National Aeronautics and Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

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Unique COLTS facility to hit stride this spring

BY DAMODAR AMBUR

NASA Langley is developing a national test facility – known as COLTS, or Combined Loads Test System – to support the structures technology developmental needs of NASA and the U.S. airframe industry.

The facility includes a combined loads test machine, scheduled to be up and running in April; a room-temperature test machine, which has been operational for about two years; and a new cryogenic pressure-box test machine, available for research testing early this year.

The combined loads test machine may be used in the near term for testing full-scale panels for the High-Speed Research Program and the Aircraft Structural Integrity Program. Operational since 1995, the pressure-box test machine has been used to perform experiments on 10 test panels for the NASA Aircraft Structural Integrity and the Advanced Composites Technology programs.

COLTS at the starting gate

Development of the Langley COLTS facility's combined loads test machine is nearly complete and ready to evaluate the performance of full-scale fuselage panels and components by subjecting them to combined mechanical, pressure and thermal loading conditions representative of those in flight.

The COLTS facility's room-temperature pressure-box test machine tests stiffened curved panels in two-axis tension. The cryogenic pressure-box test machine evaluates stiffened curved panels representative of the reusable launch vehicle cryogenic tank structure in two-axis tension loading, as well as cryogenic and elevated temperatures. All these test machines are equipped with state-of-the-art controls, data acquisition, data storage and retrieval systems.

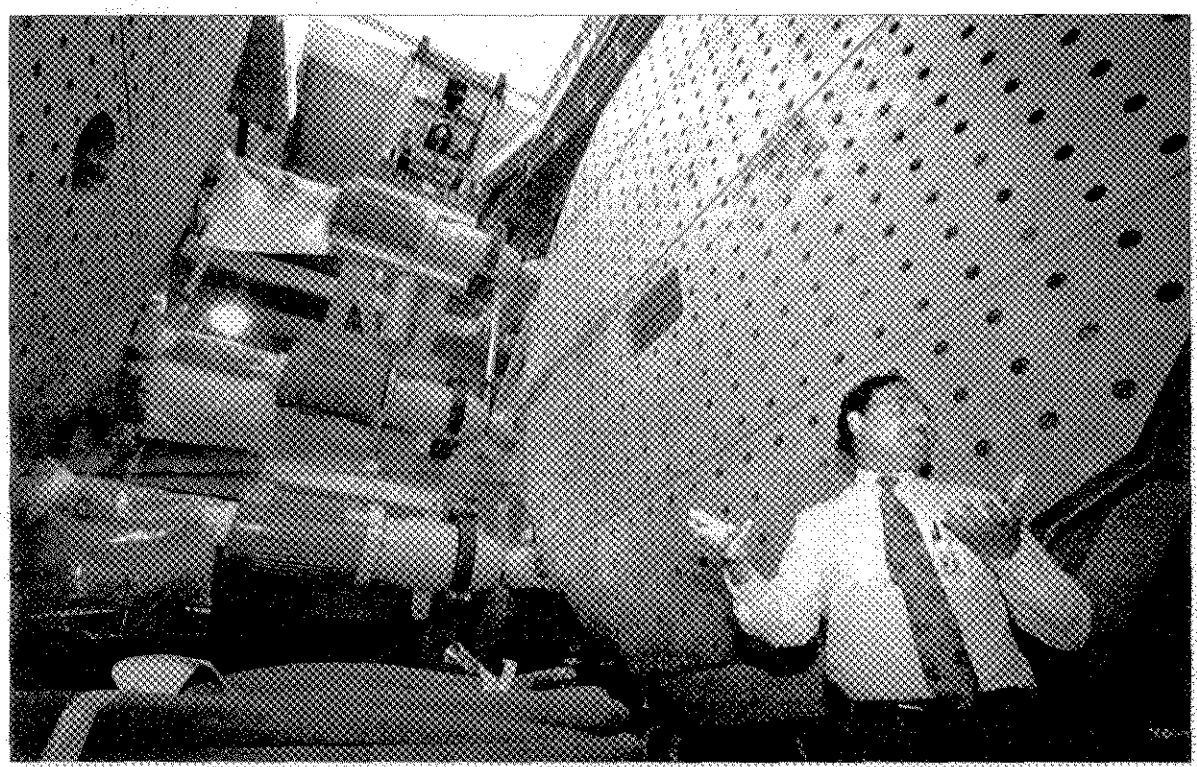


Photo by Jeff Caplan

Dr. Damodar Ambur, research manager of the Combined Loads Test Facility, explains how the roof of the test cell can be removed to allow a full-scale wing or fuselage to be lowered into the combined loads test machine for testing.

The need for structures testing

Successful development of structures for the wing and fuselage of the advanced subsonic transport and future High-Speed Civil Transport aircraft requires structures technology and structural concepts that are both lightweight and cost-effective. Designs and analysis methods for these geometrically complex structures need to be verified by testing structural elements, local details, panel subcomponents and built-up structural components that are subjected to realistic and equally complex loading conditions.

Loading conditions for subsonic and supersonic aircraft include cyclical combinations of mechanical, internal pressure and thermal loads. These tests identify structural responses and failure mechanisms that must be accounted for the structural design process. The tests also evaluate structural performance and critical design requirements, such as damage tolerance and containment for the wing and fuselage structures of both subsonic and supersonic aircraft.

One-of-its-kind facility

The planning efforts for this unique facility began in 1991 with the development of a structural loading requirements document and then a survey of the existing combined loads test facilities within and outside of the U.S. While major airframe companies

(see COLTS, page 4)

Colloquium Communiqué

Technology transfer brings NASA into everyday life

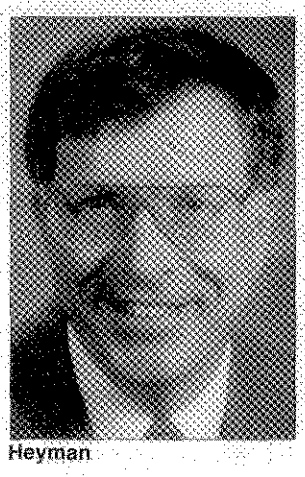
Dr. Joseph S. Heyman, director, Technology Applications Group (TAG), will deliver Langley's February colloquium lecture, titled "NASA Technology: How Aerospace Gets to Your Home," on Feb. 3, 2 p.m., in the H.J.E. Reid Conference Center. He will repeat the talk later the same evening as part of the Sigma Series lectures, 7:30 p.m., at the Virginia Air & Space Center in Hampton.

Heyman will discuss how far-reaching aerospace technology permeates and enhances everyday life. Since its inception in 1917, NASA Langley has made important contributions to the national economy and the balance of trade, primarily through the aerospace industry. Today, NASA's research extends far beyond the traditional aerospace customer.

Through proactive technology transfer and partnerships with industry, NASA is helping to create higher-quality jobs, improved quality of life and generation of wealth to ensure U.S. competitiveness.

Heyman will focus on how intellectual property, or patents, enables the development of economic opportunities, and on the methods of creating partnerships with industry, which result in benefits to industry, to NASA and to the American public. Heyman will reference past successes and new technology horizons, highlighting new products for air quality, materials, sensors and health.

As TAG's director, Heyman oversees the center's technology partnership programs with industry, created to enhance America's national competitiveness. TAG primarily provides leadership for the Small Business Innovation Research Programs, Space Act Agreements with non-aerospace industries and licenses of NASA's intellectual property. It also facilitates all technology transfer agreements between Langley and industry.



Heyman

Heyman began his NASA career at Langley in 1964 as a co-op student conducting research in radiation interactions with solids. He built a low-energy ion accelerator for solar-wind simulation supporting the Apollo Solar Wind Heavy Ion Experiment for moon rock studies.

In 1971, Heyman initiated the NASA Laboratory for Ultrasonics. Ten years later, he became head of the Nondestructive Measurement Science Branch. During the 1980s and '90s, he expanded the laboratory basic study disciplines to include radiation, thermography, fiber optics, electromagnetics and microstructure nondestructive evaluation (NDE).

A graduate of Northeastern University and Washington University, Heyman has been an adjunct professor of physics at the College of William and Mary since 1979.

The Massachusetts native holds more than 16 patents, primarily in the field of ultrasonics NDE. He has authored or co-authored more than 120 publications and presentations covering a broad area of measurement science, including particle detection in flowing fluids, acoustic spectroscopy and its calibration, transducers, high-resolution acoustic phase monitors, NDE in composites, residual and applied stress measurement and thermal NDE.

Colloquium & Sigma Lectures

Colloquium Lecture:
"NASA Technology:
How Aerospace Gets to Your Home"
Dr. Joseph Heyman, Feb. 3, 2 p.m.
H.J.E. Reid Conference Center

Sigma Lecture:
"NASA Technology:
How Aerospace Gets to Your Home"
Dr. Joseph Heyman, Feb. 3, 7:30 p.m.
Virginia Air & Space Center
Downtown Hampton
Info: 727-0900

News Briefs

Around the Agency

BLACK HOLE EJECTS MASS – (Goddard Space Flight Center, Greenbelt, Md.) Scientists observing a disk of matter surrounding a black hole in our galaxy have discovered that the disk is periodically disrupted and hurled outward in opposite directions from the black hole, in jets moving at nearly the speed of light. The black hole replenishes the disk by pulling hot gas from the surface of a nearby "companion" star, and then undergoes another disruption, repeating the sequence at half-hour intervals.

GIGANTIC STAR MAY BE TWINS – (Goddard Space Flight Center, Greenbelt, Md.) One of the Milky Way Galaxy's largest stars may in fact be a double star system, according to recent research by a team of astronomers using NASA's Rossi X-ray Timing Explorer spacecraft. The team's new work offers insight into the origin and evolution of a class of stars called luminous blue variables, which are the most massive stars known.

For more information on the above news items, check the Internet, NASA Public Affairs Home Page, News Room 1997 News Releases, at ***http://www.hq.nasa.gov/office/pao/NewsRoom/releases97.html.***

We're moving next door

The *Researcher News* office is moving from the first floor of building 1153 to the second floor of building 1149, the clinic, right next door, room 232. Our new mail stop is 293, and our phone number remains 864-6126. The move is effective immediately.

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

Multicultural Facts

▲ Top 10 Tip for Improving Diversity Retention: Reward managers for actively assisting in employee career development. – The Multicultural Advantage

▲ Feb. 13-15 – National Society of Black Engineers Region II Spring Conference, Pittsburgh, Pa., 412-648-4732

Feb. 19-21 – Hispanic Association for Higher Education Conference, Long Branch, N.J., 732-932-1263

▲ See the MCLT home page at ***http://misbss20.larc.nasa.gov/MCLT/homepage_mclt.html.*** To suggest ways to make Langley a better multicultural workplace, send an e-mail to MCLT+IDEAS@LaRC.NASA.GOV

Langley remembers its volunteers

BY NANCY FINN

Langley's volunteers received thanks from the Office of External Affairs at a luncheon last month. They received a pewter tie tack or key chain and two tickets to the Virginia Air & Space Center for their hard work.

Volunteers are retirees, their family members, or even current employees who take time out of their already busy schedules to help.

They give not only their time and energy to NASA Langley, but also their expertise. They answer public inquiries, give tours of the center and speak to stakeholders.

Gladys Hardrath, who has devoted some 847 hours over nine years, and Mary Levin, who has given some 743 hours of her time over eight years, answered children's and adults' letters from all over the world.

"I love doing this," said Hardrath. "I would do this everyday, if I had time."

Volunteers conduct tours of Langley and speak to children at schools. The Office of Public Services organized 76 tours in 1997 – reaching almost 3,000 people – including 16 driving tours in recognition of Langley's 80th anniversary.

Volunteers also help staff exhibits during special events, such as Langley's Open House, the Virginia State Fair and the North Carolina State Fair.

National Engineers Week gears up

NASA Langley is recruiting volunteers to give presentations to sixth-to-eighth-grade classes in local middle schools in conjunction with National Engineers Week, Feb. 22-28. To accommodate a large number of requests from the schools, visitations will continue throughout February and into March.

For more information or to volunteer, call Gresha Brown at ext. 45288, or reply to ***http://edu.larc.nasa.gov/engsweek/.***

Announcements

Anti-crime tips offered

Citizens Against Crime will present two hour-long crime-prevention sessions on Jan. 29, 10 a.m. and 1 p.m., at the H.J.E. Reid Conference Center. The event is cosponsored by the Federal Women's Program Committee and the Office of Safety, Environment and Mission Assurance. Charge time to J.O. B1011. For more information, call ext. 43291.

AIAA needs judges

The American Institute for Aeronautics and Astronautics' Mid-Atlantic Student Conference, hosted this year by Virginia Polytechnic Institute and State University, is looking for volunteers to serve as student paper judges in late March. Papers, submitted by both undergraduate and graduate students, will include aerodynamics, structures, spacecraft design, guidance and control, multidisciplinary design optimization and systems analysis. For more information, contact Matt Sexstone at ext. 45995 or at m.g.sexstone@larc.nasa.gov.

AMS honors Minnis

Dr. Patrick Minnis, of the Radiation Sciences Branch, has received the American Meteorological Society 1998 Henry G. Houghton Award for contributions to physical meteorology. The award was presented Jan. 14, in Phoenix, Ariz., at the AMS 78th annual meeting. The citation reads, "For making outstanding contributions to understanding the effects of clouds and aerosols on the earth's radiation budget."

Mentors needed

Christopher Newport University and the Peninsula Engineers Council need volunteer mentors for their annual Engineering Design Contest, March 28, at CNU. Some 16 high school teams are expected to enter this year's contest to solve an engineering design problem.

The students' challenge is to prepare a proposal and model of a supply system which could deliver life-support supplies to stranded astronauts on Mars.

Mentors and teams will attend a kick-off meeting Feb. 14. Mentors, who act as project leaders, will meet at least four times with their teams. CNU faculty will be available to help teams on Saturdays between Feb. 14 and March 28.

To volunteer, or for more information, call Randall Caton at 594-7188, send e-mail to rcaton @pcs.cnu.edu, or call Beth Fogarty at 594-7065 by Feb. 5.

Career seminars offered

Langley's Career Center offers the following training seminars through February:

▲ "First 30 Days on the New Job," Jan. 28, 9 a.m.-noon

▲ "Networking for Career Development," Feb. 3, 9 a.m.-noon

▲ "Starting Your Own Business: The Basics," Feb. 4, 8:30 a.m.-4 p.m.

▲ "Starting Your Own Business: Laying a Solid Foundation," Feb. 11, 9 a.m.-noon

▲ "Negotiating Salary and Benefits," Feb. 12, 9 a.m.-noon

▲ "Starting Your Own Business: In the Black ASAP," Feb. 18, 9 a.m.-noon

▲ "Life After NASA: What Will I Do Next?" Feb. 24, 9 a.m.-noon

▲ "Starting Your Own Business: The Right Side of the Law," Feb. 25, 9 a.m.-noon.

These seminars are authorized NASA and Langley training events and are open to all NASA federal civil service personnel and their spouses. Advance registration is required. For more information or to register, call ext. 45000 or fax to ext. 45040.

AMS honors Smith

Dr. Bill Smith, chief of the Atmospheric Sciences Division, received the American Meteorological Society's Verner E. Suomi Award. The citation for the award reads, "for outstanding contributions to the advancements in remote sensing from space and the applications of these data."

In addition, the AMS Council has selected Smith to present the next remote sensing lecture, "in recognition of sustained outstanding contributions to passive and active remote sensing of the atmosphere and oceans." Smith's lecture will be part of the Ninth Conference on Satellite Meteorology and Oceanography, May 25-29, in Paris, France.

AFE honors Rubrecht

Robin Rubrecht, of the Facilities and Systems Support Division, received the prestigious Facilities management Excellence (FAME) Award of Merit from the Association for Facilities Engineering for her work with the NASA Corporate Maintenance Leadership Team.

The FAME Awards recognize the best in facilities engineering and are given annually to facilities engineering professionals who demonstrate innovation and originality in problem-solving and project management activities. The awards recognize projects that contribute toward energy conservation, maintenance, management, waste minimization and productivity improvements.

Speakers Bureau December activities

Pete Thomas spoke to members of the Virginia highlands Pilots Association in Bristol, Va., on AGATE (Advanced General Aviation Transport Experiment) and on NASA's Three Pillars for Success for aeronautics.

Walt Engelund spoke to third-graders at Hampton's Gloria Dei Elementary School about the Mars Pathfinder mission.

Mark Saunders visited Seaford Elementary School to talk about space exploration.

Bobby Braun talked about the Mars Pathfinder mission to the Hampton Roads Software Process Improvement Network at Hampton University.

Robert Witkofski addressed the Williamsburg Kiwanis Club on the High-Speed Civil Transport.

Employee sends thanks

"I would like to thank everyone for all the prayers (they are working), the many wonderful cards (they have been inspirational) and the flowers that have brightened my home and life. I am most appreciative of the leave donated to me. I know I could not have made it thus far without your support and encouragement. Thank you."

– Geraldine N. Pardue

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 distrubution 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 to the editor via e-mail (m.l.graves@larc.nasa.gov) (researcher-news @larc.nasa.gov), fax (757) 864-8810, telephone (757) 864-6126 or Mail Stop 146. 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.

Oil analysis program saves money, benefits environment

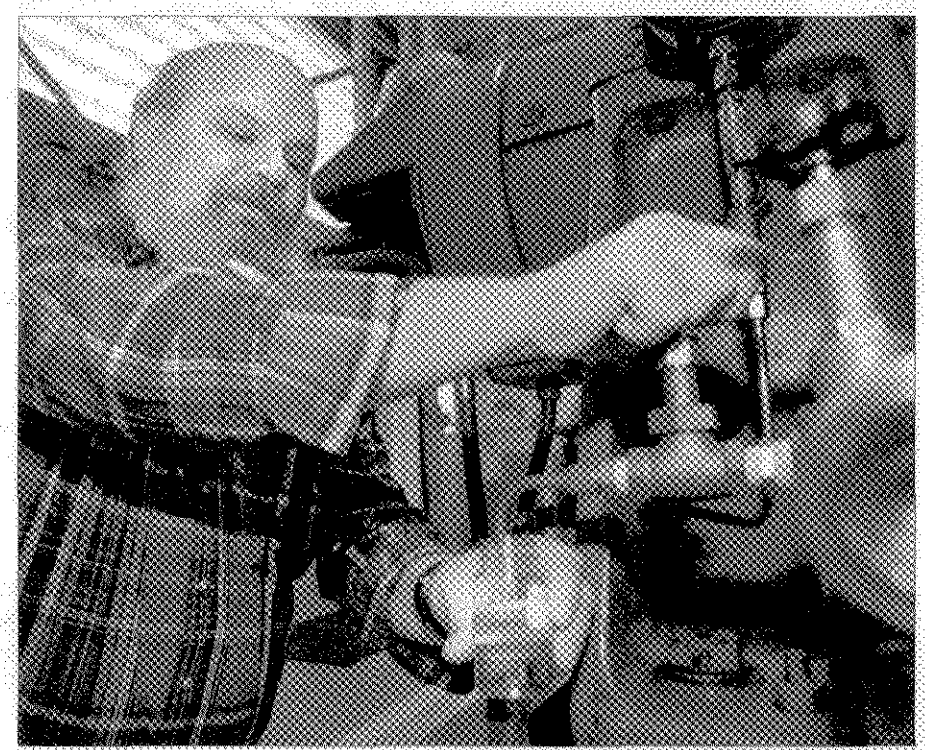

Photo by Jeff Caplan

Tom Gabany, Langley's tribologist, pulls an oil sample from the motor bearing in building 1241.

BY KRISTEN POULTNEY

The oil analysis program is one of NASA Langley's major pollution prevention projects. From January to November 1997, the program saved $60,829 and reduced waste oil by 4,249 gallons. It benefits both the center's equipment and the environment.

The proactive oil analysis program began in August 1996. The Langley Predictive Testing and Inspection (PT&I) Section uses on-site sampling and analysis technologies to detect mechanical wear before equipment breakdown and to eliminate unnecessary oil changes.

Prior to 1996, maintenance personnel changed the oil in most machinery based on a fixed time schedule (preventive maintenance) rather than based on the condition of the oil (condition-based monitoring). Langley's oil analysis program uses proactive and predictive maintenance, which are the two most advanced types of condition monitoring.

The predictive oil analysis program consists of on-site testing and analysis of critical lubricating systems, i.e., systems containing greater than 10 gallons of oil in equipment that directly supports the center's research mission. Currently, 168 critical systems with a total reservoir capacity of 27,791 gallons of oil are included in the program.

An oil analysis expert, or tribologist, takes samples of oil from the critical equipment and analyzes them using commercially available software. The test results determine whether the oil should be filtered, changed or left alone.

The on-site testing is also used to troubleshoot problematic equipment to determine where the breakdown is occurring. It is a powerful diagnostic tool that enables the tribologist to trend capabilities for the critical equipment and establish testing schedules.

Lubricant analysis ensures that the proper lubricant is being used for the

(see OIL, page 4)

Discovery team excels in NASA's 'new way of doing business'

BY CATHARINE SCHAUER

Recipients of NASA's Discovery Team Excellence Award believe that the agency's "faster, better, cheaper" approach to doing business works.

The 74-member team won recognition for its Technical, Management, Cost and Other Factors Evaluation of Discovery proposals which were submitted in response to Announcements of Opportunities.

NASA's agency-level Discovery Program encompasses a series of low-cost solar system exploration missions intended to accomplish high-quality, focused planetary science that uses innovative, streamlined and efficient management approaches. Mars Pathfinder, the second Discovery launch, is one such mission. The program encourages increased participation of industry and universities in NASA's solar system exploration for the next millennium.

Photo by Jeff Caplan

Darrell Branscome, left, and Mark Saunders display the Discovery Team Excellence Award.

"This team did so well that even those proposers who were not selected thanked NASA for doing such a great job," said Dr. Darrell Branscome, Space and Atmospheric Sciences Program Group director. "That kind of recognition does not happen often, and we are especially proud of the team that made this process work so effectively."

Discovery Team Excellence Award Winners

Mark Barrera
Dave Bearden
Dr. Jay Bergstralh
Dr. Robert D. Braun
Gresha Brown
Charlie Cannuff
Raj Chaudhuri
Mary Cloud
John W. Cox
Brian Crow
Cindy L. Daniels
Dr. Barbara Davis
Jeannie Daught
Joe Exline
Harvey Feingold
Melvin Forehand
Linda Fitzgerald
John Franke
Alan Friedlander
Dr. Bernie Garrett
Liz Gray
Dr. David A. Gilman
Dr. David Glaese
Dr. Gae Golembiewski
John Greco
Ted Grems
Lisa Guerra
Virginia Hall
Lisa Holley
William F. Hunter
Mark Jacobs
Irby Jones
Stephen Jurczyk
Susan Keddie
Brian Killough
Norman Lao
John Lanott
Woody Lovelace
Maj. Roald Lutz
Jackie Lyon
Molly Maccauley
Matthew Marshall
Jim Martin
Warren L. Martin
Don Monell
Arlene Moore
Todd Mosher
Jeff Mulle
Ralph Muraca
John Nichoff
Capt. Eric Orrill
David Page
James Panton
Cheryl Perry
Margarette Pitts
Dr. Sandra Proctor
R. Wayne Richie
William A. Roenker
John F. Rogers
Washito Sasamoto
Mark P. Saunders
Al Schallenmuller
Catharine G. Schauer
Michael L. Stancati
Greg Stover
Israel Taback
Glenn Taylor
Leon Taylor
Capt. Mike Ward
Joyce Weeks
Rick Wasenberg
Thomasena Woods
Howard Wright
Robert L. Yang

Langley community comes through again with successful holiday outreach projects

NASA Langley employees again came together during the holiday season to share with those who are less fortunate. Civil servants, contractors and retirees formed a common bond to help others by way of the center's participation in holiday community service projects. Members of the Supervisors Club, the Alumni Association and American Federation of Government Employees, Local 2755, sponsored Langley's collection of 350 pounds of food for the Peninsula Food Bank.

The Office of Public Services teamed with the Acquisition Division for the fourth year to sponsor the Angel Tree kids. The Langley community removed gift tags from the tree in the cafeteria, and packages began to appear and then to pile up as the deadline grew nearer. As a result, 66 children had a warmer Christmas – and even received some toys.

"When the goodies were delivered to the Salvation Army gym, the attendant looked at the loot and remarked that it must be from NASA," said Sandra Lemons, project coordinator.

In addition to the Angel Tree gifts, 27 dozen cookies were donated to the soup kitchen to help cheer the homeless during the holiday season. The Salvation Army feeds 70-100 people each night with their mobile soup kitchen. Once again, the Langley cafeteria supported the holiday projects by supplying containers, freezer space and space for collection.

The Salvation Army is grateful to NASA employees and the community who helped them make Christmas brighter for 3,142 Peninsula children. Since the need doesn't go away with the season, NASA Langley's Community Service Program continues to pass along information on opportunities to help those in need.

Linda Urquhart, left, Acoustics Division, and Sandra Lemons, Office of Public Services, are surrounded by contributions to the Angel Tree program. Centerwide participation sponsored 66 children in the campaign.

Photo by Jeff Caplan

OIL

(continued from page 3)

appropriate application; checks for mechanical wear and contamination, including dirt particles, water or other solids, as well as for oil degradation.

With proper oil analysis, it is possible to detect an equipment fault long before it would become evident in the operation of a machine. With this information, one can repair problems while they are small, rather than waiting until a major malfunction or costly breakdown occurs.

The oil analysis program is relatively new. Plans include bringing more lubricating systems into the program, increasing the reliability of the equipment and using trending for scheduling critical equipment maintenance.

Langley's proactive and predictive oil analysis program has saved money, reduced oil waste and improved equipment reliability. For more information, contact Tom Gabany, Langley's tribologist, at ext. 43698, or at t.a.gabany @larc.nasa.gov.

COLTS

(continued from page 1)

have some capability for load-testing structures, their usual method to test full-scale aircraft components includes developing a load frame for a specific test and then dismantling it after the test is completed.

The 1991 survey clearly identified the need for a universal test facility such as COLTS, and design and development began late the following year.

Langley/industry effort

Researchers and engineers at NASA Langley performed the test machine concept development, fabrication and assembly, while Boeing, Lockheed-Martin and other companies did most of the machine design work.

Langley was also responsible for the facility design and construction and for the development of the data acquisition system. Focused research programs at Langley supported most of the $22 million cost for the facility's development.

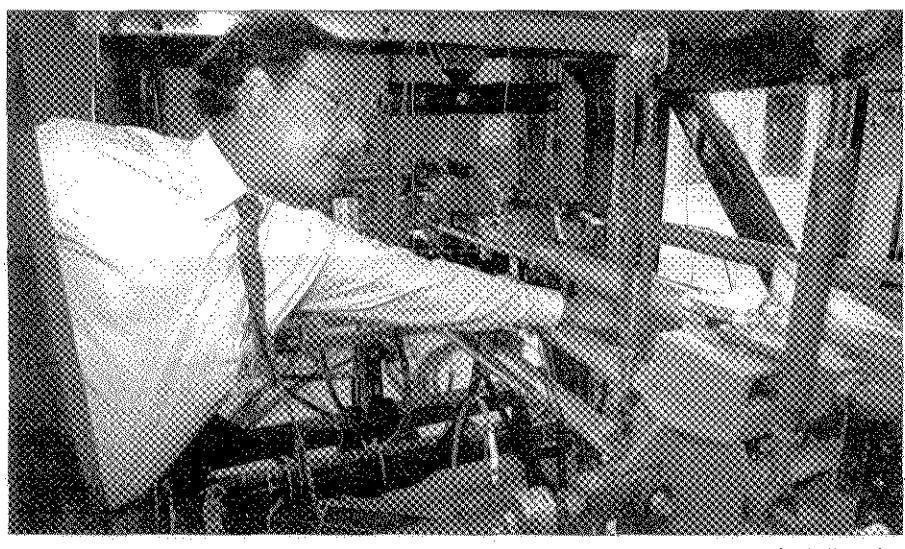

Photo by Jeff Caplan

Ambur explains how the operators of the COLTS combined loads test machine will practice the control conditions on a scaled-down test machine before applying them to the actual test machine.

Photo by Jeff Caplan

BACK IN BUSINESS – The National Transonic Facility (NTF) wind tunnel was offically reopened late last month with a ribbon-cutting ceremony, a luncheon and a tour. After cutting the ribbon, Jeffrey Hill, NTF facility manager, right, shakes hands with John Trøstheim, executive vice president of ABB Inc., U.S.A. The new drive system, which sits behind the group, is the largest of its kind in the world.

Photo by Jeff Caplan

HOLIDAY HOBNOBBIN' – Vince Rausch, left, of the Hyper-X Program Office; Elizabeth Buchan, of the Research and Technology Group; Bob Buchan, of the Utilization Analysis Branch; and Bill Smith, of the Space and Atmospheric Science Program Group, chat at the annual Director's Holiday Reception, Dec. 19, at the H.J.E. Reid Conference Center. The event gave center employees a chance to mingle and share holiday plans.

Systems engineering group to meet here

BY MATT SEXSTONE AND ALBERT MOTLEY

The Hampton Roads Area Emerging Chapter of the International Council on Systems Engineering (INCOSE), a fast-growing professional society, is planning its kickoff meeting for Feb. 24, 5:30-7 p.m., in the Hampton Room of the H.J.E. Reid Conference Center.

Systems engineering defined

Born in pre-World War II Britain, systems engineering is defined as "an interdisciplinary approach and means to enable the realization of successful systems" and has developed from the field of operations research.

Further, systems engineering is the discipline of developing products or processes based on a total systems perspective. It defines customer needs and functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation, while considering the complete problem – operations, performance, test, manufacturing, cost and schedule, training and support, disposal.

An integrated process

Systems engineering integrates all the disciplines and specialty groups into a team effort, forming a structured development process from concept to production to operation. The concept considers both the business and the technical needs of customers, with the goal of providing a quality product that meets user needs.

INCOSE
International Council On Systems Engineering
http://www.seva.net/~incose/

Reaching many disciplines

Increasingly important to developing competitive products and services in today's markets, the systems engineering approach can improve the effectiveness of all disciplines. Project managers, product developers, software and hardware engineers haved joined INCOSE to learn to use the systems engineering process and to apply it to their industries, improving their job performance as well as their organization's well being.

For more information, visit the INCOSE Web site at ***http://www.seva.net/~incose/***, or send an e-mail to m.g.sexstone@larc.nasa.gov or to a.e.motley@larc.nasa.gov.

'Life after Langley'

Post-NASA world widens for busy Langley retiree

BY JEANE SHANKS

"Is there life after retirement? There sure is," says NASA Langley retiree Bill L. Williams, 67. "Retirement allows you to do the things you've always wanted to do and keeps the brain cells stretched."

Williams, former special assistant for productivity improvement in the Personnel Division, retired from Langley in 1988 after nearly 30 years of service, mostly in personnel.

Immediately after retirement, he remained at the center, beginning work as the Langley focal point for productivity at The George Washington University Joint Institute for the Advancement of Flight Science Office. He served on teams responsible for evaluating NASA contractors, helped plan agency conferences and initiated new programs.

He is now the membership network coordinator and business recruiter for the Virginia Peninsula Total Quality Institute (VPTQI), a joint partnership between Thomas Nelson Community College and the Peninsula Chamber of Commerce.

An integral part of the 1991 start-up team that launched the VPTQI, Williams says he enjoys his work with the self-supporting, nonprofit organization which conducts specialized training and pre-employment training to new firms locating in the area.

But the VPTQI is not the only enterprise occupying Williams' time these days.

"I have stayed active by volunteering," he says, "but I am slowly phasing that out. I'm down to about 10-12 hours a week at this time, working mostly with my church and NASA-related endeavors."

Williams has started his own internet provider business, Asonic Internet, Inc., and serves as president.

"We offer dial-up internet access and Web-page hosting to the general public," he says. "A small provider is more willing to work with individuals in their needs for service. I have enjoyed watching the company take shape."

Asonic Internet's address is ***http://www.asonic.net.***

His new company has also brought Williams some unexpected rewards, he says.

"I was able to use my [internet] resources to find the remaining 10 'missing' people from my high school graduating class. We will be celebrating our 50-year reunion this coming summer, and all 368 class members are accounted for – not many classes can make that claim," he says with pride.

In fact, he chronicled the accomplishment in *Reunions Magazine*, co-authoring an article entitled "Found Everyone," published in the autumn 1997 issue.

Williams was inducted into the Warren, Ohio, High School Distinguished Alumni Hall of Fame in 1995 for his lifelong professional, community and volunteer contributions. He shares the honor with Warren graduate and astronaut Ron Parise, STS-35 and 67.

Since his retirement, Williams' involvements have run the gamut from business to service to pleasure. He served a four-year appointment on the Hampton Grievance Board, the final arbitration step for city employees with grievances not resolved internally.

He was a charter member of the NASA Langley Alumni Association, where he served on the board of directors and as president. He was also a charter member of the association's Galaxy of Gifts project and still serves as an advisory council member.

Active in his church, Williams serves on the board of deacons and has taught Sunday school for more than 20 years.

Squeezed into this already packed life are his "hobbies" – the new business, reading, collecting stamps and traveling.

He and his wife, Doris, have traveled extensively, renewing friendships along the way. A trip through Germany, Austria and Switzerland in 1990 reunited them with a German foreign exchange student they had hosted during the 1988-89 school year.

While on a bed-and-breakfast tour of England, Wales and Scotland in 1994, the Williams met for the first time with Doris' Welsh pen pal from the 1940s and '50s.

His retirement years have also brought him significant life changes – both good and bad. After successfully surviving surgery for cancer in 1992, Williams is now eagerly awaiting the arrival of his first grandchild this spring.

A graduate of Youngstown University in Ohio, Indiana University and George Washington University, Williams joined NASA Langley's personnel division in 1959, shortly after the National Advisory Committee on Aeronautics became the National Aeronautics and Space Administration. He then served as head of the Classification and Organizational Branch, as executive assistant to the assistant director for administration and as head of the Manpower Analysis Branch.

In 1970, NASA sent Williams to Ames Research Center in Mountain View, Calif., as personnel director for two years. When he returned to Langley in 1972, he was named assistant personnel officer and later director, attaining the rare distinction of serving as personnel director of two NASA centers.

He was also a NASA visiting professor at and loaned executive to Hampton University for two years, 1983-85.

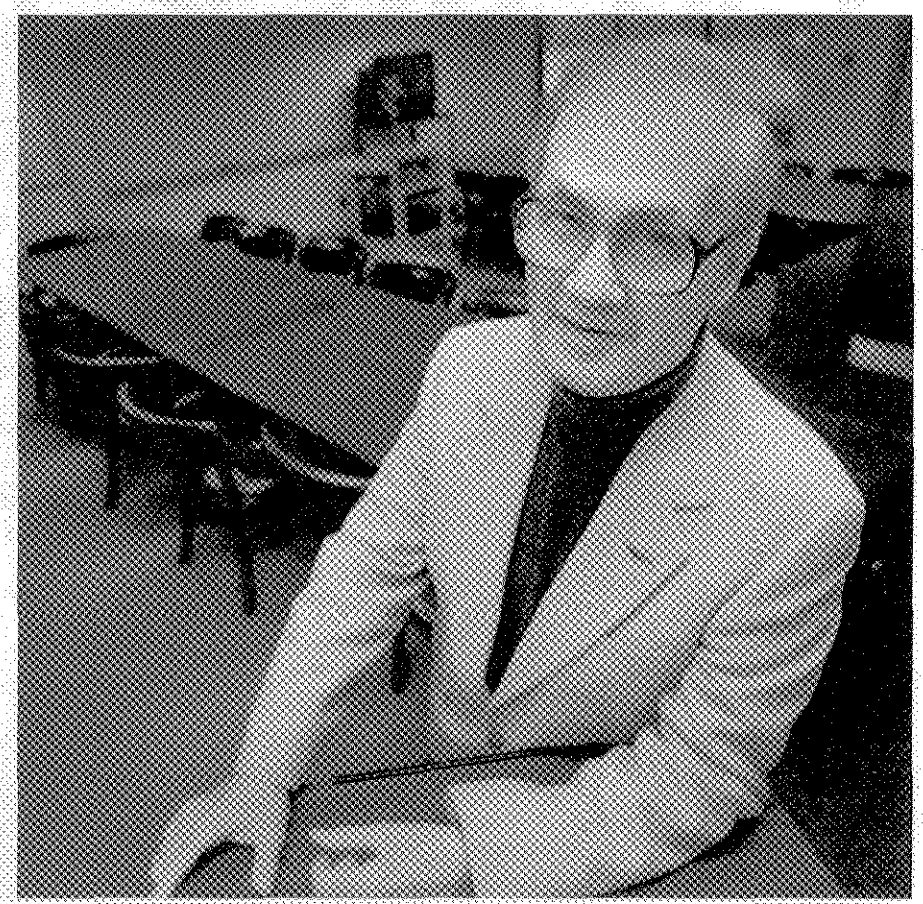

Photo by Jeff Caplan

NASA Langley retiree Bill Williams works with the Virginia Peninsula Total Quality Institute, which he helped to launch in 1991.

"There is life, and a rewarding one at that, after retirement, where you can try to do some new things, or you can keep doing the things you have always enjoyed."

Aviation pioneer visits Langley during Wright Brothers commemoration

BY NANCY FINN

Ninety-seven-year-old Fay Gillis Wells, one of the unsung heroines of early aviation, visited NASA Langley last month in conjunction with the anniversary of the Wright Brothers' first flight and the annual Wright Brothers Memorial Lecture, featuring Dr. Tom D. Crouch of the National Air and Space Museum.

Wells earned a pilot's license in 1929, 10 days before her 21st birthday. She then took a job showing and selling Curtiss Wright aircraft across the country.

While learning to fly, Wells became the first female member of the Caterpillar Club, an organization open only to pilots who have bailed out of an aircraft to save their lives.

"The club was so named because the first parachutes were made from silk," said Wells. "When a caterpillar starts to fall, he shoots out a line of silk to prevent his death."

Photo by Jeff Caplan

Aviation pioneer Fay Gillis Wells

Wells co-organized the first meeting of female pilots at Curtiss Field in Long Island, N.Y., late in 1929, where 26 of the country's 117 female pilots gathered. They quickly agreed on their purpose – to assist in the advancement of aeronautical research and to provide fellowship.

Deciding on a name for the group was more of a challenge, however. They adopted a proposal set forth by Amelia Earhart and Jean Davis Hoyt that the club's name be taken from the number of charter members. Thus, these female pilots became the Ninety-Nines.

Wells moved to Russia with her family in 1930. There she became a free-lance reporter for the *New York Herald Tribune*, as well as for many aviation magazines. She became the first woman to pilot a Soviet civil aircraft and the first foreigner to own a glider in the Soviet Union.

While in Russia, Wells coordinated Wiley Post's refueling stop in Siberia in 1933, allowing Post to complete his record solo flight around the world. Later, she declined to fly with Post on another record attempt in favor of eloping with Linton Wells in Africa. This choice saved her life; Post crashed in Alaska in 1935.

After returning to the U.S., Wells spent 13 years as a White House journalist, covering presidents Lyndon Johnson, Richard Nixon, Gerald Ford and Jimmy Carter. In 1972, she accompanied President Nixon on his historic visit to the People's Republic of China. Later, she also worked on the NASA committee to choose the first journalist to travel into space.

"If I were younger, I would probably become an astronaut," said Wells.

Of her own career in aviation, she claims fame by association, rather than by her own accomplishments.

"Even though I did not break any records," Wells said proudly, "I knew all the famous [aviators] before they were famous."

AdVentures

TAX TIME: Income tax preparation by a member of the National Association of Tax Practitioners. Get your refund fast with electronic filing and direct deposit at no extra charge. We travel to you. See our internet site at ***http://home.switchboard.com/telatax***. Call 874-3121 for an appointment.

TAX TIMES 2: For income tax preparation, call Nancy Taylor at 723-5227.

FOR SALE: 3-BR rancher near Main St. in Newport News, 1-1/2 baths, wall-to-wall carpet, central air/heat, energy efficient, attached garage, eat-in kitchen, new roof, large fenced back yard, near elementary school, good location, on cul-de-sac, 20 minutes to NASA/Langley Air Force Base. $77,500. Call 838-0726.

FOR SALE: Renovated 2-BR, 1-bath rancher in historic Wythe, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, privacy fence, large detached garage/workshop, water view from front yard, one block from Chesapeake Bay in established neighborhood with lots of trees. $69,900. Call 247-5144.

FOR SALE: Brick rancher, 2-BR, 2.5 baths, in quiet, convenient location in Isle of Wight County; sunroom; bonus room; raised fireplace with insert and blower; large eat-in kitchen; 1,976 sq. ft.; many new features; 7/8 acre lot; beautifully landscaped with above-ground pool and deck. $129,000. Call 255-0509.

FOR SALE OR RENT: Brick rancher in Denbigh's Windsor Great Park, 3 BR, 1-1/2 baths, completely remodeled, new roof and paint, modern kitchen with oak cabinets, refrigerator, tile baths with oak cabinets, huge great room, dining room, lots of closet space, ceiling fans, wall-to-wall carpet over hardwood floors, working washer and dryer, 12 by 16-ft. workshop in fenced back yard, central air, gas heat and water, located in quiet neighborhood, two streets from swimming pool, all closing costs paid with full offer. $93,000 or $750/month to rent. Call 874-4892.

FOR SALE: Beanie Babies, some retired and some new releases. $10 and up. Call 865-0586, or send e-mail to atoz@pinn.net.

VOLUNTEERS NEEDED: The Virginia Air & Space Center needs volunteers to serve as greeters, docents, assistants for the Educational Resource Center, office assistants, library assistants, special events assistants, and junior volunteers. No experience is necessary; training sessions for each position will begin the last week in January. For more information, applications or training schedules, call Bert Smith at 727-0900, ext. 735.

LAA EVENTS: **After-work party** in the Langley Activities Association lounge in the H.J.E. Conference Center, Jan. 23, featuring free neck, back and shoulders massage by Riverside Chiropractic and Markers Massage, plus Budweiser promotional giveaways and hot wings from Hooters Restaurant. **Learn country-western dancing,** Jan. 24; lessons 7-8 p.m.; dancing 8-11:15 p.m.; $3.50 cover charge. **Friday-the-13th party** brings live country and southern rock to Langley with Double Take, featuring NASA employees/musicians/singers Ronald and Donald Creech of EG&G and Shannon Lynch Thomas of AESD, Feb. 13, 4-9 p.m., in the H.J.E. Reid Conference Center. Door Prizes by M. Price Distributing Co. To be eligible for door prizes, purchase advance tickets for $1; tickets are $2 at the door. For more information, call ext. 46369. The **LAA lounge opens** every weekday at 4 p.m. LAA also offers **bingo** games every Thursday night, 7 p.m. Small game packs are $7; large game packs, $10; free game pack during your birthday week. Games are open to the public.

MISSION TO MIR: The Virginia Air & Space Center in Hampton presents the new IMAX film, *Mission to Mir*, through April 1. The film explores life on the Russian space station Mir and features NASA astronaut Shannon Lucid. For more information and showtimes, call 727-0900.

BLOOD DRIVE: NASA Langley and the American Red Cross will hold a Bloodmobile on Jan. 28 in the H.J.E. Reid Conference Center. All blood types are needed. Charge time to J.O.B1004. For more information, call Alice Eley at ext. 43308.

GEORGE'S GOODBYE: An informal retirement social for George Lawrence will be held Jan. 30, 5-7 p.m., at the Langley Room of the H.J.E. Reid Conference Center.

ALUMNI NEWS: NASA Langley Alumni Association dues, $5 per year, should be paid by the end of this month, to Mary Mesic at 2 Towne Square Drive, Newport News, Va., 23607. For more information, call 864-7330.

BID FAREWELL TO MIKE: A retirement social for Mike Hudson will be held Feb. 9, 5-7 p.m., at the H.J.E. Reid Conference Center, with heavy hors d'oeuvres and a cash bar. Cost is $10 per person, including gift. RSVP by Jan. 28. Send payment to Gerald Miller, Mail Stop 447, ext. 47252.

SAIC SEEKS INTERNS: Science Applications International Corporation (SAIC)-Hampton seeks upper-level undergraduate and graduate students to participate in our Summer Intern Program, May 26-Sept. 4, in affiliation with an ongoing contract at NASA Langley. Candidates may have experience or a degree, or may be seeking a degree, in earth sciences, physics, engineering, mathematics, scientific computer programming. For applications or more information, contact Summer Intern Program, SAIC, 825-0001, fax 825-4968, e-mail saic+intern@larc.nasa.gov. SAIC is an Equal Opportunity Employer.

UMPS NEEDED: The District 7 Umpires Association is seeking little-league volunteer umpires in Hampton, Newport News, Poquoson and York County. Good character, good judgment and the ability to get along with youngsters needed. For more information, call 595-8400.

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Researcher News

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001

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Center Snapshots

Photo by Jeff Caplan

Jennifer R. Olson received master's and doctorate degrees in atmospheric sciences in 1994 from Georgia Tech after completing an undergraduate degree in meteorology from Texas A&M University. Born in Santa Fe, Texas, near Houston, she joined NASA Langley's Atmospheric Science Division nine years ago. She worked for Planning Research Corporation in Hampton before joining NASA.

Olson is one of several civil service personnel working on the Global Tropospheric Experiment, which is being funded through Mission to Planet Earth. She analyzes meaurement data from remote portions of the globe, enabling researchers to better understand atmospheric behavior and leading to better predictions of human impact on the atmosphere.

* * * *

"Working with computer models is like the ultimate Sega game."

– Jennifer R. Olson

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 2 ❖ February 6, 1998

'Virtual reality' center aids engineers nationwide

Langley facility is 'mission control' for researchers

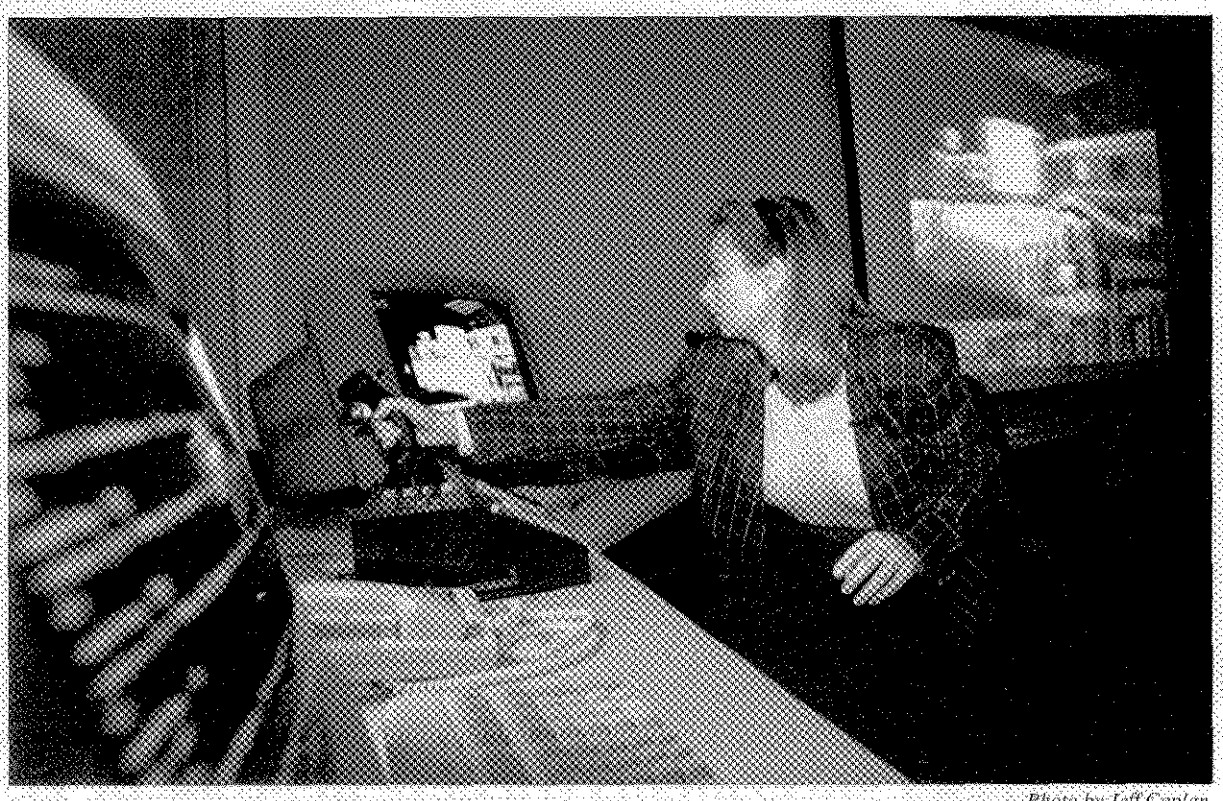


Photo by Jeff Caplan

Aerospace engineer Michelle Garn explains some of the controls used in Langley's Collaborative Engineering Center; a 3D image is displayed on the screen behind her. Engineers can remotely enter the new system in virtual reality and "move" around. Instead of a group of people flying to NASA's Jet Propulsion Laboratory in Pasadena, Calif., for a weeklong meeting, they can now "meet" through the CEC and "virtually" be in the same room without the expense and loss of time.

NASA Langley recently unveiled a new engineering center where, in the near future, researchers will use 3D glasses, motion-tracking devices and surround-sound to immerse themselves in their projects and will "meet" with other engineers thousands of miles away – all without leaving Langley.

Known as the Collaborative Engineering Center (CEC), the new facility will enable researchers at Langley to work with colleagues stationed in similar facilities across the country and around the world. The new collaborative environment will enable engineers to share information and solve problems with much more consistency.

The CEC is divided into two rooms. The primary collaboration room uses "off the shelf" technology such as videoconferencing systems, large screen projectors and internet technology to bring engineers, analysis software and data together, independent of geography. Both local and remote users can share and transfer data through common computer systems while communicating and interacting with each other in real time. The center captures the study process electronically, building databases to make it easier to create, revise, and finalize reports and designs.

The immersive engineering room is where advanced technology is being applied to the collaborative engineering process.

"This is a sort of holodeck for engineers," said Pat Troutman, the researcher in charge of the facility. "It will bring everyone together in a single virtual environment via sensory immersion, data fusion and high speed computers."

The immersive engineering facility currently allows distributed researchers to simultaneously view complex three-dimensional engineering models and accompanying data sets. The goal is that, in the near future, the immersive environment will serve as an interface to a distributed set of analytical tools, databases, models and people that all appear in a single virtual space.

The cutting-edge technology which makes the center possible represents a new era in the way engineering will be done in the future. It also will save money, due to better engineering design and reductions in travel costs and time.

(see related graphic, Collaborative Engineering Center, page 4)

Sigma Series Lecture

El Niño phenomenon takes world by storm

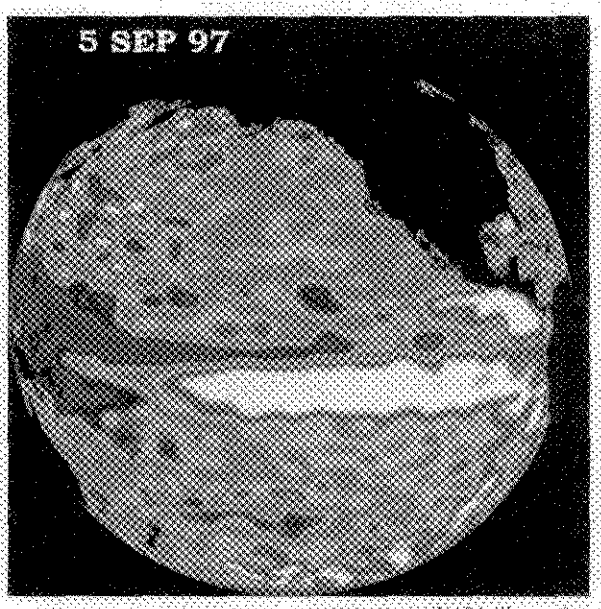
In conjunction with the Crestar International Year of the Ocean Series, oceanographer Dr. William S. Kessler will deliver a Sigma Series lecture on the weather phenomenon known as El Niño, Feb. 18, 7:30 p.m., at the Virginia Air & Space Center in downtown Hampton. The lecture is free to the public and no reservations are required.

El Niño is a disruption of the ocean-atmosphere system in the tropical Pacific Ocean. It has important consequences for weather around the globe – including increased rainfall across the southern tier of the United States and in Peru, as well as drought in the western Pacific regions.

Kessler will present a comprehensive description and overview of El Niño, emphasizing the current effects of this intriguing, puzzling and irregular climate oscillation. He will offer theories about its origin and role in the climate system, noting that several generations of hypotheses have not yielded a clear understanding of how El Niño events originate.

Given current methods and limitations of climate prediction, scientists do not have the ability to forecast an oncoming El Niño far in advance. Once an event is underway, however, computer modeling has been useful in predicting how it will unfold and its effects on remote regions such as North America.

Kessler will discuss the predictions for the continued evolution of the current El Niño, including verification of how well those predictions have played out so far.



NASA illustration

This image of the Pacific Ocean was produced using sea surface height measurements taken by the U.S./French TOPEX/POSEIDON satellite and shows sea surface height relative to normal ocean conditions on Sept. 5, 1997. The image provides more convincing information that the weather-disrupting phenomenon known as El Niño is back and is getting stronger.

Kessler is an oceanographer in the Ocean Climate Research Division of the National Oceanic and Atmospheric Administration/Pacific Marine Environmental Laboratory. He is also an affiliate associate professor of oceanography at the University of Washington. He received an undergraduate degree in mathematics from San Francisco State University and a doctorate degree in physical oceanography from the University of Washington.

Kessler's work concentrates on seasonal to interannual variability of the tropical Pacific Ocean, focusing primarily on observations. His research has included papers on physical processes involved in El Niño and in the annual cycle, and particularly on the role of equatorial low-frequency waves.

FYI

What: Sigma Series Lecture
Dr. William S. Kessler
"El Niño"
When: Feb. 18, 7:30 p.m.
Where: Virginia Air & Space Center
600 Settlers Landing Rd.
Downtown Hampton
Info: 727-0900

Learn more about El Niño on the Web at
http://podaac.jpl.nasa.gov/el_nino/

This Sigma Series lecture is sponsored by NASA Langley Research Center, the Virginia Air & Space Center, the Daily Press, Inc., and the Virginia Institute of Marine Science, the College of William and Mary.

For more information, call Arlene Levine at ext. 43318.

News Briefs

Around the Agency

MTPE NOW 'EARTH SCIENCE' – NASA has renamed the Mission to Planet Earth enterprise the Earth Science enterprise. The Earth Science enterprise is one of the agency's four strategic enterprises, responsible for a long-term, coordinated research effort to study the total Earth system and the effects of natural and human-induced changes on the global environment. The Earth Science enterprise is pioneering the emerging discipline of Earth system science, with a near-term emphasis on global climate change.

X-34 PROGRAM GETS SECOND VEHICLE – (Marshall Space Flight Center, Huntsville, Ala.) NASA has modified its X-34 contract with Orbital Sciences Corp., Dulles, Va., to produce a second flight vehicle for the X-34 Program. Under the new arrangement, unpowered tests will be added to the X-34 flight profile. A second vehicle also will provide flexibility in demonstrating various technologies allowing testing that requires repetitive flights to continue at the same time as tests which require significant, time-consuming changes to the vehicle.

PULSAR DISCOVERY STUNS SCIENTISTS – (Goddard Space Flight Center, Greenbelt, Md.) Scientists have discovered a superdense star spinning at more than 60 times per second, and calculate it could have been spinning 150-plus times per second when it formed some 4,000 years ago. Astronomers had not previously believed this class of star, called a pulsar, could form with such a rapid spin. The discovery suggests a natural continuum between fast-spinning pulsars with relatively weak magnetic fields and slow-spinning ones with strong fields..

For more information on the above news items, check the Internet, NASA Public Affairs Home Page, News Room 1997 News Releases, at ***http://www.hq.nasa.gov/office/pao/NewsRoom/releases97.html.***

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

Multicultural Facts

▲ "We believe our diversity represents a tremendous strength for Hewlett-Packard. It allows us to tap a broad range of human potential. Our diversity is a competitive advantage for our customers, our employees and our company." – Lewis Platt, president and chief executive officer, Hewlett-Packard Company.

▲ Top 10 Tip for Improving Diversity Retention: "Establish a formal mentoring program." – The Multicultural Advantage

▲ Make Langley a better multicultural workplace. E-mail suggestions to MCLT+IDEAS@LaRC.NASA.GOV, or visit the MCLT homepage at ***http://mclt.larc.nasa.gov/homepage_mclt.html***

Engineers Week helps Langley to 'connect' with local students

In conjunction with National Engineers Week, Feb. 22-28, NASA Langley will sponsor a series of special programs during the month of February for local K-12 classrooms and the local commmunity to demonstrate real-world applications of mathematics, science and technology studies.

Activities will include visits to middle schools; career day programs for high school students; a live, interactive television program, CONNECT, for students in grades K-4 and 5-8, broadcast on local PBS station WHRO-TV, Channel 15; and a rebroadcast of *Journey into Cyberspace*, a career series for middle school teachers, guidance counselors and students, broadcast on WHRO every Wednesday afternoon through Feb. 25.

The Engineers Week program and related activities comprise the single largest community outreach effort sponsored by NASA Langley. Last year, more than 140 employees participated, reaching more than 10,500 local students in grades 3-5 with classroom presentations.

CONNECT will feature two programs during February focusing on Earth science, broadcast on **WHRO on Feb. 10, 12:30 p.m., and Feb. 17, noon.** Students will explore how scientists use satellites to study the impact of human activities on the global climate and will observe featured student researchers from the Portsmouth City School District conducting an experiment that examines the variables of angle and thrust.

CONNECT is a partnership that includes WVEC-TV as well as the Portsmouth City Schools. For more information, see the Web site at ***http://edu.larc.nasa.gov/connect.***

Announcements

Academy of Science seeks technical papers

The Aerospace Sciences Section of the Virginia Academy of Science (VAS) is soliciting papers for its 76th meeting, May 27-29, at George Mason University, Fairfax, Va. The papers will include a 15-minute presentation at the meeting and a one-paragraph abstract to be published in the proceedings.

This meeting provides an opportunity for engineers to present material that may not otherwise see publication and to obtain experience in making technical presentations.

Proposed abstract titles must be submitted to Bruce Owens, ext. 48450; fax, ext. 43553; e-mail d.b.owens@larc.nasa.gov, by Feb. 20. Abstracts are due at the February meeting.

Authors are required to become VAS members. For VAS membership and general information, see the Web site at ***http://nthsrv1.jsr.cc.va.us/staff/srmartj/vacadsci.htm.***

The Virginia Academy of Science was established in 1923 to promote scientific research, science education and scientific awareness in Virginia. Similiar goals, geared toward students, are pursued through the Virginia Junior Academy of Science. Colleges and universities in the state serve as hosts for the annual meetings each spring.

Training offered

An MSC/NASTRAN Thermal Analysis course will be offered March 18-20, 8:30 a.m.-4 p.m., Building 1229, Room 120.

This seminar describes the latest heat transfer and thermal stress analysis capabilities, beginning with version 68. Program inputs and interpretation of results for conduction, convection and radiation analyses are covered in detail. The seminar attempts to provide a balance between theory, its development within the context of MSC/NASTRAN and practical application.

Prerequisites include a basic knowledge of heat transfer fundamentals, NAS101 or equivalent experience.

To register, send an Application for On-Site Training (NASA Langley Form 24) to DeAnna Lawrence at Mail Stop 309, or fax to ext. 48543. For additional information, call George Allison at ext. 42594.

Talcott promoted

The Airframe Systems Program Office announces that Dr. Noel A. Talcott, of the Advanced Aircraft Branch, has been selected as the leader of the High-Performance Aircraft Office, replacing Luat Nguyen, who becomes the new Flight Dynamics and Control Division chief.

Tech Expo '98 set

The latest in computer technology can be seen at Technology Expo '98, Feb. 25, 10 a.m.-2 p.m., at the H.J.E. Reid Conference Center. All Langley and contractor personnel are invited to attend.

The Evaluation and Information Center hosts this one-day event. More than 25 exhibitors will display the latest computer hardware, software and services.

Featured technologies include video teleconferencing, networking applications/integration, laptops/notebooks/desktops, systems solutions, forms software, records management, presentation systems, digital imaging, software/hardware and the internet. Complimentary refreshments will be served.

Retirement rolls grow

The following employees recently retired from NASA Langley:

September 1997 – Anne D. Holland, Charles H. Whitlock, Darrell A. Wood.

October 1997 – Jeff I. Clevelend II, Joseph M. Price, David E. Terray, Griffin Y. Anderson, Jay C. Hardin, Vivian W. Holmes.

December 1997 – William F. Adkins, Elizabeth G. Fedors.

January 1998 – James P. Arrington, Robert D. Averill, James E. Bostic, Emedio M. Bracalente, Theodore E. Caldwell, Huey D. Carden, O.J. Cole Jr., Bruce A. Conway, Roy C. Dunkum Jr., L. Bernard Garrett, David L. Gray, Roy V. Harris Jr., Mervin E. Hillard Jr., Charles M. Hudson, John M. Inman, Ronald R. Krodel, George F. Lawrence, W. Pelham Phillips, Harold I. Simmons, Tommy C. Steele, Edwin J. Taylor, Judy Evans Taylor, H. Scott Wagner, Hartsell F. Williams, Klaus P. Zaepfel.

Pavers remain popular present

After the success of its 1997 holiday promotion, the Virginia Air & Space Center continues to offer pavers, brass-plate markers on the walkway in front of the museum, for $50 to all NASA employees, contractors and retirees. The NASA paver section still has openings.

Pavers are often given to commemorate birthdays, weddings, memorials, graduations or retirements. For more information, or to order by phone, call Sharon Gates at 727-0900, ext. 718.

Departing employee thanks coworkers

"Since joining the staff of NASA Langley in 1978, I have developed a high regard for the people and mission of the center. I am very excited about my new position in the NASA X-33/RLV Program Office in Palmdale, Calif., but at the same time, I am very sad about leaving Langley.

"I would like to wish everyone here the best in all your future endeavors, and to sincerely thank those people who have been a part of my experience at Langley."

– Chris Naftel

In memory of James E. Justice Sr.

James E. "Choo Choo" Justice Sr., 71, died Jan. 5. He retired from NASA Langley's Materials Processing Development Section in 1986 after 40 years' service.

In memory of Dorothea Wisecarver

Dorothea "Dot" Phillips Routten Wisecarver, 87, died Jan. 23. The Hampton native and lifelong resident retired in 1975 as an accounting supervisor at NASA Langley after 26 years of service.

News Researcher

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 distrubution 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 to the editor via e-mail (m.l.graves@larc.nasa.gov) (researcher-news @larc.nasa.gov), fax (757) 864-8810, telephone (757) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor..... Keith Henry

Editor..... Mary Graves
Science and Technology Corp.

Assistant Editor..... Jeane Shanks
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.

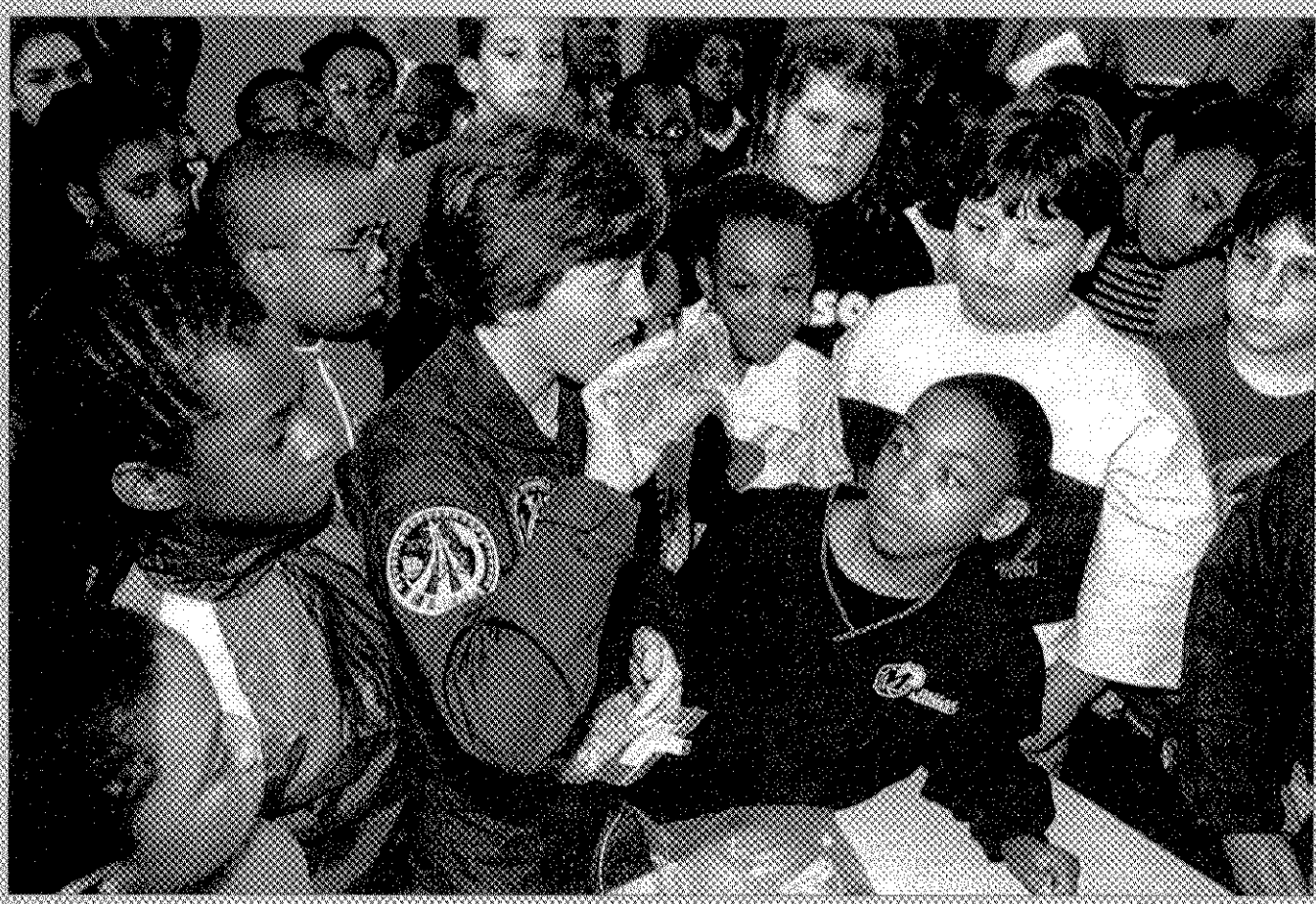


Photo by Jeff Caruso

CENTER OF ATTENTION – Students from Cooper Elementary School in Hampton crowd around astronaut Wendy Lawrence as she answers questions about what astronauts eat in space. Lawrence spoke to more than 700 students Jan. 16 at the Virginia Air & Space Center about her experiences as part of the STS-86 shuttle crew to the Russian space station Mir and her work in Star City, Russia. Lawrence was also the highlight of the VASC's MirFest, a Russian-American festival celebrating the opening of the IMAX film *Mission to Mir*.

On center, Lawrence spoke to employees about the joint U.S.-Russian Space Program. In recognition of their outstanding service to NASA's space efforts, Lawrence presented the Silver Snoopy to Ruth Amudsen, Engineering Analysis Branch, and the Space Flight Awareness Team Award to Vickie Connors, Atmospheric Studies Branch.

University of Va. engineer to speak at systems engineering meeting here

BY MATT SEXSTONE AND ALBERT MOTLEY

Dr. William T. Scherer, a systems engineer from the University of Virginia, will give a 30-minute talk entitled "Introduction to and Issues in Systems Engineering," Feb. 24, 5:30-7 p.m., in the Hampton Room of the H.J.E. Reid Conference Center, at a meeting of the Hampton Roads Area Emerging Chapter of the International Council on Systems Engineering (INCOSE).

Scherer, whose special interests include intelligent design support and decision-making systems, received bachelor's, master's and doctorate degrees from the University of Virginia. He has taught at UVA since completing his Ph.D. degree, developing and offering undergraduate and graduate courses in engineering design, decision analysis, stochastic control and computational operations research.

An expert in developing algorithms and decision models, Scherer has conducted research for the National Geographic Society, NASA's Jet Propulsion Laboratory (JPL), the Virginia Transportation Research Council, the Center for Innovative Technology and the Institute for Parallel Computation.

INCOSE
International Council On Systems Engineering
http://www.seva.net/~incose/

Currently, he is assisting the Virginia Department of Transportation in systems integration for Intelligent Transportation Systems, including the design of the Northern Virginia traffic management center. He is also working with the Army Aviation Directorate on the development of algorithms to improve the maintenance costs associated with helicopters via the improved prediction of fatigue on helicopter components.

Scherer's previous work has included support by Abtech for developing aircraft diagnostic algorithms, by NASA's JPL for developing spacecraft scheduling algorithms, and by the Pittsburgh Super-Computer Center, for developing combinatorial optimization algorithms on their Cray and Convex computers.

Scherer has served as a consultant to many companies, including Capital One Financial Corporation, National Capitol Systems, Inc., Barron Associates and the Defense Communications Agency. These efforts have involved strategic planning, business process reengineering and the development of decision support systems to aid in the allocation of scarce resources.

Committed to engineering education, Scherer chaired the engineering school's undergraduate committee for the past three years. In 1993, he was named Distinguished Faculty Member at the university, and he is currently a faculty fellow at Hereford College.

He has been a leader in developing the Systems Engineering Capstone Program, a senior-level team research and design project course, which was a primary factor in the department's 1990 special award granted by the Accreditation Board for Engineering and Technology. Scherer directed an interdisciplinary student team in 1993 that won the Cooper and Lybrand University Design Challenge, resulting in a $5,000 prize for the students.

He is active with student organizations, serving as the advisor to Tau Beta Pi, the student chapter of the Institute for Operations Research and Management Science (INFORMS), Omega Rho and the American Society of Engineering Management.

An editor and reviewer for numerous scholarly journals, Scherer's work has been published in textbooks and journals, including Operations Research; Institute of Electrical and Electronics Engineering's (IEEE) Systems, Man and Cybernetics; the Journal of Mathematical Analysis and Applications; and the American Society of Engineering Education's Journal of Engineering Education. He has addressed audiences at national and international conferences on the subjects of decision-making models and engineering education. Scherer also serves on numerous national committees for the IEEE, IEEE Systems, Man, and Cybernetics and INFORMS. He has been elected to Tau Beta, Omega Rho, Sigma Xi, and Omicron Delta Kappa and is a member of numerous professional societies.

For more information, visit the INCOSE Web site at ***http://www.seva.net/~incose/***, or send an e-mail to m.g.sexstone@larc.nasa.gov or to a.e.motley@larc.nasa.gov.

COMMUNITY CORNER

BY SANDRA LEMONS

One out of five Americans can't read this sentence. Between 40 and 44 million adults in this country are functionally illiterate.

Background

Peninsula READS is a community-based nonprofit organization serving functionally illiterate adults in Hampton, Newport News, Poquoson and York County. Adults who read at or below the 5th-grade level are matched with trained volunteer tutors for individual instruction. Peninsula READS volunteers also provide conversational English instruction to foreign-born adults.

Founded in 1968, Peninsula READS, or the Peninsula Literacy Council, has been recognized twice by the Virginia Literacy Foundation as the outstanding private literacy group in Virginia. Supported by United Way, Peninsula READS helps more than 500 adult nonreaders each year.

How you can help

Literacy volunteers receive intensive tutor training through a series of workshops. Using audio/visual presentations, demonstrations and role-playing, the workshops prepare volunteers to teach one-to-one or in small groups.

Peninsula READS always needs individuals to lead tutor training workshops, to plan and manage programs, to assist with administrative tasks and to spread the news to other prospective tutors and students.

For more information and a schedule of upcoming tutor training workshops, contact:

Peninsula READS
2021 Cunningham Drive
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Hampton, Va. 23666
E-mail: penread@norfolk.infi.net
Phone: 838-5300

Tailless fighter previews future fighter technology

NASA DRYDEN, NASA AMES

The NASA/Boeing X-36 Tailless Fighter Agility Research Aircraft has successfully completed its flight research program – demonstrating the feasibility of future tailless fighters achieving agility levels superior to today's best military fighter aircraft.

The project goals are to develop and demonstrate enhanced technologies to improve the maneuverability and survivability of future fighter aircraft.

"All of our project goals were met or exceeded," said Mark Sumich, X-36 project manager at NASA's Ames Research Center, Moffett Field, Calif.

During the final flight phase, the X-36 project team examined the aircraft's agility at low speed/high angles of attack and at high speed/low angles of attack.

"We also achieved the final flight's goal to expand the X-36's speed envelope up to 206 knots, or 234 miles per hour," Sumich said. "The aircraft's stability and handling qualities were excellent at both ends of the speed envelope."

Thirty-one flights were made during the flight research program at NASA's Dryden Flight Research Center, Edwards, Calif., which ran from May through November last year. The X-36 flew a total of 15 hours and 38 minutes and used four different versions of flight control software. The aircraft reached an altitude of 20,200 feet and a maximum angle of attack of 40 degrees.

The 28-percent-scale X-36, built by the Boeing Phantom Works in St. Louis, Mo., is designed to fly without the traditional tail surfaces common on most aircraft. The X-36 is 18 feet long with a 10-foot wingspan; three feet high; and weighs 1,270 pounds.

The aircraft is powered by a Williams Research F112 turbofan engine that provides 700 pounds of thrust. It is remotely controlled by a pilot in a ground station cockpit, complete with a head-up display. The pilot-in-the-loop approach eliminates the need for expensive and complex autonomous flight control systems.

"We now have a proven research aircraft that can be used for future tests," said Gary Jennings, X-36 program manager for Boeing Phantom Works. "As people become aware of the aircraft's capabilities, interest is increasing in using it for future flight tests."

With the flight test program completed, the X-36 will be placed in flyable storage condition in a hangar at Dryden.

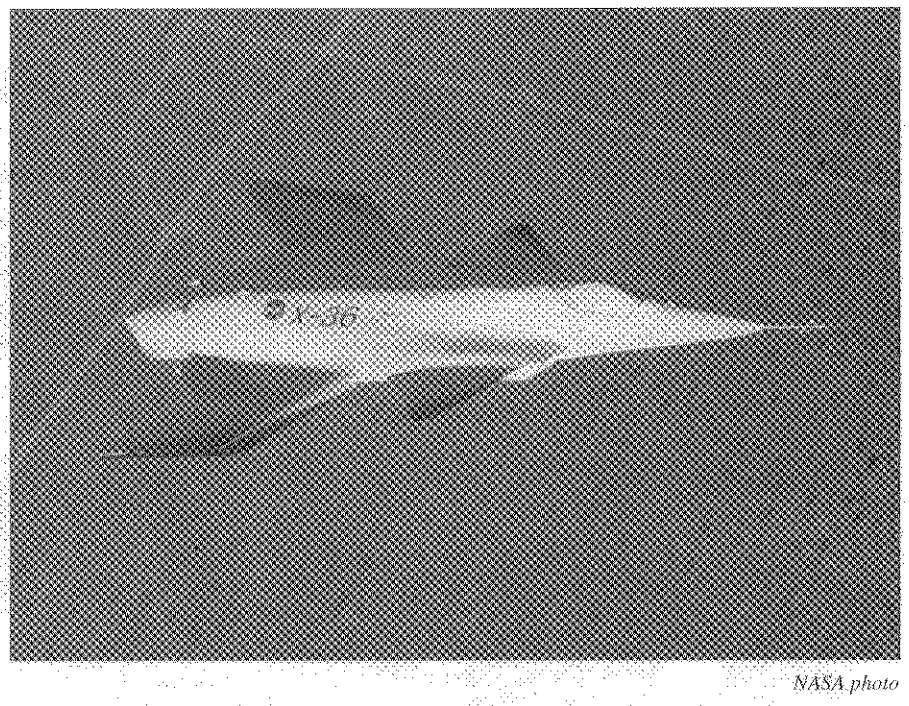
"Discussions are underway about what to do next with both of the X-36 aircraft," said Gary Cosentino, X-36 deputy project manager at Ames. "There is potential for other technologies, such as a highly advanced reconfigurable flight control system, to be incorporated on the aircraft and possibly flight-tested in the future."

The X-36 Flight Test program team was comprised of employees from Boeing, Ames and Dryden.

"The Dryden flight test infrastructure played a major role in supporting our operation and helped make us a success," said Sumich. "The streamlined process of approval cycles allowed us to operate in a very efficient manner. The fact that we completed 31 flights in only 25 weeks is an unparalleled accomplishment for a remotely piloted aircraft."

Ames and the Boeing Phantom Works developed the technologies required for a tailless fighter beginning in 1989. In 1993, the Phantom Works proposed the remotely piloted aircraft technology demonstration to validate the technologies in a real flight environment. In 1994, Phantom Works began fabrication of the two aircraft in its rapid prototyping facility in St. Louis.

NASA and Boeing are full partners in the project that was jointly funded under a roughly 50/50 cost-sharing arrangement. The combined program cost for the development, fabrication, and flight testing of the two prototype aircraft is approximately $20 million. Ames leads the X-36 program; Dryden is hosting the program and providing range support.



NASA photo

The NASA/McDonnell Douglas X-36 remotely piloted aircraft flies near the edge of Rogers Dry Lake near NASA Dryden Flight Research Center, Edwards, Calif., last summer.

JPL marks 40th anniversary of Explorer 1

JET PROPULSION LABORATORY

Forty years ago, a team of scientists and engineers successfully launched Explorer 1, the first U.S. satellite to orbit the Earth. This historic accomplishment marked the nation's debut in the Cold War-era space race and set the stage for the establishment of the civilian space agency that would become NASA.

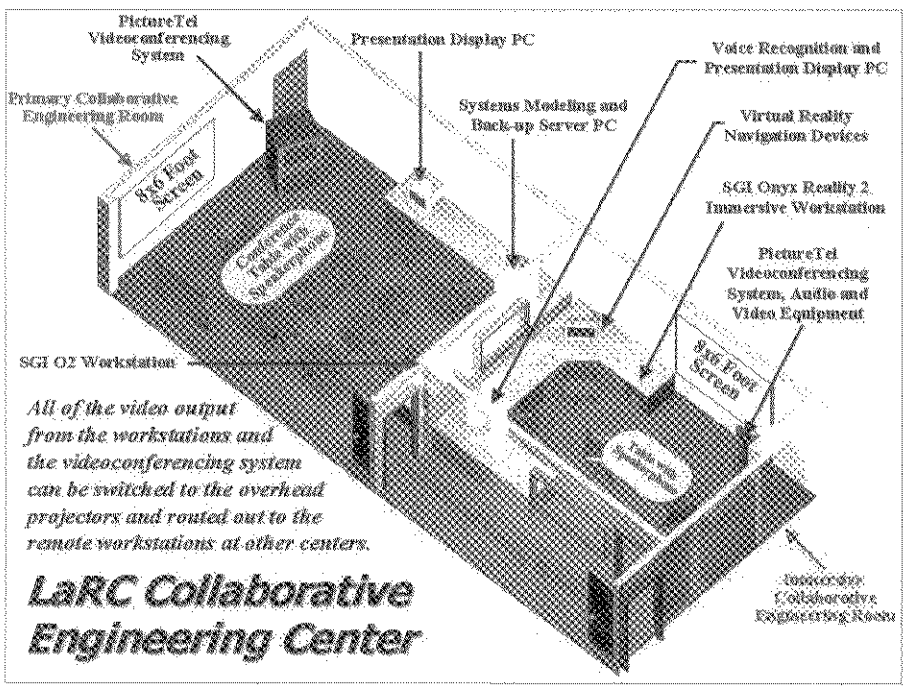
NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., was still operated as a research laboratory for the U.S. Army when it was selected in November 1957 to develop the first U.S. satellite. The work included its science package, its communications system, and the high-speed upper stages for the Army's Redstone rocket that would guide the 20-pound Explorer 1 into space.

JPL and the Army completed the assignment and successfully launched the satellite in less than three months. JPL and the Army Ballistic Missile Agency, based in Huntsville, Ala., joined in firing the satellite toward space from the missile test center at Cape Canaveral, Fla., on Jan. 31, 1958.

The scientific experiment onboard, a cosmic ray detector built by Dr. James Van Allen of the University of Iowa, soon returned one of the most important findings of the space program: the discovery of what are now known as the Van Allen Radiation Belts around the Earth. Explorer 1 went on to operate for three months.

COLLABORATIVE ENGINEERING CENTER

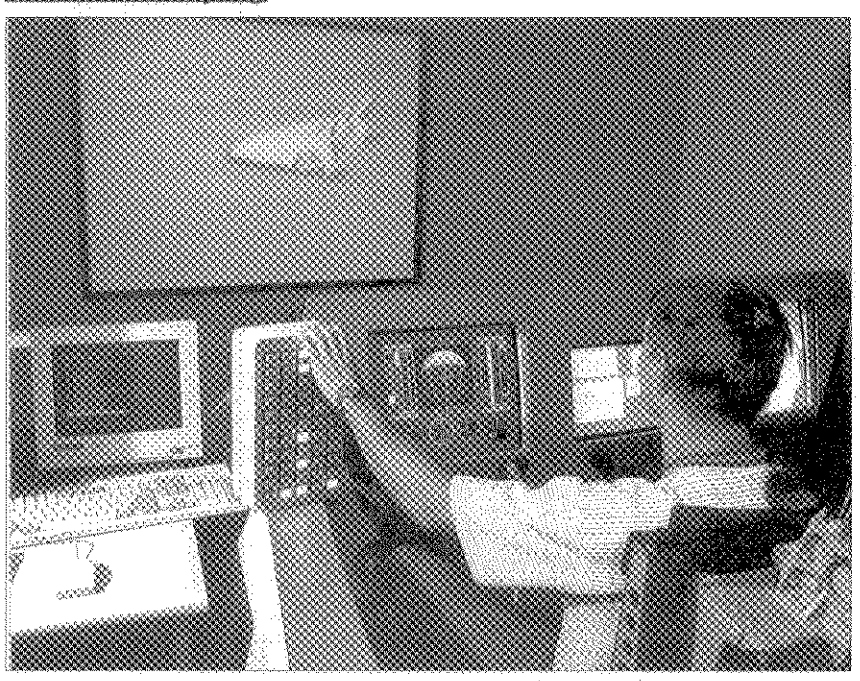
(continued from page 1)



NASA illustration

The Collaborative Engineering Center is a facility that acts as a mission control center for the collaborative process. Team members located at Langley, along with remote team members across the nation, can perform reviews, tag-ups and concurrent engineering analysis. The center is divided into two separate but colocated rooms.

Almost like flying



NASA photo

Steve Ishmael, X-33 Program deputy of flight operations at NASA Dryden Flight Research Center, Edwards, Calif., flies a simulation of the X-33 Advanced Technology Demonstrator. This simulation is used to provide flight trajectory data while flight control laws are being designed and developed, as well as to provide aerodynamic design information to X-33 developer Lockheed-Martin.

GWU professor finds flight in teaching, aircraft design

Former employee of Northrop, Boeing lands gracefully in classroom

BY JEANE SHANKS

Meet Robert R. Sandusky Jr., full-time professor of engineering and applied sciences at the George Washington University's (GWU) Joint Institute for Advancement of Flight Sciences (JIAFS) here at Langley – and owner of two patents for airplane design.

"This job [at the JIAFS] seemed like a natural – combining a university environment and teaching," said Sandusky, 58. "I've always enjoyed teaching, and I got into it through flight instructing."

He likes to relate to younger people and gets vicarious pleasure from watching someone evolve and learn to fly.

"It's sort of like learning to fly all over again," he said.

The road to GWU

He came to GWU through an early retirement incentive program offered by Northrop Grumman Corp. He worked on prototype airplanes, taking one from the first line on a piece of paper through flight testing – work which took 10 years of his life and which resulted in two design patents.

"There wasn't much challenge left in that area," he said of his work on prototypes. "Coming to GWU was not something I couldn't resist, but it just fell into place as though this was something I was supposed to do."

Sandusky began his teaching experience in the fall of 1986, when he taught an aircraft design course as an adjunct professor at Northrop University in Los Angeles.

The NASA/GWU connection

The JIAFS is a cooperative program between NASA and GWU and is extremely competitive. Each year, thousands of students inquire about the program. The three students Sandusky taught came from an applicant pool of about 250.

"My course is not analytical; it is more intuitive and creative – qualities that are a big part of designing an airplane – and that's what I'm trying to teach."

Many of the students are Langley employees pursuing advanced degrees, while others are graduate research scholar assistants (GRSAs) from across the nation who have been selected competitively. These GRSAs conduct research 20 hours a week in one of Langley's branches on a branch-related subject, under the guidance of a NASA advisor and a George Washington faculty advisor.

Sandusky monitors the quality and academic standards of the students' work, and the NASA advisors oversee their projects and the direction of the research. While pursuing a degree, students work in NASA's facilities, and NASA has the opportunity to employ their bright minds for two years at a reasonable rate.

"It's a win-win situation for everyone," said Sandusky.

A demanding instructor

His aircraft design course focuses on multidisplinary optimization and aircraft design methods. Aircraft safety and security is a large, new area, and JIAFS is investigating how design methodology could be further enhanced and proven, said Sandusky.

"Students become frustrated with the structure of my class," he said. "Engineers normally are given a problem and have to come up with an answer. My course is not analytical; it is more intuitive and creative – qualities that are a big part of designing an airplane – and that's what I'm trying to teach."

His course involves no assigned homework or tests. At the end of the semester, students turn in a completed airplane design as their final grade. Each student works individually, he said.

Sandusky finds that changing the course problem each year keeps instructors and students on their toes. Last year's problem was to design a supersonic business jet, and this year, it is to design an unmanned strike fighter and then to pack eight of them into a C-5A airplane. A 100-page proposal and a half-hour oral presentation complete the course requirements. Student designs are entered into the annual American Institute for Aeronautics and Astronautics' design competition.

Sandusky plans to work with Langley's Office of Education to teach the course through distance learning, making the class truly interactive, with cameras at all locations. Student input is very important in this course, he said, so answers to problems would come from the students rather than from the instructor.

Sandusky the inventor

Sandusky holds two patents for prototypes he developed while he worked at Northrop. The U.S. Patent Office lists him as "first-named inventor" on the patents for the F-20 Tigershark (1986) and the YF-23A Advanced Tactical Fighter (1992).

"Although my name is on the patent, it was a team effort – no one person can obtain a patent alone," he said. Each of the 1,500 engineers on Sandusky's team contributed an important part of the entire design.

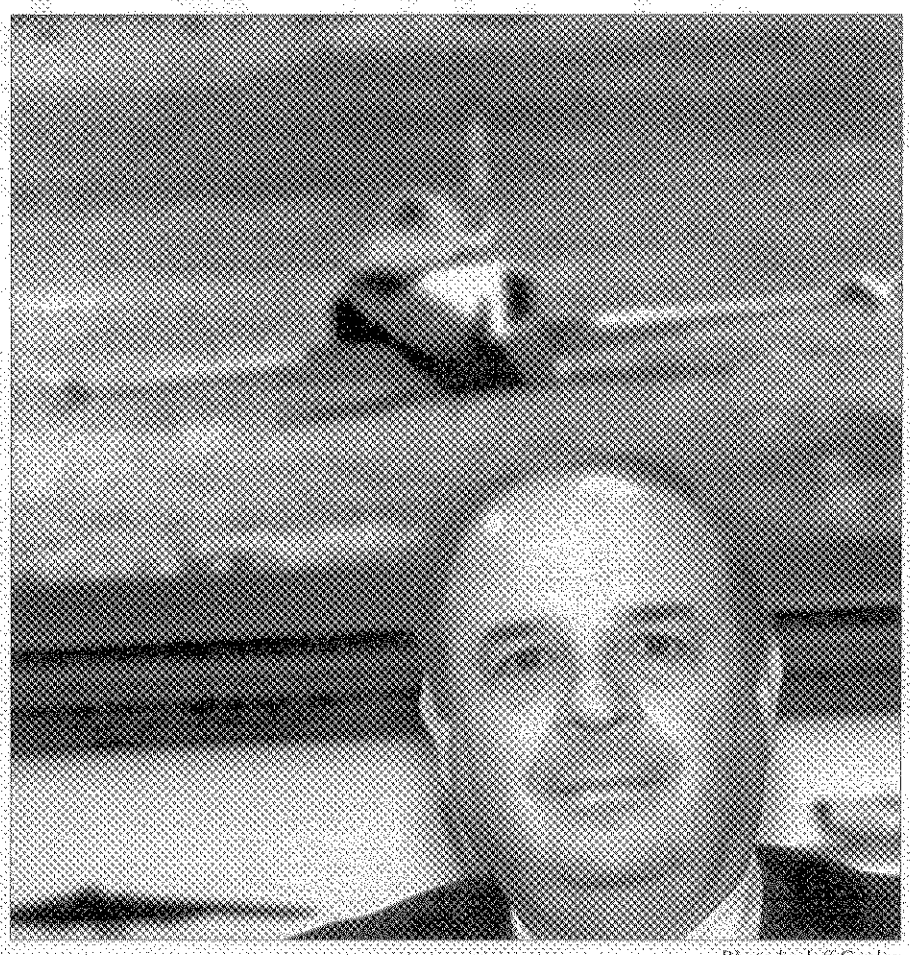


Photo by Jeff Caplan

Sandusky sits in his office in front of a photo of the F-20 Tigershark, the first of two aircraft for which he holds the design patent.

Photo courtesy Robert Sandusky

Sandusky stands in front of the second of his patented aircraft, the YF-23A Advanced Tactical Fighter, at Edwards Air Force Base, California.

First-flight jitters

The prototypes he helped design did not find Sandusky in the pilot seat at flight test time.

The first flight is always exciting because you never know for sure, but you hope you have everything covered," he said.

"I had spent 10 years of my life [on this plane design], and that flight test was the peak of my industry career."

Being a designer standing at the end of a runway, watching the airplane that you designed take off – that's about as close as a man can come to having a baby, he said.

"The pilot, Paul Metz, came to me before the initial test flight and asked only one question – 'Is it OK?' That's all he said – 'is it OK?'" Sandusky was astonished at the simple question.

"I thought through all the thousands of problems we had over the 10 years, took a deep breath and said, 'It's OK.' Off he went, and I didn't exhale for an hour and a half, until he came back.

"It was a *great* day," he continued. "I had spent 10 years of my life [on this plane], and that flight test was the peak of my industry career."

Lifelong love of flying

Sandusky holds a master's degree in aeronautical engineering from the University of Colorado and a master's degree in aeronautics and astronautics from the University of Washington. He is a certified flight instructor with more than 2,600 flight hours and is a registered professional engineer in the states of California and Washington.

He has accumulated more than 25 years' experience in aircraft design. He participated in the aerodynamic and configuration design of the lightweight fighter competition while employed at the Boeing Company.

He then joined Northrup, where he started with aerodynamic and performance analysis of the YF-17 prototype. Sandusky served as manager of advanced design and then as chief engineer of the Advanced Tactical Fighter (ATF) program for its lifetime.

AdVentures

TAX TIME: Income tax preparation by a member of the National Association of Tax Practitioners. Get your refund fast with electronic filing and direct deposit at no extra charge. We travel to you. See our internet site at *http://home.switchboard.com/telatax*. Call 874-3121 for an appointment.

TAX TIMES 2: For income tax preparation, call Nancy Taylor at 723-5227.

TAX TIMES 3: Qualified accountant with years of experience to prepare 1997 personal tax returns, reasonable rates. Call 596-0959 or pager number 419-9822.

FOR SALE: 3 BR rancher, nice starter home near Main St. in Newport News, 1-1/2 baths, wall-to-wall carpet, central air/heat, energy efficient, attached garage with automatic door opener, cat-in kitchen, new carpet and padding in all bedrooms, new roof, freshly painted interior, large fenced back yard, near elementary school, on cul-de-sac, 20 minutes to NASA/Langley Air Force Base. $77,500. Call 838-0726.

FOR SALE: 1980 DATSUN 210 good condition, reliable transportation around town. $450. Call Dianne at 872-6747 before 9 p.m.

FOR SALE: 1991 Nissan 240 SX, great shape. $7,450. Call 851-1402, 5-9 p.m.

FOR SALE: Beanie Babies, current, new-release and retired "babies." $10 and up. Call 865-0586 or e-mail to atoz@pinn.net. Leave a detailed message.

POLISHED COPY: Published author will edit academic/professional papers for mechanics and/or style. Reasonable rates. Call 877-3502.

LOST: White J Crew jacket with brown collar at the basketball gym on Jan 16. Call ext. 47866.

SPACED OUT: The Virginia Air & Space Center presents a new traveling exhibit, to run Feb. 7-Sept. 7. Developed by Ohio's Center of Science and Industry, *Destination: Space!* features more than 75 original works of space-exploration art by renowned artist Robert McCall, whose paintings were part of the commemoration of NASA Langley's 75th anniversary in 1992. Exhibit visitors will also journey through several "space station labs," including K'NEX Research and Development Center, Space Shuttle Technology Demo, Tri-Axis Astronaut Trainer and Satellite LIVE! For more information, call 727-0900.

MISSION TO MIR: The Virginia Air & Space Center in Hampton presents the new IMAX film, *Mission to Mir*, through April 1. The film explores life on the Russian space station Mir and features NASA astronaut Shannon Lucid. For more information and showtimes, call 727-0900.

VASC DISCOUNTS: The Virginia Air & Space Center is offering a 10 percent discount on all levels of membership to NASA employees, contractors and retirees, now through June. Membership includes an allotment of free IMAX movie tickets and discounts in the Museum Store and on science camps, birthday parties, programs, Busch Gardens season passes and more. For more information, or to order by phone, call Sharon Gates at 727-0900, ext. 718.

SAY 'BYE TO BILL: A retirement luncheon for Bill Adkins will be held Feb. 12, noon, in Building 1251A, Room 139 (31" Mach 10 Tunnel Shop Area). Pizza and cold beverages will be available. Cost is $5 per person, due before Feb. 10. To reply, contact Mickey Gardner, ext. 41447, Mail Stop 414, Building 1251A, Room 151.

LAA EVENTS: **Friday-the-13th party** brings live country and southern rock to Langley with Double Take, featuring NASA employees/musicians/singers Ronald and Donald Creech of EG&G and Shannon Lynch Thomas of AESD, Feb. 13, 4-9 p.m., in the H.J.E. Reid Conference Center. Door Prizes by M. Price Distributing Co. Advance tickets are $1; $2 at the door. Advance tickets required for door prize drawings. For more information, call ext. 46369. The **LAA lounge opens** every weekday at 4 p.m.; **bingo** games every Thursday night, 7 p.m

BOB'S LAST BITE: A retirement luncheon for Bob Averill will be held Feb. 19, 11:30 a.m., in the Langley cafeteria. Cost is $12 per person, including gift. If you can't make the luncheon, stop by for cake, 12:30-1:30 p.m. (Gift donations are welcome.) RSVP by Feb. 12 to Susie Henriksen, ext. 42133, Mail Stop 434, or Elaine Crawford, ext. 46864, Mail Stop 131.

TECH OPEN HOUSE: Virginia Polytechnic Institute and State University's College of Engineering will host its second Industry Opportunities Open House, June 4, on the university campus. The daylong event will include clinics, tours of research facilities and opportunities for industry to interact with faculty. Clinics will address materials and structural design and responses, industrial processes, sensors and measurement, signal processing, automation and control and electronics. All industries with an interest in engineering research and development are welcome to attend. For more information, contact Tom Caruso at 540-231-6771 or at caruso@vt.edu.

