold L. Atkins
- "Development of Aerogel Composites as Nanotechnology Platforms," Jeffrey D. Jordan
- "Development of Electroluminescent Coatings for Excitation of Pressure and Temperature Sensitive Paints," Clifford J. Obara
- "Experimental Nonlinear System Identification," Walter A. Silva
- "High Transmission Window for Low Gamma Radiation," Warren C. Kelliher
- "Molecular Engineering of High Performance Electroactive Polymers," Joycelyn S. Harrison
- "Multi-Disciplinary Optimization for Fully 3-D Radiation Models," Robert C. Singleterry Jr.
- "Object-Oriented Designer Computational Fluid Dynamics," William L. Kleb
- "State Space Partitioned Adaptive Critic Designs for Reconfigurable Aircraft Control " Mark A. Motter
- "Synergistic Powered-Lift and Control Technologies Applied to Advanced SuperSTOL Aircraft," Bryan A. Campbell
- "Turbulent Drag Reduction with a Surface Plasma," Stephen P. Wilkinson
- "Ultra Nanostructured Composites," Thomas S. Gates and Norman J. Johnston
- "Universal Foundations for Image-Based Measurements of Motion Fields and Morphology of Deformable Matters," Tianshu Liu

Climate

- "Airborne Demonstration of an Innovative Technique for Measuring CO2 from Space," Edward V. Browell
- "Climatic Data Sets for Architectural Applications: Designing Global Warming out of Existence," Paul W. Stackhouse Jr.
- "Development of an Nd:Y2O3 Laser Transmitter for the Measurement of Global Tropospheric Ozone from Space," William C. Edwards
- "Development of Field-Controlled Spectrally Smart Active Filters," Sang H. Choi
- "Efficient UV Generation with OPA Idler Absorption," Larry B. Petway
- "Frontiers in Passive Atmospheric Remote Sensing," Martin G. Mlynczak
- "High Spectral Resolution Lidar Development and Demonstration," Chris A. Hostetler
- "Proximity Sensor," William C. Edwards
- "Regional Air Quality Modeling System," Robert B. Pierce
- "Wavelength Agile Photodetection Using Non-Linear Optics," James A. McAdoo

Aerospace

- "An Intelligent Instrumentation System for Aerospace Applications — NanoTechnology Based," Seun K. Kahng
- "Aircraft Dynamics: Nonlinear Math Modeling," Patrick C. Murphy
- "Carbon Nanotube Reinforced 3-Dimensional Ordered Porous Carbon for Energy Storage," Joycelyn S. Harrison
- "Collapsible Fuel Tanks for Rockets," John T. Dorsey
- "Distributed Propulsion Concept Development and Testing," Mark D. Moore
- "Expendable Intelligent System for Biomimetic Characterization," Qamar A. Shams
- "Flap Edge Vortex Alleviation," Harry L. Morgan Jr.
- "Optimal Design of Blended-Wing-Body Non-Circular Fuselage Concepts," Vivek Mukhopadhyay
- "Rapid Deceleration of Airplanes for Aborted Takeoffs," Bryan A. Campbell
- "Revolutionary Distributed Sensing for Active Noise Control," Gary P. Gibbs
- "Wake-Vortex Alleviation Using Micro Tabs," John C. Lin

Security & Classified

- "Chemical Detectors with Unprecedented Sensitivity and Selectivity," John W. Connell
- "Multifunctional Materials," Catharine C. Fay

Transportation

- "Active Shielding and Control of Environmental Noise," Craig L. Streett
- "An Integrated Approach to Noise Control with Applications to Aircraft Cabins," Suresh M. Joshi
- "An X-Vehicle Issue: Understanding Cryogen Fuel Containment," Norman J. Johnston

Space Access

- "Slip Casting Polymer Matrix Composites," Ruth H. Pater
- "Synthesis of Nano-crystalline Metallic Foils," Stephen J. Hales

Planetary Access

- "A Novel Approach to Freeform Fabrication of Aluminum for On-Orbit Manufacturing," Karen M. Taminger
- "Microwave Processing of Regolith/Polymer Materials " Sheila Ann Thibeault

AdVentures

CLASSIFIED

FOR SALE: '99 Toyota Tacoma PreRunner; hunter green; AT; air conditioning; cruise control; bedliner; 12,500 miles. Very good condition; well maintained. $18,000 or take over lease payments. Call 596-7924.

FOR SALE: '96 Lincoln Town Car Cartier four-door sedan; 4.6-liter V8; automatic; air conditioning; power steering; windows and door locks; tilt wheel; cruise control; premium sound system with CD changer; cassette and AM/FM radio; integrated phone; dual air bags; four-wheel ABS; leather interior; dual power seats; moon roof; alloy wheels. Kelly Blue Book value: $16,750; sell for $15,500. Call 472-9070 evenings or e-mail <jon.sweet@bigfoot.com>.

FOR SALE: Benches from country church; great for porch or family room; solid tongue-and-groove oak; 10 feet long; $100. Can be seen at 582 Wythe Creek Rd., Poquoson. Call 868-4888.