VIRGINIA SYMPHONY: Entertainer Ben Vereen joins the Virginia Symphony, Feb. 7, at Chrysler Hall; the Symphony presents a Rachmaninoff Masterworks concert, Feb. 14, also at Chrysler Hall. For other events, call the ticket office at 623-2310.

NASA marks 40 years with commemorative logo

40 NASA
Forty Anniversary
Pioneering the Future

Throughout 1998, NASA will celebrate the 40th anniversary of its founding with events across the agency. Langley's celebration will be focused at our visitor center, the Virginia Air & Space Center. Watch for anniversary activities and events identified by this logo.

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Newsletter
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Center Snapshots

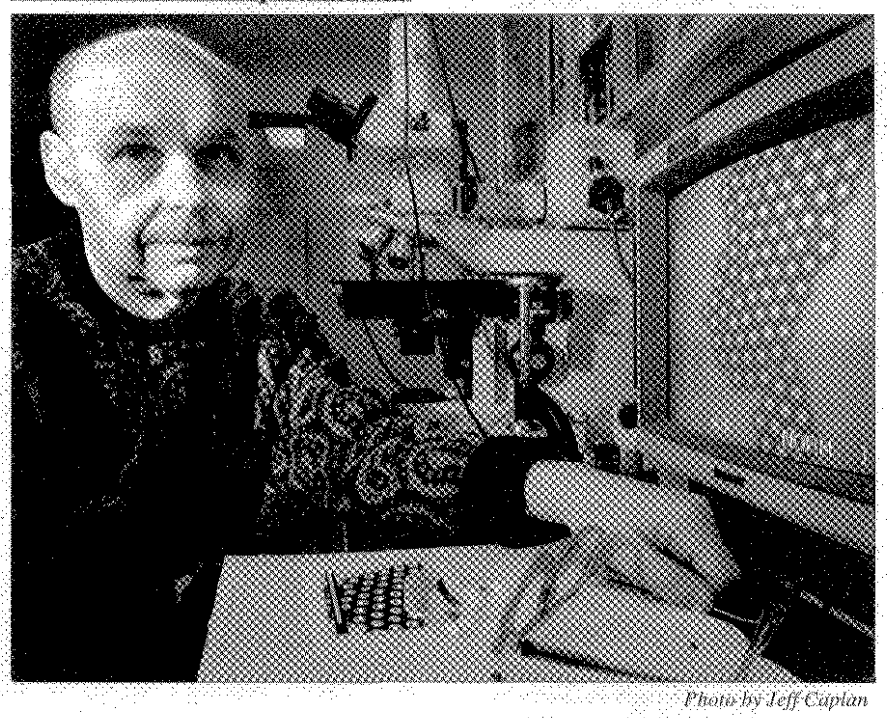


Photo by Jeff Caplan

Dr. Richard Partos received an undergraduate degree in chemistry from the University of Chicago and a doctorate degree in organic chemistry from the University of California at Los Angeles. Born in Chicago, Ill., Partos worked in industry for several companies before joining Analytical Services and Materials, and, later, the Old Dominion University Research Foundation, in support of Langley's Process Systems Branch, in 1987.

Partos works with the production of polystyrene microspheres, the particles used in wind tunnels with laser velocimetry – the process of monitoring the air flow around a model. His work also encompasses a large variety of instrumental and wet chemical analyses of oil, water, composite and metal samples, using techniques such as image analysis, atomic emission and infrared spectroscopy.

* * * *

"We can handle so many different types of analytical problems [here at Langley]. You never know what you are going to get next."

– Richard Partos

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 3 ❖ February 20, 1998

NASA budget request for 1999 includes slight cuts

Editor's Note: *Following are excerpts from NASA Administrator Daniel Goldin's remarks at the NASA budget briefing held Feb. 2 at the NASA headquarters auditorium in Washington, D.C.*

If you go home with one message today, let it be this:

Realizing the promise of the future depends on delivering on the promises made to the American people.

The administration has clearly articulated its goals for the civil aeronautics and space programs (The National Space Policy and the Goals for a National Partnership in Aeronautic Research and Technology).

The NASA Strategic Plan lays out our programs to achieve these goals. And the budget proposal which I present to you today provides the resources required to do that. I will quickly go through the highlights of the budget proposal for each enterprise.

Human Exploration, Development of Space

In 1998, we at NASA, along with 15 other nations, are on target to begin the assembly of the International Space Station. Our budget fully funds the ambitious research program for the station.

I am proud that the space shuttle team is delivering on its promise:

We meet our flight rate. We have less and less in-flight hardware problems.

We're flying for less money. And we are safer today than ever before.

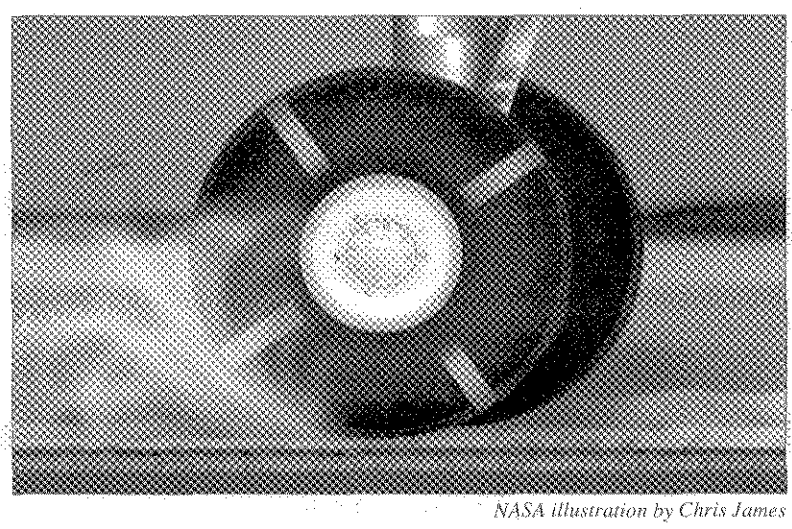
As for new projects, we have identified as a start-up

(see BUDGET, page 4)

Researchers to get a grip on runaway runways

Langley leads study to reduce airport accidents

BY KEITH HENRY



NASA illustration by Chris James

NASA Langley and Transport Canada are leading an international effort to help prevent accidents by aircraft losing traction on icy runways. Ice or snow on a runway was a factor in approximately 30 airplane accidents between 1983 and 1995, according to reports from the National Transportation Safety Board.

A research team has been in Canada this month proving technology concepts for better understanding of runway friction, improved tire designs, better chemical treatments for snow and ice, and new types of runway surfaces that minimize bad weather effects.

Inaccurate, incomplete or confusing runway surface information has been a contributing factor in a number of cases where airliners have slid off the end of the runway upon takeoff or landing – or have been dangerously slow in reaching liftoff speed due to the slowing effect of snow, ice or rain.

In response, the team has developed an international runway friction indexing method being tested on wintry runways at the Jack Garland Airport in North Bay, Ontario, Canada, about 200 miles north of Toronto. Researchers are comparing friction measurements from ground friction measuring vehicles and research aircraft in different winter runway conditions.

Once confident in the new indexing method, the research team will focus on relating it to different aircraft types and sizes.

"The index will be a single, accurate and easy-to-use tool to help both pilots and airport operators worldwide quickly assess winter runway conditions," said Thomas Yager, lead NASA engineer, of Langley's Structural Dynamics Branch.

The index – probably in the form of a simple chart – will help pilots with "go/no-go" runway decisions based on readings taken by a ground-friction measurement vehicle on the same runway. The index will help airport operators determine if their runways are suitable for aircraft operations and when maintenance is required.

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. Complicating the winter weather picture is that criteria for safe operations on a given runway snow condition differ from airport to airport, due to differences in grooving and pavements.

At North Bay, the new indexing method has successfully "harmonized" runway traction measurements from 13 different ground vehicles on ice-, snow- and slush-covered runways. A Dassault Falcon-20 and a deHavilland Dash-8 aircraft – both commuter-sized – are taking complementary traction data from actual takeoffs and landings on the same runways at each surface condition.

Getting a grip on runaway runways is a joint effort led by NASA and Transport Canada with support from the Federal Aviation Administration (FAA), the Canadian National Research Council and several airframe manufacturers.

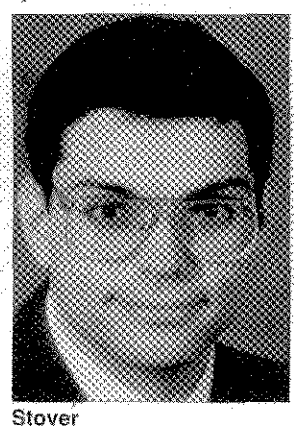
Also participating are organizations and equipment manufacturers from Europe and several Scandinavian countries. The team is midway through a five-year study called the Joint Winter Runway Friction Measurement Program. The program is also expected to help relieve airport congestion during bad weather.

The study contributes to NASA's recently established effort to reduce the U.S. aircraft accident rate by a factor of five within 10 years and, while maintaining safety, to triple airline system capacity in all weather conditions within 10 years.

Colloquium Communiqué

NASA conducts varied research on board Mir

Greg Stover, of Langley's Space Projects Office, will deliver Langley's March colloquium lecture, "NASA Research on the Russian Space Station," March 3, 2 p.m., at the H.J.E. Reid Conference Center. He will repeat the talk later the same evening as part of the Sigma Lecture Series, 7:30 p.m., at the Virginia Air & Space Center, downtown Hampton.



Stover

Between March 1995 and May 1998, the Russian Space Station Mir will have hosted seven NASA astronauts as crewmembers, as well as a variety of U.S. experiments. The NASA program supporting this endeavor is known as International Space Station (ISS) Phase I.

This program uses Mir to gain experience in the areas of cooperation, investigation and operation in preparation for the construction and use of the International Space Station. ISS designers are using Mir as a unique opportunity for long-duration data gathering for space station hardware, materials and construction methods.

In addition, Mir crewmembers are taking advantage of the microgravity environment to conduct scientific investigations and to make improvements in operational procedures.

Stover will discuss Langley's involvement with the Phase I program and will present results gathered from experiments conducted on board Mir.

The experiments, conducted both internally and externally, involve crew force measurements, superconducting materials, debris and materials exposure and Earth-sensing instruments.

Stover is deputy manager of Langley's Clouds and the Earth's Radiant Energy System (CERES) project, a remote sensing instrument recently launched on the Tropical Rainfall Measurement Mission observatory and scheduled for future flight on the Earth Observing System missions. He has served as project manager for the Mir Environmental Effects Payload (MEEP), a debris and materials exposure experiment which successfully flew on Mir for 18 months, and for the Middeck Active Control Experiment (MACE), a structural dynamics and controls experiment which successfully flew on STS-67.

Colloquium & Sigma Lectures

Colloquium Lecture:
"NASA Research on the Russian Space Station"
Greg Stover, March 3, 2 p.m.
H.J.E. Reid Conference Center

Sigma Lecture:
"NASA Research on the Russian Space Station"
Greg Stover, March 3, 7:30 p.m.
Virginia Air & Space Center
Downtown Hampton
Info: 727-0900

Stover, a native of Jasper, Ala., joined NASA in 1990 as an electrical engineer specializing in control systems. He holds a bachelor's degree from Auburn University and a master's degree in electrical engineering from the Georgia Institute of Technology (GT). He is also pursuing a Ph.D. degree from GT.

News Briefs

Around the Agency

RESEARCHERS FIGHT DEADLY VIRUS – (Marshall Space Flight Center, Huntsville, Ala.) NASA and industry biotechnology researchers have taken an important step toward developing a treatment for Respiratory Syncytial Virus, a life-threatening virus that causes pneumonia and severe upper respiratory infection in infants and young children.Through NASA-funded research and the application of space technology, researchers have determined the three-dimensional atomic structure of a potentially important therapeutic antibody to this virus.This knowledge will permit scientists to understand key interactions between the antibody and virus, facilitating development of treatments for the disease.

SATELLITE TO STUDY ATMOSPHERE – (Goddard Space Flight Center, Greenbelt, Md.) The first in a new class of inexpensive, student-built space missions funded by NASA was scheduled for launch Feb. 5 from Vandenberg Air Force Base, Calif. The mission, the Student Nitric Oxide Explorer (SNOE), will investigate the effects of energy from both the sun and the magnetosphere on nitric oxide densities in the Earth's upper atmosphere. The SNOE spacecraft is designed, built and operated by the University of Colorado's Laboratory for Atmospheric and Space Physics in Boulder. SNOE is the first of three student satellite projects to be built under the Student Explorer Demonstration Initiative program. Information about SNOE is available on the internet at ***http://lasp.colorado.edu/snoe/***

STATION ASSEMBLY CREW ASSEMBLED – (Johnson Space Center, Houston, Texas) Astronaut and U.S. Air Force Col. Brian Duffy will command the third U.S. assembly flight, designated shuttle mission STS-92, to the International Space Station. Joining Duffy on the flight deck will be pilot and U.S. Air Force Maj. Pamela Ann Melroy, who marks her first space flight with STS-92. Mission Specialists Koichi Wakata; Peter J. K. (Jeff) Wisoff, Ph.D.; Leroy Chiao, Ph.D.; U.S. Army Col. William McArthur Jr.; and U.S. Navy Cmdr. Michael Lopez-Alegria were named to the flight in June.

For more information on the above news items, check the Internet, NASA Public Affairs Home Page, News Room 1997 News Releases, at ***http://www.hq.nasa.gov/office/pao/NewsRoom/releases98.html.***

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

Multicultural Facts

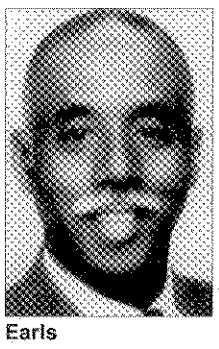
▲ "Our preliminary results show a high statistical correlation between cross-cultural training and strong team performance. These results suggest that synergy is possible. On the strength of these findings, we think that managers can begin to view their culturally diverse work groups as an opportunity for competitive advantage, rather than an uncomfortable reality." – Anne Perkins, *Harvard Business Review*

▲ Feb. 26-28 – U.S. Black Engineer of the Year Awards Conference, Baltimore, Md., (410) 244-7101

▲ Make Langley a better multicultural workplace. E-mail suggestions to MCLT+IDEAS@LaRC.NASA.GOV, or visit the MCLT homepage at ***http://mclt.larc.nasa.gov/homepage/mclt.html***

'Renaissance man' from NASA Lewis to speak at Black History Month event

Dr. Julian M. Earls, deputy director for operations, NASA Lewis Research Center, Cleveland, Ohio, will be the guest speaker for Langley's observance of Black History Month, Feb. 24, 1-2 p.m., at the H.J.E. Reid Conference Center. Earls' topic will be "Is Black History Month Necessary and/or Appropriate?" All employees and contractors are invited to attend. Civil service personnel may charge their time to J.O. A5006.


Earls

Earls, a scholar, author, teacher, humanitarian, athlete and orator, has been referred to as a "Renaissance man."

He earned a bachelor's degree in physics from Norfolk State University, a master's degree in radiation physics from the University of Rochester School of Medicine, and a doctorate in radiation physics from the University of Michigan. He also earned the equivalent of a second master's degree in environmental health from the University of Michigan and is a graduate of the Harvard Business School's prestigious program for management development.

Earls is also co-founder of the Development Fund for Black Students in Science and Technology, a nonprofit organization whose members make personal contributions in an effort to raise $1 million for scholarships to black students who attend historically black colleges and universities. In addition, he has served on many university boards of trustees.

Earls was inducted into the inaugural class of the National Black College Alumni Hall of Fame – along with Dr. Martin Luther King Jr. and U.S. Supreme Court Justice Thurgood Marshall.

Announcements

Tech Expo '98 set

The latest in computer technology can be seen at Technology Expo '98, Feb. 25, 10 a.m.-2 p.m., at the H.J.E. Reid Conference Center. All Langley and contractor personnel are invited to attend.

The Evaluation and Information Center hosts this one-day event. More than 25 exhibitors will display the latest computer hardware, software and services.

Featured technologies include video teleconferencing, networking applications/integration, laptops/notebooks/desktops, systems solutions, forms software, records management, presentation systems, digital imaging, software/hardware and the internet.

Housing needed for summer interns

If you are interested in renting a room, house or apartment to participants in the Langley Aerospace Research Summer Scholars and American Society for Engineering Education programs this summer, contact Debbie Young in the Office of Education via e-mail at d.b.young@larc.nasa.gov or by phone at ext. 45215. Include name, phone, e-mail address, and mail stop. You will receive a form to complete. The program will run from approximately June 1 to approximately Aug. 7.

NASA Langley folks named AIAA fellows

The American Institute of Aeronautics and Astronautics (AIAA) has elected three Langley employees to the grade of fellow: Darrell R. Branscome, director of the Space and Atmospheric Science Program Group; Bobby L. Berrier, associate head of the Configuration Aerodynamics Branch; and Bruce J. Holmes, manager of the General Aviation Element, Advanced Subsonic Technology Progam Office.

Branscome is honored for "significant personal contributions to the U.S. civil space program in the development of national and NASA space policy, in the planning of space transportation programs, and in the implementation of science, technology and operational programs."

Berrier is honored for "outstanding leadership and pioneering technical contributions to air-breathing propulsion which have contributed significantly to the nation's preeminence in aviation."

Holmes is honored for "exemplary accomplishments in the establishment and leadership of the Advanced General Transport Experiment Alliance and for outstanding contributions to the revitalization of the general aviation industry.

Presentations of the 1998 fellows will occur at the AIAA's Global Air and Space Conference and Exhibit, May 4-6, in Arlington, Va.

Career seminars offered

Langley's Career Center offers the following training seminars through April:

▲ "Life After NASA: What Will I Do Next?" Feb. 24, 9 a.m.-noon

▲ "Starting Your Own Business: The Right Side of the Law," Feb. 25, 9 a.m.-noon

▲ "So You Want To Be A Consultant," March 5, 8:30 a.m.-noon

▲ "Resume Reality," March 10, 9 a.m.-noon

▲ "Money Matters," March 19, 1-4 p.m.

▲ "The 'Net and Career Development," March 26, 9 a.m.-noon; 1-4 p.m.

▲ "Cover Letters and Thank-You Notes," April 8, 1-4 p.m.

▲ "Interview Basics," April 14, 9 a.m.-noon

▲ "Communicating Effectively with Your Supervisor," April 22, 1-4 p.m.

▲ "Stress Management," April 28, 9 a.m.-noon

These seminars are authorized NASA and Langley training events and are open to all NASA federal civil service personnel and their spouses. Advance registration is required. For more information or to register, call ext. 45000 or fax to ext. 45040.

Applications due for NASA scholarships

Applications are being accepted for NASA college scholarships and are due at NASA Johnson Space Center, Houston, Texas, by March 31.

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.

The NASA College Scholarship Fund awards scholarships to qualified dependents of NASA and former NASA employees, agencywide. Five scholarships will be awarded in the amount of $2,000 each in this 16th year of the program. The renewable scholarship is for a maximum of $8,000 during six calendar years.

Application forms are available in Building 1195B, Room 134. For more information or application forms, call Carlie Johanson, ext. 42554.

In memory of Vernon Saunders

Vernon W. Saunders, 75 died Jan. 29. The Peninsula native and lifelong resident retired in 1980 from NACA and NASA as a flight research supervisor after 34 years of service.

In memory of Richard H. Newman

Richard Harold "Dick" Newman, 71, died Jan. 29. He retired from NASA in 1983 after 35 years of service.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 distrubution 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 to the editor via e-mail (m.l.graves@larc.nasa.gov) (researcher-news@larc.nasa.gov), fax (757) 864-8810, telephone (757) 864-6126 or Mail Stop 146. 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..... Jeane Shanks
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.

Photo by Jeff Caplan

Bob Manfred, Office of Environmental Engineering, heads the pollution prevention effort at Langley's hangar as he funnels jet fuel to be reused.

Environmental Office continues pollution control efforts at Langley

BY BARBARA BODENSTEIN

Langley's Office of Environmental Engineering continues to strive to prevent pollution and to promote recycling in more and more ways, including the recent recycling of jet fuel and the increase in purchases of recycled office products.

Fuel finds new life at hangar

Putting pollution prevention concepts into action, the Flight Operations and Support Division is reusing samples of JP-5 jet fuel at Langley's hangar complex. The fuel used to be disposed of as hazardous waste.

Aircraft at the hangar are fueled from refueling trucks, and the fuel in these truck storage tanks is sampled daily for quality assurance.

The fuel samples cannot be returned to the JP-5 storage tanks for fear of contamination during transfer. But since JP-5 can substitute for diesel fuel, it is now being used to run the engines of the refueling trucks.

Avoiding the expenses of new fuel and waste disposal saves the center about $150 a month.

For more information, contact Dave Steigerwald at ext. 48058 or at d.j.steigerwald@larc.nasa.gov.

Recycled products preferred

The Electronics Technology Branch has been helping the Office of Environmental Engineering to identify reliable office products with recovered content for centerwide use. Many center employees offer additional help with their continued use of environmentally preferred products instead of their nonrecycled counterparts.

In 1996, only 7 percent of Langley's purchases of office products contained recycled content. In 1997, that increased to 46 percent, as the center spent $166,613 on office products – including $76,596 in products with some recycled content. This increase goes a long way toward the recycled content goal of 75 percent of the total paper procured.

The Langley community continues to make every effort to comply with Section 6002 of the Resource Conservation and Recovery Act.

For more information, contact Kristen Poultney at ext. 48759 or at k.j.killough @larc.nasa.gov, or see the Web site at ***http://osemant1.larc.nasa.gov/P2/procurement.***

Three Langley people help to evaluate Presidential Quality Award candidates

Two NASA Langley employees, along with one recent Langley retiree, now are Presidential Quality Award (PQA) examiners. The President's Quality Award Program recognizes federal organizations for operational performance excellence and improvement.

The most recent Langley addition to the team, Susan Voigt, of the Spacecraft and Sensors Branch, became a PQA examiner last year.

Irwin Schauer, of the Internal Operations Group, has been a PQA examiner since 1994, following a year as a Malcolm Baldrige National Quality Award Examiner.

H. Scott Wagner, who retired in December from the Internal Operations Group, has been an examiner since 1995. Voigt, Schauer, and Wagner participated in the 1998 PQA application reviews last October.

Examiners for the PQA Program are selected from among leading business and government leaders and quality experts in the United States. They are all familiar with quality principles reflected in the PQA criteria and based on the Malcolm Baldrige National Quality Award criteria, with modifications tailored to federal government organizations.

Most organizations that write an application don't do it to win the award, but primarily to use the application process as a learning experience and to gain expert advice on continuous improvement opportunities.

The Office of Personnel Management first screens the applications, which are then assigned to an examiner team for review. PQA examiner teams are carefully selected to reflect a diversity of talent, experience, perspective and strengths in different categories, including both industry and government members on a team of four or five.

Each team reads and studies one 60-page application, writes comments specific to each of the 20 items in the criteria, develops a consensus score for the application, and writes a report to the panel of judges. Based on the initial evaluation, about 10 applicants become finalists. The examiner team visits these organizations for several days of investigation and fact-finding to clarify and confirm questions raised by the team during the initial review.

Voigt, Schauer and Wagner have all participated in on-site visits.

"Observing an organization that is practicing quality in the conduct of their business each day was an inspiration," said Voigt. "We attended their monthly business meeting, interviewed several managers at all levels and learned about their employee evaluation methods, innovative incentive awards systems, and methods of aligning all processes for increased organizational efficiency."

Understanding the PQA criteria helps to integrate Langley quality initiatives such as Total Quality Management training, Strategic and Quality Framework (SQF), systems thinking, software process improvement, and planning for ISO registration. The SQF includes PQA self-assessment as one of the outcome metrics for the "Organizational Value" critical success factor.

A panel of judges will review all the reports on the PQA finalists this spring and make recommendations to President Clinton. The Presidential Quality Award winner is usually announced at the annual National Conference on Federal Quality in July in Washington, D.C.

For more information, visit the Web site at ***http://cis-www.larc.nasa.gov.***

Presidential Quality Award Criteria

1998 Categories/Items	Point Values
1. Leadership	**130**
1.1 Leadership System	95
1.2 Organization Responsibility and Citizenship	35
2. Strategic Planning	**80**
2.1 Strategy Development Process	40
2.2 Organization Strategy	40
3. Customer Focus	**80**
3.1 Customer and Market Knowledge	40
3.2 Customer Satisfaction and Relationship Enhancement	40
4. Information and Analysis	**80**
4.1 Selection and Use of Information and Data	25
4.2 Selection and Use of Comparative Information and Data	15
4.3 Analysis and Review of Organization Performance	40
5. Human Resource Development and Management	**120**
5.1 Work Systems	45
5.2 Employee Education, Training and Development	45
5.3 Employee Well-Being and Satisfaction	30
6. Process Management	**110**
6.1 Management of Product and Service Processes	70
6.2 Management of Support Processes	20
6.3 Management of Supplier and Partnering Processes	20
7. Business Results	**400**
7.1 Customer Satisfaction Results	110
7.2 Overall Financial and Performance Results	110
7.3 Human Resource Results	45
7.4 Supplier and Partner Results	25
7.5 Organization-Specific Results	110
TOTAL POINTS	**1,000**

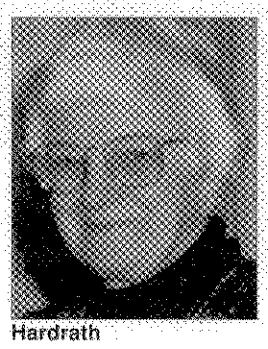
NASA Langley loses longtime volunteer

Gladys Thor Hardrath, 75, died Feb. 8. A Hampton resident for 50 years, she had been a volunteer at NASA Langley for more than nine years.

"Gladys was a friend as well as an invaluable volunteer employee for the Public Inquiry Center (PIC)," said Jeane Shanks, manager. "She brightened up the day for more than seven years, giving more than receiving."

Hardrath had answered requests for information from children and adults throughout the world and had helped to organize the PIC.

"Gladys was such a lovely person who made important contributions to the PIC," said Deborah Douglas, Langley's contract historian. "I still remember with a smile her attempts to learn how to use the word processor during a project she worked on for me."



Hardrath

She cheerfully greeted the public and staffed the front desk while volunteering at the previous Langley Visitors Center for more than two years.

"Gladys was a dear friend and a very conscientious volunteer," said Audrey Coppedge, public education information assistant. "She often said that she loved working in the Public Inquiry Center, and she prided herself on knowing where particular information was located."

Hardrath was the widow of Herbert Hardrath, a former chief of NASA Langley's Materials Division.

NASA Budget Request

BUDGET

(continued from page 1)

in fiscal year 2000 . . . the Space Station's Crew Return Vehicle.

During the next year, we will closely watch the X-38 development and monitor cost projections. That way, we can verify the appropriate funding levels when we begin this new start-up.

Human Exploration Enterprise

It is our belief that the peer reviewed life and micro-gravity science from the International Space Station could have a tremendous impact for life here on Earth.

And it is our hope that the research and experience gained from the space station, the shuttle and the new crew return vehicle will help us study the mission requirements and the technological barriers for extended human exploration beyond Earth orbit.

We can't be afraid. It is our destiny to take that next step. That step might be the moon. It might be Mars. Maybe even beyond.

Space Science

Let me share with you a quick example of the direction the Space Science enterprise is going.

In the 1980s, we launched two – count 'em, two – solar system exploration missions – Magellan and Galileo.

During the 15-month period of October 1997 through January 1999, we will have launched seven spacecraft – an average of one every 10 weeks.

With this budget, we will be able to focus on funda-mental questions regarding the sun-Earth connection and the structure and evolution of the universe.

With this budget, we will be able to build on the success of the Mars Pathfinder and the Mars Global Surveyor with more robotic missions, including – hopefully – the technology for a sample return mission.

And I am pleased to announce that the Europa Orbiter has been selected as NASA's first outer-planet technology mission.

That, too, is in the budget.

We hope this mission will help us learn more about the liquid water ocean that we think Galileo may have detected underneath Europa's thick icy crust. And we hope this mission helps us develop the technology that we might need for an interstellar probe in the not-too-distant future.

Earth Science

We need to better understand the total Earth system and the effects of natural and human-induced changes on the global climate.

You will notice that the Earth Science budget is lower in its five-year projection than last year. There's a good reason for that – a reason we are very proud of. We now have lower cost spacecraft that meet – or exceed – our toughest requirements.

Aeronautics, Space Transportation and Technology

The upcoming budget continues NASA's commitment to the strategic technology goals we announced last year.

This budget also allows us to forge ahead on development of advanced launch vehicles – X-33 and X-34 – that will revitalize the American launch industry. Each has passed critical design reviews, and we have begun building flight hardware.

And last but not least, this budget will let us continue the important work of developing the Next Generation Internet to increase network capacity at least 1,000 times.

This budget will enable us to keep up the important work of opening the air and space frontiers and enriching the lives of all Americans.

Last year was exciting. I'm willing to bet this year will be even better.

Two Langley programs gear up, two wind down, affecting bottom line of FY 1999 budget request

BY LEE RICH
Congressional Affairs Officer

On Feb. 2, President Clinton submitted to Congress the administration's fiscal year 1999 budget request for the federal government.

Despite pre-Christmas fears that NASA may take a major cut, the budget request for the agency reflected a reduction of only 1 percent, going from $13.638 billion in FY '98 to $13.465 billion in the FY '99 request.

For complete NASA budget information and full texts of Goldin's remarks and Code R statement, visit this Web site: *http://www.nasa.gov/budget/budget index.html.*

At a Feb. 2 press briefing, Langley Director Dr. Jeremiah F. Creedon concentrated on the Langley portion of the NASA budget.

Proposed funding for Langley of $563 million, down from $632 million in FY '98, reflects the winding down of two programs, High-Speed Research and Advanced Subsonic Technology. Two new programs scheduled to ramp up in the next few years – Aviation Safety and High-Speed Research IIA, will stablilize the Langley portion of the NASA budget.

Congressional subcommittees charged with oversight of NASA will hold hearings during the next few months to gather information before acting on the authorization and appropriations requests. The end of FY '98 is Sept. 30, by which time the appropriations bills for FY '99 must be passed.

FY 1999 NASA Budget Request Summary (millions of dollars)

	FY 1998	FY 1999
Human Space Flight	**5,679.5**	**5,511.0**
Space Station	*2,501.3*	*2,270.0*
U.S./Russian Cooperative Program	*50.0*	*---*
Space Shuttle	*2,922.8*	*3,059.0*
Payload and Utilization Operations	*205.4*	*182.0*
Science, Aeronautics & Technology	**5,552.0**	**5,457.4**
Space Science	*1,983.8*	*2,058.4*
Life & Microgravity Sciences & Applications	*214.2*	*242.0*
Earth Science	*1,367.3*	*1,372.0*
Earth Observing System (EOS)	704.6	659.1
EOS Data Information System	209.9	256.6
Earth Probes Development	48.6	85.9
Science	294.1	294.9
Operations, Data Retrieval & Storage	70.3	70.5
Global Observations to Benefit the Environment (GLOBE)	5.0	5.0
Launch Services	34.8	---
Aeronautics & Space Transportation Technology	*1,470.9*	*1,305.0*
Aeronautical Research & Technology	907.1	786.0
Research & Technology Base	428.3	418.0
Focused Programs	478.8	368.0
High-Performance Computing and Communications	45.7	20.6
High-Speed Research	232.0	190.0
Advanced Subsonic Technology	201.1	157.4
Advanced Space Transportation	417.1	388.6
Reusable Launch Vehicle	381.0	340.3
Future Launch Studies	10.0	20.0
Advanced Space Transportation Technology	26.1	28.3
Commercial Technology Program	146.7	130.4
Commercial Technology Programs	25.2	23.2
Technology Transfer Agents	20.0	7.2
Small Business Innovative Research Programs	101.5	100.0
Mission Communication Services	*395.8*	*380.0*
Academic Programs	*120.0*	*100.0*
Mission Support	**2,388.2**	**2,476.6**
Safety, Mission Assurance, Engineering and Advanced Concepts	*37.8*	*35.6*
Space Communication Services	*194.2*	*177.0*
Research & Program Management	*2,033.8*	*2,099.0*
Construction of Facilities	*122.4*	*165.0*
Inspector General	**18.3**	**20.0**
Total Budget Authority	**13,638.0**	**13,465.0**

Code R budget statement outlines agency's future direction

Editor's Note: Following are excerpts from the Aeronautics and Space Transportation Technology Enterprise (Code R) budget statement accompanying the NASA FY 1999 budget request.

The Aeronautics and Space Transportation Technology enterprise's responsibility is to provide revolutionary advancements in science and technology that sustain global U.S. leadership in civil aeronautics and space.

To meet this challenge, the enterprise, in conjunction with industry and the Federal Aviation Administration (FAA), established the Three Pillars for Success: Global Civil Aviation, Revolutionary Technology Leaps, Access to Space. Within these three pillars, a set of ten enabling technology goals have been defined that address current and future national needs.

The total Fiscal Year 1999 Budget Request for the Aeronautics and Space Transportation Technology Enterprise is $1,305 million. Highlights of the budget request include:

1. Aeronautics Research and Technology – $786 million

High-Speed Research – $190 million

NASA's High-Speed Research Program is working on advanced technologies to address the high-risk, environmental and economic "barrier issues" that currently prevent any manufacturer from making a financial commitment to this potential market.

The FY 1999 budget request of $190 million will enable the program to build upon successful completion of 1998 milestones, including the completion of Tu-144 flight tests, which provided data to be compared to HSCT design tools; evaluation of future HSCT flight deck concepts; design, fabrication and testing of a 60 percent-scale engine nozzle model that will provide static performance and acoustic data; and an engine combustor design selection.

Major plans for FY 1999 will include the completion of the second of three major milestones – the Technology Configuration, a technology baseline airplane configuration resulting from the HSR technology validation development and down-selection processes. Wind tunnel and computational fluid dynamics evaluations will be completed on the selected high-lift system for the Technology Configuration.

High-Speed Research Phase IIA will focus on answering the remaining technology questions on whether U.S. industry will be able to build a viable, economical and environmentally sound High-Speed Civil Transport.

Due to the successful results in the existing HSR program, an extension is proposed called Phase IIA. HSR Phase IIA will focus on answering the remaining technology questions on whether U.S. industry will be able to build a viable, economical and environmentally sound HSCT.

Beginning in FY 1999, this research will further mitigate risk in two critical areas – propulsion and airframe materials/structures. HSR Phase IIA will deliver well-defined products, including propulsion component rig tests, fabrication and ground tests of a full-scale engine and exhaust nozzle, and fabrication and durability tests of major fuselage and wingbox subassemblies using pre-production materials and structures processes.

Advanced Subsonic Technology – $157.4 million

The AST program was planned and designed to develop, in partnership with the FAA and the U.S. aeronautics industry, high-payoff technologies to enable a safe, highly productive global air transportation system that includes a new generation of environmentally compatible, operationally efficient U.S. subsonic aircraft.

In FY 1999, the AST environmental element will emphasize methodology to optimize take-off and landing flight tracks that will reduce community noise impact. Sector rig testing of low-emission combustor concepts will meet the 50 percent NOx reduction goal for large engines. The third field test, focusing on atmospheric observations, will be conducted to further refine the global climate models.

"The Advanced Subsonic Technology program was planned and designed to develop ... high-payoff technologies to enable a safe, highly productive global air transportation system....."

In the capacity area, a flight test will be conducted to demonstrate the Center-Terminal Radar Approach Control Automation System (CTAS) on the ground and advanced flight management system (FMS) in the flight vehicles, using data-link capabilities to facilitate information exchange between CTAS and FMS.

Assembly of the semispan composite wing will be completed, and a test readiness review will be conducted. A design method for integrating the aerodynamic design of the wing with the propulsion system will be validated and provided to industry.

High-Performance Computing and Communications – $20.6 million

NASA's High-Performance Computing and Communications (HPCC) program is part of the multiagency effort to boost supercomputer speeds one thousand-fold to at least one trillion arithmetic operations per second – one teraflop – and communications capabilities one hundred-fold. In addition to this amount, HPCC effort is funded by the Space Science, Earth Science and Education programs. The total agency funding for HPCC in FY 1999 is $47.5 million.

Research and Technology Base – $418 million

NASA's Aeronautics Research and Technology R&T Base aims to serve as the vital foundation of expertise and facilities that consistently meets a wide range of aeronautical technology challenges for the nation.

In particular, the initial $500 million commitment over five years of the Aeronautics and Space Transportation Technology Enterprise to achieve the goals of the administration's Aviation Safety Initiative is initially supported from reinvestments made within the R&T Base.

In FY 1999, the R&T Base element will continue its advancement of integrated design techniques, including wind tunnel flow quality and testing productivity enhancements, more accurate model positioning and balance calibration systems, on-line, real-time test data and more versatile user interfaces.

In the Airframe Systems element, NASA researchers will develop technology in safety with complete simulations of optimized crew workload displays. This will be used to help reduce accidents caused by errors in the flight deck. The technologies will contribute to an additional reduction in the aircraft accident rate.

The Propulsion Systems element will concentrate on demonstration of two advanced engine technologies: (1) advanced material and process systems capable of inlet temperatures above 2,400 degrees F, and (2) a 900-degree F silicon carbide sensor.

2. Advanced Space Transportation – $368.6 million

The second major program area of the Aeronautics and Space Transportation Technology Enterprise is the Advanced Space Transportation program. In accordance with National Space Policy, NASA is taking the lead in developing the technology for the next-generation reusable space transportation systems.

The FY 1999 Reusable Launch Vehicle (RLV) Program will include both ground-based technology development and a series of flight demonstrators – the X-34 small reusable demonstrator, the X-33 large-scale Advanced Technology Demonstrator, and the Bantam demonstrators for small payload-class launch systems.

Funds are requested to initiate "Future X" experimental vehicles to continue flight demonstration of technologies which can further reduce the cost and increase the reliability of reusable space launch and orbital transportation systems. These Pathfinder class experiments would demonstrate cutting-edge technologies with high payoff potential and would cost between $1 million and $100 million.

3. Future Space Launch Studies – $20 million

In FY 1998, initial studies on the Liquid Flyback Booster and the applicability of the X-38 program to a Crew Transfer Vehicle will be complete. These studies, in conjunction with ongoing RLV technology and business plan development, will form the basis for industry-led trade studies in FY 1999 and FY 2000 on a future NASA space transportation architecture.

The results of these studies will inform NASA and the administration's end-of-the-decade decision on the pursuit of an operational launch system to reduce NASA's launch costs, as called for in the National Space Transportation Policy. A terms-of-reference document approved by the administration will provide the basis for conducting these industry-led studies.

The initial $500 million commitment ... to achieve the goals of the administration's Aviation Safety Initiative is initially supported from reinvestments made within the R&T Base.

4. Commercial Technology Program – $130.4 million

The third major program area of the Aeronautics and Space Transportation Technology Enterprise is the commercial technology program. Since its inception in 1958, NASA has been charged with ensuring that NASA-developed technology is transferred to the U.S. industrial community to improve the competitive position of the U.S. in the world community.

The technology commercialization program consists of conducting a continuous inventory of newly developed NASA technologies, maintaining a searchable database of this inventory, assessing the commercial value of each technology, establishing R&D partnerships with industry for dual use of the technology, disseminating knowledge of these NASA technology opportunities to the private sector, and supporting an efficient system for licensing NASA technologies to private companies.

The amount requested for NASA commercialization efforts includes $101.5 million to carry out the provisions of the Small Business Innovation Research (SBIR) Act, which requires a set-aside of 2.5 percent of NASA's total extramural R&D spending for small business research grants. In addition, 0.15 percent of the same extramural R&D amount is set aside for the Small Business Technology Transfer program.

The NASA SBIR/STTR program has contributed to the U.S. economy by fostering the establishment and growth of more than 1,100 small, high-technology businesses.

AdVentures

TAX TIME: Income tax preparation by a member of the National Association of Tax Practitioners. Get your refund fast with electronic filing and direct deposit at no extra charge. We travel to you. See our internet site at ***http://home.switchboard.com/telatax***. Call 874-3121 for an appointment.

TAX TIMES 2: For income tax preparation, call Nancy Taylor at 723-5227.

TAX TIMES 3: Qualified accountant with years of experience to prepare 1997 personal tax returns; reasonable rates. Call 596-0959 or pager number 419-9822.

TAX TIMES 4: Accurate, computerized income tax returns prepared by an experienced, degreed accountant and federally certified tax preparer. Ask about referral discount. Call Wanda at 838-6546.

NEED A SITTER? Child care in my home. Monday-Friday, 6 a.m.-6 p.m., meals and snacks provided, nonsmoking home in the Spring Trace area just off Harpersville Rd., Newport News. Call 595-6456 after 5 p.m.

FOR SALE: Cerwin Vega speakers, model D-9, 4-way (15"/6"/6"/2"), 5-350W, 4 ohm, with fuse protection and variable tone control. 18" wide/18" deep/36" high. 85 pounds each. Originally $650 a pair, will sell for $300 a pair. Call 896-0008, 6-10 p.m.

FOR SALE: Beautifully renovated rancher home in Hampton's historic Wythe section. 2 BR, 1 bath, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, privacy fence, large detached garage/workshop, one block from the Chesapeake Bay in neighborhood with lots of trees. $69,900. Call 247-5144.

FOR SALE: Brick rancher in quiet convenient location in Isle of Wight County. 3 BR, 2.5 baths, sunroom, bonus room, raised fireplace with insert and blower, large, eat-in kitchen, 1,976 sq. ft., many new features, 7/8-acre lot, beautifully landscaped, above-ground pool and deck. $129,000. Call 255-0509.

FOR SALE: 3-BR rancher in Hilton area of Newport News, 1-1/2 baths, wall-to-wall carpet, central air/heat, energy efficient, attached garage with automatic door opener, eat-in kitchen, new carpet and padding in all bedrooms, new roof, interior freshly painted, large fenced back yard, near elementary school, good location, on cul-de-sac, 20 minutes to NASA/Langley Air Force Base. $77,500. Call 838-0726.

FOR SALE: 1991 Nissan 240 SX, great condition, $7,200. Call 851-1402 before 9 p.m.

SYSTEMS ENGINEERING: The Hampton Roads Emerging Chapter of the International Council On Systems Engineering (INCOSE) will host a local chapter meeting Feb. 24, 5:30-7 p.m., in the H.J.E. Reid Conference Center. The program speaker, Dr. William T. Scherer from the University of Virginia, will give a 30-minute talk entitled "Introduction to and Issues in Systems Engineering." Attendance is open to anyone interested in systems engineering. For more information, visit the INCOSE Web site at ***http://www.seva.net/~incose/***, or send e-mail to m.g.sexstone@larc.nasa.gov or to a.e.motley@larc.nasa.gov.

SIDE OUT: NASA Langley's Volleyball Club is forming leagues for all levels of play and will offer clinics, taught by skilled players and coaches, March 13, 16 and 20. Learn how to play, or learn how to play better. League play runs March 17-May 29, Tuesdays, Wednesdays and Thursdays. Rosters are due March 6. All NASA civil service personnel, contractors, military personnel and family members are invited to play. For more information, contact Robert Singleterry at ext. 41437, or at r.c.singleterry@larc.nasa.gov.

MISSION TO MIR: The Virginia Air & Space Center in Hampton presents the new IMAX film, *Mission to Mir*, through April 1. The film explores life on the Russian space station Mir and features NASA astronaut Shannon Lucid. For more information and showtimes, call 727-0900.

VASC DISCOUNTS: The Virginia Air & Space Center is offering a 10 percent discount on all levels of membership to NASA employees, contractors and retirees, now through June. Membership includes an allotment of free IMAX movie tickets and discounts in the Museum Store and on science camps, birthday parties, programs, Busch Gardens season passes and more. For more information, or to order by phone, call Sharon Gates at 727-0900, ext. 718.

Beam me up:

Fortieth Anniversary
Pioneering the Future

Star Trek's "Scotty," James Doohan, will beam into the Virginia Air & Space Center, Feb. 28, 10 a.m.-5 p.m., to sign autographs and to share his experiences aboard TV's Starship Enterprise during the perpetual hit space-adventure series. Doohan appears in conjunction with NASA's 40th anniversary celebration and the VASC's new traveling exhibit, *Destination: Space!* Developed by Ohio's Center of Science and Industry, the exhibit features original works of space-exploration art by renowned artist Robert McCall, whose paintings were part of the commemoration of NASA Langley's 75th anniversary in 1992. For more information, call 727-0900.

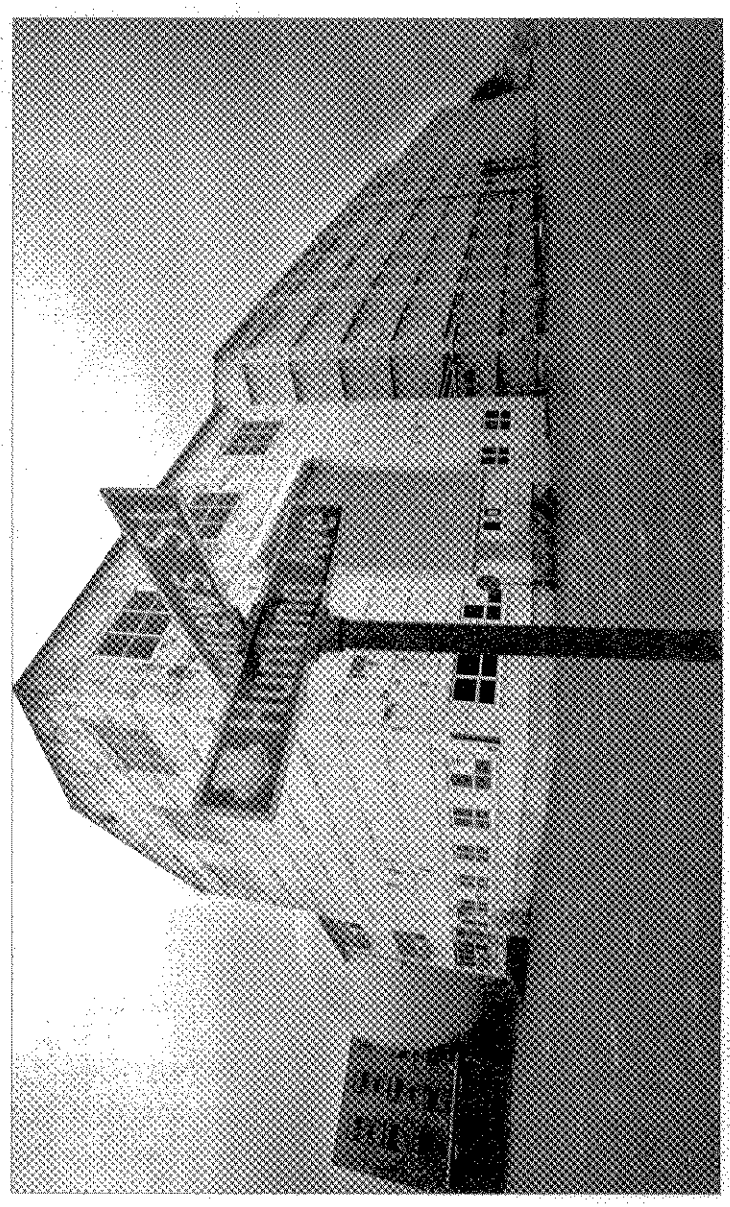


Photo by Jeff Caplan

LAKE LANGLEY – NASA Langley was hit by flood waters from a nor'easter storm that impacted much of the Hampton Roads area early this month. By 3:45 p.m., Feb. 4, when this picture was taken, high tide had crested at four feet above normal levels at Langley. By the following morning, it ran a foot still higher, according to Harold Beazley, NASA safety engineer. Employees of Langley's East End were reassigned to higher ground for much of the three days of the storm. Only minor damage occurred while the tide was in. Still, Beazley said, "it hasn't been this bad since the Ash Wdnesday storm of 1962, yet this was not even what we can expect out of a category-one hurricane, which would be much worse."

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News
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Fiftieth Anniversary
Pioneering the Future
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 4 ❖ March 6, 1998

Rotating probe to help improve aircraft safety

Langley researchers author article for Aerospace America

BY BUZZ WINCHESKI AND MIN NAMKUNG

Editor's Note: *Following are excerpts from "Developing New Nondestructive Inspection Tools for Aging Aircraft," an article by Russell A. "Buzz" Wincheski and Min Namkung of Langley's Nondestructive Evaluation Sciences Branch. The article appears in the March issue of* Aerospace America *magazine.*

Photos by Jeff Caplan

Buzz Wincheski demonstrates how NASA uses the rotating probe system to inspect rivets on aircraft wings. Here, he works on the wing of NASA's 737, which was recently retired to Seattle, Wash.

Commercial airflight has become increasingly commonplace during the last decade, and all indications are that this trend will continue. The increases in both air traffic and the aging of commercial aircraft suggest that technological breakthroughs will be needed if safety is to continue increasing.

In an effort to meet these needs, NASA has initiated the Airframe Structural Integrity Program, an aggressive attempt to develop cost-effective and more reliable technologies for assuring the safety of air travel. As a direct consequence of this program, the agency has developed a new nondestructive inspection (NDI) tool for rapidly and reliably detecting fatigue damage in aircraft structures before there is any significant compromise to the structural integrity or safety of the vehicle.

This instrument, the rotating self-nulling probe, is based on the self-nulling eddy current effect, discovered in November 1992. That discovery quickly led to the development of a commercial instrument for detection of fatigue cracks and, with continued testing and development, to the rotating self-nulling probe system.

Origin of fatigue damage

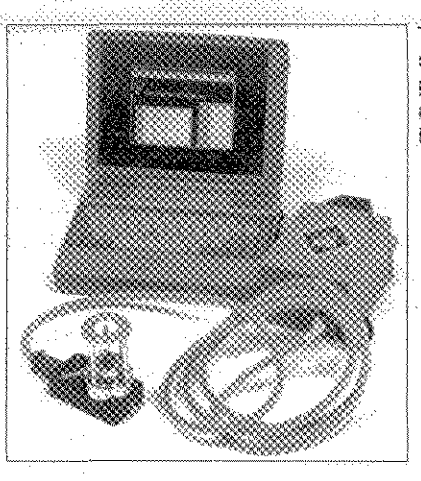
Each flight of a jet aircraft entails a pressurization of the cabin. This creates a pressure differential between the cabin and the outside atmosphere, which causes the fuselage to expand. As the plane lands, the cabin pressure equalizes with that outside the aircraft, and the cabin contracts back to its original shape.

This expansion and contraction of the aluminum body is known as a fatigue cycle. Each flight of the plane is therefore associated with a fatigue cycle, and over time, these fatigue cycles will lead to fatigue crack initiation and growth. The fatigue damage is concentrated at the high stress points on the fuselage – the rivet joints.

How the probe operates

The principle of operation of the probe can be summarized as follows:

An alternating current supplied to the outer windings creates an electromagnetic field. The high-permeability ferrous lens upon which the drive coil is wound concentrates this field into a cylinder at the surface of the lens, inducing a highly localized, circular-shaped eddy current density distribution in the surface region of the test object. Since the eddy current induction is a way that an electromagnetic system resists any externally imposed changes, the mere presence of a conducting object near the probe reduces the signal detected by a pickup coil placed in the center of the probe.



The rotating self-nulling probe system is a user-friendly inspection tool.

However, it takes the ferrous lens that creates a highly localized concentrated eddy current, and magnetically decouples the pickup coil from the winding to

(see PROBE, page 4)

'Live shots'

Cold winds breathe life into TV spots on runway friction

BY KIMBERLY W. LAND

If you were watching TV in Cleveland, Denver, St. Louis or one of six other big cities last month, you might have seen Langley's Tom Yager pitching his program.

Yager and other Langley researchers challenged Canada's bitter chills as part of a five-year study geared toward improving runway safety. While there, nine TV stations conducted "live shot" interviews with Yager, senior research engineer for the Winter Runway Friction Measurement Program.

Via satellite from North Bay, Ontario, large market stations across the nation asked Yager questions about the improvement of tire designs, better chemical treatments for snow and ice, and new types of runway surfaces that minimize bad weather effects.

Langley's "live shot" program, begun last August, not only increases total viewership but also greatly extends coverage of NASA Langley's programs beyond the local area. According to a 1996 Harris Poll for the Center for Media and Public Affairs, 34 percent of Americans get their news from their local TV stations, 17 percent from the national TV news stations and 10 percent from CNN (Cable News Network).

Photo by Peggy Hopkins

Langley's Tom Yager braves the Canadian cold as he prepares to face the TV camera for a "live shot" interview on runway friction.

News Briefs

Around the Agency

NASA HELPS FIGHT HEART DISEASE – Astronauts who spend extended periods in space often experience weakening of their hearts and blood vessels. As doctors and researchers work to understand why this happens, many of their findings can be applied to heart disease. NASA recently highlighted how its research and technology has led to breakthroughs in the understanding, diagnosis and treatment of heart disease – the number one killer of American men and women. Information about current and future technologies is available on the Internet at ***http://www.nasa.gov/newsinfo/heart.html***

VOYAGER 1 TRAVELS FARTHEST – (Jet Propulsion Laboratory, Pasadena, Calif.) In a dark, cold, vacant neighborhood near the very edge of our solar system, the Voyager 1 spacecraft became the explorer that traveled farthest from home. On Feb. 17, Voyager 1, launched more than two decades ago, cruised beyond the Pioneer 10 spacecraft and become the most distant human-created object in space, at 6.5 billion miles from Earth. The two are headed in almost opposite directions away from the sun.

NASA RADAR REVEALS ANCIENT REMAINS – (Jet Propulsion Laboratory, Pasadena, Calif.) New evidence of a prehistoric civilization and remnants of ancient temples in Angkor, Cambodia, have been discovered by researchers using highly detailed maps produced with data from an airborne imaging radar instrument created by NASA. Experts say the findings, made possible by the Airborne Synthetic Aperture Radar (AIRSAR) developed by NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., may revolutionize the way archaeologists view the ancient city's development. AIRSAR images of the Angkor region will be available on the Internet at ***http://www.jpl.nasa.gov/news/***

For more information on the above news items, check the Internet for NASA's News and Information Web page at ***http://www.nasa.gov/releases/1998.***

Multicultural Facts

▲ "When you are surrounded by sameness, you get only variations on the same." – Kevin Sullivan, past vice president of human resources, Apple Computers

▲ If you have difficulty developing mentor relationships, which is a very common dilemma for professionals of color, seek out and create strategic allies instead. This is best accomplished by seeking opportunities to work on task forces, committees, or projects where others will have an opportunity to see your skills and commitment level. – The Multicultural Advantage

▲ Make Langley a better multicultural workplace. E-mail suggestions to MCLT+IDEAS@LaRC.NASA.GOV, or visit the MCLT homepage at ***http://mclt.larc.nasa.gov/homepage_mclt.html***

Former aeronautics administrator says thanks, goodbye to Langley

"Thank you, Langley Research Center, for the wonderful gifts at my retirement. I am flattered to be a recipient of the Langley marble bookends. They will be another enduring reminder of my pleasant times as a member of the NASA aeronautics team. I hope that I have remembered to thank all of the individual program offices for the terrific mementos you sent. If not, thank you all.

"Most of all, though, I wish to thank all of you for your support, commitment and excellence in planning and implementing NASA's programs at Langley, both for the Aeronautics and Space Transportation Technology Enterprise and the other enterprises' programs. Your dedication to our programs during times of great challenges and distractions has maintained the excellence that the nation expects from NASA. I am proud to have been a small part of the effort for a short time.

"You gave me a chance to be on the team, and I appreciate that very much. My job of fighting for enterprise programs was greatly enhanced by the excellence in program implementation that we could offer, largely because of your efforts. Many challenges remain, but I am confident about NASA's and Langley's future with your continued dedication and commitment.

"Thanks again for a great ride."

– Bob Whitehead

Editor's Note: *Dr. Robert E. Whitehead, former associate administrator for NASA's Office of Aeronautics and Space Transportation Technology (1995-97), retired at the end of last year after 26 years of federal service.*

During his tenure in that office, he oversaw the expansion of the enterprise to include advanced space transportation technology. He was responsible for the facilities and personnel at NASA Langley, Ames Research Center and Dryden Flight Research Center, both in California, and Lewis Research Center, Ohio.

Announcements

NAE honors Bushnell

The National Academy of Engineering (NAE) has elected Dennis M. Bushnell, NASA Langley senior scientist, among its newest group of members, including 84 engineers and seven foreign associates. The academy's U.S. membership now totals 1,941, with 155 foreign associates.

Election to the NAE is among the highest professional distinctions accorded an engineer. Academy membership honors those who have made "important contributions to engineering theory and practice, including significant contributions to the literature of engineering theory and practice," and those who have demonstrated "unusual accomplishment in the pioneering of new and developing field technology."

NASA Administrator Daniel S. Goldin is also among the newest members.

Skywatchers to meet

The Skywatchers Astronomy Club will host a free evening of telescopic viewing of the heavens, March 7, 7:30 p.m.-midnight, at the club's observatory, Building 1231A, 10A Lindbergh Way. A variety of telescopes will be set up for this event, and no reservations are required. Everyone older than age 16 must show a photo identification at the main NASA gate. For more information, call Marilyn Ogburn at ext. 41175.

Author to speak at alumni luncheon

NASA Langley retiree and author Earl Hastings will speak at the Alumni Association luncheon on March 10, 11:30 a.m., in the private dining room of the NASA cafeteria. Hastings will discuss his book, *A Pitiless Rain*, which is about the Civil War battle in Williamsburg. Hastings will be available to sign copies of the book, which will be for sale after the program.

Bee club to meet

The NASA Langley Apiculture Club (Honeybunch) will hold its monthly meeting on March 16, 7-9 p.m., at the Regency Health Care Center, 112 North Constitution Drive, Yorktown. The principle topic will be spring management, and an open forum will be conducted.

This meeting is free and open to the public. For more information, call Henk at 566-3911 or Glaspell at 864-5194.

Technology Day set

NASA civil service employees are invited to attend the Lockheed Martin Technology Day, March 24, 8:30 a.m.-3:30 p.m., at the H.J.E. Reid Conference Center. The exposition is to provide NASA management, researchers and engineers insight into Lockheed Martin technology activities related to Langley programs.

Exhibits of Lockheed Martin technologies will be held throughout the day, and technical representatives will be available for discussions. Some of the exhibits are proprietary; therefore, NASA badges are required for admission.

Retirement social set

A retirement social for Allan and Diane Wieting will be held March 27, 5-8 p.m., in the H.J.E. Reid Conference Center. Hors d'oeuvres and refreshments will be served. Cost is $12 per person, including gift contribution. For reservations, contact Laura Eure at Mail Stop 117, ext. 42836, or Donna Forbes at Mail Stop 285, ext. 43520, no later than March 20.

Applications due for NASA scholarships

Applications are being accepted for NASA college scholarships and are due at NASA Johnson Space Center, Houston, Texas, by March 31.

Applicants must be pursuing a course of study in the science or engineering fields that will lead to a recognized undergraduate degree at an accredited college or university in the United States.

The NASA College Scholarship Fund awards scholarships to qualified dependents of NASA and former NASA employees, agencywide. Five scholarships will be awarded in the amount of $2,000 each in this 16th year of the program. The renewable scholarship is for a maximum of $8,000 during six calendar years.

Application forms are available in Building 1195B, Room 134. For more information or application forms, call Carlie Johanson, ext. 42554.

AIAA seeks nominees

The American Institute of Aeronautics and Astronautics (AIAA), Hampton Roads Section, announces the call for nominations for fellows and associate fellows.

Associate fellows have accomplished or have overseen important engineering or scientific work, have done original outstanding work, or have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics.

Nominees must be senior AIAA members with at least 12 years of professional experience. Three AIAA member references from associate fellows, fellows or honorary fellows are required. Nomination forms are due by April 15; references, by May 15.

Fellows are distinguished in aeronautics or astronautics and have made notable, valuable contributions to the arts, sciences or technology of those fields. Nominees must be associate fellows; five references are required. Nomination forms are due by June 15; references, by July 15.

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

(see ANNOUNCEMENTS, page 3)

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 distrubution 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 to the editor via e-mail (m.l.graves@larc.nasa.gov) (researcher-news @larc.nasa.gov), fax (757) 864-8810, telephone (757) 864-6126 or Mail Stop 146. 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. . . . . Jeane Shanks
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.

COMMUNITY CORNER

BY SANDRA LEMONS

Join the Human Race

The second annual Human Race will be held April 4, 1-4 p.m., at Newport News Park. The race is a unique, multi-faceted 5K event – walk, run, jog, rollerblade – for individuals, teams and families. It is open to all charitable organizations – most of which do not have the resources to organize a special event of this magnitude.

Background

Many nonprofit programs on the Peninsula are finding it harder and harder to make ends meet. At the same time, demand for their important services is increasing. The Human Race is an annual fundraising event coordinated by the Volunteer Center for the benefit of Peninsula charitable organizations.

Here's how you can help

The NASA Langley Fitness Center is partnering with the Office of Public Services to sponsor a team. To become a part of the NASA Human Race team, call fitness instructors Peggie Williamson or Donna Burton at ext. 46387 or Sandy Lemons, Office of Public Services, at ext. 43957. Team members collect pledges to support their participation. The team then chooses a charity to be its beneficiary.

Or, if you regularly support a favorite charity, you may form your own team to benefit that charity. For more information on forming a team, call Elyse Brown at the Volunteer Center, 873-9328, ext. 33.

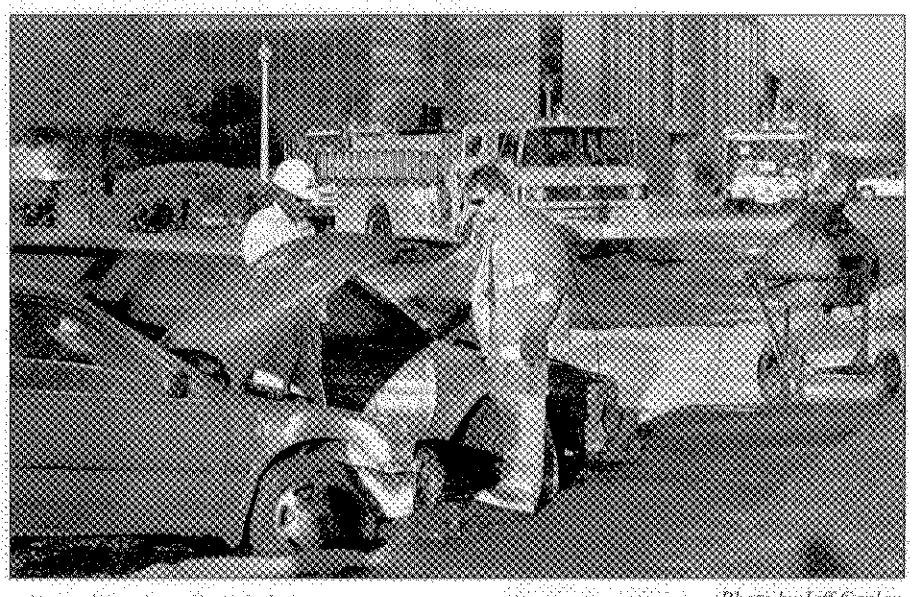


Photo by Jeff Caplan

FEBRUARY FIREWORKS – Mike Birdsong of the Hampton Fire Department looks into the engine of one of two cars burned in a fire on West Durand Street on Feb. 13. The fire started when hot tar ignited, causing three propane tanks to explode and the two cars to catch on fire. The tar was being used on the roof of Building 1293A. No injuries were reported, and no damage to NASA property occurred. Fire departments from NASA Langley, Langley Air Force Base and Hampton responded to the blaze.

ANNOUNCEMENTS

(continued from page 2)

Nominations open for Software of Year Award

NASA is accepting nominations for its 1998 Software of the Year Award, which recognizes software developed and owned by NASA.

A monetary award of up to $100,000 goes to authors of software in which NASA has an intellectual property interest; which has been supported, adopted, sponsored or used by NASA; and which is significant to the NASA mission. Software programs must be commercial-grade products.

The NASA Software Advisory Council, comprised of software development experts from all NASA centers and the Jet Propulsion Laboratory, Pasadena, Calif., will judge the entries.

Entries and supporting materials are due by April 17.

To enter, fill out a NASA Form 1329 for each software entry. Include copies of the product, sample applications and data, and descriptive documentation of the package, in addition to evidence demonstrating the impact, degree of innovation and suitability of the entry.

For more information, call 202-358-2468.

AIAA conference set

The American Institute of Aeronautics and Astronautics will hold its eighth annual International Space Planes and Hypersonic Systems and Technologies Conference, April 27-30, at the Waterside Marriott Hotel, Norfolk.

Advanced registration by March 30 is encouraged and saves conference participants $50. A check made payable to AIAA or credit card information must be included with the registration form. Pre-registrants may pick up their materials at the advance registration desk. After March 30, participants may register at the onsite registration desk.

For registration forms, fees and more information, see the Web site at ***http://www.aiaa.org/calendar/hyper98prog.html***, or contact Customer Service, AIAA, 1801 Alexander Bell Drive, Suite 500, Reston, Va., 20191, 703-264-7500 or 800-639-2422, or send an e-mail to custserv@aiaa.org.

Buyout employees need to account for property

All NASA Langley property users and custodians who are considering taking the buyout should remember that they will be accountable for all equipment assigned to them.

Those who have already decided to take the buyout need to start transferring equipment responsibilities to another person. This will ensure an orderly transfer of property and will reduce the need to submit survey reports for missing equipment.

For more information, contact Nellie Freeman, ext. 42056, n.e.freeman@larc.nasa.gov.

Employees offer thanks

"Thanks so much to everyone who donated leave to me during the time I was on bedrest and after the birth of my son. Thanks especially to my coworkers in the Office of Human Resources for their support. Baby Michael says thank you, too."

– Mary Ann Steuck

"I want to thank all of my colleagues and friends for my outstanding retirement celebration on Feb. 9. Your planning and efforts made the party a thoroughly enjoyable experience for me and my family.

"The presentations were both meaningful and humorous. They constituted a fine balance of the humorous high and low points in my career. I thoroughly enjoyed revisiting those accounts from days gone by.

"All of your presents are keenly appropriate, and I sincerely appreciate receiving them. I will use the gift certificate to purchase some much-needed tools. Rest assured that, the next time I need an inverse, left-handed screwdriver, I'll have one.

"I also want to thank my friends from the Combined Federal Campaign (CFC) for the decorative and delicious cake. The time I worked as a loaned executive to the CFC is very special to me.

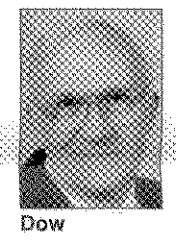
"In closing, I want to thank all of my colleagues for the opportunities, encouragement and support you have given me during my 39-1/2 years at NACA/NASA Langley. No one could have had a more satisfying career then I've had. I sincerely appreciate your contributions to that career."

– C. Michael Hudson

In memory of Marvin B. Dow

Marvin B. Dow, 67, died Feb. 11. He retired in 1996 after 40 years as a research engineer at NACA/NASA Langley. He was a composite manufacturing pioneeer and key leader in the NASA Aircraft Energy Efficiency Program. He had served the center as a distinguished research associate since his retirement.

Dow, a University of Virginia graduate, was the first NASA employee to have a corporate building named after him – the Marvin B. Dow Stitched Composites Development Center at the Boeing facility in Huntington Beach, Calif. He had spent the last 25 years of his career in pursuit of the application of advanced composite materials on commercial transport aircraft. The building was officially dedicated at a ceremony last August.



Dow

In memory of Ben A. Goddin

Ben A. Goddin, 79, of Yorktown, died Feb. 17. He retired in 1975 from NASA Langley after 35 years of service in the Operations Support Division as a supervisory engineering technician.

Scouting for NASA

Photo by Doris Jones

Longtime Boy Scout leaders Robert Wallis, left, of Langley's Engineering Support and Facility Projects Branch, and Greg Jones, of the Flow Modeling and Control Branch, taught 34 boy scouts in four classes for the Scouts' Space Exploration Merit badge at the Chesapeake Bay District Mall Show, held at Patrick Henry Mall in Newport News last month. Wallis is a scout leader with Poquoson Troop 28; Jones is with Denbigh Troop 6. The Chesapeake Bay District is part of the Colonial Virginia Council of the Boy Scouts of America. As part of the merit badge requirements, the boys learned about careers in science, engineering, space and aeronautics. And since the classes were held in the mall, hundreds of people stopped by to look at the models of the space shuttle and X-33.

Aerospike engines tested at Dryden

SR-71 experiment deemed successful

BY KIRSTEN WILLIAMS
NASA Dryden Flight Research Center

The NASA/Rocketdyne/Lockheed Martin Linear Aerospike Experiment (LASRE) had its first flight aboard the SR-71 at the end of October. The aircraft flew for one hour and 50 minutes, reaching a maximum speed of Mach 1.2 and a maximum altitude of 33,000 feet before landing at Edwards Air Force Base, Calif., successfully validating the SR-71/linear aerospike configuration.

A second flight, similar to the first, occurred Dec. 19. During the two-hour mission, an envelope expansion flight, the aircraft achieved a maximum altitude of approximately 50,000 feet and a top speed of Mach 1.6.

The goal of the first two flights, called "aero" flights, was to evaluate the SR-71-pod configuration. These were aerodynamic data-collection flights, and the rocket engine was not ignited. The flights are being used to gather valuable information about the stability and control, performance, aerodynamic characteristics and structural integrity of the aircraft-pod configuration as the SR-71 approaches and passes Mach 1.

Earlier last year, LASRE completed a series of ground tests at the Air Force Research Laboratory Propulsion Directorate's facilities (formerly Phillips Laboratory, Calif.) to validate the model's rocket-fuel plumbing and ignition system. The experiment underwent a successful cold flow test at NASA Dryden Flight Research Center on Sept. 24, the first one since the pod returned from the Propulsion Directorate facility.

LASRE program

The LASRE experiment is designed to gather data on the exhaust plume of a linear aerospike rocket engine as it travels through the transonic region of flight – from just below to just above Mach 1.

Linear aerospike rocket engines have been laboratory- and ground-tested many times during the past 30 years, but have never flown. These engines will power NASA's X-33 Advanced Technology Demonstrator, scheduled to fly next year. LASRE is a part of the X-33 Advanced Technology Demonstrator program.

A "typical" LASRE data-collection flight consists of the SR-71 taking off to rendezvous with a tanker aircraft for aerial refueling. Then, the SR-71, with the piggyback LASRE pod, will climb to an altitude between 20,000 and 80,000 feet. The linear aerospike will then be fired for the collection of in-flight data on the performance of the engine. The LASRE pod carries enough fuel for one aerospike rocket engine firing per flight, which lasts two-to-three seconds.

The flight-research missions will measure the rocket engine's performance, from subsonic speeds up to Mach 3, or approximately 2,200 miles per hour. Among the important flight test points scheduled will be the data gathered as the SR-71 passes through the so-called transonic region, from roughly Mach 0.8 to Mach 1.2, about 750 miles per hour.

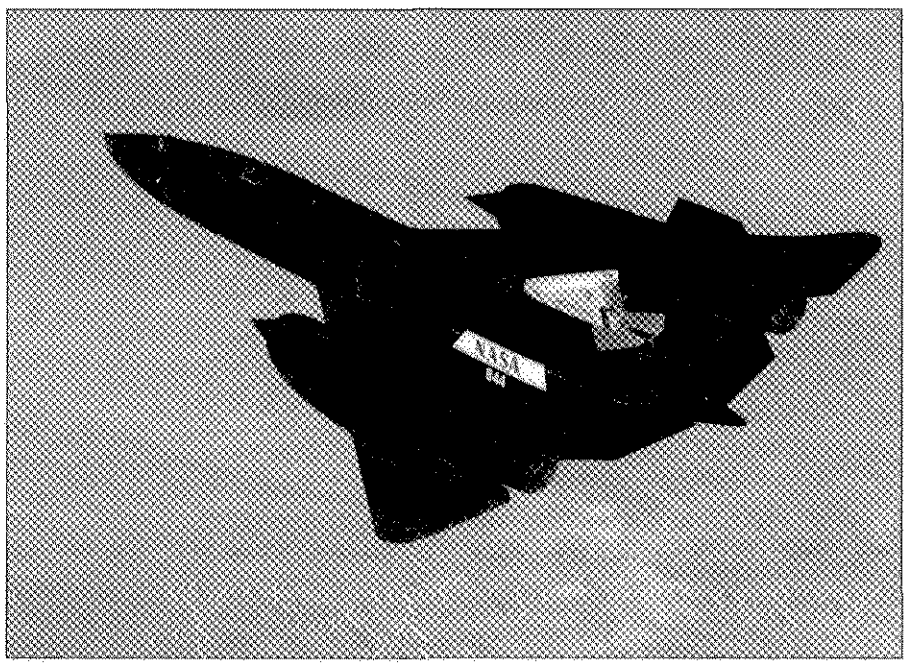
The flight-research missions will be used to gather accurate data on the interaction of the X-33 model's airflow with that of the linear aerospike engine and its exhaust plume. This data will also help determine the efficiency of the rocket engine.

Hardware and aircraft

The experiment itself is a one-tenth-scale, half-span model of the X-33. The model contains eight thrust cells of an aerospike engine and is mounted on a housing known as the "canoe," which contains the gaseous hydrogen, helium and instrumentation gear.

The model, engine and canoe together are called the "pod." The entire pod is 41 feet in length and weighs 14,300 pounds. The entire pod was mounted on NASA's SR-71, No. 844, on Aug. 26, in preparation for first flight. The SR-71 is on loan to NASA from the U.S. Air Force.

The aerospike engine is expected to produce approximately 7,000 pounds of thrust.



NASA Dryden photo

A NASA SR-71 successfully completed its first flight at the end of October as part of the NASA/Rocketdyne/Lockheed Martin Linear Aerospike Experiment (LASRE) at NASA's Dryden Flight Research Center, Edwards, Calif.

Aerospike engine background

Linear aerospike rocket engines have been in existence for more than 30 years. Based on a concept developed by the Air Force's Propulsion Directorate in the early 1960s, Rocketdyne, now Boeing North American – Rocketdyne, developed the technology for both linear and annular aerospike engines during the mid-'60s, ground testing various designs into the '70s.

Rocketdyne proposed the aerospike engine for use on the space shuttle, but the engine was turned down because the technology was considered too immature at the time. Since then, Rocketdyne has accomplished 73 laboratory and ground test firings, with more than 4,000 seconds of operation of this type of engine.

Rocketdyne has spent more than $500 million over the years to test and improve aerospike engine technology. Recent improvements funded by the Air Force early this decade made it possible to improve the manufacturing of aerospike engine thrust cells, while modern performance sensors and monitoring controls enable split-second engine control.

The linear aerospike engine is similar to normal rocket engines in plumbing and accessories, using like components, such as turbopumps. However, one of the major and most notable differences is the absence of a bell-shaped nozzle.

The linear aerospike engine uses the atmosphere as part of its nozzle, with the surrounding airflow containing the rocket's exhaust plume. This keeps the engine at optimum performance and efficiency along the entire trajectory of ascent to orbit.

Traditional rocket engines cannot compensate for atmospheric changes, from low altitude and high atmospheric

(see AEROSPIKE, page 5)

PROBE

(continued from page 1)

accomplish the self-nulling effect. This is possible only if the eddy currents flow in a perfect circular path. Any disturbance will destroy the self-nulling condition, producing unmistakable signals in the pickup coil. It is also easy to prove that the amplitude of the detected signal is nearly proportional to the length of a fatigue crack.

A riveting problem

Among the difficulties with inspecting for small flaws under airframe rivets is that the fatigue damage begins under the rivet head, which poses problems in coupling electromagnetic energy into the damaged area.

In addition, the geometry of the rivet joint often changes due to rivet tilt and/or misfit and unknown paint coating thicknesses.

Nevertheless, the main issue is that the sheer number of rivets mandates a rapid inspection technique.

The rotating probe method aims to meet these several challenges.

Experimental testing of the rotating probe method led to continuous improvements in the system hardware and software. The size and weight of the rotating probe head was reduced by nearly a factor of 3, and the inspection time decreased by about an order of magnitude.

At the same time, the minimum reliably detectable flaw size was decreased to approximately 0.8 millimeter (0.032 inch). This flaw length corresponds to a fatigue crack that is still well buried under the fastener head and has set the standard for crack detectability throughout the industry.

A user-friendly tool

The complete system consists of a laptop control computer, a small electronics package and the rotating probe head. The system is therefore very portable and rugged.

Operation of the system is also straightforward. The probe head is first placed near the fastener to be inspected. The system provides a clear, real-time indication of probe misalignment, and the user can easily reposition the head to obtain the required alignment. Once the alignment criteria are satisfied, the probe output voltage data are captured and processed to determine if any fatigue cracks are present.

The processed signal displayed on the instrument panel clearly indicates the size and location of any fatigue cracks which may be present under the airframe fastener, and a warning light is turned on if a fatigue crack is detected. The entire inspection process can be completed in only a few seconds.

Outlook for technology transfer, commercialization

The rotating probe system has been systematically tested throughout the airline industry. Initial tests were performed at the test facility provided by the Federal Aviation Administration at the FAA Aging Aircraft Nondestructive Inspection Validation Center in November 1995. Subsequently, prototype systems were manufactured at NASA Langley and shipped to a Boeing airframe manufacturer.

More recently, a prototype system was delivered to the U.S. Air Force for use in work investigating fatigue crack initiation and propagation modes in fuselage structures at Wright Patterson Air Force Base in Ohio.

In addition, testing on in-service aging aircraft is to be conducted starting early this year. An aircraft with more than 80,000 flights has been selected for this initial test at Atlanta's Hartsfield International Airport.

Work with the rotating probe system has continued on two fronts in the recent past. The NASA-developed technology is now being transferred to the commercial sector so that the system more rapidly affects the safety and fiscal resources of the airline industry. NASA Langley scientists are working closely with Foerster Instrumentation Inc., the licensee commercializing this technology, to ensure a smooth transfer.

Student-built robot comes to life with help from Langley engineers

BY KIMBERLY W. LAND

With help from about a dozen current and retired NASA Langley engineers, 12 high school students from the New Horizons Governor's School and the Point Option alternative program in Hampton have created a radio-controlled robot that will enter a national science contest later this month. The students are participating in a national educational program called FIRST (For Inspiration and Recognition of Science and Technology), which engages robots from all over the country in team competition against each other.

Robotics by the rules

According to competition rules, the students had six weeks to create and build the robot – using a tight budget, keeping within a specified weight limit and complying with other qualifying factors. In this year's competition, robots score points by moving nine balls into different goals on the arena floor; the highest-scoring robot wins the contest. The students created a steel-framed robot with a pivoting arm on top and two sets of roller pins that squeeze the balls between goal bars.

Quick weight-loss

But getting that far hasn't been easy. "The kids ran into a few problems along the way," said Jeff Seaton, a NASA Langley engineer who works with the Research and Technology Group. Seaton has been working with the students on the project from its inception.

The robot was dismantled three times to correct problems – like the robot's weight. Five days before the robot was shipped out, the students were still shaving and sanding down metal to reduce the weight of the robot, which cannot exceed 130 pounds, said Seaton. By using the sander and making a few more adjustments, the robot finally weighed in at 126.5 pounds.

Intensive effort

Students from New Horizons – who come from throughout the Peninsula to attend the Governor's School, the vocational school, and the alternative education program – have spent more than 20 hours a week after school and on weekends working on the robot body and on the mobile robot platform, which controls the robot.

"Now that it's over with, I can get some sleep," said Hugh Hockett, an 11th-grader from Menchville High School in Newport News. Hockett said he pulled one too many "late-nighters" working on the robot with other students, but that he was looking forward to seeing the robot perform at the competition.

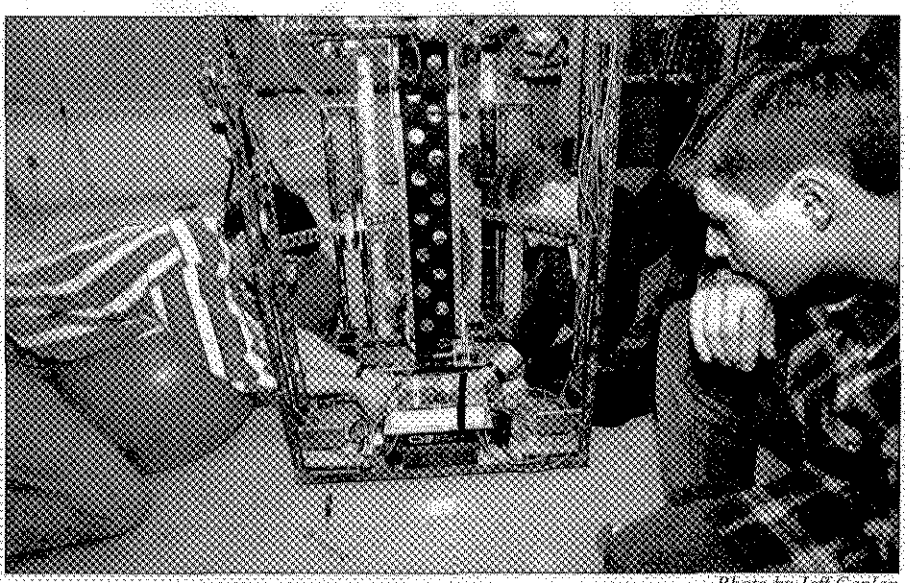


Photo by Jeff Caplan

Hugh Hockett, an 11th-grader at Menchville High School, watches as John Evans, left, of Langley's Research Technology Group, and Philip Kobezak, a 12th-grader at Bruton High School, attach wires to a battery that will power the robot. "Ace," as the students have named their creation, took six weeks to build.

About a dozen current and retired NASA engineers volunteered many hours of their time and donated materials from the Langley Robotics Lab, as well as the funds to take the project to competition, said Seaton.

NASA Langley lent its support to the New Horizons project for the first time this year. In previous years, the center has participated in the FIRST competition with students from the robotics program at Hampton's Phoebus High School.

BLAZING TRAILS IN SCIENCE: Members of the Trail Blazers Girls Science Club of Greensboro, N.C., get a tour of Langley's 7x10 Wind Tunnel on Feb. 13. The club, comprised of students from two middle schools, was making its fourth annual visit to the center. They came to Hampton Roads for the weekend to tour NASA Langley and the Virginia Marine Science Museum in Virginia Beach.

Photo by Jeff Caplan

Area businesses included in SBIR awards

BY KATHY BARNSTORFF

Three Hampton Roads companies are among more than 300 nationwide that have won Small Business Innovation Research (SBIR) awards from NASA.

High Technology Corporation and Vigyan, Inc. of Hampton and Science and Engineering Applications Company of Virginia Beach have been chosen for initial SBIR awards out of 2,665 proposals submitted by small, high-tech firms.

Each business will receive up to $70,000 for a six-month feasibility study to help determine whether their proposals will advance NASA technology.

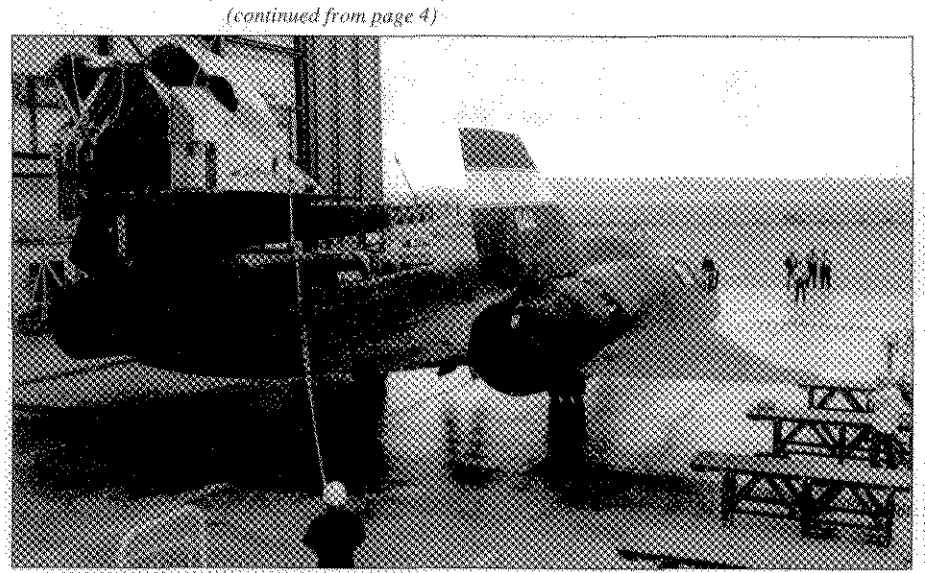
Firms that successfully complete the feasibility study are invited to submit a phase-two research proposal which could lead up to $600,000 over two years.

NASA OK'd 335 SBIR projects, at a total cost of almost $23 million, from proposals submitted last October. They were reviewed by NASA field centers for technical merit and relevance to agency research and technology needs.

NASA Langley OK'd 47 projects with aeronautic and space applications.

AEROSPIKE

(continued from page 4)



NASA Dryden photo by Tony Landis

The Linear Aerospike Experiment is mounted on a NASA SR-71 aircraft at NASA Dryden.

pressure, to high altitude and low atmospheric pressure. So, they are designed for a particular performance range in an effort to get the best performance from them.

In addition, linear aerospike engines are 75 percent smaller than normal rocket engines of comparable thrust. The smaller design means less engine weight and less engine support structure required, which allows for lighter spacecraft. This will result in lower cost to launch a vehicle into orbit.

X-33 Advanced Technology Demonstrator

The X-33 is a technology demonstrator for a Single-Stage-To-Orbit reusable launch vehicle (RLV). The RLV program is a cooperative agreement between NASA and industry. The goal of the program, and a major goal for NASA Aeronautics, is to enable significant reductions in the cost of access to space, and to promote the creation and delivery of new space services and other activities that will improve U.S. economic competitiveness.

The program implements the National Space Transportation Policy, which is designed to accelerate the development of new launch technologies and concepts to contribute to the continuing commercialization of the national space launch industry.

Lockheed Martin Skunk Works, Palmdale, Calif., is fabricating the X-33. Marshall Space Flight Center, Huntsville, Ala., is NASA's lead center for the X-33 program.

AdVentures

TAX TIME: Income tax preparation by a member of the National Association of Tax Practitioners. Get your refund fast with electronic filing and direct deposit at no extra charge. We travel to you. See our Internet site at *http://home.switchboard.com/telatax*. Call 874-3121 for an appointment.

TAX TIMES 2: For income tax preparation, call Nancy Taylor at 723-5227.

TAX TIMES 3: Qualified accountant with years of experience to prepare 1997 personal tax returns, reasonable rates. Call 596-0959 or pager number, 419-9822.

TAX TIMES 4: Accurate, computerized income tax returns prepared by an experienced, degreed accountant and federally certified tax preparer. Ask about referral discount. Call Wanda at 838-6546.

FOR SALE: Beanie Babies --current, new release and retired. $10 and up. Call 865-0586.

FOR SALE: 3-BR rancher in Hilton area of Newport News, 1-1/2 baths, wall-to-wall carpet, central air/heat, energy efficient, attached garage with automatic door opener, eat-in kitchen, new carpet and padding in all bedrooms, new roof, interior freshly painted, large fenced back yard, near elementary school, good location on cul-de-sac, 20 minutes to NASA/Langley Air Force Base. $77,500. Call 838-0726.

FOR SALE: 1995 Sea-Doo GTX jet ski, 750cc engine with enough power to pull a skier or a tube; seats 3 people; garage kept; low hours on engine; with speedometer, fuel gauge, side mirrors; includes trailer, tube, rope, four life vests, soft anchor. $4,500. Call 723-0944.

FOR SALE: 1994 Chevrolet C-3500 Dually, 6.5 turbodiesel, 47,000 miles, heavy-duty trailering package, limited slip differential, anti-lock brakes, customized/conversion truck package. Loaded inside and out. $18,500. Call 723-0944.

FOR RENT: Luxury 2-BR, 2 1/2-bath townhouse in Hampton, convenient to Langley, walk-in closets, decks overlooking the lake, central air/heat, ceramic tile, carpet, ceiling fans, jacuzzi tub, $700/month. Available mid-March. Call 827-5253.

SHARE A RIDE? Ride-share wanted from Lightfoot area in Williamsburg to NASA Langley. Flexible hours. Call Donna Jones at ext. 43839.

SIDE OUT: NASA Langley's Volleyball Club is forming leagues for all levels of play and will offer clinics, taught by skilled players and coaches, March 13, 16 and 20. League play runs March 17-May 29, Tuesdays, Wednesdays and Thursdays. Rosters are due March 6. For more information, contact Robert Singleterry at ext. 41437, or at r.c.singleterry@larc.nasa.gov.

CAN'T RESIST: Drs. Michele Macara eg and Craig Streett, fitness instructors with the Langley Activities Association's Aerobics Club, will offer an introductory Resist-A-Ball class for abdominal and lower-body toning, at Bally Total Fitness, Newport News, across from Patrick Henry Mall, March 14, 1-2 p.m. The LAA Aerobics Club also offers Resist-A-Ball classes at NASA Langley. The 21-inch diameter balls, first used in rehabilitation centers for sufferers of back and knee injuries, facilitate isolation of the abdominal muscles, with full support of the trunk, which is also strengthened through muscle contraction during exercise. Resist-a-Ball classes are Tuesdays and Thursdays, 5-6 p.m., or Saturdays, 9:30-10:30 a.m., in the LAA gym. For more information, call ext. 42295 or 45720.

Michele Macaraeg demonstrates Resist-a-Ball abdominal exercises.

MISSION TO MIR: The Virginia Air & Space Center in Hampton presents the new IMAX film, *Mission to Mir*, through April 1. The film explores life on the Russian space station Mir and features NASA astronaut Shannon Lucid. For more information, call 727-0900.

TENNIS TIME: NASA Langley's Tennis Club will start the 1998 season in April with league, ladder and tournament play. To join in these activities, which will include picnics, clinics and parties later in the year, call Marco Egoavil at ext. 47247 or Tom Yager at ext. 41304. Annual dues are $10.

TOUR GUIDES NEEDED: The first organizational meeting for driver/tour hosts for the NASA Langley/Virginia Air & Space Center's summer van tours will be April 3, 9 a.m., at the VASC. The "Windshield Tours" originate at the VASC and include a narrated drive through Langley's east and west areas, a portion of Langley Air Force Base, as well as the hangar, the Variable Density Tunnel, Impact Dynamics and the 7-by-10-Foot High-Speed Wind Tunnel. Tour guides, especially those who are NASA or LAFB retirees, can share their knowledge and experience with visitors from all over the world. For more information, call Steve Devan at 898-9290.

VASC DISCOUNTS: The Virginia Air & Space Center is offering a 10 percent discount on all levels of membership to NASA employees, contractors and retirees, now through June. Membership includes free IMAX movie tickets and discounts in the Museum Store and on science camps, birthday parties, programs, Busch Gardens season passes and more. For more information, or to order by phone, call Sharon Gates at 727-0900, ext. 718.

UNIVERSAL VISION: The Virginia Living Museum in Newport News presents "Visions of the Universe," an art exhibit featuring images of outer space by Joe Tucciarone, now through June 7. The exhibit features a collection of 20 original paintings and images from the Hubble Space Telescope. "Visions of the Universe" and auxiliary exhibits are included in museum admission: $6 adult; $4 children, ages 3-12; children under age 3 and museum members, free. Hours are Mon.-Sat., 9 a.m.-5 p.m.; Sun., noon-5 p.m.; Thurs., 7 p.m.-9 p.m. For more information, call 595-1900.

Center Snapshots

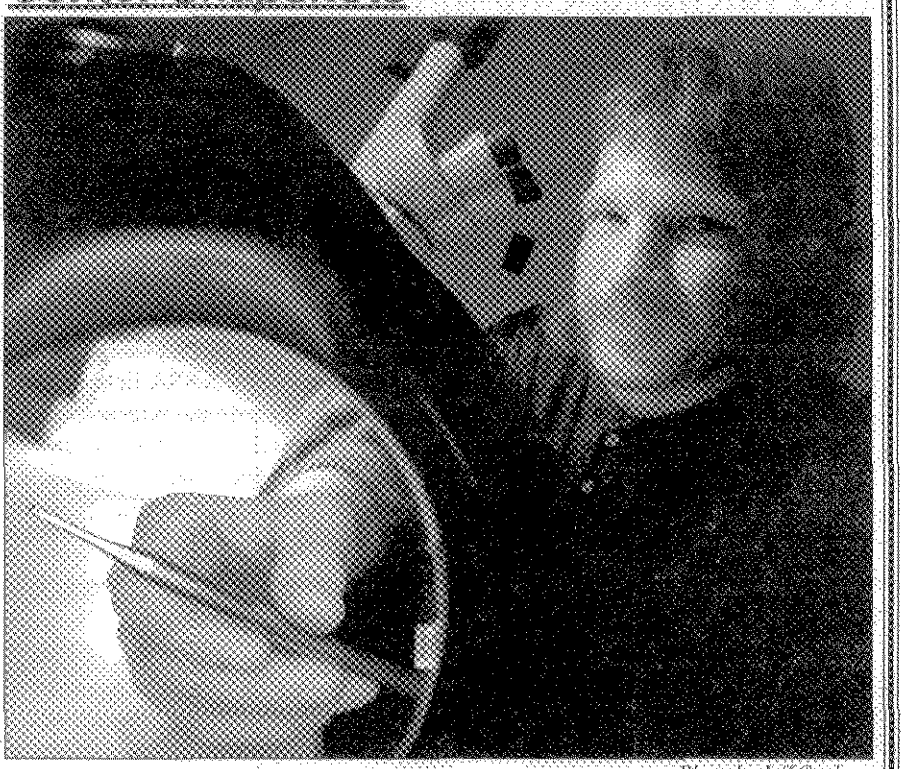


Photo by Jeff Caplan

Wayne D. Geouge worked at the Portsmouth Naval Yard as a machinist before coming to Langley some 12 years ago. A Hampton resident, Geouge works in Building 1267A in the Nondestructive Evaluation Section of the Fabrications Division, building probes for wind tunnels.

At times, Geouge receives designs for probes sketched out on napkins that researchers draw during their lunch breaks. His job is to build the probes from scratch by cutting, sanding and drilling tiny holes into pieces of stainless steel. The probes eventually would be able to accurately measure the environment in a specific part of a wind tunnel during a test run.

* * * *

"I enjoy working and tinkering with the little stuff. It's kind of like a hobby."

– Wayne D. Geouge

Researcher News

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Pioneering the Future

National Aeronautics and Space Administration
Langley Research Center

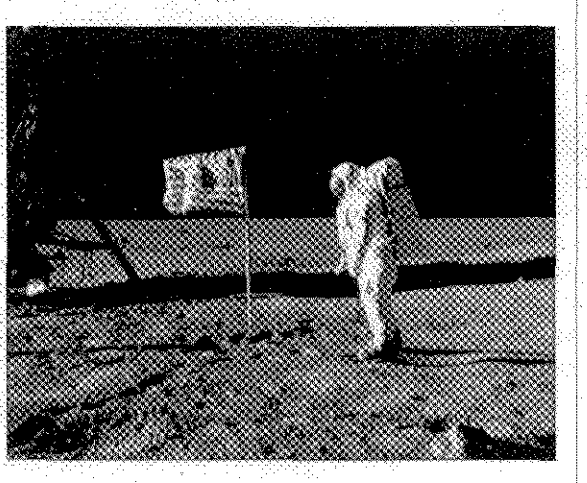
News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 5 ❖ March 20, 1998

HBO Chronicles NASA Journey: From Earth to the Moon

BY MARNY SKORA



In tribute to NASA and the ingenuity of the American people, Home Box Office (HBO), a division of Time Warner Entertainment Co., will present a 12-part miniseries that chronicles the race to the moon. Two one-hour segments of *From the Earth to the Moon* will air Sunday evenings starting April 5.

The series depicts the national will and intense mobilization of forces brought about by President Kennedy's May 1961 speech that challenged Americans to send a man to the moon within the decade.

Actor-director Tom Hanks returns to space as executive producer of this most ambitious and expensive HBO film production to date. Taking moments from each of the missions — Mercury and Gemini through Apollo — Hanks recreates NASA's journey to explore the lunar surface.

We have different filmmakers for each episode, so each has a different narrative, a different visual style," said Hanks. "I want viewers to be enthralled by the enterprise of going to the moon. I want them to be amazed that every step a man took on the moon was this evolutionary step for all of us. I want to give the audience a very entertaining, very enlightening overview of just how substantial a journey this was, for the men who went there, for the families who supported them and for all of us as a society."

The miniseries is based in part on Andrew Chaikin's book *A Man on the Moon*. Chaikin joins former astronaut David Scott as a consultant on the project. Scott, who flew on Gemini 8 and Apollo 9, commanded the Apollo 15 mission and is one of only 12 men to walk on the moon.

Man on the moon, above, and the Earth from a moon's-eye view are just two of the spectacular photos taken during the Apollo era at NASA, and highlighted in an upcoming HBO series.

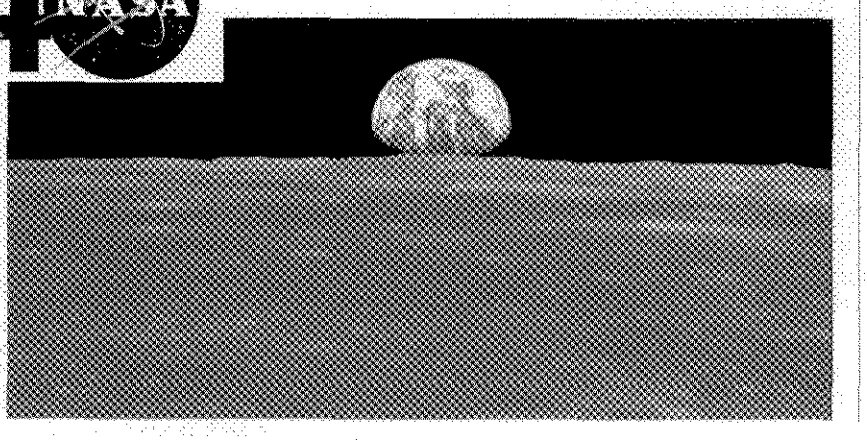
In commemoration of NASA's 40th anniversary, NASA Langley is partnering with HBO and Cox Communications to premiere the series March 31 at the Virginia Air and Space Center for a group of community and business leaders.

The First Episode — April 5: *Can We Do This?* and *Apollo I*

Having been challenged by JFK to send a man to the moon by the end of the decade, a veritable army of technicians and aviators strive to meet the challenge. Reflecting on Yuri Gagarin as the first man in space, the miniseries begins with Alan Shepard's 15-minute Mercury ride and covers many of the key personalities and events that culminated in the Apollo program.

"The title of the [first] episode is *Can We Do This?* because that was the real question!" said Hanks who directed the opening hour in addition to producing the whole series. He asks probing questions: How do we put a man into space? What does the spacecraft look like and what does it need? Can a man in a spacesuit go outside the spacecraft? Can two spacecraft meet in orbit? "Episode one shows how these things were figured out," said Hanks. It lays the foundation for the miniseries.

The second hour recounts the death of Apollo I astronauts Grissom, White and Chaffee in a pre-launch fire. The tragedy jars the Apollo program and triggers an overhaul of NASA's plans to land humans on the moon.

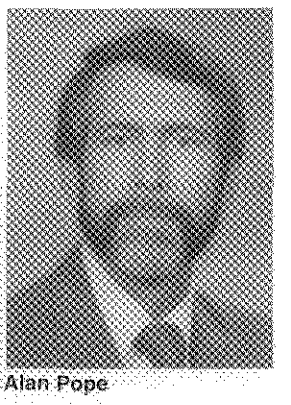


NASA Photos

Colloquium Communiqué

Langley researchers present "Designing the Mind-Centered Flight Deck" in April

Paul Schutte



Alan Pope

Paul Schutte and Alan Pope of Langley's Flight Dynamics and Controls Division will deliver the April colloquium, "Designing the Mind-Centered Flight Deck," April 7 at 2 p.m. in the H.J.E. Reid Conference Center. The lecture will be repeated that same evening as part of the Sigma Lecture Series, 7:30 p.m. at the Virginia Air and Space Center, downtown Hampton.

Designing the Mind-Centered Flight Deck

NASA has embarked on a bold new program to significantly reduce the number of aviation accidents worldwide. More than 70 percent of all aviation accidents and incidents have been attributed to human error.

A group of researchers at Langley think that if flight decks were designed to take into account human limitations and to take advantage of uniquely human capabilities, a large number of these accidents could be averted. This group is working on a project called "Error Proof Flight Deck." They are designing a flight deck so that normal, fallible human behavior will not jeopardize the safety and efficiency of a flight mission.

The design seeks not only to reduce the negative consequences of human behavior, but also to allow the mission to benefit from unique human abilities such as creativity, intuition, innovation and responsibility — abilities that computers and automation do not yet have.

This colloquium will discuss how the group is using advanced measurement technologies, mental models and innovative interface techniques and concepts to design a flight deck that reinforces the mental capabilities of the crew. It will describe how spin-offs from these efforts are contributing technologies for mind-body medicine. The colloquium will include a demonstration of some of these measurement techniques.

About the Speakers

Schutte is a research scientist in the Flight Dynamics and Control Division at Langley where he has worked since 1981. He has conducted research in knowledge-based systems for onboard aiding of civil transport flight crews, particularly in subsystem fault management. He codeveloped the Faultfinder fault management concept which received the 1991 R&D 100 award. Schutte is the technical leader of the Error Proof Flight Deck team investigating human-centered design concepts for civil aviation flight decks. His particular research interests include fault management and human-machine interaction. Schutte graduated from Mary Washington College with a bachelor of science degree in mathematics and physics and from the College of William & Mary with a master of science degree in computer science.

Pope is a research scientist in Langley's Flight Dynamics and Controls Division where he has worked since 1980. He leads the Hazards and Error Management (HEM) research program. The HEM program researches and develops methods for identifying and controlling factors that lead a flight crew to error. He is also a licensed clinical psychologist and assistant professor at the Eastern Virginia Medical School and senior lecturer at Christopher Newport University. Pope received his bachelor's and master's degrees of science in electrical engineering from Tennessee Technological University and the University of Tennessee, respectively. He graduated from the University of Florida with a doctorate in clinical psychology. Pope is the 1998 recipient of the AIAA Contribution to Society Award for his work on technologies for attention deficit disorder, diabetes and stress-related disorders.

Colloquium & Sigma Lectures

Colloquium Lecture:
"Designing the Mind-Centered Flight Deck," Paul Schutte and Alan Pope, Tuesday, April 7, at 2 p.m. in the H.J.E Reid Conference Center auditorium

Sigma Lecture:
Tuesday, April 7, at 7:30 p.m. at the Virginia Air and Space Center, Hampton, for information: 727-0900

News Briefs

Around the Agency

COLLINS NAMED FIRST FEMALE SHUTTLE COMMANDER Astronaut Eileen Collins (Lt. Col., USAF) will become the first woman to command a Space Shuttle when Columbia launches on the STS-93 mission in December 1998. Collins will be joined on the flight deck by Pilot Jeffrey S. Ashby (Cmdr., USN) and Mission Specialists Steven A. Hawley, Ph.D., and Catherine G. "Cady" Coleman, Ph.D. (Major, USAF). CNES Astronaut Michel Tognini (Col., French Air Force) was named to the crew on Nov. 12. Selected as an astronaut in 1990, Collins has served as a pilot on her two previous space flights. Her first space flight was STS-63 in February 1995 as Discovery approached to within 30 feet of Mir, in a dress rehearsal for the first Shuttle/Mir docking. In May 1997, she visited the Mir space station as pilot on board Atlantis for the sixth Shuttle/Mir docking mission, delivering Astronaut Mike Foale and returning Jerry Linenger to Earth. For additional information on the STS-93 crew, or any astronaut, see the NASA Internet biography home page at URL:http://www.jsc.nasa.gov/Bios/.

KIDS USE INTERNET TO LEARN ABOUT AIRPLANE DESIGN A NASA project called Aero Design Team Online is using the Internet to help students learn about airplane design. Students and the general public can visit a website (http://quest.arc.nasa.gov/aero/) to find out how aeronautical engineers use airplane models, wind tunnels, supercomputers, simulators and other tools during the airplane design cycle. The project continues through May, although plans are underway to extend it into the summer. "We're teaching about airplane design through the lives of people who are doing the work," said Susan Lee of NASA's Ames Research Center, Moffett Field, Calif. For example, we're following a wind tunnel test of a model of a future supersonic airliner." In addition, kids ask questions via e-mail; learn how an airplane flies; see pictures of aircraft; and participate in Internet chats with people from teams that design and test airplanes. During Internet chats, youngsters use computers to converse with mentors by typing questions and reading responses and dialogue via the World Wide Web.

For more information on the above news items, check the Internet for NASA's News and Information Web page at ***http://www.nasa.gov/releases/1998.***

Photo by Jeff Caplan

S.A.L.T.'s new sound facility in Building 1208

From left; William Rash, architect and designer with Sverdrup Corp., and Allen Rawls, NASA construction manager, get an explanation from facility coordinator Robert Baals of how the acoustic wedges absorb the energy emitted from the testing instruments in the new Structural Acoustic Load and Transmission Facility in Building 1208. The facility officially opened February 3.

January Speakers Bureau Report

Patrick Minnis spoke to the Virginia Beach Kiwanis Club about "Global Warming"; **Bert Northam** spoke to the Society of Manufacturing Engineers, Hampton Roads Chapter about "Carbon-Carbon Pistons"; **Bobby Braun** spoke to members of the Newport News Medical Association about "The Mars Pathfinder and Sojourner"; **John Korte** spoke to first grade students at John B. Dey Elementary School, Virginia Beach, about "Aerospace Engineering at NASA"; **Mary Ann Smith** spoke to Poquoson Elementary School fifth grade students about "Careers in Engineering"; **Dan Vicroy** spoke to Wichita State University students and faculty about "NASA's Wake Vortex Research."

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

Multicultural Facts

▲ "We believe our diversity represents a tremendous strength for Hewlett-Packard. It allows us to tap a broad range of human potential. Hewlett-Packard's diversity is a competitive advantage for our customers, our employees and our company." – Lewis Platt, president and chief executive officer, Hewlett-Packard Company

▲ Top 10 Tip for Improving Diversity Retention: "Establish a formal mentoring program." – The Multicultural Advantage

▲ Make Langley a better multicultural workplace. E-mail suggestions to MCLT+IDEAS@LaRC.NASA.GOV, or visit the MCLT homepage at ***http://mclt.larc.nasa.gov/homepage_mclt.html***

Announcements

Retirement Social

Joseph R. Chambers, Chief, Aeronautics Systems Analysis Division, Airframe Systems Program Office, will retire on March 27. A retirement social with heavy hors d'oeuvres is planned for April 1, 5 to 8 p.m. in the H. J. E. Reid Conference Center. The cost is $13 per person or $25 per couple (which includes gift). Please respond to Susan Price or Pat West at ext. 46399.

Retirement Social

A retirement social in honor of Irving Abel will be held March 30 beginning at 5 p.m. in the H.J.E. Reid Conference Center. The social will include heavy hors d'oeuvres and a cash bar. The cost is $12 per person, and includes a gift. Gift-only donations of $4 will be accepted. Please respond to Jackie Smith, ext. 43003, by March 23, and send payment to Smith at Mail Stop 121.

Retirement Luncheon

A retirement luncheon for Archie Fripp will be held in the private dining room of the NASA Cafeteria at 11:30 a.m. on Wednesday, April 1. Call for menu choices. Cost of the meal is $7. Donations for gift are optional. Please respond by March 26 (earlier would be better for planning) to Bill Debnam at ext. 41499, e-mail w.j.debnam.larc.nasa.gov. Make checks payable to William,Debnam and send to Mail Stop 473.

Letters

Thank You from Bill Averill: "I want to thank all of my friends who made my recent retirement luncheon such an enjoyable and memorable event.

The generous gifts and memorabilia were greatly appreciated, and will always be enjoyed. But the greatest gift was the many memories gained over the years of working with the wonderful people in the NASA Langley family. Thanks to you all."

Langley Runners' Club Race Results

The Langley Runners' Club Winter 5-Mile Race was held on Feb. 24, a day with strong gusty winds. Finishing first was Steve Robbins with a time of 33:35, followed by Steve Sudik, 37:10 and Alex Tessler, 37:20. Thea Ganoe was the first place woman with a time of 48:51.

In Memoriam: Susan Leigh Adkins

Susan Leigh Adkins was born July 2, 1948 in Martinsville, Va. She graduated from James Madison University in 1970 with a bachelor's degree in English. Susan was an English teacher at Jones Junior High School in Hampton from 1970 to 1977.

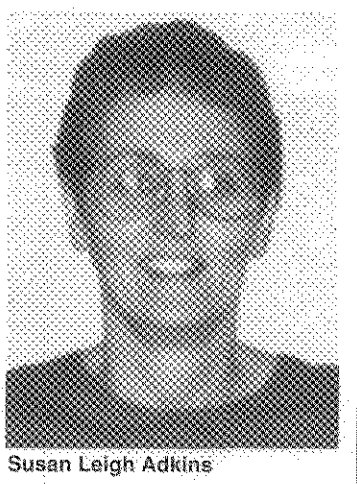
Susan began her career at NASA Langley in April 1977. She was hired as a library technician, and received her master's degree in library science in 1981 from Catholic University in Washington, D.C.

"The earth recedes and flattens out beneath . . . I finally looked outside and fell in love."

— Susan Adkins, in her thoughts on flying

Most recently she was a technical information specialist in the Information Systems and Services Division. Her duties involved organizing and implementing programs and activities that educate the scientific and technical community at NASA Langley to the available information services within the Technical Library and how best to use them.

"Susan was one of those people you could count on to



Susan Leigh Adkins

get stuff done," said Langley chief scientist Dennis Bushnell. "You could count on her to make the difference between an inspired solution and just going through the motions."

In Memoriam

George M. Walker Jr.

George M. Walker Jr., 60, died Friday, March 6, in Gloucester. He attended the Langley Apprentice School and served at Langley for 18 years.

Joseph V. Boyle Jr.

Joseph Vincent Boyle Jr., 79, died Friday, Feb. 27. He was a native of Pennsylvania, and served at Langley for 40 years, retiring in 1980 as a branch head at the model shop.

Don't Forget the BLOOD DRIVE, Wed., March 25 from 9 a.m. to 3 p.m. at the H.J.E. Reid Conference Center

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov) (researcher-news@larc.nasa.gov), fax (757) 864-8810, 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. . . . . Jeane Shanks
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.

photos by Gwen Wheatle

Most of the 1998 MATHCOUNTS participants, who are "Making Math Count," had time to pose for a group photo before taking pencil to paper in the math competition.

Making math count for local middle school students

BY GWEN WHEATLE, OFFICE OF EDUCATION

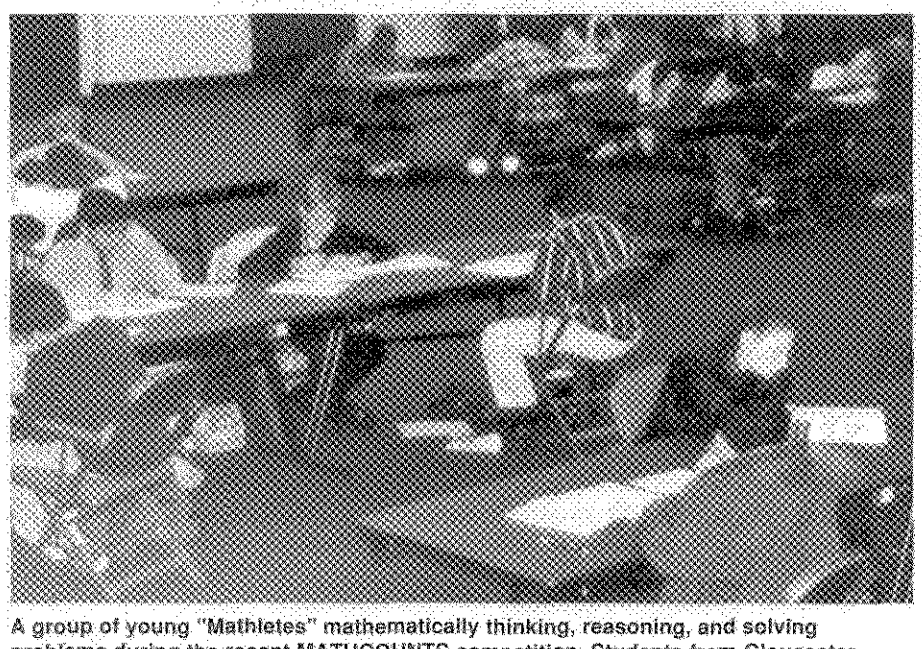
Good news travels fast. Iris saved enough money from her paper route to buy a new bicycle. She immediately told two friends, who, ten minutes later, each repeated the news to two other friends. Ten more minutes later, these friends each told two others. If the news continues to spread in this fashion, how many people will know about Iris's new bicycle after 80 minutes?

Saturday morning, Feb. 21, was a cool day that brought 49 seventh and eighth grade students and their coaches to the H.J.E. Reid Conference Center. Students and coaches gathered that morning to participate in the 15th annual MATHCOUNTS regional competition. The teams represented nine schools from several area private and public school divisions, including Hampton Roads Academy, Gloucester County, Hampton City, Williamsburg/James City County, and York County.

Students competed in individual and team events. These "mathletes" responded to questions meant to foster mathematical thinking, reasoning, and problem-solving. Questions, such as the one above, were presented in timed events to the mathletes. At the end of the day-long competition, the results were in. The top four schools were Berkeley and James Blair, both in Williamsburg/James City County, Syms (Hampton City), and Hampton Roads Academy (Newport News City). These winners will progress to the state-level contest which will be held in this month. The top four scorers from the state will progress to the national finals.

NASA is a national sponsor of MATHCOUNTS and supports the competition by sending the top team, and the top three winners to Space Camp. NASA also sponsors a three-day orientation workshop for math coaches, which takes place at a NASA Center. The regional competition held at Langley was just one of several National Engineers Week outreach activities supported by the Center during February.

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.



A group of young "Mathletes" mathematically thinking, reasoning, and solving problems during the recent MATHCOUNTS competition. Students from Gloucester, York County, Williamsburg/James City County, Hampton City and Newport News schools competed. Winners will move on to the state competition.

A Message to Federal Workers from the Vice President of the United States

Five years ago this month, we embarked on a National Performance Review to change the way government works. It seemed an impossible task. Red tape, senseless rules, and rigid hierarchies separated us from the people we were pledged to serve. Public trust in government was at an all-time low and the budget deficit at an all-time high.

Today, the reinventing government initiative is the longest running and most successful government reform effort in history. Thanks to your partnerships in and out of government and the application of exciting new technologies, our government does work better and it does cost less. As a result, public trust is beginning to go up and the deficit is being eliminated.

The key to this success is you. We trusted you—the people on the front lines—to get the job done, and you delivered. You knew the problems and you knew how to fix them. For the first time in history the federal government has measurable standards for serving the American people. We have safer workplaces, less crime, easier buying practices, faster drug approvals, and faster delivery of mail. We have cut unnecessary regulations and outdated programs, trimmed our own workforce, and saved taxpayers billions of dollars.

To celebrate this success and build on what you have accomplished, we are celebrating our fifth anniversary by launching a new Conversation with America. We urge you to begin an ongoing dialogue with the American people to learn what they want and expect from their government. Our goal is to regain in fullest measure the confidence of the people we serve.

We have recently renamed our effort the National Partnership for Reinventing Government. We ask your commitment to NPR's new vision, America@OurBest," and its mission, "In time for the 21st Century, reinvent government to work better, cost less, and get results that Americans care about."

President Clinton and I are proud of you. Thank you for your fine work. — *Al Gore*

Langley's Career Center Announces Events, March to May

Langley's Career Center offers the following seminars through May: Mar. 24, The Net & Career Development, 9 a.m. to 12 noon and again from 1 to 4 p.m.; Apr. 8, Cover Letters & Thank You Notes, 1 to 4 p.m.; Apr. 14, Interview Basics, 9 a.m. to 1 noon; Apr. 22, Communicating Effectively with Your Supervisor, 1 to 4 p.m.; Apr. 28, Stress Management, 9 a.m. to 12 noon; May 7, Retiring for Fun, not Profit, 9 a.m. to 12 noon; May 13, Conflict Resolution (for Managers), 9 a.m. to 12 noon ; May 21, Skills for the Interviewer, 9 a.m. to 12 noon; May 28, The Net & Career Development, 9 a.m. to 12 noon and again from 1 to 4 p.m.

The seminars are authorized NASA and Langley training events. Participation is open to all NASA Federal civil service personnel and their spouses. **Please register in advance.** Call ext. 45000, fax: ext. 45040 CTAPC is located in Building 1312, next to the Langley Federal Credit Union.

COMMUNITY CORNER

BY SANDRA LEMONS

JOIN THE HUMAN RACE!

For Walkers, Runners, Joggers, Wheelchair Participants, Rollerbladers, etc.
The 2nd annual Human Race will be April 4 from 1 to 4 p.m. at Newport News Park.

Be a part of this unique 5K event designed to support local nonprofit organizations

To become a part of the NASA Human Race team, or for more information, call race sponsors Peggie Williamson or Donna Burton at ext. 46387 or Sandy Lemons, Office of Public Services, at ext. 43957.

NASA Langley reduces CFC use

BY JOHN HOULAHAN

Since 1990, NASA Langley has dramatically reduced chlorofluorocarbon (CFC) use and release to the environment. CFCs and other ozone-depleting compounds have been shown to damage the stratospheric ozone layer which protects the earth from the sun's ultraviolet radiation.

The United States, in cooperation with more than 140 countries, is phasing out the production of CFCs and other ozone-depleting substances in an effort to safeguard the ozone layer. Under a treaty known as the Montreal Protocol all developed countries agreed to phase out production of most ozone-depleting substances, including CFCs, by the end of 1995. The 1990 Clean Air Act Amendments incorporated this production ban date and directed the Environmental Protection Agency (EPA) to develop regulations to maximize recycling, ban nonessential uses, develop labeling requirements and examine safe alternatives for ozone-depleting substances. Langley began an aggressive program in 1990 that has cut CFC use and losses. The motive was concern over the environmental damage caused by CFCs and by high CFC costs and restrictions on their use.

Emissions were reduced from a high of 80,000 pounds in 1989 to 7,000 in 1997. Three areas where CFCs have been significantly reduced are the Transonic Dynamics Tunnel, cleaning operations and air conditioning.

The Big Switch

The largest single use of CFC at Langley, and the most unique, was at the Transonic Dynamic Tunnel (TDT). CFC-12 (dichlorodifluoromethane) was used as the test gas. After use, CFC-12 was captured and reused through a closed loop process. But 12 to 24 tons of CFC-12 were lost each year from leaks. Faced with spiraling CFC purchase costs and tightening environmental reporting the TDT staff decided to switch. After careful tests and study, all 105 tons of CFC-12 were replaced with HFC 134a in June 1996. HFC 134a was selected because it has acceptable properties for test purposes, is not classified as an ozone depleting substance or a toxic chemical by the EPA, and is less expensive than CFC-12. Selling the CFC-12 removed from the TDT netted the Center $466,830.

A Clean Sweep

Before 1993, CFCs were widely used at Langley as cleaning agents for a variety of materials. Most CFC cleaners have been replaced with non-CFC solvents or water-based cleaners. CFC is still used in a limited number of applications or where no alternative technology exists. For example CFC-113 (1,1,1 or 1,1,2 trichlorotrifluoroethane) is used as a cleanliness verification solvent for precision cleaning of oxygen systems components used in wind tunnels. It is also used to clean the liquid oxygen injection ring in the 8-Foot High-Temperature Tunnel. The CFC-113 is captured, distilled, and reused to clean the injection ring.

Cool and Collected

CFCs are common refrigerants in air conditioners and chillers. Since 1994, the Facilities and Systems Support Division, supported by EG&G, have saved more than 54,210 pounds of CFC refrigerant at a cost savings of more than $300,000. This was achieved by improved equipment maintenance, capturing and reusing CFCs, and replacing CFCs with more ozone-friendly or non-ozone depleting refrigerants. Improved air conditioner maintenance has eliminated or greatly reduced leaking equipment by certified refrigeration technicians who repair equipment to capture and reuse the refrigerant. Refrigerants such as CFC-11 and CFC-113 are being replaced with EPA SNAP (Significant New Alternative Policy) program approved alternative refrigerants which are non-ozone depleting. The goal is to replace CFCs with alternatives as they become available and the equipment is serviced or replaced. The EPA created the SNAP program to identify and publish alternatives to ozone-depleting substances.

What are CFCs?

CFCs are a class of chemicals often marketed under the trade name freon. They are stable, nonflammable, low in toxicity, and inexpensive to produce. CFCs were used widely in the U.S. economy. They were found in products such as adhesives, coatings and inks and propellants in aerosol spray cans. CFCs were also widely used as refrigerants, to produce foams such as Styrofoam and as cleaning agents. CFCs were once commonly sold at gas stations, supermarkets and hardware stores. CFC production has been halted, and its use was strictly regulated after CFCs were found to damage the stratospheric ozone layer.

What is Stratospheric Ozone?

Stratospheric ozone is a naturally-occurring gas that filters the sun's ultraviolet (UV) radiation. Scientists believe that man-made chemicals like CFCs are rapidly destroying this layer of gas 10-to-30 miles above the Earth's surface. CFCs have chemical lifetimes of more than 50 years. They are very stable and do not break down in the lower atmosphere. Although CFCs are heavier than air they are eventually carried by winds into the stratosphere in a process that can take as long as two to five years. Strong UV radiation breaks the CFC molecules apart, releasing chlorine. A single chlorine atom can destroy over 100,000 ozone molecules. The net effect is to destroy ozone faster than it is naturally created. A diminished ozone layer allows more radiation to reach the Earth's surface. For people, overexposure to UV rays can lead to skin cancer, cataracts and weakened immune systems. More UV can also lead to reduced crop yield and disruptions in the marine food chain.

Langley staff members continue to look for alternatives for the limited CFCs still in use. For more information on CFC alternatives, contact the Langley Office of Environmental Engineering or the EPA SNAP website (http://www.epa.gov/ozone/test/index.html).

Women's History Month 1998

A Proclamation by the President of the United States of America

The Preamble to the Constitution begins, "We, the people." Yet that phrase, inspiring as it is, has not always included all Americans.

Women's history in America has been the story of the struggle of women of all racial, ethnic and cultural backgrounds to be included in that simple but powerful statement. It is the story as well of how, in striving to reach their own great potential, women have strengthened and enriched our Nation.

In every era of American history, women have braved enormous challenges to change our world for the better. Women of faith in the early 17th century dared a dangerous journey and the unknown wilderness to seek freedom of conscience in a new land. As our Nation struggled for independence and to establish a new, more enlightened form of government, women like Esther DeBerdt Reed and Sarah Franklin Bache supplied food, clothes and funds for Washington's soldiers. Freedom fighters like Sojourner Truth and Harriet Tubman led hundreds of enslaved men and women to liberty through the Underground Railroad, and social reformers like Gertrude Bonnin advanced the human rights of American Indians. Suffragists like Susan B. Anthony, Elizabeth Cady Stanton and Luisa Capetillo challenged the conventions of their times and sought to secure for women one of the most basic rights within our democracy.

This year marks the 150th anniversary of the women's rights' movement in America and its immeasurable contributions to our Nation's promise of justice and equality for all. The visionary women and men who gathered in Seneca Falls, New York, in July of 1848 for the first Women's Rights Convention in history gave voice so powerfully to women's aspirations for inclusion and empowerment that their vision continues to shape our world today.

Once disenfranchised, American women now serve at the highest levels of government, as Justices of the Supreme Court and in increasing numbers in the Cabinet and the United States Congress. Once denied the resources and opportunities to play organized sports, American women made sporting history this year by winning the first ever Olympic Gold Medal in women's ice hockey. Women are cracking the glass ceilings of corporate management to lead some of our country's most prominent businesses. As parents and partners, entrepreneurs and artists, politicians and scientists, women are helping to build an America in which all citizens, regardless of gender, are free to live out their dreams.

Thanks to the efforts of women leaders, little girls across America today know far fewer limits than did their mothers and grandmothers. But there still remains work to be done to create a more just America, and we must rededicate ourselves to ending the discrimination that women still face. We must continue our efforts to help women succeed at work and at home, to be free from violent crime, and to enjoy quality health care. In doing so, we will confirm our conviction that "We, the people" includes us all.

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 1998 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 voices and stories of courageous women who have made our Nation strong.

IN WITNESS WHEREOF, I have hereunto set my hand this second day of March, in the year of our Lord nineteen hundred and ninety-eight, and of the Independence of the United States of America the two hundred and twenty-second.

WILLIAM J. CLINTON

Langley Sponsors "Take Our Daughters to Work Day" Program

Langley's annual "Take Our Daughters to Work Day" program will be April 23 at the H.J.E. Reid Conference Center. The Langley program will introduce girls, ages 9 to 15, to the technical community where their parents work. This year's event is co-sponsored by The Federal Women's Program Committee (FWPC), the Hampton Roads Section of Women in Aerospace, the Newport News Branch of the American Association of University Women and the Society of Women Engineers – Hampton Roads Section.

The program will be a half-day structured event (8 a.m. to 12:30 p.m.) with the afternoon spent at the parent's workplace. This program is available on a first-come-first-served basis and is open to all NASA employees and contractors. The first 100 registrants (with completed forms), will be accepted and a waiting list will be kept for cancellations and returning daughters from last year's program. The registration deadline is March 31. The registration form requires the parent's supervisor's approval, and it is the responsibility of the parent to inform the student's school principal and teachers of the absence. Schools are aware of this program, and have granted excused absences in the past. A parent must escort his/her child at all times, including to the structured event and tour.

The structured event will include registration, followed by two hands-on activities for the students and, concurrently, 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 NASA Langley. The parents' briefing will feature an educational specialist on gender bias in education and tips on how to help children overcome difficulties in math and science skills. Parents will join the students at the end of the program for a guided tour of two facilities. The program breaks for lunch at 12:30 p.m. Lunch is on your own but the Aero Diner and main cafeteria will be prepared with sufficient food to accommodate this late lunch. The afternoon is left open for parents to share with their daughters at the workplace.

The Take Our Daughters to Work concept was developed by the Ms. Foundation for Women, an education-oriented, nonprofit organization that provides a forum to learn about women's issues, networking and professional growth. The program "Take Our Daughters to Work Day" was held across the country for the first time in April 1993, when a parent took his/her daughter to the workplace and introduced her to the working world. The focus is to broaden young girls' minds to the possibilities available to them. This program was developed to address the issue of gender bias in education where girls are not actively encouraged to develop math and science skills. Many organizations around the country observed this day last year including NASA Headquarters and most of the NASA centers.

Please return the completed form (at right) to Patsy Campbell, FWP Manager, Mail Stop 178. For more information, call Patsy, at ext. 43291 or Patricia Williams at ext. 43415. NASA civil service employees can charge their time to Job Order B1011. Contractors must negotiate leave with contact employers.

Registration Form for: "Take Our Daughters to Work Day"
April 23, 1998, 8 a.m. to 12:30 p.m.
H.J.E. Reid Conference Center

Daughter's Name_____ Age_____
School Name/ City_____
Parent's Name_____
Organization (Group/Division or Company)_____
Mail Stop_____
Work Phone _____
Supervisor's Approval_____

(Orders for "Take Our Daughters to Work Day" T-shirts will not be taken this year. If you wish to purchase any items from Ms. Foundation, indicate so and an order form will be faxed to you): Yes, fax the form to me at _____ (fax number).

Terms of Registration:
- This program is offered to daughters of NASA Langley employees and contractors.
- Each student must be accompanied by a parent or legal guardian at all times.
- Interested employees must receive approval from their supervisors to participate in this program.
- A limited number of children can be accommodated; therefore, only the first 100 registration forms will be accepted. Forms must be received by March 31, 1998.
- Please contact Patsy Campbell, ext. 43291, if special accommodations or accessibility to buildings are required.
- Return completed registration form to Patsy Campbell, Mail Stop 178, or fax to ext. 48832.

FWPC Celebrates Women's History Month

The Federal Women's Program Committee will celebrate Women's History Month with the Annual Achievers' Panel, March 26, 1 to 3 p.m., at the H.J.E. Reid Conference Center.

Panelists representing various career fields at Langley will share their career highlights, lessons learned along the way, stories about their mentors and tips for those who may wish to follow their career path.

"Women of NASA" Langley Research Center participants will be honored. Refreshments will be served after the program to provide time for networking. Contractors are welcome. Langley civil service employees may charge their time to Job Order B1011. For more information, contact Patsy Campbell at ext. 43291.

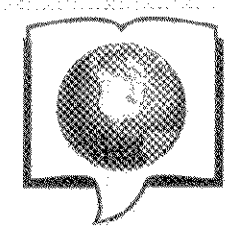
AIAA 8th International Conference in Norfolk

The American Institute of Aeronautics and Astronautics (AIAA) 8th International Space Planes and Hypersonic Systems and Technologies Conference will be held at the Waterside Marriott Hotel in Norfolk, Va., April 27 to 30. The conference is designed to provide a forum for discussion and exchange of information for the development of the aerospace plane class of vehicles and hypersonics technologies as well as for decision makers from the international aerospace community and aerospace plane users.

Registration

All participants are urged to use the advance registration form. Registering in advance saves conference attendees $50. A check made payable to AIAA or credit card information must be included with your registration form. Advance registration forms must be received by March 30. Pre-registrants may pick up their materials at the advance registration desk. All those not registered by March 30 may do so at the onsite registration desk.

For more information, call David Brandt at AIAA, (703) 264-7524, or use the AIAA conference website at http://www.aiaa.org/calendar/hyper98prog.html



Choices for the 21st Century

Public Policy Discussions in Your Local Library

Former U.S. Ambassador to lead series at JCC Library

New challenges, or the same old thing? Middle East conflict or peace? Open borders or closed doors? New futures or past approaches? The Williamsburg Regional Library (WRL) was selected by the Virginia Foundation for the Humanities as one of 12 libraries around the state to host a series of discussions entitled "Choices for the 21st Century."

The first of these four discussions will be held at the James City County Library, 7770 Croaker Road, Norge, March 24 at 7 p.m., moderated by retired U.S. Ambassador Robert Fritts. Fritts is director of The Washington Program of The Thomas Jefferson Program in Public Policy at The College of William and Mary. The three subsequent discussions will be held on March 31, April 14 and 21. They are free and open to the public, although pre-registration is required by calling (757) 259-4071.

The program examines the values underlying policy choices, not their technical feasibility, so this four-part series is suited for the non-expert. The special format enables participants to explore the changes taking place in the world, weigh national priorities, and discuss together, in the neutral setting of the library, the directions they think U.S. policy should take. A ballot at the end of the program is provided, and the results will be sent to public officials.

More information on this and other programs offered by the WRL can be found at www.wrl.org.

Storytellers in Concert at the Williamsburg Library

A special evening of imaginative entertainment, Storytellers in Concert, will be staged Saturday, March 21 at 7:30 p.m. in the Williamsburg Regional Library's Arts Center Theatre. The storytelling evening is free of charge.

The program will feature prominent Virginia storytellers Dylan Pritchett, Betsy Mountcastle and Pete Houston. They will perform tales from world-wide literature and folklore in three unique telling styles. The evening storytelling showcase is being sponsored by the Williamsburg Regional Library in association with Weavers of the Word, a local storytelling organization.

The concert is the culmination of the Virginia Storytelling Gathering, a day-long workshop on storytelling technique. For more information on the Virginia Storytelling Gathering or the Saturday night concert, call the Williamsburg Regional Library at (757) 564-9651.

AdVentures

FOR SALE: Beautiful two-story condo in Kiln Creek. 2 BR, 2 baths, living room, kitchen, dining room, loft overlooking living area, wall-to-wall carpet, cathedral ceilings, patio with french doors, gas heat. Community swimming pool/club house, tennis courts, and paved walking/rollerblade path. $87,900. Call 989-0298.

FOR RENT: 3 BR rancher with attached garage on Lake Hampton. 10 minutes from Langley. $425./mo. Call 851-3397.

INCOME TAX PREP: For income tax preparation, call Nancy Taylor at 723-5227.

VIRGINIA SOARING is accepting new members. An educational soaring club, located in Emporia, Va., provides free flight instruction to members. See http://members.aol.com/vasoar for more information or call 890-2020.

FOR SALE: Beanie Babies — current, new releases and retired, $10 and up. Call 865-0586.

TAX HELP: Qualified accountant with reasonable rates. Call 596-0959.

VIRGINIA AIR & SPACE CENTER

Take it to the top

The top of Mt. Everest calls only the most daring and determined individuals, those who risk much to achieve the most dangerous of dreams. The IMAX film *Everest* is a story of amazing achievements, taking visitors on an inspirational and spellbinding ascent with a daring team of climbers who found beauty and triumph in the wake of tragedy. *Everest* premieres at the VASC March 28.

Take the ultimate trip . . . to space

What is it like to live in space? The new IMAX film, *Mission to Mir*, opened in January, and will continue to show until Sept. 9. Don't miss the fiery launch of the Soyuz, the transport rocket that delivers teams of cosmonauts to and from Mir, life aboard Mir, and footage of Shannon Lucid's record-breaking 188 day trip orbiting 200 miles above the Earth.

For show times and costs, call (757) 727-0900.

LAA NEWS:

• Put on your Easter bonnet for the **Easter Egg Hunt and Parade**, Saturday Apr. 4, from 1 to 3 p.m. at the H.J.E. Reid Conference Center picnic grounds. There will be games to win prizes starting at 1 p.m. At 1:30 p.m. put on your Easter bonnet/hat and join the parade. Every participant wins a prize and a grand prize will go to the best hat. The hunt begins at 2 p.m. Respond by March 27 to the LAA office with name and age of each child.

• A **LAA Buy-Out Social** in honor of this year's buy-out retirees, Friday, April 3, 4 to 9 p.m. in the H.J.E. Reid Conference Center auditorium. Music is provided by The Melody Makers. Royal Caribbean Cruise lines will be here to showcase upcoming group opportunities. The LAA will sponsor door prizes and beverage specials. Tickets are $4 in advance and must be paid for by March 30. Only admission tickets paid for in advance can be used to receive a free lasagna plate. Honored retirees will receive a boutonniere/corsage and a lasagna plate. Seating is limited. For more information contact the LAA office at ext. 46369 or Marilyn Aldrich at ext. 48278.

EXCHANGE SHOP NEWS: Ed Hastings' book, "A Pitiless Rain," about the Civil War battle in Williamsburg, is available for sale as is the 1998 Federal Employees Almanac. Almanac cost is $7.75. Busch Gardens and Water Country USA tickets are now available. Season passes to Busch Gardens, Eurosplash passes (combination to both parks) and single day ticket(s) to Busch Gardens are on sale. Busch Gardens opens March 28. Spring Polo Shirt Sale Monday, March 23, all day. Shop hours are 7:30 a.m. to 2 p.m.

LANGLEY SOFTBALL: Anyone interested in starting a new team for the 1998 Langley softball league please contact Clifford Obara at ext. 43941, e-mail: c.j.obara @larc.nasa.gov, no later than March 27 to be included in the exhibition schedule. Contact Cliff if you are interested in playing on an existing team or for more information.

VIRGINIA SYMPHONY CONCERTS: March 7, hear pieces by both Mozart and Beethoven at the Hampton Roads Academy. March 8, enjoy a "Musical Mystery" Pops concert with Wes Kenney at the Virginia Beach Pavilion. Wear a trench coat and dark glasses for "mystery" prizes. Symphony season brochures are available at the Exchange Shop or the cafeteria. For other events, call the ticket office at 623-2310.

LAA AEROBICS CLUB: Resist-A-Ball classes began in January with 30 people coming to Saturday morning classes, resulting in abdominal and lower body toning. The 21" diameter balls were first introduced in rehabilitation centers for those with bad backs and knee injuries. They allow isolation of muscle groups while maintaining full support of the trunk area, showing gains in trunk stability and strength. The LAA Aerobics Club teaches slow-impact, step and strength training classes in the LAA Gym on Tues., Thurs. (5 to 6 p.m.) and Saturday (9:30 to 10:30 a.m.). Correction from March 6 Researcher News: Resist-A-Ball is featured only on Saturdays. Call ext. 42295 or 47520 for more information.

Center Snapshots

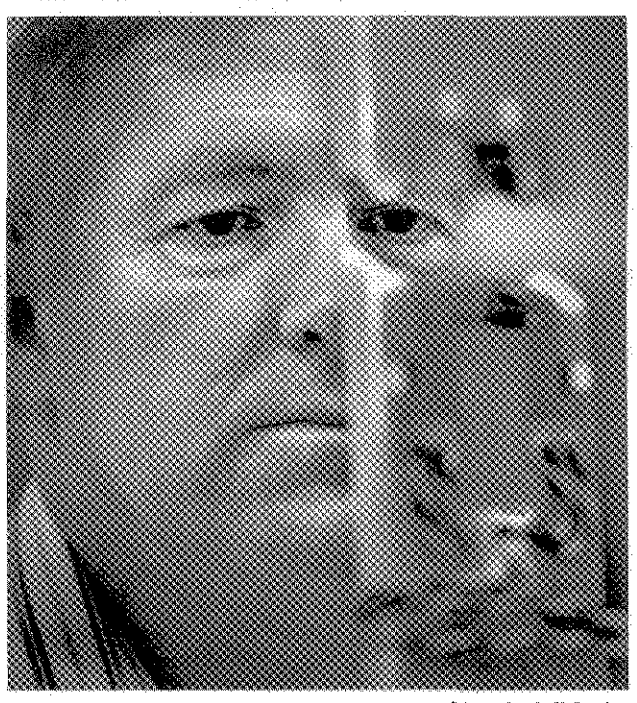


Photo by Jeff Caplan

Joe C. Woolsey, from Ozark, Ark., spent four years in the Air Force at Langley Air Force Base as a crew chief working on F106s. After a brief stint with Newport News Shipbuilding, he has worked at NASA Langley for the last 32 years in the Materials Research Lab. He is currently the senior technician in charge.

One of the current projects he and his staff are working on is testing metal for a new super lightweight external fuel tank that will replace the current one on the space shuttle. The new aluminum lithium alloy is lighter and stronger than the current steel tank. The shuttle has to be lightened for it to carry parts of the space station into orbit.

* * * *

"The people and conditions I work in — I don't think you could beat them anywhere in the country." *– Joe C. Woolsey*

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Researcher News

National Aeronautics and
Space Administration
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News Researcher

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International Aerospace Hall of Fame Inducts Richard T. Whitcomb

BY DEBORAH DOUGLAS

Retired Langley engineer Dr. Richard T. Whitcomb was inducted into the International Aerospace Hall of Fame at the San Diego Aerospace Museum March 14.

The San Diego Sheraton's banquet hall was the site of the black-tie event which honored the Short Brothers, founders of the world's oldest aircraft company with a record of continuous production; Concorde test pilots Brian Trubshaw and Andre Turcat; and Dr. Whitcomb. Whitcomb was being honored for his illustrious career (1943-1980) as an aerodynamicist at Langley. His portrait, painted by aviation artist Craig Kodera, and a description of his accomplishments, is now part of the International Aerospace Hall of Fame's permanent display.

The ceremony began with the posting of the colors by the U.S. Marine Corps Recruit Depot Color Guard and greetings from museum president William Chana. Master of Ceremonies Tom Blair, editor of San Diego Magazine and a reporter and writer in California, introduced the guest speaker Vice Admiral Donald Engen, USN (ret.). Engen, current director of the National Air and Space Museum, spoke about various aspects of his career in naval aviation, as administrator of the Federal Aviation Administration and as a member of the National Transportation Safety Board.

Engen's speech was followed by the Induction of the Hall of Fame Honorees. Paintings of each of the 1998 honorees were unveiled. Each honoree (or representative) was invited to the podium. A short video highlighting the specific accomplishments of that honoree was shown followed by the presentation of a crystal trophy and citation. Banquet attendees were then asked to rise for the playing of the national anthem of the honoree's country.

Whitcomb's video featured photographs and video footage from Langley as well as excerpts from interviews he had done for various documentaries and PBS specials. After receiving his award, and the playing of the Star Spangled Banner, Dr. Whitcomb spoke. He thanked the museum for honoring him, and began his reflections.

Whitcomb began by noting one major change that had been obvious when he came in for a landing at the San Diego airport — the Convair plant was no more. Convair had been a major member of the aerospace community, and Whitcomb recalled making many trips to visit the company.

He recalled for the audience his extensive work on the F-102 (which became the F-102A). NACA wind tunnel work showed that the drag on the F-102 was so great that the airplane would not be able to fly supersonically. He recalled that the data caused a fair amount of consternation but that many still rejected his results as "*just* wind tunnel data."

Aerodynamics engineers at Convair took Whitcomb seriously, however, and together they worked to design a new fuselage for the F-102 based on Whitcomb's area rule concept. Convair built a model, and Whitcomb and his staff at the 8-Foot Wind Tunnel ran the tests again. This time the results showed that with the redesigned fuselage the F-102 would go supersonic. In the meantime, Whitcomb noted, Convair had proceeded to build an airplane according to the original design. When the airplane was test flown it proved that the wind tunnel data was *right*. The airplane would not go supersonic. "Of course, immediately, the Air Force said to design a new fuselage which Convair did," Whitcomb said.

"I think Convair set a record for building a new fuselage," he stated. He recalled that he had a chance to observe the construction which had workers lined up "elbow-to-elbow" on both sides of the fuselage as well as underneath. He proudly noted that when the airplane was tested with the new fuselage it not only broke the sound barrier, it did so while *climbing*.

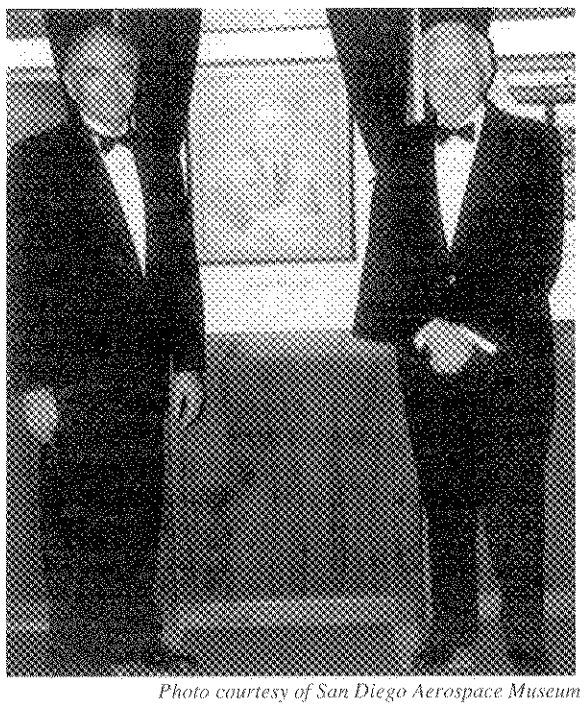

Photo courtesy of San Diego Aerospace Museum

Dr. Richard Whitcomb, right, stands in front of an oil painting of himself that is part of the permanent display at the San Diego Aerospace Museum. With him is museum president William Chana. Whitcomb was inducted into the museum's International Aerospace Hall of Fame for his internationally known aerodynamic work on the Area Rule, supercritical wings and winglets.

The banquet was attended by several hundred people representing some of the most important Southern California aerospace industries. Langley was also represented by Roy Harris, recently retired assistant director. In addition to the main banquet, the San Diego Aerospace Museum also hosted a Friday evening reception for the honorees and the artists who painted the portraits.

Langley's Plans for Meeting the Year 2000 Computer Challenge

BY MANJULA AMBUR, Y2K PROJECT MANAGER

The Year 2000 computer date problem, commonly known as the "Y2K bug" arises from the programming practice of using two digits to represent a four-digit year field – using 85 to represent the year 1985 – to conserve computer memory and disk space. A two-digit representation will make the year 2000 indistinguishable from 1900 or 2001 from 1901, etc. This inability to distinguish dates may cause inaccuracies in such things as arithmetic operations, date interpretations and backup file expiration dates. If not corrected, the effects of the errors can range widely. Problems can range from miscalculation of maintenance intervals of complex systems like airplanes and nuclear power plants to space mission control centers becoming inoperable and historic data searches being garbled, from statistical databases storing data out of order to Global Positioning System signals stopping altogether. Y2K can affect software, embedded systems and hardware. The federal government issued specific guidelines and milestones to address and manage Y2K issues.

NASA's Year 2000 Program is managed by the Chief Information Office (CIO) at NASA Headquarters with project offices at each center. The Langley Y2K project is managed by the Langley's CIO in the Information Systems and Services Division. Its main objectives are to ensure that Langley has assessed its research facilities and information systems for Y2K impact, is compliant in high risk (mission and human life) areas, and has the appropriate inventory documentation in place for center management certification and upcoming audits. Langley's CIO Pat Dunnigton said, "The project is taking a risk management approach, which is sensitive to limited resources and time constraints. The main focus is to assist the Center in understanding and working through the Y2K issues."

The key to the success of Langley's Y2K compliancy is involvement of the whole Center. Since the knowledge of facilities, systems and functions resides in the line organizations, staff participation in identifying Y2K issues is critical. Center associate director, Doug Arbuckle said, "We need everyone's help to identify where the problems are, assess the risk, and make the right decisions to fix, replace or live with the problem."

An initial assessment at Langley was done by various organizations in fiscal years 1996 and 1997. No major problems surfaced other than those in Langley Business Systems, and they are being corrected by the Information Management Branch. In the past year, more information on the potential Y2K risks has become available from industry and vendors.

A more focused and systematic reassessment is underway at Langley to validate the existing analysis, conduct a detailed analysis in high risk areas, and to develop documentation for certification status.

Internal Operations Group director Sammie Joplin said, "It is important that all computer systems and related equipment in research facilities continue to function correctly without impact to Langley's research mission in the year 2000. This reassessment process will help us to achieve this goal."

The question most often raised by Langley employees has been how and where to look for Y2K problems. The answers can be broad and complex in range, from operating system to custom code to embedded chip issues.

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News Briefs

Around the Agency

NASA SET TO STUDY THE SUN: NASA's Transition Region and Coronal Explorer (TRACE) mission, scheduled for launch no earlier than March 30, will greatly improve understanding of events in the Sun's atmosphere, including intense storms and flares that can have an impact on power and communications systems on Earth. The TRACE mission will join a fleet of spacecraft studying the Sun during a critical period when solar activity is beginning its rise to a peak early in the new millennium. The Sun goes through an 11-year cycle from a period of numerous intense storms and sunspots to a period of relative calm and then back again. The coming months in the Sun's cycle will provide solar scientists with periods of strong solar activity interspersed with periods when the Sun is relatively passive and quiet. This will give TRACE the chance to study the full range of solar conditions, even in its relatively short planned lifetime.

EVIDENCE POINTS TO IMPACT AS DINOSAUR KILLER : Two new impact crater sites in Belize and Mexico add further evidence to the hypothesis that an asteroid or comet collided with Earth about 65 million years ago, subsequently killing off the dinosaurs and many other species on the planet. Researchers Adriana Ocampo of NASA's Jet Propulsion Laboratory, Pasadena, Calif., and Kevin Pope of Geo Eco Arc Research, La Canada-Flintridge, Calif., led an international team that discovered the two new sites during a recent expedition sponsored by NASA's Exobiology Program and The Planetary Society, Pasadena, Calif.

For more information on the above news items, check the Internet for NASA's News and Information Web page at ***http://www.nasa.gov/releases/1998****.*

MULTICULTURAL LEADERSHIP TEAM — MCLT — NASA LANGLEY RESEARCH CENTER

• Lack of innovation and problem solving leads to uncreative responses in the marketplace and a decline in market share. Heterogeneity (diversity) in problem solving groups produces more creative responses in an increasingly competitive global marketplace.

— from *Facts About Diversity*, National MultiCultural Institute

• Although 13-percent of the United States general population is African-American, they make up only about 4.5-percent of the science and engineering professionals in the labor force. — from *Advancing Minorities' Interest in Engineering* homepage, http://www.morgan.edu/academic/special/amie/AMIE.HTM

Announcements

Vernie Knight Retirement Dinner

A retirement dinner for Vernie Knight will be held Monday, May 4 in the H.J.E. Reid Conference Center. There will be a social hour with a cash bar from 6 to 7 p.m. and a prime rib dinner starting at 7. The cost is $13.50 per person including gift contribution. Make checks payable to Keith Harris, ext. 43824, or Donna Gallaher, Mail Stop 257, ext. 41621, or d.a.gallaher@larc.nasa.gov by April 20.

Bud Southall Retirement Social

A retirement social for Charles "Bud" Southall III will be held Tuesday, April 21, 5-8 p.m., in the H.J.E. Reid Conference Center. Hors d'oeuvres and refreshments will be served. Cost is $12 per person, including gift contribution. For reservations, contact Gloria Evans at Mail Stop 481, ext. 44570, no later than April 15.

Retirement Social for Bryce Kepley

A retirement social for Bryce Kepley will be held May 8, 5-8 p.m., in the H.J.E. Reid Conference Center. Heavy hors d'oeuvres will be provided and a cash bar will be available as a part of this retirement celebration. Gift donations of $4 will be accepted. Please respond to Boyd Perry, ext. 42840, regarding gift donations and attendance by May 5.

Two Asian Conferences Call for Papers

International Quality and Productivity Center (IQPC) Worldwide Pte. Ltd. in Singapore is organizing two more Asian conferences for the public sector. The first event "Performance Measures for Government," will be June 20-22. At this time, IQPC is announcing a "call for papers" for the following events:

1) Strategic Planning for Government, July 20-22, Singapore. This event will provide government agencies throughout the region with the information they need to successfully integrate performance measures with the strategic plan. China has voted to restructure its government, so the timing is perfect for this event.

2) Government Online, August 20-22, Singapore. Many Asian countries are making IT projects their first priority to attract more foreign investment. This event will highlight what is already being done to use online technology to revolutionize the delivery and range of services that Government agencies offer.

Presentations should be one hour in length. To develop an international network of government officials, contact Jennifer Nimmer at jennifer@iqpcworldwide.com

She can also be reached at (65) 325-6350 or by fax at (65) 224-9514. Note: Jennifer lives in Singapore and is 11 hours ahead of Eastern time in the United States.

In Memoriam

Raoul'd M. Price

Raoul'd "Ral" Price, 75, died on Thursday, March 12 at Riverside Regional Medical Center. Price served at Langley for 42 years.

Lee M. Fogg

Lee M. Fogg, age 68, died Wednesday, Feb. 25. Fogg served with Langley's Security Force for 35 years prior to retirement.

E. Franklin Perkins

E. Franklin Perkins, 78, died Sunday, March 22. He was a native and lifelong resident of Newport News.

Perkins retired as a mechanical engineer from Langley after 27 years of service.

Walter E. Frayser Jr.

Walter "Pete" Elmo Frayser Jr., 78, died Sunday, March 1.

A resident of Poquoson for 41 years, Frayser was employed at Langley as a water treatment and pollution control engineer for more than 32 years, retiring in 1979.

Gordon H. Jaehnig

Gordon Henry Jaehnig, 77, died Thursday, March 12.

Jaehnig was a veteran of World War II and an instructor of civil engineering at the University of Wisconsin. He retired in 1976 after 30 years of service at Langley as a civil engineer.

Workshop on Computational Aerosciences in the 21st Century

The Computational Sciences Technical Committee (CSTC) and the Institute for Computer Applications in Science and Engineering (ICASE) are holding a workshop aimed at examining emerging technologies that may lead to a reduction in the time required for computations of physically and geometrically complex phenomena by two orders of magnitude.

The long range goal of the workshop is to provide "real-time" simulations of complex problems that could revolutionize progress in aeronautics and space research. The payoff for implementing such a high-risk goal could be significant economically, and foster the creation of entirely new industries.

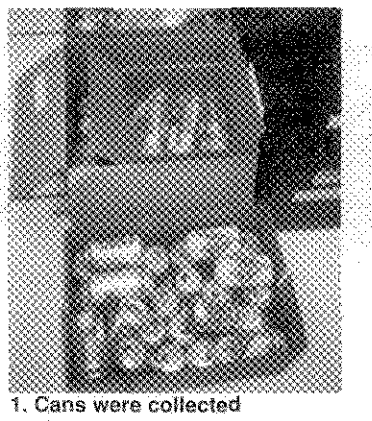
The workshop will be April 22 to 24 at the Radisson Hotel in Hampton, Va. It is co-sponsored by NASA, ICASE, National Science Foundation and the Army Research Office. There is no cost to employees of sponsoring organizations but registration is required. A full list of speakers and other information can be found on the ICASE website at http://www.icase.edu/workshops/CAS21st.html

Build a Shuttle look-a-like "one can at a time"

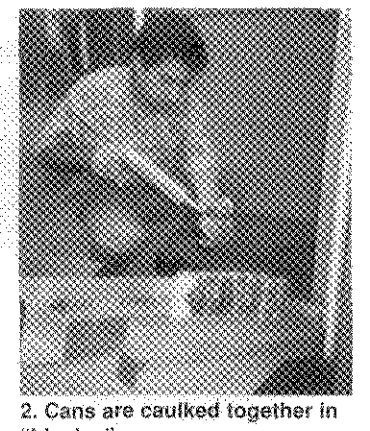
BY MAHYAR MALEKPOUR

It took more than a year to drink enough soda to make this shuttle look-a-like. As I collected them I glued these cans together. I must admit, I drank a lot of these sodas but, by far, my officemate Ed Hogge drank most of them. As the shuttle was taking shape, other colleagues in Building 1220 brought more soda cans to speed up the process. Since cans are big, building anything with them will be large. Large structures, of course, require a lot of space. It was an interesting project and fun to do, but because of the sheer size of it, I think I'll stick to clay.

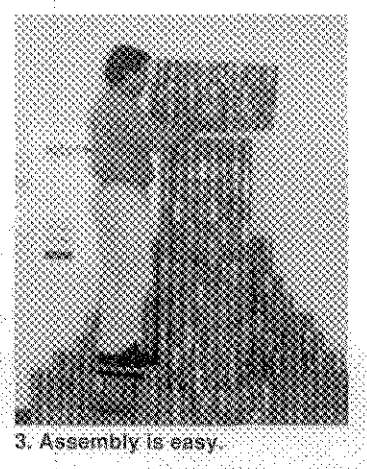
Bernice Becher photographed many pictures of all stages of this construction and has compiled them in an album. I'd like to display this shuttle someplace where our visiting youngsters could see it — your suggestions are welcome. On-Center visitors are always welcome. Please call ext. 41513 before visiting.



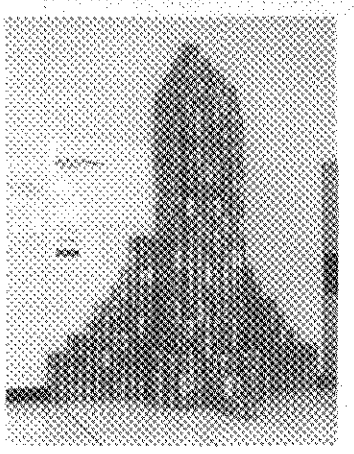
1. Cans were collected



2. Cans are caulked together in "blocks."



3. Assembly is easy.



4. The finished product is ready for countdown and takeoff.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov) (researcher-news@larc.nasa.gov), fax (757) 864-8810, telephone (757) 864-6150 or Mail Stop 146. 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.

It's March Madness at Langley, Baby!

The 1998 NASA Basketball Association (NBA) tournament was held March 13 and 14 in the gym. Upsets were on hand in the A-League with the fourth-seeded Cooters overpowering regular season champion Attitudes 38 to 37. Although the Attitudes led for most of the game, the Cooters finished strong led by Ray Rhew (15 points) and Bob Gifford (12 points). The other A-League semifinal game was also an upset as the third seeded Tools outlasted the second-seeded Bus Ride 58 to 55 in overtime. The tools were led by Dana Gould (19 points) and Chris Mouring (15 points). In the championship game, the Tool's Gordon Bayless led all scorers with 14 points as the Tools defeated the Cooters 54 to 40.

Front row (l-r): George Cowley, Don Smith, Eduardo Gutierrez (son of Luis), Alan Johnson.
Back row (l-r): Luis Gutierrez, Gary Willis, Keith Knight, Pat Bauer.
Not pictured: Tim Schott.

Below, seated (l-r): Sean Kenny, Jen Young, Charles Poupard. Standing (l-r): Lloyd Marks, Rodney Russell, Keith Belvin, Paul Daspit, Shannon Arnold, Burt Cano. Not pictured: Ricky Hall and Brian Jensen.

Photos by Dana Gould

Front row (l-r): Bill Tomek, Mark Frye, Brian Killough, Steve Young. Back row (l-r): Dana Gould, Brian Cheshire, Chris Mouring, Gordon Bayless, Kevin Laferriere, Phil Barry. Not pictured: Steve Sandford.

There were no upsets in the B-League as the regular season champion Ballers prevailed in the tournament. The Ballers started out by defeating fourth-seeded JIAFS 62-42, led by Sean Kenny's 22 points. The other B-League semifinal game matched the second-seeded Gougers against the third-seeded Aztecs. The Gougers won, 35 to 32, led by John Costulis (13 points) and Neil Cheatwood (11 points). But the inside-outside play of Costulis and Cheatwood were not enough to overcome Rodney Russell's 15 points in the B-League championship game as Russell led the Ballers to a 48 to 44 win.

The first semifinal game of the C-League tournament saw regular season champion DEI defeat the fourth-seeded Hookers 41 to 36. DEI was led by Barry Twine and Hubert Martin who both chipped in 14 points. The second C-League semifinal pitted the second-seeded Happy Losers against the third-seeded Old Coots. Again the favorite prevailed as Gary Willis and George Cowley with 12 points each led the Happy Losers past the Old Coots, 42 to 34. Cowley led all scorers in the C-League Championship game with 21 points as the Happy Losers defeated DEI, 35 to 28.

NASA INTERCENTER COMPETITION 1998

Spring races are scheduled on the following dates: 10-K races, April 13, 23 and May 4; 2-Mile races, April 16, 20 and 29. Races start at 5 p.m. on Doolittle Road at the Bldg. 1222 parking lot. May 7 at 5 p.m. A 2-mile run/walk will be co-sponsored with the Langley Fitness Center for National Fitness Month. This race also counts for the Intercenter 2-Mile. The Intercenter Competition is held each spring and fall among the NASA Centers. All Langley employees, retirees, and on/near-site contractors earn points for the Langley team by participating. Runners, joggers and walkers are welcome. For information, call Richard Shearer at ext. 47036. Langley Runners Club Web Site: http://larc-exchange.larc.nasa.gov/laa/runners

Career Center Welcomes New Counselor/Facilitator

BY SUSAN COSTELLO

Langley's career development resources grew by one staff member in March when Kathryn Haugan joined the Career Center team. She was introduced to the participants of the March 5 workshop, "So You Want to Be a Consultant!" and co-facilitated the workshop, "Resume Reality." Career Center counselor/facilitator Marty Brown remarked, "Not only is she a superb trainer, but her talents will help us bring extra focus and organization to

Photo by Jeff Caplan

Kathryn Haugan

Since its inception during the spring of 1995, the Career Center has established a reputation among participants for providing quality, career management assistance in a friendly, professional environment. Career Center offerings were originally primarily for individuals considering the buyout option. Over the past three years, services, facilities and workshops have expanded to include many items of interest to NASA employees who plan to stay.

While the Career Center still serves a number of spouses, prospective retirees, co-ops and other civil service individuals seeking career advancement in the private sector, many participants are NASA employees who want to remain in the workforce. They seek assistance from the Career Center to strengthen their communication skills, completion of application forms, interview skills, negotiating skills, in short to improve their chances of success and promotion.

The center has also offered workshops for specific work groups and has developed specialized workshops, such as "Effective Communication between Engineers and Technicians," to fulfill requests by organizations. Due to these expanded offerings, participation has increased to a level warranting an additional counselor/facilitator.

Haugan's background includes more than 20 years of experience in counseling and training, working in both the public and private sectors. Most recently, as an ODU faculty member, she did extensive curriculum development and course facilitation for the Accelerated Career Transition Education program. Overlapping that assignment, she worked with an executive outplace-ment firm conducting small group career transition workshops.

Haugan also managed her own human resource development firm. She consulted with a wide variety of regional business and government organizations, providing organizational needs assessment and professional development activities. Additionally, she is an adjunct faculty member with several area colleges, facilitating courses in business administration, human resource management, workforce education and development and organizational behavior.

A native of Norfolk, she earned her bachelor's degree in sociology from the University of Virginia and her master of arts degree in human resource devel-opment from George Washington University.

"Our careers are central to our sense of satisfaction with our lives," Haugan said. "I'm excited to be a part of the Center's effort to offer professional development activities to NASA employees in all stages of their careers."

Career Center Manager Anne Aakre is pleased to have Haugan on board. Aakre said, "We anticipate Kathryn's experience in training development will further enhance Career Center offerings."

COMMUNITY CORNER

CONTACT Someone Who Cares

Wish you had someone to talk to? Someone who would really listen? CONTACT serves all people in Hampton, Newport News, York County, Poquoson and beyond through confidential telephone assistance and community education programs. The caller might be a lonely and depressed person, a latchkey child at home alone and scared or an elderly or disabled person in need of emotional support.

Why does CONTACT work?

CONTACT works because people care. A 24-hour crisis hotline is staffed by trained volunteers ready to listen to anyone who calls. More than 2,000 calls are handled every month.

Here is how you can help

It takes about 200 volunteers to staff the 24-hour crisis hotline. Volunteer, and be trained as an "active listener." Become a CONTACT friend by making a tax-deductible donation. Volunteer to support fundraising projects. For more information about how you can become a CONTACT volunteer, or other ways you can help, call 757-244-0594.

National Engineers Week

1998 National Engineers Week Volunteers

For the eighth year, Langley National Engineers Week volunteers' willingness to reach out to make a difference in the lives of middle school students, grades 6 through 8 in the Hampton Roads area have made a great impact not only on the students but on the teachers. The volunteers, in their enthusiasm, shared the importance and relevance of mathematics, science, technology and communication skills in today's world.

The Center would like to acknowledge and thank the following people for their participation in the 1998 National Engineers Week program.

Ledora Akanni
Marilyn Aldridge
George Allison
Tahani Amer
Ruth Amundsen
Richard August
Melvin Bailey
Monica Barnes
Dan Barney
Sheri Beam
Laurence Bement
Gaudy Bezos-O'Connor
Bill Bissett
James Bolitho
Philip Brown
Sharon Burton
Robert Callaway
Mark Carpenter
Lin Chambers
David Christhilf
Julio Chu
Dan Cler
William Compton
Lawrence Cooper
Tom Daniels
Russell DeYoung
Glenn Diskin
Dana Dunham
John Edwards
Chuck Eldred
Patricia Erickson
Wayne Ewing
Greg Fletcher
Julie Fowler
Larry Gilbert
Anthony Giunta
Donner Grigsby
Steve Grossen
Shashi Gupta
Robin Hardy
Steve Harvin
Edward Hogge
Roger Howell
Linda Hunt
Jason Issac
Bruce Jackson
Hank Jarrett
Stanley Jones
Guy Kemmerly
Dr. John Lamar
Allen Larar
Andrew LaRoy
Andrew Lovejoy
Jim Luckring
Angela Mason
Anthony Maturo
Troy Middleton
James Miller
John Mitchell
Michelle Moore
Edward Morris
Al Motley
Mark Motter
Tom Moul
Vivek Mukhopadhyay
Effie Nicosia
Anthony Nutari
Clifford Obara
Sharon Padula
Vickie Parsons
Hayes Press
Barbara Pritchard
Anne Racel
Clay Rogers
Jim Rogers
Marianne Rudisill
Christopher Rumsey
James Russell
Robert Sandusky
Matt Sexstone
Dave Shuster
Scott Sims
Robert Singleterry
Mary Ann Smith
Sharon Smith
Susan Snell
M. Leroy Spearman
Debbie Steigerwald
Leroy Taylor
Geoff Tennille
James Townsend
Clayton Turner
Dan Vicroy
Myra Walton
Martin Waszak
Sharon Welch
Bill Willshire
Karen Wood
Glenn Woodell
Tom Yager
Katherine Young
W. Robert Young
Otto Youngbluth

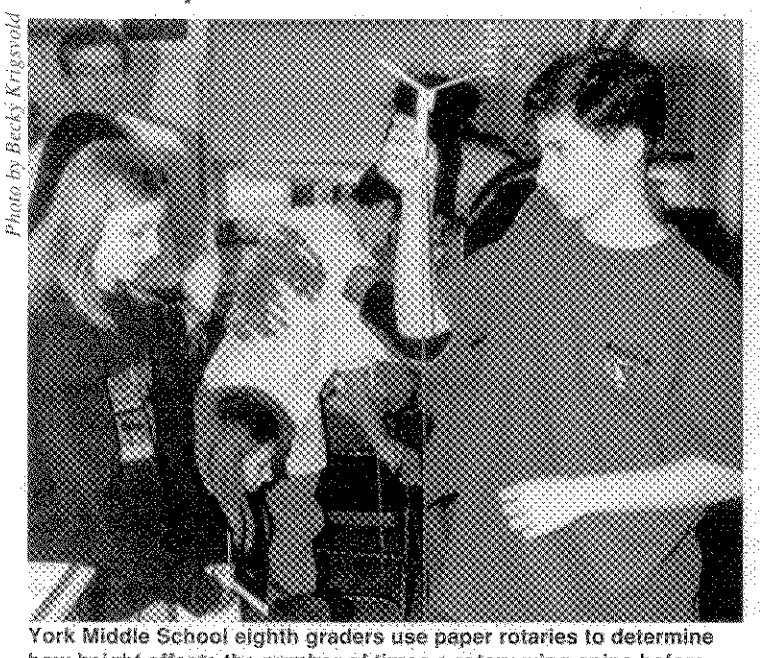


Photo by Becky Krigsvold

York Middle School eighth graders use paper rotaries to determine how height affects the number of times a rotary wing spins before landing. Jim Luckring, Aero- and Gas-Dynamics Division, demonstrated through this activity the practical applications of Algebra I in the NASA workplace.

National Engineers Week: Turning Ideas Into Reality

BY DR. SHELLEY CANRIGHT, PRECOLLEGE OFFICER
LANGLEY NEW PROGRAM MANAGER

"We involve the educational community in our endeavors to inspire America's students, create learning opportunities, and enlighten inquisitive minds." — ***1998 NASA Strategic Plan***

Although technological advances — made possible by about two million U.S. engineers — continue to rocket forward, engineering has been called the stealth profession because engineers generally are not in the public spotlight. To increase public understanding of the profession, the nation's technology-based companies, universities, government agencies and volunteer associations join together in the world's largest annual celebration of the engineering profession . . . National Engineers Week (NEW). This year NEW was recognized February 22-28.

As part of the celebration, Langley sponsored a series of special programs during the month of February for local K-12 students and the local community to demonstrate the real-world applications of mathematics, science and technology studies. Activities included visits to middle schools; a career day program for high school students; a live, interactive television program, *CONNECT*, for grades K-4 and 5-8 students on the local PBS station WHRO-TV; and a rebroadcast of *Journey Into Cyberspace*, a career series for middle school teachers, guidance counselors and students that was shown on WHRO and on NASA-TV. A special Langley NEW web page was created to provide online information about each of the events. It can be found on the Office of Education's home page at http://edu.larc.nasa.gov

School Visitations

For the eighth consecutive year, Langley National Engineers Week volunteers reached out to the educational community and motivated, and enlightened the minds of elementary and middle school students in the Hampton Roads area. The primary focus this year was on the middle school grades (6 through 8) to school districts within 50 miles of the Center.

The 103 civil service, contractor, grantee and retiree volunteers gave more than 200 presentations to about 10,000 middle school students in 44 schools within 12 school divisions. Armed with videos, demonstrations and models these volunteers shared the importance of mathematics, science, technology, team work and communication skills in school and throughout life.

Feedback from the teachers has been terrific. They rated the programs given by the volunteers as being a valuable experience for both teacher and students. Most strongly agreed that the

. . . continued on next page

Photo by Kevin Krigsvold

Fifth graders from Sedgefield Elementary School listen as Angela Mason, Structural Dynamics Branch, describes the type of material in the main landing gear tire that was used on the STS-39 Mission.

content of the presentations matched the school's educational objectives. Ruth Sandifer, teacher at Crittenden Middle School said, "This is an excellent program. Can't wait to have it again."

Evaluations from the teachers and volunteers will help improve the experience even further next year. Tom Yager, senior research engineer, Structures Division, claimed, "Every year I'm surprised by student questions, comments and interest. This program helps keep me feeling young!"

CONNECTing with Students

New to Hampton Roads public television this season is a program series created and produced through Langley's Office of Education called CONNECT. The CONNECT series constitutes four, 30-minute interactive broadcasts live from Langley's studio to grades K-4 and 5-8 audiences through WHRO-TV, Channel 15. Each program features one of NASA's four enterprises and is designed to demonstrate the connection between mathematics concepts and skills taught in the classroom and their application in the NASA workplace.

The CONNECT program *Earth from Space* was broadcast Feb. 10 and 17 to more than 400 registered sites. Guest researcher Dr. Mary Ann Smith, Atmospheric Sciences Division senior researcher, explored how scientists have used satellites to study the impact of human activities on global climate and examined with students the math behind the data from space-based instruments.

A partnership was struck in the preparation of this program with WVEC-TV, Channel 13. SKYMAX-13 chief meteorologist Jeff Lawson added a special element to his 5 and 6 p.m. weekday reports two weeks prior to the CONNECT broadcast. During the newscast student and parent viewers were presented with temperature data and were encouraged to complete a five-day temperature investigation that included calculating the range and mean for a given city and between cities. The exercise helped prepare and reinforce the mathematics concepts featured in the CONNECT video. Print materials to support the CONNECT program were available online at http://edu.larc.nasa.gov/connect.

Career Choices

In cooperation with the Peninsula Engineers Council (PEC), Langley hosted a Career Day program for high school students Feb. 18 and 19. More than 750 students from Hampton Roads including students from Camden County High School, Camden, N.C. attended.

The Career Day program focused on career information and provided students with the opportunity to visit NASA displays of projects and programs and to speak with engineering professionals from Langley's research and technical directorates and PEC engineering societies. Paul Holloway, retired Langley director and 1997 Engineer of the Year, was the keynote speaker for the event.

Journey into Cyberspace

Rounding out Langley's month-long National Engineers Week events was a 15-day broadcast on NASA Television of the video series *Journey Into Cyberspace* (JIC), which included follow-on web chats immediately following each day's broadcast. The six-part series, a col-laboration between Langley, the Virginia Space Grant Consortium and Old Dominion University Academic Television offered middle school educators a tool to help raise their students' awareness in high-technology fields and the application of scientific inquiry. Check out the JIC web site for more details on the series and to obtain support materials — http://careerjourney.vsgc.odu.edu The series is likely to become a popular addition to NASA's Television Education file.

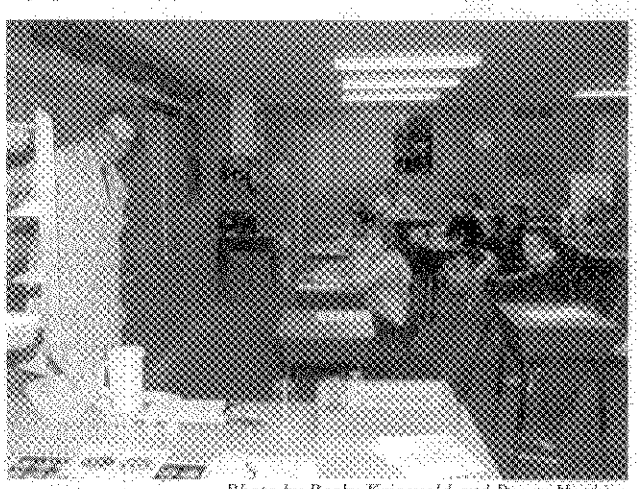


Photo by Becky Krigsvold and Peggy Hopkins

Fifth grade students from the Forrest Elementary School in Hampton watch with enthusiasm and anticipation as Dr. Al Motley, Systems Engineering and Control Branch, makes the students smile, dressed in designer science wear explains the process of tracking air pollution using absorption measurement techniques.

Photo by Becky Krigsvold

Jennifer Bakht and Brooke Williams from Nansemond Suffolk Academy talk with Dr. Tex Jones during a recent Career day.

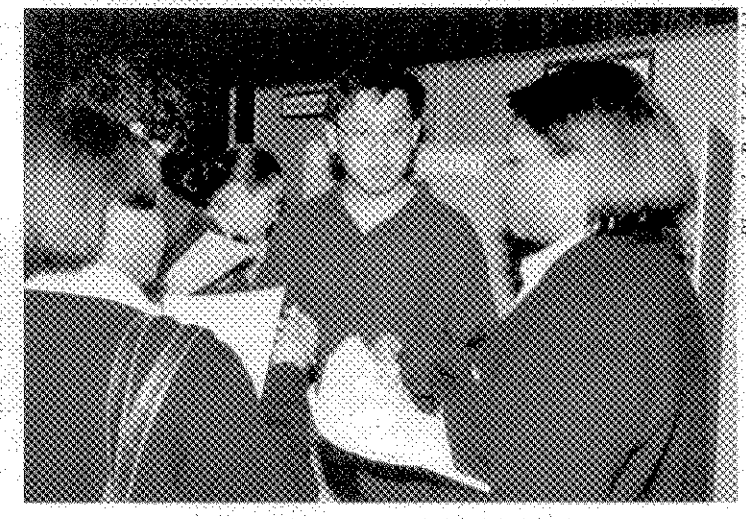


Photo by Becky Krigsvold

Students at Langley's Career Day discuss their options. NASA displays offered career information to the 750 high school students who attended the February event.

Year 2000 . . .

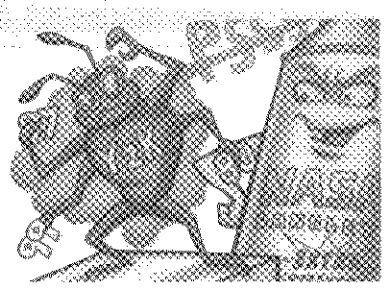
continued from Page 1

To help with the reassessment, Langley is using Y2K expertise from Computer Sciences Corporation (CSC). John Dodd, CSC's Y2K program director said, "Langley has a great resource of information technology that runs wind tunnels, test labs, space mission support and special engineering analysis. Though not as date-intensive as payroll, banking and Social Security, I suspect that changes in operating systems levels will be needed along with some fixes to applications."

"Identifying areas to be fixed in complex engineering systems and, especially, in embedded systems takes systematic and deeper analysis," he said. "I've seen other NASA software written in C++ and Unix that won a NASA award that had to make a fix to the code. The combination of CSC's Year 2000 expertise and collaboration with Langley personnel will provide focus for the necessary analysis and testing of high-risk areas."

The reassessment work is organized into 16 core areas: major wind tunnels, major test labs, small tunnels and labs, data acquisition systems, data reduction systems, spacecraft, aircraft, flight simulation, networks, information technology security, scientific and engineering, utilities, safety and security, scientific and technical information, business systems and desktop computers. Reassessment is slated to be finished July 1998. It will produce an as-sessment report with an action plan and certification status for the Center. The goal is to make Langley Y2K compliant in major areas by March 1999, a federal milestone. Y2K compliancy can be achieved by repairing, replacing, upgrading, retiring, using workarounds, or doing nothing where the risks are not significant.

The reassessment process of major facilities has begun. Staff from the Aero- and Gas Dynamics Division's (AGDD) tunnels have attended the Y2K awareness workshop, and started the inventory process for major systems in the tunnels. John Paulson, AGDD assistant division chief said, "Year 2000 is potentially very serious. We cannot have wind tunnels down in January 2000, and not be able to meet testing commitments to our customers. The first step toward compliance is a systematic inventory of the hardware and software systems that support our facilities. Then we will know the magnitude of the problem we may face." Staff from Structures, Materials, Fluid Mechanics, Flight Dynamics Division and



Facilities and Systems Support Division have just started the process by attending the workshop.

The PC BIOS (personal computer basic input and output system) Y2K issue is a known problem and Langley PCs need to be checked and corrected as necessary. To reduce redundant efforts, a Centerwide strategy for testing desktop PC BIOS is being formulated and will be by implemented by the Communications and Computer Systems Branch.

Visit the Langley Y2K web page (URL: http://cio.larc.nasa.gov/y2k) for more information on the Y2K problem, Langley's plans and the compliancy status of various vendor products. Through the Web page, questions or comments can be sent, and Y2K best practices can be shared. All employees are urged to tell their branch managers of any Y2K compliance concerns. Look for Y2K project progress updates on the Web page and in the Researcher News with the "Y2K Bug" logo.

AdVentures

INCOME TAX PREPARATION: For income tax preparation, call Nancy Taylor at 723-5227.

FOR SALE: Xerox 5220 personal copier, $175; brand new Simmons Beautyrest "Roosevelt Luxury" full size mattress and box springs, $200. Call 874-3121.

INCOME TAX PREPARATION: Member of National Association of Tax Practitioners. Get your refund fast with electronic filing and direct deposit at no extra charge. We travel to you, by appointment. 874-3121. http://home.switchboard.com/telatax

HOUSE FOR SALE: Beautifully renovated rancher in Hampton's historic Wythe section. 2 BR, 1 bath, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, a privacy fence, large detached garage/workshop, one block from the Chesapeake Bay in neighborhood with lots of trees. $69,900. Call 247-5144.

FOR SALE: Ericson 27' sailboat, exc. cond., diesel, wheel, split cockpit, new bottom paint, very good cruiser/club racer, $16,200. Call (804) 642-6507 evenings, (757) 878-3457, days.

FOR SALE: Beautiful 2-story condo in Kiln Creek. 2 BR, 2 baths, living room, kitchen, dining room, loft overlooking living area, wall-to-wall carpet, cathedral ceilings, patio with French doors, gas heat. Community swimming pool/club house, tennis courts, and paved walking/rollerblade path. $87,900. Call 989-0298.

TAX HELP: Call a qualified accountant with reasonable rates at 596-0959.

FOR SALE: Beanie Babies — current, new releases and retired. $10 and up. Call 865-0586.

TRAVEL PLANS: Manassas Travel, Inc. will present a Royal Caribbean international cruise night, April 3, 4 to 6 p.m. at the Buyout Social. Call ext. 42101 for more information.

JAZZ GREATS AT WRL: 1998 Grammy Award winning trumpeter Randy Brecker will join a quartet of jazz musicians in concerts at the Williamsburg Regional Library Arts Center Theatre April 10 and 11 at 8 p.m. Tickets are $13 in advance, and $15 the day of the show. Brecker recently won a Grammy for Best Contemporary Jazz recording for his Brazilian-inspired album "Into the Sun."

Jazz trombonist John Fedchock, formerly with the Woody Herman band, will perform with a trio of talented regional jazz musicians at the library theatre Friday, April 17 at 8 p.m. Tickets are $8 and $6 (for those under 16). Tickets for both events may be reserved by calling WRL at (757) 259-4070. More information on this and other library programs can be found on the Internet at http://www.wrl.org.

BALLET: The Chamber Ballet of Williamsburg will present a "Cultural Exchange" performance April 15 at 8 p.m. in the new Music Theater of Williamsburg. The performance will include a variety of dances, featuring dancers from the Cumberland Dance Company of Enola Pa., ENCORE! Dance company of Baltimore Md., the Virginia Beach Ballet Academy and Chamber Ballet's Apprentice, Junior and Senior companies. For ticket information call 229-1717. For more information on Chamber Ballet, visit their Web site at: http://www.worldreach.net/jantol/chamber.htm

BUYOUT SOCIAL: The LAA presents a Buyout Social, Friday, April 3, 2:30 to 3:30 p.m. in the H.J.E. Reid Conference Center with complimentary coffee, punch and light snacks. Everyone is invited to say good-bye to retirees. Enjoy the fellowship, refreshments, and signup for a special discount Caribbean cruise. LAA and Manassas Travel, Inc. will showcase opportunities and discounts for cruises, from 4 to 6 p.m. LAA Social begins at 4 to 9 p.m. Lasagna dinner served 4 to 7 p.m.— advance sales by April 1. Buyout retires receive two complimentary lasagna dinners (one for them and one guest), others $4 in advance. Call to register. Music by "The Melody Makers" is from 5 to 9 p.m. Call the LAA office at 864-6369, for dinner ticket and other information.

TRAINING OPPORTUNITY: The Program/Project Management Initiative announces its next program, "Creative Approaches in Project Management," April 20-24 at the Ramada Inn, Hagerstown, Md., to provide a forum for understanding key initiatives influencing NASA project management, and learn about state-of-the-art project management tools/techniques used by other agencies and industry. The workshop is for personnel with at least 5 years of project management experience, levels GS 13 to SES. If interested, please contact immediately: Sherry Douglas at (202) 554-8677 ext. 27 or e-mail at sdouglas@tadcorps.com

EARTH DAY 1998: The Atmospheric Sciences Division, Virginia Institute of Marine Science, Geology Dept. of the College of William and Mary; and American Institute of Aeronautics and Astronautics, are sponsoring an environmental briefing: "Air, Land and Water," Thursday, April 16, 10 a.m. to 1 p.m. at the Pearl Young Theater. For more information call: Arlene Levine 757 864-3318 or a.s.levine@larc.nasa.gov

Center Snapshots

Photo by Jeff Caplan

Inez Williams has worked in the cafeteria for the past 26 years. She retired for about three weeks. She returned to NASA because her boss asked her to and because everyone at Langley missed her, she said.

She has worked almost all of the positions in those years as a civil servant, and is currently working as a server in the main food line. She learned her skills by listening and watching others with more experience doing their own jobs.

Williams was born in Mullins, South Carolina on March 10, 1927 and moved to downtown Newport News in November of 1951. She is the mother of eight children.

* * * *

Asked what she likes about being at NASA Langley for so long, she replied, "I love the people and they love me."

– Inez Williams

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Researcher News

National Aeronautics and
Space Administration
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Pioneering the Future

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 7 ❖ April 17, 1998

Early Tests Show Sensor Could Make Air Travel Safer

BY DWAYNE BROWN, NASA HEADQUARTERS, KIRSTEN WILLIAMS, DRYDEN FLIGHT RESEARCH CENTER, AND KATHY BARNSTORFF

NASA is testing a new sensor that could make air travel safer by detecting clear air turbulence. An early warning would give pilots time to take safety precautions. First tests of the new turbulence sensor are promising, officials say.

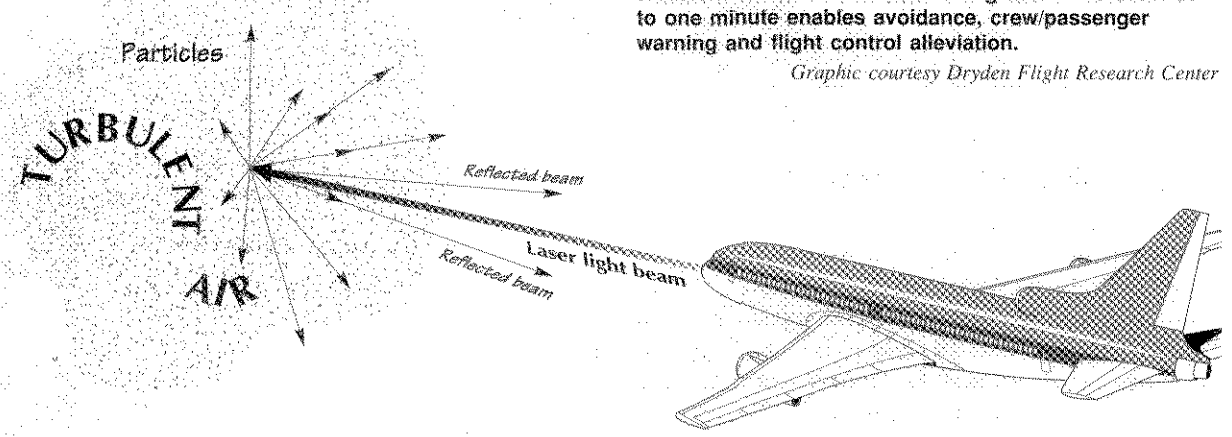
Clear air turbulence is an invisible safety hazard for aircraft. Though seldom damaging to modern aircraft, which are designed to withstand its stresses, it is the leading cause of in-flight injuries among the flying public.

What's Happening

During the tests, the system observed turbulent regions of air in the skies ahead of the aircraft. The plane experienced disturbances as it entered the turbulence. In that scenario, if an alarm were sounded when turbulence was first detected, passengers could have quickly returned to their seats and fastened their seatbelts before the encounter," said project manager Rod Bogue of NASA's Dryden Flight Research Center, Edwards, Calif.

Flights of the detector originated from Jefferson County Airport, near Broomfield, Colo. The experiment was flown on three separate flights for a total of more than seven hours at altitudes as high as 25,000 feet. Additional flights are slated to add to the turbulence database and to fine-tune the sensor for better measurements.

Currently there are no effective warning systems for clear air turbulence. It usually occurs at high altitudes near jet streams and in the vicinity of mountain ranges, and as far as 50 miles or more from developing storm systems. It's been referred to as" rough air" or "air pockets," that can be felt, but not seen.



Using the onboard Infrared Doppler Turbulence Sensor, a laser light beam is sent out ahead of the aircraft's flight path. Bouncing off of the swirling dust particles, the reflected beams reveal the presence of unseen turbulent air. This advance warning time of 20 seconds to one minute enables avoidance, crew/passenger warning and flight control alleviation.

Graphic courtesy Dryden Flight Research Center

The Sensor Device

The sensor device, called Airborne Coherent LiDAR for Advanced In-flight Measurement (ACLAIM), was designed and built by Coherent Technologies Inc., Lafayette, Colo., for NASA. It relies on a form of laser technology called Light Detection and Ranging (LiDAR), to detect changing velocities of tiny particles in turbulent air. As long as the wind velocity remains uniform, no turbulence exists.

But if the laser beam detects changes in the velocity, it's a clear indication of turbulence ahead. The laser technology is similar to the more familiar radar and can be envisioned as a kind of infrared radar. Although conventional radar uses radio waves, this laser technology relies on infrared light waves.

"The infrared radar concept uses a light pulse transmitted from the laser, and some of the light is reflected off the particles back to a sensor at the source," Bogue said. "The reflected light has a slight shift in frequency, called a Doppler shift, due to the aircraft's motion relative to the particles. By analyzing the frequency of the Doppler shift, the changes in wind velocity along the laser beam's path can be determined," he said.

During its first flight, the flight crew located turbulent conditions and used the infrared radar to measure the changes in wind speed — a measure of turbulence — before flying through the disturbed air. Once the aircraft reached the turbulence, the crew compared the pre-encounter measurements with the

Continued on Page 5

May 5 Colloquium and SIGMA Lecture Features "Innumeracy, Newspapers and Democracy"

Author and mathematician Dr. John Allen Paulos will present a talk entitled, "Innumeracy, Newspapers and Democracy" for the May Colloquium, Tuesday May 5, 2 p.m. at the H.J.E. Reid Conference Center.

The talk will reprise some of the issues discussed in the concept of innumeracy (lacking in the knowledge to deal with scientific and mathematical concepts) and, especially, in Paulos book, "A Mathematician Reads the Newspaper." Structured like the morning newspaper, the book investigates the mathematical angles of stories in the news.

"Number Stories" Tell the Story

Mathematical naivete can put readers at a disadvantage in thinking about issues in the news that may seem on the surface not to involve mathematics at all. "Number stories" complement, deepen, and regularly undermine "people stories." The notions of probability and randomness can enhance articles on crime, health risks or other societal obsessions (like the bible codes). Logic and self-reference may help to clarify the hazards of celebrity and spin-doctoring. Business finance, the multiplication principle and simple arithmetic point up consumer fallacies, electoral tricks and sports myths. Chaos and non-linear dynamics can suggest how difficult and frequently worthless economic and environmental prediction is. And mathematically pertinent notions from philosophy and psychology provide perspective on a variety of contemporary public issues.

About the Speaker

Paulos received his doctorate in mathematics from the University of Wisconsin. He is currently a professor of mathematics at Temple University in Philadelphia.

Dr. John Allen Paulos

In addition to being the author of a number of scholarly papers on mathematical logic, probability and the philosophy of science, Paulos has written "Mathematics and Humor" (1980), "I Think, Therefore I Laugh" (1985), "Innumeracy – Mathematical Illiteracy and Its Consequences" (1989), "Beyond Numeracy – Ruminations of a Numbers Man," (1991) and "A Mathematician Reads the Newspaper" (1995). "Innumeracy" was on the New York Times best-seller list for five months in 1989. "Beyond Numeracy" was translated into six languages. Both were extensively discussed in the national media. "A Mathematician Reads the Newspaper" hit the number one slot on the Amazon electronic booksellers list.

Recent writings and recognition have included his Folio Ovation winning article "Dyscalculia" in Discover magazine, an education article for the New York Times Book Review, the lead essay in the Washington Post's BookWorld, many appearances on public radio and C-Span, and OpEds in the New York Times on the Unabomber, stock market, etc.

COLLOQUIUM & SIGMA LECTURES

Colloquium Lecture:
"Innumeracy, Newspapers and Democracy,"
John Allen Paulos, Tuesday, May 5, at 2 p.m. in the H.J.E. Reid Conference Center

Sigma Lecture:
Tuesday, May 5, at 7:30 p.m. at the Virginia Air and Space Center, Hampton. For information, call 727-0900

An active public speaker, Paulos has spoken to audiences from the Smithsonian to the National Academy of Sciences, local colleges, mathematics associations and business and financial forums.

Sigma Series Lecture

Paulos will also deliver a similar Sigma Series lecture Tuesday, May 5 at the Virginia Air and Space Center at 7:30 p.m. The Virginia Air and Space Center serves as NASA Langley's official visitor's center. It is located in downtown Hampton at 600 Settler's Landing Road. For directions or more information about the Sigma Series and the Virginia Air and Space Center's other programs, call (757) 727-0900.

More Information

Dr. Paulos website is located at http://www.math.temple.edu/~paulos/

For information about this and future colloquia, the Colloquium and Sigma Series homepage is located http://oldtown.larc.nasa.gov/Lectures/lectures.htm

NewsBriefs

Around the Agency

EARTH DRAGS SPACE AND TIME AS IT ROTATES: An international team of NASA and university researchers has found the first direct evidence of a phenomenon predicted 80 years ago using Einstein's theory of general relativity — that the Earth is dragging space and time around itself as it rotates. Researchers believe they have detected the effect by precisely measuring shifts in the orbits of two Earth-orbiting laser-ranging satellites, the Laser Geodynamics Satellite I (LAGEOS I), a NASA spacecraft, and LAGEOS II, a joint NASA/Italian Space Agency (ASI) spacecraft. The research, which is reported in the current edition of the journal Science, is the first direct measurement of a bizarre effect called "frame dragging." "General relativity predicts that massive rotating objects should drag space-time around themselves as they rotate," Dr. Erricos Pavlis of the Joint Center for Earth System Technology said. "Frame dragging is like what happens if a bowling ball spins in a thick fluid such as molasses. As the ball spins, it pulls the molasses around itself. Anything stuck in the molasses will also move around the ball. Similarly, as the Earth rotates, it pulls space-time in its vicinity around itself. This will shift the orbits of satellites near the Earth."