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The next edition of the *Researcher News* will be published on Jan. 12, 2001. Please send submissions to <j.r.roberts@larc.nasa.gov> by Jan. 2.

After-Work Holiday Social Dec. 15

Langley Research Center's Activities Association will host an after-work holiday social at 5 p.m. **Dec. 15** in Afterburners. The Mann Act will perform. For more information, call ext. 46369.

'Ole-Timers' Get-Together On Dec. 16

Langley Research Center's "Ole Timers" will hold their annual get-together from 9 to 11:30 a.m. **Dec. 16** in Bldg. 1244, Room 121. Doughnuts and coffee will be provided. For more information, contact Calvin Chandler at 864-3900 or 864-3906.

Exchange Shop Holding Sales

Langley Research Center's Exchange Shop has extended its hours to accommodate holiday shopping. The shop, which is regularly open from 7:30 a.m. to 2 p.m., will be open from 7 a.m. to 6 p.m. **Dec. 20**. The shop also will hold the following sales:

- **Dec. 18-22:** Draw an envelope for a variety of special discounts.
- **Dec. 26-29:** All holiday merchandise on sale.

Mammograms Offered On-Center

Langley Research Center's Management and Employee Support Branch will host mammographic exams on **Dec. 20** and **29**, on **Jan. 17, 22, 23, 29** and **30, 2001,** and on **March 8, 21** and **26, 2001.**

The exams will be administered by Riverside Mammography Van Services on-Center in the parking area between the Clinic and the Cafeteria. Each appointment is scheduled to last 30 minutes and will include the mammography screening and instructions on self-examination. The results of the mammogram will be mailed directly to the patient and the designated physician.

Langley employees, contractors and retirees — and their family members — are eligible for the exams. To schedule an appointment, call the Riverside Diagnostic Center at 594-3900. Time spent at the exam may be charged to J.O. B1008. The cost is $75. Payment may be made by cash, check or Visa/MasterCard.

For more information, call Langley's Management and Employee Support Branch at 864-3194.

New Year's Eve Party At Afterburners

Langley Research Center's Activities Association will host a New Year's Eve party on **Dec. 31** in the H.J.E. Reid Conference Center. Doors will open at 8 p.m., the party will start at 8:30 p.m., and a champagne toast will take place at midnight.

Tickets are $15 per person in advance and $20 at the door. For tickets or more information, call ext. 46369.

JIAFS Registration Open Jan. 3-12

George Washington University's Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley Research Center offers master's, engineer's and doctorate degrees in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the spring 2001 semester are **Jan. 3-12, 2001**. For a course schedule or more information, contact the JIAFS office at ext. 41982 or <jiafs@larc.nasa.gov> or visit <http://www.seas.gwu.edu/~jiafs/spring.html> on the Web.

Volunteers Needed For Road Race

Langley Research Center's Office of Public Services is recruiting volunteers to assist with the 10th annual Pomoco Hampton Coliseum Road Race on **Feb. 2-3, 2001**. Volunteers will be needed at the following times:

- from 4 to 9 p.m. **Feb. 2** for package pick-up;
- from 6 to 10:30 a.m. **Feb. 3** for package pick-up, registration and set-up;
- and from 8 a.m. to 12:30 p.m. **Feb. 3** for water stops and the information desk.

All volunteers will receive T-shirts and are requested to attend a registration at 6 p.m. **Jan. 30** at Hampton Coliseum. To volunteer, contact The Volunteer Center at 262-0190 or <tvcnnva@attglobal.net>.

OHR Wants Employees' Suggestions

Langley Research Center's Office of Human Resources is soliciting ideas to improve NASA and its operations. Employees are encouraged to use the Employee Suggestion Program to submit ideas that will significantly improve product quality, devise new tools or equipment, reduce cost of materials, and directly increase effectiveness of NASA operations.

Each year, employees have earned recognition and monetary awards by turning their ideas into winning suggestions.

Ideas should be submitted on Langley Form 167 (now available on the Langley Forms System) and forwarded to Karen Ridlon at Mail Stop 174. For more information, call Karen Ridlon at ext. 43194.

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Researcher News

National Aeronautics and
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Langley Research Center
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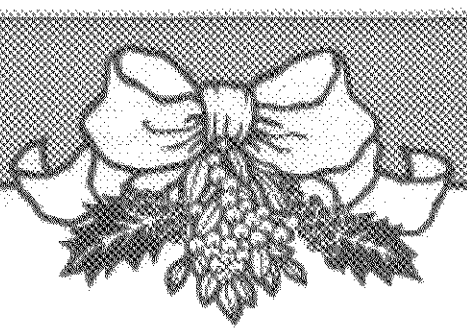

In celebration
of the holiday season,
the Director of
Langley Research Center,
Dr. Jeremiah F. Creedon,
cordially invites all
NASA civil service/contractor
employees and retirees
to attend a reception at the
H.J.E. Reid Conference Center
Friday, December 15,
from 2:30 to 4 p.m.

Sponsored by the
Langley Federal Credit Union
and the
Langley Activities Association

Refreshments and free raffle tickets will be available.
Drawings will be held at 3, 3:30 and 4 p.m. for tickets
to the Virginia Air and Space Center exhibits and IMAX films.