For more information on the above news item, check the Internet for NASA's News and Information Web page at http://www.nasa.gov/releases/1998

Announcements

Virginia Waterfront International Arts Festival

The second annual festival, April 23 through May 10, includes such events as Itzhak Perlman, Gladys Knight, Moscow Chamber Orchestra, Universal Ballet of Korea, Perks Dance Music Theatre, The Parsons Dance Company and an International Military Tattoo. Events for children include the Flying Danish Superkids and Carnival of the Animals. For tickets and information, call TicketMaster at 671-8100 or the Festival at 664-6492. Group discounts for 10 or more are available.

Bud Southall Retirement Social

A retirement social in honor of Charles (Bud) M. Southall III will be Tuesday, April 21, beginning at 5 p.m. in the H.J.E. Reid Conference Center. The social will include heavy hors d'oeuvres and refreshments. Cost is $12 per person, which includes gift. For reservations, contact Linda McKnight, ext. 44572, or Gloria Evans at Mail Stop 481, ext. 44570 by April 17.

Bryce Kepley Retirement Social

A retirement social for Bryce Kepley will be held May 8, 5 to 8 p.m., in the H.J.E. Reid Conference Center. Heavy hors d'oeuvres will be served and a cash bar will be available as a part of this retirement celebration. Gift donations of $4 will be accepted. Please respond to Boyd Perry, ext. 42840, about gift donations and attendance by May 1.

Strehle/Singleton Retirement Cookout

Join us for a retirement "Wing Ding" cookout for Frank Strehle and John Singleton, Thursday, April 23. Fun starts at 4:30 p.m. at the big shelter (#1) next to the H.J.E. Reid Conference Center. Cost is $5 per person (in advance). RSVP to Keith Knight <h.k.knight@larc.nasa.gov> Bldg. 1209, Room 150A, Mail Stop 442.

A listing of all March/April 1998 retirees can be found on page 3 of this issue.

Future Conferences Scheduled RCC

Coming up at the H.J.E. Reid Conference Center are the following:

• May 11 to 13, Flight Dynamics Working Group;

• May 18 to 20, Magnetic Levitation and Propulsion Workshop. The workshop will examine the state of technology in the development of high-speed electromagnetic levitation and propulsion systems.

• June 8 to 12, Smart Structures and Actuators Conference.

Also coming up, August 31 to Sept. 3, a DOD/FAA/NASA Joint Aging Aircraft Conference to be held in Williamsburg.

For more information about the conference center, contact Pam Verniel at ext. 46362.

In Memoriam

Dr. Eugene Lundquist

Dr. Eugene Lundquist, 90, died Sunday, Feb. 1.

Lundquist, former head of the Structures Division, was well-known for his theory on buckling of aircraft plates and shells. He retired in 1963 after 34 years of service at Langley.

1998 Space Shuttle Launch Schedule

The Space Shuttle launch schedule for the rest of 1998 is shown below.

For up-to-date information, see <http://www.ksc.nasa.gov/shuttle/missions/missions.html>, accessed from the Kennedy Space Center homepage.

• STS-90 Launch, April 16, 2:19 p.m. EDT
• STS-91 Launch, May 28, 8:05 p.m. EDT
• STS-88 Launch, July 9
• STS-95 Launch, Oct. 29
• STS-93 Launch, Dec. 3
• STS-96 Launch, Dec. 9

Causeway passes are available from Olin Jarrett, (757) 864-6320, o.jarrett@larc.nasa.gov, about three weeks before each launch.

Aerosciences in the 21st Century Workshop

The Computational Sciences Technical Committee (CSTC) and the Institute for Computer Applications in Science and Engineering (ICASE) are holding a workshop aimed at examining emerging technologies that may lead to a reduction in the time required for computations of physically and geometrically complex phenomena by two orders of magnitude.

The workshop will be April 22 to 24 at the Radisson Hotel in Hampton, Va. It is co-sponsored by NASA, ICASE, National Science Foundation and the Army Research Office. There is no cost to employees of sponsoring organizations but registration is required. A full list of speakers and other information can be found on the ICASE website at http://www.icase.edu/workshops/CAS21st.html

National Partnership for Reinventing Government Announces Electronic Records Mgmt. Conference

A conference, Solving Electronic Records Management (ERM) Issues for Government Websites: Policies, Practices and Strategies, will be April 22 in Washington, D.C. Learn current legal issues, policies, practices and strategies; and contribute to ERM recommendations for a research report to the National Archives and Records Administration. For details and to register, contact http://www.federalinstitute.com or call Christina Nelson at 301-320-4397.

March Speakers Bureau Ceremony Recognizes Participants

Braun Named 1997 Speaker of the Year

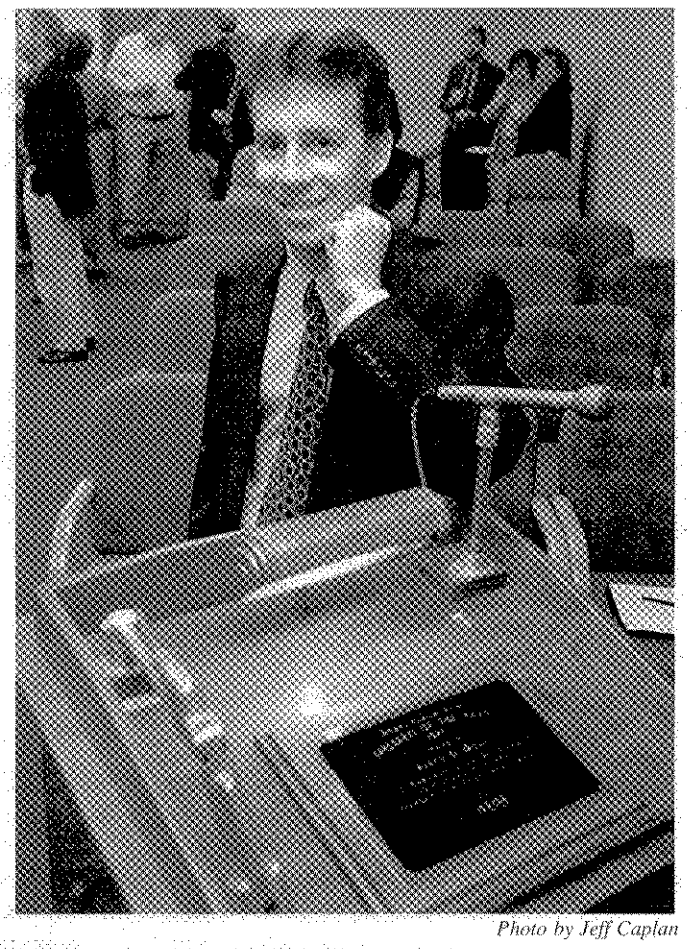


Photo by Jeff Caplan

Bobby Braun, Vehicle Analysis Branch, was named as Langley's 1997 Speaker of the Year. Braun made 10 Speakers Bureau presentations last year, most about his work on Mars Pathfinder/Sojourner.

The Speakers Bureau is a key program in Langley's outreach effort to inform its stakeholders of the value they receive for the investment they make in NASA and in Langley.

This year, 62 speakers gave 127 talks to more than 13,000 listeners, an 83 percent increase over the previous year.

Ten speakers gave at least three talks during the year and earned Speakers Bureau pins: Bobby Braun, Lin Chambers, John Mouring, Sam James, Angela Mason, Clyde Medley, Al Ragsdale, Rob Rivers, Dan Vicroy and Bob Witcofski. Two others also gave three talks each but have already earned a pin: Mary Ann Smith and Leroy Spearman. The next group of awardees each gave five or more presentations during 1997: Jane Hogge, seven talks, Lin Chambers, eight talks , Christine Darden, nine talks and Bobby Braun, 10 talks.

Braun was named Langley Speaker of the Year. He had an important part in NASA's very visible accomplishment — the highly reported Mars landing July 4, 1997, as a member of the Pathfinder-Sojourner Landing Team.

Keynote speaker Dr. Jeremiah Creedon, Center director, said, " The Speakers Bureau is very important to me. The work you do telling the NASA story is most definitely a high priority at this Center and throughout the Agency. I can't emphasize enough how much we value your efforts. We at Langley are fortunate to have a cadre of ambassadors so enthused about the work we do here that you are willing to go into the community — often on your own time — and talk about NASA's value to the Nation," Creedon said.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov) (researcher-news@larc.nasa.gov), fax (757) 864-8810, 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.....Ann C. Gaudreaux
Science and Technology Corp.

Assistant Editor..... .....Jeane Shanks
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.

Chat Live on the Internet with Apollo Astronauts and Actors from HBO'S "From the Earth to the Moon"

A series of live Internet chats featuring astronauts and other key figures of the Apollo program, the actors who portray them, and creators of HBO's miniseries, "From the Earth to the Moon" began April 4. The chats are being coordinated for HBO by the National Space Society, a nonprofit space advocacy organization.

HBO's "From the Earth to the Moon" follows the voyages of America's Apollo astronauts and the 12 manned Apollo missions — from the early U.S. space efforts in 1961 to the final Apollo lunar mission in 1972. The exclusive 12-part miniseries will air on HBO on six successive Sundays. They began April 5 and continue through May 10, with two, one-hour dramas airing each night from 8 to 10 p.m. Eastern time.

For the latest chat guest list, visit <http://www.nss.org/apollo>. For complete information on the miniseries, visit <http://www.hbo.com/apollo>.

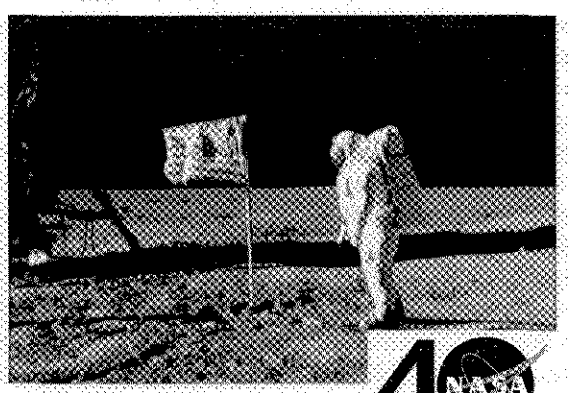


Photo by Jeff Caplan

Mike Lewis, above left, and Mike Wusk talk before the start of the HBO special preview of "From the Earth to the Moon" at the Virginia Air and Space Center March 31. The museum played host to the partners involved in producing the movie, which included NASA Langley.

The Internet Chats

WHEN/WHO: (NOTE: Guests confirmed as of March 30, 1998; schedule subject to change and additions)

- Saturday, April 18, 8 - 9 p.m. ET
Astronaut Buzz Aldrin (Apollo 11), Actor Bryan Cranston (Buzz Aldrin)
- Saturday, April 25, 8 - 9 p.m. ET
Former Apollo Flight Director Chris Kraft, Actor Stephen Root (Chris Kraft)
- Saturday, May 2, 8 - 9 p.m. ET
Actor Daniel Hugh Kelly (Gene Cernan), Actor David Clennon (Lee Silver)
- Saturday, May 9, 8 - 9 p.m. ET
Astronaut Harrison Schmitt (Apollo 17), Actor Tom Amandes (Harrison Schmitt)

WHERE: PEOPLE.com Auditorium on Yahoo! Chat at <http://chat.yahoo.com> Home Box Office brings the space race to cyberspace with its most ambitious Web site to date for "From the Earth to the Moon" <http://www.hbo.com/apollo>.

The live Internet chats are sponsored by the National Space Society, PEOPLE.com, LIFE.com and Yahoo! Chat.

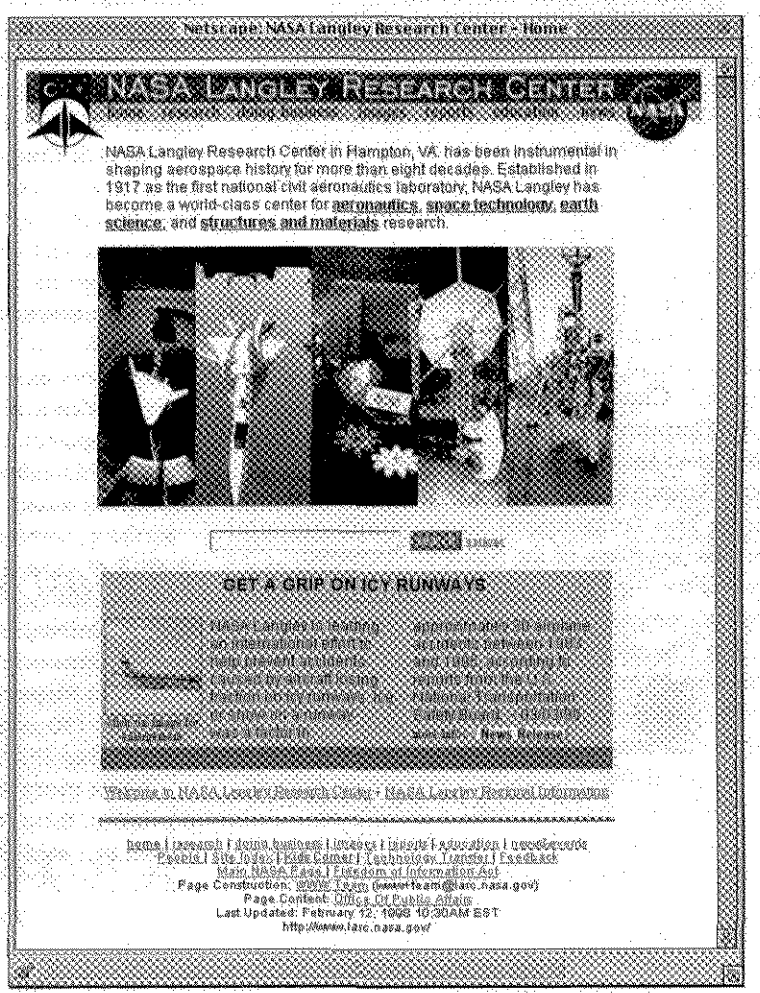
The Miniseries Schedule

The following segments from the miniseries "From the Earth to the Moon" are coming up on HBO. They are aired on Sundays at 8 p.m.

- Sunday, April 19
Part 5: Spider
Part 6: Mare Tranquilitatis
- Sunday, April 26
Part 7: That's All There Is
Part 8: We Interrupt This Program
- Sunday, May 3
Part 9: For Miles and Miles
Part 10: Galileo Was Right
- Sunday, May 10
Part 11: The Original Wives' Club
Part 12: Le Voyage Dans La Lune

More than 100 locations were used in the filming, including NASA's Kennedy Space Center (KSC) and other Florida locations like the Naval Training Center and the Utility Commission in Orlando, Edwards Air Force Base and Tustin Marine Air Corps Station in Calif.

Check Out the New NASA Langley Homepage Design



Above is the prototype homepage design for NASA Langley. It can be found by using the address listed below. Employee feedback is welcomed and an online evaluation survey is found on the new homepage.

The NASA Langley homepage has been redesigned to inform Langley's stakeholders, both the public and our strategic partners, of the Center's research and its value to the Nation. To help customers make the best use of the homepage, the new design is intended to be user friendly and nontechnical.

To provide easy access to important information about Langley's programs, the new homepage contains links to six main topics. These topics are *Research, Doing Business, Images, Reports, Education* and *News and Events*. Each main topic page contains links to related Langley homepages. Many homepages fall under more than one main topic and, as such, are linked under several of the main topics.

The new homepage design will be accessible from the Langley homepage for an evaluation period. The World Wide Web team and the Office of External Affairs would like employee feedback on the new design, so please take the time to review the new page and complete the on-line evaluation survey by May 15. The team will use all feedback to finalize the homepage design before replacing the current Langley homepage in June. The address of the new homepage is <http://wwwd.larc.nasa.gov/newsite.html>

Bidding a Fond Farewell to Langley Co-Workers

The following Langley employees have retired during March and April 1998. They will be missed by their co-workers on Center. The Center thanks each one for their years of service, wishing them health and happiness.

Retirees are: Irving Abel, Jose Alvarez, E. Marie Ashe, Billy Ashworth, Thomas Bales, Salvatore Bavuso, Robert Blakeslee, Susan Bostic, Shirley Boswick, Cuyler Brooks, Jr., David Brooks, Inez Byars, Anne Cary, Joseph Chambers, Joyce Clemens, C. Gerald Clendenin, James Coon, Paul Cooper, Leonard Credeur, David Davis, William Davis, William Drummond, Bette Duncan, R. Earl Dunham, Jr., David Duxbury, Peter Edgette, Bert Emerson, Jr., Barbara Eutsler, Alexander Evans, Robert Evans, Gail Fairheart, Wilbur Fichter, Michael Fischer, Diane Forrest, Jerome Foughner, Jr., Thomas Frasher, Archibald Fripp, Robert Fults, Luther Gartrell, Gary Giles, Philip Glaude, Henry Goad, Arthur Gooden, James Griffith, William Hampshire, Charles Harris, Randall Harris, Sr., Troy Haskins, Ronnie Henk, Brickey Hughes, Casimir Jachimowski, Bryce Kepley, J. Wayne Keyes, Kemper Kibler, Earl Knight, Dolores Kochman, Mary Ella Kopia, Betty Lane, Richard Layman, Martin Leatherman, Peter LeBel, Sara Lindberg, W. Barry Lisagor, Henry Livas, Jr., Econyes Lowe, Dal Maddalon, Donald Maiden, Michael Mann, John Mathews, Robert McGhee, Lemuel Meetze, Sandra Mims, Frederick Moore, Jarmon Moore, John Mouring, Jr., Arnold Mueller, Lloyd Nelson, G. Burton Northam, Kemp Parrish, Joseph Phillips, Howard Price, James Privette III, Ronald Rader, Patricia Reagon, Alberta Reid, James Richardson, Velma Richardson-Martin, James Robertson, Arthur Robinson, Jr., Martha Robinson, William Rollins, Jr., Lawrence Rowell, Richard Russell, William Scarlett, Benjamin Schlichenmayer, Edward Self, Ronald Shaiken, Betty Sheets, David Shuster, Willis Simmons, John Singleton, Jack Smith, Kathryn Smith, Robert Smith, Jr., Charles Southall III, John Soule, James Spencer, David Stephens, Francis Stone, Frank Strehle, Buford Thaxton, Blas Villanueva, Jr., Susan Voigt, Raymond Walters, Joseph Walz, Allen Wieting, Diane Wieting, Jane West, Jimmy Wilson, Robert Witcofski, Davis Wright, Jr., Eleanor Wynne, Edgar Yarrington and Katherine Young.

March — A Very Active Month for The Speakers Bureau

The Speakers Bureau reports the following activity for March 1998:

Dick Davis spoke to two groups of students at Matthew Whaley Elementary School about "The Solar System." **Sonny Overbay, Anna Noe** and **Nina Tappan** gave students at Samuel P. Langley Elementary School a demonstration on temperature changes and the use of fiber optics. **Joe Struhar** spoke at the Hampton Rotary Club dinner meeting about "Langley's Economic Future."

Jane Hogge spoke to students at Round Hill Primary School in Roanoke about "Working in Space." She also addressed Virginia Beach's Alanton Elementary School second graders about "Space Exploration." **Charles Southall III** spoke to Poquoson Elementary students about "Airplanes." **Angela Mason** spoke to Hampton University's Computer Science Club. Her topic was "You Can Succeed In This Technological World, If You Believe," an overview of the National Transonic Facility and the Aircraft Landing Dynamics Facility, pointing out computer science applications.

Dr. Lin Chambers spoke to the Woman's Club of Hampton about "Atmospheric Science." **Dr. Stanley Woodard** spoke to the Lindsay Middle School CHROME club about "Mars Pathfinder and aerospace technology developed by Langley." **Bobby Braun** spoke to Old Dominion University's Institute of Electrical and Electronic Engineers about "Mars lander and rover engineering problems, methodology used to solve them, possible equipment presentation, future mission requirements or problems." Braun gave the same talk to students at Virginia State University and Polytechnic Institute.

Ledora Akanni spoke to a first grade class at Lee Elementary in Hampton, using the shuttle and rover models to explain how they worked and their purpose in NASA's space mission. She gave the same talk at the Pearl Bailey Library in Newport News. **Willard Bauserman** spoke to Bethel Baptist Preschool students about "Space and the Space Suit." **Olin Jarrett** spoke to an engineering technology class at Western Carolina University about "Careers in Math and Science." He also was a judge at a Regional Science Fair at the university for Cullowhee Elementary School, grades 4, 5 and 6, and spoke to students, grades seven through 12, about "Space."

Craig Hunter addressed the College of William & Mary, Department of Mathematics about "Using Technology and Multimedia in Math, Science and Engineering Education." **Dr. Mary Ann Smith** spoke at Hines Middle School sixth grade talented and gifted program science classes about "Rainbows, Halos and Sun Dogs."

Community Corner

HELP BUILD A BETTER FUTURE

Spring has finally arrived and what better time to start a new project? Housing Partnerships, Inc. (HPI) offers volunteers an opportunity to help relieve substandard housing and give families a fresh start on the future.

Background

Established in 1985 and now a United Way Agency, HPI continues to replace housing and repair homes for people in Williamsburg, James City County and York County. Housing Partnerships, Inc. helps scores of local citizens who are physically or financially unable to improve their living situations.

How You Can Help

Volunteer opportunities include painting, construction, and fund raising. HPI organizes their projects so that all you need to do is arrive ready to work and you are on your way to helping build a better community. To learn more about this opportunity, and how you can put your skills to work, please contact Nayda Pophal at 221-0225.

NASA Offers Unique Business Opportunity

BY KATHY BARNSTORFF

WANTED: High-tech pioneer to move NASA technology into the marketplace

REWARD: $800,000 in start-up money

NASA Langley is looking for a business willing to stake its future on technology developed by NASA engineers.

The U.S. Congress has set aside $5 million over the next two years to fund three new and six existing small business incubator programs at NASA facilities across the country.

The financial incentive is designed to help companies move NASA technology into the marketplace.

"Business incubators have proven to be an effective accelerator for entrepreneurial, technology-based companies," according to Dr. Joe Heyman, director of Langley's Technology Applications Group. "By aiding small and/or start-up firms in the application of the unique and innovative technologies within federal labs, business incubators represent a valuable economic growth opportunity for Hampton Roads," he said.

State and local governments, U.S. universities and private companies can submit proposals not only to NASA Langley Research Center, but also to the Goddard Space Flight Center in Maryland and the Dryden Flight Research Center in California.

Firms must be willing to locate within 30 miles of each of the three centers and match start-up money provided by NASA. Each business incubator is expected to receive $400,000 a year over the next two years.

The deadline for submitting proposals is May 29. Awards will be announced around July 1.

More details can be found at <http://www.nctn.hq.nasa.gov>

10 Most Memorable Record Flights of 1997 Announced

The National Aeronautic Association (NAA) recently announced its eighth annual selection of the "Ten Most Memorable Record Flights," chosen from more than 150 aviation records set in the United States during 1997.

"While every record is an important contribution to aviation, these records have left a lasting impression on us," said Art Greenfield, director of Contest and Records for NAA. These are NAA's selections:

• Lifting off from Busch Stadium in St. Louis, Mo., Steve Fossett kept his Rozier balloon aloft for six days, two hours, and 44 minutes, before coming to rest in Sultanpur, India. This record for "Duration" was set January 14 through 20.

• The unmanned, solar-powered AeroVironment Pathfinder, remotely piloted by Dave Ganzer and Greg Kendall, climbed its way to a height of 71,504 feet, off the coast of Kauai, Hawaii. This record for "Altitude" was set July 7.

• Departing Seattle on April 1, Frank Santoni and the crew of a Boeing 777-200-IGW circled the globe in one day, 17 hours, 58 minutes, at an average speed of 552 mph. This flight earned them the record for "Speed Around the World, Eastbound."

• Departing Washington, D.C., in a Gulfstream V, Bernard Ozbolt, Henry Gibson, and Robert McKenney, flew nonstop to Dubai, United Arab Emirates, a distance of 7,055 miles. This record for "Distance Without Landing" was set Nov. 13.

• Using ridge lift along the Appalachian Mountains, Karl Striedieck flew his Schleicher ASW-27 glider from Mill Hall, Pa. to Selma, Ala., a distance of 800 miles. This record for "Straight Distance to a Goal" was set April 18.

• Space Shuttle Discovery Commander Ken Bowersox and the crew of STS-82 reached an altitude of 387 miles above the earth during the mission to service the Hubble Space Telescope. This record for "Altitude in Paracircular Orbit" was set Feb. 19.

• Members of an all-women skydiving team joined over the skies of southern California in a 25-person, open canopy formation, setting the record for "Largest Canopy Formation—Feminine Category" Oct. 17.

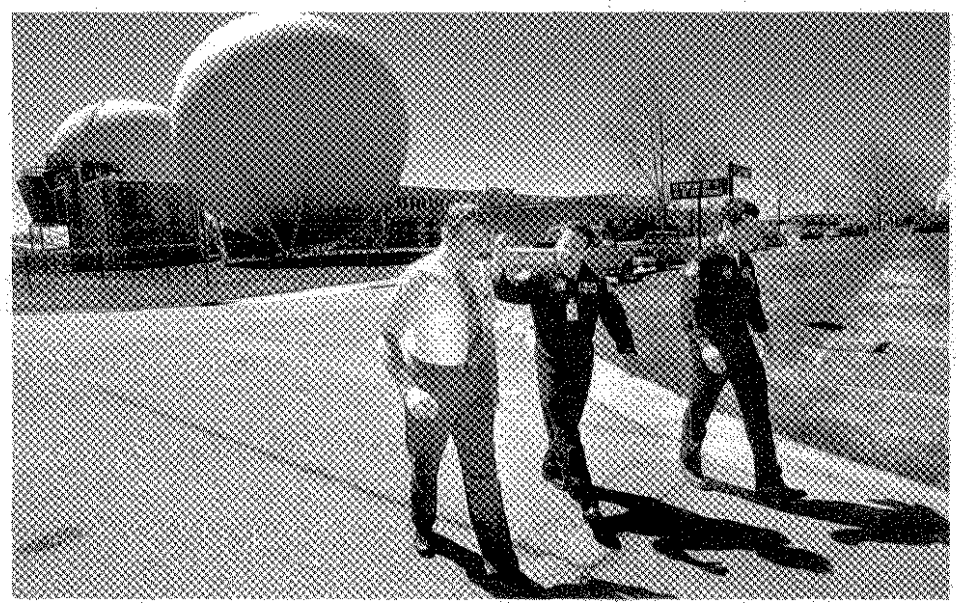
• On a scheduled flight from Hong Kong to San Francisco, United Airlines Capt. David Link made the journey in a Boeing 747-400 in 10 hours, 26 minutes, averaging 661 mph. This record for "Speed Over a Commercial Air Route" was set Feb. 18.

• After release from a tow-launch over California City, Calif., Jim Payne flew his Schempp-Hirth Discus A glider over a 65-mile triangular course at an average speed of 135 mph. This record for "Speed over a 100 km Triangular Course" was set March 3.

• During a tour around the United States in their twin-engine Piper Comanche PA-30, Addison Farmer and Harley Hice visited all the state capitals in eight days, nine hours, and eight minutes. This record for "Fastest Time to Visit All the State Capitals in the Contiguous U.S. and the District of Columbia" took place July 4 through 13.

These individuals, and many others, were honored March 30, at the Annual Awards Ceremony of the NAA at the National Air and Space Museum, Washington, D.C.

The NAA has more than 100 member organizations. Through its member affiliates, the association works to serve more than 400,000 individuals — 250,000 are active aviators. The NAA is the National Aero Club of the United States and the nation's oldest aviation organization. Its mission is the advancement of the art, sport and science of aviation and space flight. NAA is also the U.S. representative to the Fédération Aéronautique Internationale, an 88-country organization that oversees all aviation and space records established worldwide. The NAA can be contacted at 1815 N. Fort Myer Drive, Suite 700, Arlington, Va. 22209.



Astronauts Visit Center

Wayne Sawyer, left, Thermal Structures Branch, gives astronauts Charlie Camarda, center, and John Herrington a tour of the 8-Foot High Temperature Tunnel and the Combined Loads Test Facility (COLTS). The two flew to Langley April 5 to see tests being conducted on a thermal protection system for the X-33. Camarda worked on the systems prior to his present position.

Photo by Jeff Caplan

Celebrate April as National Poetry Month with Williamsburg Regional Library

The third annual National Poetry Month, created by the American Academy of Poets, will be marked in April at the two libraries of the Williamsburg Regional Library system with several free programs.

— Poetry Open Reading, April 21 at 7 p.m. in the Williamsburg Library Arts Center Theatre. Are you a poet but the world doesn't know it? Here's an chance to read your own poetry or just come to hear another poet read theirs. All ages are welcome, but participants must limit their selections to fewer than three poems or less than 10 minutes total reading time.

— Poetry reading by members of the Williamsburg Poetry Guild, April 25 at 2 p.m. in the James City County Library Community Room. This group of local poets will read original works that they have created over a five-year period.

— Boot Hill and the Alimentary Spirit World of Southern Joy, April 29 at 7 p.m. in the James City County Library Community Room. Ron Smith, writer in residence and George O. Squires, Chair of Distinguished Teaching at St. Christopher's School, Richmond read the title poem and others from a new manuscript. Smith, who also teaches creative writing at the University of Richmond, led the Williamsburg Regional Library's 1997 series on contemporary American poetry.

National Poetry Month was inaugurated by the Academy of American Poets in 1996 to bring together publishers, booksellers, literary organizations, libraries, schools and poets around the country to celebrate poetry and its vital place in American culture.

Additional information on this and other library programs, along with links to other poetry resources, can be found on the Internet by searching for Williamsburg Regional Library or by going directly to http://www.wrl.org or calling (757) 259-4071.

Spring Cleaning Reminder from VPPSA

Remember the yard when you are in the middle of spring cleaning. Leftover leaves from the fall, new grass growth and prunings can all be recycled rather than thrown away.

The Virginia Peninsulas Public Service Authority's Composting Facility can take those yard trimmings and leaves, and turn them into new products for use in landscaping the yard and garden. For more information, call the facility at 898-5012.

NASA Awards Contracts for Space Telescope

BY KIMBERLY W. LAND

NASA's Langley Research Center has awarded five contracts to four companies to develop prototypes of cryogenic actuators for the Next Generation Space Telescope (NGST). The NGST, a predecessor to the Hubble Space Telescope, is a $500 million project planned for launch some time in 2007. The actuators are corrective, movable devices that will perform several objectives for the NGST being developed by NASA.

The contractors will design, fabricate, and test cryogenic actuator systems to control the figure, tip, tilt, and focus of the primary mirror, position of the secondary mirror, and actuator arrays for a deformable mirror as a basic contract effort.

The primary purpose of the NGST will be to view stars in the infrared spectrum – good infrared spectroscopy requires very cold temperatures which allows one to see red-shifted stars better to study the origin of the universe. It will have a primary mirror that is nearly four times as large as Hubble's. The eight-meter mirror will have much more light gathering capability than Hubble's. Operating much farther from Earth, the NGST will have more simplified operations, with enhanced image sharpness compared to that of the Hubble Space Telescope.

American Superconductor Corporation based in Westborough, Mass., was awarded a contract for $18,750. American Superconductor Corp. is a leader in developing commercial applications of superconductor technology for the global electric power industry. Xinetics, Inc. in Devens, Mass., was awarded a contract for $20,000. Xinetics, Inc. specializes in the development of cryogenic actuators for deformable mirrors.

Energen, Inc. in Billerica, Mass., has been awarded two contracts; one for $32,900 and the other for $34,600. Energen, Inc. develops, manufactures, and markets actuators for precision positioning, robotics and active vibration control based on magnetic smart materials technology.

The last contract was awarded to Alson E. Hatheway (AEH), Inc. in Pasadena, Calif. for $41,000. AEH, Inc., recognized for its Angstrom™ transducers and actuators, focuses on engineering solutions, in the areas of precision motion, opto-mechanics, and engineering analysis.

The NGST is managed at Goddard Space Flight Center in Greenbelt, Md. For more information on the project, refer to the NGST homepage at http://www.ngst.nasa.gov/

AeroMat '98 Announces Conference

The 9th Annual Advanced Materials and Processes Conference and Exposition will be held June 15 to 18 at the Sheraton Premiere Hotel in Tysons Corner, Va. The conference title for 1998 is "Materials Solutions: Optimizing Performance in Today's Aerospace Environment."

Representatives from Langley will be on hand to lead or address seminars on launch vehicle technology, light alloy technology, titanium alloy technology, microstructures and other topics. AeroMat offers practical answers to tough structural and engine materials problems in the aerospace industry.

For more information, call ASM International customer service center at 800-336-5152, ext. 5900, e-mail Cust-Srv@po.ASM-Intl.org, or visit the web site at <http://www.ASM-Intl.org> The advanced registration deadline is May 26.

March Blood Drive Helps Local Supply

The March 25 Blood Drive yielded 213 pints for the local chapter of the American Red Cross. Special thanks is extended to two first-time donors: Tanya Lane and Karl Moeller.

Special recognition also goes to longtime donors: Dennis Holloway, 10 gallons; Fred Beissener Jr., nine gallons; Jan Benson and James Dillon, eight gallons; James Adams and Steven Bauer, seven gallons; Timothy Wood, six gallons; Jon Sweet and Robert Gifford, five gallons; Benjamin Copeland Jr., James Hallissy and David Hahne, four gallons; Dana Gould and David Lockard, three gallons; John Grubb and David Jones, two gallons; and Stephanie Horvath, one gallon.

The next Blood Drive will be Wednesday, May 27, 9 a.m. to 3 p.m., at the H.J.E. Reid Conference Center. Please consider donating blood at that time.

ACLAIM . . .

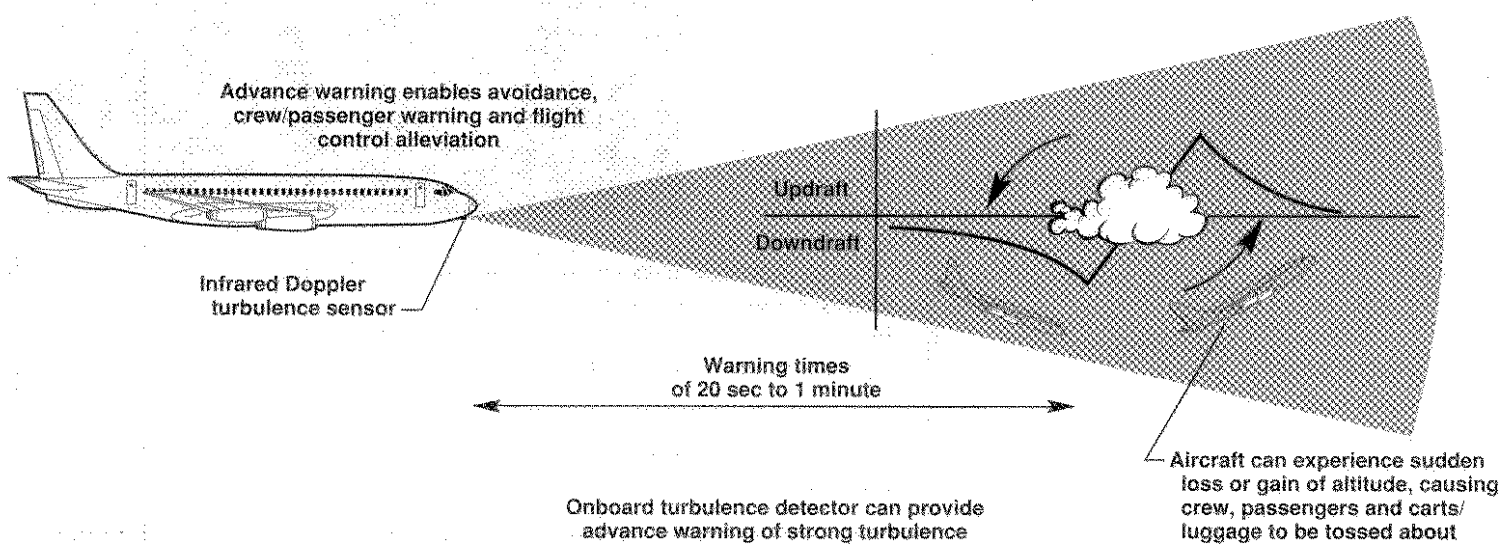
continued from Page 1

effects of the turbulence they experienced. In this way, the team is exploring the relationship between the laser radar-measured turbulence characteristics and the actual turbulence experienced by the aircraft. These tests are designed to provide an efficient checkout of the flight hardware and to help characterize turbulence measurements. Not much is known about accurately detecting and forecasting turbulence," said Larry Cornman, scientist for the National Center for Atmospheric Research (NCAR), Boulder, Colo. "Through this new device and turbulence research conducted at NCAR, we expect a clearer picture to emerge to make flying safer."

Dryden is using an aircraft owned by the National Science Foundation and operated by NCAR. NCAR is managed by the University Corporation for Atmospheric Research under sponsorship by the National Science Foundation. Other partners for the project include Langley, Marshall Space Flight Center, Huntsville, Ala.; Coherent Technologies, Inc.; Global Hydrology and Climatology Center; Huntsville, Boeing Commercial Airplane Group, Seattle, Wash, and the Air Force Research Laboratory Sensor Directorate Multifunction Electro-Optics Branch, Dayton, Ohio.

Langley is the Agency's lead center for the NASA Aviation Safety program. Other participating NASA centers include Dryden, Ames Research Center, Moffett Field, Calif, and Lewis Research Center, Cleveland, Ohio.

Airborne Coherent LIDAR Advanced In-Flight Measurement (ACLAIM)



Turbulent air is a a weather phenomenon that can be invisible both to the eye and to radar. Aircraft passing through this localized area, sometimes as small as 1,000 feet across, can experience sudden loss of gain in altitude. This can cause crew, passenger and carts/luggage to be tossed about, resulting in human injuries or fatalities.

Graphic courtesy of Dryden Flight Research Center

AdVentures

PIANOS FOR SALE: Pianos, reconditioned, warranted; half-price. Yamaha, Knabe and others, tuning and delivery included. Call (757) 898-6135.

COTTAGE FOR RENT: Kill Devil Hills by the week or three-day minimum, sleeps 9, newly decorated, fully furnished. Call Bill at 868-6427.

FOR SALE: Value Checks are available for purchase from the Langley Child Development Center (LCDC) Parent-Teacher Association. Cost is $10 per book. Coupon books can be used between now and May 31, 1999. Proceeds go to support the LCDC. If interested in purchasing a coupon book, contact Rose Mustain at e.r.mustain@larc.nasa.gov.

FRIENDS OF SPACE DAY are cordially invited to attend the grand re-opening of the Space Day Web site. Space Day is gearing up for 1998 with a new look, new games and new teacher resources. Drop by www.spaceday.com and give them some feedback.

FORT MONROE: Jazz vocalist Vinnie Knight and her Quartet are featured at the Fort Monroe Club, April 19, 6 to 9 p.m. Prior to that, a beefeater buffet will be served from 5:30 to 7:30 p.m. Tickets for buffet and show are $14 at the door. The performance is one of the Fort Monroe "Jazz for all Seasons" program. For tickets, call 728-5656.

ECVP AWARDS NIGHT: The Engineers Club of the Virginia Peninsula (ECVP) will host its Annual Student Awards night, 6 p.m., Monday, April 27, at the Alumni Room #150, Student Center, Christopher Newport University. Top senior science students from 20 area high schools will be given an award and a chance to voice their future plans. Heavy hors d'oeuvres will be served and the cost is $5. Bill Barker, a Thomas Jefferson interpreter, will speak about Jefferson's love for education and the sciences. For reservations, call Ron Harvey at 249-2322 or Abe Leiss at 877-2939 by April 24.

FREE RESIST-A-BALL WORKSHOP in MAY: The LAA Aerobics Club will offer a free Resist-A-Ball workshop for those who want to learn how to tone abdominal muscles and strengthen their backs. Resist-A-Balls and an instructional tape will be made available at the workshop. The Ball can be easily used at home with effective toning in a short period of time (15 to 20 minutes). Only a limited number of Resist-A-Balls are available. Call in advance to reserve equipment. The workshop is May 6 from 5 to 6 p.m. in the H.J.E. Reid Conference Center. For more information, call ext. 42295 or 45720. To get started on an exercise program, the LAA Aerobics Club meets three times per week in the LAA gym: Tues. and Thurs. from 5 to 6 p.m. and Saturday at 9:30 to 10:30 a.m. Classes include low-impact, bench, strength training/toning and the new Resist-A-Ball classes (only offered on Saturday). Beginners are welcome. For more information, call the numbers listed above.

LAA AFTER WORK SOCIAL featuring the Hampton University Jazz Band. Bring a friend and enjoy an evening of good music, good food and good fun, Friday, April 17, in the H.J.E. Reid Conference Center, 4 to 9 p.m., no cover charge. **BINGO** games are every Thursday night at the H.J.E. Reid Conference Center with cash prizes . Questions? Call ext. 46369.

LANGLEY TENNIS CLUB is planning a spring picnic and doubles play tournament for Saturday, April 18, from 11 a.m. to 3 p.m. Members and players interested in Tennis Club membership are welcome. Call John Lin at ext. 45556 or Tom Yager at ext. 41304 for reservations and more information.

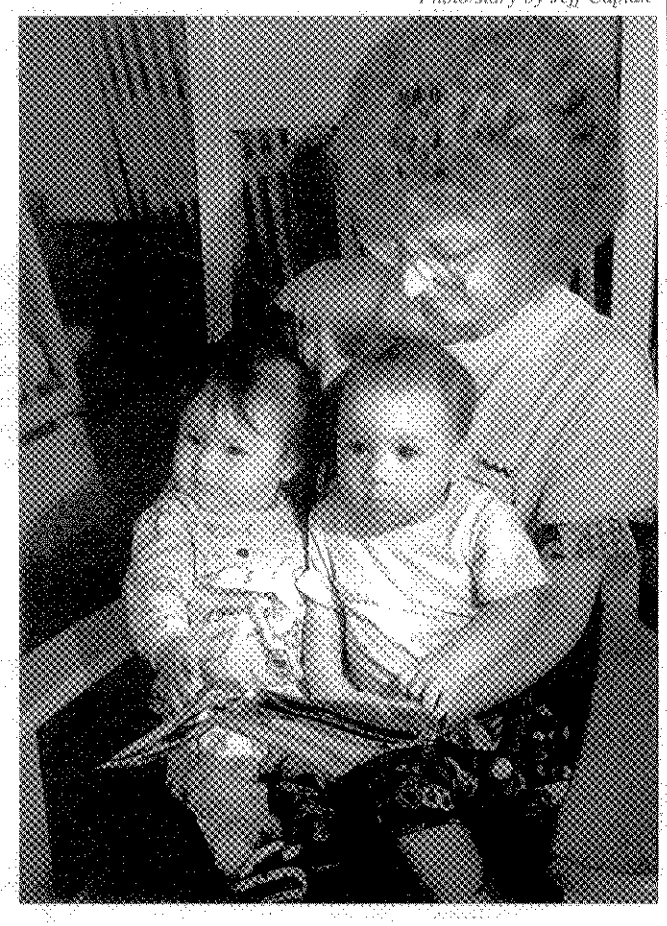
SYMPHONY CONCERTS: April 18, hear "A Knight on Broadway" with Eric Knight. Saturday, May 2, enjoy Shakespeare's, "A Midsummer Night's Dream" with the International Arts Festival. Virginia Symphony season brochures are available at the Exchange Shop or the cafeteria. For other events, call the ticket office at 623-2310.

EIC CLOSES: With declining use and limited budget, the Evaluation and Information Center (EIC) closed on April 10. The hardware/software demonstration center in Building 1130T1 is closed to walk-in customers/tele-phone support. Call local system administrators with questions, including use of applications such as MS Office. Computer training classrooms in building 1130T1 are still available. Call the Employee Development Branch at ext. 42599 to schedule these classrooms.

HONEYBUNCH MEETING: The Langley Apiculture Club (Honeybunch) holds its regular monthly meeting April 20, from 7 to 9 p.m., at the Regency Health Care Center, 112 North Constitution Drive, Yorktown (Rt. 17 to Dare Rd., to N. Constitution Dr., first left off Dare Rd. to the second building on the right). Main topic of discussion will be Spring Management. A video about installing packaged bees will be shown. An open forum will follow. Meetings are free and open to the public. For information call Henk at 566-3911, Maddrea, ext. 42674 or Glaspell, ext. 45194.

Center Snapshots

Photo/story by Jeff Caplan



Sara King, NASA Langley Exchange Council, has worked for the Langley Child Development Center for the past nine years. She is the lead teacher for the infant room. That means that with the help of a handful of assistants, she is in charge of all the children's needs throughout the day. The ages of the children she cares for range from six weeks to 10 months.

King, who now lives in Grafton, was born in East Brady, Pa. She wants the parents to feel secure, relaxed and confident in her care for their children. In her nine years at the center, she has cared for more than 100 children of contractors and civil servants.

* * * *

"The most challenging part of my job is keeping all the children happy at once. That's a challenge." *– Sara King*

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Researcher News

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Pioneering the Future
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 8 ❖ May 1, 1998

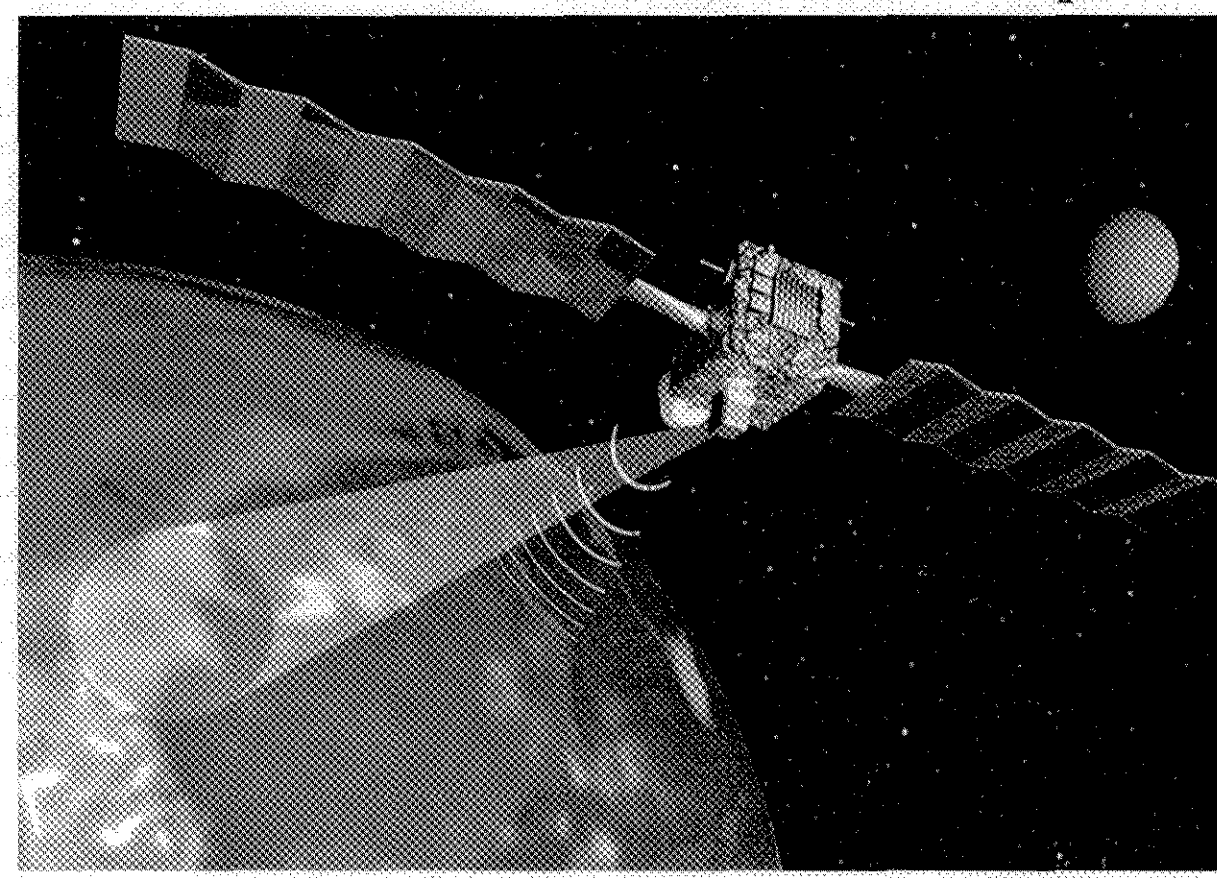
Langley's Future Plans to Send FTS Instruments into Space

BY VICKIE PARSONS

FTS is the acronym for Fourier Transform Spectrometers. FTS instruments have flown in space for 20 years and provided excellent atmospheric and meteorology science data. The worldwide interest in these instruments has increased, so that numerous research opportunities have become available.

Langley has been involved with these instruments for more than 10 years. However, the intensity of the Center's involvement in the design, plans for ground, aircraft, and space FTSs and its associated science, is growing as a result of Langley's investment in technology development funds, and exposure through NASA competitive programs.

Members of the Research and Technology Group and Internal Operations Group are making excellent progress towards lightweight composites, digital signal processing, smart materials and miniaturization that will improve the quality, reduce the mass, reduce the power needs, and increase the lifetime of space FTS instruments.



Animation by Joe Ponthieux

Artist's concept of a Fourier Transform Spectrometer, with energy-producing solar array panels, used as a passive remote sensor to measure emitted and reflected energy as it interacts with other atmospheric molecules.

FTS Optical Design

An innovative optical FTS design was conceived at Langley in March 1996. This design is called the "WEB" because of compact folding of the light, like a spiderweb. It promises to provide better resolution interferograms for approximately 1/3 the size of conventional FTS instruments, which are currently about one cubic meter for the resolution being studied. An interferogram is the interference pattern that comes from moving the light beams in and out of sync within the instrument.

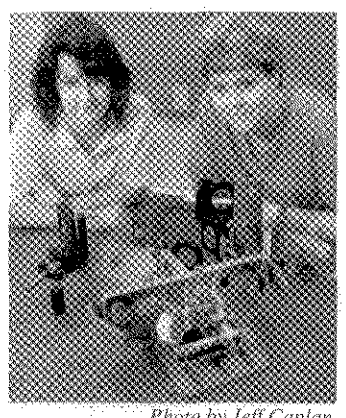


Photo by Jeff Caplan

Anna Noe, left, and Nina Tappan, Electro-Optics & Controls Branch, stand behind the FTS "WEB."

Under direction from the Aerospace Electronic Systems Division (AESD), the Fabrication Division made a prototype from stainless steel. The first interferograms were produced on this lab instrument in September 1997. A patent for the design is cur-rently being pursued by Langley's Technology Applications Group patent attorneys. Applications available for this design range from planetary remote sensing of atmospheric parameters to earth-orbiting measurements of climate, to ground based industrial applications for monitoring hazardous chemicals.

"WEB" Fabrication

Dwayne Hinton, AESD, and Ed Long of Materials Division (MD) are directing COI under a contract to fabricate a composite version of the "WEB." This should provide further mass reductions of state-of-the-art space-qualified FTS instruments. The Materials Division is also developing piezo materials to drive the mirror movements in the FTS design.

A down-select among several options has occurred, and the system is currently being perfected. The goal is to produce interferograms from the composite lab instrument with this innovative mirror drive system by October. This will prove the operational ease of this design in time to propose numerous international opportunities. Sheila Thibeault, MD, is also developing composite optics for incorporation into the instrument. These will again reduce the overall mass of an operational instrument. The goal is to eventually develop a "sensorcraft" version where all the optics and electronics are actually part of the structure — instrument and spacecraft become one.

FTS in Space

Dr. William Smith, an FTS expert, joined Langley as the head of Atmospheric Sciences Division. Now the leadership role in the Advanced Geo-stationary Sounder Studies is at Langley. Smith is the principal investigator and Jessica Woods-Vedeler of Structures Division (SD) is instrument manager. The ultimate goal of their work is to develop an FTS instrument that will provide better weather information, atmospheric chemistry and imaging that could replace the existing GOES satellite instrument.

Smith also brought to Langley responsibility for another FTS instrument, the NAST-I. It is now under completion at Massachusetts Institute of Technology's Lincoln Labs. This activity is funded by the National Oceanic and Atmospheric Administration (NOAA)/National Environmental Satellite, Data, and Information Service (NESDIS) Integrated Program Office. Field engineering flights on the ER-2 from Dryden Flight Research Center occurred in March 1998. The instrument is scheduled to participate in the Convection and Moisture EXperiment (CAMEX III) mission for studying hurricane tracking using NASA-funded aircraft remote sensing instruments in August/September 1998.

The Aerospace Mechanical Systems Division (AMSD) and AESD are responsible for logistical support and engineering of the instrument following more engineering flights. The mission manager is Irby Jones of AMSD and the science team will be led by Allen Larar of ASD.

Interest in FTS instruments has continued to grow. Dwayne Hinton and Vickie Parsons are program managers for all FTS technology applications at Langley. They are investigating 24 different opportunities to develop ground-based, aircraft-based, or space FTS instruments for NOAA, and NASA's Offices of Earth Science and Space Science science needs. This major effort holds the promise of an exciting future for Langley's involvement in atmospheric chemistry and meteorology.

VP Recognizes NASA Aviation Safety Partnership

BY KATHY BARNSTORFF

Vice President Al Gore announced new aviation safety measures April 14 designed to help reduce the fatal aircraft accident rate by 80 percent over the next ten years.

The Vice President called the initiative "Safer Skies." He said, "It has been developed by the FAA, with help from the aviation industry, and it is built upon the considerable resources and expertise of NASA. It includes both an aggressive overall push to reduce the rate of fatal accidents and injuries in our skies, and two specific new actions that will increase the safety of air travel right away."

Those actions include more rigorous engine inspections starting in June and mandatory installation of enhanced ground-warning systems within three years.

Gore spoke at Reagan Washington National Airport before a crowd of more than 200 journalists, aviation industry leaders and representatives from NASA including Acting Deputy Administrator Jack Dailey, Acting Associate Administrator for Aeronautics Rich Christiansen and Aviation Safety Program director Mike Lewis from Langley.

Joining him at the podium were Transportation Secretary Rodney Slater and Federal Aviation Administrator (FAA) Jane Garvey.

NASA has entered into a partnership with the FAA and the aviation industry to make the skies safer. The United States aviation system is already the safest in the world, but government officials are concerned that a projected increase in air traffic could lead to more accidents. Currently 600 million people fly in the United States each year. That number is expected to rise to 1 billion a year by 2010.

News Briefs

Around the Agency

GREENHOUSE GASES MAY BE WORSENING: In late 1997, larger levels of ozone depletion were observed over the Arctic than in any previous year on record. Now, using climate models, a team of scientists reports why this may be related to greenhouse gases, according to a paper published in the April 9 issue of Nature. The study suggests the increase in greenhouse gas emissions is one possible cause of the observed trends in Arctic ozone losses and that this may delay recovery of the ozone layer.

SATELLITE TAKES STUDENTS TO RAINFOREST: During the month of April, NASA's Advanced Communications Technology Satellite (ACTS) connected students in selected schools in Iowa, Florida, Texas, New York, Pennsylvania and West Virginia with scientists at a field research site in the Amazon rainforest in Brazil. The Space Communication Office at Lewis Research Center in Ohio used ACTS to supply the primary communication links for "Live from the Rainforest," the latest segment of an ongoing series of electronic field trips to scientific frontiers. The links included both the live video broadcast from the rainforest and a return link from the participating classrooms as well as supplementary audio, fax and Internet connections.

NEUROLAB SHUTTLE MISSION LAUNCHED APRIL 17: Space Shuttle program managers launched NASA's second Shuttle mission of 1998 on April 17. The mission is a two-week life sciences research flight focusing on the most complex and least understood part of the human body, the nervous system. The Flight Readiness Review held at Kennedy Space Center, Fla., in early April was the final major review by all Shuttle project offices to evaluate the readiness of the flight crew and vehicle, along with launch and mission control flight teams, to support the launch of Space Shuttle Columbia on the STS-90 Neurolab mission.

SCIENCE TEAM CHOSEN FOR TECHNOLOGY VALIDATION MISSION: Nine researchers have been selected to be the Science Team for the Mars Microprobes, a technology validation mission that will hitchhike to the red planet aboard NASA's 1998 Mars Polar Lander mission. Two identical probes will be carried as a secondary payload on the lander, due for launch in January 1999. Following an 11-month cruise, the Microprobes will separate from the lander before it enters the Martian atmosphere, and then hit the ground at approximately 400 mph.

SPACE STATION MEDIA WORKSHOP IS MAY 12-14: Members of the news media are invited to attend press briefings and hands-on demonstrations at training and simulation facilities May 12 to 14 at Johnson Space Center, Houston, Texas. The activities will provide information about the International Space Station and its five-year assembly in orbit that will begin with launches this year. The workshop will follow a day of standard preflight media briefings — on the last Shuttle-Mir docking mission, STS-91 — that are currently planned for May 11 at Johnson.

For more information on the above news items, check the Internet for NASA's News and Information Web page at http://www.nasa.gov/releases/1998

Announcements

Retirement Thanks

From Joe Chambers: "Thanks to all of the 170 wonderful people who attended my retirement party on April 1. The turnout of NASA, industry, DOD, and university friends was really appreciated. My family and I had a marvelous time, and your participation and friendship made an unforgettable event that much more enjoyable. The mutual roasting and recounting of special events during my 36 years at the Center brought back many fond memories of the world-class research accomplishments that we can all point to with pride in Langley and NASA. The gifts were magnificent, and I've already used my BBQ smoker successfully. Good luck to each of you in future endeavors, and special thanks to Pat West, Susan Price, and Cindy Lee for an event that I will always cherish."

Knight Retirement Dinner

A retirement dinner for Vernie H. Knight Jr. will be Monday, May 4 at the H.J.E. Reid Conference Center. At 6 p.m., a cash bar will be open, followed at 7 p.m. with a prime rib dinner and an 8 p.m. program. The cost is $13.50 and includes a gift. Call Donna Gallagher, ext. 41621 or F. Keith Harris, ext. 43824 for information.

SBIR/STTR Conference Slated for 5/14

An SBIR/STTR Conference, "Technologies for Industry," will be May 14, 8 a.m. to 3:30 p.m. at the College of William and Mary, Williamsburg. Participants will learn how small businesses can compete for federal research and development funding. A $15 fee includes all sessions, breakfast and lunch. For a program schedule and agenda, speakers, travel directions and other details, contact K.C. Das at (804) 698-4184, kcdas@deq.state.va.us

"From the Earth to the Moon" Wrap-up Begins

HBO's "From the Earth to the Moon" mini-series about the Apollo astronauts and manned Apollo missions will air its final four segments on two Sundays from 8 to 10 p.m. Eastern time. On May 3, see Part 9: For Miles and Miles and Part 10: Galileo Was Right, and on May 10, view Part 11: The Original Wives' Club and Part 12: Le Voyage Dans La Lune.

For complete information on the mini-series, visit <http://www.hbo.com/apollo>

Lane Retirement Social

A retirement social in honor of Betty Lane will be held Friday, May 15, 5 to 8 p.m., in the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and cash bar will be available. Beer and wine will be provided. The cost is $10 per person, including gift contribution of $4. Gift only donations will be accepted. Please respond by May 8 to Linda Fitzgerald, ext. 42461, Mail Stop 144 or Beverly Thomas-Burse, ext. 42533, Mail Stop 126, e-mail: b.r.thomas-burse@larc.nasa.gov regarding gift donations and attendance.

Farewell Luncheon

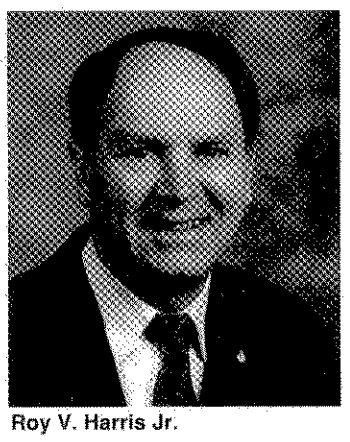
A luncheon in honor of Veloria Martinson will be held May 5 in Building 1262 at 11 a.m. Pizza and refreshments will be provided. The cost is $7 per person, including gift contribution. For reservations, contact Ray Scholz at Mail Stop 497, ext. 41315, no later than May 4.

In Memoriam

Maurice Munger

Maurice Munger, 98, died Thursday, April 16. He retired as a mechanical engineer with NACA, after 27 years of service. He worked at Langley Field from 1936 to 1942.

AIAA Announces Roy Harris as Recipients of the Reed Award



Roy V. Harris Jr.

The American Institute of Aeronautics and Astronautics (AIAA) announced that Roy V. Harris Jr. is the 1998 recipient of one of the aerospace profession's most prestigious awards, the Reed Aeronautics Award. The award will be presented during the Honors Night Banquet, May 6 in conjunction with the AIAA Global Air & Space '98 International Business Forum, May 4 to 6, in Arlington, Va.

The Reed Aeronautics Award is the highest award an individual can receive for achievements in the field of aeronautical science and engineering. It is named for aeronautical engineer and designer, Dr. Sylvanus Albert Reed, whose achievements include the design of the first metal propeller system.

The citation for the awards reads, "For exemplary leadership in aeronautics research and technology development, which contributed to the foundations for U.S. supremacy in subsonic, supersonic, hypersonic, high-performance military, and commercial aircraft."

AIAA is the largest professional technical society, principal voice, and information resource devoted to the progress of engineering and science in aviation and space.

Harris began his NASA career at Langley in 1958 as an aerospace engineer. In 1973 he was named head of the Advanced Configuration Branch and chief of the High-Speed Aerodynamics Division in 1974.

In 1985, Harris became the director for Aeronautics. Nationally recognized as an authority in the field of supersonic aerodynamics, Harris made major contributions in the development of analytical techniques for aircraft design and evaluation. He is a fellow of the AIAA and received AIAA's Lawrence Sperry Award as well as a NASA Exceptional Service Award in 1968 for research leading to the development of supersonic aircraft.

In 1981, Harris was given the Distinguished Presidential Rank Award by President George Bush.

Harris was named assistant director for research and engineering in the Office of the Director in 1994. He was also appointed by the NASA Associate Administrator for Aeronautics and Space Technology to the additional position of Group Director for Wind Tunnels. In this position, he had management responsibility for all of NASA's major wind tunnels until his retirement in January 1998.

In Memoriam

Kenneth W. Holley

Kenneth Wilbur Holley, 75, died Friday, April 3. He was a native and lifelong resident of Hampton. Holley retired as an electrical tradesman from Langley in 1985, after 40 years of service.

William C. Moughon Sr.

William Clayton Moughon Sr., 66, died Wednesday, April 15. He retired from Langley as an engineering technician after 32 years of service.

Eberhard Rees

Eberhard Rees, 89, died Thursday, April 2. Rees, a German-born rocket engineer, succeeded Werner von Braun as director of Marshall Space Center, Huntsville, Ala., in 1970. He played an important role in the Saturn family of space launching vehicles, the first crafts designed and developed for space flight.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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..... Jeane Shanks
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.

Nine Employees Earn Advanced Degrees through Center Program

Nine Langley staff members have earned advanced degrees through the Center's Advanced Study Program.

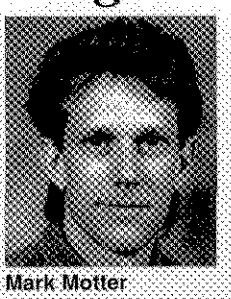
The program provides Langleys' engineers, scientists and administrators an opportunity to improve their proficiency in aeronautical and space research, and earn graduate credit while at Langley. About 1,534 employees have earned advanced degrees through the program.

James L. Garrison Jr., Space Systems Concept Division, earned a doctor of philosophy in aerospace engineering from University of Colorado; Mark A. Motter, Facility Systems Engineering Division, earned a doctor of philosophy in computer engineering from University of Florida; and Walter A. Silva, Structures Division, earned a doctor of philosophy in ap-plied science and mathematics from the College of William and Mary.

Master's degrees were awarded to the following employees: Bonnie Allen, Aerospace Electronic Systems Division, earned a master of science degree in computer science from Old Dominion University; Kim E. Kudlinski, Information Systems and Services Division, earned a master of engineering degree in electrical engineering from Old Dominion University; Michael L. Nelson, Information Systems and Services Division, earned a master of science degree in computer science from Old Dominion University; H. Kevin Rivers, Structures Division, earned a master of science degree in engineering mechanics from Old Dominion University; S. Melissa Brown Rivers, Aero- and Gas-Dynamics Division, earned a master of science degree in mechanical engineering from George Washington University; and Richard J. Siebels, Acquisition Division, earned a master of science degree in contract management from Florida Institute of Technology. Additionally, Lloyd B. Evans, assigned to the Office of Education as manager of the NASA Graduate Student Researchers Program, earned a master of science degree in education from Old Dominion University.

The Employee Development Branch congratulates these individuals for the long hours and hard work necessary to achieve these accomplishments. Such work not only brings added expertise to Langley, but also enhances each individual's professional growth and career development. For information on the Center's program, call George Allison at ext. 42594.

James Garrison Jr.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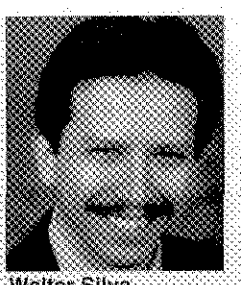
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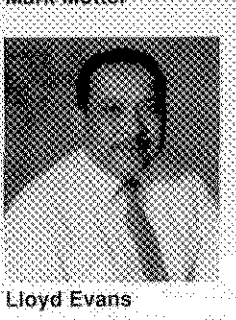
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Kim Kudlinski

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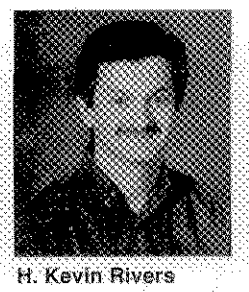
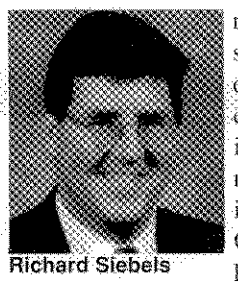

H. Kevin Rivers

S. Melissa Brown Rivers


Richard Siebels

Sun 'n Fun Features Aero Exhibits

BY DONNA ROPER

Nearly 700,000 people attended the 24th annual Sun 'n Fun Experimental Aircraft Association (EAA) Fly-In in Lakeland, Fla., April 19 to 25. The airshow and aviation convention is the second largest event of its kind in the world.

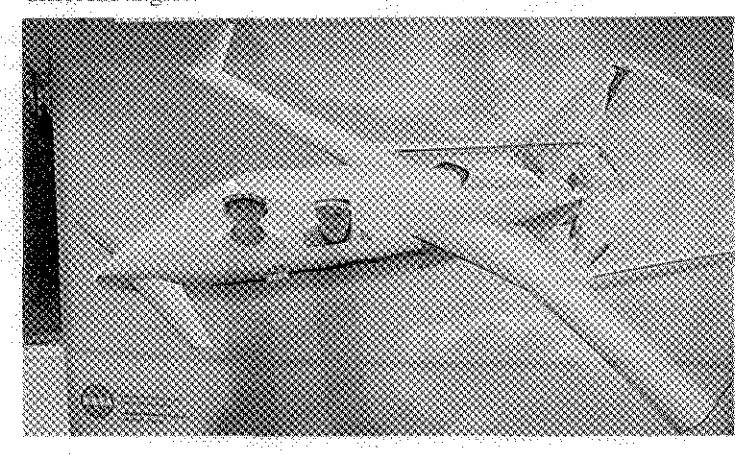
Before entering the tent with the NASA exhibits, visitors stopped outside to have photos taken at Langley's new general aviation aircraft cut-out exhibit (*see photo below*), where people appeared to be in the cockpit of a futuristic general aviation plane. Children loved this photo op.

Astronauts Frank Caldeiro and David Brown answered hundreds of questions about the astronaut corps. The "Kennedy Spaceman" took over the astronaut duties for the part of the week, signed autographs, and walked around the flightline inviting people to visit the NASA exhibits.

Inside the NASA tent, visitors were drawn to an interactive computer-wind-tunnel exhibit that simulated airflow around images of the F-18 and space shuttle. They peered into 3-D glasses, and used a mouse to rotate images and inspect the airflow from different angles.

Next stop was a Three Pillars exhibit that included models of the Boeing-777, high-speed civil transport and X-33. A panel display described Langley's aeronautics research in aviation safety and general aviation. Aviation enthusiasts hovered near panel exhibits of the Advanced General Aviation Transport Experiments (AGATE) Consortium, and a video showed a future scenario of a family traveling in a small airplane instead of a car. Pilots were especially interested in engine models and exhibits that highlighted work from NASA Lewis's general aviation propulsion program. Others checked out recent work in aviation safety and high-speed research, shuttle flight hardware and tile technology and shuttle ground processing operations.

A specially-modified AGATE testbed aircraft with a number of NASA technologies for navigation, weather, terrain, traffic and system status information was on-hand. The aircraft, an experimental Bonanza, featured an engineering paint scheme that maps airflow contours over the entire vehicle.



Mackenzie Earns Simmons Fellowship; Waggoner Heads for Penn State

BY NANCY FINN

Anne Mackenzie, Sensors Research Branch, will attend Simmons College, Graduate School of Management Program for Developing Managers.

The four-week program is offered each spring and fall at Simmons College in Boston. Attendees learn how to interpret and use financial data, and to motivate employees and build teams using communication skills.

"This experience will give me a chance to learn how people in organizations other than government agencies and research organizations view their work and how they conduct business," Mackenzie said.

Mackenzie came to Langley in 1987. She works in the Flight Electronics Technology Division designing sensors, planning experiments, and analyzing data. She has worked on the Airborne Doppler Windshear Radar Experiment, the Radiometer Low-Noise Amplifier Studies and the Aviation Weather INformation (AWIN) Program. She serves as a contract technical monitor and as a contract officer's technical representative.

Mackenzie earned a bachelor of science degree in general biology from Purdue University, an associate in applied science degree in electrical engineering technology and a bachelor of science degree in electrical engineering from Purdue University in Indianapolis, Ind. She holds a master of science degree in electrical engineering from Virginia Polytechnic Institute and State University.

Anne McKenzie

Edgar G. Waggoner

Edgar G. Waggoner will attend the Program for Strategic Leadership at Penn State University. The two-week program is aimed at senior-level managers who contribute to the strategic planning of their organization, using leadership, team-building, cooperation, communication and problem-solving skills.

"The Program for Strategic Leadership will provide skills which have immediate application in my present assignments as a branch manager and member of RTG's Transition Leadership Team. Successful transfer of these skills into my present assignments will increase my effectiveness." Waggoner said. "As my responsibilities change, I feel strongly these skills will allow me to be a more effective manager and leader."

Waggoner came to Langley in 1982 where he served as group leader of the Applied Aerodynamics Group in the High Reynolds Number Aerodynamics Branch. In 1986 he became the assistant head of that branch, and in 1989, he became the head of the Subsonic Aerodynamics Branch, now a part of the Aero- and Gas-Dynamics Division.

Waggoner earned a bachelor of science degree in aeronautical engineering from Auburn University, a master of engineering degree in mechanical engineering from Southern Methodist University and a master of engineering administration from George Washington University. He is completing the dissertation requirements for a doctorate.

Langley Wetlands Fill Vital Role

BY JOHN HOULAHAN

The wetlands surrounding Langley are part of the Back River drainage area, and provide a vital function to the overall health of the Chesapeake Bay. Rainwater falling on the Center starts its journey by flowing into the ditches and small creeks and freshwater wetlands and then slowly percolating, or draining into the tidal wetlands.

The tidal wetlands drain into Tabbs Creek or Brick Kiln Creek, which flow into the Back River and ultimately to Chesapeake Bay. The wetlands are the transition between the dry land and the water, and this link in the ecological chain is the focus of this article.

What Are Wetlands?

"Wetlands" is the collective term for marshes, swamps, bogs, and similar areas found between dry land and water along the edges of streams, rivers, lakes and coastlines. Although most wetlands have standing or flowing water, many are dry for part of the year. For example, tidal wetlands influenced by the tides may be dry twice a day.

Ecologists categorize wetlands into two main groups: estuarine or tidal wetlands, and palustrine or freshwater wetlands. Wetlands are more than just a place for mosquitoes to multiply and snakes to lurk. They help restore and maintain water quality, absorb flood waters, and are home for many different kinds of plants and animals.

Water Quality

Wetlands remove and retain nutrients such as nitrogen and phosphorous. An overabundance of these nutrients is scientifically linked to poor water quality in Chesapeake Bay. Forested riparian (streamside) wetlands have been shown to remove approximately 80-percent of the phosphorous and 90-percent of the nitrogen from water. Wetlands also reduce sediment loads, and absorb pollutants before these contaminants can enter Chesapeake Bay.

Flood and Erosion Control

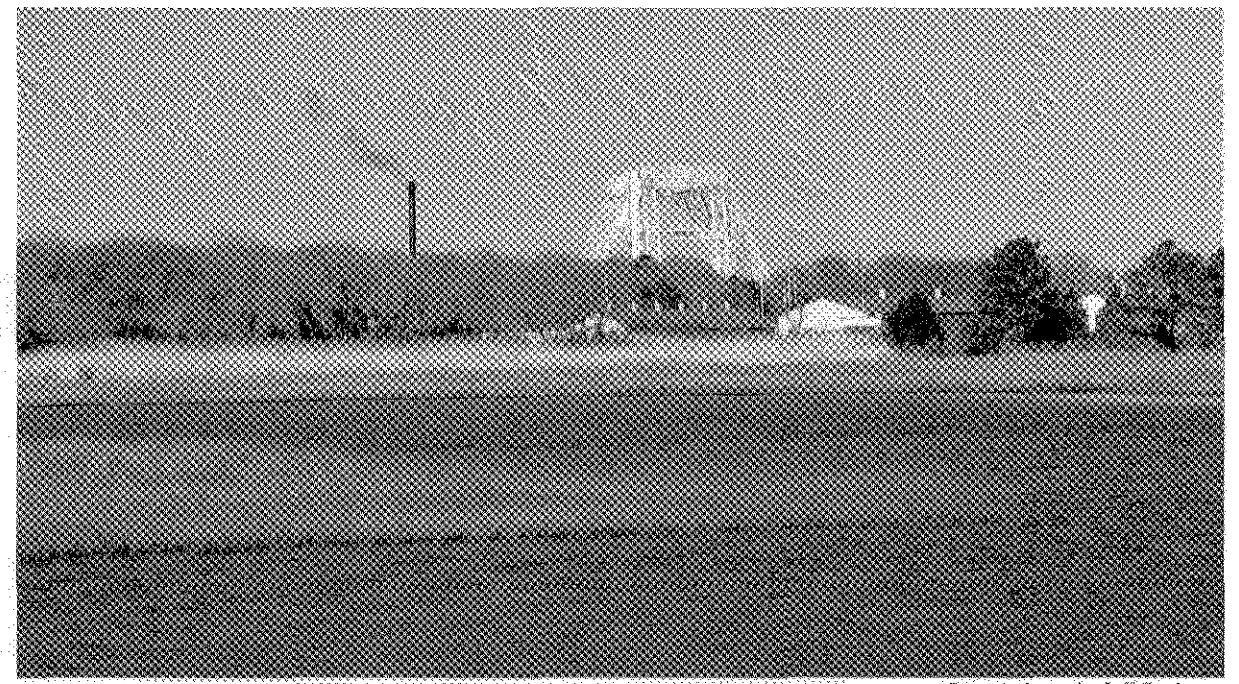
Wetlands are natural sponges that absorb flooding waters. By temporarily storing flood waters wetlands help protect property owners from flood damage. The recent flooding from this winter's back-to-back Nor'easters would have been worse without the wetlands to buffer the land and store flood waters.

Wildlife and Aquatic Habitat

Wetlands, like those surrounding Langley, are some of the most productive habitats on earth. Salt-tolerant grasses, including smooth cordgrass, salt hay grass, giant cordgrass and switchgrass, generally dominate estuarine or tidal wetlands. Other plants, like black needlebrush, three-squares, narrow-leaved cattail and rose mallow, may be abundant, especially in brackish water areas.

Wetlands are also a particularly crucial habitat for many animals. The list is a virtual "who's who" of critters. Included are ducks such as black, mallard and canvasback; grebes, cormorants and other waterfowl, osprey, song birds, shorebirds such as terns, wading birds like the great blue heron or the secretive yellow crested night heron and several mammals like raccoons and muskrats.

Some of these animals live full-time in the wetlands (muskrats and herons). Others are seasonal residents visiting the wetland for food, reproduction or cover. Almost all of the Bay's recreational or commercial fish and shellfish depend on tidal wetlands at some point in their lives — striped bass, menhaden, flounder, spot, croaker, sea trout, drum, oysters and blue crabs to name just a few. In fact, Chesapeake Bay is the major spawning and nursery ground for striped bass on the East Coast. Ten-pound striped bass and speckled sea trout up to eight pounds were caught by sport fishermen last fall from the shore at Langley Air Force Base.



Page 4 photos by Jeff Caplan

A view of some of Langley's wetlands, like Tabbs Creek above, can best be seen from a raised wooden boardwalk located at Langley Air Force Base. Some of the Center's wetlands offer a view of Langley's Landing Loads Facility.

Wetlands Protection

Wetlands are so important to the Chesapeake Bay that they are used as a barometer of the bay's health. According to the Chesapeake Bay Foundation, one-fourth of the Bay basin, approximately 4100 km, is covered by wetlands. Unfortunately, many of these fragile ecosystems are being lost. Development, pollution, introduction of new plant and animal species and land subsidence are responsible.

The protection of existing wetlands and restoration of wetland acreage and function are critical to sustaining habitats for breeding, spawning, nesting, and wintering of living resources, including those resources vital to the regional economy. Widespread destruction of tidal wetlands has been stopped by strict regulations. Freshwater wetlands, however, are much more vulnerable to loss.

In 1989 the states of Virginia, Maryland, Pennsylvania and the District of Columbia, the Environmental Protection Agency and the Chesapeake Bay Commission committed to a wetlands policy of a "no net loss" goal, and to take steps to achieve a long-term goal of a net resource gain in acreage and function. This commitment by the governments surrounding the Bay was reaffirmed in October 1997. State and local governments are developing strategies to achieve the protection and restoration of wetlands, to establish a quantifiable wetland restoration and preservation goal and to define methods to measure our success in meeting that goal. For more information on wetlands contact the Chesapeake Bay Foundation or visit their website at http://www.savethebay.cbf.org/.

Information About Langley's Wetlands

At Langley any activity that will or may impact a wetland must be reported to the Office of Environmental Engineering at ext. 43500 in advance. A pre-construction form must be completed.

An excellent place to view our tidal wetlands is the marsh boardwalk at Langley Air Force Base (LAFB). This raised wooden boardwalk makes a large loop spanning the tidal marsh for about 500 yards. Interpretive signs point out different natural and cultural resources. A raised platform provides a great view of the wetlands and wildlife bordering Tabbs Creek and the Back River. To get to the boardwalk, exit Langley through the Durand gate to LAFB. Turn left on Weyland Road and left on Worley Boulevard. Park on the left side in front of the horse stables. The unmarked boardwalk entrance is on the right. Look for the horse crossing sign.

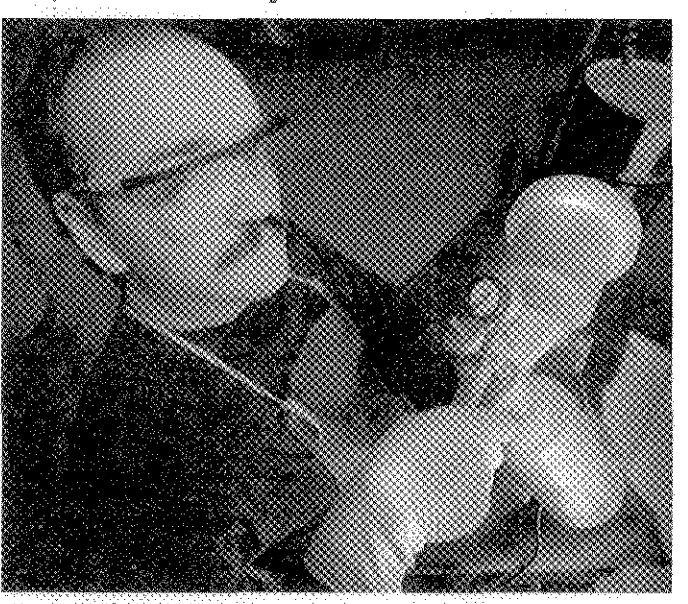
OEE Improves Cylinder and Can Disposal on Center

The Center is saving money by reducing hazardous waste disposal costs with two devices that collect residue from used propane cylinders and aerosol cans. These savings already have amounted to $9,800.

Propane cylinders, like ones used with camping equipment, are used on-site to power propane torches for a wide variety of tasks. It is a misconception that when a cylinder is empty, it can be thrown away. Even after the contents of a cylinder have been used up, there are still traces of propane gas left inside it. Disposal companies charge about $200 each to remove and dispose of these cylinders.

Recently the Office of Environmental Engineering purchased a device that checks for any remaining propane, dispenses of any residue, and devalves the cylinders. After a cylinder has gone through this process, it is considered completely empty and suitable for recycling as scrap metal. This device has already been used on 14 propane cylinders with disposal savings of $2,800.

Aerosol cans are treated similarly. As with propane cylinders, the cans will always have a trace of liquid left in them. It costs about $500 to dispose of a 55-gallon drum of aerosol cans. Langley's device that punctures the can and collects residue has saved the Center $7,000 in disposal costs in less than one year. After the cans have been punctured, they are considered empty and suitable for recycling as scrap metal.



Chris Burris, Office of Environmental Engineering, empties the hazardous contents of a cylinder, using a hand-held recycling unit, so it can be recycled into scrap metal.

Center employees can help this effort by handling propane cylinders and aerosol cans appropriately. Separate the two types of used containers and place them in properly labeled containers in your building's satellite accumulation area. Containers are available from Chris Burris at ext. 48025 or e-mail c.t.burris @larc.nasa.gov. Call Burris with any questions about the program, or to schedule a pickup of empty propane cylinders and aerosol cans.

NASA's Experimental Program Stimulates Competitive Research

BY DR. ELIZABETH WARD

Responding to Congressional concerns about the unequal distribution of federal research dollars, the National Science Foundation (NSF) established the Experimental Program to Stimulate Competitive Research (EPSCoR) in 1978.

In 1990, Congress called for other federal agencies to fund EPSCoR programs and, in 1998, seven federal agencies sponsor these research and development (R&D) enhancement grants.

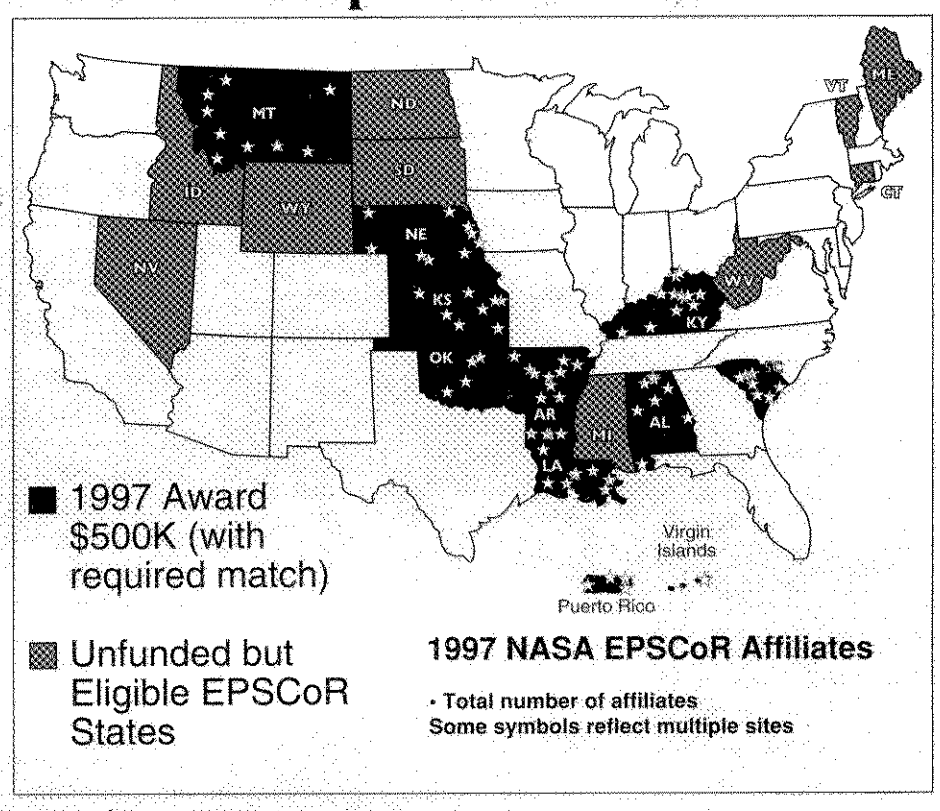
NASA EPSCoR

NASA initiated its nationally competitive, merit-based EPSCoR program in 1994 through its Office of Human Resources and Education. NASA EPSCoR involves 68 academic institutions operating in 10 state-based consortia.

The program targets states of modest research infrastructure with funds to develop a more competitive R&D base. The 10 currently funded participants are Alabama, Arkansas, Kansas, Kentucky, Louisiana, Montana, Nebraska, Oklahoma, Puerto Rico and South Carolina. In addition, 10 other states are eligible to compete for funding but have thus far been unsuccessful in the competitions (see map).

The goal of NASA EPSCoR is to develop state-based research enterprises that are long term, self-sustaining and nationally competitive for non-EPSCoR dollars. Program objectives include the transfer of developed technology to state industry, increased economic growth of the participating states, human resource development, and communication of the benefits of NASA research to the public. EPSCoR projects are closely related to one of NASA's four strategic enterprises. EPSCoR researchers collaborate frequently with NASA's field installations and program offices. EPSCoR fosters cooperation among departments, across institutions, with state and local government, and with business and industry.

NASA EPSCoR awards of $500,000 per state annually require a one-to-one match from participating states and are guaranteed for three years with satisfactory performance. A two-year renewal option is decided after a comprehensive review at the end of the third year. Over the past four years, the 10 funded states have leveraged over $92 million in non-EPSCoR funds. For NASA's $5 million per year investment over the past three years, the leveraging EPSCoR researchers exceeds four to one. In the same time period, NASA EPSCoR researchers have filed for five patents, nine patent applications and 12 invention disclosures.



How It Works

The following anecdote illustrates how EPSCoR has successfully partnered academia, government and state-based industry. In Montana, researchers (including undergraduate students) from universities, industry and NASA cooperated to develop an innovative tool used to calibrate field instruments known as Optical Spectrum Analyzers (OSAs). Typical OSAs measure the wavelength of a signal in fiber optics to a precision of 0.1 nanometer. Inevitably, the instruments lose their calibration and have to be returned to the factory for recalibration. Three separate Montana EPSCoR companies collaborated on the manufacture of the new tool. In 1997 this collaboration resulted in jobs for more than 40 Montana university graduates.

EPSCoR-funded research in laser optics has resulted in more than 40 local jobs for Montana State University graduates.

More Information

NASA's plans for future EPSCoR awards include more collaborations among state-based industry and academic institutions, plus stronger ties to Agency researchers. The next round of competitions is slated for 2002. For more information, consult the NASA EPSCoR web site at http://www.hq.nasa.gov/epscor/ or, on Center, call ext. 43299.

Virginia Air and Space Center News

The Virginia Air and Space Center announces several upcoming spring and summer activities, including summer camps for children.

Soar to New Heights at Summer Camps

Inspire a child to be a future engineer, pilot, archaeologist or astronaut at the center's summer space camps, where science comes alive.

- Astro-Archaeology – June 22 to 26, ages 7 to 12, $125/$115 members, 9 a.m. to 3 p.m., two off-site field trips included.
- Astronaut Me – June 29 to July 2, $70/$65 members, 9 a.m. to noon, includes a space toy kit.
- Lights and Bytes – July 6 to 10, ages 7 to 12, $110/$100 members, 9 a.m. to 3 p.m., discover the world of computers and electricity.
- Little Planets – July 7 to 9, ages 5 to 7, $55/$50 members, 9 a.m. to noon, plunge into the extraordinary world of outer space.
- Astronaut Adventure I – July 13 to 17, ages 7 to 12, $110/$100 members, 9 a.m. to 3 p.m., includes a rocket kit.
- Astronaut Adventure II, offered two times this summer, July 20 to 24 and August 17 to 21, ages 7 to 12, $125/$115 members, 9 a.m. to 3 p.m., includes an off-site field trip, camp t-shirt and workbook.
- Just Plane Fun – July 27 to 31, ages 7 to 12, $125/$115 members, 9 a.m. to 3 p.m., two off-site field trips included.
- Reach for the Red Planet – August 3 to 7, ages 7 to 12, $120/$110 members, 9 a.m. to 3 p.m., includes a Mars probe kit.
- Totally Robots – August 10 to 14, ages 7 to 12, $120/$110 members, 9 a.m. to 3 p.m., includes a robot kit. For more information, and to register for camps, call 272-0900, ext. 780.

Virginia Air and Space Center
Hampton Roads History Center

Come Fly with Us!

Visit the center May 9 from 10 a.m. to 5 p.m. to celebrate flight with the ***FlightFest***.

FlightFest will investigate several faces of flight, starting with the structure of our feathered friends during a presentation by the Virginia Zoo. Langley and Oceana pilots will be on hand to display flight gear and answer questions about flight training and defending the country above the clouds.

Other activities include videos from six eras of flight exploration and scale models of U.S. jet power from Air Power Park. There will also be interactive displays and activities from the center's Education Department, NASA Langley and the American Institute of Aeronautics and Astronautics. Call 727-0900 for more information.

Community Corner

Changing Lives — One Smile at a Time

For 16 years, Operation Smile has traveled around the globe to help children in many of the world's developing nations. Now, in a growing U.S. program, a commitment has been made to help our own children. One in 800 American children is born with a facial deformity. Even with Medicaid and some private insurance, surgery is not available to many of these children. Operation Smile strives to make sure that no child falls through the cracks. Highly specialized physicians affiliated with Operation Smile have treated more than 21,000 U. S. children and 22,000 patients in 12 developing nations.

Background

In 1982, Dr. William P. Magee, Jr., a plastic surgeon and his wife, Kathleen, a nurse and clinical social worker, joined a volunteer medical group to the Philippines. From his experience, Operation Smile was founded as a permanent nonprofit organization.

How You Can Help

Operation Smile Norfolk and Newport News locations needs volunteers to perform clerical and administrative tasks, and to work in local fundraising events like auctions and marathons. Graphic skills are needed for advertising, printing, and distribution to promote public awareness. One of the most rewarding ways to help is to open your home or provide host accommodations to a child and/or family during surgery and follow-up treatment in the United States. For more ways that you can help, contact Volunteer Manager Melissa Young at (757) 321-3247.

AdVentures

CONDO FOR SALE: Denbigh/Sonoma Woods. 2BR, 1.5 bath condo, new carpet, vinyl and paint, security system, carport, storage unit, ceiling fans, all appliances convey. Price is $43,000 or qualifying assumption at 7.5 percent w/ $4,500 down; less than 11 years left on mortgage. Call 874-6697.

FOR RENT: Master bedroom suite in 3,000 sq. ft. home, private bath, waterfront property, cable, hot tub, $385/mo., utilities included, 15 minutes from Langley. Owner travels extensively. For inquiries, contact Gretchen Gottlich home, (757) 245-8319, work (301) 803-6242, gottlich@us.ibm.com, or ggott@visi.net.

VALUE CHECKS are available for purchase from the Langley Child Development Center (LCDC) Parent-Teacher Association. Cost is $10 per book. Coupon books for local merchants can be used until May 31, 1999. Proceeds go to support the LCDC. To purchase a coupon book, contact Rose Mustain at e.r.mustain@larc.nasa.gov.

HOUSE FOR SALE: Beautifully renovated rancher in Hampton's historic Wythe section. 2 BR, 1 bath, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, privacy fence, large detached garage/workshop, one block from the Chesapeake Bay in neighborhood with plenty of trees. $69,900. Call 247-5144.

FOR SALE: Mac PowerBook 3400 laptop, 200MHz PowerPC 603e, 256K L2 Cache, 80MB RAM, 2GB hard drive, 12X CD-ROM, 12.1" active matrix color screen, built-in Ethernet and 33.6 modem, 4-speaker stereo sound. Includes Mac OS 8.1, 3 Li-Ion rechargeable batteries, leather carrying case, misc. software, $2850. Call Craig at 599-1267.

FOR RENT/SALE: Lakefront luxury townhouse in Hampton near Langley. 3 BR, 2-1/2 baths, walk-in closets, hot tub and decks overlooking the lake, private parking area. $750/mo., available immediately. Call 827-5253.

RETIREES — LANGLEY ALUMNI ASSOCIATION NEWS: The Alumni Association members were fortunate to have Dr. Jerry Creedon speak at the last meeting. He gave a straightforward presentation on the Center.

Members will be asked to vote on by-law changes at a future meeting. A committee of Jerry Elliot, Marna Mayo and Bert Rockey are reviewing them for currency.

REMINDER: Dues are payable at the beginning of each year. They are still only $5 (a NACA deal). New retirees receive first-year membership free. To check your membership status, call Mary Mesic, head of the membership division, at 247-1714.

LUNCHEON: The Alumni Association Luncheon will be May 12, 11:30 a.m. in the private dining room of the cafeteria, Building 1213. The guest speaker is Reggie Ugo of the UniGlobe U-Travel Service of Williamsburg. Cathy Cavender, a representative from Princess Cruises will show a brief video and give information about preparing for, and enjoying a cruise.

TOUR GUIDES NEEDED: The next scheduled driver/tour host meeting is for May 1 at 9 a.m. at the Virginia Air and Space Center. Tour driver responsibilities typically require a commitment for one day per week during July and August. For more information, call Steve Devan at 898-9290.

ALUMNI AND RETIREE Volunteers Sought: Your gift of three to four hours per week will help many an inquisitive adult, and light up a child's eyes. As a volunteer in the Public Inquiry Center, answering informational requests sent to Langley from throughout the world, you can make a difference in not only your life but someone else's. Call Jeane Shanks at (757) 864-3293 for more information.

SHARE YOUR EXPERTISE: Are you willing to share your NASA expertise? A library of interview resources is being compiled. There are occasional calls to Langley asking to telephonically interview a person for specific projects. The time involved would be no more than an hour once or twice a year. If you would like to be included, call Jeane Shanks at (757) 864-3293.

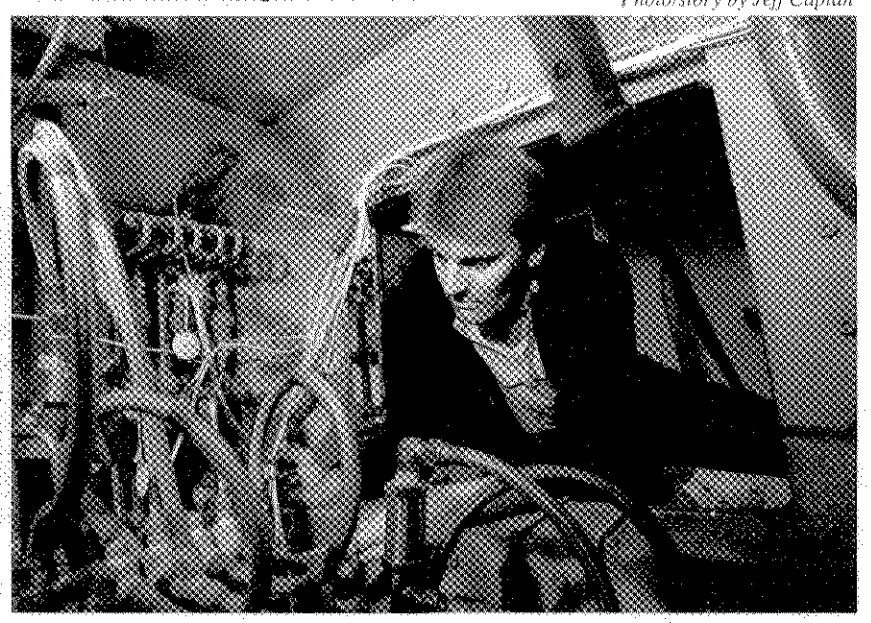
VIRGINIA SYMPHONY CONCERTS: Saturday, May 2, see Shakespeare's "A Midsummer Night's Dream" as part of the International Arts Festival. May 23, come and play along with the Virginia Symphony on the instrument of your choice, at the Fifth Annual Play-along, at Lynnhaven Mall Center Court. Symphony season brochures available at the Exchange Shop or the cafeteria. For events/information, call the Symphony ticket office, 623-2310.

VIRGINIA CHORAL SOCIETY will present "Te Deum" by Berlioz and selections from "Carmen" by Bizet. Guest chorus will be the Virginia Youth Choir. Performances are at 8 p.m., Saturday, May 16, at the First Presbyterian Church, 514 S. Armistead Avenue, Hampton, and at 3 p.m., Sunday, May 17, at Trinity Lutheran Church, 6807 Huntington Avenue, Newport News. Tickets are $8 for adults, $6 for students and seniors, on sale at the door. For more information, call 851-9114.

FUTURE COLLOQUIA AND SIGMA EVENTS: June 2, Dr. Bill Smith, will talk about "Human Exploration and Development of Space." To find more information about upcoming talks, the Colloquium and SIGMA homepage is found at http://oldtown.larc.nasa.gov/Lectures/lectures.html

Center Snapshots

Photoistory by Jeff Caplan



Jeff Conover of Poquoson, a mechanical technologist in NASA's Arc-Heated Scramjet Test Facility (AHSTF), has worked at Langley since 1988 as a contractor and then as a civil service employee. One of his many tasks is to change the engine fuel configuration for different tests. As a technician in the AHSTF, he is responsible for daily maintenance of both the facility and model systems and instrumentation.

Conover completed training at Thomas Nelson Community College, and worked for five years in the 8-Foot High Temperature Tunnel. For the past three years he has been working in the Scramjet Facility.

Currently he is working with the DFX Mach 5 engine configuration for the Hyper-X Program, a NASA sponsored project. Tests are being conducted to gather a Mach 5 database.

* * * *

Referring to the challenges the tunnel presents, "The complexity of the facility creates new challenges for every test."

— Jeff Conover

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Researcher News

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001

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Fortieth Anniversary
Pioneering the Future
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 9 ❖ May 15, 1998

Langley's Remote Sensors and Lasers Impact Multiple Research Fields

BY PATRICIA CROSS

For years, Langley's remote sensors and lasers have been at the forefront of research and technology development in atmospheric science. Other uses are under exploration for the technologies developed on Center.

What is Remote Sensing?

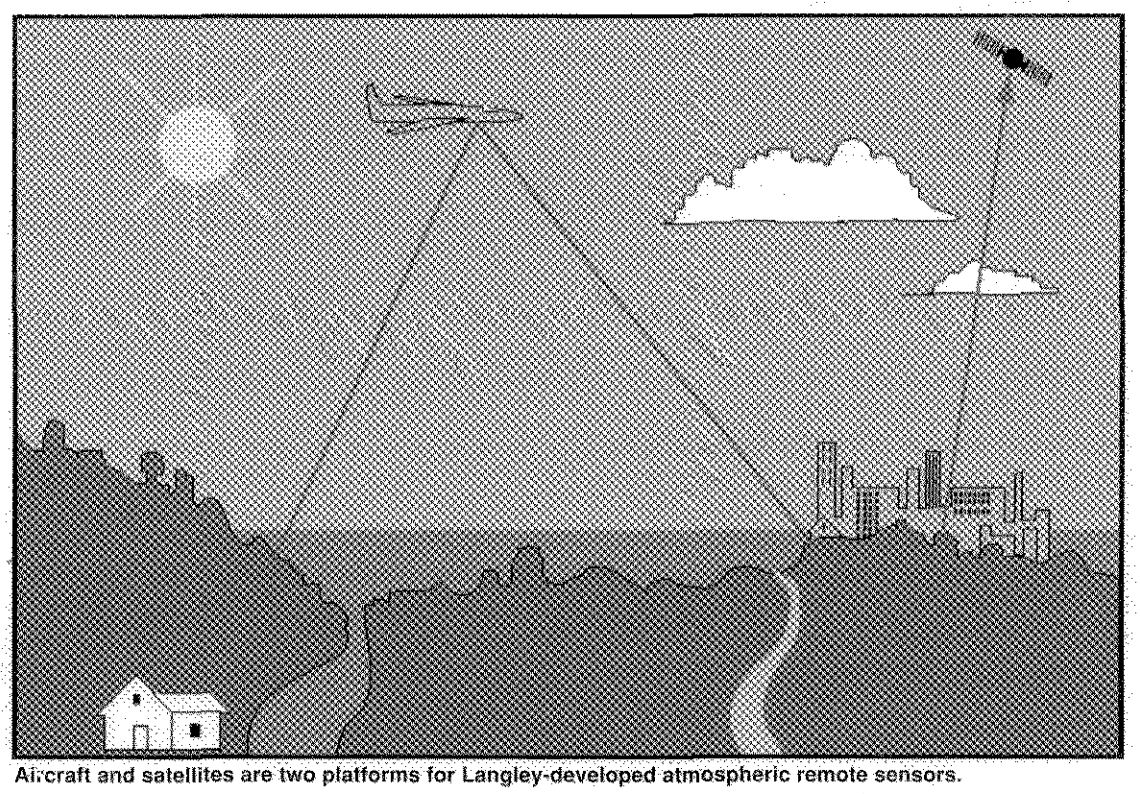
Remote sensing is any technique for measuring, observing or monitoring a process or object without physically touching the object under observation. Optical and radio telescope cameras, even eyesight, are types of remote sensing with which most people are familiar.

Because remote sensing instruments are not in contact with the object being observed, they allow the monitor to: Avoid hazardous or difficult to reach regions, such as inside nuclear or chemical reactors, in biological hot spots, inside smoke stacks, on the freeway, in the ocean or polar regions, on other planets or the sun; measure a process without disturbance, such as monitoring flow around aircraft models in a wind tunnel or measuring temperature during experiments; and probe large volumes economically and quickly, such as providing global measurements of aerosols, air pollution, agriculture, human impact on the environment and large-scale geographic features.

Active vs. Passive Remote Sensors

There are two classes of remote sensors: passive and active. Passive remote sensors do not include the energy source on which the measurement is based. The eye and optical telescopes are passive remote sensors: they rely on an external light source. The eye cannot see at night if the room lights are out.

Active remote sensing instruments include the energy source on which the measurement is based. Radar is a widely known form of active remote sensing. In radar, the instrument emits a radio wave and senses the returned energy which is reflected from the target. Since the speed of radio waves and the time delay between emission and return are known, the distance to the target can be determined. Lidar (Light Detection and Ranging) is the optical analogue of radar. Lidars emit a concentrated light beam onto the target and measure the energy reflected back to the lidar receiver. The intensity or amount of reflected energy measured by the receiver provides the needed information about the target.



Aircraft and satellites are two platforms for Langley-developed atmospheric remote sensors.

With lidars, the light source is not a radio wave, but rather it is in the visible and adjacent (ultraviolet and infrared) regions of the electro-magnetic spectrum. The light source is generally a laser.

Most of the remote sensors in use today are passive sensors. They are easier and cheaper to build. Unfortunately, passive remote sensors deployed on satellites only work when the sun is shining on the area under the satellite.

Lidars

Lidar comes in three major varieties: range finders, DIAL (Differential Absorption Lidar) and Doppler lidar. Range finders, like radar, emit a pulse of light and measure the time interval between when the pulse is emitted and when the reflected pulse is detected. Like radar, they are used to determine the distance to an object. Because of its much shorter wavelength, laser range finders are effective for much smaller targets. Indeed, by scanning the surface of the target, advanced range finders can determine the target's shape and size in addition to its distance.

Dial lidar can be used to measure the temperature, density, and pressure of trace gases and aerosols in the atmosphere. Two probe laser beams are used, one with a wavelength that corresponds to a target gas absorption peak (on-line) and the other that falls between the target gas's absorption features (off-line). The ratio of the on-line to off-line returned signal strength is related to the absorption characteristics (which in turn depend on the temperature, density, and pressure) of the target gas.

Doppler lidars use the Doppler shift, the small change in wavelength due to motion of the surface, to measure the target's velocity. A common application of Doppler radar in atmospheric remote sensing is to measure wind velocity. Wind velocity measurements have many military, civilian government and commercial applications that include monitoring local winds during shuttle launches and landings, measuring wind turbulence, wind shear and wake vortices near airports and during flight (giving airline pilots advanced warning of trouble spots), and improving weather forecasts.

Continued on Page 5

Subject of June 2 Colloquium and Sigma Lecture: *The Human Adventure Continues*

William L. Smith, deputy director of the Space and Atmospheric Sciences Programs Group, will present "The Human Adventure Continues," June 2, 2 p.m. in the H.J.E. Reid Conference Center and June 2, 7:30 p.m. at the Virginia Air and Space Center.

William L. Smith

Human Exploration and Development of Space (HEDS) is one of the NASA enterprises. Its mission is to open the space frontier by exploring, using, and enabling the development of space, and to expand the human experience into the far reaches of space.

HEDS seeks the marriage of robotic and human capabilities to overcome the challenges of distance, time and environment. The HEDS goals include preparing to conduct human missions of exploration to planetary and other bodies in the solar system; using the environment of space to expand scientific knowledge; providing safe and affordable human access to space; establishing a human presence in space; and sharing the human experience of being in space. It also hopes to enable the commercial development of space and share HEDS knowledge, technologies and assets that promise to enhance the quality of life on Earth.

The space shuttle and the International Space Station serve as research platforms to pave the way for sustained human presence in space through critical research on human adaptation. Lessons learned in operation and research using these system capabilities represent stepping stones of human exploration for a return to the Moon or Martian missions. Smith's presentation will focus on the conduct of a Mars Human Exploration mission from launch to return of the explorers.

About the Speaker

Smith started his NASA career in 1965 in what was then called the Office of Advanced Research and Technology at NASA Headquarters. He transferred into the Office of Space Flight, and was involved in Gemini, Apollo, Advanced Space Transportation Program, Skylab and space shuttle development and initial operations before moving to industry.

From 1985 to 1988 Smith worked at both TRW, Redondo Beach, Calif., as an Advanced Systems manager, and from 1988 to 1991 at the Grumman Space Station Division, Reston, Va., as the director of utilization in system engineering support to Space Station Freedom configuration. Smith returned to NASA in 1991 and, subsequently, became the director of advance development in the Office of Exploration at NASA Headquarters where he also served as the acting associate administrator.

In 1993 Smith joined the Office of Space Science, first as the chief technologist and support to the chief engineer, and then moved to planetary flight programs management. There he had management responsibility for the faster, cheaper Discovery mission efforts; the Mars Surveyor Program missions for 1998, 2001, 2003 and 2005, the Galileo mission and Mulitmission Ground Support System development at JPL. Smith joined Langley in August 1995 in his current position.

For more information about future colloquia, the Colloquium and Sigma Series homepage is located at http://oldtown.larc.nasa.gov/Lectures/lectures.htm

News Briefs

Around the Agency

CONSTRUCTION ZONE FOUND AROUND STAR: NASA astronomers using the new Keck II telescope in Hawaii have discovered what appears to be the clearest evidence yet of a budding solar system around a nearby star. Scientists released an image of the probable site of planet formation around a star known as HR 4796, about 220 light-years from Earth in the constellation Centaurus. The image, taken with a sensitive infrared camera developed at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., shows a swirling disk of dust around the star. The Keck II image of HR 4796 and information on the MIRLIN camera are available on the World Wide Web at: http://cougar.jpl.nasa.gov/mirlin.html.

DEEP SPACE 1 LAUNCH SET FOR OCTOBER: The planned July 1998 launch of NASA's Deep Space 1 technology validation mission from Cape Canaveral, Fla., has been rescheduled for October. The delay is due to a combination of late delivery of the spacecraft's power electronics system and an ambitious flight software development schedule, which together leave insufficient time to test the spacecraft thoroughly for a July launch.

HAIR-RAISING TECHNIQUE CLEANS OIL SPILLS: Most folks with oily hair use shampoo to get the oil out. But one Alabama hairdresser, Phillip McCrory, likes oily hair , and is working with NASA to use human hair to soak up oil spills. Researchers at NASA's Marshall Space Flight Center in Huntsville, Ala., are testing this hair-raising recovery technique for oil spilled in water. McCrory found that human hair adsorbs — rather than absorbs — oil. Instead of bonding with the hair, the oil gathers in layers on the hair's surface. This allows for easy recovery of the oil and its reuse by simply squeezing it from the collection bundles.

REPLICA OF 1903 FLYER TO BE DISPLAYED: The first full-scale replica of the historic 1903 Wright Flyer is at Ames Research Center, Moffett Field, Calif., in preparation for public display this spring and wind tunnel tests next January. The replica is scheduled for a two-week test in Ames' 80-foot by 120-foot wind tunnel — the world's largest. During the test, engineers will study the replica's stability, control and handling at speeds up to 30 mph in the wind tunnel. Results will be used to compile a historically accurate aerodynamic database of the Wright Flyer. For information, check out : <http://www.alumni.caltech.edu/~johnlatz/1903.html>.

For more information on the above news items, check the Internet for NASA's News and Information Web page at ***http://www.nasa.gov/releases/1998****.*

Announcements

CTAP Offers Training Programs

The Career Transition Assistance Program Center (CTAPC) is offering the following training programs through July.

May Programs

Tues., May 19, Communicating Up the Line, 9 a.m. to 12 noon; Thurs., May 21, Skills for the Interviewer: Interview Beyond the Obvious, 9 a.m. to 12 noon; Thurs., May 28, The Net & Career Development, 9 a.m. to 12

June Programs

Thurs., June 4, Starting Your Own Business: The Basics, 8:30 a.m. to 4 p.m.; Tues., June 9, Giving and Receiving Feedback, 8:30 a.m. to 12:30 p.m.; Thurs., June 11 Starting Your Own Business: Laying a Solid Foundation, 9 a.m. to 12 noon; Thurs., June 18, Starting Your Own Business: In the Black ASAP, 9 a.m. to 12 noon; Thurs., June 25, Starting Your Own Business: The Right Side of the Law, 9 a.m. to 12 noon; Tues., June 23, Getting Started: Career Development, Skills for the New Millennium, 2:30 to 4 p.m.; Wed., June 24, Getting Started: Career Development, Skills for the New Millennium, 10 to 11:30 a.m.; Tues., June 30, Networking for Career Development, 9 a.m. to 12 noon.

July Programs

Wed., July 8, So You Want to be a Consultant!, 8:30 a.m. to 12 noon; Thurs., July 16, 12 noon, and Cover Letters and Thank You Notes, 1 to 4 p.m.; Thurs., July 23, Interview Basics, 9 a.m. to 12 noon, and Negotiating Salary and Benefits, 1 to 4 p.m.

The seminars are authorized NASA and Langley training events. Participation is open to all NASA federal civil service personnel and their spouses. Advanced registration is required via phone ext. 45000 or fax ext. 45040. The Career Center is in Building 1312 next to Langley Federal Credit Union.

Reid Retirement Social

You are invited to a wine and cheese retirement social in honor of Alberta W. Reid, Wed., May 20, 4:30-6:30 p.m., at the H.J.E. Reid Conference Center. Cost is $10 per person (includes gift). Gift-only donations accepted. Contact Michelle Ferebee at ext. 45617 or Patsy Campbell at ext. 43291.

Help Needed for Liver Transplant Recipient

Langley employee Susan Hoban requests that interested readers contact her to help a local resident in a "race for his life against cirrhosis of the liver." Call Susan for details after 6 p.m. at 826-6691.

In Memoriam

Donald Blackwell

Donald Blackwell, 68, died Thursday, April 23. A retired Air Force master sergeant and Vietnam veteran, Blackwell served at Langley until his retirement in 1995.

Oce W. Johnson

Oce Johnson, 93, died Sunday, March 22. Johnson began his NACA career in October 1942, and retired from Langley as an engineering technician in January 1968 after 26 years of service.

Hugh Watson

Hugh Smith Watson Jr., 89, died Monday, April 27.

A former columnist with the Daily Press, Watson retired from Langley in 1979 as a purchasing agent after 35 years of service.

Lonnie L. Smith

Lonnie Leroy Smith, 66, died Thursday, April 2 in Kilmarnock, Va. Smith, a retired aviation electronics technician with the Norfolk Naval Air Rework Facility, had been a contractor at Langley.

Wilbur T. Quinn

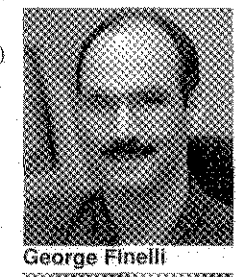
Wilbur T. Quinn, 78, died Tuesday, April 28. He was a native and lifelong resident of Poquoson. Quinn was employed at Langley and retired in 1976 after 32 years.

BLOOD DRIVE REMINDER: The next Blood Drive is May 27, 9 a.m. to 3 p.m. in the H.J.E. Reid Conference Center. Please consider donating blood at this time.

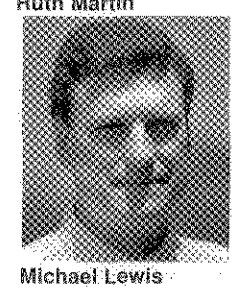
Three from Langley Headed for SESCD Program

BY NANCY FINN

The NASA Senior Executive Service Candidate Development Program (SESCDP) provides an organized approach for preparation for SES openings. The 12-to-18-month program consists of formal courses, seminars and work assignments. This spring three Langley employees undertake the SESCDP: George Finelli, Aviation Safety Program, Ruth Martin, Airframe Systems Program Office, and Mike Lewis, Aviation Safety Program.


George Finelli

Ruth Martin


Michael Lewis

George Finelli

"I expect to take full advantage of the SESCDP work assignments to gain insights into the aviation industry not readily achievable at Langley," said Finelli. "SESCDP will expand my experiences and arm me with executive tools hard to come by in the grind of everyday work."

Finelli came to Langley in 1980 as a research engineer. In 1991 he became the assistant branch head of the System Validation Methods Branch and, in 1993, he assumed leadership of the Computing and Critical Disciplines Office within the Aeronautics Program Group. He served as leader of the Fundamental Concepts and Methods Office in the Airframe Systems Office until 1995. Finelli is currently lead for Technical Integration for the Aviation Safety Program.

Finelli has also served as a member of the Strategic Cultural Assessment for the 90s for Communications, a Total Quality Assurance facilitator, and an organizer for both of Langley's Technology Opportunities Showcases.

Finelli earned a bachelor of arts degree in computer science from the State University of New York, Buffalo, and a master of science in statistics from Virginia Polytechnic Institute and State University. He attended Syracuse University under the NASA Maxwell Mid-career Development Program, and then received a master's degree in Public Administration from Troy State University.

Ruth Martin

"The program's flexibility will help us gain valuable exposure to areas that may be missing in our current experiences, and to explore areas of particular professional interest," Martin said.

Martin came to Langley in 1980. She worked in the former Acoustics Division, Structures Directorate performing helicopter noise research and, in 1991, she became the assistant branch head for the Aeroacoustics Branch. She then served as program manager for Langley's Rotorcraft program from 1994 to 1996. Martin spent most of 1997 at NASA Headquarters, serving as executive assistant to the associate administrator of Aeronautics and Space Transportation Technology. Martin is now deputy director for the Airframe Systems Program Office.

Martin earned a bachelor of science degree in mechanical engineering from Old Dominion University and a master of science degree in Acoustics from George Washington University. She also participated, under a NASA fellowship, in the Smith College Management Program for Women in 1994.

Michael Lewis

"I expect to gain a broadened perspective in senior management issues and operation," Lewis said.

Continued on Page 4

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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..... Ann C. Gaudreaux
Science and Technology Corp.

Assistant Editor..... Jeane Shanks
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.

Langley's Network Firewall Installed

A network firewall has been installed between the Center's computer network, LaRCNET, and the World Wide Web Internet. NASA has chosen to use firewalls at all Centers to improve security and risk management for sensitive information. Users should be aware that if their computer is connected to LaRCNET, they are vulnerable to intrusion and hacking, especially if their computer is accessible from the Internet. Although the firewall will provide added protection to LaRCNET-connected computers, it will not guarantee that computers behind the firewall are safe from intrusion. The best access security continues to be achieved by implementing the proper safeguards at the computer itself. The firewall does have an alert capability that allows rapid response to external attacks. The firewall is also easily configurable to respond to dynamic requests for access.

To allow time for proper real-world checkout and to fully access user requirements, a phased approach for firewall implementation has been taken. The current firewall configuration imposes minimal restriction on traffic in either direction. The final firewall configuration will **not** restrict outgoing traffic, except to sites that are potentially embarrassing or dangerous to the Center or Agency. However, substantial restrictions will be placed on incoming traffic in the final configuration. These restrictions will be based on well-defined user requirements for external access to Langley systems. The firewall will **not** affect dial-up access to the Center, or any traffic on NASA private networks (e.g., Aeronet to NASA Ames). It is expected that the firewall should be in its final configuration by the end of December 1998.

Plans for implementing restrictions on access through the firewall will be developed in conjunction with the user community. This will be accomplished with messages sent to distribution to solicit user feedback. For more information on this topic, please check out the Computer Security WWW site at <computer-security@larc.nasa.gov> and select "Special Interest Topics" to find the slides for the Firewall presentation. You may also contact Geoff Tennille at 864-5786 or g.m.tennille@larc.nasa.gov to arrange a briefing for your organization.

NASA Announces Contest to Name X-ray Observatory

NASA HEADQUARTERS RELEASE

NASA is searching for a new name for the Advanced X-ray Astrophysics Facility (AXAF), scheduled for launch Dec. 3, from space shuttle Columbia. AXAF is the third of NASA's Great Observatories, after the Hubble Space Telescope and the Compton Gamma Ray Observatory. Once in orbit around Earth, it will explore hot, turbulent regions in the universe where x-rays are produced.

Dr. Alan Bunner, director of NASA's Structure and Evolution of the Universe science program, announced the start of a contest, open to people worldwide, to find a new name for the observatory.

Entries should contain the name of a person (not living), place or thing from history, mythology or fiction. Contestants should describe in a few sentences why this choice would be a good name for AXAF. The name must not have been used before on space missions by NASA or other organizations or countries.

The grand prize will be a trip to NASA's Kennedy Space Center in Cape Canaveral, Fla., to see the launch of the satellite aboard the space shuttle. Ten runner-up prizes will be awarded and all entrants will receive an AXAF poster.

NASA will announce the final selection of the winning name later this year.

Contest rules, electronic entry forms, and additional information can be found on the Internet at: http://asc.harvard.edu/contest.html> Entries also can be mailed to: AXAF Contest, AXAF Science Center, Office of Education and Public Outreach, 60 Garden Street, Mail Stop 83, Cambridge, Mass., 02138. Mailed entries must be postmarked no later than June 30, 1998.

The observatory, now in the final stages of assembly and testing at TRW's facility in Redondo Beach, Calif, is more than 45 feet long and weighs 10,500 pounds. AXAF is the largest and most powerful x-ray observatory ever constructed. Its images will be more than 10 times sharper than any previous x-ray telescope. The focusing power of the telescope is equal to the ability to read a newspaper at a distance of half a mile.

Magnetic Levitation and Propulsion Workshop

The Facility Systems Engineering Division (FSED) and the Hypersonic Maglev Group (HYMAG) are holding a workshop aimed at addressing technologies critical to the development of magnetic levitation, hypersonic testing, advanced space launch capacity and high-speed transportation systems.

The workshop is May 18 to 20, 8 a.m. to 4:30 p.m. at the H.J.E. Reid Conference Center and is co-sponsored by NASA and HYMAG. There is no fee for Langley employees and contractors but a $6 fee is required of those wishing to partake of refreshments.

A registration form can be found at http://workshop.larc.nasa.gov/hymag/. For additional information, contact Ingrid Carlberg at ext. 44174.

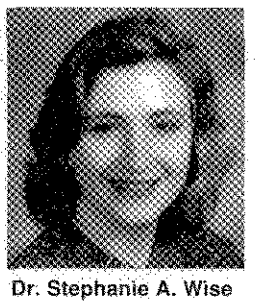
Wise Receives PACE Award

Dr. Stephanie A. Wise, a materials research engineer in Langley's Environmental Interactions Branch, was the recipient of the Karl Schwartzwalder – Professional Achievement in Ceramics Engineering (PACE) award.

A ceramic engineering graduate of Clemson University, Wise earned her bachelor of science degree in 1988 and doctorate degree in 1992.

Since she came to Langley, she has served as principal investigator for the Materials in Devices as Superconductors (MIDAS) spaceflight experiment. MIDAS evaluated the on-orbit performance of high-temperature superconductive circuits while aboard the Mir space station.

Wise's current work focuses on improving processes and concepts for piezoelectric ceramic materials and on the development of piezoelectric ceramic actuators for integration into airframe systems and spacecraft instruments. Wise is the author or co-author of 25 technical publications.


Dr. Stephanie A. Wise

About the PACE Award

The PACE award recognizes outstanding young ceramic engineers for achievements significant to the profession and to the general welfare of the American people. The purpose of the award is to focus public attention on the achievements of the honorees, and show the opportunities available in the ceramic engineering profession.

Community Corner

Today's Youth = Tomorrow's Leaders

BY SANDRA LEMONS

The Newport News Alliance for Youth is a collaborative effort by local agencies and community leaders to provide a safe place for youth to gather, socialize, and learn. Since its incorporation in 1991, the Alliance serves as a forum for the development of a city-wide youth development agenda that supports all young people in their efforts to develop skills and competencies.

Why does Alliance for Youth work?

The guidelines for the Newport News Alliance for Youth are founded on research which indicates that positive, caring relationships; safe and structured environments; the opportunity to participate; a healthy start; and the cultivation of marketable skills provide the foundation for young people to develop into productive adults.

How you can help

Volunteers are needed as mentors in positive role modeling, and to help conduct on-going sponsored programs such as the Juvenile Diversion Program and Partners in Prevention. Upcoming events include the 2nd Annual Stand for Children, Men's Health, Education and Jobs Fair, Fathers Day Picnic, and Fishing Clinic. To give your time and services, please contact the Alliance for Youth at 757-245-5635.

Space Day 1998: Astronaut Andy Thomas Announces International "Space Day" Celebration

A first-ever live Webcast on space, to help future generations "Embrace Space," was announced by astronaut Andy Thomas aboard the Russian space station Mir. He noted that the goal of Space Day, Thursday, May 21, is to advance science, math and technology education, and inspire others to realize the vision of our space pioneers.

Highlighting Space Day 1998 are a series of major initiatives, including:

• Cyber Space Day — The centerpiece for the international celebration is the world's first, live interactive Webcast dedicated to space. It will be hosted by a series of journalists. The 8-hour "Intergalactic Teach-In" will be broadcast over the World Wide Web on May 21. Guided by a committee of major space and science organizations, the project aims to provide students of all ages with the opportunity to meet some of the most fascinating people in the universe: the men and women whose vision, talent and dedication have helped us reach for the stars.

• Student Signatures in Space — Elementary school students around the world will have the opportunity to send their signatures on a voyage to space this year. The project provides special posters to be autographed by students, scanned onto disks, and carried aboard Senator John Glenn's shuttle mission that returns him to space after 36 years. (*See VASC News on Page 4*)

The official Web site for Space Day and the Embrace Space project is **www.spaceday.com**, a resource of space information for on-line visitors. The site provides continuous updates on Space Day events and hotlinks to the best space content. It will also serve as the gateway for the Cyber Space Day International Webcast. For more information, contact Cathy MacFarlane or Shauna Sullivan (202) 833-8121, eodev@aol.com

Free Space Day Electronic Field Trip May 20

Registration is open for "Outside the Envelope: Exploring Beyond Earth's Boundaries"— the free Space Day '98 electronic field trip airing on Wednesday, May 20. It is presented by the Challenger Center for Space Science Education.

For information, or for on-line registration, visit: http://www.challenger.org/ote.html

Guidelines for Political Activities Conducted at NASA Installations

NASA OFFICE OF GENERAL COUNSEL

Questions have been raised concerning visits by political candidates for office – local, state or federal – to NASA installations. As a federal agency, NASA may not endorse, encourage, or otherwise support any partisan political figures or parties.

In the interest of providing our employees with the opportunity to become better acquainted with significant issues and the viewpoints of various candidates on matters of interest, those holding or seeking office have been permitted on occasion to appear at NASA installations.

Each of these appearances has been based upon its particular facts and circumstances; so there has been no specific set of rules applied to all of them. It seems appropriate to ensure consistency in this area by providing guidance to those who may have to make decisions or respond to inquiries about such appearances. The following guidelines are provided:

• Requests from candidates to visit NASA facilities shall be treated in an even-handed manner, with no preference shown to a particular candidate or party. Every effort should be made to obtain specific details concerning the proposed visit.

• Requests by a candidate for a briefing may be granted, but attendance should be limited to the candidate and a small number of the candidate's entourage.

• To be most beneficial to our diverse workforce, candidate visits should be limited to those running for national or statewide office, i.e. President, vice president, Congress or governor.

• NASA cannot and doesn't want to control the content of any candidate's presentation. Appearances will be limited to providing forums for discussion of issues of interest to employees at the site; no overt political rally, parade or other non-informational event may be held on a NASA facility. No political fundraising or partisan registration drives may be conducted on a NASA site.

• Any meeting should be scheduled to cause minimum disruption to the normal activities of the installation. Attendance by employees shall be purely voluntary. No superior can encourage or discourage attendance based upon political affiliation of the speaker, the supervisor or the employee.

• Attendance by employees at such appearances is not considered part of the official duties of the employee. Therefore, appropriate leave must be taken by the employee in attendance if the event is held during the employee's work day, i.e., not before or after work or during the lunchbreak.

Finally, all Hatch Act rules apply to these on-site gatherings: i.e., NASA employees are free to attend such meetings. They may not, however, make a speech in support of the candidate, nor distribute campaign material at such meetings, or solicit contributions.

These are the guidelines the local center/installation directors will use in making the final decision as to the merits of approving or discouraging a candidate visit. For more information, call Langley's Office of the Chief Counsel, ext. 43221.

SESCPD . . .

Continued from Page 2

From 1983 to 1988, Lewis worked with the Army Aeroflightdynamics Directorate at NASA Ames, conducting helicopter flight control and handling quality research. He spent a year at NASA Headquarters as program manager for Aeronautical Guidance and Controls. In 1989 he joined Langley as a Wind Shear Flight Test Project engineer, and later served as deputy Wind Shear Program manager. He has also served as program manager for Flight Deck Systems on the High Speed Research Program. Lewis currently serves as the director of the NASA Aviation Safety Program.

Lewis holds a bachelor of science in engineering degree in mechanical and aerospace engineering from Princeton University and a master of science in aeronautics and astronautics from Stanford University.

He has received the Robert Lichten Award by the American Helicopter Society, the AIAA San Francisco Chapter Young Engineer of the Year Award and numerous NASA individual and group achievement awards. He has authored 15 scientific journal articles, conference papers and other technical reports.

The SESCDP Process

The SESCDP accepts applications from qualified persons including federal employees outside NASA and from outside the government. Each candidate undergoes several screenings. The NASA Executive Resources Board (ERB) makes the final selection.

Candidates must show that they are skilled leaders as well as information managers who possess skills outlined by the Office of Personnel Management.

SES members must be aware of current and future staffing needs based on organizational goals and budget realities. They oversee the allocation of financial resources and manage budget policies.

The SES members are responsible for "selling" their organizations to the others within and outside the Agency, e.g., agency heads, Congressional members and staff, media and professional groups. They form, develop, and enhance alliances with external groups. They distribute information — written and oral — to upper level managers and their employees as well as to stakeholders.

Becoming a successful SES member means leading change and people. SES members should understand the links between administrative competencies and mission needs.

Celebrate National Space Day at the VASC

Blast off to the Virginia Air and Space Center to celebrate National Space Day, May 21. The center will commemorate Space Day with several science and space-related activities, including IMAX films, demonstrations by museum educators and other space-related exhibits and activities.

Stop by the center on Space Day to:

• Send your signature to space. Sign the Space Day poster that will be sent to space with John Glenn aboard STS-95, scheduled for October.

• See the Apollo 12 Command Module, that was launched Nov. 12, 1969, and traveled nearly one million miles on its lunar mission.

• Watch the IMAX film, *Mission to Mir*. Shown at 11 a.m., the film highlights life on the Russian Space Station Mir, showing the cooperation between American astronauts and Russian cosmonauts. *Everest* is also showing in the IMAX theater.

• Combine science and technology with art and creativity at the new traveling exhibit *Destination: Space!* The interactive exhibit will spark imaginations about human's future in space. Get immersed in a space adventure that will educate, inspire and challenge viewers to look beyond modern space exploration to new frontiers.

• Receive $1 off center admission if you say "Apollo 12" at the admissions desk upon entering.

• See what astronauts and space shuttles encounter in pressureless outer space. See a Shuttle Technology Demonstration, presented by museum educators. Watch a shuttle "burn up" without the protection of heat-deflecting tiles and other interesting aspects of shuttle technology.

Virginia Air and Space Center
Hampton Roads History Center

The Virginia Air and Space Center is located at 600 Settlers Landing Road in downtown Hampton. Admission to the center is $6 for adults, $5 for NASA employees, seniors and military, and $4 for children 3 to 11. IMAX prices are $5.50 for adults, $4.50 for NASA, seniors, military and children ages 3 to 11. Call 727-0900.

Virginia Air & Space Center Offers LaRC Tours

This summer, visit the Virginia Air and Space Center and take a guided motor tour of NASA Langley and Langley Air Force Base.

The tour is offered in a van provided by Tysinger Motors. Explore the birthplace of America's aerospace history, including five national historic landmarks. Tours begin May 23 and continue through Sept. 7. The schedule follows: May 23 through June 28, Saturday at 11 a.m. and 2 p.m.; Sunday at 2 p.m. June 29 though Sept. 7, Monday through Saturday at 11 a.m. and 2 p.m. and Sunday at 2 p.m.

The fee for the tour is $4 with the purchase on any center admission ticket. Admission to the museum includes one daily IMAX film, and is $9 for adults, $8 for seniors/military/NASA and $7 for children, ages 3-11. For more information, call 727-0900.

Student Award Winner Mentored in NDE

Sanjay Venkat, a senior at Grafton High School is part of a mentorship program at the Non-Destructive Evaluation (NDE) Branch at Langley. The mentorship program was organized through the New Horizon's Governor School in Hampton. Venkat developed software for cure monitoring of composites using LabView, a graphical user interface (GUI) software package. Dr. Eric Madaras, NDE, is his mentor.

Photo by Jeff Caplan

Sanjay Venkat, Governor's School student, holding a sample of his work, is serving an internship on Center. He is writing code for a machine that "cooks" fabric.

Venkat participated in the 13th Annual Virginia State Science and Engineering Fair, April 18 at Jefferson Middle School, Washington D.C. He presented his work under the project title "Smart Sensor Cure Monitoring with Ultrasonics," and won the state's first place award in the Computer Science category. He also won the Grand Prize award, and was selected as an alternate to represent the state in the International Science Fair in Texas, May 10. Venkat also received special awards and recognition from the Central Intelligence Agency with a first place award for computer science, the Association for Computing Machinery for outstanding scholastic achievement in computer science or applications, and Virginia State Science and Engineering award for his outstanding science project. He recently received the Rodman scholarship for engineering at the University of Virginia.

Prior to the state-level competition Venkat won the first place award and several special awards in the Tidewater Science Fair competition held during March 1998 at Chesapeake. They are: Computer Science (first place), advancing to the state competition; Tidewater Science Fair Award of Excellence, chosen from all categories; the United States Army Award, first place; Intel's Excellence in Computer Science Award, first place; and Kaufman & Canoles' Student Inventor Award first place.

Remote Sensing . . .

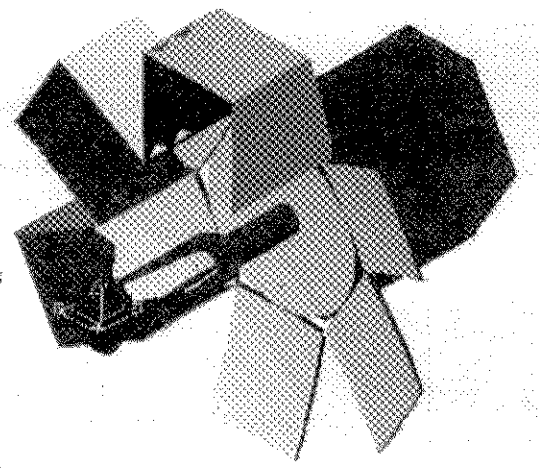
Continued from Page 1

Current Projects

DIAL lidars such as Langley's LASE (Lidar Atmospheric Sensing Experiment), require two nearly simultaneous laser pulses of slightly different wavelengths. The LASE instrument is used to measure water vapor, the most important radiative gas in the troposphere affecting the Earth's radiation budget.

The goals of Langley's Laser In-Space Technology Experiment (LITE) mission were to validate key lidar technologies for spaceborne applications, to explore the applications of space lidar, to provide the first lidar science measurements of clouds and aerosols from space, and to gain operational experience which will benefit the development of future systems on free-flying satellite platforms. LITE's scientific data provided the first highly-detailed global view of the vertical structure of cloud and aerosol from the Earth's surface through the middle stratosphere.

NASA Langley and the Canadian Space Agency are jointly developing ORACLE (Ozone Research with Advanced Cooperative Lidar Experiments), an autonomously operated, compact DIAL instrument to be placed in orbit using a Pegasus-class launch vehicle. ORACLE will provide real-time, global remote sensing of stratospheric ozone which protects life on earth from harmful UV radiation from the sun. More accurate and precise measurements of tropospheric winds, an important element in NASA's Earth Science Program, would provide a greater impact on numerical weather prediction models than any other space-based observation.



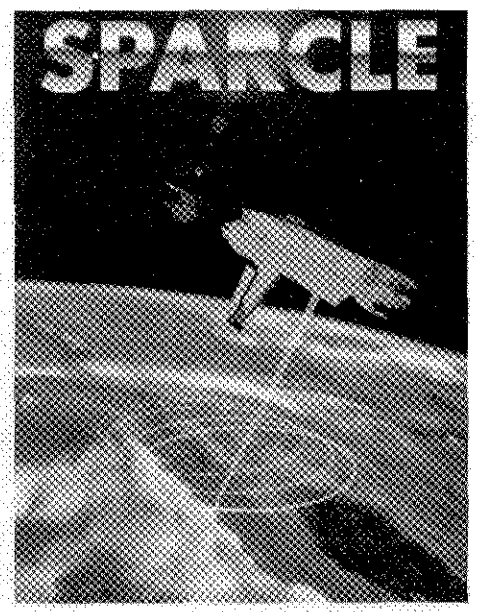
Some of NASA's remote sensing experiments are represented by these programs, LITE, above, ORACLE, below, LASE, below right, and SPARCLE, upper right.

The Doppler Lidar experiment, SPARCLE (Space Readiness Coherent Lidar Experiment), will reside in two pressurized Shuttle Hitchhiker modules the size of large wastepaper baskets.

SPARCLE will aim pulses of eye-safe laser light into the atmosphere, and measure the light that is reflected back to it by dust and aerosols in the atmosphere. Using the optical heterodyne detection technique to measure the Doppler shifts in the return signals, wind velocities will be determined.

Heterodyne detection involves the optical mixing of the lidar return with another laser operating at or near the lidar transmitter wavelength, with detection of the difference or beat frequency of the mixed signal.

Aircraft vortices present a hazard to other aircraft. Given adequate time, a vortex will dissipate and another aircraft can safely travel through that airspace. Vortices do, however, limit how closely one aircraft can safely follow another, and hence, how much time must elapse between successive aircraft using a given airspace and runway. NASA's Aircraft Vortex Spacing System (AVOSS), part of a future air traffic control system, will enable planes to take-off and land more safely while decreasing the separation between aircraft. Langley is developing and demonstrating eye-safe pulsed coherent lidar systems for ground-based measurement of wake vortices in the airport terminal area. Vortex position and strength are displayed and sent to the AVOSS in real time.



Spinoffs

Langley's Remote Sensing Technology Branch (RSTB) is building on its laser research program to develop the lasers at the heart of these experiments. These eye-safe lasers exploit previously-unused wavelength regions, emit significantly more energy than existing lasers in currently used wavelength regions, exhibit near-diffraction-limited performance, and operate more efficiently than existing lasers.

Numerous commercial applications for various laser materials and lasers developed by NASA exist. Potential commercial uses of these lasers include chemical sensing, illumination, surgical tools, dermatology, opthamology, dentistry and probes.

Ti:sapphire was primarily a research laser material before Langley selected it as the gain material for the LASE laser. Ti:sapphire was not commercially available. By funding materials growth programs to significantly improve the quality of Ti:sapphire, and by demonstrating that Ti:sapphire has the requisite characteristics to make relatively high-powered, long-life lasers, NASA made significant contributions toward bringing this material out of the lab and into commercial products.

Langley also improved the workhorse of the laser industry, Nd:YAG. Through Small Business Innovation Research (SBIR) grants, Langley-sponsored research developed techniques for growing Nd:YAG laser technology with one-fifth the loss of older technologies.

Lasers are and will remain important components of NASA's Earth Science Strategic Enterprise and of NASA's technology development for a safer, faster, more fuel-efficient air-traveling future. Past laser research enabled Langley to develop lasers for the current generation of active remote sensors. Today's research will enable development of lasers for tomorrow's active remote sensors, yielding a safer, more productive world.

The RSTB logo

RSTB is interested in transferring Langley technology to industry and to other government agencies. To become a partner in research or a customer for other products, contact RSTB via their website at http://aesd.larc.nasa.gov/GL/GLF.html. RSTB is located in Building 1202, Mail Stop 474. The branch head is James Barnes, ext. 41637, e-mail, j.c.barnes@larc.nasa.gov

Parenting: What You Need to Know

BY PEGGY PHELPS AND GAEL HAWKINS, OFFICE OF HUMAN RESOURCES
KATHY SKINNER, LANGLEY CHILD DEVELOPMENT CENTER

Planning on having a baby anytime soon? Or maybe not necessarily soon, but you like to plan ahead? Perhaps you already have children but would like an update on government policy in areas such as working part-time, telecommuting, and job-sharing. Maybe you are interested in strategies for getting into the "perfect" child care center. What kinds of things should you consider before deciding that day care is the right choice for you and your child?

In today's society, where very often both parents work, couples are faced with the challenge of how to raise a healthy, happy and normal child while also fulfilling long term career goals. With all the decisions to be made, being informed of all your alternatives and knowing where to go to keep up-to-date is invaluable. Come hear all the facts. A parenting program will be given June 2 at noon, in the Executive Dining Room of the cafeteria. Reservations are not required. Free pizza and soda will be provided to American Institute of Aeronautics and Astronautics (AIAA)/Women in Aerospace (WIA) members. For more information on this event, cosponsored by the AIAA Hampton Roads Section Young Professionals Committee, Women in Aerospace and the Federal Women's Program Committee, call Robin Hardy at (757) 864-7159 or e-mail r.c.hardy@larc.nasa.gov

SBIR Phase I Award Goes to STC

The U.S Air Force has selected Science and Technology Corp. (STC), Hampton, for a Small Business Innovation Research (SBIR) Phase II award. The award, valued at about $750,000, is for the development of a real-time software program called Hypersonic Aerodynamic and Thermal Loads Optimization Program (HATLOP) for space vehicles. The HATLOP code developed by STC's Flight Research Group under SBIR Phase I shows a significant improvement in the accuracy and speed of computation over existing codes.

When a space vehicle flies in the upper atmosphere, there is a sharp deterioration in the lift/drag characteristics of the vehicle. For the safety of the space vehicle during reentry, it is necessary to accurately predict aerodynamic as well as heat transfer characteristics of the vehicle using a very fast procedure.

The HATLOP design code will have the capability to give real-time flight results with good accuracy. Aerodynamic-thermal-structure interaction and optimization of the vehicle shape and of the trajectory will also be included in order to enhance the usefulness of the code to the design engineer.

For more information about SBIR programs, Langley's SBIR office can be reached by calling ext. 49569.

Notice: Contacts for NASA EPSCoR Program

Regarding the May 1 Researcher News article about the NASA Headquarters-managed NASA Experimental Program to Stimulate Competitive Research (EPSCoR):

For information on Langley University research programs, contact the University Affairs Office at 44000; for information on the National EPSCoR Program or the NASA Space Grant program, consult the EPSCoR web site at <http://www.hq.nasa.gov/epscor/>, or call Dr. Elizabeth Ward at ext. 43299.

AdVentures

LCDC Value Checks are available for purchase from the Langley Child Development Center (LCDC) Parent-Teacher Association. Cost is $10 per book. Coupon books can be used between now and May 31, 1999. The Value Check coupon books include coupons for local merchants and the Virginia Air and Space Center. Proceeds go to support the LCDC. To purchase a book, call Rose Mustain at ext. 42571, or e.r.mustain@larc.nasa.gov.

TIME SHARE WEEK: Vacation resort in Orlando, Fla. near Disney. Aug. 30 to Sept. 6, sleeps 6, has kitchen, dining room, 2 baths, access to resort facilities and more, only $600. Call 868-9819 for info.

FOR SALE: Truck cap for Toyota pickup; currently on a 1984 Toyota pickup, white, high-rise, plenty of windows. $150 OBO. Call 874-3121.

SITTER NEEDED June 15 to Aug. 29 for two kids, ages 9 and 10. 8 a.m.- 5 p.m., Mon. - Fri. Must have driver's license/car. Prefer fun/energetic teen to supervise/play. Call Sally at 898-5188.

HOUSE FOR SALE: North Calvert County. 4 BR colonial, foyer, 2.5 bath, whirlpool, one-acre, garage, office, kitchen w/ bay window, LR/DR, family room w/fireplace, cathedral ceiling, deck, large attic, wood floors, upgraded carpet, low utilities, close to schools and Andrews AFB. Asking $294,900. Call (301) 855-7306.

FOR SALE: Xerox 5220 personal copier. $175. Call 874-3121.

FOUND: Man's jacket in Building 645A (Spin Tunnel office). Call Mike Fremaux at ext. 41193 to describe/claim.

SEEKS ROOM: German graduate student looking for a room to rent, non-smoker, likes pets, call Soenke, ext. 45326, 930-0002, (home), or e-mail s.goldschmidt@larc.nasa.gov.

HOUSE FOR SALE: Poquoson, 2-story brick/vinyl home. 4 BR, 2-1/2 baths, FR w/fireplace, hardwood floors, 1/4-acre lot w/patio & fenced backyard. 10 mins. to Langley. $134,900. Call 868-3968.

HELP PENINSULA READS by eating at the Spaghetti Warehouse, 115 Arthur Way, Newport News (Kiln Creek), Sunday, May 31 from 11 a.m. to 9 p.m. Enjoy a meal at the Spaghetti Warehouse and 15-percent of your ticket will be donated to Peninsula READS – just tell the cashier when paying the bill. For more information or directions, call 838-5300.

FORT MONROE NEWS: Consul general of the Korean Embassy in Washington, D.C., Sung Yup Kim will be the speaker at a luncheon, May 20 at 11:30 a.m. to help the Fort Monroe Club observe Asian-Pacific American Heritage Month. His talk, "Pursuing Progress: One Vision, One Mission, One Voice," is open to the public. The cost is $6. For information, call 727-3782 or 727-4164.

CIRCUS AT LAFB: Carson & Barnes Largest Wild Animal Circus comes to the Langley Air Force Base soccer field Tuesday, May 26 at 4:30 and 7:30 p.m. Admission is $8, adults, $4, children 2-11 years. For more information, call 764-3999 or 764-4725.

LAA AEROBICS CLUB'S free Resist-A-Ball Workshop has been rescheduled for Wed., June 17, not in May as planned. It be held at the H.J.E. Reid Conference Center from 5 to 6 p.m. If you want to learn about a way to strengthen your abdominal and back muscles with the Ball, call ext. 42295 or 47520 to reserve your space at the workshop. Attendees will be lent an instructional tape to preview Resist-A-Ball techniques before the workshop. Folks are also invited to come out to our Saturday morning Resist-A-Ball classes (9:30 to 10:30 a.m.) in the LAA Gym. A limited number of Balls are also available for purchase. LAA Aerobics classes are on Tues., Thurs. from 5 to 6 p.m. and feature low-impact and bench with Saturday mornings from 9:30-10:30 focusing on Resist-A-Ball in the LAA Gym. Beginners are welcome any time. Call the above numbers for more information.

LAA News: LAA after-work party on the Picnic Grounds, Friday May 29, 4 to 9 p.m. Outdoor fun and games, win prizes, beverage specials, bring a friend.

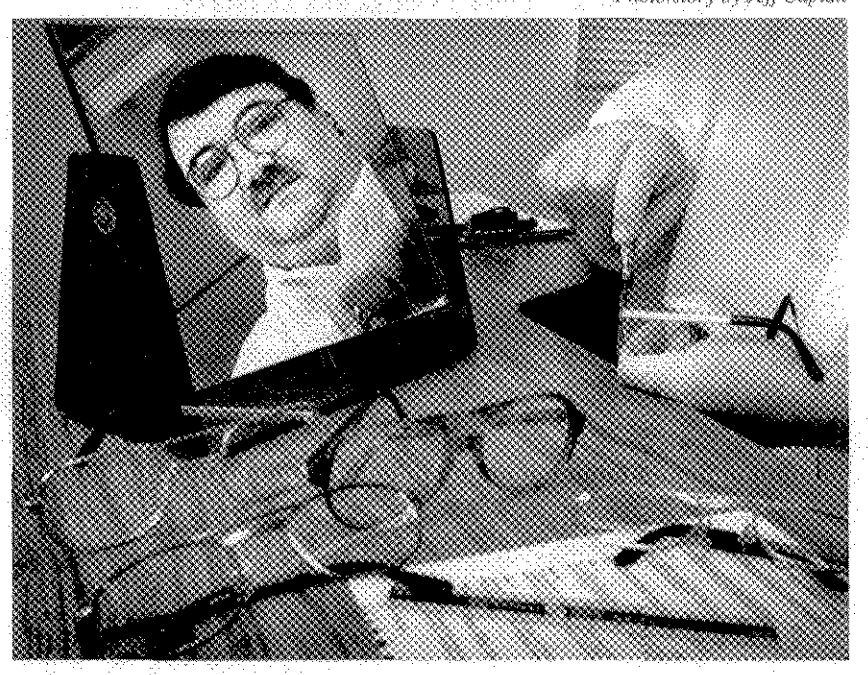
- Bingo every Thursday night in the H.J.E. Reid Conference Center auditorium. A recent winner took home a $1,200 jackpot. You could be next. Games start at 7 p.m.
- Country Western Line Dancing — Learn how to dance on Saturday, May 16 and Saturday, May 30, in the H.J.E. Reid Center. Lessons at 7 p.m. and dancing at 8, $3.50 cover charge, for 16 years and above.
- Raffle tickets are on sale for the annual LAA Carnival, Aug. 21 and 22. Support the LAA by purchasing a $1 raffle ticket from one of the Carnival Monarch candidates. The raffle offers cash prizes of up to $1,000.

For more information on any of these LAA activities, call ext. 46369.

GETTING RID OF OLD TIRES? The Virginia Peninsulas Public Service Authority (VPPSA) will take up to 25 old tires free during special drop-off collections. The first tire amnesty runs through May 31 in York and Middlesex counties. Each member community will host a month-long tire collections until September. Members are Hampton, James City, Poquoson, Williamsburg and York. For more information, call 728-2062.

Center Snapshots

Photo/story by Jeff Caplan



Donnie Garner, a contractor with Dr. Paul Seck and Garner Optical of Hampton, has worked at the Center for the past one-and-a-half years making safety glasses.

Born in Norfolk, Garner moved to Virginia Beach at the age of five where he has lived since. He learned the basics of his trade working for various optical labs in the area before joining his father's business in Hampton in 1982. At the request of his father, Donald, Garner studied and passed the State Board for Opticians in 1986.

His Langley office has recently moved from the Health Clinic (Building 1149) to Building 1299, trailer 500, and office hours are 8 a.m. to 12 noon on Tuesdays. For more information, call 864-3728.

* * * *

Asked what does he like most about working at the Center:
"The interesting people that you meet and work with every day." — Donnie Garner

Researcher News

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Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ◆ Issue 10 ◆ May 29, 1998

NASA Selects Teams for Research Agreements: A "Weather Channel" in Every Cockpit?

BY KATHY BARNSTORFF

Airlines and smaller airplanes are one step closer to having up-to-the-minute, graphical weather displays in their cockpits, thanks in part to a new NASA aviation safety initiative, headquartered at Langley.

NASA has selected research proposals from eight industry teams to develop Aviation Weather Information (AWIN) systems for commercial airliners and general aviation aircraft.

"Pilots tell us their number one priority is graphical weather information. We want to make it as easy to get a weather channel in the cockpit as it is in your living room. Technologies already exist that could help make that happen," said Michael Lewis, director of the NASA Aviation Safety Program (AvSP).

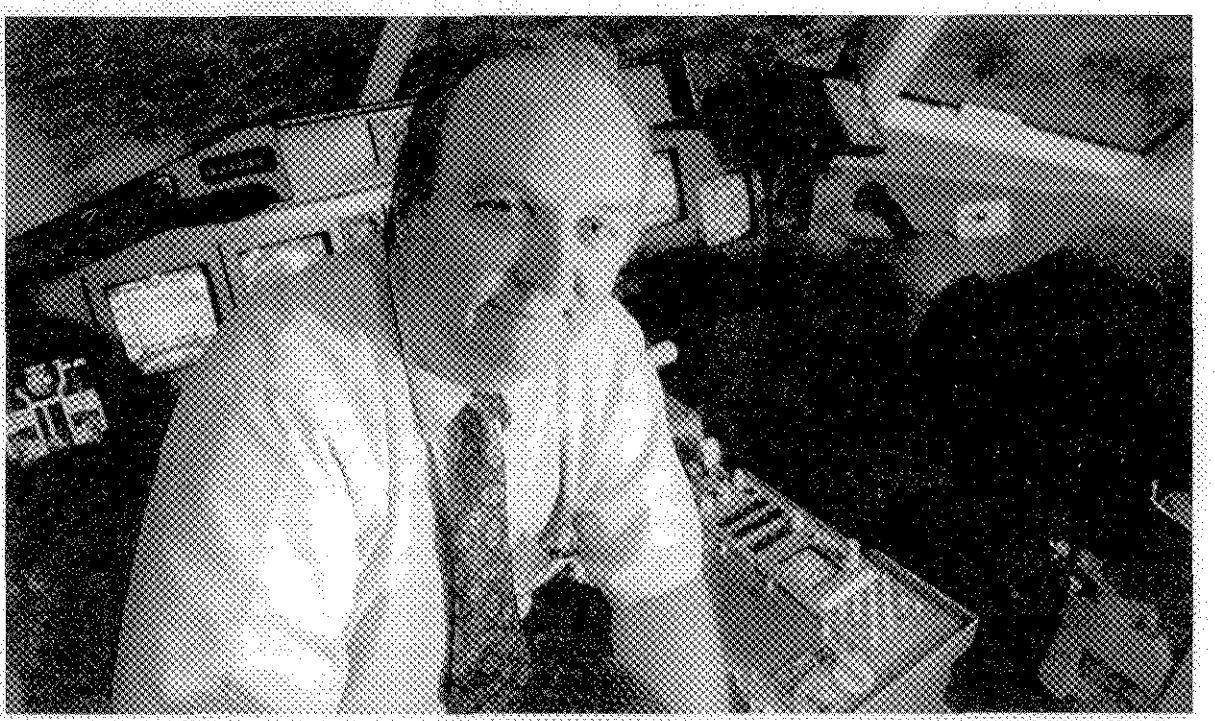


Photo by Jeff Caplan

Senior research engineer Charles Scanlon, Flight Management and Control Division, temporarily takes the helm of the Research Deck Simulator which includes AWIN weather graphics in its displays.

What is AvSP?

AvSP is a partnership with the FAA, the aviation industry (manufacturers and operators) and the Department of Defense (DoD). This partnership supports the national goal announced by President Clinton last year to reduce the fatal aircraft accident rate by 80-percent in 10 years and by 90-percent over two decades.

The weather information selections are one of NASA's new investments in that ambitious challenge. NASA asked U.S. companies to submit proposals for research, development, prototyping and implementation of AWIN systems and components. Industry teams submitted more than 40 proposals in three weather information categories: a national and worldwide system, a general aviation system and topical areas or specific components. NASA, FAA and DoD researchers evaluated the proposals based on technical merit, cost and feasibility.

NASA has set aside more than $8 million that will be matched by industry to fund AWIN projects over the next 18 months. More money is expected to be designated later to accelerate commercialization and make some systems available within five years.

Developing AWIN

For the first phase of the program, teams led by Honeywell and Boeing/McDonnell Douglas Corp. will receive up to $2.4 million each to develop a national and worldwide AWIN solution. During the same 18 month period, the NavRadio group will be awarded up to $1.2 million and the ARNAV team, up to $400,000, for a general aviation weather information system. Other teams led by Rockwell International, Honeywell and NavRadio will divide $1.6 million to develop specific components for AWIN.

Senior research engineer Charles Scanlon, Flight Management and Control Division, has been working on AWIN research for eight years. He ran cockpit simulation tests of stormy weather using real airline pilots as subjects.

"In half the scenarios we gave them this one extra tool of the graphical cockpit weather information," Scanlon said. "With that information they were able to make better re-route decisions [to avoid bad weather]. We measured that they had five-percent less distance, less time, less fuel — which adds to the economics for the airlines. Safety was measured in terms of staying three times as far away from the thunderstorms."

NASA envisions AWIN as a futuristic system that would allow aircraft to be both a source and user of weather information. Airborne sensors would provide data for weather systems on board the plane, on the ground and in other aircraft. In the cockpit would be easy to read, real-time displays that can show weather across the country, not just a limited number of miles

Continued on Page 4

Armstrong Named AA for Aeronautics and Space Transportation Technology

NASA HEADQUARTERS NEWS RELEASE

Lt. Gen. Spence M. (Sam) Armstrong (USAF, Ret.) has been named to head NASA's Aeronautics and Space Transportation Technology Enterprise at NASA Headquarters in Washington, D.C., effective May 11, Administrator Daniel S. Goldin announced.

Armstrong's extensive career includes experience in flight testing and astronautical engineering as well as command at five different levels within the U.S. Air Force. He has served as NASA's associate administrator for Human Resources and Education since September 1991. Prior to that assignment, Armstrong served as director of program architecture for the Synthesis Group, formed as a temporary organization from 1990 to 1991 to develop long-range program architectures for the U.S. human space flight program.

As associate administrator, Armstrong will be responsible for strategic planning, requirements definition and budgetary formulation of NASA's aeronautics research and space transportation technology activities. His duties will include overall responsibility for each of NASA's four aeronautical research centers — Ames, Moffett Field, Calif.; Dryden, Edwards Air Force Base, Calif.; Langley; and Lewis, Cleveland, Ohio.

"We are at a crucial time for NASA, the Nation and the world in aerospace technology," Goldin said. "We have the traditional aeronautics research, and we have the technologies that are emerging from the efforts in space transportation. NASA needs to fully integrate the two to get the leverage and synergy needed if we are to be the future aerospace leader. I've chosen Sam Armstrong because he has the technical background and proven track record as a leader. He has my complete backing to make this happen through organizational changes within the enterprise and through cooperation with other government agencies, the aerospace industry and the international community."

Lt. Gen. Spence M. Armstrong

Armstrong is a retired U.S. Air Force Lieutenant General and command pilot with over 4,500 hours (including 100 missions over North Vietnam in the F-105) flying time in 50 different aircraft. He was vice commander of Air Force Systems Command from July 1987 to April 1990 and, prior to that, was vice commander-in-chief, Military Airlift Command.

From July 1983 to July 1985 Armstrong was chief of the U.S. Military Training Mission to Saudi Arabia. He also served as commander, Air Force Military Training Center, San Antonio, Texas; deputy chief of staff for Technical Training, Air Training Command; deputy director for Space and C3, DCS Research, Development, and Acquisition, Headquarters USAF, the Pentagon; assistant deputy chief of staff for Operations, Air Training Command; commander, 80th Flying Training Wing, Sheppard Air Force Base, Texas; base commander and, later, deputy for logistics, 12th Flying Training Wing, Randolph AFB, Texas.

Armstrong graduated from the U.S. Naval Academy, Annapolis, Md., with a bachelor of science degree in engineering. Armstrong also received master's degrees in both astronautical and instrumentation engineering from the University of Michigan. He attended Harvard University's Senior Managers in Government Program; Columbia University's Executive Program in Business Administration; the USAF Aerospace Research Pilot School, Edwards Air Force Base, Calif.; and the Air War College.

News Briefs

Around the Agency

'SOLID SMOKE' TILES CAN BE USED ON EARTH: A new concept for spacecraft tiles also can be used on Earth to make efficient, vacuum-like insulation for refrigerators, furnaces and automobile catalytic converters. The new material is similar to that used for the tiles on the space shuttle to protect the vehicle from the heat generated during reentry into Earth's atmosphere. However, the new tiles have a layer of aerogel, or 'solid smoke,' mixed into the tile's air spaces. "Solid smoke, or aerogel, works like a vacuum layer because it's a great insulator," said aerogel tile co-inventor Dr. Susan White of Ames Research Center, Moffett Field, Calif. "The new aerogel tiles can insulate spacecraft from 10 to 100 times better than today's tiles."

NEAR-BIG BANG CHALLENGES BURST THEORIES: A recently detected cosmic gamma ray burst released 100 times more energy than previously theorized, making it the most powerful explosion since the creation of the universe in the Big Bang. A team from the California Institute of Technology, Pasadena, Calif., measured the distance to a faint galaxy from which the burst originated at about 12 billion light years from the Earth. The team's findings appear in the May 7 issue of the journal Nature. The burst was detected Dec. 14, 1997, by the BeppoSAX satellite and NASA's Compton Gamma Ray Observatory satellite. Information on the Compton Gamma Ray Observatory is available at: <http://cossc.gsfc.nasa.gov/cossc/descriptions/cgro.html>. Information on Gamma Ray Bursts is available at: <http://cossc.gsfc.nasa.gov/cossc/nasm/VU/overview/bursts/bursts.html>

HUBBLE SHOWS HOW TO FEED A BLACK HOLE: Astronomers have obtained an unprecedented look at the nearest example of galactic cannibalism — a massive black hole hidden at the center of a nearby giant galaxy that is feeding on a smaller galaxy in a spectacular collision. The views provided by complementary images from two instruments aboard NASA's Hubble Space Telescope are giving astronomers new insights into the powerful forces being exerted in this complex maelstrom. Located only 10 million light-years away, this peculiar-looking galaxy contains the closest active galactic nucleus to Earth and has long been considered an example of an elliptical galaxy disrupted by a recent collision with a smaller companion spiral galaxy.

NASA AND YALE PUSH THE BARRIERS ON MT. EVEREST: As four climbers made their assault on Mt. Everest's summit in mid-May, NASA and Yale University tested new health care devices based on space science technology. From the mountain's extreme environment, health data traveled from the base camp to the NASA-Yale telemedicine project. The problems of high altitude adaptation, physiological stress and the climbers' location represent great medical challenges similar to an astronaut's situation in space. NASA and Yale have been working in partnership since July 1997, to contribute to the United States' competitive lead in commercial applications of telemedicine.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>

Announcements

Parenting: What You Need to Know

In today's society, the challenge of raising a healthy, happy and normal child while fulfilling career goals are great. Knowing all of your alternatives and where to go to keep up-to-date is invaluable. Come hear all the facts. A parenting program will be given June 2 at 12, in the Executive Dining Room of the cafeteria. Reservations are not required. Free pizza and soda will be provided to American Institute of Aeronautics and Astronautics (AIAA)/Women in Aerospace (WIA) members. For more information on this event, cosponsored by the these two organizations and Federal Women's Program Committee, call Robin Hardy at ext. 47159, r.c.hardy@larc.nasa.gov

AeroMat Conference Set for June 15 to 18

The 9th Annual Advanced Materials and Processes Conference and Exposition, "Materials Solutions: Optimizing Performance in Today's Aerospace Environment" will be held June 15 to 18 at the Sheraton Premiere Hotel in Tysons Corner, Va.

For information, call ASM International customer service center at 800-336-5152, ext. 5900, e-mail Cust-Srv@po.ASM-Intl.org, or visit the web site at <http://www.ASM-Intl.org>

Boeing Phantom Works Conducts Expo

The Boeing Company's "Phantom Works" will conduct a technology exposition and exchange at Langley June 23 to 24 from 8:30 a.m. to 5 p.m. The exposition will inform customers about the advanced technologies and processes that Boeing is pursuing, and to learn more from customers about potential applications for future development.

The exposition in the H.J.E. Reid Conference Center, will display a wide variety of technologies, processes and advanced systems that represent breakthroughs in the affordability, performance and quality of aerospace systems. It is intended for U.S. government military and civilian personnel of U.S. citizenship. A valid ID is required for attendance.

Tribute to Susan L. Adkins

Friends and fellow poets and writers of Susan Adkins, who died in March, have compiled a memorial booklet of poetry and prose entitled *In Fond Memory of Susan L. Adkins*. The book is available at the Langley Exchange Shop. Proceeds from the sale of the book will benefit The Susan L. Adkins Writers' Fund. For information, contact ext. 41585 or exchangeshop@larc.nasa.gov

Retirement Thanks

From Vernie Knight: "Thanks to all my friends and associates who attended and contributed to my retirement party on May 4. The turn out, roasting, career recollections, and gifts were all great. My family and I thoroughly enjoyed the fun night. Special thanks to Mitch Thomas, Keith Harris, Donna Gallaher, Ray Calloway and Dave Kershner. Good luck to all in the future."

NARFE To Meet

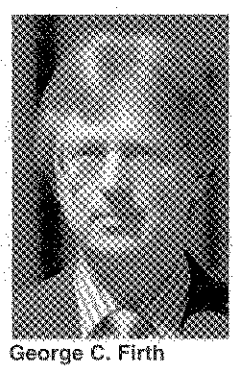
A June luncheon meeting of the National Association of Retired Federal Employees (NARFE) will be held at the Quality Inn, Mercury Blvd. Hampton, Monday, June 8, beginning at 10:30 a.m. A humorous style show is the program for the luncheon, For advanced tickets and information, call Robert C. Green, program chair, at 874-3858.

IT Expo June 3 – 4

Free tickets are available to an Information Technology Expo and Conference at the Virginia Beach Pavilion, June 3 and 4. More than 200 national and local vendors will exhibit. Call Kay Megorden, Peninsula Advanced Technology Center, 766-7850, x 288.

Firth Heads to Carnegie Mellon for Senior Executive Seminar

BY NANCY FINN


George C. Firth

George C. Firth will attend the Senior Executive Seminar at Carnegie Mellon University in Pittsburgh, Pa. The three-week program's primary objective is to give participants the concepts and techniques needed to increase productivity and effectiveness in their organizations. The program integrates lectures, discussions, projects and practical work to enhance skills in strategic vision, human resource management, program development and evaluation, resource planning and management, and organizational representation and liaison.

"The Senior Executive Seminar will provide skills that are needed to enhance our performance during this era of constrained resources and increasing demand," Firth said. "My expectations are that I will be exposed to techniques, strategies and experiences that will provide the foundation for becoming an effective manager and leader."

He added, "I believe that it is essential that we strive for continuous technical and personal growth to enhance our collective and individual well-being, and I intend to use these capabilities to help my organization increase its productivity and to be a more effective advocate and contributor to teaming and collaboration across organizations."

Firth came to Langley in 1964 as an apprentice aerospace technician in the predecessor to today's Facility Systems Support Division. In the early 1970s, he gained status as a Vietnam veteran, and during the early 1980s, he was employed as a senior aircraft engineer by Lockheed-Georgia. In 1989, he became the head of the Process Systems Section in the Facilities Engineering Division and in 1992, he was named head of the Engineering Support Branch. After the Center reorganization of 1994, he was reassigned as head of the Process Systems Branch, Facility Systems Engineering Division.

Firth earned a bachelor of science degree in mechanical engineering and a master of engineering management degree from Old Dominion University.

PDP Homepage Now Available On-Line

Now on-line is the Professional Development Program (PDP) homepage. Created by the 1997-1998 PDP class, this site provides all NASA employees with up-to-date, useful information on all aspects of travel between centers. Information on housing, moving, travel reimbursement and center operations are relevant to any NASA employee on long-term travel. The Internet address for the PDP homepage is: http://www.hq.nasa.gov/office/codef/codeft/pdp/

In Memoriam

Abraham Leiss

Abraham Leiss, 74, died Monday, May 4. A native of Pittsburgh, he was a Peninsula resident for 51 years.

Leiss, a mechanical engineer, was a resource head of the Langley Scout Launch Vehicle Project Office from 1959 until he retired in 1980. Leiss served at Langley for 35 years. He was very active in the Virginia Peninsula Engineers Club (past president) and the National Space Society.

Eston Howard Jr.

Eston Howard Jr., 47, died Saturday, May 9. The Yorktown native was employed as a truck driver by NCI Information Systems at NASA Langley.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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. . . . . Jeane Shanks
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.

Video Group Receives Multiple Awards

BY SHERI BEAM

The Video Applications Group has recently received a number of awards for its productions. The group provides video services for the entire Langley community, including studio and field production, audio recording, and high-end 2-D and 3-D animation. Video projects cover a wide variety of topics from educational programs and live uplinks to highly specialized technical presentations. The award-winning projects are:

Connect I - Flight Direction, produced for the Office of Education, received an Award of Distinction in the Educational category, from The Communicator Awards. The Communicator Awards is a national organization, founded to recognize individuals and companies in the communications field whose talent and creativity achieves a high standard of excellence and serves as a benchmark for the industry. The Award of Distinction is given for projects that exceed industry standards in conveying a company's or organization's message. Entries are judged by a panel of award-winning professionals. There were more than 2,900 entries from 47 states and five other countries. About 20-percent of the entries won this award.

Connect II – Planetary Landers, produced for the Office of Education, received an Award of Excellence in the Educational – K-12 category from The Videographer Awards. The Videographer Awards, a division of The Communicator Awards, gives recognition to special events in videography deemed to be produced, shot, and edited in a manner that is exceptional, as judged by other video professionals. The Award of Excellence is given to those entries whose ability to capture the event or communicate the message is exceptional. There were more than 1,800 entries from 42 states. About 13-percent of the entries won this award.

Photo by Jeff Caplan

Elementary school children participate in one of four award-winning Office of Education Connect programs produced by Video Applications Group.

Several projects received Telly Awards. The Telly Awards, founded in 1980, showcases and recognizes outstanding non-network and cable film and video productions. This year, there were more than 9,500 entries. Finalist (bronze) awards are given to approximately 15-percent of the entries. Since entrants submit only their best work, earning Telly recognition is a significant creative achievement.

The National Science Olympiad, produced for the Office of Education, won a bronze award in the Government Relations Category.

Employee Development Process, produced for the Office of Human Resources, won a bronze award in the "How to" category.

Breaking Barriers, produced for the Office of Public Affairs to celebrate Langley's 80th anniversary, won a bronze award in the Public Relations category.

Community Corner

Until There Is a Cure, There Is the American Diabetes Association

BY SANDRA LEMONS

The American Diabetes Association was founded in 1940 and was reorganized in 1969 to increase its ability to serve the public. The association is the nation's leading nonprofit health organization to provide diabetes research, information and advocacy. Today the American Diabetes Association conducts programs in all 50 states and the District of Columbia, reaching more than 800 communities.

THE MISSION

The mission of the organization is to prevent and cure diabetes and to improve the lives of all people affected by diabetes. To fulfill this mission, the American Diabetes Association funds research, publishes scientific findings, and provides information and other services to people with diabetes, their families, health care professionals and the public.

HOW YOU CAN HELP

The association is always looking for volunteers with expertise and experience in leadership, administration, business, finance, health care, marketing, public relations, politics, law and fund raising, among other skills.

The association prides itself on recognizing the true value of a volunteer. An affiliate will work closely with volunteers to match their skills and interests with a challenging assignment.

To volunteer your time and talent, contact the Norfolk office of the American Diabetes Association at 623-4068, the Peninsula Chapter at 596-8150, or call the American Diabetes Association at 1-800-342-2383.

VIRGINIA AIR & SPACE CENTER

VASC Offers Langley Tours

This summer, visit the Virginia Air and Space Center and take a guided motor tour of NASA Langley and Langley Air Force Base.

The tour is offered in a van provided by Tysinger Motors. Explore the birthplace of America's aerospace history, including five national historic landmarks. Tours continue through Sept. 7. The schedule follows: May 23 through June 28, Saturday at 11 a.m. and 2 p.m.; Sunday at 2 p.m. June 29 though Sept. 7, Monday through Saturday at 11 a.m. and 2 p.m. and Sunday at 2 p.m.

The fee for the tour is $4 with the purchase of any center admission ticket. Admission to the museum includes one daily IMAX film, and is $9 for adults, $8 for seniors/military/NASA and $7 for children, ages 3-11. For more information, call 727-0900.

Freeman Leads Space Study

Del Freeman Jr. has begun a one-year detail to NASA Headquarters. He reports to the Chief Engineer as the Deputy Chief Engineer for Space Transportation. In this position, he leads the critical Office of Management and Budget mandated $25M Space Architecture Study which will help the Agency make critical FY 2001 Space Transportation budget decisions. During this assignment he will divide his time between Headquarters and Langley. Lana M. Couch will serve as Acting Director, Aerospace Transportation Technology Office, during this period.

Culpepper Named AIAA Tech VP

Richard Culpepper

Richard Culpepper, Assistant to Director of Langley's Aerospace Transportation Technology Office, has been named vice president-elect of the American Institute of Aeronautics and Astronautics (AIAA) for Technical Activities. He will serve one year as vice president-elect followed by three years as Vice President – Technical Activities. In this position, he will be responsible for the overall direction of technical activities involving Technical Committees, Technical Groups, technical meetings and displays, and technical communications. He will also be the chairperson of the Technical Activities Committee.

"To have one's peers elect you is an honor, a challenge and a thrill," Culpepper said. "Keeping up with technical advances into the next century is something I look forward to."

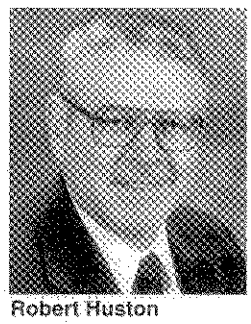
Culpepper is liaison for NASA hypersonic efforts at the Air Force Research Laboratory (AFRL), Wright-Patterson Air Force Base, Ohio. In this capacity he serves as the NASA Deputy Program Manager for the AFRL Hypersonic Technology (HyTech) Program.

Culpepper served as NASA Headquarters liaison at Wright-Patterson from 1981 to 1986, and worked in the National Aerospace Plane (NASP) Joint Program Office from 1986 to 1995 as special assistant to the NASP Program Director. He was the Technical Program co-chair for the AIAA 8th International Space Planes and Hypersonic Systems and Technologies Conference held recently in Norfolk.

Culpepper joined Langley in 1966, starting in the Flight Research Division doing research on the Kestrel V/STOL aircraft. He is a graduate of Virginia Polytechnic Institute and State University and the National Defense University.

Huston Awarded Lectureship

BY MEGHAN WOODCOCK



Robert Huston

Robert Huston, a Langley Distinguished Research Associate (DRA) in rotorcraft technology, presented the Alexander A. Nikolsky Lecture at this year's American Helicopter Society (AHS) Forum held May 20 to 22 in Washington, D.C.

The Nikolsky Lectureship is awarded to "an individual who reflects the highest ideals, goals, and achievements in the field of helicopter and V/STOL (Vertical/Short Take-Off and Landing) aircraft engineering and development." Huston lectured May 21 on the "Future of Vertical Lift," and was then presented with an award by the AHS.

Huston began his career at Langley in 1958 researching hingeless rotor concepts. In the early 1970s, he served as program manager for the development of the NASA/Army Rotor Systems Research Aircraft. In the 1980s Huston was executive director of the National Rotorcraft Noise Reduction program.

Since his retirement in 1992, Huston has acted as a consultant for private firms, the Air Force and Navy, and has volunteered as a docent for the Virginia Air & Space Center. He has also acted as editor-in-chief of the AHS Journal. Here at Langley, in the Fluid Mechanics and Acoustics Division, Huston continues his study of the history of rotorcraft technology.

Huston earned bachelor of science and master of science degrees in aeronautical engineering from the University of Kansas.

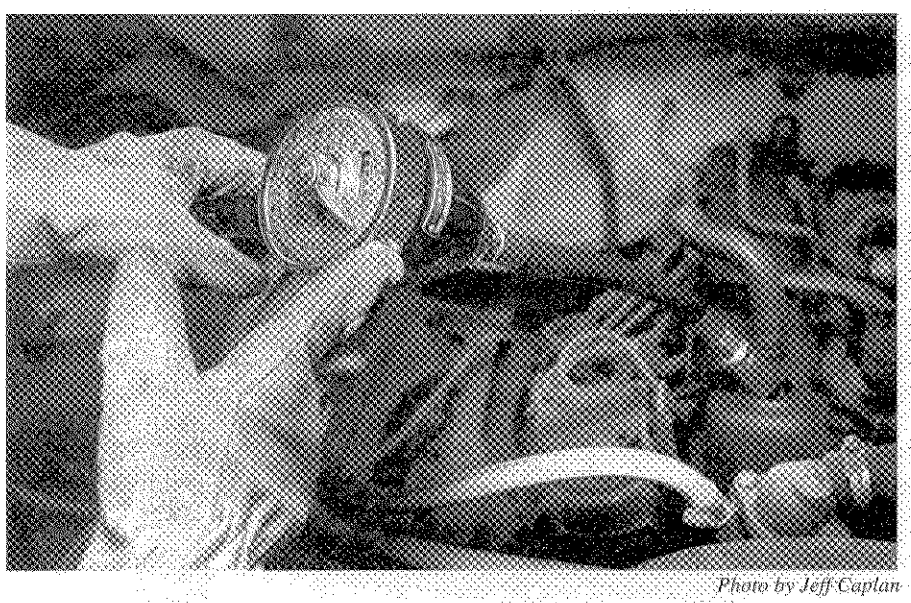


Photo by Jeff Caplan

A member of the Vehicle Maintenance staff uses a special nozzle from the bulk oil storage system to fill a vehicle's crankcase with motor oil.

Bulk Oil Tank Earns Environmental Kudos For the Vehicle Maintenance Staff

BY DAVE STEIGERWALD

The Vehicle Maintenance Facility staff members have been putting pollution prevention concepts into action. Langley purchases motor oil for vehicle oil changes in bulk instead of in individual one-quart containers. A tanker truck fills a bulk storage tank directly. Using this bulk storage tank provides environmental benefits as well as an economic savings of 38 cents per quart.

The use of bulk storage tanks keeps the containers and their oil residue from entering landfills. In the past, oil changes at the Center generated numerous empty one-quart containers that had to be discarded in the trash. Because of the oil residue left in them, most recycling programs prohibit the recycling of these plastic containers.

To change oil in a vehicle, a mechanic uses compressed air to pump the oil through a high-pressure hose fitted with a special nozzle directly into the vehicle's crankcase. The mechanic monitors the amount of oil entering the crankcase with a gauge located on the nozzle. This direct transfer also eliminates the possibility of contaminating the oil, something that can happen when transfer containers are used to fill the vehicle's crankcase.

The Vehicle Maintenance staff will soon be switching to using re-refined lubricating oil. Buying re-refined oil closes the recycling loop by creating a demand for recycled products. It also satisfies a Presidential Executive Order requiring federal facilities to purchase certain recycled or re-manufactured items.

For more information, contact the author Dave Steigerwald via e-mail: <d.j.steigerwald@larc.nasa.gov>

Weather Channel in the Cockpit?

Continued from Page 1

ahead. That way pilots could more easily monitor possible trouble spots and make better, more cost-efficient routing decisions.

That weather information would get to and from aircraft by satellite and ground transceivers using broadcast datalink and two-way communications systems. Many industry teams also propose to incorporate decision aids into their AWIN designs. Those could include, among other tools, alarm systems or displays of suggested routes to help pilots better avoid potentially hazardous weather situations.

Aviation Safety Teamwork

The aviation safety initiative was created in the summer of 1997 by NASA Administrator Dan Goldin in response to a report from the White House Commission on Aviation Safety and Security, chaired by Vice President Al Gore. NASA has designated about $500 million over five years for aviation safety, with more funding expected to follow.

Researchers at four NASA field installations are working with the FAA and industry to develop affordable, implementable technologies to make flying safer: Langley; Ames Research Center in Moffett Field, Calif.; Dryden Flight Research Center in Edwards, Calif.; and Lewis Research Center in Cleveland, Ohio.

Because of advances in the last 40 years commercial airliners are already the safest of all major modes of transportation. But with an accident rate that has remained relatively constant in the last decade, and air traffic expected to triple over the next 20 years, the U.S. government wants to prevent a projected rise in the number of aircraft accidents.

For more information on the NASA Aviation Safety Program please check the Internet at: www.hq.nasa.gov/office/aero/oastthp/programs/avsaf/avsafpro.htm

Soar to New Heights at VASC Summer Camps

Inspire a child to be a future engineer, pilot, archaeologist or astronaut at the center's summer space camps. Camps are scheduled throughout the summer months beginning in late June.

For more information, and to register for camps, call 727-0900, ext. 780.

LAA Carnival to Feature Food, Fun and Festivities

BY DONNA SNIPES

Make plans now to attend the 1998 Langley Activities Association Carnival. The carnival will kickoff Friday, August 21 at 5 p.m., and will continue on Saturday, August 22, starting at noon. The carnival will run until 10 p.m. on both days at the LAA grounds near H.J.E. Reid Conference Center, Building 1222.

Planned attractions include bingo, video games, rides, arts and crafts, a casino and sporting events. There will be plenty of activities for children. A variety of entertainment will be provided on the main stage including the sounds of Mixed Company, a popular band of local musicians. Food and beverages will be available for purchase.

Raffle tickets will be drawn every half-hour with special drawings at 6, 9 and 10 p.m. each day for monetary prizes. Raffle tickets are available from Monarch candidates. Each ticket purchased represents one vote for the Monarch of your choice. The contestant with the largest number of votes will be crowned the 1998 Carnival Monarch on Friday evening.

A daring young man tries out the space ride at last year's LAA Carnival.

The LAA needs your help to make the carnival a success. Contact the LAA manager at ext. 46369 to volunteer your time, purchase raffle tickets, or offer suggestions/comments.

Monarch Contestants Seek Co-Workers' Votes

Contestants for the 1998 Langley Activities Association Carnival Monarch seek the votes of co-workers. Each raffle ticket sold equals one vote cast for the contestant of your choice. For more information about the Monarch contest or the 1998 Carnival, call ext. 46369.

Keisha Armistead, Employee Development Branch, enjoys photography, modeling, rollerblading, auto mechanics and interior design.

Keisha Armistead

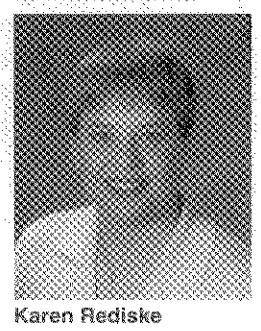
Stephanie Horvath, of the Models and Materials Technology Branch, enjoys playing golf on a weekly basis.

Stephanie Horvath

Jennifer Hubble, Atmospheric Sciences Division, likes sports, including softball and volleyball.

Jennifer Hubble

Karen Rediske of EG&G in the Finance Department likes reading, bowling and country music.



Karen Rediske

Mann Named Deputy AA, Office of ASTT

NASA HEADQUARTERS NEWS RELEASE

Michael B. Mann has been named deputy associate administrator for NASA's Aeronautics and Space Transportation Technology enterprise effective immediately. Mann will serve as Deputy to Associate Administrator Lt. Gen. Spence M. (Sam) Armstrong (USAF, Ret.). (*See story, Page 1*)

Mann most recently has been deputy associate administrator (management) for the Office of Earth Sciences. Prior to 1994, he served in a similar capacity in the Office Space Flight. From April 1980 through July 1989, Mann served in NASA's Comptroller's Office in several cost analysis and resources management positions.

He was a principal member of the Agency's Zero Base Review Team, and played a key role in the development of NASA program management and financial management policies and procedures.

A graduate of Virginia Polytechnic Institute with a bachelor of science degree and a master of business administration, Mann spent seven years in the United States Army in the logistics and procurement career field. He is the recipient of numerous awards including the NASA Exceptional Service Medal, two Presidential Meritorious Awards and a Distinguished Executive Award.

For more information, see the InfoCom web page at http://www.hq.nasa.gov/hq/infocom.htm

No Time For Training?

Don't have time to leave your building for training? The Employee Development Channel, WEDC-15 will bring the training to you.

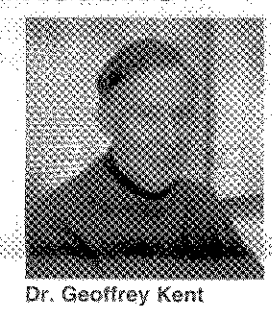
To provide developmental opportunities to more employees, the Employee Development Branch, with assistance from the Communications and Computer Systems Branch, has created Langley's WEDC-15.

Channel 15 will promote four curriculum areas over four months. One of the curricula will be highlighted every Tuesday and Thursday at the following broadcast times: 8 a.m., noon, 4 and 8 p.m. Upcoming topics are management, motivation, information technology, and teambuilding.

The videos to be broadcast are: Teambuilding, Vol. 1 and 2: Learn the Secrets of Developing a High Performance Team with Mark Sanborn; Windows NT: Implementation and Deployment; Windows NT 4.0: Principles and Features; Professional Supervision Skills, Vol. 1 and 2: How to Increase Your Confidence, Respect, and Results with Jack M. Everitt; How to Set and Achieve Goals, Vol. 1 and 2: Getting Focused and Motivated to Take Immediate, Effective Action with Dr. Bobbe Sommer.

For complete scheduling information, visit our web site at: http://ohr.larc.nasa.gov/wedc.html. To suggest ideas for programming or evaluate programs, complete the evaluation form at the web site.

STC Scientist to Receive NASA Medal



Dr. Geoffrey Kent

Dr. Geoffrey S. Kent, senior scientist at Science and Technology Corp. (STC), Hampton, has been selected to receive NASA's Distinguished Public Service Medal. The award will be presented at the 1998 Agency honor awards ceremony June 4 in Washington, D.C.

This is the second award Kent has received from NASA. In 1986, he received a NASA Public Service Medal.

Kent has been with STC since 1980, working at NASA Langley in the field of atmospheric physics.

His work includes research on stratospheric and tropospheric aerosols using satellite instruments and with ground-based and airborne lidar (light detection and ranging) systems. He is a co-investigator on the SAGE II, SAGE III and LITE spacecraft experiments.

Kent received a doctorate degree in radiophysics and master of art degree in physics from Cambridge University, England. Prior to joining STC, he was a professor of physics at the University of West Indies.

Dempsey Earns Degree

Photo by Jeff Caplan

Tina Dempsey

Tina L. Dempsey, Army Research Laboratory (ARL), recently graduated from Christopher Newport University (CNU). She completed the requirements for a bachelor of science degree in governmental administration with a specialty in legal studies in December 1997. She works in the Technology Applications Group's (TAG) Office of Patent Counsel as a paralegal specialist.

Dempsey started as a participant in the NASA Langley/Thomas Nelson Community College's Secretarial Co-op Program and placed in the Structures and Dynamics Division. She also served in the Landing and Impact Dynamics Branch (LIDB). She also completed an associate in applied science degree in office systems technology.

Her advice to others? "Set short and long-term goals," Dempsey said. "Don't get discouraged when your long-term goals seem so distant. Set short-term goals, and reward yourself when you meet them. This will give you the motivation and determination to keep going."

Virginia General Assembly Honors Glenn, Langley

The Virginia House of Delegates and Senate has passed a joint resolution declaring October 1998 as "John Glenn/NASA Langley Month."

The purpose of the resolution is to honor Langley's contributions to the space program because Sen. Glenn trained on this Center as an astronaut, and is returning to space on the October shuttle mission.

The joint resolution was sponsored by Del. I. Vincent Behme Jr., 91st House District. A large reproduction of the resolution has been sent to the Center. It will be framed and displayed on Center.

House Joint Resolution No. 430

Designating October 1998 as John Glenn/NASA Langley Month in Virginia.
Agreed to by the House of Delegates, March 12, 1998
Agreed to by the Senate, March 13, 1998

WHEREAS, the NASA Langley Research Center, founded in Hampton in 1917, is among the nation's premier research laboratories; and

WHEREAS, NASA Langley is a national leader in aeronautics, space transportation technology, and atmospheric sciences research; and

WHEREAS, America's first human space flight program, Project Mercury, began at NASA Langley, and America's "Original Seven" astronauts trained there beginning in 1959; and

WHEREAS, United States Senator John H. Glenn, Jr., one of the Original Seven astronauts, trained extensively at NASA Langley in preparation for his historic flight of February 20, 1962, during which he became the first American to orbit the earth; and

WHEREAS, on February 16, 1998, it was announced that John Glenn will again journey into space aboard the Space Shuttle Discovery on the STS-95 mission in October 1998; and

WHEREAS, the Commonwealth of Virginia wishes to honor John Glenn's lifetime of heroic and singular contributions to the United States civil space program, the United States Senate, and the United States Marine Corps; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the General Assembly, in honor of the achievements of Senator John Glenn and the NASA Langley Research Center, designate the month of October 1998 as John Glenn/NASA Langley Month in Virginia; and, be it

RESOLVED FURTHER, That the Clerk of the House of Delegates prepare copies of this resolution for presentation to Senator John H. Glenn, Jr., and NASA Langley Research Center Director Dr. Jeremiah F. Creedon in order that they may be apprised of the action of the General Assembly of Virginia.

Hernandez Celebrates 15 Years of Mission Success

EVA DECARDENAS, HERNANDEZ ENGINEERING

Hernandez Engineering, Inc. (HEI) celebrates 15 years of engineering mission success during 1998. To commemorate the milestone, the company is celebrating with its employees and customers across the United States. In appreciation for the years of technical excellence, Hernandez Engineering owners Mike and Tery Hernandez are drawing 12 employees' names from contracts across the country for a trip to New York City.

Hernandez Engineering's Safety and Mission Assurance and Occupational Safety and Industrial Hygiene Contracts at NASA Langley kicked off the celebrations April 28 where LaRC/HEI employee Phillip Babb was the first lucky winner.

Mike Hernandez thanked employees for their excellent support during the past 15 years, and looked forward to a 25th anniversary celebration.

INCOSE Hosts June Meeting

The Hampton Roads Emerging Chapter of the International Council On Systems Engineering (INCOSE) will meet June 9, 6 to 7:30 p.m., Building 1218, Rm. 107. The program speaker Mickey O'Connor, manager of the Systems Engineering Dept. at Newport News Shipbuilding, will talk about his experience in applying systems engineering methods to a mature engineering organization. For more information, visit the local INCOSE Web site at http://www.seva.net/~incose/, or e-mail a.e.motley@larc.nasa.gov, m.g.sexstone@larc.nasa.gov.

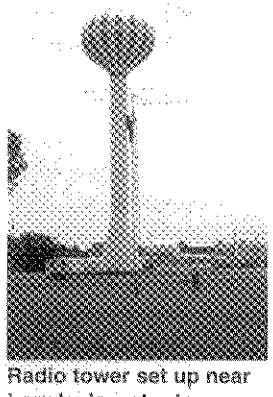
Langley Amateur Radio Club to Test Emergency Preparedness

During the weekend of June 27-28, NASA Langley Amateur Radio Club will participate in a national exercise to test its ability to work under emergency conditions. The club is seeking amateur radio volunteers from Langley's work force, especially hams with CW experience, to take part in Field Day 1998.

From 2 p.m. June 27 to 2 p.m. June 28, the Langley club, with the Southern Peninsula Amateur Radio Klub (SPARK), will attempt to contact other amateur radio operators around the world. This year's exercise will involve more than 200,000 amateur radio operators worldwide.

Both clubs will begin setting up equipment (tents, antenna towers, radios and emergency generators) at 2 p.m. Friday, June 26. The clubs will set up in the softball field behind H.J.E. Reid Conference Center.

To simulate actual emergency conditions, such as a hurricane strike in the area, emergency power supplies will be used, including gas-powered generators and solar panels, and the clubs will work out of tents during the entire 24 hours of the exercise.



Radio tower set up near Langley's water tower.

For more information, or to volunteer, call Jim Byrd at ext. 45961, or Rich Eckman at ext. 45822. People without amateur radio licenses are invited to help with setup on Friday, or to observe the world of amateur radio at any time during the weekend. Children/spouses are welcome.

AdVentures

CONDO FOR SALE: Willoughby, waterfront, 2 BR, 2 bath, sauna, fireplace, loft, fans, all appliances. Fee $120/mo. Hot tub, pool, beach, boat slips, 20 min. to Langley, available immediately, asking $93,000. Call 855-7775.

BOAT FOR SALE: 1988 Chaparral, 278 XLC, twin Mercruiser I/O's, sleeps 5, full head & galley, electr. refrig., heat pump/AC and more. Ski, cruise, and fish. Ready to go. Engines recently overhauled. Asking $21,900. Call 855-7775.

HOUSE FOR SALE: North Calvert County, 4 BR colonial, foyer, 2.5 bath, whirlpool, one acre, garage, office, kitchen w/bay window, LR/DR, family room w/fireplace, cathedral ceiling, deck, large attic, wood floors, upgraded carpet, low utilities, close to schools and Andrews AFB. Asking $294,900. Call (301) 855-7306.

CAR FOR SALE: 91 Plymouth hatchback, white, automatic transmission, power steering and brakes, radio, low miles, $5,200. Call 247-5426.

FOR RENT: Cottage at Kill Devil Hills by week or three-day minimum, sleeps 9, newly decorated, fully furnished, deeded rights to beach. Call Bill at 868-6427.

HOUSE FOR SALE: Renovated rancher in Hampton's Wythe section, 2 BR, 1 bath, living room, spacious kitchen, hardwood floors, enclosed front patio, privacy fence, detached garage/workshop, one block from Chesapeake Bay. Reduced to $66,900. Call 247-5144.

HOUSE FOR SALE: Four BR, 2-story on dead-end street in Poquoson. Landscaped 1/4-acre lot with patio/fenced yard, 1,716 sq. feet, one-car attached garage, FR/fireplace, 3 baths, dishwasher, new stove, water heater and roof. 10 minutes from NASA. $134,900. Call 868-3968.

FREE CONCERTS: The Phoebus Saxophone Quartet will give two free classical concerts, Sat., June 13, 3 p.m., Williamsburg Regional Library and Sun., June 14, 3 p.m., Gloria Dei Lutheran Church, Hampton. For information, call Ron Gann at 723-6864.

LANGLEY ALUMNI ASSOCIATION NEWS: The Langley Alumni Association Luncheon will be June 9 at 11:30 a.m. in the private dining room of the cafeteria, Building 1213. The guest speaker will be Jeannine Stump from the Riverside Regional Medical Center who will speak about Golden Care/Medicare. For more information about the luncheon or the Alumni Association, call the information line, 864-7330.

HELP PENINSULA READS by eating at the Spaghetti Warehouse, 115 Arthur Way, Newport News (Kiln Creek), Sunday, May 31 from 11 a.m. to 9 p.m. Enjoy a meal at the Spaghetti Warehouse and 15-percent of your ticket will be donated to Peninsula READS – just tell the cashier when paying the bill. For more information or directions, call 838-5300.

LAA SUMMER FLING: The Langley Activity Association sponsors a Summer Fling Friday, June 26, 4 to 9 p.m. The Back River Band will be on the outdoor stage at the picnic grounds. M. Price Distribution Co. will have promotional giveaways and games. Hot dogs are 50 cents at the picnic shelter, and cold beverages are available. No admission fee for the outdoor entertainment. For information, call ext. 46369 or visit the LAA office, Bldg. 1222 Room 112.

LAA AEROBICS CLUB'S free Resist-A-Ball Workshop has been rescheduled for Wed., June 17, not in May as planned. It will be held at the Reid Conference Center from 5 to 6 p.m. Learn about a way to strengthen your abdominal and back muscles with the Ball. Call ext. 42295 or 47520 to reserve your space at the workshop. Attendees will be lent an instructional tape to preview Resist-A-Ball techniques before the workshop. Folks are also invited to come out to our Saturday morning Resist-A-Ball classes (9:30 to 10:30 a.m.) in the LAA Gym. A limited number of Balls are also available for purchase. LAA Aerobics classes are on Tues., Thurs. from 5 to 6 p.m. and feature low-impact and bench, with Saturday mornings from 9:30-10:30 focusing on Resist-A-Ball in the LAA Gym. Beginners are welcome any time. Call the previously listed numbers for more information.

DANCE PROGRAM: On May 30, Saturday, 7 p.m. Bharatanatyam, a dance program by Vidhya Bashyam will be presented at the Hindu Temple of Hampton Roads, Chesapeake, Temple Lane off of Rte. 104 South; free admission. For information call 868-4152 or 867-8692

FORT MONROE NEWS: "Music Under the Stars" concerts starts Thursday, June 4 at 7:30 p.m. at the gazebo across from the Chamberlain Hotel. All concerts are free and open to the public. In the event of rain, concerts move to the Post Theater. For information, call 727-3620. Enjoy fresh seafood at the "Crab Cracking" event at the Fort Monroe Club surf bar June 5 at 6 p.m. For information, call 727-3103. Come join the "Luau" at Fort Monroe Beach June 19. Live entertainment and luau food will be provided in a Hawaiian environment. Wear your favorite Hawaiian-style attire. For information, call 727-3103 or 727-3151.

Astronaut Visits Virginia Air and Space Center

Photo by Jeff Caplan

Astronaut Charlie Camarda, visiting the Virginia Air and Space Museum in Hampton May 15 and 16, helps fourth-graders from White Oaks Elementary School in Virginia Beach assemble items that would go to Mars if there were a human colony on the red planet, as part of the center's Mars Base 2020 program. Camarda was a researcher in the Structures Division at Langley prior to his acceptance in the NASA astronaut corps.

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Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 11 ❖ June 12, 1998

Fire and Ice: Arctic Expedition Probes Role of Clouds in Climate Change

BY CATHERINE WATSON

An ice-breaking ship, research airplanes, space satellites and an international team of scientists are converging in the Alaskan Arctic to learn more about global climate change. They're studying clouds and radiation from the sun during the spring and summer.

The FIRE Arctic Cloud Experiment (FIRE/ACE) is looking at a variety of cloud systems in a two-phase campaign April 7 through June 13 and July 6 through 30. FIRE (First International Satellite Cloud Climatology Project Regional Experiment) is led by NASA, and headquartered at Langley. Its research is being done in Alaska's Beaufort Sea and over the coastal town of Barrow.

"We know very little about Arctic clouds and how they interact with the polar surface and atmosphere," said Langley's Dr. Patrick Minnis, FIRE project scientist. "The data from FIRE/ACE will provide the opportunity to greatly expand our knowledge of the Arctic climate — an important component in any global climate change scenario.

"The ultimate goal is to learn enough to more accurately forecast global climate change," Minnis added. "The better we can understand it, the more we'll be able to determine the possible effects of potential global change, such as iceberg melting and coastline flooding."

The current campaign will use four aircraft, numerous earthbound instruments and six orbiting satellites to take measurements of clouds from high above them, inside them, and below them.

An ER-2 airplane, based at Dryden Flight Research Center, Edwards, Calif., arrived in Alaska in mid-May. During missions the aircraft will fly at about 70,000 feet. It's equipped with a suite of remote sensors to study clouds that form in the vicinity of "leads" — large cracks that expose water and melt ponds.

An ER-2 takes off to study clouds as part of the FIRE/ACE program. The FIRE project is managed from Langley.

Three other aircraft are also participating. A University of Washington CV-580, a National Center for Atmospheric Research C-130, and a Canada National Research Council Convair CV-580 will use a variety of instruments to take measurements "in situ," or inside the clouds.

Additionally the Canadian Coast Guard icebreaker vessel, the "Des Groseilliers," has been frozen into the Arctic ice pack for a year as part of a climate-modeling project sponsored by the National Science Foundation and Office of Naval Research. Scientists making measurements from the ice will share data with scientists taking measurements during this spring's series of overflights.

Canada's lead agency for FIRE is the Atmospheric Environment Service of Environment Canada. Other supporting organizations are the National Research Council of Canada, and in the United States, the National Science Foundation, Office of Naval Research, Department of Energy, National Oceanic and Atmospheric Administration and Department of Defense.

Participants include more than 80 researchers from eight NASA centers, five U.S. agencies, 13 U.S. universities and educational consortia, and three private U.S. companies, as well as scientists from Canada, Great Britain and the Netherlands. FIRE is managed by the Radiation Sciences Program, Office of Earth Science, NASA Headquarters, Washington, D.C.

Detailed information on FIRE/ACE, as well as the other FIRE projects, can be found on the FIRE home page at: http://fireace.fire.nasa.gov and at: http://asd-www.larc.nasa.gov/fire/

Photo by Jeff Caplan

During a visit to Langley, NTSB chairman Jim Hall, left, talks with Dan Woodell, radar design engineer, Rockwell Collins, inside a company research aircraft.

NTSB Chairman Hall Visits Langley

BY KATHY BARNSTORFF

The country's top aviation safety official says airline passengers should keep their seat belts on.

National Transportation Safety Board Chairman James Hall made that remark during a visit to Langley, headquarters of the NASA Aviation Safety Program (AvSP).

Hall said he's concerned about the recent number of injuries associated with clear air turbulence. The NTSB Chairman learned about AvSP's efforts to prevent aircraft accidents, including research being done on an airborne sensor to detect clear air turbulence. He also spoke to Langley employees about one of his agency's biggest challenges: the investigation into the crash of TWA Flight 800. Two hundred thirty people died when the TWA 747 went down off Long Island in July 1996.

Hall said he hopes the NTSB investigation into that accident will be finished by the end of the year. NASA is one of about 20 organizations assisting the NTSB in that probe.

NASA Headquarters Honors Three from Langley

Three men from Langley were recently honored at NASA Headquarters. They are:

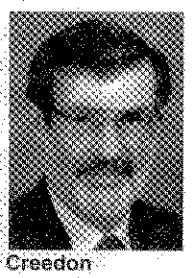
Roy V. Harris, Jr., a Distinguished Service medal: "In recognition of outstanding contributions to the United States preeminence in aeronautics;

Dr. Geoffrey S. Kent, Science and Technology Corporation, Distinguished Public Service medal: "For distinguished service to NASA's Mission to Planet Earth Enterprise in the development of global aerosol and cloud climatologies for assessing their impact on the Earth's radiation balance and climate change;" and

Dr. Jeremiah F. Creedon, Center director, an Outstanding Leadership medal: "For your many personal contributions and untiring commitment to the Nation, NASA, and the Langley Research Center as an outstanding leader of vital aeronautics and space programs."

Harris

Kent



Creedon

NASA Langley Salutes Its Employees with Honor Awards, see story Pages 3 and 4

News Briefs

Around the Agency

HUBBLE FINDS A RUNAWAY WORLD: NASA's Hubble Space Telescope has given astronomers their first direct look at what may be a planet outside our solar system, one that has apparently been ejected into deep space by its parent stars. Located in the sky within a star-forming region in the constellation Taurus, the object appears to lie at the end of a strange filament of light. That suggests it was flung away from the vicinity of a newly forming pair of binary stars.

SPACE STATION PARTNERS ADJUST TARGET DATES: Representatives of all nations involved in the International Space Station have agreed to officially target a November 1998 launch for the first station component and to revise launch target dates for the remainder of the 43-flight station assembly plan. In meetings of the Space Station Control Board and the Heads-of-Agency at Kennedy Space Center, Fla., all station partners agreed to launch dates of Nov. 20, 1998, for the Control Module named Zarya (Russian for sunrise) and Dec. 3, 1998, for Shuttle mission STS-88.

NASA FORMS OFFICE IN RUSSIA FOR ISS OPERATIONS: NASA has formed the Office of Human Space Flight Programs, Russia, to oversee the transition from the Phase One Shuttle-Mir program to the assembly and operation of the new International Space Station (ISS). Astronaut Michael A. Baker (Capt., USN) will lead this office. Baker was recently named assistant director to Johnson Space Center Director George W. S. Abbey. One of his responsibilities will be to supervise the transition of human space flight initiatives associated with ISS. He will be NASA's lead representative on operational issues to the Russian Space Agency and its contractors as part of NASA's Human Exploration and Development of Space initiative.

SOLAR FLARE LEAVES SUN QUAKING: Scientists observed a flare-generated solar quake that contained about 40,000 times the energy released in the great 1906 earthquake that devastated San Francisco. The solar quake that the team recorded looks much like ripples spreading from a rock dropped into a pool of water. Over the course of an hour, the solar waves traveled for a distance equal to 10 Earth diameters before fading into the fiery background of the sun's photosphere. Unlike water ripples that travel outward at a constant velocity, the solar waves accelerated from an initial speed of 22,000 miles per hour to a maximum of 250,000 miles per hour before disappearing.

IMAGES SHOW MAGNETIC ENERGY BURST ON SUN: The first images from NASA's Transition Region and Coronal Explorer (TRACE) spacecraft reveal activity in the solar atmosphere in stunning detail. They also include the first detailed observations of a magnetic energy release, called a magnetic reconnection. The reconnection was observed on May 8 in a region of the solar atmosphere where two sets of perpendicular magnetic loops expanded into each other. High resolution movies of a relatively small but clear magnetic reconnection event and other spectacular solar activity observed by TRACE were presented during the spring meeting of the American Geophysical Union in Boston.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>

Announcements

Career Center Events for June-August

The Career Center summer schedule is as follows:

June

• June 18, Thurs., Start Your Own Business (SYOB): In the Black, ASAP, 9 to 12; June 25, Thurs., SYOB: The Right Side of the Law, 9 to 12; June 23, Tues., Getting Started: Career Development, 2:30 to 4, and again on June 24, Wed., 10-11:30; June 30, Tues., Networking for Career Development , 9-12.

July

• July 7, Tues., Job Applications and Skill Statements, 9 to 12; July 8, Wed., So You Want to be a Consultant!, 8:30 to 12; July 16, Thurs., Resumé Reality, 9 to 12, Cover Letters and Thank You Notes, 1 to 4; July 23, Thurs., Interview Basics, 9 to 12, Negotiating Salary and Benefits, 1 to 4; July 29, Wed., Communicating Up the Line, 9 to 12.

August

• Aug. 5, Wed., Defining You and Your Career, 9 to 12; Aug. 12, Wed., Networking for Career Development, 9 to 12; Aug. 13, Thurs., First 30 Days on the New Job, 9 to 12; Aug. 18, Tues., Hone Your Negotiation Skills, 9 to 12.

Curly Pig Sees Justice Is Served

On May 1, attorneys in the Office of Chief Counsel – Kathy Kurke, Shawn Gallagher, Kevin Love, Rami Hanash and Sharon Smith – put on a mock trial for the fourth grade at Carrollton Elementary School in honor of "Law Day," a nationwide celebration of our nation's system of justice. The trial was "The Commonwealth of Virginia v. Curly Pig." Curly Pig was accused of "attempted wolf cooking." Mr. Wolf, above right, was played by Gallagher, with Kurke in the role of judge. Was it self-defense, or did Pig have it in for Mr. Wolf? The jury (the students) found Pig not guilty, and learned something about the nation's judicial system.

The Career Center

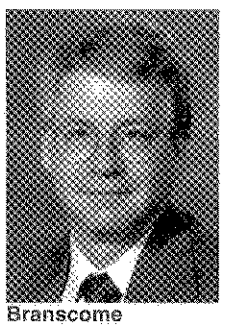
The seminars are authorized NASA and Langley training events. Participation is open to all NASA federal civil service personnel and their spouses. Participants are asked to register in advance. Call ext. 45000, fax ext. 45040. All sessions are held in Building 1312, next to the Langley Federal Credit Union. Visit the Career Center Web site at <http://wwwctapc. larc.nasa. gov>.

Letters

From Bryce Kepley: "A sincere thank you is extended to everyone who participated in my recent retirement social. The evening was very enjoyable for me and my family. We consider it a grand finale of my NASA career. My 'NASA family' has always been very close and supportive. I attribute this as a key factor to what I consider a successful career. Thanks for the Lowes' gift certificates, and a special thanks to those who planned the event. I could not have asked for a better send-off."

From Veloria Martinson: "Thank you so much for your expression of love and kindness at my farewell party. Although you all mean more to me than material things, I cannot begin to express how overwhelmed I was by your gift. You are a loving and generous people. I would like to give a special thanks to Ray Scholz, Bob Daugherty, Kathy Bulluck and everyone else at the Aircraft Landing Dynamics Facility. I have benefited so much from your support throughout my 10 years with NASA. Thank you."

Branscome to Head for NASA HQ



Branscome

Darrell Branscome, Director, Space and Atmospheric Sciences Program Group (SASPG), is transferring to NASA Headquarters to become the Deputy Associate Administrator for Enterprise Development in Code M. His transfer will be effective sometime in June/July, at which time William L. Smith, deputy director of SASPG, will become acting director for the group.

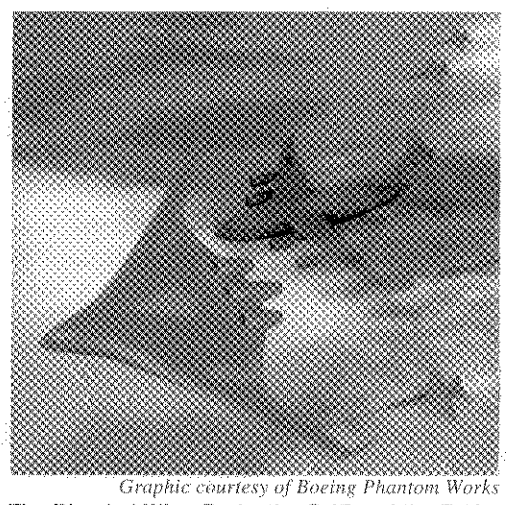
Boeing Phantom Works Exchanging Ideas with Customers

The Boeing Phantom Works will be visiting Langley to show government employees technologies and systems of the future.

"Boeing has been working on a lot of innovative ideas that offer cost and performance improvements to our customers," said Dave Swain, executive vice president of the Phantom Works.

Phantom Works has expanded its communications efforts to include a Technology Exposition and Exchange series being conducted at customer installations across the country.

"Boeing's biggest challenge is to communicate our innovative ideas to our customers, and to learn how best to apply them," Swain said.



Graphic courtesy of Boeing Phantom Works

The Blended Wing Body, the C-17 and the F-18 are represented in this graphic from the Boeing Phantom Works in St. Louis.

On display at the expositions are scale models, demonstrations and wall posters of advanced technologies, processes and systems that offer greater affordability, quality and performance for current and future products. Exposition highlights include 3-D modeling and simulation processes, structures and vehicle configuration technologies, open systems architectures, advanced manufacturing and prototyping techniques, and advanced systems such as hypersonic/space transportation vehicles, blended wing-body aircraft and a canard rotor/wing concept.

The Boeing Phantom Works Technology Exposition and Exchange will be held on both June 23 and 24 from 8:30 a.m. to 5 p.m. in the H.J.E. Reid Conference Center. It is open to all U.S. government military and civilian personnel of U.S. citizenship presenting a valid U.S. government ID badge.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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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Assistant Editor. . . . . Jeane Shanks
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.

Honor Awards Salute Employees

NASA Langley's annual Honor Awards ceremony, held May 28th, recognized 34 individuals and 12 teams. Also honored were the winners of the H.J.E. Reid Award, the Paul F. Holloway Non-Aerospace Technology Transfer Award, the Richard T. Whitcomb Aerospace Technology Transfer Award and the special Mars Pathfinder Awards.

Photos by Jeff Caplan

Exceptional Service Medals

Celeste M. Belcastro, for sustained outstanding achievement in Digital Upset Research which contributed significantly to advancements in aviation safety.

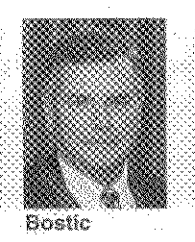
James E. Bostic, for exceptional service to the Center and Agency as Langley's Internal Operations Program Manager for financial resources, facility operations and maintenance.

Phillip L. Brown, for outstanding technical engineering contributions in the design, development, and integration of the Clouds and the Earth's Radiant Energy System (CERES) instruments.

Richard E. Campbell, for sustained contributions to the development of advanced instrumentation for NASA's Aeronautics and Mission to Planet Earth Programs.

Karen R. Credeur, for exceptional service in communicating to NASA's stakeholders the value of Langley research to world-class science and to the security and economy of the nation.

Belcastro


Bostic

Brown

Campbell

Credeur

Angela M. Davis, for exceptional administrative contributions to the Space Projects Office.

Samuel M. Dollyhigh, for outstanding contributions and leadership in systems studies of aeronautical vehicles.

Gloria S. Evans, for exemplary performance and dedicated administrative support to the Facilities and Systems Support Division.

David T. Fahringer, for outstanding service in the design and development of unique and complex test articles in support of NASA/LaRC mission and programs.

David L. Gray, for sustained outstanding achievements in wind tunnel instrumentation and test technology development contributing significantly to advancements in aeronautical research.

Davis

Dollyhigh

Evans

Fahringer

Gray

Leonard P. Kopia, for outstanding leadership in the design, development, and integration of the Clouds and Earth's Radiant Energy System (CERES) instruments which are state-of-the-art from Earth radiation budget measurement.

Thomas H. Leffel Jr., for exceptional technical leadership and personal contributions to Langley's spaceflight and aeronautics programs.

Monica Green Schrum, for outstanding leadership in providing fiscal direction and discipline to the Office of Safety, Environment and Mission Assurance and to NASA through the application of detail budgeting and review processes.

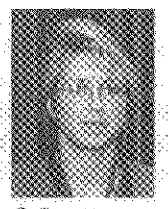
Lloyd W. Spangler, for exceptional service to Langley aerospace missions in the area of electronics technology and flight system development.

Allen H. Whitehead Jr., for exemplary technical and managerial service in support of Langley Research Center Programs.

John W. Wilson, for outstanding technical and programmatic leadership in the development of high-energy radiation transport theory, measurement, and protection methodology.

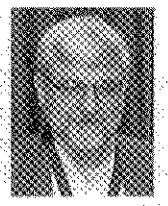
Kopia

Leffel


Schrum

Spangler

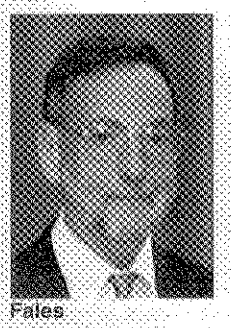
Whitehead


Wilson

H.J.E. Reid Awards

The H.J.E. Reid Award recognizes an outstanding publication, refereed journal article or other formal NASA archival media first-authored by a Langley employee or group of employees. They are Friedrich O. Huck; Carl L. Fales; Zia-ur Rahman; and R. Alter-Gartenberg.

Huck

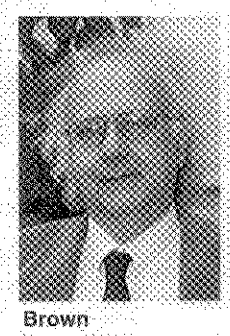

Fales

Rahman

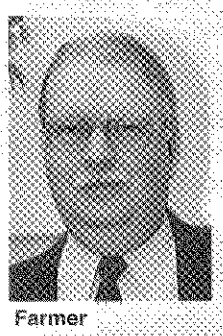
No photo available
Alter-Gartenberg

The Paul F. Holloway Non-Aerospace Technology Transfer Awards

Kenneth G. Brown; Patricia P. Davis; Franklin H. Farmer; Erik J. Kielin; David R. Schryer; Billy T. Upchurch; the Low Temperature Catalyst Team


Brown

Davis


Farmer

Kielin

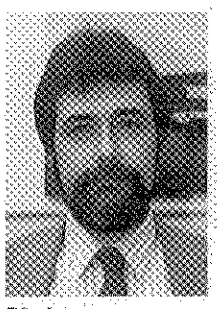
Schryer

Upchurch

The Richard T. Whitcomb Aerospace Technology Transfer Awards

W. Kyle Anderson; Robert T. Biedron; Sherrie L. Krist; Christopher L. Rumsey; James L. Thomas; The Computational Fluid Dynamics Three-Dimensional (CFL3D) Navier-Stokes Code Technology Development Team

Anderson


Biedron

No photo available
Krist

Rumsey

Thomas

Outstanding Leadership Medals

Edward V. Browell, for outstanding leadership in the development and application of laser remote sensing systems in the investigation of global atmospheric processes.

Dennis M. Bushnell, for outstanding leadership in innovative, high-risk research in fluid dynamics leading to practical solutions to important problems, and in setting the agenda for future research on advanced vehicle concepts.

John E. Cooper, for outstanding leadership in managing the Clouds and the Earth's Radiant Energy System (CERES) Project in its successful development, spacecraft integration and initial flight operations of flight-qualified instruments.

W. Barry Lisagor, for outstanding technical leadership of the NASA Light Alloy Metals Program leading to the development and practical application of advanced metallic structures for aerospace applications.

Joseph R. Struhar, for outstanding leadership in managing Langley's financial resources to achieve NASA goals.

Browell

Bushnell

Cooper

No photo available
Lisagor

Struhar

Exceptional Achievement Medals

W. Kyle Anderson, for exceptional scientific achievement in the development of unstructured-grid computational fluid dynamics methods for viscous flows over complex airframe systems.

Bruce R. Barkstrom, for outstanding contributions to the system architecture and cost modeling of the Earth Observing System Data and Information System (EOSDIS).

Thomas F. Brooks, for exceptional scientific achievement in noise prediction and control for airfoils and rotors.

Alpheus W. Burner, for exceptional contributions in pioneering development and application of the Single Camera Wing Twist Model Deformation Measurement System.

Virginia M. Cordle, for exceptional achievement in program control management of the Agency's High-Speed Research Program.

Anderson

Barkstrom

Brooks

Burner

Cordle

Wesley C. Easley, for outstanding contributions to transport flight research through design, development and flight demonstration of advanced flight control, navigation and communication systems and displays.

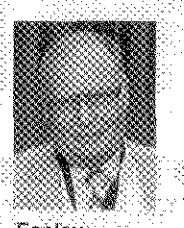
Gary L. Giles, for outstanding technical contributions and personal dedication to the development, and application of the Equivalent Laminated Plate Solution (ELAPS) Code.

Brian J. Jensen, for exceptional scientific development of high-performance composites and adhesives for aerospace application.

Robert B. Lee, III, for outstanding contributions in the development, calibration and on-time, within-budget delivery of highly calibrated radiometric instruments and unique data processing algorithms for the CERES experiment.

Thomas C. Moore Sr., for outstanding technical accomplishments and innovative development of Strain Measurement Techniques.

Jonathan B. Ransom, for exemplary research, development, and successful technology transfer of interface modeling technology for analysis and design of structural systems.


Easley

Giles

Jensen

No photo available
Lee

Moore

Ransom

Public Service Medal

Shashi K. Gupta, Analytical Services & Materials, Inc., for outstanding contributions in developing innovative methodologies and algorithms for deriving global surface radiation budget fields using satellite measurements and operational meteorological data.

Gupta

Equal Employment Opportunity Medal

C. Wayne Williams Jr., in recognition of outstanding leadership and significant contributions toward the advancement of Equal Employment Opportunity ideals at Langley.

No photo available
Williams

Exceptional Engineering Achievement Medal

John C. Lin, for exceptional contributions in the field of passive flow control which have resulted in improved performance and safety of both aerospace and non-aerospace vehicles.

Lin

Exceptional Scientific Achievement Medal

Curtis P. Rinsland, for pioneering new results using data from the four ATMOS flights on shuttle between 1985 and 1994.

Rinsland

Group Achievement Awards

• 14- by 22-Foot Subsonic Tunnel Team, for outstanding contributions in support of vital research programs during seven days per week, 24 hours per day operations at the 14- by 22-Foot Subsonic Tunnel.

• B-757 Transport Research Facility Development Team, for outstanding contribution to transport flight research through the design, development, fabrication, integration, implementation and installation of a research system onboard NASA's B-757 aircraft.

• CERES Algorithm Development and Data Management Team, for outstanding contributions to the CERES experiment in the formulation of innovative, complex analysis algorithms and in the design, development, integration, testing and timely delivery of the data management system.

• The Clouds and the Earth's Radiant Energy System (CERES) Instrument Development Team, for outstanding accomplishments in the design, development and spacecraft integration and test of the Clouds and the Earth's Radiant Energy System (CERES) instruments.

• Composite Wing/Advanced Stitching Machine Team, for successful development/demonstration of large scale, automated stitched/RFI composites fabrication technology for use as an affordable, lightweight composite primary wing structure.

• Global Aerothermodynamic Surface Measurements Team, for development/application of a thermography technique which provided global, quantitative aeroheating, hence, flight aerothermal environment, for advanced aerospace vehicle concepts.

• High Lift CFD Development Team, for outstanding technical achievement and exemplary teamwork in developing and implementing the technology for integrating computational fluid dynamics into the High Lift design process.

• High-Speed Research Composites and Adhesives Team, for outstanding work on the development of polymeric composites and adhesives in the High-Speed Research Program.

• Low-Visibility Landing and Surface Operations Flight Validation Team, for significantly impacting the safety and efficiency of airport surface operations in all-weather conditions through the development, integration, and demonstration of key navigation and situation awareness technologies.

• Wind Lidar Transmitter Team, for exceptional research and technology innovations, and team dedication in completing a pioneering two-micrometer transmitter for NASA New Millennium Program's coherent wind lidar instrument.

Mars Pathfinder Awards

Group Achievement Award

Mars Pathfinder team, for exceptional design, testing, operations, and postflight data reconstruction segments of the Pathfinder mission.

Outstanding Leadership Medal

Mark P. Saunders, for outstanding leadership in initiating and managing NASA's Discovery Program, including the completion of the highly successful Pathfinder mission on schedule and under budget.

Exceptional Achievement Medals

Robert D. Braun, for outstanding achievement for significant individual contributions to the Mars Pathfinder Program.

Walter C. Engelund, for outstanding achievement for significant individual contributions to the Mars Pathfinder Program.

Peter A. Gnoffo, for exceptional engineering achievement in accurately predicting aerodynamics of Mars Pathfinder enabling a highly accurate landing.

Robert A. Mitcheltree, for exceptional engineering achievement in defining the aerothermodynamic environment over the Mars Pathfinder spacecraft enabling a successful hypervelocity entry.

Saunders

Braun

Engelund

Gnoffo

Mitcheltree

Langley Runners Club Results for '98 Spring Races

BY RICHARD SHEARER

The NASA Intercenter Running Competition is held twice a year among the NASA Centers. For the Spring 1998 Races, 18 Langley employees and contractors took part in the 10K race, and 24 men and women ran in the 2-Mile race.

The top Langley runners in the 10K were: Men's Division – Erik Vedeler with a time of 36:29; Scott Bartram, 38:40; and Jeff Boghosian, 41:15; Women's Division – Valerie Plyler, 38:33; Sally Viken, 45:02; and Thea Ganoe, 58:52.

In the 2-Mile, the top runners were: Men's Division – Erik Vedeler, 10:26; Scott Bartram; 11:24, and John Hoppe, 12:23; Women's Division – Sally Viken, 13:16; Thea Ganoe, 17:05; and Pat Parker, 27:12.

Three Summer Scholar Programs Kick-Off

BY GERRI RANKIN

Three programs are under way at Langley this summer that involve students from Historically Black Colleges and Universities. Langley is mentoring three students, one each from the IMAGE (Increase Minority Access to Graduate Engineering), WISE (Women in Science and Engineering) and SPACE (Strategic Preparedness Advancing Careers in Engineering) programs and their Langley mentors.

Cox/Medley

IMAGE student William Cox Jr. is a sophomore at Florida A&M University. He is an electrical engineering major and a son of Col. USAF and Mrs. William Cox Sr. Cox graduated from Hampton High School with highest honors in 1997. While at Hampton, he volunteered to work for the Salvation Army, and was Squadron Commander in the Air Force Junior ROTC. According to Cox, being chosen to attend the Governor's School was one his most memorable honors. He is working with his mentor on some of the organization's latest electronic technology a Butterworth high-pass filter box.

Cox's mentor is Clyde Medley, an electrical engineering technologist in the Facilities and Support Systems Division. Medley graduated from Norfolk State University as well as the NASA Langley Apprenticeship Program. Medley troubleshoots the operation of electrical and electronic equipment and is responsible for testing in four Acoustic Research Laboratories. Medley has mentored students for the past 11 years. "I stress putting education first," he said. "Every endeavor thereafter is secondary."

Winters/Santa Maria

One of Langley's newest WISE interns is Mareisha Winters, a computer engineering major and sophomore at Spelman College. Winters is from Fairport, N.Y., and is a 1997 honors graduate of Fairport High School and a member of the National Society of Black Engineers. Winters is enrolled in a dual degree program. She plans to earn a degree in computer science from Spelman and computer engineering from Georgia Tech. This scholar prides herself for being "hard working and analytically intelligent with a witty sense of humor."

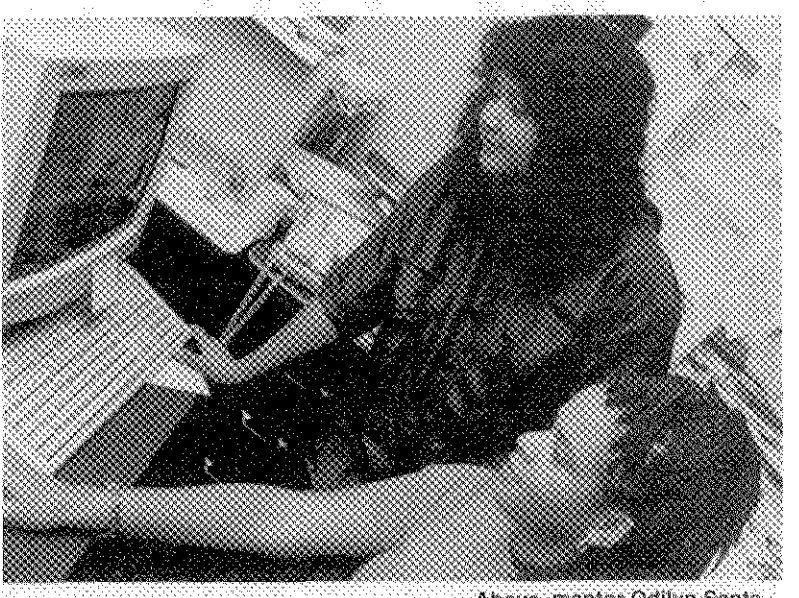
Odilyn Santa Maria, Aeroacoustics Branch, is Winters' mentor. Santa Maria is a graduate of UCLA and is seeking her masters degree through the Penn State Graduate Program. An aerospace engineer in the Fluid Mechanics and Acoustics Division, Santa Maria is a member of that organization's Flight Measurement Team. She is principally involved in acoustics flight testing of full-scale aircraft. She served as the chairperson for the Hampton Roads Section of the AIAA.

Dawson/Gray

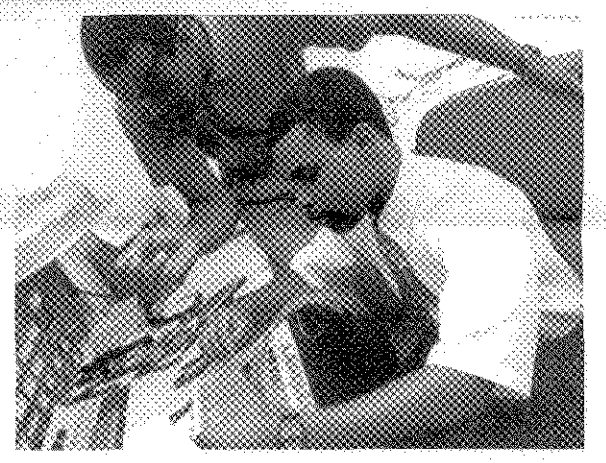
Morehouse College's SPACE scholar is Muhammad Dawson. Dawson is a native of Hamden, Conn. He earned a full scholarship to Morehouse, and is a physics/engineering major. Dawson enjoys writing and dance. "I am now on my second attempt at writing a short social-commentary-type novel, and I hope to travel to Japan one day to study dance," he said. "Being the second youngest of six children, I had to make my own tracks," and that he has done. He broke his high school's cross country record, and two track and field records. He studies both Arabic and computer graphics. Dawson will be assisting Bill Gray with environmental testing of composite materials and material evaluation for the Facilities and Systems Support Division.

William "Bill" Gray has mentored for the WISE, IMAGE and SPACE programs for three years. He attended Thomas Nelson Community College and the Langley Apprenticeship Program to become a mechanical engineering technologist. Gray, an Army veteran, allows his students to establish their own project pace. He is now a senior technologist in the Facilities and Systems Support Division where he works on several programs that conduct experiments for the Environment Interactions Branch.

Other Langley mentors for this years Summer Scholars programs are Drs. Joycelyn Smith, Steve Scotti, Stanley Woodard and Robert Bryant, Structures Division; J. Everitt Brown and Steven Lee, Facilities Systems Support Division; Julie Williams-Byrd, Aerospace Electronic Systems Division; Richard Ross, Experimental testing Technology Division; and William Winfree, Dr. Stephanie Wise and Sharon Arnold, Materials Division.



Photos by Rebecca Kriegwold



Above, mentor Odilyn Santa Maria, Aeroacoustics Branch, works with WISE scholar Mareisha Winter (seated) of Spelman College.

Left, Morehouse College's SPACE scholar Muhammad Dawson is introduced to Langley facilities by mentor Bill Gray.

Below, Project IMAGE scholar William Cox Jr. gets direction from his mentor Clyde Medley.

Langley a Valuable Player in Trans-Atlantic Educational Demonstration

BY LIN CHAMBERS & ANNE RACEL

A transatlantic educational project developed by Langley for grades 3 to 12 has caught the attention of First Lady Hillary Clinton.

Mrs. Clinton and NASA Administrator Daniel Goldin saw a demonstration of the CERES S'COOL project last month – she in Paris and he in Washington, D.C. Four schools in France and the United States participated in the event which kicked off a joint effort between NASA and the French space agency, CNES.

It featured interactive, Internet-based demonstrations of the French Titus software for studying SPOT imagery in schools, and of the Clouds and the Earth's Radiant Energy Systems (CERES) Students' Clouds Observations On-line (S'COOL) Project, http://asd-www.larc.nasa.gov/SCOOL/.

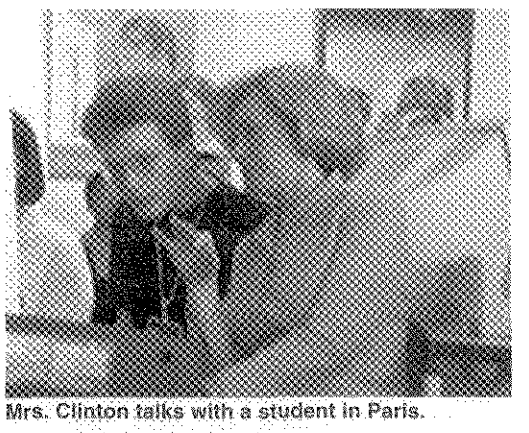
Prior to the demonstration, students in three of the schools made cloud and weather observations and reported them to the S'COOL database at Langley's Distributed Active Archive Center (DAAC). Corresponding satellite images were obtained from GOES-8 and METEOSAT for the same period. The week chosen proved to be an interesting one. Thick clouds were present most of the time, so the students observed mostly low clouds, while the satellite saw mid- and high-level clouds.

Schools also received copies of Titus Software and SPOT images of their cities. Students scanned the images and located home town landmarks.

Personnel from DAAC, Atmospheric Sciences Division (ASD), the Office of Education (OEd) and Langley's Learning Technologies Project (LTP) provided assistance to the schools. Dr. Bruce Barkstrom, CERES principal investigator, visited science classes at Kramer Middle School, Washington, D.C., to explain the purpose of the S'COOL Project and its relation to CERES. Dr. Martial Haeffelin, CERES researcher, gave students at the Brooklyn School for Global Studies a lesson on scientific aspects of S'COOL while waiting for the demonstration to begin. Dr. Lin Chambers, ASD, and Carolyn Green, educational specialist, taught nine middle school science classes in a single day at the American School of Paris. Anne Racel (DAAC) worked with the students and teachers at Kramer Middle School to prepare their part of the demonstration, helping them understand the science behind it. She and her DAAC colleagues worked to ensure that the computers at the D.C. school, as well as at Langley where S'COOL data reside, were operational for the event. Jeff Seaton and John Evans, LTP, trained teachers to use all the new equipment and software. Dr. Shelley Canright, OEd, worked to plan and re-plan events with all involved.

Guests were given a computer satellite tour of Paris, New York City, and Washington, DC. Using NetMeeting and the Titus Software over the Internet, students at each school displayed a SPOT image of their city and showed visitors famous landmarks. A student in Paris modified the images to compare the amount of vegetation in Paris and Washington, D.C.

After that, students used IChat over the Internet to explain the S'COOL project. Each school included images and text in their reports of cloud observations. The schools also showed how their observations compared with those of the satellite.



Mrs. Clinton talks with a student in Paris.

AdVentures

CRUISIN': Manassas Travel, Inc., has several staterooms available aboard the Nordic Express, sailing on Oct.12 from San Juan, P.R. with a southern Caribbean itinerary to the U.S. Virgin Islands and St. Maarten. Cost is $881 per person, full amount due Aug. 13. Price includes roundtrip air from Norfolk to San Juan, 4-night cruise, meals, entertainment and port charges. Call Dawn Feldhause, ext. 42101, for more information.

FOR SALE: 1977 Corvette, white w/tan leather interior, automatic transmission, garaged, $6,900, 872-7117.

HOUSE FOR SALE: Poquoson, 2-story brick/vinyl home, 1716 sq. ft., 4 BR, 2-1/2 baths, FR w/fireplace, hardwood floors, beautiful 1/4-acre lot w/patio & fenced backyard, 10 mins. to Langley, $134,900. Call 868-3968.

FOR SALE: 1991 Plymouth hatchback (3-door), white, automatic transmission, AC, power steering and brakes, radio, low miles, $5,200. Call 247-5426.

FOR SALE: 1986 Toyota Celica Supra, all power, 5-speed, original owner, good condition, $3400. Call evenings, 898-8463.

LAA Hosts Indoor/Outdoor Summer Event

Activities will take place Friday June 26, 1998, 4 - 9 p.m.
OUTDOORS: The Back River Band will be on stage. M. Price Distributing will be on the picnic grounds with games, prizes and outdoor beverage truck. At the picnic shelter, food is available – hot dogs and sodas for 50 cents, BBQ sandwiches $2, and nachos $1.50. Volleyball and horseshoes will be set up for everyone.
INDOORS: Try your luck at LAA games of chance: Black Jack, Chuck O' Luck, Horse Wheel, Roulette and Instant Bingo Rip-Off cards, from 5 to 8:30 p.m. Cash drawings are at 9 p.m., winner need not be present. All are welcome, must be 18 to play. Cost: $5 in advance, $8 at the door. Cost includes $100 in playing chips to get you started for cash prizes totaling $750. Call the LAA office, ext. 46369, for more information.

AIAA HOLDS ANNUAL GOLF OUTING/PICNIC

The American Institute of Aeronautics and Astronautics invites participation in its seventh annual golf outing, Thursday, June 25, at Eaglewood, Langley Air Force Base Golf Course, 1:30 p.m. Cost is $35 per player ($140 per team) and covers greens fee, cart and prizes. The format: Captain's choice with teams of four players. Mulligan tickets will be sold to use on any shot (except closest to the pin). Teams will be flighted by total team handicap. Prizes will go to lowest team scores and individual closest to the pin. Proceeds will benefit the AIAA Scholarship Fund.

Following the golf round, bring family and friends to the AIAA Hampton Roads Section Spring Picnic. Enjoy the food, play horseshoes and volleyball, or just visit with the crowd, Thursday, June 25, 1998 4:30 to 7 p.m. at the picnic grounds, H.J.E. Reid Conference Center. The menu is hamburgers, hot dogs and all the fixings and beverages. Pay-at-the-door cost for members, guests, and golf outing players is $5, nonmembers, $7, student members, $3, children (6-12), $2, and children under 6 are free.

Checks should be made out to "L.A.A." Reservations are requested by noon, Monday June 22. Contact Paresh Parikh at 864-2244 or p.c.parikh@larc.nasa.gov

Civil Service Nominations Sought for Seminars, Conferences and Fellowships

Langley is seeking nominees for Office of Personnel Management (OPM) Management Development Seminars, Brookings Management Programs and NASA-sponsored fellowships.

Additional information, including descriptions of all programs, may be found on the Internet at: http://www.hq.nasa.gov/office/codef/codeft/dp.html.

Applications for all of these programs may be initiated by the individual and must be passed on to the Group level. All nominations must have group endorsement. Competition for these programs is limited to Langley civil service employees. Deadlines for Group nominations will be July 1998. For additional information call Cecelia R. Fletcher, at ext. 42339.

1998 COMPA INVITATION: The Conference of Minority Public Administrators (COMPA) meets in the Chesapeake Conference Center, June 16 to 18. This year's theme is "Developing and Transforming Leaders to Meet the Challenge of Tomorrow," and the featured speaker is Dr. Julian Earls, deputy director of Operations, NASA Lewis Research Center. For information, call Sharon Hoggard at (757) 382-6911 or Kimberly Short at 393-8581, ext. 3003.

NAME THE LOUNGE: The LAA lounge, located in the Reid Center opens daily at 4 p.m. Help name the lounge by sending e-mail to: d.a.snipes@larc.nasa.gov. Winner receive a card good for 100 beverages in the lounge.

FORT MONROE CONCERT: More than 50 musicians form the U.S. Continental Army Band will present concert music Thursday, June 18, 7:30 p.m. at Continental Park, Ft. Monroe. Concerts are free; rain moves the event to the theater, Bldg. 42. Call 727-3620, for more information.

Center Snapshots

Photo by Jeff Caplan

Wendy Johnson, mechanical technician at the 14- by 22-Foot Subsonic Wind Tunnel, was born and raised in Portsmouth, Va. She has worked at the Center for 11 years after graduating from Norfolk State University. Her duties include: mechanical, technical operations and basic support while working with 20 others on day shift. Currently Johnson is working on assembling a 5-percent scale, High-Speed Research model which will be tested for its aerodynamic performances.

* * * * * * * * *

Asked what she likes most about the Center. . . "The technical support we offer to today's aerospace industry."
– Wendy Johnson

Researcher News

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Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

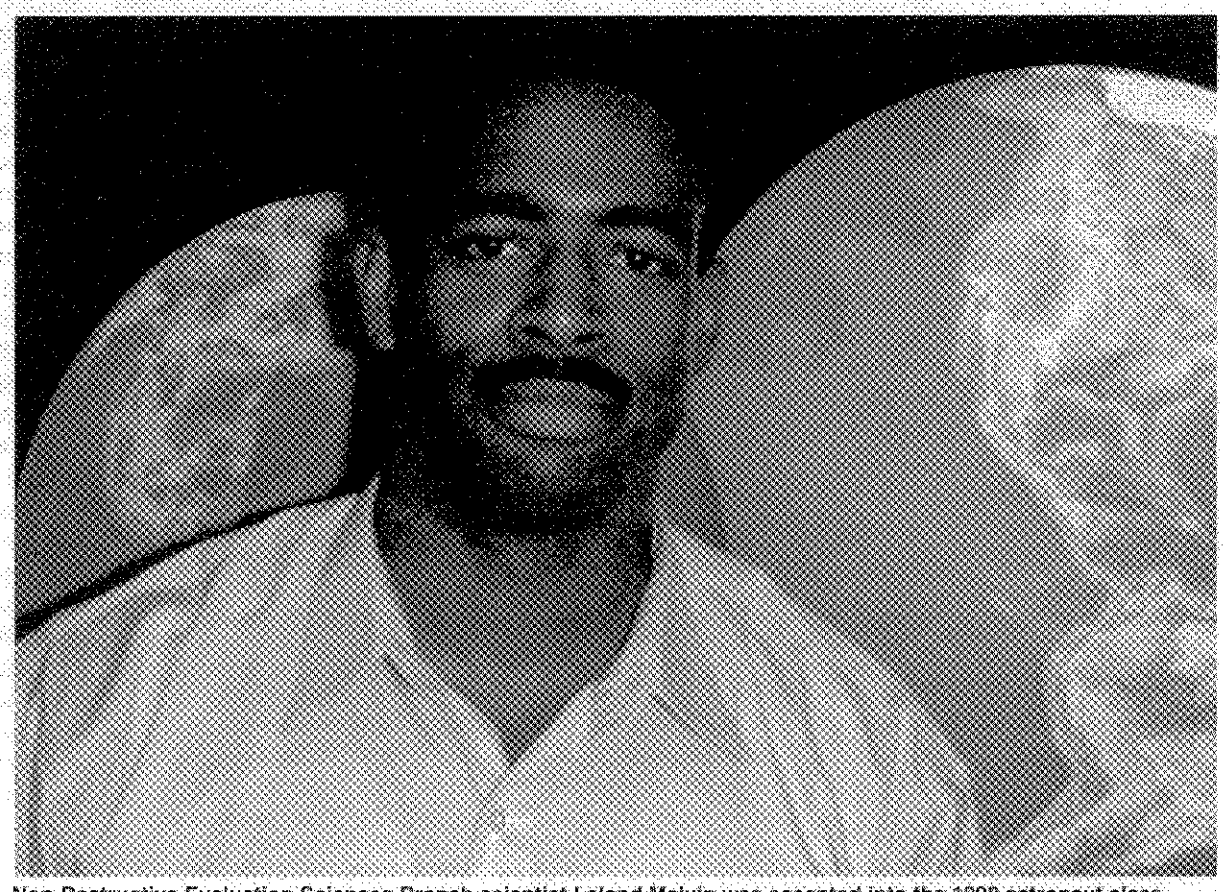
News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 12 ❖ June 26, 1998

Langley Scientist Chosen for Astronaut Training

BY BOB ALLEN



Non-Destructive Evaluation Sciences Branch scientist Leland Melvin was accepted into the 1998 astronaut class.

NASA Langley research scientist Leland D. Melvin is one of this country's 25 new astronauts.

Melvin will report to the Johnson Space Center in Houston later this summer to begin training and evaluation as a mission specialist. After about a year of schooling, he and the other members of the 1998 astronaut class will receive their technical assignments. Not only is Melvin expected to fly on the space shuttle, he may spend up to eight months at a time aboard the International Space Station.

"It's an exciting opportunity," Melvin said. "I'm willing to give back to the country and the agency my time and effort. I have a duty to help the country with the human exploration of space."

Melvin began his Langley career in 1989. He currently works in the Non-Destructive Evaluation Sciences Branch as the principal investigator of the Fiber Optic Sensing System (FOSS). The FOSS will be used to check for hydrogen leaks in the aft compartment of the space shuttle.

In addition, Melvin is the X-33 Integrated Vehicle Health Monitoring (IVHM) program manager. The IVHM system is a network of fiber optic sensors that will be used to quickly and accurately determine the condition of space vehicles after they return from orbit. It is expected to eliminate the need for complicated and time-consuming inspections between space flights.

So, how did it feel to be selected as an astronaut candidate? The 34-year-old described it this way, "I started tingling. I couldn't sit still. I walked down the hall to the lab and then I called my parents and said, 'Hey, I got in.' You could hear their feet hitting the ground from the backflips."

A graduate of Heritage High School in Lynchburg, Melvin earned a bachelor of science degree in chemistry from the University of Richmond in 1986 and a master's degree in materials science from the University of Virginia in 1991.

He was a NASA Research Fellow from 1988 to 1990, and received many honors, including a Langley Performance Award, Certificate of Outstanding Performance and Superior Accomplishment Award.

Melvin is also an author and has spoken at number of international conferences. Plus he is a member of many professional organizations including the American Chemical Society, The Society for Experimental Mechanics, National Technical Association, and Graduate Society of Black Engineers.

One researcher from Langley has joined each of the last three NASA astronaut candidate classes. Langley alumni Dr. Stephen K. Robinson flew on the STS-85 mission in August 1997 and will fly with John Glenn later this year. Charlie Camarda just completed his one-year training and is currently awaiting a flight assignment. Both will help Melvin adjust to life in Houston.

The astronaut class of 1998 includes eight pilots and 17 mission specialist candidates. Of the 25 class members, 21 are male and four are female.

"I will miss all the people here at Langley whom I've worked with for nine years. I've met a lot of wonderful, intelligent people who have helped shape my career and also get me to this summit," Melvin said.

"I'm going to miss everyone I've worked with in fiber optic sensing, the optical lab and Vehicle Health Monitoring program," he added. "I feel like that's my baby. I'm going to miss that program, and the people working with it. But this is a once in a lifetime opportunity too good to let pass by."

Astronaut Chang-Diaz Featured at July Colloquium

Astronaut Dr. Franklin Chang-Diaz, who was on board the last U.S. mission to the Russian Space Station Mir, will be at Langley next month. Chang-Diaz will present a colloquium, "STS-91 – The Final Shuttle-Mir Docking Mission," Tuesday, July 7, at 2 p.m. in the H.J.E. Reid Conference Center.

The colloquium is a joint presentation of the Langley Colloquium Committee, American Institute of Aeronautics and Astronautics – Hampton Roads Section, the National Defense Industrial Association and the Virginia Aerospace Business Roundtable.

Chang-Diaz was a mission specialist on STS-91. He will describe this final scheduled Shuttle/Mir docking mission, which concludes the joint U.S./Russian Phase I Program. The Phase 1 Program is a precursor to the International Space Station. STS-91 also carried into space the Alpha Magnetic Spectrometer Investigation (AMS) to search for anti-matter and dark matter in space and to study astrophysics.

About the Speaker

A veteran of six space flights, Chang-Diaz became an astronaut in 1981. He received a bachelor of science degree in mechanical engineering from the University of Connecticut and a doctorate in applied

NASA photo

plasma physics from the Massachusetts Institute of Technology. He received the Liberty Medal from President Reagan, three NASA Exceptional Service Medals, American Astronautical Society Flight Achievement Award, four NASA Space Flight Medals, and Outstanding Technical Contribution Award. In 1993 Chang-Diaz was appointed Director

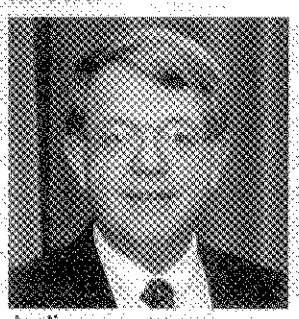
Continued on Page 4

Joplin/Sawyer Receive Presidential Rank Awards

Sammie D. Joplin, director, Internal Operations Group, and Wally Sawyer, director, High-Speed Research Program Office, both received Presidential Rank Awards in June.

The honor of Presidential Rank is bestowed on a small number of career Senior Executive Service members for exceptional performance over an extended period of time. Each year, no more than five-percent of the government-wide career executives may receive the rank of Meritorious Executive Award which recognizes sustained accomplishments. Each man was so honored at a government-wide presentation at Constitution Hall in Washington, D.C., with remarks given by Vice President of the United States, Al Gore.

Continued on Page 3



Joplin

Sawyer

News Briefs

Around the Agency

NASA RESEARCHERS FOCUS ON MEXICAN FIRES: Since the beginning of the Mexican fires in late March/early April, atmospheric researchers at NASA Goddard using the Total Ozone Mapping Spectrometer (TOMS), have been closely monitoring the fires and their smoke. TOMS obtains daily images of the amount of smoke present in the atmosphere anywhere in the world. Scientists have a keen interest in the smoke generated by fires like these because it contributes to overall global air-pollution levels that can impact the quality of air that humans breathe. Increased smoke concentration from human-induced fires could also contribute to global climate change.

NASA SELECTS HOME FOR SPACE TELESCOPE: The duties of the Space Telescope Science Institute in Baltimore, Md., will be expanded to include the management of science operations for the Next Generation Space Telescope (NGST), NASA officials announced. The institute, located at the Johns Hopkins University, has been operating the science program for the Hubble Space Telescope since 1983. The NGST is one of the cornerstone missions of the Astronomical Search for Origins and Planetary Systems, a major thrust of NASA's Space Science program. The NGST will provide a critical follow-on to the Hubble Space Telescope, and continue to deliver world-class optical and infrared science well into the second decade of the new millennium.

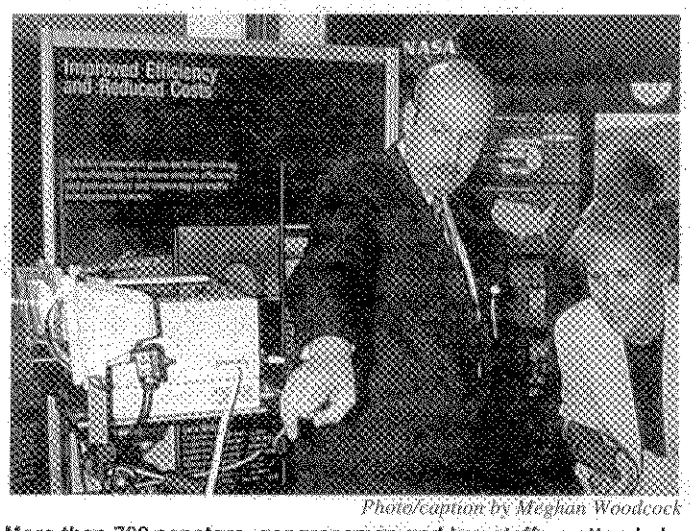
MOTT TO LEAVE NASA: Mike Mott, NASA Associate Deputy Administrator (Technical), has announced he plans to leave NASA to join Boeing Space Transportation, Seal Beach, Calif., as Vice President, Business Development. Mott, one of the Agency's top three managers, has worked for NASA since January 1994. Mott served in the United States Marine Corps in numerous operational and staff assignments throughout the United States and the western Pacific.

TECHNOLOGY GIVES MOTORISTS AN EARLY WARNING: A new traffic technology may be able to warn motorists of rapidly approaching emergency vehicles and trains. The Emergency Vehicle Early Warning Safety System, or E-ViEWS, developed with the assistance of NASA's Jet Propulsion Laboratory, Pasadena, Calif., is particularly timely given the increasing number of police chases. The system equips emergency vehicles with transponders that communicate via microwave with receivers on large visual displays on intersections' traffic signals. As the vehicles approach the intersections, signal lights turn yellow, then red, for cross-traffic. The visual displays will also alert drivers.

ARCTIC EXPEDITION SEEKS MARS SCIENCE INSIGHTS: NASA scientists will explore a barren Arctic meteorite impact crater to attempt to learn more about Mars' early history, while testing technologies useful for future robotic and human exploration of the planet. Scientists consider the site a potential Mars analog because many of its geologic features, such as the crater's ice-rich terrains, its ancient lake sediments and nearby networks of small valleys, resemble those reported at the surface of Mars.

For more information, on the above news items, check the Internet for NASA's News and Information web page at <http://www.nasa.gov/releases/1998>

NASA Tech Showcase Draws 700



Photo/caption by Meghan Woodcock

More than 700 senators, congressmen and key staffers attended the NASA 40th Anniversary Technology Showcase held at the Washington D.C. Rayburn Building June 10. Dr. John Lin of the Flow Modeling and Control Branch and Elliott Cramer (shown above), Buzz Wincheski and Patricia Pahlavani, all of the Nondestructive Evaluation Sciences Branch, were on-hand to demonstrate Langley research. Notables in attendance included Congressmen Rohrabacher (R-Calif.), Stabenow (D-Mich.), Pickering (R-Mo.), Barrett (R-Neb.), Burton (R-Ind.), Strickland (D-Ohio), Souder (R-Ind.), Klink (D-Penn.); staffers from the offices of House Speaker Gingrich (R-Ga.) and Congressmen Davis (R-Va.), Weldon (R-Fla.) and J. Kennedy (D-Mass.) and key staffers of House Science Committee members. Administrator Daniel S. Goldin toured the expo and spoke with researchers staffing the various displays representing work from each NASA Center.

Letters

From Alberta W. Reid:
"To my co-workers and true friends – thanks to all who made my retirement party such a memorable and wonderful occasion, and one which I will always cherish. Thanks to all who sent me cards to wish me well. May God bless you all."

From Carol Fowler:
"A sincere thank you is extended to everyone who donated leave during my absence. All the phone calls, cards, visits, and support were deeply appreciated. It is wonderful to work with such a special group of people here at NASA. Thank you."

Early Reminder

Roll up your sleeves for the next Langley Blood Drive, Wednesday, July 22, 9 a.m. to 3 p.m. in the H.J.E. Reid Conference Center.

Earl Dunham Retirement Social

Earl Dunham invites friends and co-workers to join him in the celebration of his retirement at a Retirement Social, from 4 to 6 p.m., Monday, June 29 in the Hampton/Langley Rooms of the H.J.E. Reid Conference Center.

In Memoriam

Frederick C Balmer Sr.

Frederick C. Balmer Sr., 74, a lifelong Hampton resident, died Tuesday, June 9.

Balmer retired as supervisor of the model shop at Langley in 1980. He was a graduate of the NASA Langley Apprentice School.

Emma Jean Landrum

Emma Jean Landrum died Friday, May 29. She had retired from Langley.

Robert B. Boas

Robert Bryan Boas, 68, died Sunday, June 7. After retiring from the U.S. Navy in 1978 with 30 years of service, Boas worked as an engineer at Langley, retiring in 1995.

Meet the Leadership Challenge

BY BRIAN SUTTON

Langley needs **you** to assure its reputation for outstanding leadership skills continues into the 21st century. The NASA Fellowship Program represents a golden opportunity for employees to learn management skills and enhance their chances to make a bigger contribution at Langley.

Former award winners say fellowships are an excellent way to learn about management skills and training. Alan Farrow, Facilities Program Development Office, who attended the Strategic Leadership Fellowship at Penn State said, "I found the course to be very pertinent to NASA today. The best part of all programs such as this is the interaction and bonding between you and your peers from other government agencies or, in my case, with those from around the world."

Some researchers say the transition from research to management can be difficult. Mark Shuart, Materials Division, said, "The Program for Management at the Harvard Business School significantly helped me to develop business management insights that complement my technical expertise. That perspective resulted in an incredible training experience that I will never forget."

Fellowships also allow managers to update their managerial skills. Fay Collier, manager, ISO 9000 Certification Project Office, said, "The Sloan Fellowship gave me a year to evaluate my approach to the management of people and technology. I could compare that with current best practices taught by world-class professors and industry and government executives and, based on those comparisons, make adjustments to my own management style."

"I thoroughly enjoyed the experience, and succeeded in broadening my analytical skills as well as enhancing my understanding of modern management principles," said Junilla Applin, Engineering Design Branch, who attended the Simmons Program for Developing Managers in Boston.

The fellowships provide opportunities to meet with managers from other countries. Laura O'Connor, Engineering Support and Facilities Projects Branch, who completed two semesters at Syracuse University's Maxwell School of Citizenship and Public Administration said, "Approximately 50-percent of the participants in the Executive Education Program at Maxwell are international students and managers. The global makeup added a rich and incredibly diverse perspective on issues and policies. That perspective is mandatory in today's environment."

Applying for NASA Fellowships

Applications are now being accepted for NASA-sponsored fellowships at some of the nation's best schools. NASA-sponsored fellowships are available for both managers and non-managers from GS-12 to SES. Management fellowships offer an opportunity to study at Harvard, Massachusetts Institute of Technology, Stanford, Carnegie Mellon, Penn State, Simmons or Syracuse for periods from two weeks to one year. NASA also offers, in conjunction with the National Space Club and MIT, fellowships which are open to non-management employees.

Several allow recipients to pursue research at any institution in the United States where a faculty sponsor is found.

The process is run by Langley's Employee Development Branch (EDB). Dr. Belinda Adams, Langley's representative on the Agency's Executive Development Education Panel, and Cecelia Fletcher, EDB, will help candidates and supervisors match fellowship programs with development goals.

Full descriptions of fellowship programs are found at the following web site: <http://www.hq.nasa.gov.office/codef/codeft/fellowshipdesc.html> Application forms are at <http://www.hq.nasa.gov.office/codef/codeft/6.html> Anyone interested in these opportunities should call their group offices **immediately**, or call Fletcher, ext. 42339.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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.

Web Cameras Provide Instant Look at X-33 Vehicle Assembly, Launch Site Construction

BY DOM AMATORE, MARSHALL SPACE FLIGHT CENTER

Three internet-linked cameras in California now provide web browsers up-to-the-minute snapshots on construction of NASA's prototype for future space launch vehicles and work at its launch site.

The NASA X-33 Program has placed two digital cameras high above the X-33 assembly floor in Palmdale, Calif., and one camera looking out over the launch site at Edwards Air Force Base, Calif. The images captured by the cameras are featured on the internet at NASA's X-33 website.

New images of the vehicle's construction are captured every 15 minutes and posted to the X-33 website the following day. Camera A's focus is on the vehicle's primary assembly structure. On the left side of the image sits the X-33's 26-foot-long liquid oxygen tank cradled in a series of composite beams. The tank forms the forward third of the vehicle. The black vertical surface on the right is the vehicle's aft assembly structure, where the two linear aerospike engines will be mounted. The X-33 will take shape at this location on the assembly floor. It is scheduled to roll out from this spot in May 1999.

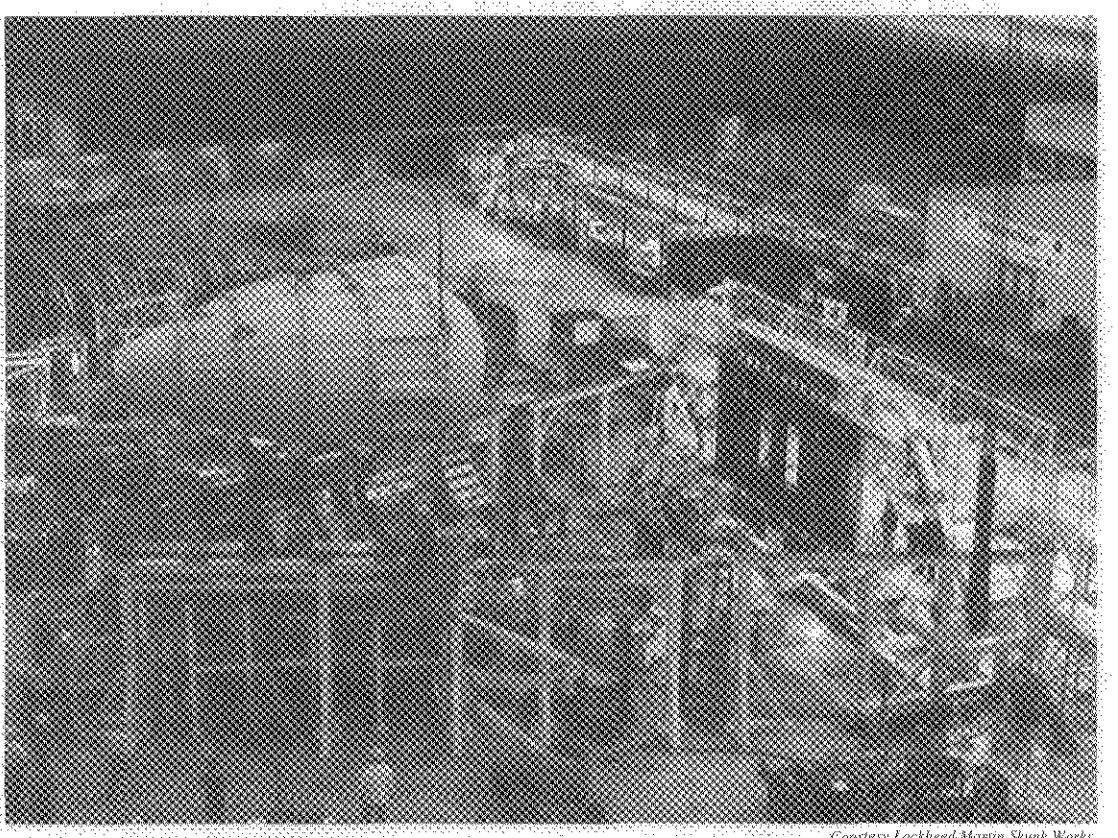
The image from Camera B shows side-by-side tooling structures for, in the foreground, the X-33's upper thermal protection system, and in the center, the vehicle's upper internal support structure.

Images of construction of the launch site are also captured every 15 minutes and posted to the web weekly. The camera's focus is centered on the location for the vehicle's launch pad. The left side of the image currently shows construction of the launch site's 250,000 gallon water tower on the west side of the 25-acre facility. A deluge stream of water will be used for cooling and sound suppression at launch.

To access the images, visit the X-33 Web site at: <http://x33.msfc.nasa.gov>. From the opening page, click on the "Internet Cameras" hypertext link and follow directions to access the photos. Or, for faster access, go directly to the camera page at: <http://stp.msfc.nasa.gov/cameras/camera.html>

The NASA/Lockheed Martin Skunk Works X-33 is a subscale technology demonstration prototype of a reusable launch vehicle. Through demonstration flights and ground research, NASA's X-33 program will provide the information needed for industry to decide whether to proceed with development of a full-scale, commercial reusable launch vehicle.

Vehicle assembly continues on a fast pace through spring 1999, when the X-33 is scheduled to roll out from the assembly facility. The first of the X-33's 15 test flights is scheduled to occur in July 1999.



Courtesy Lockheed Martin Skunk Works

From a Web camera's vantage point high above the X-33 assembly floor, an image is captured of crews placing the X-33's liquid oxygen tank into the primary assembly structure. The 26-foot-long, 5,500-pound aluminum liquid oxygen tank that forms much of the nose and forward third of the X-33 vehicle was placed into the assembly facility April 19.

Spearman Wins AIAA 1998 Aerodynamics Award

Leroy Spearman, Langley Distinguished Research Associate in the Systems Analysis Branch, was honored recently by the American Institute of Aeronautics and Astronautics (AIAA) with the 1998 Aerodynamics Award.

The award is presented for meritorious achievement in the field of applied aerodynamics. It recognizes notable contributions in the development, application, and evaluation of aerodynamic concepts and methods.

An Associate Fellow of the AIAA, Spearman has been doing aerodynamic research at Langley for 53 years. He currently works as a senior technical specialist in the Aeronautics Systems Analysis Division. He was responsible for the first supersonic tests for a number of research programs, including the variable wing sweep concept for multi-mission aircraft, canard-type aircraft missiles and aircraft, supersonic transport concepts and lift-body reentry vehicles.

Spearman

The 1998 award, presented to Spearman in mid-June, reads: "For the pioneering research and exceptional contributions in the field of supersonic aerodynamics which has impacted the design of essentially every supersonic aircraft and missile developed in the United States since the 1950s."

Presidential Rank Awards . . .

Continued from Page 1

Since July 1994, Sawyer has overseen Langley's high-speed research efforts. He leads the development of critical technologies in the areas of aerodynamic performance, airframe materials and structures, flight deck technology, propulsion technology and system integration to support the development of the High-Speed Civil Transport.

Sawyer began his career at Langley in 1965 as an aerospace engineer. He served as head, Concepts Analysis Section; head, Fundamental Aerodynamics Branch; and assistant chief of the Advanced Vehicles Division.

Sawyer is an associate fellow of the American Institute of Aeronautics and Astronautics.

Joplin leads the Center's largest and most diverse organization providing technical and administrative services. This includes engineering, wind tunnel and laboratory operations, experimental testing technology, fabrication, flight operations, scientific and business computing, scientific and technical information services, logistics management, and acquisition.

Joplin began his Langley career in 1963, and has served as head of the Mechanical Engineering Section, chief of Facilities Engineering Division and head of Langley's Facility Study Office supporting the National Facilities Study.

Two from Langley Receive AVS Best Paper Award

BY KATRINA TOWNES

Dr. Joycelyn Simpson Harrison and Anne St. Clair were awarded the 1997 R.F. Bunshah Award for "The Best Paper" by the American Vacuum Society (AVS) for their paper entitled "Fundamental Insight on Developing Low Dielectric Constant Polyimides" in May 1998.

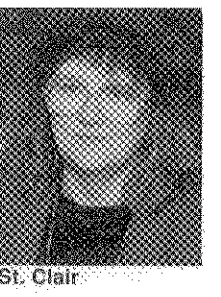
"The paper presents research on an extensive structure/dielectric property study wherein systematic variations in polarizability, free volume and fluorination were made," Harrison said. "These three variations resulted in the creation of novel polymers exhibiting ultra-low dielectric [non-conducting] properties and excellent moisture resistance."

The AVS evaluating peer committee cited the paper because it provided basic insight into how varying polymer structure can achieve a lowered dielectric constant which crosses boundaries affecting many polymer science areas.

Harrison presented the paper at the Metallurgical Coatings and Thin Films conference in San Diego, Calif. in March 1997. Afterwards, it was published in the journal Thin Solid Films' 1997 volume.

Harrison came to Langley in 1993 as a National Research Council post-doctoral student, and in 1994, she began working as a research engineer in the Composites and Polymer Branch of the Materials Division (MD). Her primary research is in the area of smart material technologies for aerospace applications. Presently, she is the MD Lead 3 manager for the Aircraft Morphing Program.

Harrison



St. Clair

She is a graduate of Spelman College with a bachelor of science degree in chemistry and Georgia Technical Institute with a bachelor of science degree, a master of science degree and doctorate degree in chemical engineering.

St. Clair, chief scientist of the Materials Division, has worked for Langley for 25 years. She conducts and directs research on the synthesis and development of high performance films and coatings for aerospace applications for Langley. Currently, she leads the Materials Division's Advanced Aircraft Program.

She is a graduate of Queens College in Charlotte, N.C. with a bachelor of arts degree in chemistry and Virginia Polytechnic Institute and State University with a master of science degree in bioinorganic chemistry.

AVS is a 6,000 member organization dedicated to advancing the science and technology of vacuum materials, surfaces, interfaces, thin films and plasmas, and to providing a variety of educational opportunities.

Red Cross Thanks Langley Donors

Dear NASA Blood Donors:

On behalf of patients in regional hospitals, I would like to thank the 251 people who donated blood at Langley on May 27. Your response to an urgent plea helped bring hospital inventories back to a safe level. In addition to the regular loyal donors who came, there were 19 first time donors. We hope these new donors had a good experience and will become part of the regular cadre of loyal NASA Langley donors.

We'll be back at Langley on Wednesday, July 22. Please mark your calendars and join us again in our efforts to provide an adequate and safe blood supply for regional hospitals.

Sincerely,
Jeannette Hibbitts
Blood Services Consultant, American Red Cross,
Mid-Atlantic Regional Blood Services, Norfolk

May Blood Drive Report

Total blood donors for May 27 were 251 and with 19 first-time donors.

Multiple donors are also thanked for their long-term commitment to help saving others' lives: 22 gallons, Dorothy Kubalak; 16 gallons, William Debnam Jr. and John Kovtun; 14 gallons, Charles Marple; 12 gallons, Daniel DiCarlo; 11 gallons, Michael Bryan; 10 gallons, Steven Yaros, Ben Wilson Jr. and Lawrence Huebner; 9 gallons, Kenneth Voss; 8 gallons, Christopher Cagle; 7 gallons, Franklin Mayhew, Richard Young and Donald Phillips; 6 gallons, Robin Freeman, David Burnett and Jon Thompson; 5 gallons, Robert Huffman Jr.; 4 gallons, Gretchen Murri and Jeffrey Flamm; 2 gallons, Gerald Alexander; 1 gallon, Patricia Parker, Leon Cooke and Fernandus Rattliff.

First-time Donors

First-time donors included Kory Priestly, Stanton DeHaven, Patty Howell, Alice Eley, Theodorus Dingemans, Thomas Pinelli, Joann Marshall, Peter Coen, Shannon Fish, Martin Baxter, Sallie Herbener, David Johnson, John Foster, L. Therman Burgess, Christopher Jones, Davis Wright Jr., Sue Sorensen, Jamal Masad and Frances Boyd.

Langley Deploys Wake Turbulence System

BY KEITH HENRY

A Langley team has set up a series of instruments at the Dallas/Ft. Worth International Airport (DFW) as part of an ambitious NASA research program to reduce costs and delays at the nation's major airports. The program, the Aircraft Vortex Spacing System (AVOSS), is aiming for a year 2000 demonstration at DFW.

The system monitors weather conditions, predicts the motion and decay of aircraft wakes, and compares the predictions with wake observations from a laser-radar system, or lidar. The lidar observes the signatures of wake vortices, which are invisible "tornadoes" that spin off the wingtips of aircraft. The wakes from small planes are not strong enough to affect most passenger aircraft. But those from large planes can cause passenger discomfort or serious accidents if smaller aircraft fly into wake vortices.

"The wake vortex data we're getting now from DFW will help determine when airplanes may safely follow more closely during approach and landing in inclement weather," said Brad Perry, of the Crew Systems and Operations Branch and manager of NASA's reduced spacing operations research.

Currently air traffic controllers rigidly apply fixed spacings between different classes of aircraft during adverse weather conditions. The spacings often cause air traffic delays that disrupt flight schedules and increase costs. If more is understood about wake vortices, it may be possible to change those separation standards.

The research is part of a larger NASA effort called the Terminal Area Productivity (TAP) program, led by Ames Research Center, Moffett Field, Calif.

While the current AVOSS program is focusing on a system that may be interfaced to existing air traffic control (ATC) systems, the full benefit of AVOSS technology will be realized when combined with an advanced ATC automation system like the Center-TRACON Automation System (CTAS) being developed at Ames.

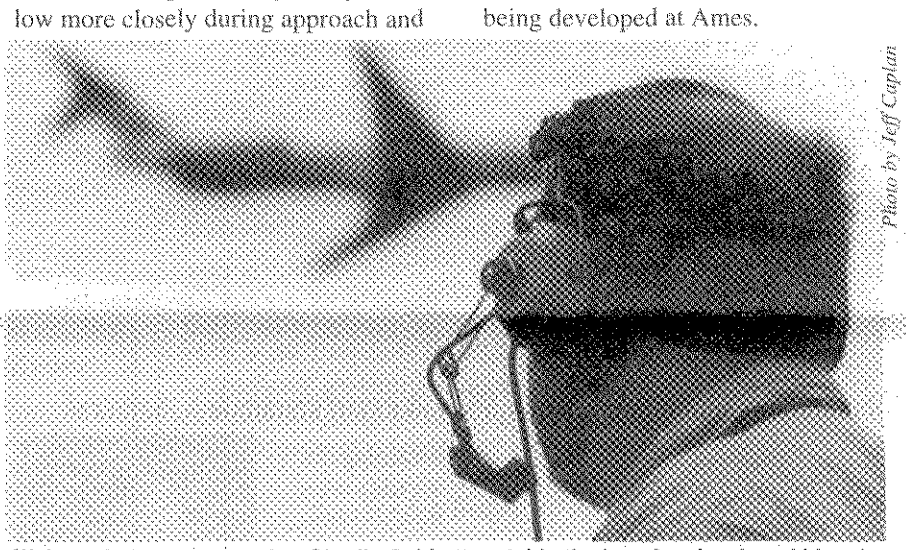


Photo by Jeff Caplan

Wake turbulence researcher Charlie Cobbett, outside the Langley-developed Lincoln Laboratory lidar van, radios the type of airplane to a second researcher inside a laser radar trailer parked near an approach path at Dallas-Fort Worth airport.

Invest Today, Enjoy Tomorrow

BY HEIDE ELLIS

Langley's 1998 U.S. Savings Bond Campaign will be held from June 15 through July 17, with the theme "Invest Today, Enjoy Tomorrow."

The essence of saving is planning ahead. No matter what your goal is, the regular purchase of savings bonds will help you reach it with market-based rates and easy access to your savings. The sooner you start investing in savings bonds, the more you will have when you need it: whether it's for the new baby's college education, a new home or your retirement.

Interest on EE Bonds can be tax deferred until they are redeemed and are exempt from state and local income taxes. There are also special tax benefits for education savings. For current rate information please call 1-800-4US-BOND.

More than $185 billion worth of savings bonds are owned by 55 million Americans and each year 15 million people buy more. U.S. Savings Bonds are the world's most widely held security. This strengthens our economy and benefits all of us.

Join your co-workers who are among the 6.8 million Americans who purchase Bonds regular the easy way through payroll savings programs.

At the end of the campaign, there will be a drawing for two free $100 bonds; one to a new participant and one to someone increasing their bond deduction. It is easy to join – just complete the savings bond form you received in the mail and return to Payroll at Mail Stop 133. You will automatically be entered in the drawing. Winners will be announced at the end of the campaign in the Researcher News.

Nurturing the Future through Early Intervention

In 1971, the Downtown Hampton Child Development Center began with a vision of a caring community. In 1988, the center was the first child care program on the Peninsula to be accredited by the National Academy of Early Childhood Programs.

Mission Statement

The center's mission is to nurture preschool children of parents who are pursuing self-sufficiency by providing an affordable, quality educational program." It provides physical, emotional, social and intellectual growth of each child through planned activities. Priority is given parents who must have child care to become gainfully employed. A planned curriculum with age-appropriate activities is provided along with breakfast, lunch and a snack. The center is nonprofit with a sliding scale tuition based on family income.

How You Can Help

Encourage the desire to read by joining the staff of "readers of children's books." Male role models are especially needed. Tutor English to children of foreign-born families. Organize books and help install the new library system, help with mass mailings and create aides for teachers. Handyman work is always in demand. For more information, call Odessa Hawkins at 722-5627.

Chang-Diaz . . .

Continued from Page 1

of the Advanced Space Propulsion Laboratory at the NASA Johnson Space Center where he continues research on plasma rockets.

The colloquium is open to all NASA employees and contractors. Civil service personnel should charge their time to B1010.

Free Public Evening Lecture

Chang-Diaz will present the same lecture as part of the Sigma Series that evening at 7:30 p.m. at the Virginia Air and Space Center in downtown Hampton. The lecture is free and open to the public.

For more information

Notices concerning upcoming and recent past Colloquium and Sigma Series lectures are available on the World Wide Web (using a browser such as Mosaic or Netscape) at http://oldtown.larc.nasa.gov/Lectures/lectures.html or from the NASA Langley Home Page http://www.larc.nasa.gov/larc.html under General Information about NASA Langley Research Center. Those unable to attend a colloquium can check out a videotape of it by calling the NASA Technical Library at ext. 42389.

NASA Selects Hampton U. to Receive Partnership Award

Four Historically Black Colleges and Universities and three Hispanic-Serving Institutions were competitively selected to be recipients of the Partnership Award for the Integration of Research into Mathematics, Science, Engineering and Technology Undergraduate Education (PAIR). Hampton University was named "The Center for Lidar and Atmospheric Science Students."

The purpose of the PAIR Partnership Awards is to provide minority institutions with an opportunity to build on their NASA-sponsored research and their rich history of educational excellence by strengthening the mathematics, science, engineering and technology undergraduate academic infrastructure of the minority institutions. Each PAIR Partnership Award recipient can receive up to $2.5 million over the five-year program.

VCES in Fifth Year Promoting Technology Graduate Studies and Research

BY BRIAN SUTTON

The Virginia Consortium of Engineering and Science Universities (VCES) will be celebrating its fifth anniversary on Jan. 2, 1999. The consortium consists of Old Dominion University (ODU), the College of William and Mary, the University of Virginia (UVA) and Virginia Polytechnic Institute and State University (Virginia Tech).

The purpose of the consortium is to increase graduate study and research at the highest technological level and make it available in Hampton Roads, the second largest population concentration in Virginia. Fulfillment of this purpose is expected to create new jobs and provide support for the creation of even more high-technology businesses in Virginia.

In March 1995, VCES secured its present location at 303 Butler Farm Road, Suite 101. This facility has two operational video-conferencing rooms.

They are frequently used to bring campus courses from ODU, UVA and Virginia Tech to the VCES location. The equipment also enables most VCES students to take their qualifying and final exams at the site.

"The video-conferencing capability has been a tremendous asset for the students," said consortium director Dave Chestnutt. "They are able to take classes that are not offered locally and they are also able to make appointments with their professors for face-to-face video-conferencing appointments. It really has been terrific."

VCES has more than 50 engineering and science students participating in its graduate programs. Programs include mechanical, aerospace and civil engineering, materials and science engineering, as well as applied science and engineering science and mechanics. Students are able to attend classes either at VCES or at ODU.

So far there have been six doctoral graduates with three more expected this year. VCES students also make frequent use of the Commonwealth Graduate Engineering Program courses delivered at the ODU Peninsula Center for some of their requirements.

The VCES organization is configured to adopt new programs to meet local needs. Following this goal, a naval architecture master's degree program has been added from Virginia Tech's aerospace department. Dr. Richard Barnwell, a former Langley chief scientist, is the on-site faculty for this program. The program is set up to allow completion of the degree within two years, while the student maintains a full-time job.

VCES has brought outstanding professors to the Peninsula over the past several years to teach both full semesters and short courses. VCES' Research Conference last spring brought together NASA and university faculty and graduate students to review research of interest to NASA. About half of the 45 presentations were about structural materials, a Langley specialty. "The presentations were well received by NASA and the university community," Chestnutt said.

Photo courtesy VCES

VCES director Dave Chestnutt, seated far right, with students and professors at the VCES offices in Hampton.

In addition to providing programs for graduate students, VCES is charged with facilitating research for the university faculty. With that goal in mind, VCES is involved in the promotion of two new research centers, the proposed Virginia Center for Atmospheric Sciences and the Virginia Materials Technology Center. Both centers are intended to be collaborative efforts with NASA, the State of Virginia, VCES universities, and private industry.

The Center for Innovative Technology recently awarded a grant to VCES to conduct an economic impact study of establishing a Virginia Materials Technology Center with matching funds from NASA and VCES universities. Charles Blankenship, former director of Structures, and the Technology Applications Group at Langley, is leading this study for VCES. The formation of the Virginia Center for Atmospheric Sciences depends on a NASA initiative in order to get started while the Virginia Materials Technology Center will most likely be a State of Virginia initiative with strong industry support, led by VCES universities.

"The main benefits from these centers for NASA will be the research capabilities that they will possess," Chestnutt said. "For the universities, the centers will offer a mix of research and education possibilities. Industry will be extremely interested in adapting the results from both NASA and university research."

More information about VCES, including course listings and assistantships information can be found on their web page at: http://vcesu.larc.nasa.gov.

LARSS Students Return to Center for Summer Research

BY BRIAN SUTTON

Summer is here again and with it come NASA summer educational programs. The biggest is the Langley Aerospace Research Summer Scholars (LARSS) program. LARSS brings with it a large influx of university students eager to learn and interact at Langley.

About LARSS

The LARSS program was established in 1986 by Dr. Samuel Massenberg for rising juniors and seniors and first-year graduate students. This summer there are 125 LARSS students, out of 400 applicants. Students have come from as far away as Arizona, Texas and Puerto Rico and as near as Hampton and Norfolk to participate.

LARSS is intended to encourage high-caliber college students to pursue and earn graduate degrees and to enhance their interest in aerospace research by exposing them to the professional research resources and facilities of Langley. Each student must complete a research project under the supervision of a mentor and attend lectures by prominent engineers and scientists.

For many LARSS participants, this is not their first year in the program. Many students come back to spend a second summer at Langley.

Brent Andrews, a recent graduate of New Jersey Institute of Technology, who is spending his second summer here in the Flight Instrumentation Branch said, "I came back to Langley for a second summer because NASA challenges it's workers to create new ideas, and places an enormous importance on the education of their employees."

LARSS students not only get to interact with their mentors and other Langley personnel, but some also get to work together. Jeff Mitchell and Layne Tcheng, both rising juniors at the University of Virginia, are working together in the Systems Integration Branch. "We are working on an algorithm that would show the most efficient taxiway for an airplane to use in order to reach the gate after landing by using a Global Positioning System (GPS)," said Mitchell. "It is very interesting since we are dealing with high-tech equipment like GPS."

Beneficial to Students

With the number of students who return to the program and the number of new students who apply each year, there is no question that the LARSS program is enormously popular. Students enjoy countless benefits from working over the summer in a high quality research environment like Langley.

More information about the LARSS program is available at: http://edu.larc.nasa.gov:80/larss.html. This site also contains a link to another LARSS web page.

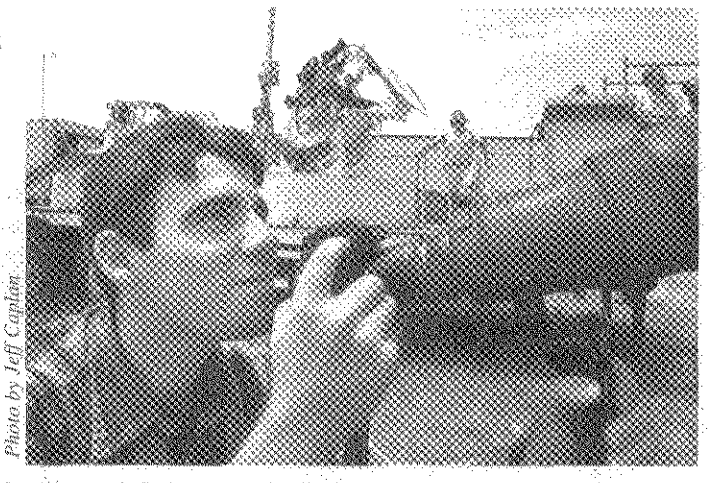


Photo by Jeff Caplan

LARSS photo intern Scott Spitzer from Bethlehem, Penn., right, is a rising senior at Rochester Institute of Technology. Shown on a recent assignment, Spitzer's major is biomedical photography.

FAA Specialist Abbott Addresses Human Factors in Aircraft Accidents

BY KATHY BARNSTORFF

Erasing human error from aircraft cockpits doesn't mean removing the human element, but it does require better training and procedures for flight crews. That's according to a Federal Aviation Administration (FAA) expert who spoke at a meeting of the American Institute of Aeronautics and Astronautics this month at Langley.

Dr. Kathy H. Abbott is the FAA's Flight Deck Human Factors National Resource Specialist. "Pilot error continues to be a primary factor in accidents," Abbott said. "Modern flight decks have eliminated some problems, but introduced others." Before her temporary assignment with the FAA, Abbott was the head of Langley's Crew Vehicle Integration Branch.

Langley researchers studying futuristic cockpit design were in the audience, along with managers of the NASA Aviation Safety Program (AvSP), headquartered at Langley.

Abbott talked about some of the challenges facing AvSP. The year-old program is trying to develop feasible, affordable technologies, to help cut the fatal accident rate 80-percent in 10 years.

"NASA must do research that is relevant, so it gets used and actually gets applied. [Airlines] can't measure the cost of an accident that didn't happen. We must communicate benefits and not just safety." she said.

Abbott also commented, "We have a tendency to focus nationally. If we have a desire to increase safety we can't do that. We need industry. We need global authorities and research."

AdVentures

FOR SALE: Piano, Kimball; like-new condition, $950 includes delivery. Call 898-6155.

FOR SALE: 1986 Toyota Celica Supra, all power, 5-speed, original owner, 150,000 miles, good condition, $3,400. Call evenings, 898-8463.

FOR SALE: 1998 Buick Park Avenue, 800 miles, $34,068 sticker, $30,800 invoice, $28,800 or best offer. Call 357-2452.

CONDO FOR SALE: Willoughby waterfront, 2 BR, 2 bath, sauna, fireplace, loft, fans, all appliances. Fee $120/mo., hot tub, pool, beach, boat slips, 20 min. to Langley. Clean, modern, ready now, $93,000. Call 855-7775.

FOR SALE: 1991 Mazda 626 LX, 5 speed, sun roof, AC, cruise control, power steering, brakes, windows, locks, $4,200 OBRO. Call 867-6794.

HOUSE FOR SALE: Renovated rancher in Hampton's Wythe section. 2 BR, 1 bath, LR, large kitchen, hardwood floors, front patio, fence, large garage/workshop, near the Bay. Reduced to $66,900. Call 247-5144.

HOUSE FOR SALE: North Calvert County, Md., 4 BR custom colonial; foyer, 2.5 bath, whirlpool, one-acre wooded lot, garage, office, kitchen w/bay window, LR/DR, family room w/fireplace, cathedral ceiling, deck, large attic, wood floors, upgraded carpet, low utilities, close to schools and Andrews AFB. Asking $289,000. Call (301) 855-7306.

BOAT FOR SALE: 1988 Chaparral, 278 XLC, twin Mercruiser I/O's, sleeps 5, full head & galley, electr. refrig., heat pump/AC, full canvas, lots more. Ski, cruise, and fish! Engines recently overhauled. Ready to go. $21,900. Call 855-7775.

HOUSE FOR SALE: Newmarket, vinyl siding, 1109 sq.ft., 2 BR, 1 bath, garage, shed, elec. range, refrig., gas heat and hot water, washer & dryer, ceiling & attic fans. Completely renovated, large oak trees, $57,500. Call 380-6595 or 886-1900.

LAA NEWS:

• Raffle tickets are on sale now for the annual LAA Carnival Aug. 21 and 22. Support the Activities Association by purchasing a $1 ticket from one of the Carnival Monarchs or call the LAA office. There are cash prizes up to $1,000. Volunteers are needed for the carnival. Call the LAA office at ext. 46369.

• Name the Lounge Contest – the LAA lounge, located in the H.J.E. Reid Center is open daily at 4 p.m., super beverage specials are available every Wednesday, 4:30 to 5:30 p.m. The Lounge needs a name. Send suggestions to <d.a.snipes@larc.nasa.gov> Winner will receive a VIP card good for 100 beverages.

• LAA Indoor/Outdoor Summer Event. Activities are Friday, June 26, 4 to 9 p.m.

OUTDOORS: The Back River Band will be on stage. M. Price Distributing will be on the picnic grounds with games, prizes and outdoor beverage truck. At the picnic shelter, food is available – hot dogs and soda, 50 cents, BBQ sandwiches, $2, nachos, $1.50. Volleyball and horseshoes will be set up for everyone.

INDOORS: Try your luck at LAA games of chance – Black Jack, Chuck O'Luck, Horse Wheel, Roulette and Instant Bingo Rip-Off cards, from 5 to 8:30 p.m. Cash drawings are at 9 p.m., winner need not be present. All are welcome, must be 18 to play. Cost: $5 in advance, $8 at the door. Cost includes $100 in playing chips to get started for cash prizes totaling $750. Call the LAA office at ext. 46369 for more information.

FT. MONROE NEWS:

The Music Under the Stars Series continues – July 2, the Concert Band; July 9, TRADOC Rock; July 16 and 23, 156th Army Band; and July 30, country rock band Showdown. All concerts are free and open to the public, held at the gazebo, across from the Chamberlin Hotel, Ft. Monroe, and start at 7:30 p.m. A special "Fourth at the Fort" will feature celebration beginning at 4 p.m., July 4, featuring The Rhondels and fireworks. Other performances and family entertainment will be provided. Food and beverages are available. For more information, call 727-3620.

WILLIAMSBURG REGIONAL LIBRARY NEWS:

Area writers will have the unique opportunity to hear a reading by New York poet Brett Axel and read their own work for possible publication in a New York literary magazine. The poetry reading and open microphone night is Monday, July 13 at 7 p.m. in the Patricia Schell Memorial Meeting Room at the Williamsburg Library, 515 Scotland St. Both reading and open microphone portion are free and open to the public. For more information, call (757) 259-4071. Find them on the internet using your favorite search engine to locate Williamsburg Regional Library or directly at <http://www.wrl.org>

NARFE NEWS: The National Associated of Retired Federal Employees' local chapter will hold a memorial service and meeting, Monday, July 13, 10:30 a.m. at the Midtown Community Center, 570 McLawhorne Dr., Newport News. For more information about the chapter and its meetings, call Catherine Askew at 247-1558.

Center Snapshots

Story by Katrina Townes/ Photo by Jeff Caplan

Margaret A. Wawrzonek, a LARSS student from Milwaukee, Wisc., loves working in Langley's Data Analysis and Imaging Branch of the Information Systems and Services Division.

Wawrzonek, who is legally deaf, earned an associate in occupational studies degree in graphic design/applied art and computer graphics on May 23, 1998 from the National Technical Institution of the Deaf at Rochester Institute of Technology. She says her greatest challenge at Langley is not her hearing impairment but her work.

Wawrzonek is designing a graphic logo for the SAGE 3 RESURS, an atmospheric monitoring satellite, along with her mentor Bill Kluge. Her other duties involve working with illustrations, mounting boards, computer programs and other graphic designs.

* * * *

"I hope this opportunity will enable me to get a better job than I had before." — *Margaret Wawrzonek*

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Researcher News

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News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 13 ❖ July 10, 1998

NASA Internet Site Seeks Views on Personal Air Transportation

BY KEITH HENRY

NASA announced the establishment of an interactive Internet site that presents concepts of future personal air transportation through detailed discussion, descriptions, simulations and graphic displays.

The site allows the visitor to have a voice in the design of an advanced personal air transportation system by completing a 10-minute survey related to their travel needs and expectations.

The Internet site address is http://apats.org.

The site was developed by the NASA General Aviation Program Office at Langley.

Program office director, Bruce Holmes, said, "Design engineers and officials in both the private sector and the public sector want to hear from you, the travel customer, so they can design a new advanced air transportation system with the quality and value you expect. By completing this survey, your voice becomes important in determining the standards for personal air travel of the future."

The site and the survey, created to explore the future role of aviation in personal transportation systems, is an outgrowth of two major government-industry partnerships. The partnerships were established to develop the technologies needed to enable an affordable personal air transportation system and to address the challenges of defining the operating requirements for such a system.

The first partnership, the Advanced General Aviation Transport Experiments (AGATE), is a consortium of NASA, the Federal Aviation Administration and more than 70 leading U.S. aviation companies, universities and non-profit organizations. The second, the General Aviation Propulsion (GAP) program, is a NASA-FAA-industry cooperative effort led by Lewis Research Center, Cleveland, Ohio.

A single-pilot, four-place airplane of the future equipped with AGATE-GAP technology is expected to be as easy to fly as driving an automobile, cost no more than a luxury automobile and safely and dramatically extend the range of daily personal travel beyond that of the automobile.

NASA Langley animation by J. Pomhieux

Animation of a single-pilot, four-place airplane of the future equipped with AGATE-GAP technology is expected to be as easy to fly as driving an automobile, cost no more than a luxury automobile and safely and dramatically extend the range of daily personal travel beyond that of the automobile.

Beach Accepts University Post

Becomes Associate Director, Applied Research Center

BY MIKE FINNERAN

Beach

NASA Langley Research Center's deputy director is retiring to accept a position at Christopher Newport University.

Dr. H. Lee Beach Jr. will leave NASA Langley July 10 and start work Aug. 17 as a professor in the Department of Physics, Computer Science and Engineering.

Beach said he will split his time between Christopher Newport and the new Applied Research Center, where he will become associate director.

"I am really going to miss NASA and Langley and all of my friends here," he added. "But this is a new opportunity, and I am looking forward to the challenge."

Beach has bachelor's, master's and doctoral degrees in mechanical engineering from North Carolina State University. His research has ranged from radiative heat transfer to supersonic combustion ramjet propulsion. He held positions of increasing responsibility at Langley and NASA Headquarters until he was named Langley's deputy director in 1992.

Beach received NASA's Exceptional Service Medals in 1989 and 1992, the Senior Executive Service Meritorious Presidential Rank Award in 1992, NASA's Exceptional Achievement and Outstanding Leadership Medals in 1994, and a prestigious Air Breathing Propulsion Award from the American Institute of Aeronautics and Astronautics in 1997.

Beach has taught graduate-level courses at George Washington University, Christopher Newport University and North Carolina State.

A Sure Winner: Expanding Remote Sensing Using GPS

BY KATRINA TOWNES

By measuring the interaction between air and sea surface, Langley researchers are expanding the way scientists and the public acquire information about long-term climatology as well as short-term weather.

Dr. Jim Garrison and Dr. Steve Katzberg, both from Langley's Space Systems and Concepts Division, have developed a remote sensing device called the Biostatic Scatterometer. The device resulted from their helping NASA's Earth Science Enterprise Office to identify major remote sensing issues facing the Agency.

The Global Positioning System (GPS) is a constellation of navigational satellites. Based on GPS equipment, the instrument processes information on a laptop computer inside an airplane. This processing is possible because of two specialized aircraft antenna and the reflected GPS signal.

With its small size and low cost, the remote sensing device will be used to take measurements in several areas of study including wind speed, wetland mapping and the high altitude atmospheric layer called the ionosphere.

"Global measurements of wind speed are important for models of oceanic circulation in the scientific research community," Garrison said. Because wind speed is also beneficial to other areas such as operational weather forecasting by the National Oceanic and Atmospheric Administration (NOAA) and other meteorological organizations, the device could serve as a storm tracking tool.

Wetland mapping would allow flooded areas to be mapped and more information about soil moisture to be received. This is possible because of strong reflected signals from wet ground or confined water areas.

Photos by Jeff Caplan

Drs. Jim Garrison and Steve Katzberg, Spacecraft and Sensors Branch, flank Charles Howell, Federal Data Corporation NYMA, Inc. They are seen with a laptop computer that receives GPS signals via the remote sensing device they developed, the Biostatic Scatterometer.

To enhance three-dimensional models of the ionosphere, the tool will take measurements of the ionospheric total electron content over the ocean. This will also improve the quality of models produced by ground-based sensing sites.

Garrison and Katzberg, along with Ed Walsh of the Goddard Space Flight Center in Greenbelt, Md., conducted flights on the Wallops C-130 research plane. With the Scatterometer mounted to the aircraft, they flew parallel with the orbit of a Topex satellite for three days. Their findings also have been compared to wind speed and direction information from NOAA buoys off the Eastern Shore.

"Our accomplishments are much, much better than we had thought at the very beginning," said Katzberg. "We've taken something that people did not think existed and the experiment proved that it does exist, and that it has applications."

Continued on Page 3

News Briefs

Around the Agency

ARCTIC EXPEDITION SEEKS MARS SCIENCE: NASA scientists soon will explore a barren Arctic meteorite impact crater to attempt to learn more about Mars and its early history, while testing technologies useful for future robotic and human exploration of the planet. From June 22 to July 26, a 20-member science team from NASA and several other research organizations is exploring the Haughton Impact Crater and its surroundings on Devon Island in the Arctic Circle. Scientists consider the site a potential Mars analog since many of its geologic features, like the crater's ice-rich terrains, ancient lake sediments and networks of small valleys, resemble those reported on Mars.

NASA AND FRENCH TO EXPAND SPACE COOPERATION: NASA and the Centre National d'Etudes Spatiales (CNES) have agreed to explore joint cooperation on the exploration of Mars, telemedicine and education. "Mars exploration is envisioned as an international endeavor involving bilateral and multilateral cooperation, and France and the United States are interested in expanding cooperation in this area," Daniel S. Goldin, NASA Administrator, said. NASA and CNES have agreed to explore joint cooperation on the exploration of Mars, with focus on the first Mars Sample Return mission, now scheduled for launch in the summer of 2005.

LIGHTWEIGHT 'ICE ZAPPER' USED ON AIRCRAFT: A NASA ice removal system will be included with the first new general aviation aircraft to be introduced in the country in 15 years. The lightweight, patented device will zap dangerous ice from wings and other aircraft parts during flight. Lancair Inc., Bend, Oregon, will test the system with its Lancair IV aircraft and make the system available later this summer with the new Columbia 300, a four-seat, general aviation airplane. Even in warm climates, aircraft icing can be a problem at higher altitudes where temperatures are cold. The ice zapper could help NASA meet its goal of greatly improving commercial aircraft safety.

COMPANIES SELECTED FOR INFORMATION TECHNOLOGY: NASA has selected seven companies to fulfill a contract that will apply a "faster, better, cheaper" approach to the way the Agency obtains desktop computers and local communications services. The contract, called the Outsourcing Desktop Initiative for NASA (ODIN), will deliver comprehensive desktop computer, server and intra-center communications services to NASA and its contractors. Under the contract, NASA will define the computer and communications capabilities for each job within the Agency and purchase a particular bundle of hardware, software and communications equipment for each "seat." The price for each type of "seat" will be fixed. The seven successful offerors are: Boeing Information Services, Inc., Vienna, Va.; Computer Sciences Corporation, Laurel, Md.; Dyncorp TECHSERV, LLC, Reston, Va.; FDC Technologies, Bethesda, Md.; OAO Corporation, Greenbelt, Md.; RMS Information Systems, Inc., Lanham, Md.; and Wang Government Systems, Inc., McLean, Va. More information on the ODIN initiative can be found at the following web site: <http://outsource.gsfc.nasa.gov>

For more information on the news items above, check the internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

Career Center Events for July-September

The following Langley Career Center schedule is planned:

July

- Thurs., 7/16, Résumé Reality, 9 a.m. - 12; Cover Letters and Thank You Notes, 1-4 p.m.
- Thurs., 7/23, Interview Basics, 9 a.m. - 12; Negotiating Salary & Benefits, 1-4 p.m.

August

- Wed., 8/5, Job Applications and Skill Statements, 9-11 a.m.
- Thurs., 8/13, First 30 Days on the New Job, 9 a.m.-12
- Tues., 8/18, Hone Your Negotiation Skills, 9 a.m.-12

September

- Thurs., 9/3, Skills for the Interviewer, 8:30 a.m.-12:30 p.m.
- Wed., 9/9, Starting Your Own Business (SYOB): The Basics, 8:30 a.m.- 4 p.m.
- Thurs., 9/10, Getting Started: Career Development, 9-11 a.m.
- Wed., 9/16, SYOB: Laying a Solid Foundation, 9 a.m.-12
- Wed., 9/23, In the Black, ASAP, 9 a.m.-12
- Tues., 9/29, Skills for the New Millennium/Defining You and Your Career, 9 a.m. -12
- Wed., 9/30, SYOB: The Right Side of the Law, 9 a.m. -12

The seminars are authorized Langley training events, held in Building 1312, next to the Credit Union. Participation is open to all NASA civil service service personnel and their spouses. To register in advance, call ext. 45000, or fax: 45040. Visit the website: <http://www-ctapc.larc.nasa.gov>.

Retirement Reception

A retirement reception for Arnold W. Mueller will be Monday, July 27, H.J.E. Reid Conference Center's Langley and Hampton rooms from 5 to 7 p.m. Cost of $12 per person includes heavy hors d'oeuvres and gift. Call Flo Ventura at ext. 43618 or Odilyn Santa Maria at ext. 45104 for reservations by COB July 15.

Letters

Retirement Social Thank You

From Lemuel E. Meetze: "I want to thank all of you who participated in my recent retirement social and for the generous gift. I consider my career in Flight Simulation much more successful due to the Simulation Systems Branch personnel, the support services staff, the many researchers and others I have had the opportunity to be associated with over the years. Thank you very much."

New Contractor Provides Center's Custodial Services

Effective May 1, Econo-Clean Janitorial Services, Inc., an 8(a) firm, became the new contractor responsible for providing Centerwide custodial support services at Langley. Econo-Clean replaced Ryder Services, Inc., which provided Langley with several years of quality service under a previous contract. Econo-Clean was highly recommended by the Small Business Administration, and has performed numerous custodial support services contracts for other government installations. The one-year contract expires Apr. 30, 1999 with one option period, May 1, 1999 to Apr. 30, 2000. The contract value for the first year is about $1.35 million.

In Memoriam

Janet H. Broad

Janet Hubbard Broad, 75, died Tuesday, June 16. A native and lifelong resident of Newport News, Broad began work at NACA in 1944 as a mathematician, and left to raise her family.

Blood Drive Reminder: Wednesday, July 22 , 9 a.m. to 3 p.m., H.J.E. Reid Conference Center

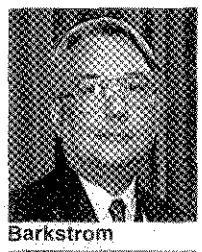
Four Thompson Fellows Head for Programs

BY KATRINA L. TOWNES

Following a 21 year-old tradition, four Langley research scientists will enhance their capabilities after being selected as the Floyd L. Thompson Fellowship recipients for 1998-1999.

Three recipients, Dr. Bruce R. Barkstrom, Dr. Bryan A. Baum and Dr. Marty Mylnczak, were chosen from the Atmospheric Sciences Division (ASD). Dr. Ronald D. Joslin, Fluid Mechanics and Acoustics Division (FMAD), was also chosen.

Barkstrom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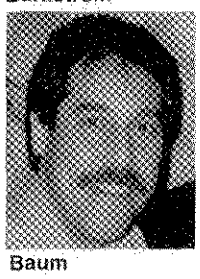
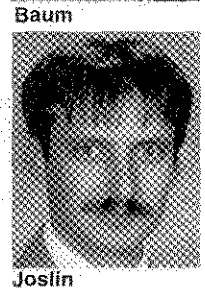

Baum


Joslin

Mlynczak

Conducting research at the University of Illinois at Urbana-Champaign (UIUC), Barkstrom, a senior research scientist from the Radiation Sciences Branch, will identify cloud systems in data from the Earth Radiation Budget Experiment (ERBE).

"The cloud systems identified will let me build a climatology that will improve our understanding of how clouds influence the absorption of energy from the Sun and modulate the Earth's emission of energy to space," Barkstrom said.

Barkstrom will interact with computer scientists at the UIUC's National Computing Sciences Alliance to ensure that others will be able to look at the cloud systems and extract them efficiently from the large volume of ERBE instantaneous data. Following his stay there, Barkstrom will spend three months at the Langley's Distributed Active Archive Center (DAAC) putting data on-line for general access. The software he develops will also be applied to the data from the investigation of Clouds and the Earth's Radiant Energy System (CERES).

In 1974, he began working in Langley's George Washington University Environmental Modeling program. From 1979 until 1991, he worked as an ERBE experiment scientist. Since 1990, he has been the CERES instrument principal investigator.

Barkstrom earned a bachelor of science degree in physics from the University of Illinois and a master of science and doctorate degrees in astrophysics from the Northwestern University.

Baum

Senior scientist in the Radiation Sciences Branch, Baum will study the use of advanced multispectral techniques to remotely sense multilayered cloud properties and the remote sensing of aerosols in satellite imagery at the University of Wisconsin at Madison. He will also develop materials for use in educational activities.

"I'm excited about this opportunity to learn from my esteemed colleagues at the University of Wisconsin," Baum said.

Beginning his Langley career as a research scientist in 1989, Baum served as deputy project scientist and project scientist of the Distributed Active Archive Center. From 1992 to 1994, he was a principal investigator on a study of multiple cloud properties as determined from radiative transfer theory and merged High Resolution Infrared Radiometer Sounder and Advance Very High Resolution Radiometer data.

Baum earned a bachelor of science degree in chemical engineering from Vanderbilt University, a master of science

Continued on Page 4

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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.
limited

New Laser's "First Light" Shatters Record

JEFFERSON LAB NEWS RELEASE

Researchers at the U.S. Department of Energy's Thomas Jefferson National Accelerator Facility (Jefferson Lab) have delivered first light from their Free-Electron Laser (FEL). Only two years after groundbreaking for the FEL, infrared light of more than 150 watts (150,000 times more powerful than a supermarket scanner or compact disk player) was delivered in mid-June — 15 times the power of existing free-electron lasers.

The FEL provides not only a unique tool for basic research in materials science and atomic and molecular physics but, because of its efficiency, offers the potential light at a cost useful for industrial purposes. Initial users include DuPont for polymer processing and Armco/Northrup-Grumman/Virginia Power for metals processing. In addition, Old Dominion University, College of William and Mary, Christopher Newport University and Norfolk State University are partnering with industries in the new Applied Research Center built by the City of Newport News adjacent to the Jefferson Lab campus to use the FEL capabilities.

To enable researchers to probe deep inside the atom's nucleus using electrons, Jefferson Lab pioneered superconducting technology for accelerating electrons to high energy in efficient, cost-effective accelerators. Jefferson Lab's superconducting electron-accelerating technology offers two cost advantages for FELs – the laser can operate 100-percent of the time instead of only one- or two-percent of the time, and 99-percent of the energy that is not converted to useful light in a single pass can be recycled. The FEL development program displays the knowledge of the Lab's staff specialists in this superconducting technology as well as the built-in infrastructure of related specialized equipment.

Jefferson Lab photo

Jefferson Lab Director Hermann Grunder, center right, and the Free-Electron Laser (FEL) team celebrate the FEL's first run in mid-June.

The FEL project was funded by the Department of Energy, the Commonwealth of Virginia and the Department of the Navy. It is supported by industries, universities and the city of Newport News. Jefferson Lab is managed by a consortium of universities in the southeast called the Southeastern Universities Research Association. FEL was also made possible with the support of the Virginia Congressional delegation, particularly Senators Robb and Warner and Congressmen Bateman, Scott and Sisisky.

X-33 Thermal Protection System Tests Complete

NASA DRYDEN RELEASE

NASA's F-15B Aerodynamic Flight Facility aircraft has successfully completed flight testing of Thermal Protection System (TPS) materials for the X-33 Advanced Technology Demonstrator at Dryden Flight Research Center, Edwards, Calif.

Six flights were flown to test the durability of the TPS materials at flight velocities above the speed of sound, providing data to the X-33 demonstrator program team. The X-33 is scheduled to begin test flights in July 1999.

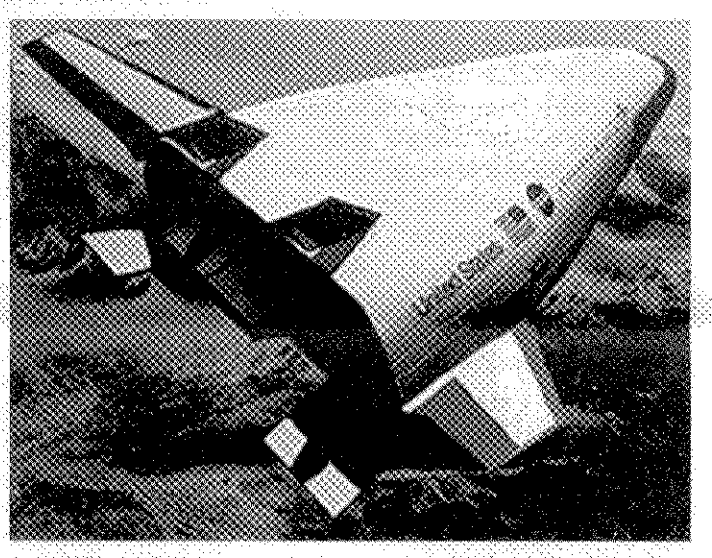
Thermal protection systems are used on spacecraft to protect them during flight, primarily as a "heat shield" during reentry into Earth's atmosphere. Though the X-33 is a suborbital technology demonstrator for an eventual commercially developed and operated single-stage-to-orbit launch system, the X-33 will encounter an extreme heating environment similar to what such a vehicle will encounter during orbital spaceflight and atmospheric reentry.

The F-15B reached an altitude of 36,000 feet and a top speed of Mach 1.4 during the flight series. No damage or signs of wear from high speed or maneuvering were apparent on any of the TPS materials. This provided further confidence to the X-33 team in the ability of the materials to successfully protect the X-33 and follow-on vehicles in the harsh environment in which they will fly.

"With the F-15B we were able to accomplish the X-33 TPS durability flights in a timely and cost-effective manner," said Roy Bryant, Dryden's F-15B project manager. "The X-33 TPS team is very happy with the data obtained during these tests. A satisfied customer indicates a job well done by the F-15 project team."

The TPS material samples include metallic Inconel tiles, soft Advanced Flexible Reusable Surface Insulation tiles and sealing materials. They were flown attached to the forward-left side position of the F-15B's Flight Test Fixture II, a device attached underneath the aircraft to carry experiments. In-flight video from the aircraft's onboard video system and chase aircraft photo and video cameras documented the condition of the TPS materials during flights.

"I appreciated the quick manner in which this flight project was accomplished," said Gary Trippensee, Dryden's X-33 project manager. "The combined B.F. Goodrich Co., Ohio; Ames Research Center, Moffett Field, Calif.; and Dryden test team provided valuable X-33 TPS flight qualification data," Trippensee said.



The proposed X-33 Advanced Technology Demonstrator vehicle is being built by Lockheed Martin Skunk Works, Palmdale, Calif.

Conference Discussed New Remote Sensing Techniques

BY CATHERINE E. WATSON

More than 350 scientists and engineers from across the world met to review the latest developments in the art and science of laser remote sensing. The 19th International Laser Radar Conference was held July 6-10 at the U.S. Naval Academy (USNA). Attendees reviewed progress in understanding current issues like global warming, ozone depletion, severe weather and atmospheric pollution.

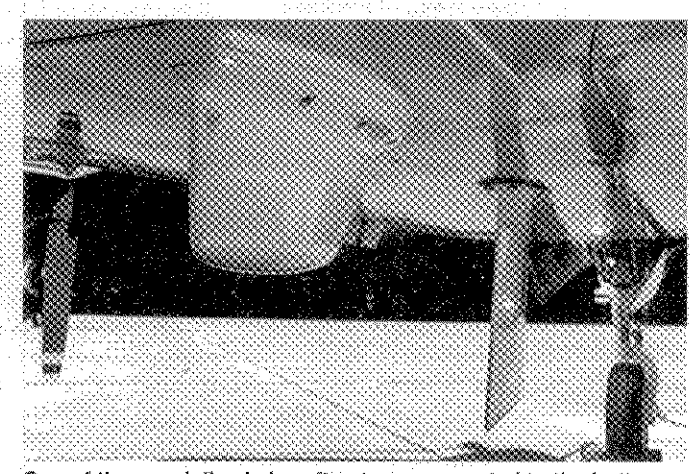
The conference was hosted by Langley, Goddard Space Flight Center, and USNA. It was cosponsored by national agencies and scientific organizations including NASA, NOAA, USNA, Naval Research Laboratory, Optical Society of America, American Meteorological Society, University of Maryland-Baltimore and Hampton University. The conference was held under the auspices of the International Committee on Laser Atmospheric Studies of the International Radiation Commission and the Committee on Laser Atmospheric Studies.

GPS . . .

Continued from Page 1

Garrison and Katzberg submitted their Biostatic Scatterometer and its findings to GPS World magazine's annual "Application Contest." The contest provides a preview of innovative GPS applications ranging from surveying, navigation and timing to vehicle tracking. Accepted entries will appear in the August 1998 issue.

As for the future of the device, Garrison and Katzberg have even bigger plans. In August, the researchers, with assistance from the Virginia Space Grant Consortium, plan to make an important step toward satellite-like predictions by placing the instrument on a balloon that will rise 60 to 70 thousand feet. These predictions may result in a ride aboard a shuttle-launched satellite as early as mid-1999.



One of the specialized aircraft antenna, mounted to the bottom of a C-130 cargo plane, receives GPS signals.

NASA Funding: Moving in the Right Direction

BY LEE RICH

Election years tend to galvanize Congress into picking up the legislative pace, especially with the must-pass-by-Oct. 1 deadline for the 13 appropriations bills. Politicians want to be on the campaign trail, not in Washington, as the November election approaches (all 435 House seats and 34 Senate seats are involved).

Status of NASA Funding

The House Appropriations Committee marked up the Fiscal Year (FY) 1999 Veterans Administration (VA), Housing and Urban Development (HUD) and Independent Agencies (IA) bill, of which NASA is a part, on June 25. The huge ($94.3 billion) bill allocated $13.3 billion to NASA for FY 1999, $136 million less than the Administration's request. The Senate Appropriations Committee had earlier, on June 11, marked up its version of the VA-HUD-IA bill and provided $13.6 billion for NASA, an increase of $150 million over the request. Floor passage of each bill will likely occur in late July. The next step will be the appointment of a conference panel, usually consisting of members from the House and Senate VA-HUD-IA Appropriations Subcommittees, who will determine the final amount for NASA, likely $13.5 billion. The bill would then go to the President for signature to become Public Law.

Gardner Selected to Chair the Employee Suggestion Committee

BY KAREN RIDLON

James E. Gardner, technical staff assistant of the Technology Applications Group, has been selected as the new chairperson of the Employee Suggestion Committee (ESC). Gardner has served as a member of ESC since 1987 and as the vice-chairperson since 1996.

Gardner began his Langley career in 1961 as a cooperative engineering student. He conducted research in aircraft performance; dynamic and static load testing of advanced reentry models; heat transfer on reentry models. He also performed structural analysis on composite cylinders, and did trajectory calculations and analysis of the Scout launch vehicle.

He earned a bachelor of science degree in engineering mechanics from Virginia Polytechnic Institute and State University. Gardner then served as a materials engineer in the Materials Division, and continued research on the effects of various environments on the properties of materials for AeroSpace Vehicle Structures. His work on structures continued and, from 1989 to 1994, he served as the technical staff assistant to the director for Structures.

Since then, Gardner has been in his current position. In this capacity, he supports TAG's responsibilities of increasing the Center's technology partnership programs with industry to enhance America's national competitiveness. TAG provides leadership for the Small Business Innovation Research (SBIR) Programs, Space Act Agreements with non-aerospace industries, and licenses of NASA's intellectual property. It also facilitates all technology transfer agreements between the Center and industry.

Gardner

Gardner received several outstanding performance and special achievement awards at Langley for his contributions during his long career. In 1994, he accepted a Team Excellence Award for the Administrative Staffing Advisory Team for their role in supporting the implementation of administrative and clerical employees with the Center reorganization.

What is the ESC?

The Employee Suggestion Committee consists of a chairperson, vice chairperson, executive secretary and union representatives. Employees, who have been selected by their respective management based on their expertise in a given area or in having a background in a variety of work disciplines at Langley, can serve two-year terms as committee members. The ESC reviews technical and administrative suggestions submitted by Langley employees, determines the eligibility of the employee to receive an award, and recommends the type or amount of award to be granted. If a suggestion is adopted by the Center, the suggester will receive an award. The award will be based on tangible and/or intangible benefits as a result of the suggestion.

Do You Have ESP?

Langley's Employee Suggestion Program (ESP) encourages innovative and constructive ideas. For more information, see the story, top right, on this page.

Employee Suggestion Program Explained

The objectives of Langley's Employee Suggestion Program (ESP) is to stimulate and encourage the submission of constructive ideas which will significantly improve product quality, eliminate unnecessary work, and reduce cost of materials or directly increase effectiveness of government operations. Generally, ideas that deal with employee services, benefits, working conditions, housekeeping, routine safety practices or maintenance of grounds and buildings are normally not eligible for consideration as suggestions. Each year, employees have earned recognition and tangible awards by turning their ideas into winning suggestions. Summarized below are suggestions that have been adopted this year by Langley employees:

• A suggestion by Steve C. Seider, entitled Screen Adaptor Fitting, was the design and installation of screen adaptor fittings for exhaust ports of solenoid operated valves at the 8-Foot High-Temperature Tunnel.

• A suggestion by William J. Healy and Steve C. Seider was to repair a transfer pump that was damaged and leaking hydraulic fluid in the 8-Foot High-Temperature Tunnel. The pump was critical for the operation of the tunnel in support of an important Navy missile test.

Ideas must be submitted in writing on Optional Form 303, Employee Suggestion. For more information about ESP, call Karen Ridlon, Personnel Management Branch, at ext. 43194.

Thompson Fellowships . . .

Continued from Page 2

degree in chemical engineering from the University of Colorado at Boulder and a doctorate degree in atmospheric sciences from Georgia Institute of Technology.

Joslin

Joslin, a senior research scientist in the Flow Modeling and Control Branch, will perform research at Pennsylvania State University and Applied Research Laboratory on simulating/modeling the flow induced micro- and macro-sized actuators for active control of internal and external aerodynamics. He will also develop and validate an unsteady Navier Stokes computer code with experimentally-measured data.

"The new code could be used in engineering analyses to design, develop, and optimize actuators (frequency, velocity, size, and location) for given applications," Joslin said. Such actuators being developed by Penn State and NASA will benefit from this data.

Joslin began his Langley career in 1990, and has served as the Level Three Advance Subsonic Transport and High-Speed Research Laminar Flow Control Technology manager. He was responsible for advancing boundary layer predictions tools. Joslin is also an expert in direct numerical simulations, active flow control and unsteady viscous fluid dynamics.

Joslin earned a bachelor's, a master of science and doctorate degree in aerospace engineering from Penn State, and a master's in business administration from Chadwick University.

Mlynczak

Senior research scientist in the Theoretical Studies Branch, Mlynczak will work as an associate principal investigator for Langley's Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) experiment. He'll work with team members developing data products and preparing data analysis for NASA's Thermosphere, Ionosphere, Mesosphere, Energetics, and Dynamics (TIMED) mission at the University of Colorado at Boulder. The SABER instrument flying aboard the TIMED spacecraft will improve the understanding of the fundamental processes governing the energetics, chemistry, dynamic, and transport of the atmospheric region extending 60-to-180-kilometers. This mission is scheduled for launch in May 2000.

"It's an honor, first of all to be selected," Mlynczak said. "It shows the good investment Langley makes to allow four members to advance their own capabilities as well as those of the Center."

From 1981 to 1982, Mylnczak worked as an engineer for McDonald-Douglas in St. Louis. Since coming to Langley in 1986, he has worked as a researcher and, later, senior research scientist. Mylnczak earned a bachelor of science degree in physics from the University at St. Louis, a master of science degree in meteorology from the University of Wisconsin at Madison and a doctorate degree in atmospheric sciences from the University of Michigan.

Johnson Heads to Women Managers Program

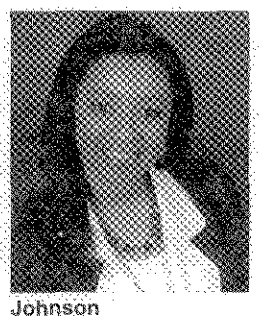
BY NANCY FINN

Christyl C. Johnson will attend the Critical Issues Program for Women Managers, sponsored by the Smith College Consortium. The consortium is an educational partnership among six Fortune 500 companies and Smith College, Northampton, Mass.

"Because I am a government employee, I believe that I will be able to offer a different perspective to the participants," Johnson said. "I believe that we will discover quite a few parallels and differences, for which I may be able to offer unique solutions."

Johnson earned a bachelor's degree in physics from Lincoln University in 1987. In 1990, she earned a master's degree in electrical engineering from Pennsylvania State University. She came to Langley as an engineer in the Remote Sensing Technology Branch, where she designed and built laser systems for advance active remote sensors.

Johnson then served as a subsystem manager for the diode seeding subsystem for the LASE (Lidar Atmospheric Sensing Experiment instrument. She was also lead engineer for the diode-pumped Cr:LiSAF laser technology program. As lead engineer, she contributed to the development of high power 670-nanometer laser diodes and high quality Cr:LiSAF laser crystal development. Johnson is currently assistant head of the Electro-Optics and Controls Branch.


Johnson

The Critical Issues Program is tailored to meet the needs of women managers from member companies. They learn strategic and global thinking, how to give and receive critical feedback, and successful management in a rapidly changing environment. Participants are trained in organizational and leadership development, negotiations strategies and global and corporate finance.

Lifelong Learning Available at CNU

The NASA work environment provides a degree of challenge and excitement that most others don't. After retirement, many find a component of their lives missing. If your brain is nagging you to do something, the LifeLong Learning Society (LLS) at Christopher Newport University (CNU) could be the answer.

LLS' mission is to provide learning opportunities in an environment of fellowship for retirees. It includes lectures, courses, study groups, field trips and social events. LLS shares its offerings with the community through joint efforts with CNU and other institutions, groups, industries, etc.

Now celebrating its 10th anniversary, LLS has 400 active members and is growing each year. No previous educational experience is required; intellectual curiosity is the sole prerequisite. Dozens of courses are offered. No exams or grades are given. LLS also offers travel programs, social activities, lectures and musical and literary programs. Fall semester classes begin Sept. 8 and the cost is minimal. Call 594-7568 for information, and to receive the fall brochure.

ASEE Faculty Arrive for Summer

BY BRIAN SUTTON

While known for many of its summer programs that involve student internships, Langley also offers programs to university faculty members. The American Society for Engineering Education (ASEE) Summer Faculty Fellowship Program allows university faculty to participate in research projects on Center. About 40 faculty members are in this summer's program.

ASEE is a coordinated effort between Hampton University, Old Dominion University and Langley to host college or university faculty who are appointed as fellows. Fellows devote their time to a research problem, and follow a program of technical lectures and seminars given by distinguished scientists and engineers from NASA, academe and industry.

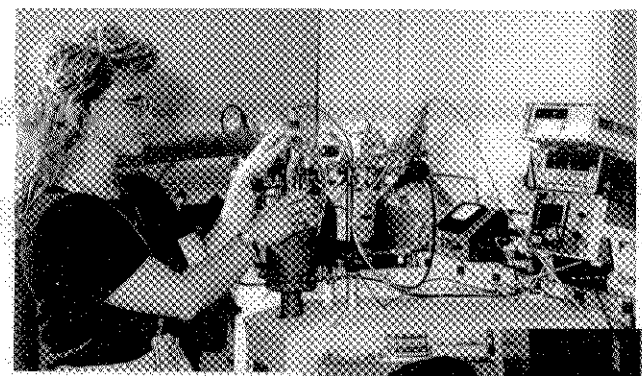
Dr. Deborah Carey, a visiting professor of chemistry and biochemistry from Marywood University, said, "The opportunities that the program provides enables me to relay my experiences to my students. I feel like a role model for women in science because I have the chance to do research projects like I am doing here at Langley."

ASEE hopes to further the knowledge of engineering and science faculty members, to stimulate an exchange of ideas between participants and NASA employees, to enrich the research and teaching activities of participants' institutions, and to contribute to the Center's research objectives.

Dr. Norman Loney of New Jersey Institute of Technology's Chemical Engineering Department, where he teaches the transport of mathematical methods, said, "I enjoy the opportunity to see different areas and interact with different people who are in the field of computational fluid dynamics. I can find out about the newest methods in software and its uses."

ASEE is also designed to give university faculty members a rewarding personal experience. The program offers several social activities for participants and their families that highlight the cultural and recreational facilities of Langley and the local area.

More ASEE information is available from Debbie Young, Office of Education (OEd) at 864-5215. Information about ASEE and other OEd programs is also available at: <http://edu.larc.nasa.gov/asee.html>.

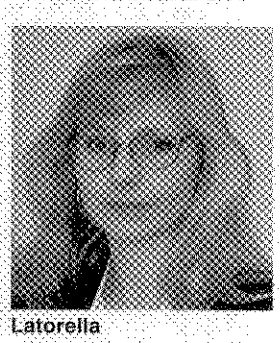


Dr. Deborah Carey, Marywood University, is spending her second year at Langley working with Dr. Billy Upchurch in the Experimental Testing Technology Division.

Dr. Norman Loney, right, New Jersey Institute of Technology, is designing a new mixing system in the 8-Foot High Temperature Tunnel operations facility at the Gas Dynamics Division.

Photo by Dave Archer

Langley Engineer Wins Award for Dissertation



Latorella

Kara Latorella, aerospace engineer in the Crew/Vehicle Integration Branch, was named the 1998 winner of the Stanley N. Roscoe Award for the best doctoral dissertation in a research area related to aerospace human factors.

Latorella completed the dissertation, "Investigating Interruptions on the Flightdeck," in 1997 under the advisement of professors in the Department of Industrial Engineering at the State University of New York at Buffalo. Her work was funded by a grant from the NASA Graduate Student Researchers Program at Langley. Paul Schutte, Langley engineer involved in crew station design and the error-proof flightdeck program, served as Latorella's mentor for the project.

In the Crew/Vehicle Integration Branch, Latorella is developing human-centered methods and measures for evaluating performance in flightdecks for the error-proof flightdeck program, and enhancing flightdeck weather information for the aviation weather information program. Her research includes human-performance assessment, usability assessment, human/computer interaction, decision aiding and cognitive engineering.

Latorella earned a bachelor's degree in an independent curriculum for human factors from Cornell University and a master's degree in industrial engineering from Penn State.

The award was presented to Latorella by the Aerospace Human Factors Association, a constituent organization of the Aerospace Medical Association.

Army Researcher Achieves Dream

BY HENRY RUSSELL AND KATHY BARNSTORFF

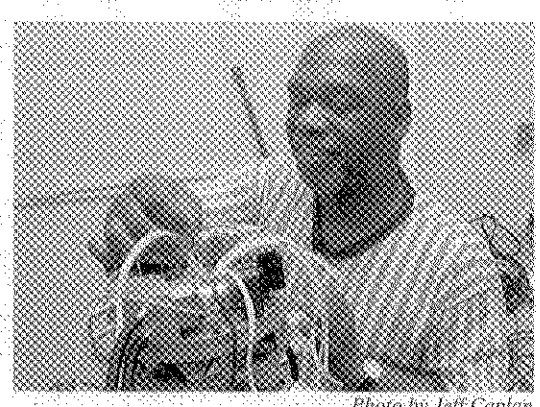


Photo by Jeff Caplan

Chester Langston works in the TDT.

Chester Langston is finally living his dream, after years of study and a little red tape.

Langston is an electronic engineer at Langley's Transonic Dynamics Tunnel. That's not all that rare at a NASA research center, but Langston is an Army employee who started as a contractor, then became a technician.

"The one thing I like out here is that things are always changing. You finish one research project and go onto the next. The constant changing keeps me going," Langston said.

He set a personal goal in 1985 to become an engineer. He worked days and studied nights to get a bachelor of science in electrical engineering technology from Old Dominion University in Norfolk.

Unfortunately a "technology" degree didn't fit requirements for an entry level Langley engineering job. That didn't stop Langston. Instead he hit the books again at Hampton University.

"I had put so much time in the first degree. I didn't want to throw that away," says Langston. "I had to keep going or I wouldn't have gained anything."

Langston juggled school and work for another four years. On the job he won several awards and commendations for his NASA rotorcraft work and was selected for the U.S. Army Research Laboratory Technician of the Year Award in 1996. At school he earned a second bachelor of science – in electrical engineering.

Finally last November Langston got the job he had pursued for more than a decade. He went from engineering technician to electronic engineer.

Langston says his fellow workers treat him about the same, but "sometimes it's hard not to think like a technician. Now I have the best of both worlds. I can use my electronic flow background to visualize a test product from beginning to end. This saves times, especially when it comes to design specifications," he said.

Steam Plant Makes Boiler Modifications

BY DAVE STEIGERWALD

The Langley West Area Steam Plant (Building 1215) has made significant upgrades recently that will greatly reduce the air pollutant emissions that result from the steam production. Three of the four boilers can now burn either fuel oil or natural gas. The fourth boiler burns only natural gas.

The modifications also included the installation of low nitrogen oxide (NOx) emitting burners and flue gas recirculation systems to minimize air emissions.

The Center uses steam for heating buildings and aeronautical research. Along with supplying steam for heating purposes, high-pressure steam is used in steam ejectors for wind tunnel research. The Center uses up to 150,000 pounds of steam per hour during peak usage. The total cost for the conversion is expected to fall between $1.5 and $1.6 million.

The boilers originally burned coal, as the time progressed and air quality requirements became more stringent, coal was switched to fuel oil. The steam plant started using No. 6 residual fuel oil, which was then upgraded to a No. 4 blend and then finally to No. 2 distillate fuel oil. Switching from No. 6 to No. 2 drastically lowered the sulfur emissions released during the burning process.

The boilers now burn natural gas, which reduces NOx emissions and nearly eliminates sulfur emissions. This is important because NOx emissions contribute to ground-level ozone problems, and sulfur dioxide emissions contribute to acid rain problems. The installation of low NOx burners and flue gas recirculation systems was important to ensure compliance with air permit requirements. This modification project makes certain that Langley can generate the steam it requires without significant additional air emissions.

Langley is supplied with natural gas based on an interruptible service contract with Virginia Power. In the event gas service is interrupted the steam plant has 250,000 gallons of No. 2 fuel oil in reserve to continue producing steam.

Dan McGowan, left, shows how the new computer system, installed at the Steam Plant at Langley, can remotely control the boilers on the East side as well as the new boilers for the Center.

Photo by Jeff Caplan

AdVentures

HOUSE FOR SALE: Renovated rancher in Hampton's historic Wythe section, 2 BR, 1 bath, large living room, spacious kitchen, hardwood floors throughout, enclosed front patio, a privacy fence, large detached garage/workshop, one block from Chesapeake Bay in neighborhood with lots of trees. Reduced to $66,900. Call 247-5144.

CAR FOR SALE: 1986 Ford Crown Victoria, V-8, A/C, power brakes, locks, steering and windows. $2,800. Call Chace at 596-3196.

CAR FOR SALE: 1994 Plymouth Sundance Duster, white, two-door, hatchback, automatic transmission, anti-lock brake system, power steering and door locks, A/C, driver's airbag, am/fm cassette stereo, tinted windows, new battery, G-tires, 70,000 miles, runs great, asking $5,500. Call 868-0334 or pager, 884-6818.

HOUSE FOR SALE: Newmarket, vinyl siding, 1,109 sq.ft., 2 BR, 1 bath, garage, shed, elec. range, refrig., gas heat and hot water, washer & dryer, ceiling & attic fans. Completely renovated, large oak trees. $57,500. Available immediately. Call 380-6595 or 886-1900.

NASA SKI TRIP: The eighth annual Agencywide ski trip is scheduled for Jackson Hole, Wyoming, January 30 through February 6,1999. All NASA personnel, friends and family are welcome. Contact Michael Schooley at 874-2736 for additional information.

MANASSAS TRAVEL INC. : An American Express representative has held a limited number of staterooms aboard the Nordic Express, sailing on Oct. 12 from San Juan, Puerto Rico. Langley has the only rooms available on this cruise – all others have been sold out. The ship will offer a 4-day itinerary visiting the U.S. Virgin Islands and St. Maarten. The price is $881 per person, based on double occupancy, and includes roundtrip air from Norfolk to San Juan, the cruise, meals, entertainment and port charges. The full amount is due August 13. Call Dawn Feldhause at ext. 42101 for more information.

BIG BANDS AT BUCKROE: Every Sunday of the summer through August 30, 7 to 9 p.m. at Buckroe Beach Park, hear the sounds of yesterday. Bring lawn chairs/blankets for the free concerts. Food and beverages are available. Call 727-6429 for information.

BUCKROE MOVIE SERIES: Every Wednesday at 7 p.m. through Aug. 26, see a free movie at Buckroe Park. Bring blankets or lawn chairs. Food and beverages are available; picnickers are also welcome. Children's activities are part of the events. For movie schedule, call 727-6429.

LAA NEWS: Tickets! Raffle tickets are on sale now for the annual LAA Carnival, Aug. 21 and 22. Support the Langley Activities Association by purchasing a $1 ticket from one of the Carnival Monarchs or call ext. 46369. Cash prizes up to $1,000 will be given away. Volunteers are needed for the Carnival. To help, or for more information, call the LAA office at ext. 46369.
The LAA Name the Lounge contest continues. The entry deadline is July 15, and the prize is a card good for 100 beverages in the lounge. The winner will be announced at the Carnival Aug. 21. E-mail your lounge name suggestion to <d.a.snipes@larc.nasa.gov>

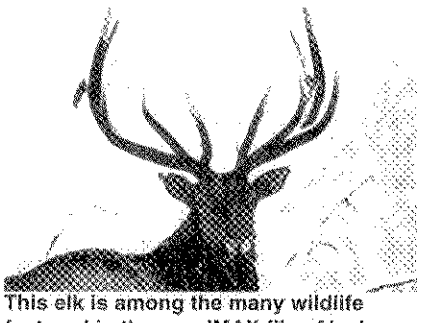
Virginia Air & Space Center Premiers "Alaska"

Cool off this summer with the new IMAX film, *Alaska: Spirit of the Wild*, premiering at the Virginia Air and Space Center July 16. Alaska is a place where one can rediscover a vitality and beauty vanishing from our lives. Travel to Alaska to experience the ultimate story of survival, where life triumphs against brutal cold conditions, with *Alaska: Spirit of the Wild*.

Virginia Air and Space Center
Hampton Roads History Center

Alaska: Spirit of the Wild is shown daily and Thursday through Sunday as part of the evening double feature with *EVEREST*. Visit the on-line IMAX schedule at <www. vasc.org>.

Call 727-0900, ext. 703 for advance reservations. IMAX admission is $5.50 for adults and $4.50 for NASA, seniors and children ages 3-11. The center is at 600 Settlers Landing Rd., Hampton. For information, call (757) 727-0900 or (800) 296-0800.



This elk is among the many wildlife featured in the new IMAX film *Alaska: Spirit of the Wild*.

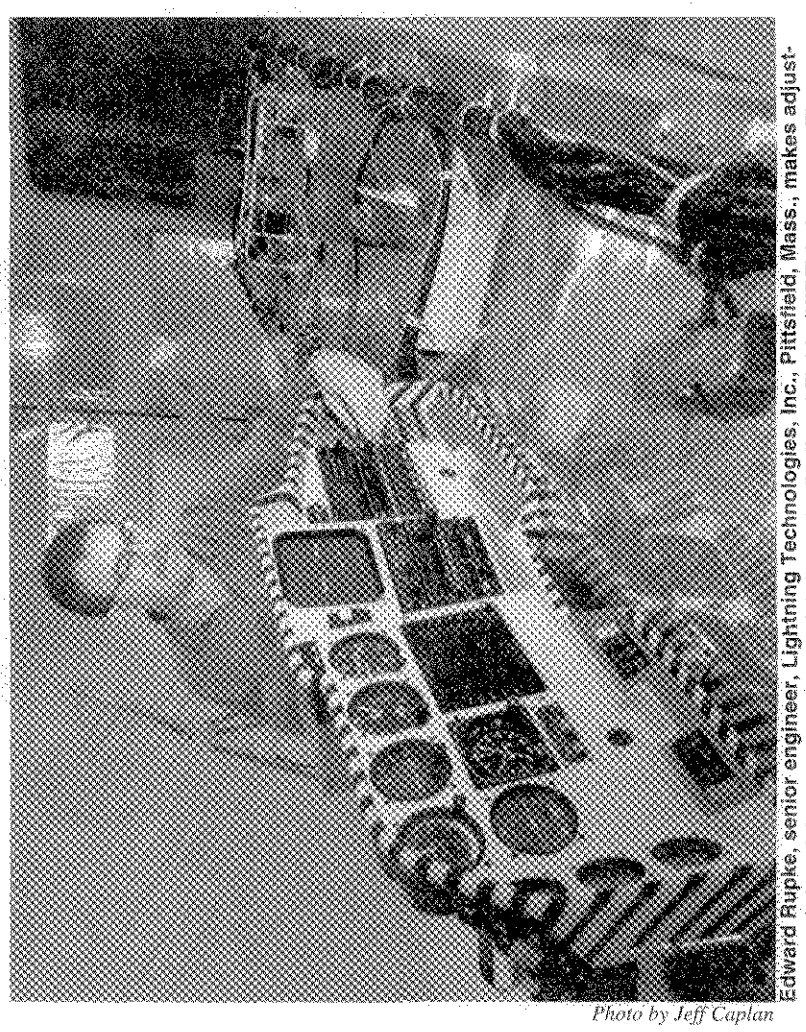


Photo by Jeff Caplan

Edward Rupke, senior engineer, Lightning Technologies, Inc., Pittsfield, Mass., makes adjustments to aircraft instruments in the High Intensity Radiated Fields (HIRF) Laboratory. The research tests the effects of electro-magnetic interference on aircraft electronic systems.

Researcher News

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News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 14 ❖ July 24, 1998

NASA Technology Gives Virginia Boy his First Day in the Sun

Langley Played Early Role

BY AUDREY SCHWARTZ RIVERS, JOHNSON SPACE CENTER, AND KEITH HENRY

Mikie Walker is ready to face the sun in his new "space suit." *Photo by Stuart Wagner, Richmond Times-Dispatch*

Like an astronaut setting foot on a new world, a six-year-old Virginia Beach boy can explore Earth during daylight for the first time, thanks to new NASA space suit technology.

On April 19, Mikie Walker became the first American child to receive a modified "space suit" that protects him from the sun's ultraviolet rays and other light sources. Mikie has porphryia, a genetic disorder that causes extreme and potentially dangerous sunlight sensitivity that can result in chronic skin inflammation, blistering, inflammation of nerves, abdominal pain and other disturbances. For some children with light sensitivity disorders, even a 40-watt light bulb can be dangerous.

"Mikie's new favorite outdoor activities include playing in dirt and rolling on the lawn," his mother Angela Walker said. "He enjoys this so much that, at the end of the day, he resembles a soil-encrusted Apollo moonwalker."

NASA's Johnson Space Center, Houston, Office of Technology Transfer and Commercialization offered the suit to Mikie through an agreement with the not-for-profit HED and Related Disorders Foundation, Hampton, Va.

John Samos and Thayer Sheets, Langley's Technology Transfer Office, were instrumental in supporting the creation of the foundation in the late 1980s when a local Hampton resident called NASA Langley for help. Confident that the agency that put men on the moon could solve any technical problem, Sarah Moody listened and learned about a decades-old space suit technology that she would later adapt for "cool suits" for kids.

"It's amazing to think that NASA astronauts having walked on the Moon means a child now can play in the sunlight," said Moody, founder and president of the HED foundation, which donates cooling gear and other garments to children with hypohidrotic ectodermal dysplasia (HED), multiple sclerosis, spina bifida, cerebral palsy and other genetic disorders. HED is a medical disorder characterized by a lack of sweat glands, which can lead to heat exhaustion, heatstroke and even death. Thirty children are on the foundation's waiting list for a suit like Mikie's.

The pint-sized space suit blocks nearly all of the sun's ultraviolet rays. Mikie sports an improved version of a prototype protective suit provided last September to four-year-old Kyle and two-year-old Ryan Richards of Shotton Colliery, England. The brothers have Polymorphic Light Reaction Syndrome, a serious allergy to light that causes severe skin lesions. Without the suits, the brothers could venture outside only at night. Last fall, the boys, who looked like junior astronauts, wore their protective suits to Disney World in Orlando, Fla., and also viewed a Space Shuttle launch at the Kennedy Space Center.

Thanks to the "expert" feedback provided by the Richards brothers, NASA developed an upgraded version of the protective garment. The suit's headpiece was redesigned totally to enhance ventilation and reduce overheating in the head area.

"The body cooling system was changed from a battery-powered liquid pump unit to a passive phase change vest, made of material similar to refrigerator cold packs used for sports injuries. The vest is simple, less expensive and more durable than the original battery pump," said Robert Dotts, assistant director, Technology Transfer and Commercialization at Johnson. "The new phase change vest is easier to use for both children and their families and brought down the cost of the entire UV suit," Dotts said.

MicroClimate Systems, Inc., of Sanford, Mich., supplied the phase change vest, and the Solar Protective Factory of Carmichael, Calif., provided the UV protective outer garments. The DRLI Company, which supplies protective coatings for astronauts' space suit helmets, supplied the clear UV-blocking coating for Mikie's ski-goggle-like face visor.

According to HED Foundation's Moody, who presented the NASA suit to the Walker family, a giggly Mikie couldn't wait to don his "space suit" and explore the outdoor world of his home planet in daylight. The family headed for a local lake and, also for the first time, Mikie could look at the scenery out the van's windows.

Previously, the passenger windows of any vehicle in which Mikie rode, had to be covered completely to prevent exposure to sunlight.

For more information about UV protective suits for children with applicable disorders, contact the HED Foundation at P.O. Box 9421, Hampton, VA, 23670, phone 757/826-0065, or check out the web site at: http://www.microclimate.com/hed/

August Colloquium Speaker Confronts Year 2000 Computing Crisis

Speaker Joel C. Willemssen will present the August colloquium, "Confronting the Year 2000 Computing Crisis," 2 p.m., August 11, at the H.J.E. Reid Conference Center.

How vulnerable are we to "calendrical catastrophe?" Find out about the current and future impact of Year 2000 (Y2K) compliance and catastrophes on federal agencies and the citizens they serve.

About the Speaker

Willemssen is the Director of Civil Agencies Information Systems at the U. S. General Accounting Office (GAO). He is responsible for GAO's reviews of information technology management at many of the federal government's major departments and agencies, including the Departments of Agriculture, Education, Energy, Health and Human Services, Housing and Urban Development, Interior, Labor, Transportation, Veterans Affairs; and Environmental Protection Agency and Social Security Administration. He frequently testifies on information technology issues before Congressional committees, appearing on more than 25 occasions, to date, during the 105th Congress. Willemssen joined GAO in 1979 and since that time has participated in and led numerous computer systems reviews at a wide array of federal agencies. His experience is predominantly in systems development, acquisition approaches, performance evaluation, systems maintenance, and Y2K.

Willemssen

Willemssen received bachelor's and master's degrees in business administration from the University of Iowa, and completed the executive level program in information systems at University of California at Los Angeles.

Tackling the Y2K Challenge

The U. S. General Accounting Office, the investigative arm of the Congress, has been actively involved in assessing the federal government's progress in addressing the year 2000 crisis and in offering recommendations to help address it. Willemssen, GAO's Director of Civil Agencies Information Systems, has testified on numerous occasions before congressional committees on this issue. His presentation will focus on guidance to organizations on dealing with Y2K, particularly with respect to business continuity and contingency planning and testing; the current status and future outlook for federal agencies' progress on Y2K; readiness status and prospects for the nation's key economic sectors; and recommendations directed to the chairman of the President's Year 2000 Conversion Council.

Sigma Series

A Sigma Series lecture on the same topic will be presented by Willemssen at 7:30 at the Virginia Air and Space Center, Hampton.

News Briefs

Around the Agency

EFFORTS TO RECOVER SOHO CONTINUE: Engineers are continuing efforts to reestablish contact with the NASA/European Space Agency (ESA) Solar and Heliospheric Observatory (SOHO) spacecraft using NASA's Deep Space Network (DSN). Contact with SOHO was lost on June 24 during maintenance operations. Engineers are concentrating on gaining a full understanding of the events which led to the loss of signal, information which might help them devise procedures which may recover contact with SOHO. Commands are being sent to SOHO about once per minute through the DSN's 34-meter antennas instructing the spacecraft to activate its transmitters.

NASA AWARDS MORE SHUTTLE WORK TO USA: Johnson Space Center, Houston, has modified its contract with United Space Alliance (USA) of Houston to include more than $900 million in work on the Space Shuttle's solid rocket booster and other shuttle elements. USA is the prime contractor for the space shuttle fleet operations. The performance period runs through Sept. 30, 2002.

SATELLITE DATA SHOW RETREAT OF EL NIÑO: New sea surface height measurements taken by the ocean-observing TOPEX/Poseidon satellite show the equatorial Pacific in a state of flux with the warm, high sea level El Niño-spawned waters in retreat and areas of colder, low sea level waters on the increase. The 1997-98 El Niño has been the strongest ever recorded. A "La Niña" (Spanish for "little girl") is essentially the opposite of an El Niño. The trade winds are stronger than normal and the cold water normally found along the coast of South America extends to the central equatorial Pacific. La Niña also changes global weather patterns, resulting in less rain along the coasts of North and South America. TOPEX/Poseidon will be able to track a potentially developing La Niña.

LATEST FINDINGS – MARS PATHFINDER: A year after the landing of Mars Pathfinder, mission scientists say that data from the spacecraft paint two strikingly different pictures of the role of water on the red planet, and yield surprising conclusions about the composition of rocks at the landing site. "Many of the things that we said last summer during the excitement after the landing have held up well," said Dr. Matthew Golombek, Pathfinder project scientist at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "But we have now had more time to study the data and are coming up with some new conclusions." Several clues from Pathfinder data point to a wet and warm early history on Mars. Magnetized dust particles and the possible presence of rocks that are conglomerates of smaller rocks, pebbles and soil suggest copious water in the distant past. In addition, the bulk of the landing site appears to have been deposited by large volumes of water, and the hills on the horizon known as Twin Peaks appear to be streamlined islands shaped by water.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>

Announcements

Letters

Alumni Association Newsletter

From Bert Rockey: "Thanks to all of you for sending in your dues. The letter sent by the director of secretarial services, Charlotte Tyeryar, seems to have helped. Our membership director, Mary Mesic, and her staff are updating the records. Please allow a little time for processing. We appreciate the contribution from Stefan Cavallo.

"Alumni Association vice president, Steve Devan, has a good program series lined up for the rest of the year.

"The association treasurer is looking for records and information regarding incorporation. Those with records/information, please let me (Bert Rockey) know, by calling 864-7330."

Thank You Note

From Jerry N. Hefner: "My family and I would like to extend our sincere thanks and appreciation to my friends and co-workers here at Langley for the prayers, cards, notes, flowers and other expressions of sympathy that you sent to us following the death of my mother on June 20. Your actions have made this very difficult time much easier to endure. God bless each of you."

In Memoriam

Alfred E. Alexander

Alfred E. Alexander, 91, died Tuesday, July 7.

He began working for the National Advisory Committee for Aeronautics in 1930, NASA's forerunner, and retired in 1963.

Kenneth S. Bates Sr.

Kenneth Scott Bates Sr., 79, died Sunday, June 28. He retired from Langley's Analysis and Simulation Branch in 1983 after 42 years.

William C. Cardwell

William Custis "Billy" Cardwell, 65, died Saturday, July 11. A native and lifelong Peninsula resident, he worked at Langley and Newport News Shipbuilding before founding Cardwell Printing in 1977.

Geraldine N. Pardue

Geraldine N. Pardue

Geraldine Nichols Pardue, 59, died Saturday, July 11.

Born in Richmond and raised in Hampton, Gerri was a graduate of Hampton High School and Thomas Nelson Community College.

Gerri began working at Langley in 1985 as a secretary. Her latest position was in the Advanced Subsonic Technology Program Office (ASTPO). She was an active member of Langley's Satellite Committee for People with Disabilities (SCPD) and the Center's Disability Program Advisory Council (DPAC).

She is survived by her husband, Richard, and ten daughters, 22 grandchildren and two great-grandchildren.

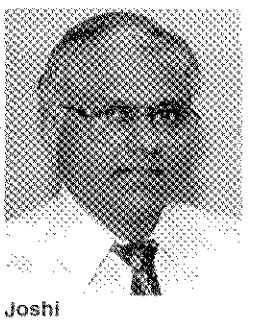
Sam Morello, head of ASTPO, and Gerri's supervisor, said, "Gerri was one of the most positive people I have ever worked with. She looked for ways to improve both the organization and herself. She always was willing to lend a hand to her co-workers."

"Gerri was a prime mover in the Center's Disabilities program," said Milton Holt, Flight Electronics Technology Division, and DPAC chairman. "Without her efforts much of the progress we have made at the Center to help the disabled would not have occurred in such a timely manner. She was passionate about this program, and we will greatly miss her enthusiasm and dedication."

SBIR Workshop Announced

A Small Business Innovation Research and Development (SBIR) Workshop will be held Sept. 23 and 24 at Virginia Polytechnic Institute and State University. Learn how to obtain grant money for research using SBIR and other government programs.
To register to attend or to purchase booth space to exhibit, call K.C. Das at (804) 698-4184.

Joshi Elected ASME Fellow



Joshi

Dr. Suresh M. Joshi, senior scientist in the Flight Dynamics and Control Division, has been elected to the Fellow grade of the American Society of Mechanical Engineers (ASME). The ASME, founded in 1880, is one of the oldest engineering societies in the world, with nearly 125,000 members worldwide. Fellow is the highest elected grade of membership, and recognizes exceptional engineering achievements and contributions to the engineering profession. Notably, this is the third Fellow honor for Joshi, who has also been recognized as a Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and of the Institute of Electrical and Electronics Engineers (IEEE).

Joshi received his doctorate in electrical engineering from Rensselaer Polytechnic Institute, Troy, N.Y. He started his Langley career in 1983. Prior to that, he was a National Research Council research associate and a research professor with Old Dominion University. Joshi is internationally recognized for his research on robust control, stability theory and applications to advanced aerospace systems.

During the early 1990s, Joshi served as a key technical leader in the Analytical Design Methods Team of Langley's Controls-Structures Interaction (CSI) Program. His present research addresses multivariable control theory and its applications to advanced aircraft.

His publications include two books and more than 140 technical papers and reports. He also co-edited three books published by the ASME, and was the recipient of a number of awards including Langley's Dual Career Ladder Award, a Floyd Thompson Fellow award and the 1995 IEEE Control Systems Technology award. He is listed in a number of biographical publications.

Disability Program Manager Announced

BY JEANE C. SHANKS

Rankin

Geraldine (Gerri) M. Rankin was recently selected as Langley's new Disability Program Manager in the Office of Equal Opportunity Programs (OEOP). Rankin worked for years with the previous manager, Diane Forrest, who retired in April.

"My primary program goals are to promote the recruitment and hiring of individuals with disabilities, to continue to provide accommodations to Langley's disabled, and insure that facilities are accessible," Rankin said. "I want to encourage a greater awareness for students with targeted disabilities, particularly those in secondary grades and high school, to math and science careers."

"With this in mind, I will continue community outreach activities like the recent visits of computer campers sponsored by The United Cerebral Palsy Foundation," she said.

She will continue to coordinate the Summer Scholars Program. The program involves about 20 students each sum-

Continued on Page 5

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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..... Ann C. Gaudreaux
Science and Technology Corp.

Assistant Editor..... Jeane Shanks
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.

Nominees Sought: Federal Laboratory Consortium Awards for Excellence in Technology Transfer

The 1999 Federal Laboratory Consortium (FLC) Awards for Excellence in Technology Transfer recognizes laboratory employees who have accomplished outstanding work in the process of transferring a technology developed by a federal laboratory. It is important to understand that these awards are specifically for transferring technologies; they are not given for a research effort — no matter how innovative it might be. To determine this difference, consider the following questions.

– Is the technology being used by industry or state/local government?

– How have nominees been involved in transferring the technology to those users or applications:

- by making linkages?
- by adapting the technology?
- by arranging a collaboration based on a laboratory technology?

– Have any of the results been licensed?

All submissions for the FLC Awards must be received by August 26. Thirteen complete sets of each nomination (one original and 12 copies) must be received by the due date. To download the award forms from the internet, simply point the browser to www.federallabs.org/awards/download/forms.htm and follow the instructions provided.

Please submit nominations to Sherry Sullivan, Mail Stop 200. If you have any questions, Sullivan can be reached by e-mail at s.l.sullivan@larc.nasa.gov or by phone at 864-2556.

TAG Announces Forum: The Changing Face of Langley's Commercialization Program

The Technology Applications Group (TAG) will host a forum entitled "The Changing Face of Langley's Commercialization Program – How it Affects You," August 13, from 9 to 11 a.m., in the H.J.E. Reid Conference Center.

Each year, the work of Langley's scientists, engineers and technicians results in hundreds of discoveries and inventions. The actions that you take in disclosing your discovery will determine whether or not the Center, the American business community and you will further benefit from your innovations.

After a brief presentation about how Langley has changed its approach to technology commercialization, including a discussion of the desired cultural changes needed to make the program even more successful, there will be an open Question & Answer session. TAG staff members will be on-hand to answer questions from the floor.

Some general questions that will be addressed include:

- Will the patent process interfere with my publishing my research?
- Must my invention be related to my work at Langley?
- How do potential industry partners find out about my invention?
- When should I submit an invention disclosure to TAG?
- Other than filing an invention disclosure, what will be my involvement in the technology transfer process?
- How are the invention's royalties divided?

Employees are also invited to submit any questions in advance of the forum by e-mailing questions to Sherry Sullivan, <s.l.sullivan@larc.nasa.gov>.

Langley Helps Present Aviation Report Card

BY KEITH HENRY

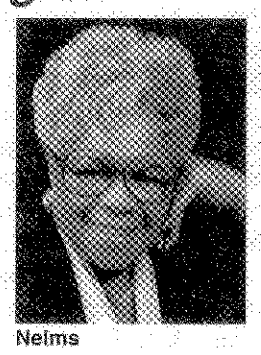
NASA will report on progress toward 10 ambitious aviation and space technology goals at the Experimental Aircraft Association (EAA) air show and fly-in to be held in Oshkosh, Wisc., July 29 to Aug. 4.

The "Three Pillars for Success" goals, introduced last year, focus on developing technologies for a safer, cleaner, more affordable global aviation system; sustainable growth in aviation products and services; and affordable access to space.

The goals are the subject of an extensive NASA exhibit and a more narrowly-focused news briefing, both heavily supported by Langley, that will report on progress toward general aviation (small aircraft) revitalization. The general aviation goal includes making personal air travel as easy, cheap and safe as travel by car.

Women's Equality Day Program

The annual Women's Equality Day Program and FWPC Award ceremony will be Thursday, August 6, at 1 p.m. at the H.J.E. Reid Conference Center. The guest speaker will be Dorothy Nelms, president of Federally Employed Women, Inc. This year marks the 150th anniversary of the Women's Right Movement. Please join the Federal Womens Program Committee in celebrating this special event.


Nelms

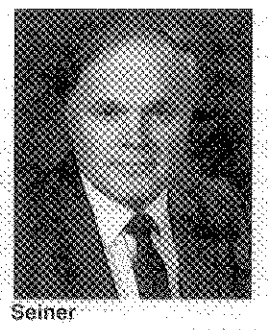
For more information, call Jackie Smith, ext. 43003, or Patsy Campbell, ext. 43291.

AIAA Honors NASA Scientist

BY JACK PREISSER

Dr. John M. Seiner, leader of the Jet Noise Team, Aeroacoustics Branch, is the 1998 recipient of the American Institute of Aeronautics and Astronautics (AIAA) Aeroacoustics Award.

The award was presented at a ceremony during the Fourth Annual AIAA/CEAS Aeroacoustics Conference in Toulouse, France. CEAS is the Confederation of European Aerospace Societies. The award is given annually for an outstanding technical or scientific achievement resulting from an individual's contributions to the field of aircraft community noise reduction.


Seiner

The citation for the Aeroacoustics Award read: "In recognition of outstanding contributions to the fundamental understanding, prediction, and control of subsonic and supersonic jet noise."

The award was an engraved bronze medal, a citation certificate and a rosette pin.

Seiner is internationally recognized for his pivotal contributions to the science of supersonic jet noise reduction technology. In addition, he plays a key role in shaping the nozzle acoustics part of NASA's High-Speed Research Program and the Advanced Subsonic Technology Noise Reduction Program.

Seiner is an Associate Fellow of the AIAA, and has presented numerous papers at standing-room-only AIAA sessions. He served as chairman of the AIAA's Aeroacoustics Technical Committee from 1995 to 1997.

He received at bachelor of science degree from Drexel University and a master of science degree and doctorate in aeronautical engineering from Penn State University.

AvSP Forges Alliance with AEREA

BY KATHY BARNSTORFF

NASA's Aviation Safety Program (AvSP), headquartered at Langley, has established global ties.

AvSP hosted a delegation from the Association of European Research Establishments in Aeronautics (AEREA) earlier this month.

The seven members from laboratories in the Netherlands, Sweden, England, France, Germany and Italy toured not only Langley, but also NASA Headquarters, Lewis Research Center, Cleveland, Ohio, and Ames Research Center, Moffett Field, Calif.

"We believe there is ample opportunity for cooperation with NASA," said AEREA Coordinator Dr. Adriaan deGraaff during his visit here.

The researchers were given presentations about AvSP programs including aviation weather, crashworthiness, human factors and system monitoring and analysis.

They also toured Langley facilities that do research in aging aircraft, impact dynamics and high intensity radiated fields.

But all agreed one of the highlights of their U.S. trip was Langley's community luncheon with astronaut Franklin Chang-Diaz and astronaut candidate Leland Melvin.

The AEREA visit came less than six months after a NASA/FAA delegation, including AvSP director Michael Lewis, toured several European aeronautics research agencies.

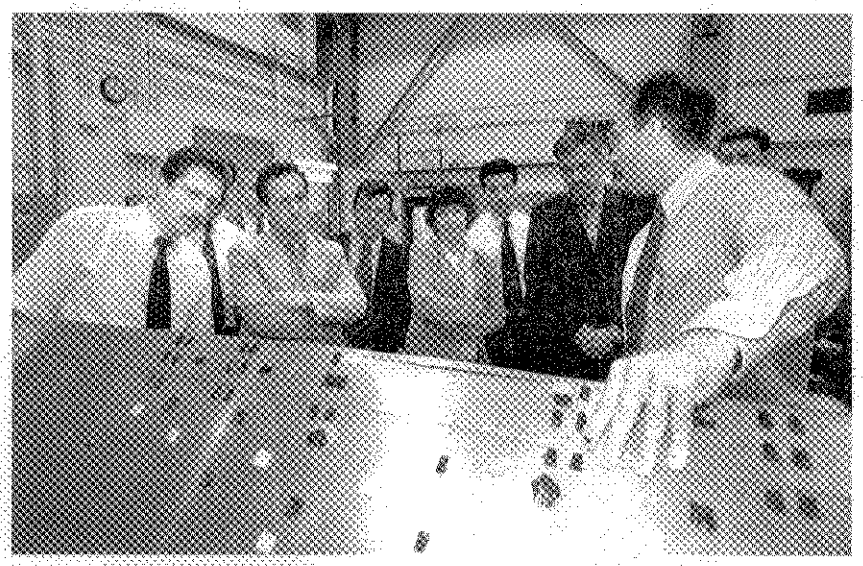


Photo by Jeff Caplan

Langley materials research engineer Dr. Dave Dawicke explains nondestructive evaluation techniques to AEREA visitors. Those techniques have been tested for use in inspecting aircraft for fatigue cracks. From left, they are Dr. Karlheinz Haag, German Aerospace Center, Giuseppe Verde, Italian Center for Aerospace Research, Dr. Karl Fredrik Nilsson, Aeronautical Research Institute of Sweden, Christiane Michaut, National Office of Aeronautical Studies, France, Michel Piers, National Aerospace Laboratory, the Netherlands, Dr. Adriaan deGraaff, National Aerospace Laboratory, the Netherlands, and Dawicke from Langley.

Pre-Service Teacher Institute Trains Future Educators

BY DONNA POLAND AND BRIAN SUTTON

In the climate of educational reform, the role of science curriculum and instruction becomes a primary concern to improve science education. The science community and various professional organizations have developed national science standards to assist in the structuring of science curriculum and instruction.

While many of these recommendations deal specifically with science content, several recommendations address the need for an integrated approach to learning and problem-solving as well as science process skills.

Training Pre-Service Teachers

A recent initiative by Langley's Office of Education and Norfolk State University strives to provide pre-service teachers with an awareness of the integration of math, science and technology use throughout NASA facilities, the wealth of integrated curriculum resources available from NASA and a greater understanding of problem-based approaches to learning.

Woven throughout the Pre-Service Teacher Institute experience is the adherence to the understanding and use of the national science standards in the development and selection of curriculum materials and resources. The content used during the institute centers around aspects of general aviation and aerospace, with appropriate connections to math, science and technology.

"I think this program has potential benefit for the students, for their states when they go back and teach, and for the country at large," said George Reece, NASA Headquarters associate administrator for Equal Opportunity Programs, program funding source.

The program is the first and only kind of pre-service teacher program that has such magnitude. The first session was in May, the second in June, and the final session in July.

Each of the two-week institutes drew participants from minority universities on the east coast to Langley. During their stay, participants experienced an array of NASA-developed materials, and explored its resources and technologies, both on-line and on Center, and became aware of the problem-solving skills and strategies to make students productive citizens.

Field Trips Included

A trip to the model shop enabled participants to see the applications of science and math in the construction of air transport models. The trip stressed the importance of teamwork in generating ideas and problem-solving.

An outing to Skyworld Flight Training Center at Newport News-Williamsburg International Airport gave teachers first-hand experiences in general aviation. The staff gave instruction in fight simulators, navigational techniques, control tower operations and a final flying experience in a Cessna 172-Skyhawk.

In the classroom, participants learned the importance of the experimentation process using the CONNECT series materials, a Langley-developed curriculum resource.

The institute also brought in guest speakers from both the educational and scientific communities. While education speakers stressed the importance of educational practices and national science standards, speakers from the science community illustrated how these practices transferred to the real-world of science and business.

"The Pre-Service Teacher Institute provides NASA with a future opportunity to encourage and enrich the minds of young children to pursue mathematics, science and technology information and careers," said Roger Hathaway, University Affairs officer for the Office of Education.

Photos by Donna Poland

At Langley's Pre-Service Teacher Institute, Dr. Cassandra Combs, left, and Tony Ducal, far right, demonstrate volcanic eruptions and magma flow using a Jello mold.

Small Disadvantaged Business and University Opportunities Forum Held at Langley

BY BRIAN SUTTON

Representatives from small disadvantaged businesses and minority-serving universities and colleges around the nation converged on the Center for Langley's annual Small Disadvantaged Business and Universities Opportunities Forum, July 22 to 24.

There were three purposes of the "Building America's Technology Workforce" forum. One was to advance the high-tech capability of small disadvantaged businesses in the NASA aeronautics program. The forum also provided strategies for participation in technology transfer and commercialization activities and a better understanding of research opportunities available at Langley.

The forum gave these institutions a chance to come in contact with top level management and technical and procurement personnel. The forum benefits NASA as a whole.

"The forum insures continual commitment to the agency's socioeconomic initiatives," said Vernon Vann, Small Business specialist and head of the Acquisition Support Branch. "It heightens the awareness of senior-level technicians, managers of the extent to which small businesses and small disadvantaged businesses possess capability in high-tech areas relevant to aeronautics contracting and subcontracting opportunities."

The first day of the forum included a full range of presentations by universities, NASA groups and industry.

Universities making presentations were Hampton University, Norfolk State University and North Carolina A&T University.

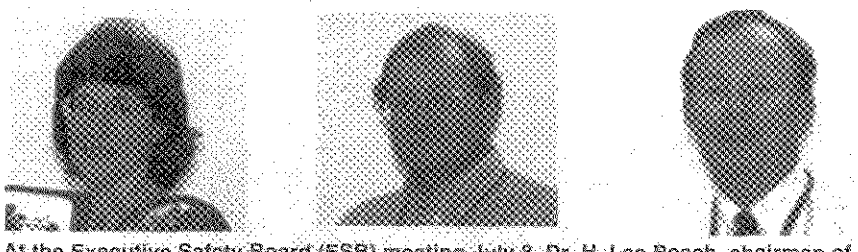
Presentations from Langley were given by the Space and Atmospheric Sciences Program Group, the Research and Technology Group, the Airframe Systems Program Office and the Technology Applications Group.

Other presenters included Dr. Robert Templin, of Virginia's Center for Innovative Technology (CIT), the Caelum Research Corp., Eagle Aeronautics, Inc., Strategic Technology Institute, Inc. and the AYT Corporation.

The luncheon speaker for the first day of the forum was Terry Riley, executive director of the Hampton Roads Technology Council.

The second day of the forum consisted of technical discussions and an afternoon tour of the Center, and technical presentations wrapped up the final half-day.

OSEMA Presents Safety Awards



At the Executive Safety Board (ESB) meeting July 8, Dr. H. Lee Beach, chairman of the ESB presented Quarterly Facility Safety Awards to Catharine Schauer, Raymond Scholz and Alan Henderson. Bert Garrido, below left, director of the Office of Safety, and Mission Assurance (OSEMA), presented Beach with a certificate thanking him for his efforts on behalf of the ESB during his tenure as chairman.

Community Corner — Quest for the Cure

BY SANDRA LEMONS

The Leukemia Society of America, Inc. is a national voluntary health agency dedicated solely to seeking the cause and eventual cure of leukemia, lymphoma, multiple myeloma and Hodgkin's disease. The organization was established in 1949, and became the Leukemia Society of America in 1967 in recognition of its national scope.

Community Service

The society conducts a two-way communications program with the local social service agencies and treatment facilities to provide resources and referrals for patients and their families. Local chapters also interact with government, health departments and family assistance groups to provide help to patients when needed.

How You Can Help

The Leukemia Society of America is a great opportunity for anyone who has office skills, or telephone skills, an ability to plan special events, or simply the desire to help. For instance, Project SHARE LIFE is carried out in conjunction with the National Marrow Donor Program to recruit more potential marrow donors for the national registry. Donors and volunteers are essential in keeping this project in operation. To learn how you can become a volunteer, contact Lisa Morgan of the Virginia Chapter at (757) 838-9351.

NASA Langley Awards New Business Incubator

BY DON NOLAN-PROXMIRE

NASA Langley has awarded a cooperative agreement to establish a high-technology business incubator at the Center, one of three announced by the Agency.

The other cooperative agreements were awarded by Goddard Space Flight Center, Greenbelt, Md.; and by the Jet Propulsion Laboratory (JPL), Pasadena, Calif., combined with Dryden Flight Research Center, Edwards, Calif.

The Langley award is to the Virginia Center for Innovative Technology. Team members include Christopher Newport University; Hampton Roads Partnership; Hampton Roads Technology Council; Hampton University; Mentor Technology Ventures; Norfolk State University; Small Business Development Center of Hampton Roads; and the College of William and Mary.

Goddard awarded the second new high-technology business incubator to a team led by the Maryland Economic Development Corporation. Team members include the Emerging Technology Center of the Baltimore Development Corporation; University of Maryland, Baltimore County; the Johns Hopkins University; the Morgan State University (Clarence M. Mitchell Jr. School of Engineering); the University of Maryland; The Abell Foundation; and the CAN Company.

The third new high-technology business incubator award was made by the NASA Management Office at the Jet Propulsion Laboratory and by the Dryden Flight Research Center to the California State Polytechnic University, Pomona, Calif. The university will build upon the ongoing success of the Pomona Technology Center, an independently developed incubator, located in the technology park on university land.

These business incubators will provide U.S. start-up or small existing high-technology firms and U.S. educational institutions with a wide array of critical business development support services for the primary purpose of commercially applying NASA technology. Each new business incubator will receive funding from NASA in the amount of $400,000 per year for fiscal years 1998 and 1999, and will in turn match (or exceed) NASA's contribution through cash or in-kind funding from non-federal sources.

In addition to the establishment of these three new business incubators at NASA centers, funds also were provided, based on program guidelines, to the six existing NASA incubators to enhance services to incubator firms. The existing NASA-sponsored incubators include: Ames Research Center, Moffett Field, Calif.; Johnson Space Center, Houston, Texas; Kennedy Space Center, Fla.; Lewis Research Center Cleveland, Ohio; Marshall Space Flight Center Huntsville, Ala.; and Stennis Space Center, Pearl River, Miss.

With the addition of the three new NASA business incubators to the existing six, NASA now has in place a nationwide resource to expand the growing high-technology interests of small businesses and educational institutions. Further information on these awards can be obtained through the following e-mail address: <c.l.allen@larc.nasa.gov>.

Shakespeare Plays at W&M this Summer

The 1998 Shakespeare Festival at William and Mary features two plays this summer, "Romeo and Juliet" and "Measure for Measure." The show dates are:

- Romeo and Juliet – Sat., July 25, 8 p.m., Wed., July 29, 8 p.m., Fri., July 31, 8 p.m., and Sun., August 2, 2 p.m.
- Measure for Measure – Fri., July 24, 8 p.m., Sun., July 26, 2 p.m., Tues., July 28, 8 p.m., Thurs., Ju-ly 30, 8 p.m., and Sat., August 1, 8 p.m.

Tickets are $12 per person for each showing, or $20 per person for both plays. The performances are at the Phi Beta Kappa Hall at the college. Contact the box office at (757) 221-2674 for tickets and information.

Runners Club Announces 1997 Runner of the Year

The results from the 1997 NASA Intercenter Competitions have been tallied. John Hoppe, Acoustic, Optical and Chemical Measurement Branch was named the 1997 Langley Runner of the Year. This is the fourth straight year Hoppe has won the title. He also won the title in 1978. Hoppe earned 56.64 points by winning his age group in all four races of the 1997 Spring and Fall NASA Intercenter Races. His times were 41:12 and 41:11 in the 10-K and 12:26 and 12:12 in the 2-Mile.

Steve Sudik, UNISYS Corp., placed second with 44.64 points and Al Graham, Crew Systems and Operations Branch, was third with 38.14 points.

Others in the top 10 were Don Brown, 32.64; Pat Parker, 32.48; Bernice Becher, 26.32; Scott Bartram, 24.32; Jan Spangler, 23.82; David Witte, 21.64; and Robert Mitcheltree, 18.98.

For more information about the Langley Runners' Club call Richard Shearer at ext. 47036.

GWU Announces Fall Registration in August

The George Washington University/NASA Langley's Joint Institute for Advancement of Flight Sciences (JIAFS) has announced its 1998-99 academic year class schedules. Courses lead to master of science and doctor of science degrees in aerospace and mechanical engineering.

Registration for the fall semester is from August 10 to 21. For detailed information about master's, professional and doctoral degree studies and for applications for admission, contact: The George Washington University – JIAFS, Mail Stop 269, (757) 864-1982 or e-mail <jiafs@seas.gwu.edu> They are on the web at <http://www.seas.gwu.edu/seas/jiafs>

Yue Wins 1998 NASA Scholarship

Joyce Won-Kai Yue, daughter of Dr. Glenn K. Yue, Aerosol Research Branch, and Helen Yue, SAIC, is the recipient of a 1998 NASA Scholarship.

Yue graduated from Poquoson High School in June with straight As. She was enrolled in several honors and advanced placement math and science classes that netted her 18 college credit hours with a GPA of 4.0. She graduated as valedictorian in her class and plans to major in biology. Yue received numerous academic honors including second and fourth place awards at the International Science and Engineering Fair and many awards at national and state science and engineering fairs, U.S. Navy and Army Scientific Achievement Awards, U. S. Army and Air Force Scientific Medallion Award, National Council of Teachers Mathematics Award, first place awards in categories such as chemistry, physics and mathematics.

While attending the New Horizon Governor's School for Science and Technology, Yue also received the Bausch and Lomb Honorary Science Award as most outstanding junior and the Best Mentorship Research Project Award. At school, she received the Excellence in English Award, Excellence in Chemistry Award and the Tandy Technology Student Award. She attended the National Science Foundation's Young Scholars program and Virginia Governor's School for Science, and received first place at the Peninsula Piano Olympics and Virginia Peninsula Engineer's Club Outstanding Science Student Award.

Yue was involved in numerous school activities including treasurer of National Honor Society, secretary of Mu Alpha Theta, historian of Future Homemakers of America and a member of the International Club. After-school activities included a mentorship at Langley, a summer volunteer at a medical center and a local retirement home, a church pianist and a tutor.

"We are very grateful to many co-workers at Langley because in the past two years, Joyce has had the opportunity of conducting research here through the New Horizons Governor's School mentorship program," Dr. Yue said. "Her research results have contributed to her many awards including winning this prestigious NASA Scholarship."

Yue will attend Virginia Commonwealth University under the Guaranteed Admissions Program to the Medical College of Virginia.

NASA Scholarships are awarded annually to qualified dependents of NASA employees Agencywide. The scholarship fund began with a gift from the late Pulitzer Prize-winning author James Michener. His reason for the gift was NASA's good work and the importance of promoting education.

Photo by Paul Bagby

Joyce Yue receives a plaque from Dr. Jerry Creedon, Center director, after being named the recipient of a 1998 NASA Scholarship. With them are her mother Helen Yue, SAIC, left, and father, Dr. Glenn Yue, right, Aerosol Research Branch.

1998/99 Concert Schedule – Williamsburg Library

Who says a library has to be quiet? The Williamsburg Regional Library (WPL) has offered an extensive series of folk and jazz concerts in its Arts Center Theatre for more than 16 years. The series is known for introducing new artists to area audiences while highlighting the accomplishments of Grammy-winners and other performers. This year's season is no exception.

More music dates will be added in the coming months, including dates for the popular jazz series. For details on these concerts and to keep up with WPL's schedule check the website at www.wrl.org where you'll also find hyperlinks and a host of other resources for all ages. For ticket reservations, directions or other information, call (757) 259-4070.

Rankin . . .

Continued from Page 2

mer from Spelman and Morehouse Colleges and Florida A & M University, and their 22 Langley mentors. She began her Langley career in 1988. Before that, Rankin served in the U.S. Air Force as a race relations counselor at Plattsburgh Air Force Base, N.Y.; as an administrative spec-ialist with the Langley AFB Security Police; and as a medical secretary at the Hampton Veterans Administration Hospital.

Rankin is pursuing a bachelor's degree in human resources administration at Saint Leo College. She attended Tougaloo College in Miss. and the University of Maryland while stationed in Germany. She received numerous awards and citations, including special achievement awards while in OEOP for her work with the disabled.

AdVentures

RIDE NEEDED: Seeking car or van pool from Williamsburg. Call Raul Mejia at ext. 43485, (757) 221-0269, or e-mail <r.e.mejia@lurc.nasa.gov>

CAR FOR SALE: 1992 Ford Taurus GL, 3.8L V6, A/C, power brakes, locks, steering and windows. $5,000. Call 869-8472.

FOR RENT: Large 1 BR condo in Oyster Point area, all appliances, fireplace and deck, available immediately. $500/mo. Call 1-804-550-1823.

NASA SKI TRIP: The eighth annual Agencywide ski trip is scheduled for Jackson Hole, Wyo., Jan. 30 through Feb. 6, 1999. All NASA personnel, friends and family are welcome. Call Michael Schooley at 874-2736 for more information.

HOUSE FOR SALE: Denbigh/Ft. Eustis. 3BR, 1.5 bath, new paint/carpet. Great room, fireplace, fenced wooded yard, gas heat/hot water, garage, deck. Minutes to I-64, Newport News Park. Priced at $98,500. Call 874-0408.

HOUSE FOR SALE: 3 BR, 2-1/2 baths, Beach Road Estates, Hampton. 10 min. from Langley, near beaches. $107,500. Call 850-8189.

FOR RENT: Marlbank Cove. lg. yard, deck, garage, family room, fireplace. 4 BR, 2-1/2 baths, living/dining rms., $1,500/mo., call 875-1169.

FOR SALE: Two metal shelves, 6 x 32 x 16". $30 ea., small Morris & Lee Tesla coil, make offer. Bike rack with trailer hitch-type mount, holds 1-3 bikes. $100, call 640-0141.

CAR FOR SALE: 1994 Plymouth Sundance Duster, 2-dr, hatchback, auto trans., anti-lock brakes, am/fm cassette stereo. $5,500. Call 868-0334.

HOUSE FOR SALE: Newmarket, 2,200 sq. ft., 8 rooms, 2 baths, garage, refrig. gas/elec heat, elec. water heater, $69,900, available now. Call Edythe at 886-1900.

NEEDED: Two Swedish grad students need rooms/apt. near Langley for six months. Call Andrea at 930-0005 or ext. 47506.

LANGLEY ACTIVITY ASSOCIATION NEWS:

• Volunteers Needed: The annual carnival is Fri., Aug 21 from 5 to 10 p.m. and Sat., Aug. 22 from noon to 10 p.m. Volunteers are needed to help make this year's carnival a success. A few hours of time would help. Please contact the LAA office at ext. 46369.

• Crafters wanted for this year's carnival. If you have a special craft and need space to sell items, call the LAA office. The carnival will be a great place to shop while the kids enjoy a day of fun with games, rides and entertainment. Food, bingo, a casino, food, shows and demonstrations are planned. Bring the family.

• Carnival raffle tickets are on sale now for $1. Prizes include $25 every half hour during the carnival and grand prizes of $250, $500 and $1,000 given away each night. Winner need not be present for grand prizes. There are four Carnival Monarch candidates, and they need your help to win and be crowned. Contact your favorite candidate to purchase tickets: Karen Rediske, EG&G, at ext. 42622; Keisha Armistead, Office of Human Resources, at ext. 41003; Stephanie Horvath, Models and Materials Technology Branch, at ext. 42771; or Jennifer Hubble, Atmospheric Sciences Division, at ext. 45380. Stop by the LAA lounge on Mondays and Tuesdays, 4 to 6 p.m., July 13 – Aug. 17 for Raffle Ticket Rally Hour. Purchase a beverage for 50 cents for each raffle ticket you buy in the lounge.

• BINGO: Every Thursday night beginning at 7 p.m. Cash prizes.

• Country Western line dancing will be held Sat., July 25; $3.50 cover for 16 years old and up. Lessons at 7 p.m., dancing at 8. Bring a friend. Call ext. 46369 for more information about these activities.

• NASA Day at King's Dominion is Sat., Aug. 1, 1998. Tickets are now on sale at the LAA office, not available at the Exchange Shop.. Price for adults (13 and up) is $24, children (12 and under) are $20. A free meal will be provided. at Kings Dominion picnic pavilion. Contact the LAA office at ext. 46369 to purchase tickets.

LAA AEROBICS CLUB: An air-conditioned gym sure beats working out in the heat! All classes are low-impact with traditional low-impact on the floor or step/bench aerobics. Saturday classes use Resist-A-Ball for targeting abdomen and back strengthening. To join the LAA Aerobics Club in July, some special classes are planned for both beginners and advanced steppers on Tuesday, July 28, called Double Bench. Sign-up in advance, so the right number of benches are set up in the gym. For more information, and upcoming class schedules, call ext. 42295 or 47520.

MANASSAS TRAVEL, INC., has held some staterooms aboard the Nordic Express sailing on Oct. 12, 1998 from San Juan, Puerto Rico. Price is $881 per person, with full amount due Aug. 13, and includes round-trip air meals, entertainment and port charges. Call Dawn Feldhause at ext. 42101 for more information.

Center Snapshots

Photo by Jeff Caplan

Tyler Ryan, age 6, of Langley's Camp Lunar summer camp, gives a high-five to Astronaut Franklin Chang-Diaz July 7. Chang-Diaz was on Center to deliver a colloquium talk but took time from his schedule to meet with the children. He told the Langley summer campers that his dream to become an astronaut began when he was only 6 years old. Now a veteran of six space shuttle missions, Chang-Diaz encouraged the campers to become interested in space exploration and, in particular, to a human mission to Mars.

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Researcher News

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Langley Research Center

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Volume 12 ❖ Issue 15 ❖ August 7, 1998

Light Plane Technologies Coming to Market – Award Winners Named

FROM NASA HEADQUARTERS RELEASES

The government-industry effort to revitalize the U.S. light airplane industry is rapidly turning promises into accomplishments. Leaders of both the Advanced General Aviation Transport Experiment (AGATE) consortium and the NASA General Aviation Propulsion (GAP) program are reporting impressive progress on a broad front.

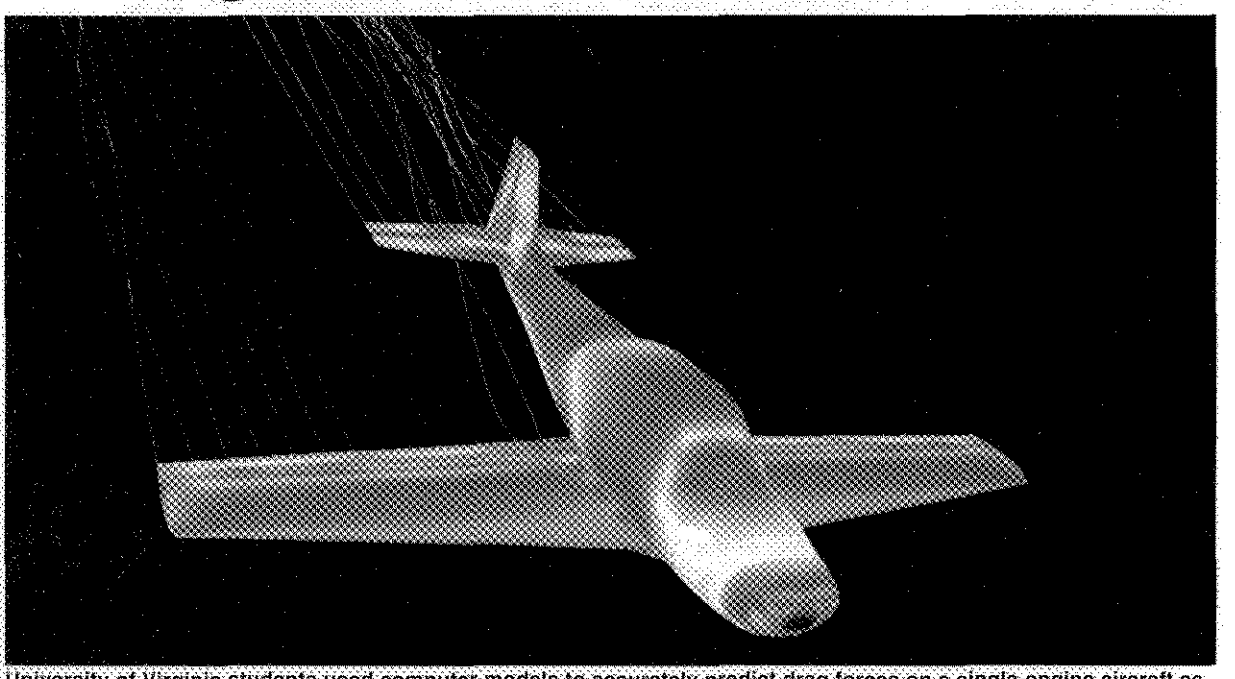
"These accomplishments are laying the foundation for a small aircraft transportation system that will make personal air travel for business or pleasure a safe, affordable transportation alternative," said Michael B. Mann, NASA's deputy associate administrator for aeronautics and space transportation technology.

"Newly-developing technologies and procedures are allowing us to move from the research stage to practical use. Even the challenging task of developing a lightweight, affordable jet engine for personal airplanes is coming along quickly through NASA's GAP program," he added.

Mann's comments were made at a joint NASA, FAA and U.S. industry news briefing held Aug. 1 at AirVenture '98, the Experimental Aircraft Association (EAA) Annual Fly-In and Convention in Oshkosh, Wisc.

Virginia has christened the nation's first statewide application of aviation digital datalink technology, establishing a public-private partnership that will set the pace for its introduction to other states in an effort to form a national system that may someday be global. At a ceremony July 9 in the state capital, Virginia Secretary of Transportation Shirley J. Ybarra praised AGATE member ARNAV Systems Inc., Puyallup, Wash., the Small Aircraft Manufacturers Association and NASA Langley for the successful partnership. Ybarra said that extension of the AGATE technology "will provide small business with safe, efficient and secure all-weather air transportation to urban and rural communities all over the country."

For more information on the NASA/FAA/Industry AGATE program check the Internet at: <http://agate.larc.nasa.gov/>. For more information on the NASA GAP program check the Internet at: <http://www.lerc.nasa.gov/WWW/AST/GAP.htm>.



Graphic courtesy University of Virginia

University of Virginia students used computer models to accurately predict drag forces on a single-engine aircraft as part of their winning design project. This computer image illustrates differences in air pressure between air at the surface of the airplane and the "free-stream" air, with high pressure, low pressure and equal pressure represented by different colors.

Design Competition Winners Announced

NASA and the Federal Aviation Administration (FAA) announced the winners of their 1998 National General Aviation Design Competition during the news briefing. Mann presented the awards to the three winning teams.

First place was presented to a 27-member undergraduate team from Virginia Tech. The winning design, dubbed "VicTor," is a single engine, four-seat, high-performance aircraft. The team's broad goal was a "fun-to-fly, safe, affordable aircraft prepared to fly on the 'highway in the sky' of the 21st century." The combination of state-of-the-art manufacturing techniques, composite materials, business plan and production data won them the first place title. A $3,000 award was given to the team and a $5,000 award went to the university's Department of Mechanical, Nuclear and Aerospace Engineering.

Second place honors were given to Pennsylvania State University's team for "Skipper 2," a high-performance, two-person single-engine, composite fuselage, tractor-prop light airplane. The design was developed by a 15-student team as part of a senior level design course. The award provided a prize of $2,000 to the team.

Third place winner was a team of 13 undergraduates from the University of Virginia. They developed a computer program that predicts drag, or resistance to airflow, in the design of new small passenger airplanes. The drag prediction could save time and money in the development of new and modified airplanes, speeding effective new designs to the marketplace. Winners shared a $1,000 prize.

Guidelines, with new criteria, for the 1998-99 academic year are available by contacting the Virginia Space Grant Consortium at (757) 865-0726, or via e-mail at <mls@penngrad.pgtt.odu.edu>.

Statement of NASA Administrator Daniel S. Goldin on the Death of Alan Shepard

The entire NASA family is deeply saddened by the passing of Alan Shepard. NASA has lost one of its greatest pioneers; America has lost a shining star.

Alan Shepard will be remembered, always, for his accomplishments of the past: being one of the original seven Mercury astronauts, for being the first American to fly in space, and for being one of only 12 Americans ever to step on the Moon. He should also be remembered as someone who, even in his final days, never lost sight of the future.

On behalf of the space program Alan Shepard helped launch, and all those that space program has and will inspire, we send our deepest condolences to his wife Louise, their children, and the rest of the Shepard family.

Alan Shepard lived to explore the heavens. On this his final journey, we wish him Godspeed.

Astronaut Alan Shepard Dies — America Loses a Hero

Astronaut Alan B. Shepard Jr., 74, the first American to fly in space, and one of only 12 people to walk on the moon, died July 21 in California.

Alan B. Shepard Jr.

Shepard, one of the original seven Mercury astronauts named by NASA in April 1959, was a former Navy test pilot.

Aboard the Mercury capsule Freedom 7, May 5, 1961, Shepard's 15-minute suborbital flight, was part of Project Mercury, the United States' first man-in-space program. The first home of Project Mercury was at Langley Research Center, so Shepard was familiar with the Hampton Roads area, and made his home here for several years before the astronaut programs were moved to Houston. A boulevard in Hampton bears his name.

Langley engineers with knowledge in reentry physics, astronomy, and celestial mechanics and navigation taught the first astronauts graduate-level space science courses. Shepard's specialty in those early years was tracking range and recovery systems.

Ten years after his first flight, Shepard returned to space for his second and last flight as commander of Apollo 14, Jan. 31, 1971. Shepard spent 33 hours on the moon during that mission.

Bill Scallion, Aerothermodynamics Branch, who knew all seven original astronauts when they trained at Langley, said, "I always thought of Shepard as the tiger of the team. There wasn't anything he wouldn't do. Training was tough but they all went home each day without a complaint."

Shepard graduated from the U.S. Naval Academy in 1944 and served in World War II. He earned his aviator's wings after the war and became a test pilot before his selection as an astronaut.

After Apollo 14, he served as a delegate, by Presidential appointment, to the United Nations General Assembly in 1971. Shepard was chief of the NASA astronaut office from June 1971 until his retirement in August 1974. He also retired from the Navy as a rear admiral in 1974. His awards included the Medal of Honor, for space exploration, in 1979. He was a president of the Mercury Seven Foundation, raising money for science and engineering scholarships.

"There are lots of answers why I want to be the first man in space," Shepard said in 1961, "but the flight obviously is a challenge and I feel the more severe challenge will occur on the first flight and I signed up to accept this challenge."

His survivors include his wife, Louise, daughters Julie, Laura and Alice, and six grandchildren.

The Shepard family has requested that memorial donations be made to the Astronaut Scholarship Foundation, 6225 Vectorspace Blvd., Titusville, FL., 32780.

News Briefs

Around the Agency

"EXPLORING THE UNKNOWN" UNVEILED: NASA unveiled *Exploring the Unknown: Selected Documents in the History of the U.S. Civil Space Program, Volume 3: Using Space*, edited by John M. Logsdon, with Roger D. Launius, David H. Onkst and Steven J. Garber. *Exploring the Unknown* is an essential reference series for anyone interested in the history of the U.S. civil space program and its development over time. *Using Space* is the third book in the six volume series.

MOLDING BETTER PRODUCTS: Research in low-gravity has taken an important first step toward making metal products used in homes, automobiles and aircraft less expensive, safer and more durable. Auburn University, Auburn, Ala., and industry are partnering with NASA to develop the first accurate computer model predictions of molten metals and molding materials used in a manufacturing process called casting. The first commercial use of the new computer information is being made by Howmet Industries of Whitehall, Mich., to more precisely design and cast aircraft turbine blades.

NEW LIGHT SHED ON LA NINA: Research scientists using data from the recently launched Tropical Rainfall Measuring Mission (TRMM) satellite, a joint U.S./Japanese mission, are shedding new light on the phenomenon known as La Niña. TRMM research team members have successfully retrieved sea-surface temperature data from the TRMM Microwave Imager (TMI) instrument onboard the spacecraft. This temperature data is giving scientists new insight into the complex evolution of the La Niña event. The images show changes in sea-surface temperature, and ocean current movement and the dissipation of El Niño. While it is too early to draw definite conclusions, the results to date appear to confirm the onset of La Niña type conditions.

STAR CLUSTER YIELDS INSIGHTS INTO UNIVERSE: NASA's Hubble Space Telescope has taken a "family portrait" of young, ultra-bright stars nested in their embryonic cloud of glowing gases. The celestial maternity ward, called N81, is located 200,000 light-years away in the Small Magellanic Cloud, a small irregular satellite galaxy of the Milky Way. The nebula offers a unique opportunity for a close-up glimpse of the "firestorm" accompanying the birth of extremely massive stars, each blazing with the brilliance of 300,000 of our suns. Such galactic fireworks were much more common billions of years ago in the early universe, when most star formation took place.

STELLAR CANNIBAL PROVIDES MISSING LINK: A newly-discovered star that is emitting rapid pulses of X-rays may be the long-sought missing link between old neutron stars that emit powerful flashes of X-rays, and older, rapidly spinning neutron stars that emit mainly radio waves. The star, called an X-ray pulsar, has greatly accelerated its own rotation at the expense of a nearby "companion" star by pulling gas from the companion onto its surface in a process called accretion. The fastest spinning pulsar of its type ever seen, the star is now rotating more than 400 times per second.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

Langleys Career Center Plans Seminars for August – October

The Career Center has announced the following schedule:

August

Tues., 8/11, The Web and Career Development, 9 a.m.-12 and 1-4 p.m.; Thurs., 8/13, First 30 Days on the New Job, 9 a.m.-12

September

Thurs., 9/3, Interview Skills for the Interviewer, 8:30 a.m.-12:30 p.m.; Wed., 9/9, Starting Your Own Business (SYOB): The Basics, 8:30 a.m.-4 p.m.; Thurs., 9/10, Getting Started: Career Development, 9-11 a.m.; Wed., 9/16, SYOB: Laying a Solid Foundation, 9 a.m.-12; Wed., 9/23, SYOB: In the Black, ASAP, 9 a.m.-12; Wed., 9/30, SYOB: The Right Side of the Law, 9 a.m.-12 Skills for the New Millennium: Tues., 9/15, Defining You and Your Career, 9 a.m.-12 Thurs., 9/17, Building Your Network, 9-11 a.m.; Tues., 9/22, Finding the Right Opportunity, 9-11 a.m.; Thurs., 9/24, Resume Reality, 9 a.m.-12; Tues., 9/29, Resume Reality, 9 a.m.-12

October

Thurs., 10/1, Cover Letters and Thank You Notes, 9-11 a.m.; Tues., 10/6, Cover Letters and Thank You Notes, 9-11 a.m.; Wed., 10/7, So You Want to be a Consultant!, 9 a.m.-12; Thurs., 10/8, Job Applications and Skills Statements, 9-11 a.m.; Tues., 10/13, Interview Basics, 8:30 a.m.-12; Thurs., 10/15, Interview Basics, 8:30 a.m.-12; Tues., 10/20, Negotiating Salary and Benefits, 9 a.m.-12; Wed., 10/21, The Web and Career Development, 9 a.m.-12; Wed., 10/28, Life After NASA, 9 a.m.-12

The seminars are authorized NASA and Langley training events. Participation is open to all NASA federal civil service personnel and their spouses. Please register in advance. To register, call ext. 45000 or fax ext. 45040. The Career Center is located in Building 1312, next to the Credit Union. Visit the web site: <http://www-ctapc.larc.nasa.gov>.

Beethoven Festival Coming Up

The Virginia Symphony will be presenting the second annual Beethoven Festival on September 4, 5 and 6 at the Williamsburg Winery. Tickets for the concerts are on sale at the Langley Exchange Shop. Tickets for wine tasting and dinner events can be purchased only through the Virginia Symphony at 623-2310.

In Memoriam

Sir James Lighthill

Sir James Lighthill, 74, mathematician and Provost of University College London, 1979-89, died July 21.

It is for his brilliant and wide-ranging contributions to applied mathematics that Lighthill will be remembered. He was the first recipient of the ICASE/Langley Theodorsen Award in 1993. ICASE is the Institute for Computer Applications in Science and Engineering.

Considered by his peers to be one of the great mathematicians of the century, Lighthill was a pioneer in supersonic aeronautics, in oceanographic studies and astrophysics. He virtually created the field of biofluiddynamics, the study of how animals move through air or water, as well as the study of the fluid mechanics of the cardiovascular system.

Throughout the years he maintained close relations with ICASE. His collected works were edited by Y. Hussaini, former ICASE Director, and were published by Oxford Press last year as a four volume set.

Harry K. Brooks

Harry K. Brooks of Candler, N.C., died July 17. Brooks worked at Langley with the Klate Holt Co. as a rigger from the 1960s to the 1980s.

Community Day of Caring Set for September 10

BY MARNY SKORA

Langley will join other community-minded organizations to sponsor the 1998 Community Day of Caring on Thursday, September 10.

Last year, the Day of Caring mobilized nearly 700 workers from area businesses and federal facilities. Volunteer assignments ranged from painting and planting to constructing playgrounds for children and houses for families. Special talents were needed for plumbing, electrical, air conditioning, landscaping, carpentry and computer projects. Volunteers also did general clean-up, fix-up chores, helped with day camps and stocked food pantries. There was something for everyone. No talent was unappreciated.

Civil service employees interested in participating in this seventh annual event should contact Nancy Finn at n.m.finn@larc.nasa.gov or ext. 46528 for a volunteer form. The first 150 Langley employees to register will be granted up to eight hours of administrative leave. Contractors who want to participate should contact their corporate office. As always, retirees are invited and encouraged to participate.

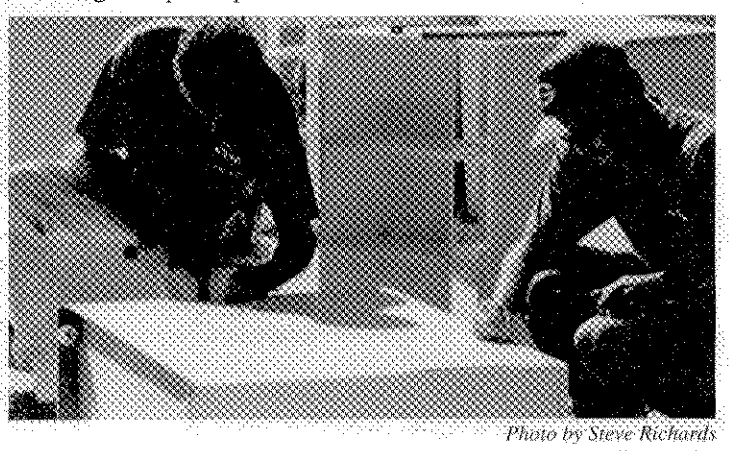


Photo by Steve Richards

IF I HAD A HAMMER . . . **Barry Lazos, left, of the Flow Modeling and Control Branch and Larry Huebner of the Hypersonic Airbreathing Propulsion Branch exchange their traditional workday tools for hammer and nails to repair bookcases at Child Development Resources during the 1997 Day of Caring.**

Advanced Initiatives Allow Everyone to Participate

NASA Langley will also again participate in the Day of Caring's School Tools initiative. Center employees are encouraged to purchase school supplies and drop them in the boxes provided in the cafeteria and the AeroDyner. School items such as pens, pencils, notebooks, crayons, markers, and glue are needed. On the Day of Caring, these donated items will be packaged and delivered to area schools for distribution to needy children on the Peninsula.

New – A Book Drive

A new initiative — a Children's Book Drive — has been organized to collect new or gently used children's books. These will be distributed through the Peninsula's Healthy Families Initiative. Both advance drives are being co-sponsored by the Office of Public Services and the Cafeteria. Collection boxes are located in the Cafeteria and the AeroDyner. In this way, even those who cannot participate in the Day of Caring can help with the annual volunteer effort.

In Memoriam

George R. Young

George R. Young, 63, lifelong resident of Hampton, died, July 17. Young earned a degree in aeronautical engineering from Virginia Tech and a master of business administration from the College of William and Mary. He worked at Langley as an aerospace engineer until his retirement in 1984.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@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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Assistant Editor. . . . . Jeane Shanks
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.

Student Finds Comfort in Chaos

BY KATRINA TOWNES

Weiting Xu is like most fourteen year olds. She e-mails her friends. She enjoys talking on the phone. She goes to the movies. She plays instruments in two school bands.

But that's where the similarity ends.

Weiting, a rising freshman at Lafayette High School in Williamsburg this fall, is not your ordinary teenager. She is exceptional, and her test score proves it. As a participant at John Hopkins University's Institute for the Academic Advancement of Youth (IAAY), Weiting scored so well on the Scholastic Aptitude Test I: Reasoning Test that she was awarded a one-course scholarship to the College of William and Mary.

While only in the eighth grade at Williamsburg's Berkeley Middle School in the fall of 1997, Weiting used the opportunity not to study English, her favorite subject, but Calculus I instead.

"Not only was Weiting a great student and a hard worker, she always asked challenging questions and that's a good sign," said Craig Hunter, her Calculus I professor.

"Math is usually taught in an uninteresting manner, but Professor Hunter taught us to look at it and get excited," said Weiting.

Her excitement paid off – she earned the highest grade in her class.

Hunter, who is also a Langley aerospace engineer in the Configuration Aerodynamics Branch, encouraged his former pupil to participate in Langley's volunteer program this summer. The program, a non-paid internship, gives students an opportunity to work in research and development with a mentor.

Now, Weiting and Hunter share an office amidst chaos.

Chaos is not as bad as it sounds. It can be fun.

"The study of chaos and fractals tells us that there is often a pattern, predictability, or order that lies hidden in things that are seemingly random, unpredictable, or arbitrary. The trick is to look at the problem in the right way so that the patterns emerge," Hunter said.

With Hunter's supervision, Weiting has new theories about everything from walking to replicating ferns.

"After so many steps, the total distance from the starting point is the square root of the total number steps taken," said Weiting. After writing a computer program - One Dimensional and Two Dimensional Random Walk, she concluded, "It's exactly true."

Looking at a fern plant as a fractal or a series of mathematical transformations and random numbers, Weiting even glimpsed infinity. Weiting, using a computer program to look at a graphic of a fern close-up, learned that each individual leaf of the fern is a replica of the entire plant. The interesting aspect of this self-similarity property is that it gives a common formula for a natural occurrence said Weiting. Unlike the computer-generated fern, a real fern's ability to replicate itself continuously is limited by nature.

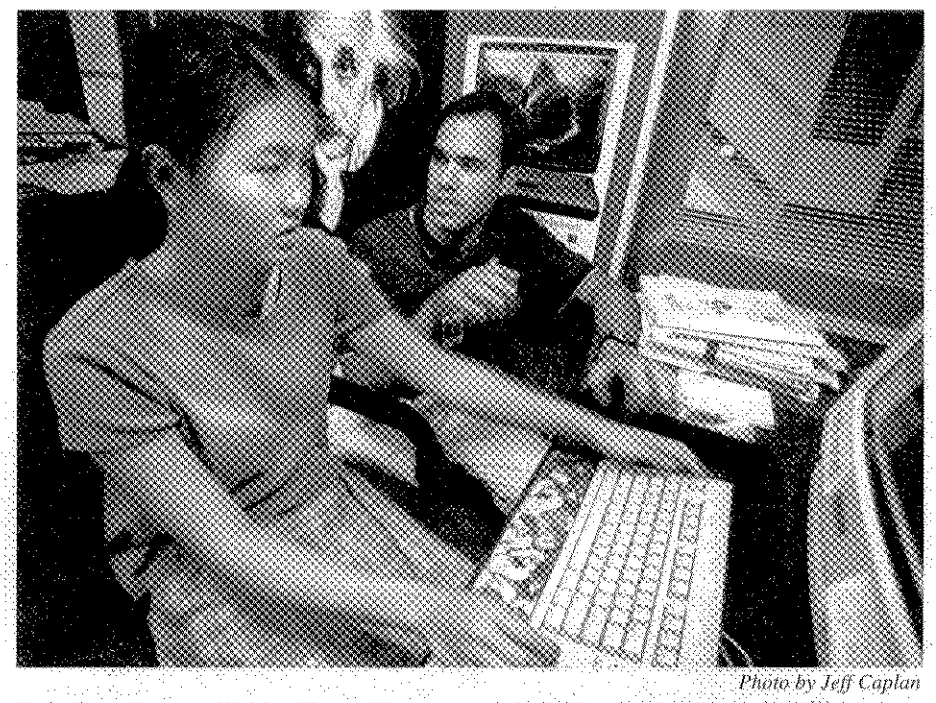


Photo by Jeff Caplan

Langley volunteer, Weiting Xu, and her mentor, Craig Hunter, Configuration Aerodynamics Branch, work on a computer application involving chaos theory and a fern. The application shows that each leaf of the fern is a replica of the entire fern.

In the end, Weiting learned that math is actually fun when applied to the real world. And although her Langley experience ends in mid-August, Weiting says it has been a lot of fun, and it'll look good on her college application. But like many her age, she's still unsure about her future.

"Being in high school, it's a pretty big step forward," said Weiting.

In her spare time, Weiting volunteers at Colonial Williamsburg as a family guide in the Governor's Palace and the Wythe House. She's also taking tennis lessons, and reading George Orwell's, *1984*.

Weiting, who was born in Shanghai, China, is the daughter of Mr. and Mrs. Zhenhui Xu. Prior to moving to James City County in 1996, Weiting and her parents lived in Charlottesville, Virginia for 10 years.

For more information about Langley's volunteer program contact Gael Hawkins in the Office of Human Resources at (757) 864-2527.

NASA Attended the NAACP Convention

NASA joined the National Association for the Advancement of Colored People (NAACP) during the annual convention in July in Atlanta.

Astronauts Yvonne Cagle, Joan Higginbotham and Stephanie Wilson joined NASA officials to exhibit a full-scale mock-up of the International Space Station.

The NAACP conducted its annual national Afro-Academic Cultural, Technological and Scientific Olympics (ACT-SO) competition during the convention. Students competed for honors in categories ranging from science and engineering to dance and cultural arts. NASA scientists served as judges for the science competition. National winners in the technical areas were presented certificates from NASA and a visit to a NASA field center or event.

GMA Pays Langley a Call

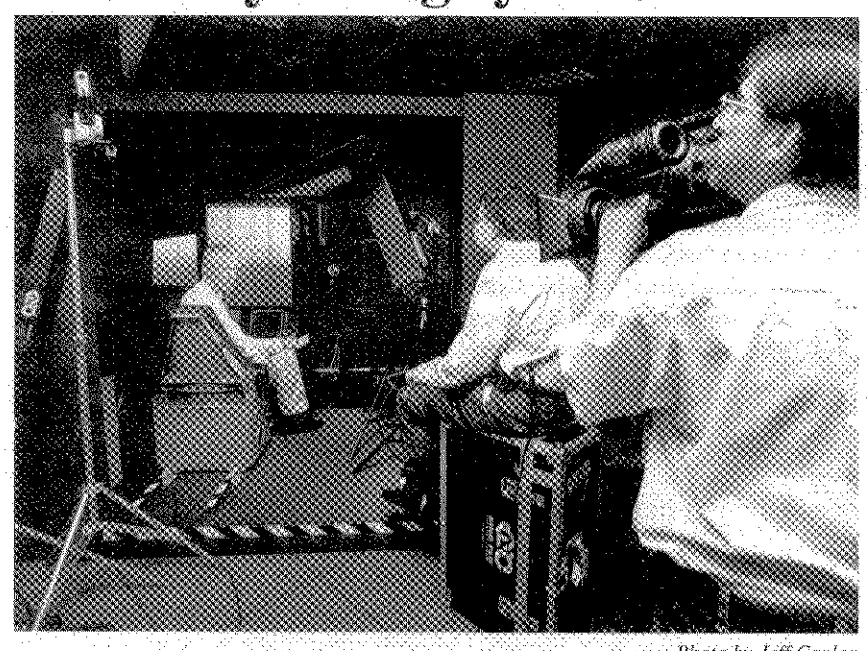


Photo by Jeff Caplan

Rodney Ricketts, technology manager for airframe materials and structures in the High-Speed Research Program Office, gets ready for an interview with ABC's "Good Morning America" crew last month. The TV program was at NASA Langley on July 22 to produce a segment about the future of commercial supersonic flight. The crew taped Ricketts in the Flight Dynamics and Control Division's VISTAS lab in Building 1268A and later took additional footage at labs operated by the structures and materials divisions in buildings 1148 and 1205.

Graduate Student Researchers Program Held Orientation and Workshop

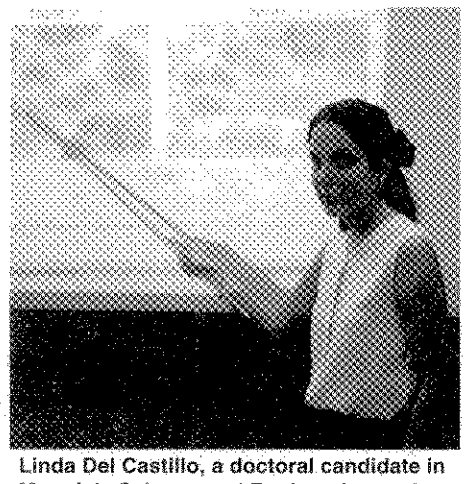
OFFICE OF EDUCATION

The Office of Education (OEd) sponsored the 4th Annual NASA Graduate Student Researchers Program (GSRP) Orientation and Workshop, Aug. 5. The goals of this three-day event were to familiarize the recipients of GSRP fellowships with the Center facilities and resources, and provide them with an opportunity to conduct technical discussions with their Langley research advisor. Langley welcomes 60 GSRP participants this month; 23 are new to the Center. The 60 represent 28 universities from all parts of the United States. Since 1990, the Langley program has supported more than 300 graduate students.

GSRP was initiated by NASA in 1980 to cultivate additional ties to the academic community, and to support a culturally diverse group of students pursuing advance degrees in science, engineering and computer science. Fellowships are awarded for graduate study leading to research-based master's or doctoral degrees. Awards are for one year and are renewable for an additional two years based on satisfactory academic advancement, research progress and available funds.

The orientation and workshop consisted of programmatic briefings, technical presentations by second- and third-year fellows, research-based discussions with Langley research advisors and tours of the Center's facilities. OEd has incorporated a unique and informative activity into the workshop: a student panel consisting of second- and third-year graduate students with broad GSRP experiences identif-ied obstacles they had to overcome, described areas of graduate school that may cause concern, and suggested pro-cedures that can enhance a student's GSRP experience.

Photo by Lloyd Evans



Linda Del Castillo, a doctoral candidate in Materials Science and Engineering at the University of California/Irvine, is a third-year GSRP participant. She recently gave a technical presentation to her Langley technical advisor and other researchers in the Metallic Materials Branch. "This fellowship program is set apart from several others due primarily to the focus on research. I was given the opportunity not only to design my experiments and investigations, but I also had to maximize productivity while minimizing waste. My experience as a fellowship recipient has been extremely rewarding."

NAFP Enters Second Year of Operation

BY BRIAN SUTTON

A prestigious NASA program is entering its second year. The NASA Administrator's Fellows Program (NAFP), begun last year by NASA Administrator Daniel Goldin, will welcome its second group of participants this month. NAFP offers an exceptional opportunity for the nation's top college and university faculty to perform research at NASA centers. It also extends an opportunity to NASA employees to spend time at these same universities.

What Is NAFP?

NAFP is designed to enhance the professional development of NASA employees and the science and engineering faculty of historically black colleges and universities, Hispanic-serving institutions and tribal colleges. The program is aimed at increasing the capability of minority-serving institutions to respond to NASA's overall research and development mission.

Doing Real Research

For the last 10 months, Langley hosted one of the fellows. Dr. Theresa Edwards from Spellman College worked here with her mentor, Dr. Joel Levine, senior research scientist in the Atmospheric Sciences Division. The two worked together closely on the problem of biomass burning and its effects on the atmosphere.

Levine said, "Dr. Edwards applied her background in mathematics and numerical analysis to our research in satellite measurements of active fires and areas burned. Serving as a NASA Administrator's fellow provides a unique experience and opportunity for a university or college faculty member to get involved in ongoing NASA research and make immediate contributions. I hope the program expands and provides additional opportunities for faculty to participate in research activities at the NASA centers."

The fellowship is unique because it also provides opportunities for NASA employees to spend time at minority-serving institutions. There, NASA employees will have the opportunity to teach, conduct research, and assist in an administrative capacity in science and engineering fields. A year could also be spent on other developmental assignments at other NASA centers, or with private industry in order to provide experience and insight for future NASA endeavors.

University Exchange

Mike Ponton, Aeroacoustics Branch, participated in the fellowship program, spending time at Hampton University and at other NASA centers. He said, "NAFP is a wonderful opportunity for an employee to strengthen the relationship between minority serving institutions and the agency. Through this cooperative effort, I feel NASA will make great strides in fur-thering the participation of underrepresented groups in science and engineering."

The experience of faculty members at NASA centers allows them to return to their institutions and enhance the basic research and management capabilities of their science and engineering departments. Faculty fellows are also exposed to the latest technology and modern research methods that they can use to continue research they began at NASA.

The NASA fellows bring the knowledge and experience of working in a research environment that is home to the most current science and engineering technology. The interaction will allow NASA employees to bring back with them insight on how NASA can expand its relationships and communications with other scientific research entities.

The program not only benefits the fellows and their universities, but benefits NASA as a whole. The NASA Administrator's Fellowship Program gathers together the top science and engineering minds in a way that is advantageous to both NASA and the university research community.

Aircraft Turbulence Accident Prevention: Preparing for the First Users' & Technologists' Workshop

The first NASA/FAA Aircraft Turbulence Accident Prevention Users' and Technologists Workshop will be Aug. 25 and 26, at the Pearl I. Young Theater.

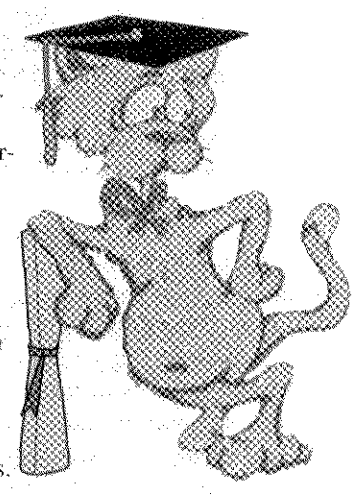
Although there have been advances in the state-of-the-art of observing turbulence and forecast systems, they have not enhanced the quality of turbulence products for the aviation community. The turbulence accident rate per flight mile has not decreased in the recent past, and the number of accidents is expected to increase in proportion to the growth in air traffic volume. To reduce the turbulence accident rate at least fivefold over the next 10 years, a program is required that is broad in scope, technically challenging and multi-disciplinary in nature.

The workshop, co-hosted by NASA and the FAA, is designed to bring together key representatives from the aviation industry — pilots, major airlines, NASA, FAA, NTSB, and Department of Defense and others from the research community to address this serious hazard within the framework of NASA's Turbulence Program element of the Aviation Safety Program.

More information about the workshop (including a registration form) can be found at the following web site: http://www.hq.nasa.gov/office/aero/oastthp/programs/avsaf/futws.htm Preregistration is required with a $10 registration fee. Note: Attendance is limited to the first 250 registrants. Notification will be posted when seating capacity has been expended. For more technical information, contact: Rod Bogue, (805) 258-3193, <rod.bogue@dfrc.nasa.gov>; or at Langley, Bob Stuever, ext. 43946, <r.a.stuever@larc.nasa.gov>; or Phil Schaffner, ext. 41809, <p.r.schaffner@larc.nasa.gov>.

Langley's Education Outreach Program Reached One Million Customers in FY'97

BY KATHRYN PAULSON



In Fiscal Year (FY) 1997, Langley's Education Outreach Programs reached one million customers. The program participants consisted of students, teachers/faculty and administrators, from kindergarten to post-doctoral levels.

Participation in the educational outreach programs varied from one-hour sessions to full four-year curricula. Customers were reached through a wide range of programs like Teacher/Faculty Preparation and Enhancement; Curriculum Support and Dissemination; Support for Systemic Change; Student Support; Education Technology and Research and Development. Each one emphasized one or more of NASA's Strategic Enterprises.

Data from EDCATS

EDCATS

The accumulation of statistical data was accomplished through the use of the Education Computer Aided Tracking System (EDCATS). EDCATS was developed in response to the National Performance Review and the Government Performance and Results Act. It collects data on NASA education outreach programs. Headquarters' Office of Human Resources and Education contracted with Advanced Applications Corporation and Allied Technology Group, Inc., in the design of EDCATS as a database accessible through the Internet which provides: on-line, real-time results to queries; files to download; and graphical presentations of the data. Langley's project manager Pat Link said, "EDCATS is an exciting new tool which enables education program managers to demonstrate the achievement of program objectives and goals, and link resource decisions to program results."

Dr. Samuel E. Massenberg, director of Langley's Office of Education, is pleased with the number of customers the Center's programs have reached this year, and is aiming for 100-percent participation in the EDCATS system. "Distance Learning proved to be the key to reaching large numbers of people at a low cost per participant ratio by reaching 907,000 customers at less than 25 cents each last year," Massenberg said.

Impressed by the number of people reached through educational programs outside the Office of Education, Massenberg stresses the need to reach the target audience. "Our target audience is well-defined," he said, " and we have emphasized the Aeronautics enterprise to reach out to teachers of middle school students in disadvantaged areas in the five states of Kentucky, North Carolina, South Carolina, Virginia and West Virginia. That target by no means is to suggest other programs are not needed or welcomed."

Massenberg added, "I would like to extend my thanks for all the hard work and dedication from everyone here at NASA Langley who has reached out to help educate our youth."

How to Record EDCATS Data

A reminder, educational outreach efforts don't have to be held until the end of the fiscal year to be reported. EDCATS is already available to collect data for FY'98. Data may be submitted to the system either manually or electronically. To submit manually, please send all pertinent information regarding your program to Kathryn Paulson at Mail Stop 400, or fax the information to 864-8835.

For electronic submissions, go to the following URL and complete as much information as possible: 1. School Science Fair judges: <http://ehb2.gsfc.nasa.gov/edcats97/centers/sfi.html>; 2. Pre-College Speakers Bureau: <http://ehb2.gsfc.nasa.gov/edcats/centers/pcbs.html>; 3. Education Outreach Presenter Report: <http://ehb2.gsfc.nasa.gov/edcats/centers/ed_outreach_presenter.html>; 4. Education Outreach Participant Report: <http://ehb2.gsfc.nasa.gov/edcats/centers/ed_outreach_participant.html>; 5. Education Outreach Institutional Report: <http://ehb2.gsfc.nasa.gov/edcats/centers/ed_outreach_ insti-tutional.html>; 6. Very Short Data/Feedback Report: <http://ehb2.gsfc.nasa.gov/edcats/centers/ed_outreach_/short.html>; and 7. Conference/Seminar/Video Conference Event Report: http://ehb2.gsfc.nasa.gov/edcats/centers/ed_outreach_video.html>

For more information, call Kathryn Paulson at ext. 41990.

Speakers Bureau Reports for July 1998

Paul Tartabini and Melvin Ferebee spoke at the Museum of York County and Winthrop University, both in Rock Hill, S.C., about "Space Flight Engineering." Ferebee also spoke to local CHROME students about "Human Physiology in Space." J. Ray Comstock Jr. spoke at Cedar Road Elementary School, Chesapeake, about "Living and Working in Space," and "Designing with the Human in Mind." Al Ragsdale spoke to the Peninsula Kiwanis Club about "Apollo 13 Experiences." Dr. Christine Darden spoke to the Peninsula Association of Business Executives about "High-Speed Civil Transport." William Grant spoke to the Aurora Program at Hampton University about "Lidar Work at Langley." Jane Hogge spoke at Oakland Baptist Church, Dalgren, about "NASA's Space Program." She also made a presentation about "Rocketry" at Banks Street Baptist Church, Norfolk. Russell Deyoung spoke about space-related topics to members of Bethel Baptist Church, Chesapeake. Olin Jarrett gave a "Langley Overview and Three Pillars" talk at Great Bridge Church of Christ, Chesapeake. Prasun Desai spoke to the Warwick Rotary Club about "Planetary Exploration." Don Monell gave a space-themed talk at Heales Ford Baptist Church, Mountain Lake.

Langley Pursues First Federal Certification in OSHA's Premier Recognition Program

BY BOB ALLEN

Langley is attempting to achieve the nation's first Federal certification under the Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP).

The VPP is OSHA's premier recognition program. VPP participants are facilities that have designed and implemented outstanding health and safety programs. Currently, about 460 private worksites across the nation are VPP certified. While the VPP has been open to private companies for some time, it opened to applications from federal agency sites with exemplary safety and health programs in November 1997.

There are three levels of VPP certification, Star, Merit and Demonstration. Langley seeks Star certification.

"Our people are our most important resource, and we are totally committed to their safety," said Center Director Dr. Jeremiah F. Creedon. "Our decision to pursue the VPP reflects that commitment."

The VPP is also an integral part of the NASA Administrator's safety initiative. In June, the Administrator announced that all NASA facilities will be Star certified by the OSHA.

In mid-August, Langley's Office of Safety, Environment and Mission Assurance (OSEMA) will submit a VPP application to OSHA. The next step will occur in September when OSHA safety specialists and industrial hygienists examine Langley work sites to identify hazardous conditions.

OSHA representatives will visit Langley on September 21 and stay for about one week.

They will examine Langley's safety records to verify that the Center has developed and implemented a safety and health program that exceeds OSHA's minimum standards. They will visit work areas and interview randomly-selected civil service and contractor employees about Langley's safety and health program and practices.

Both Langley's civil service and contract employees need to understand what the VPP is and what it means for Langley. If OSHA finds that Langley's employees do not understand the VPP or are unable to describe the Langley safety and health program, Langley's application would not be certified.

"Star certification will recognize that we have a world-class safety and health program," says Bert Garrido, Head of the OSEMA. "Most importantly, this effort will help us further reduce employee injuries, cut costs, and lead to improved morale and safe work practices."

At VPP sites, employers and employees work together and in partnership with OSHA to provide a level of safety and health protection that exceeds minimum OSHA standards. VPP sites usually have 60- to 80-percent fewer lost workdays due to illness/injury than an average site of the same size in their industry.

VPP certification enables participants to "self-certify" their safety programs and practices. In exchange for over-compliance by employers, OSHA agrees to drop a facility from its routine annual inspection schedule because OSHA's VPP onsite reviews ensure that their safety and health programs provide superior protection. VPP Star-certified sites are evaluated on site every three years, and their incidence rates are reviewed annually.

Between evaluations, VPP work sites act as "mini-OSHAs," examining their own safety and health conditions.

Langley's VPP participation will not affect the rights of employees or unions to OSHA protection. In fact, OSHA requires that employee union business agents declare their written approval of a site's participation in the VPP or the site may not participate. OSHA retains responsibility for examining formal, valid employee complaints and certain types of work site incidents.

For more information about VPP, visit the OSHA VPP homepage at <http://www.osha.gov/oshprogs/vpp/> or call Dave Barker, OSEMA, at ext. 43406.

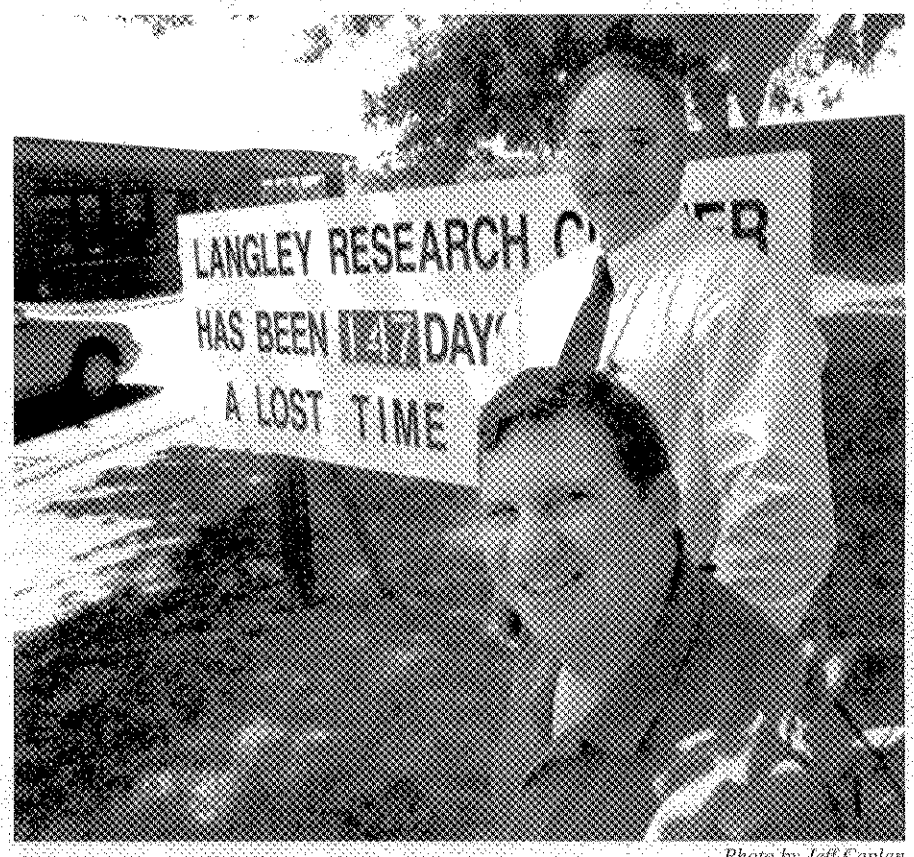


Photo by Jeff Caplan

In July, Langley hit a 1998-best of 147 consecutive days without a lost-time accident. Bert Garrido, Head of the OSEMA, pictured standing near the lost-time sign at the Main Gate with OSEMA's Dave Barker, believes that OSHA's Voluntary Protection Program will help Langley better this mark more routinely.

Langley Gears Up for Virginia State Fair

BY SANDY LEMONS

It's that time again! The Virginia State Fair, Sept. 24 through Oct. 4, is just around the corner, and the Center is gearing up to meet the challenge. Langley's participation the past few years has been a huge success. About 350,000 visitors, including 18,000 students, toured the NASA exhibits last fall. Visitors were amazed at what Langley does and how it benefits them.

State Fair polls show that fairgoers have significantly changed in recent years. People's interests have shifted from strictly entertainment to educational activities. Visitors are now even more likely to visit the NASA exhibits, be affected by what they learn, and increase their understanding and support of aeronautics and space research.

Good Feedback

Last year's volunteers had many rewarding stories to share at the close of the 1997 fair. Roger Amick, Fabrication Division, said, "People are really interested in what new and interesting things NASA is working on. Watching some of the visitors asking questions and showing a genuine interest in what they were hearing from the Langley team was very encouraging."

The Mars Pathfinder exhibit was extremely popular with "kids" of all ages. "A lot of the kids were up on the whole Pathfinder mission," said Jack Drost of the Information Systems and Services Division, "and it was great to be able to encourage them to study and to tell them that they could be an astronaut or an engineer if they wanted to be."

Exhibits this year will include a Low Visibility Landing and Surface Operations (LVLASO) cockpit simulator, an Advanced General Aviation Technology Experiment (AGATE) display, conventional and computerized wind tunnels, an astronaut appearance and a virtual tour of the International Space Station (first element launch may be in December).

What You Can Do

Employees and retirees are invited to be part of this rewarding experience by calling Sandy Lemons at 757-864-3957 or e-mail s.l.lemons@larc.nasa.gov by Sept. 4. A volunteer training session will be held in the Pearl Young Theater on Sept. 17, from 10 to 11:30 a.m.

Transportation to and from the Fair is provided by government vehicles.

Virginia Air and Space Center News

VIRGINIA AIR & SPACE CENTER

Chill Out at the VASC

Cool off this summer at the Virginia Air and Space Center with a chilling IMAX double feature experience, *EVEREST* and *Alaska: Spirit of the Wild*.

Journey to the top of the world with the powerful *EVEREST*. Climb across creaking ice falls and gaping chasms, up dangerous, towering cliffs, through a harrowing rescue and into the danger zone of oxygen-thin altitude. Endure paralyzing cold 70-mph winds, blinding snow, sleet and hazy blue ice, and brushes with death.

After that frigid experience, chill out again in *Alaska: Spirit of the Wild*. Travel to Alaska without the chills. Watch the brilliant aurora borealis dance across the horizon, come face-to-face with a massive grizzly bear and his cousin the polar bear, swim with the majestic humpback whales and more.

IMAX evening double features are presented Thursday through Sunday, at 7:30 p.m., and Friday and Saturday at 7:30 and 9:30 p.m. The double feature will run through Sept. 9, so reserve tickets today. Call 727-0900 for more information.

Education on the Move

Ride a virtual reality flight simulator, investigate wind tunnel modeling, gather weather data and more this summer with the NASA Mobile Aeronautics Education Laboratory (MAEL). MAEL will be open Thursday through Sunday from 10 a.m. to 5 p.m. through Aug. 14.

MAEL is a mobile, state-of-the-art classroom that brings new technologies to various cities to excite students about science and math. In 10 unique workshops, visitors can explore these technologies through "hands on/minds on" activities that model real-world challenges in aviation. Exhibits include virtual reality, aircraft design, remote sensing and the Internet.

The MAEL trailer and program were created through a partnership with NASA Lewis Research Center and Cuyahoga Community College. A MAEL visit is free with paid exhibit admission. Call 727-0900 for more information.

AdVentures

HOUSE FOR SALE
Renovated rancher in Hampton's Wythe section, 2 BR, 1 bath, living room, kitchen, hardwood floors throughout, enclosed front patio, privacy fence, large detached garage/workshop, one block from the Chesapeake Bay. Reduced to $66,900. Call 247-5144.

FOR RENT: Willow Oaks, 4 BR house, 2-car garage, fenced yard, Florida, play and utility rooms, $1,200/mo. Call 850-0305.

NASA SKI WEEK: The eighth annual agencywide ski trip is scheduled for Jackson Hole Wyo., Jan. 30 through Feb. 6, 1999. All NASA personnel, friends and family are welcome. Call Michael Schooley at 874-2736 for additional information.

FOR SALE: Brown recliner, excellent condition, hidden tray and drink holder, can deliver, $75. Call 890-3042, leave message.

CAR FOR SALE: 1986 Ford Crown Victoria, V-8, power windows/locks, AC, $2,500. Call 596-3196.

Peninsula READS

Champion Spellers Bat for Literacy: Saturday, August 15, War Memorial Stadium will play host to a group of Word Series champions. Before the Roadsters' game, 18 community teams will face off in a spelling competition. Proceeds from ticket sales, a silent auction of sports memorabilia, a live auction and a raffle will go to Peninsula READS, an organization that teaches adults to read. Some items to be auctioned include a signed and framed photo of Joe DiMaggio and signed baseballs from Ken Griffey Jr., Cal Ripken Jr., Hank Aaron, Nolan Ryan, Ernie Banks, Frank Robinson and Pete Rose. Gates open at 4 p.m. War Memorial Stadium is at 1889 W. Pembroke Ave., Hampton. Tickets are $5, and can be purchased in advance at the Peninsula READS office at 2021 Cunningham Drive, Suite 100. Call 838-5300 for more information.

LANGLEY ACTIVITY ASSOCIATION NEWS:

• Volunteers Needed:
The annual Carnival is Fri., Aug. 21 from 5 to 10 p.m. and Sat., Aug. 22 from noon - 10 p.m. Volunteers are needed, especially in the dunk tank, to help make this year's carnival a success. A few hours of time would help. Call the LAA office at ext. 46369.

• Crafters wanted for this year's carnival. If you have a special craft and need space to sell items, call the LAA office. The carnival will be a great place to shop while the kids enjoy a day of fun with games, rides and entertainment. Food, bingo, a casino, shows and demonstrations are planned. Bring the family.

•Carnival raffle tickets are on sale now for $1. Prizes include $25 every half hour during the carnival and grand prizes of $250, $500 and $1,000 given away each night. Winner need not be present for grand prizes. There are four Carnival Monarch candidates, and they need your help to win and be crowned. Contact your favorite candidate to purchase tickets: Karen Rediske, EG&G, at ext. 42622; Keisha Armistead, ext. 41003; Stephanie Horvath, Office of Human Resources, at Models and Materials Technology Branch at ext. 42771; or Jennifer Hubble, Atmospheric Sciences Division, at ext. 45380.

• Ground breaking of the newly renovated playground is about to begin in the picnic area. Exciting new features will include a space shuttle ride with hours of fun for little ones.

• The LAA Lounge opens at 4 p.m. daily. Tuesday night is Nacho Night, beverage specials from 5 to 5:30 p.m. Wednesday night is Wacky Wednesday with specials.

• Name the Lounge Contest – More than 200 suggestions have been narrowed to six finalists. Vote one time via e-mail <l.r.ryan@larc.nasa.gov> by noon, Aug.14. Vote only once for: The Lift-off, Moon Room, Launch Pad, After Burners, The Satellite, or The LaRC's Nest. Multiple entries will be discarded. After all votes have been tallied, the winner will be announce at this year's opening ceremony of the LAA Carnival, Aug. 21.

THE GEORGE WASHINGTON UNIVERSITY's School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences at NASA Langley offers the following degrees: master of science, engineer, and doctor of science in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the Fall semester are Aug. 10 to 21. For course schedule and information, call the GW-NASA Office at 757 864-1982; e-mail: jiafs@larc.nasa.gov; fax: 757 864-5894; URL: http://www.seas.gwu.edu/seas/jiafs.

NARFE NEWS: The National Association of Retired Federal Employees' local chapter will meet Monday, Aug. 10 in the Midtown Community Center, 570 McLawhorne Dr., Newport News. Refreshments are served at 10:30 a.m. and a program, "State Lottery – Pros and Cons," begins at 11. For more information, call Catherine Askew at 247-1558.

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Researcher News

National Aeronautics and
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Langley Research Center
Hampton, Virginia 23681-0001

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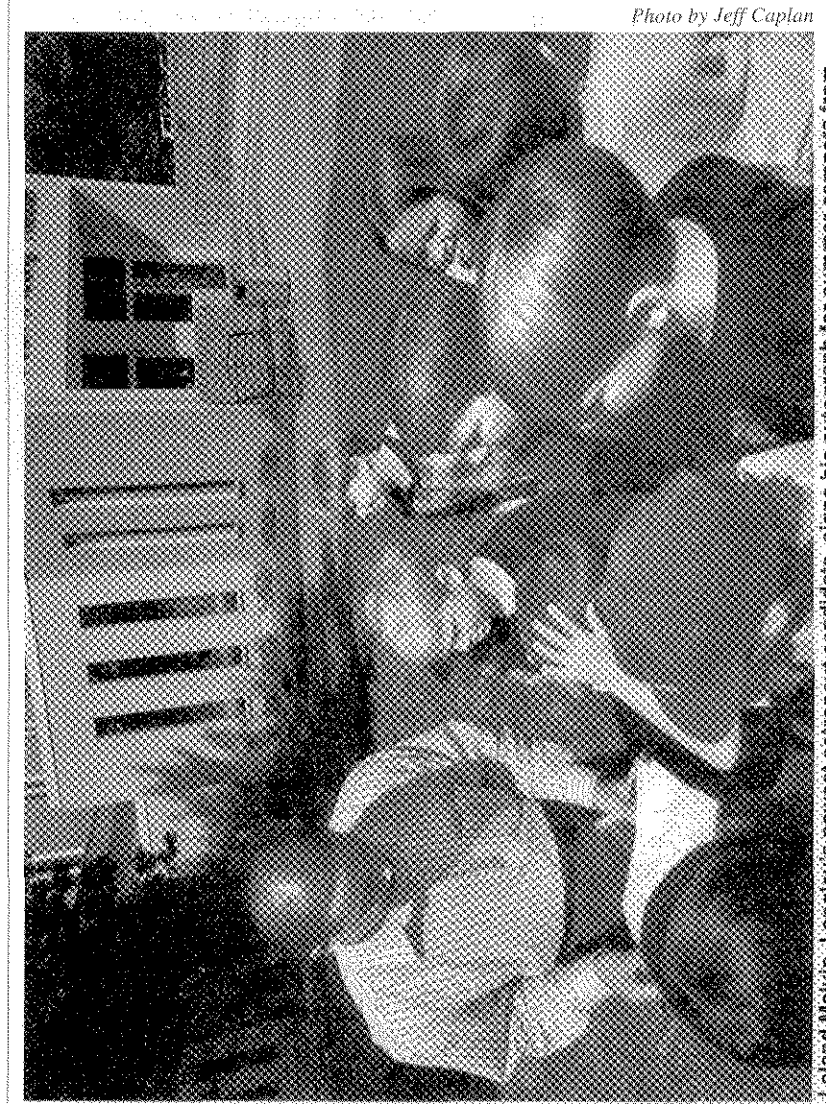
Photo by Jeff Caplan



Leland Melvin, Langley's newest astronaut candidate, signs his autograph for summer campers from Camp Lunar. He spoke to the children recently at the Pearl Young Theater. Melvin reports to Houston to begin his astronaut training this month.

Fortieth Anniversary
Pioneering the Future

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 16 ❖ August 21, 1998

Conference to Assess Agency's Aeronautics Goals

BY BRIAN SUTTON

How would you like to take a trip where you were able to fly faster, safer, cheaper, and with fewer delays? Imagine that at the same time, the plane would be quieter and emit fewer emissions.

Think of the benefits that could be gained from expanding the commercial opportunities of space by decreasing the costs of space travel.

These are some of the goals that have been outlined in one of NASA's most ambitious and forward-looking programs.

The Three Pillars for Success program is approaching its first year of implementation, and with it comes the first chance to assess how the program is working.

The program governs all aspects of NASA aeronautics research and programs as well as space transportation technology. A conference will be held this fall to monitor the progress of the program.

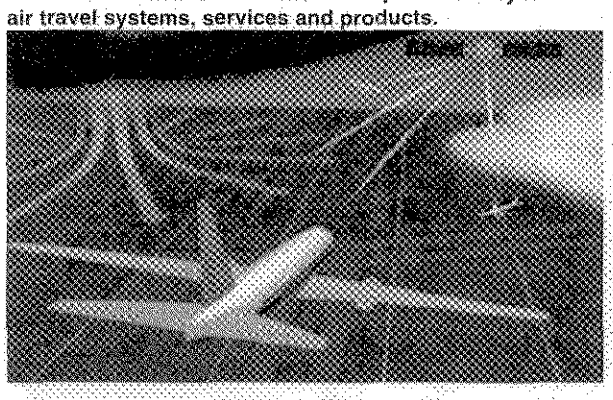
Beginning a New Initiative

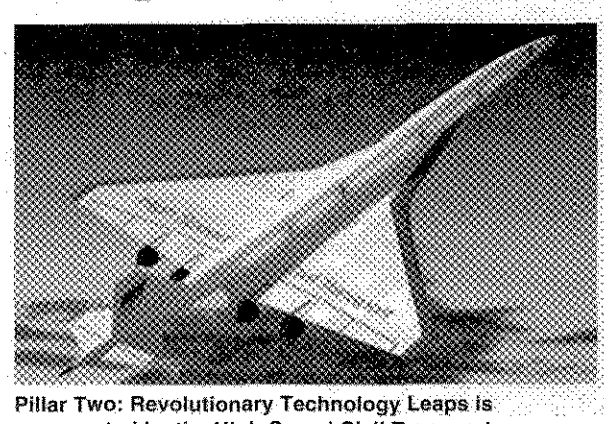
The conference had its beginnings in a speech made by NASA Administrator Daniel Goldin to the World Aviation Congress on Oct. 15, 1997. Goldin said, "It is important for us that the public understands what the national goals mean, and the progress being made towards them...We need to reach people, and we need to hear their feedback."

The "need to reach people" which Goldin referred to evolved into the "The Turning Goals into Reality Conference" which will be held Friday, Oct. 9, at Lewis Research Center, Cleveland, Ohio.

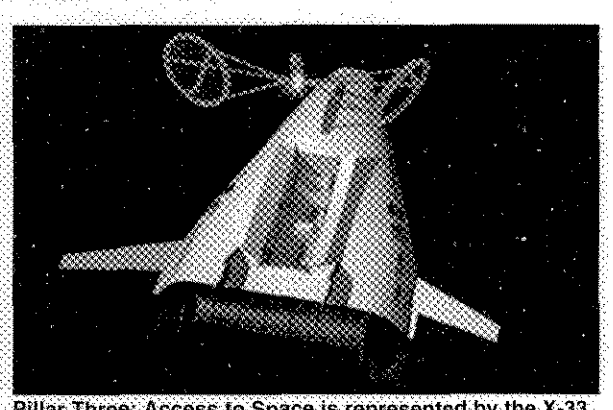
The conference will further the development of these pillars by analyzing the effectiveness of the current system. A progress report of how the goals are being achieved at all of the centers will be distributed. It will also be made available to NASA stakeholders, including members of Congress, industry, media and the public.

Pillar One: Global Civil Aviation is represented by new air travel systems, services and products.





Pillar Two: Revolutionary Technology Leaps is represented by the High-Speed Civil Transport.



Pillar Three: Access to Space is represented by the X-33 flight demonstrator.

Plans for a Conference

"The Three Pillars were not something we instituted in 1997 to watch go away. The basic goals of the Three Pillars will be around for a long time," said Mike Green, manager of the Alliance Development Office in the Office of Aeronautics and Space Transportation Technology at NASA headquarters.

Plans call for the conference to be held at Langley next year.

This year Langley will be well represented at the conference. Director Dr. Jerry Creedon will lead one of three panel discussions on the Three Pillars. Adding to the Center's presence, Langley will also display exhibits at the conference. Some of the items in the Langley exhibit are a 14-foot model of the high speed civil transport, an Advanced General Aviation Transport Experiment (AGATE) model and video, a full-scale X-33 structural wing box, and a Low-Visibility and Landing Surface Operations (LVLASO) flight simulation cockpit mock-up. Each of these exhibits supports one of the goals of the Three Pillars.

The conference includes speeches by Goldin; by Jane Garvey, FAA administrator, who will speak on the research partnership between NASA and the FAA; and by Morley Weingard, senior policy advisor to Vice President Gore. A memorandum of understanding that encompasses the NASA-FAA joint research efforts for safety and capacity will be signed.

Continued on Page 4

Three Pillars at a Glance

The Three Pillars for Success program was begun in March 1997 to establish a set of formalized goals and objectives for NASA aeronautics. The goals of the Three Pillars reflect national technological priorities for aeronautics and space that have been set by the National Science and Technology Council.

Pillar One: Global Civil Aviation

- reduce the aircraft accident rate
- reduce emissions of future aircraft
- reduce the perceived noise level of future aircraft
- while maintaining safety, triple the aviation system throughput — flying frequency, reducing delay
- reduce the cost of air travel

Pillar Two: Revolutionary Technology Leaps

- reduce travel time to the Far East and Europe by 50-percent
- invigorate the general aviation industry
- provide next-generation design tools and experimental aircraft

Pillar Three: Access to Space

- reduce the payload and cost of low-Earth orbit by an order of magnitude, from $10,000 to $1,000 per pound within 10 years
- reduce the payload cost to low-Earth orbit by an additional order of magnitude, from thousands to hundreds of dollars per pound, by 2020

"Developments on Inflatable Space Structures" Slated for September Colloquium

Dr. Costa Cassapakis will give a brief history of Inflatable Space Structures at a colloquium 2 p.m., Tuesday, Sept. 1, at the H.J.E. Reid Conference Center.

Cassapakis will speak from the vantage point of his own knowledge and experience on the subject, starting with the space objects of the 1960s. He will follow this by describing some of the developments in the last two decades, and will then discuss the sophisticated structures being built and tested today for use in space, like the spectacular Inflatable Antenna Experiment of 1996. Finally, he'll discuss technology issues remaining to be addressed, along with a vision for the future.

For more information about Langley colloquia, go to <http://oldtown.larc.nasa.gov/Lectures/lectures.htm>.

Sawyer Named Deputy Director

BY CATHERINE WATSON

Wallace C. Sawyer

Wallace C. Sawyer has been named deputy director of NASA Langley Research Center, effective Aug. 17. Sawyer was director of the NASA High-Speed Research Program before this appointment.

"Wally has a proven track record of outstanding contributions in all his assignments and, most recently, has provided exemplary leadership of the inter-center High-Speed Research program," said Dr. Jeremiah F. Creedon, director of NASA Langley. "I am looking forward to working with him both in the Center's current activities and in preparing Langley for the 21st century."

Sawyer began his career at Langley in 1965 as an aerospace engineer. He has served as the chief of Langley's Advanced Vehicles Division and as acting deputy director of Aeronautics. As deputy director of the Langley Aeronautics Program Group, Sawyer was responsible for strategic planning, advocating for resources, maintaining external and internal customer interfaces, and coordinating aeronautical systems analysis studies. Sawyer's other positions included an assignment at NASA Headquarters as acting deputy director of Aeronautics for High-Performance Aircraft.

Sawyer has a bachelor's degree in physics and mathematics from Elon College in North Carolina, and has done graduate work in physics at the College of William and Mary and engineering management at George Washington University.

Sawyer is an associate fellow of the American Institute of Aeronautics and Astronautics, and is the author/co-author of 45 technical publications and a chapter in a technical textbook.

News Briefs

Around the Agency

FUTURE SPACE STATION RESIDENT JOINS CREW: Veteran cosmonaut Sergei Krikalev, who will be one of the first full-time residents on board the International Space Station, will join the crew of STS-88, the first American assembly mission. Krikalev will join Commander Robert D. Cabana, (Col., USMC); Pilot Frederick "Rick" Sturckow (Major, USMC); Mission Specialists Nancy Currie (Major, USA); Jerry Ross (Col., USAF); and Jim Newman, Ph.D., when Endeavour launches in December. The seven-day mission will be highlighted by the mating of the U.S.-built "Unity" module to the Russian-built "Zarya" control module, which will already be in orbit. For more information on Krikalev and other astronauts, go to: <http://www.jsc.nasa.gov/Bios>, or <http://station.nasa.gov/>.

NASA SEEKS PROPOSALS FOR FUTURE-X: NASA's Marshall Space Flight Center, Huntsville, Ala., issued a NASA Research Announcement (NRA) soliciting proposals for "Future-X," the first in a continuous series of flight demonstrations to validate technologies beyond those contained in the X-33 and X-34 technology demonstration programs. Proposals are due by Oct. 1. The NRA calls for proposals for flight demonstrations of emerging technologies that require flight as a critical step in validating and maturing the technology. The technologies will be focused on substantially reducing the cost of space transportation. NRA 8-22 is available at : <http://nais.msfc.nasa.gov/home.html>.

"LEONARDO" ARRIVES AT KSC: "Leonardo," one of three Italian Space Agency multi-purpose logistics modules that will be used to resupply the International Space Station, arrived last weekend at Kennedy Space Center, Fla. Scheduled to launch aboard Space Shuttle Endeavour (STS-100) in December 1999, "Leonardo" is a reusable logistics carrier that will be the primary delivery system to resupply and return station cargo requiring a pressurized environment. The cylindrical module is approximately 21 feet long and 15 feet in diameter, and weighs about 4.5 tons, excluding up to 20,000 pounds of contents. During each multi-purpose logistics module mission, supplies and scientific experiments will be exchanged for items to be returned to Earth, including completed experiments, equipment for repair, or trash and recyclables.

TRAINING BEGINS FOR HST SERVICING CREW: A team of veteran astronauts will begin training to install new instruments and upgrading systems to enhance the scientific capabilities of the orbiting Hubble Space Telescope. Crew members Steven L. Smith; C. Michael Foale, Ph.D.; European Space Agency astronaut Claude Nicollier; and John M. Grunsfeld, Ph.D., will conduct six space walks for the STS-104 mission, scheduled for launch in May 2000. The crew will rendezvous with and capture the orbiting Hubble Space Telescope, and secure it in Columbia's payload bay using the Shuttle's robot arm. Working in teams of two, the veteran astronauts will go into the payload bay to perform tasks that will improve the productivity and reliability of the telescope.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

Day of Caring Set for September 10

BY MARNY SKORA

Langley will join other community-minded organizations to sponsor the 1998 Community Day of Caring on Thursday, Sept.10.

Civil service employees who want to participate in this event should contact Nancy Finn at n.m.finn@larc.nasa.gov or ext. 46528 for a volunteer form. The first 150 Langley employees to register will be given up to eight hours of administrative leave. Contractors who want to participate should contact their corporate office. Retirees are invited to participate.

School Tools & Books

Langley will again be a part of the Day of Caring's School Tools initiative. Items such as pens, pencils, notebooks and glue are targeted for collection. On the Day of Caring, these items will be packaged and delivered for distribution to local children.

A new initiative — Children's Book Drive — has also been organized to collect new or gently used children's books. These will be distributed through the Peninsula's Healthy Families Initiative. Both programs are co-sponsored by the Office of Public Services and the Cafeteria. Center employees are encouraged to bring supplies and books and drop them in the boxes provided in the Cafeteria and the AeroDyner.

Buy U.S. Savings Bonds, Win Twice

BY HEIDE ELLIS

The 1998 U.S. Savings Bonds campaign was successfully completed in July.

Two investors were rewarded this year during a drawing following the end of the campaign.

The new enrollee winner for a $100 savings bond was Regina Spellman. Eric Cooper, a person who increased his/her deduction, won a $100 savings bond. A special thank you is extended to the NASA Exchange Council, which makes the funds available for the drawing.

Blood Drive Reports Success for July 1998

A total of 245 people took the time from a busy schedule to donate blood in July, including five first-time donors. Coordinators Alice Eley, Human Resources Branch, and Angela Sinclair, American Red Cross appreciate the efforts of all involved. The next blood drive is scheduled for September.

In Memoriam

Dr. Casimir Jachimowski

Dr. Casimir (Casey) Jachimowski, 60, a Hampton resident since 1964, died August 10. Jachimowski studied combustion chemistry at Langley working on airbreathing propulsion systems until his retirement in April this year. His studies included research for the National Aerospace Plane.

Thank You Letters

From recent retiree Joe Chambers: "Thanks to all my friends who sent cards and expressions of sympathy following the death of my father on July 24th. It is truly touching to know that the deep friendships we make at work carry into our private lives after we retire. Bless you and yours."

From Arnold Mueller: "Many thanks to those who participated in my recent retirement party, have called or sent cards wishing me well. Your kind comments, recollections, and wonderful gifts were pleasing. You are all terrific folks and any successes I may have had in my career were in large measure because of you."

NIAC
NASA Institute for Advanced Concepts

NASA Revolution — NIAC Launched

The Universities Space Research Association (USRA) was awarded a NASA contract to establish and manage the newly-formed NASA Institute for Advanced Concepts (NIAC) through Goddard Space Flight Center, Md.

Touted as a "virtual institute" by its director, Robert Cassanova, NIAC will seek proposals from the U.S. science and engineering community to develop advanced concepts in aeronautics and space. "These concepts should be 'revolutionary,' 'imaginative,' and aimed at becoming aerospace missions for the timeframe of 10 to 40 years in the future," Cassanova said.

It is expected that as an independent source of revolutionary aeronautical and space concepts, NIAC will dramatically impact how NASA develops and conducts its mission, according to Cassanova.

Purpose of NIAC

NIAC's main purpose is to provide an independent, open forum for the external analysis and definition of space and aeronautics to complement the advanced concept activities conducted within the NASA Enterprises. NIAC will have advanced concepts as its sole focus.

NIAC will focus on markedly different concepts — specifically systems and architectures — that can impact NASA's future. "It will generate ideas for how the current NASA agenda can be done better," Cassanova said, " and expand our vision of future possibilities."

Far-Out Proposals and Grand Challenges

NIAC issued its first Call for Proposals in June with the first grant awards expected to be announced in the fall of 1998. NIAC encourages proposers to aggressively pursue concepts that will "leapfrog" the evolution of current aerospace systems. While these concepts should stretch the imagination, they must conform with NASA's broad mission and must not violate known physical principles.

A workshop was held in May to formulate what NIAC calls the Grand Challenges, intended as guidelines for proposals not limits to them.

NIAC's Scope

NIAC is functionally independent of NASA and the concepts it selects for government support will be the result of an external review by respected technical experts, called the Science, Exploration and Technology Council. NASA intends that the best products of the institute will be infused into NASA's and the nation's future programs within the constraints of budget realities. NIAC's scope is based on the National Space Policy, NASA Strategic Plan and the NASA Enterprise Strategic Plans.

USRA began in 1960 under the auspices of the National Academy of Sciences.

Along with the Call for Proposals, the Grand Challenges can be downloaded from the NIAC website at <http://www.niac.usra.edu>.

Dave Stephens Retirement Social

A retirement social in honor of Dave Stephens will be held Wednesday, Aug. 26, 5 to 7 p.m., in the H.J.E. Reid Conference Center. An Italian buffet by Carmela's will be served. Cost of $15 per person/$27 per couple includes buffet and gift. Contact Cheryl Cannon at ext. 43640 or Andy Powell at ext. 42980 for reservations by August 21.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), fax (757) 864-8810, 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

NASA Seeks Proposals for Future-X

NASA's Marshall Space Flight Center, Huntsville, Ala., issued a NASA Research Announcement (NRA) soliciting proposals for Future-X," the first in a continuous series of flight demonstrations to validate technologies beyond those contained in the X-33 and X-34 technology demonstration programs. Proposals are due by Oct. 1, 1998.

The NASA Research Announcement calls for proposals for flight demonstrations of emerging technologies that require flight as a critical step in validating and maturing the technology. The technologies will be focused on substantially reducing the cost of space transportation.

In an effort to increase U.S. competitiveness in the worldwide commercial space transportation market and lower future government costs for space access, NASA is pursuing cutting-edge technologies that will dramatically lower the cost of getting to space. These advanced technology flight demonstrations are called Future-X.

The Future-X series of demonstrations will push technology and clear the way for space development and exploration in the early years of the new century," said Gary E. Payton, Deputy Associate Administrator for Aeronautics and Space Transportation Technology at NASA Headquarters, Washington, DC.

The demonstrations will consist of flight vehicles or experiments to prove technologies that improve performance and lower development, production and operating costs of future earth-to-orbit and in-space transportation systems. Airframe system technologies will include propellant tanks, thermal protection systems, avionics and structures. Propulsion system technologies will include main propulsion systems, propellants and high temperature materials.

"Future-X sets the stage for developing a new generation of space launch vehicles that will be built faster and cheaper than previous vehicles," said Frederick Bachtel, manager of the space transportation programs office at Marshall. "For the first time, NASA will be able to readily test and validate new, state-of-the-art space transportation technologies in flight."

Projected funding of about $90 million through fiscal year 2002 is anticipated with awards scheduled for December. Awards are dependent upon the number and content of selected proposals and availability of funds. A single award is planned for a flight vehicle and multiple awards are anticipated for flight experiments.

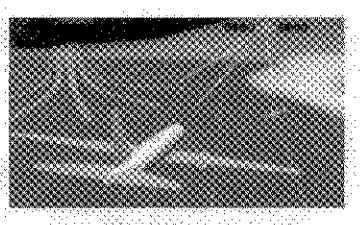
NASA Research Announcement 8-22 is available at the following Web site: <http://nais.msfc.nasa.gov/home.html>.

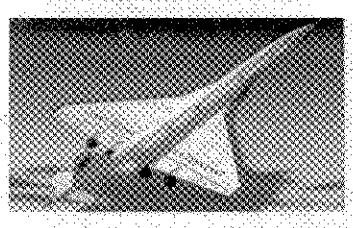
X-33 Launch Site Nearing Completion

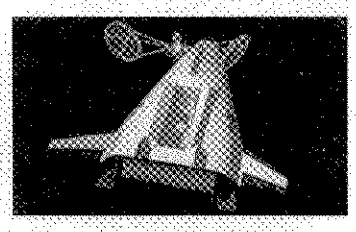
An overall shot of the 25-acre X-33 launch site, taken from Haystack Butte at Edwards Air Force Base, Calif., shows the site nearing completion. The photo was taken July 31. Construction crews recently erected the 250-foot water tower, left, which holds 250,000 gallons of water and will supply the water deluge system at launch. Other recent additions to the site include the white pressurized tanks for the liquid hydrogen and liquid oxygen that eventually will supply the X-33's linear aerospike engines, and the translating shelter, right, which will house the X-33 while it is serviced horizontally prior to each launch. The launch site is scheduled for completion this fall. The first of 15 test flights for the X-33 is scheduled to take place in July 1999.

Three Pillars Conference . . .

Continued from Page 1







The panel discussions, moderated by NASA Lewis Director Don Campbell, will touch on all three pillars.

Provisions have been made to make the panel discussions interactive via the internet. Live discussions will simultaneously be broadcast over the internet, and the public will have the chance to send in their comments. There will be other interactive opportunities available via the internet throughout the entire conference.

For the Children

Of special interest to children will be a television program run by NASA. The NASA CONNECT series emphasizes national science and mathematics standards and demonstrates the applications of the standards through television visits to the NASA workplace. A special CONNECT program is being prepared to coincide with the conference. It will broadcast one day before the conference.

All NASA centers will participate in the Aero Internet Day being held on Saturday and Sunday during the conference. Part of the day will involve virtual tours of all the NASA centers.

More information about the conference and its events can be found at <http://www.hq.nasa.gov/office/aero/conf98/>.

Three Pillars Presentation Available

Next time you are asked to talk to a group about NASA aeronautics and space transportation, consider giving a talk about the Three Pillars.

A Three Pillars presentation is now available in hard copy and electronic format through Langley's Speakers Bureau Program. The presentation consists of viewgraphs, a speech and talking points that provide an overview of the Agency's Three Pillars initiative. An addendum describes each Code R Center's role in the Three Pillars so that the presentation can be tailored to the audience.

The Speakers Bureau also has Three Pillars ink pens and brochures that can be given to the audience following the talk. For more information, contact Olin Jarrett, 864-6320, or o.jarrett@larc.nasa.gov

X-34 Completes Critical Milestone

MARSHALL SPACE FLIGHT CENTER RELEASE

The first wing assembly for NASA's X-34 technology demonstrator has completed qualification tests and has been shipped to the prime contractor, Orbital Sciences Corporation, Dulles, VA, where it has been mated to the X-34 test article under construction there.

Integration of the wing assembly with the test article fuselage marks a major milestone in the program. Flights of the air-launched X-34 are scheduled to begin next year in conjunction with flights of its larger and more advanced sister ship, the X-33.

The newly qualified X-34 wing assembly, intended for flight, has been installed, initially, on a full-scale X-34 test article at Orbital. The test article will be used for X-34 verification and certification. This first wing assembly will ultimately fly aboard one of two flight vehicles also under construction at Orbital.

The sub-orbital X-34 and X-33 vehicles will demonstrate key technologies — at high speeds and high altitudes — leading toward the development of full scale, commercially operated reusable launch vehicles after the turn of the century. The ultimate objective of these efforts is to dramatically reduce the cost of placing payloads into space.

1999 Alan T. Waterman Award Announced

BY BENJAMIN NEUMANN, NASA HEADQUARTERS

The Alan T. Waterman Award is the highest honor awarded by the National Science Foundation. Since 1975 when Congress established the award to honor the foundation's first director, the award, conferred annually, has been given to individuals who have demonstrated exceptional individual achievement in scientific or engineering research of sufficient quality to place them at the forefront of their peers.

The awardee receives a $500,000 nonrestrictive grant over a three-year period for continued research.

Who is eligible: Candidates must be U.S. citizens or permanent residents and must be 35 years old or younger, or not more than five years beyond receipt of the Ph.D. by Dec. 31, 1998. Criteria include originality, innovation and significant impact on the field.

How to Apply: Nomination application packets for 1999 are now available, and can be obtained from the National Science Foundation by contacting: Mrs. Susan E. Fannoney, Executive Secretary, Alan T. Waterman Award Committee, National Science Foundation, 4201 Wilson Blvd., Rm 1220, Arlington, VA 22230, phone: 703-306-1096; fax: 703-306-0181, or e-mail: <sfannone@nsf.gov>. The URL is <http://www.nsf.gov/nsb/awards/waterman>. Deadline for Submissions: Postmarked by Oct. 31, 1998.

NASA Technology Soars at AirVenture '98

BY KATHY BARNSTORFF

Aircraft stretched as far as the eye could see earlier this month in a huge field outside a small midwestern city. Aviation enthusiasts from all over the world converged on Oshkosh, Wisconsin for the 46th annual Experimental Aircraft Association (EAA) Fly-In.

Thousands came by plane, hundreds of thousands more by car for the world's largest sport aviation gathering called AirVenture '98. Estimates put the number of aircraft at 12,000. Twenty-five hundred of those were on display. The rest were transportation.

During the week long event the EAA figures more than 850,000 people roamed the grounds of Wittman Regional Airport. They oohed and aahed over the latest in general aviation as well as larger aircraft, including supersonic British Airways Concorde.

One of the many enthusiastic visitors was NASA Administrator Dan Goldin. He flew in for a day to meet with EAA officials, industry partners and reporters, check out the NASA exhibits and catch an air show.

"I like to hear from our customers ... what we're doing right and what we could do better," Goldin told a group of general aviation manufacturers.

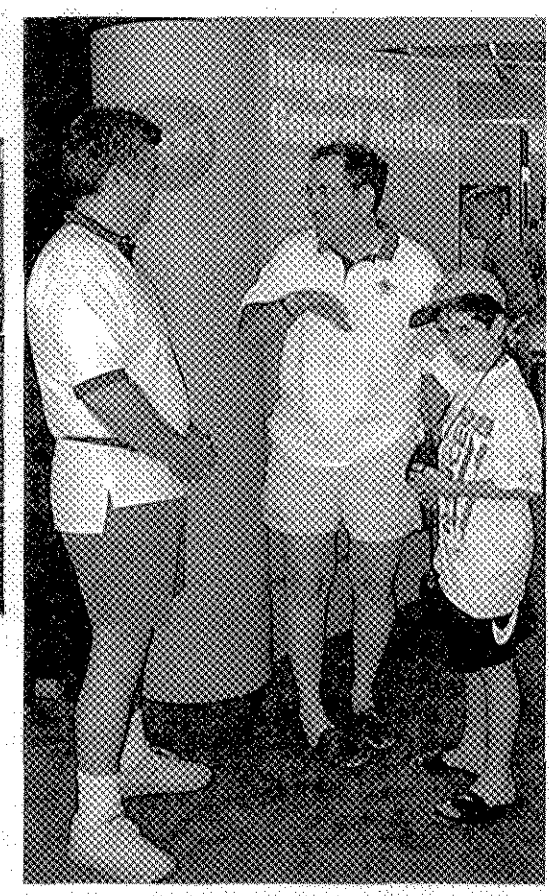
The administrator also toured both NASA exhibit halls. One building focused on the ten goals for aeronautics and space transportation technology which include aviation safety and reusable launch vehicles. A separate tent also highlighted women in NASA.

The other building displayed what NASA is doing to revitalize general aviation and the work of the Advanced General Aviation Transport Experiments (AGATE). AGATE is a consortium of NASA, the Federal Aviation Administration (FAA), industry and universities. A major attraction was the AGATE 1-B Beech Bonanza, a flying test bed for new technologies being developed by NASA and the rest of the partners.

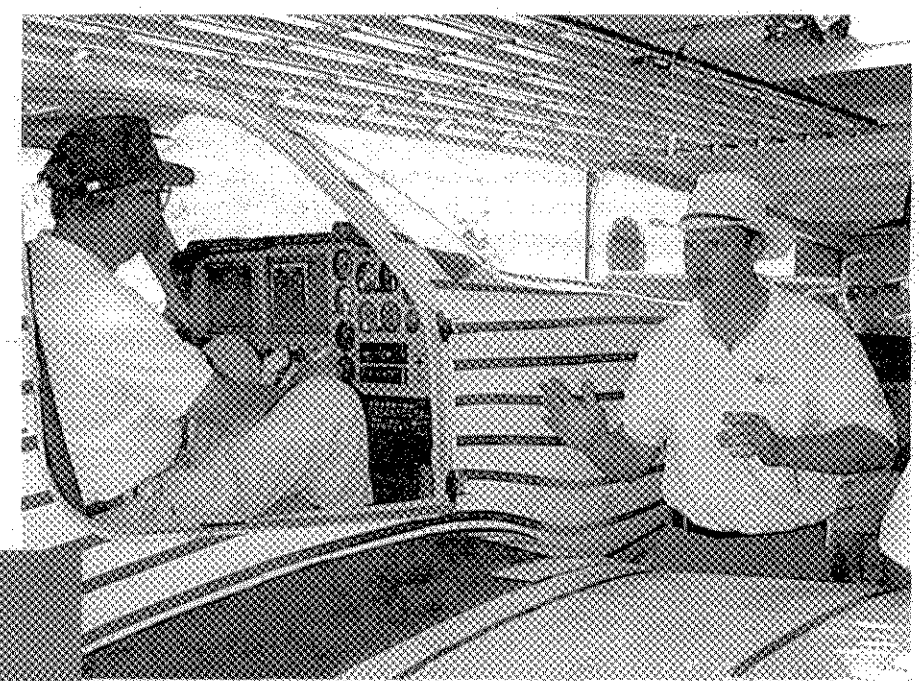
"This is our chance to reach out to the public. We are the public's representative in AGATE. This is our chance to give something back. This is where we show them what they're getting for their money," said Paul Krasa, the Langley Systems Assurance Work Package Manager for AGATE.

AGATE has also encouraged university students to get involved in general aviation by sponsoring a design competition for the last four years. New NASA Deputy Administrator for Aeronautics and Space Transportation Technology Mike Mann handed out this year's awards at a news conference. The event included remarks from Anne Harlan, the director of the FAA's William Hughes Technical Center, Atlantic City, New Jersey.

Two of the winners were from Virginia. The first place award went to a 27 member team from Mann's alma mater, Virginia Tech. Second place honors were captured by Pennsylvania State University. Third place was awarded to a team from the University of Virginia.

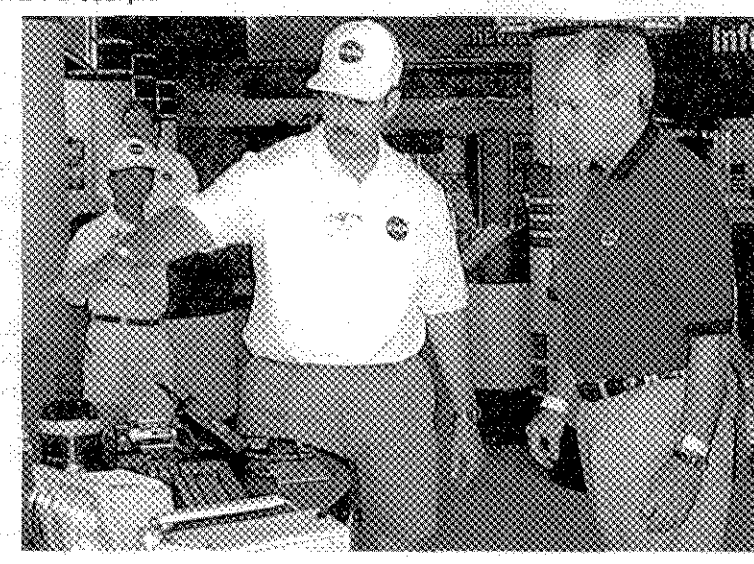


Bruce Holmes, above, Advanced Subsonic Technology Office, addresses the press during a news conference at Oshkosh. At right, Dan DiCarlo, Center Crew Systems and Operations Branch/AGATE, talks about general aviation with Jim Meer of Bethesda, Md. and his son, Julian.

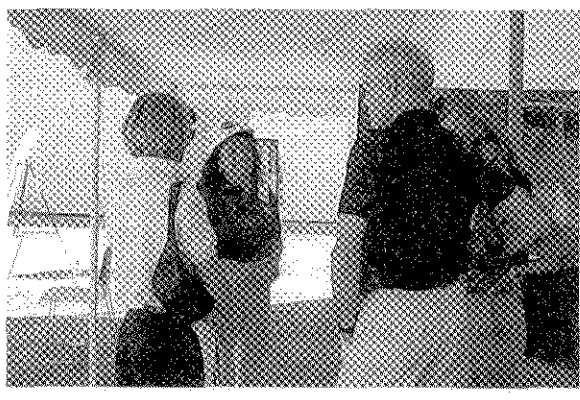


Mark Peters, Seagull Technology, talks with a visitor who is sitting in the AGATE 1-B cockpit.

The British Airways Concorde, pioneer of commercial supersonic transports, paid a visit to the Fly-In this year.



At right, Elliot Cramer, aerospace technologist from the Non-Destructive Evaluation Sciences Branch, gives NASA Administrator Daniel Goldin an explanation of NDE technology at the NASA exhibit.



Dr. Christine Darden, High Speed Research Program Office, speaks to Jack and Beth Schmid, NASA Headquarters, and others about the "Women in NASA" exhibit housed next to the main NASA exhibits building.

Photos by Kathy Barnstorff

Re-Refined Oil Now Used On-Site

BY DAVE STEIGERWALD

The Vehicle Maintenance staff has started using re-refined oil on fleet vehicles at the Center. Buying re-refined oil is good for the environment and for the economy, and it allows LaRC to meet Federal environmental requirements. The re-refined automotive oil meets all applicable SAE standards and American Petroleum Institute and military specifications.

Re-refining used oil requires only about one-third of the energy that it takes for refining crude oil to lubricant quality. It takes 42 gallons of crude oil, but only one gallon of used oil, to produce 2 quarts of new, high-quality lubricating oil. Using re-refined oil completes the recycling loop and helps increase the market for used oil.

Tu-144LL Experiments Add to HSR Knowledge

BY BRIAN SUTTON

Trying to calibrate delicate acoustical sensors on an airplane, in an open hangar with no heat, gusting winds and near-freezing temperatures is not the ideal research situation. Yet these are the conditions a team of researchers from Langley had to deal with when they worked at the Tupolev factory, just outside Moscow, Russia.

NASA, the Tupolev Joint Stock Company, and several American aerospace companies came together in a cooperative effort to use the Russian Tu-144LL supersonic transport jet as a flying laboratory for the NASA High-Speed Research (HSR) program. The program teams NASA with U.S. industry to develop technologies required for a new generation supersonic airliner. This new supersonic transport jet must be both environmentally compatible and economically successful. Following successful installation of new engines on the aircraft, data was collected from a series of flight tests conducted between April 1997 and February 1998.

The Experiments

The experiments performed by the Langley/Boeing team dealt with the problem of noise levels inside the passenger cabin. Flying at extremely high speeds increases interior noise levels. Being able to transport passengers safely is of the utmost importance, but a quiet cabin will also be crucial to the success of a future supersonic transport aircraft.

From the start, there was a clearly defined recipient for the data produced in this experiment – the HSR Structural Acoustics Integrated Technical Development (ITD) Team. ITD team lead, Dr. Stephen Rizzi, Structural Acoustics Branch, and Dr. Robert Rackl of Boeing-Seattle, served as coordinators of the structure/cabin noise experiment. Langley's Keith Harris, Vernie Knight and Donna Gallaher of the Flight Instrumentation Branch were vital team members.

Experiment Objectives

The objectives of the structure/cabin noise experiments were to record external fuselage pressure fluctuations and near-field jet noise sources, and the resulting cabin interior noise. Measurements were made on the Tu-144LL during takeoff, landing, and cruise flight conditions. Data was obtained using interior microphones, external pressure transducers and accelerometers mounted on the fuselage interior sidewall. The ITD team will use the data to validate various noise source and interior noise prediction models.

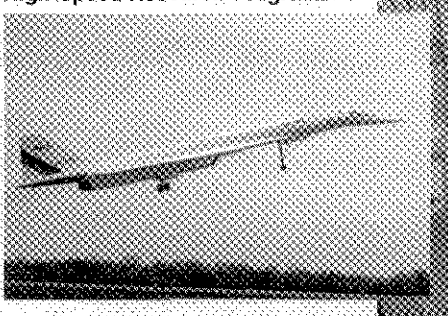
The Tu-144LL flight data was reduced at Langley in only a two-month period and is the largest known data set relating to this particular kind of research. It has been distributed to the program participants including Boeing, Lockheed-Martin and Tupolev for further analysis. Several requests for the ITD noise data have come from outside HSR programs, including the Naval Research Lab, Gulfstream Aerospace Corporation, Georgia Institute of Technology and Michigan State University.

The structure/cabin noise experiments team worked hand-in-hand with the Tupolev staff in Russia throughout the flight test program. In comparison, other Tu-144LL in-flight experiments were performed directly by Tupolev with little or no on-site participation by the U.S. side, other than the important function of instrumentation coordination by NASA Dryden Flight Research Center.

"Due to the presence of the U.S. team, we were able to negotiate additional test conditions over those previously planned and thus accomplished over 100 percent of our objectives. This high degree of success is directly attributable to the close working relationship we established," said Rizzi.

Keith Harris, Flight Instrumentation Branch, performs a functional check of the Langley designed instrument panel.

Below, the Tu-144 takes off carrying experiments for the High-Speed Research Program.



The structure/cabin noise experiment also differed from the other experiments since it had unique instrumentation requirements. Because of this, a team at Langley designed and built a totally separate data acquisition system than the one used for the other in-flight experiments.

Development of the instrumentation pallet and signal conditioning began at Langley in the fall of 1994 and was completed a year later. Contributing organizations included the Structural Acoustics, Flight Instrumentation, Engineering Design, Fluid and Acoustics Research Support, Metals Applications Technology, and Electronics Technology Branches, Quality Assurance Office and Langley contractors Raytheon and NYMA.

In addition to the Langley structure/cabin noise experiments, five other in-flight experiments and two ground experiments were completed using the Tu-144LL. The in-flight experiments involved engine airflow and heat, surface and structure equilibrium temperature, slender wing ground effects, handling quality and boundary layer, skin friction and pressure measurements. These experiments were led by NASA Dryden, Boeing, McDonnell Douglas and Rockwell. The two ground experiments, both for engine operations, were completed before the flight tests began. They were led by Rockwell, NASA Lewis, Pratt & Whitney and General Electric. IBP Aircraft Ltd. served as liaison between the U.S. team and Tupolev for all experiments.

With the success of the first series of tests, a follow-on program is being planned. It will entail additions to the six completed in-flight experiments, a new wing deflection experiment and a pilot exchange in which NASA pilots from Dryden and Langley will fly the Tu-144LL as part of the handling quality experiment. The follow-on program is to be completed by the spring of 1999.

"Working in an environment of deteriorating facilities is not easy for the Russian people. In the face of this adversity, the tireless efforts of our Russian counterparts resulted in successful completion of the program and are to be commended. It doesn't take long to get a sense of how really fortunate we are here at Langley," added Rizzi.

Photo by Kathy Barnstorff

Working to Make Flying Safer

Aviation Safety Program Marks Year Milestone

BY KATHY BARNSTORFF

The NASA aviation safety initiative started last summer in response to the White House Commission on Aviation Safety and Security, chaired by Vice President Al Gore.

The Aviation Safety Program (AvSP) is a partnership with the Federal Aviation Administration (FAA), the Department of Defense (DoD) and the aviation industry which supports a goal set by President Clinton: to reduce the fatal aircraft accident rate by 80 percent in 10 years, 90 percent in 20 years.

In its first year the NASA initiative, headquartered at Langley, has forged alliances with government and private industry in the U.S. and Europe.

"We see ample opportunity for cooperation with NASA," said Dr. Adriaan deGraaff of the Netherlands National Aerospace Laboratory, coordinator of the Association of European Research Establishments in Aeronautics.

The safety program has focused NASA research on a number of technological aircraft safety advancements. AvSP priorities were set by working groups that included aircraft manufacturers and operators, U.S. government agencies and universities.

"Pilots tell us their number one priority is real-time, graphical weather information. We want to make it as easy to get a weather channel in the cockpit as it is in your living room," said Michael Lewis, AvSP Director.

NASA is working with eight industry teams to develop Aviation Weather Information (AWIN) systems for general aviation aircraft and commercial airliners.

NASA envisions a system that allows aircraft to be both a source and user of weather information. Airborne sensors would provide data for weather systems onboard the plane, on the ground and in other aircraft. Weather information would get to and from the aircraft by satellite and ground transceivers using broadcast datalink and two-way communications systems. NASA researchers are also testing a system to detect airborne hazards not seen by traditional radar. Clear air turbulence is the leading cause of in-flight injuries to airline passengers.

Mike Lewis, second from left, AvSP director talks with NASA Administrator Dan Goldin and Mrs. Goldin at AirVenture (Oshkosh) '98.

Early flight tests of a sensor called ACLAIM or Airborne Coherent LiDar for Advanced In-flight Measurement show some promise. "During the tests, the system observed turbulent regions of air ahead of the aircraft as it moved forward. The aircraft experienced disturbances as it penetrated the turbulence. In that scenario, if an alarm were sounded when turbulence was first detected, passengers could have quickly returned to their seats and fastened their seatbelts," said project manager Rod Bogue of Dryden Flight Research Center, Edwards, Calif.

ACLAIM relies on a form of infrared laser Light Detection and Ranging (LiDAR) technology to detect changing velocities of tiny particles in turbulent air.

NASA has committed $500 million over five years for aviation safety. For more information on the NASA Aviation Safety Program please check the Internet at: <www.hq.nasa.gov/office/aero/oastthp/programs/avsaf/avsafpro.htm>. For a list of AWIN industry teams see: <http://oea.larc.nasa.gov/news_rels/1998/May98/98_23.html>. For more on ACLAIM use: <http://www.dfrc.nasa.gov/PAO/PressReleases/1998/98-16.html>.

AdVentures

CONDO FOR SALE: Hampton, immaculate 1 BR, 1 bath w/separate vanity, cathedral ceilings, balcony, all appliances, ceiling fans, security system, community pools and fitness center, near Langley/NASA, I-64. Qualifying assumable loan of $313/month or $33,500. Call 827-1174.

FOR SALE: Undeveloped wooded lot in Gloucester, 2.39 acres at corner of Duval and Francis (walking distance of Courthouse). $35,000. Call 886-1900, ask for Edythe Lichtenstein.

FOR SALE: Electric range, Amana, top-of-the-line, brand new, still in box, white, smooth-top burner elements, electronic oven controls. Retails for $700, selling for $495. Call 247-5144.

FOR SALE: Colonial 2-story, 3 bedroom house with 2-1/2 baths in historic Fox Hill. Located on quiet cul-de-sac, 10 minutes from Langley and near two beaches. $106,500. Call 850-8189.

FOR SALE: 1989 Galaxy Super Sport boat, inboard/outboard with trailer. Ready to put in water. Equipped with new depth finder, erectable awning, protective cover, five life jackets and tube for tubing. Must sell at a sacrifice -$2995. Contact Ben Barker, 850-2279.

APICULTURE CLUB: The Apiculture (Honeybunch) Club will hold its monthly meeting August 17, from 7 to 9 p.m., at the Regency Health Care Center, 112 North Constitution Drive, Grafton. Meetings are free and open to the public. For information call Henk at 566-3911, Maddrea at ext. 42674 or Glaspell ext. 45190.

LANGLEY ALUMNI ASSOCIATION: The next mtg. will be held Sept. 8 in the executive dining room at the Cafeteria with lunch at 11:30 a.m. and a brief mtg. following at noon. For info. call the Alumni Office at 864-7330.

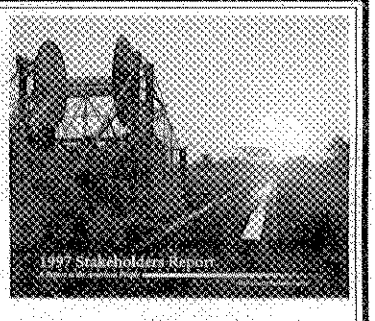
WRL NEWS: The Williamsburg Regional Library has offered a series of folk and jazz concerts in its Arts Center Theatre for more than 16 years. The series is known for introducing new artists to area audiences while highlighting the accomplishments of Grammy winners and other well-known performers. This season begins Sept. 11 with Cheryl Wheeler and Sept. 25 with Pat Donohue and Steven Bennett. For details check the library's web site at <http://www.wrl.org>. For ticket reservations, directions or other information, call (757) 259-4070.

FT. MONROE NEWS: Sheila Noll, chairperson of the York County Board of Supervisors, will speak at a luncheon to observe Women's Equality Day, 11:30 a.m., Aug. 26, at the Ft. Monroe Officer's Club. This year's theme is "Living the Legacy of Women's Rights." Reservations, by Aug. 24, are required and lunch prices at the club are between $4-$6, paid at the door. For information and reservations, call 727-3500.

LAA AUGUST ANNOUNCEMENTS

- The LAA Lounge, located in Building 1222, opens at 4 p.m. daily. Every Tuesday night is Nacho Night—free nacho chips, cheese, salsa and chili with a buy-one-get-one-free beverage special from 5 to 5:30 p.m. Every Wednesday night is Wacky Wednesday from 4:30 to 5:30 p.m. Just 50-cents for your favorite cold beverage.
- Bingo is every Thursday night at 7 p.m. Win cash prizes.
- NASA Bowling League is forming. Bowling is Tuesdays at 6 p.m. at the York AMF Lanes in Grafton, starting around Sept. 15 or 22. Teams from last year's league should send a representative, call Alan Frizzell, ext. 45413, or Rodney Russell, ext. 43053, to confirm their team's spot in the league.
- LAA Aerobics: Classes are kept simple, so beginners can join at any time. Benches and and free weights are available as are resistance tubing and dyna-bands. Resist-A-Ball classes are every Saturday morning from 9:30-10:30 a.m. in the LAA gym. Weekday classes, Tuesday and Thursday, are from 5 to 6 p.m. For more information call ext. 47520 or 42295.

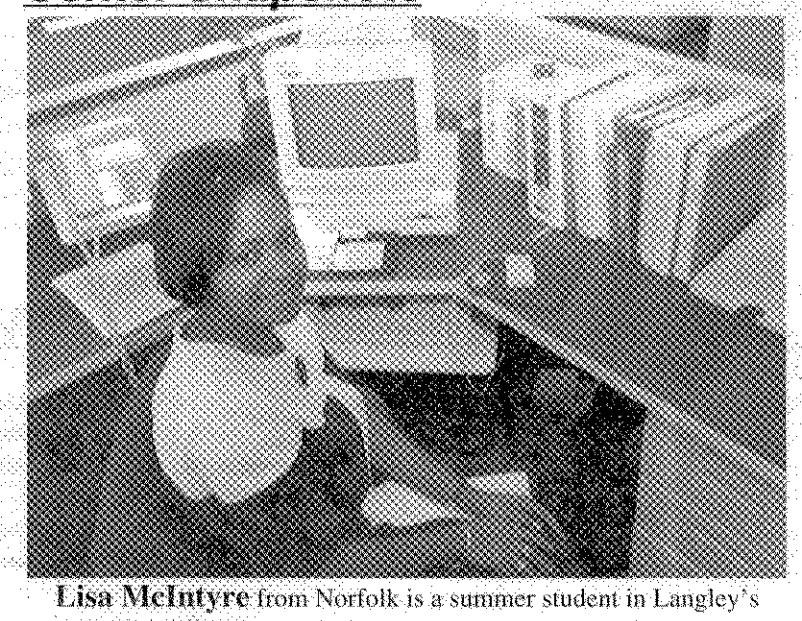
STAKEHOLDERS REPORT AVAILABLE:



The *1997 Stakeholders Report, a Report to the American People*, is available to retirees at Langley's Public Inquiry Center, 1 West Reid, Bldg. 1153. Copies will also be available at the next Alumni Association meeting or by mail by calling 864-3293. Copies have been distributed to employees and on-site contractors through Center distribution. Comments or suggestions for future editions may be directed to Marny Skora at 864-3315 or by e-mail at m.m.skora@larc.nasa.gov.

Center Snapshots

Photo by Jeff Caplan



Lisa McIntyre from Norfolk is a summer student in Langley's Army Office. She is sponsored by the Department of Defense Workforce Recruitment Program for College Students with Disabilities. Lisa works as an administrative assistant, using a variety of computer applications like PowerPoint, Excel and Word. Her main task is compiling an office procedure manual for the many automated procedures in the Business Office. There are about 18 to 20 sets of passwords for the automated procedures in the Army Office.

"It is important that we document procedures so that we can provide continuity of services to our customers in the event one of the staff is absent," said Henry Russell, team leader. "Lisa is a welcome asset. The office had five people; now we have three, so her help is truly appreciated. This kind of work usually gets put on the back burner."

Lisa says the variety of work has given her a clearer picture in making career choices. Lisa also received career guidance from Gerri Rankin, Disabilities Program manager. Lisa continues to work on her associates degree in business administration at Tidewater Community College in Norfolk, and plans to get a four-year degree in accounting or information systems.

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Researcher News

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National Aeronautics and
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Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 17 ❖ September 4, 1998

First Hardware Delivered in Hyper-X Program

BY KEITH HENRY AND KIRSTEN WILLIAMS, NASA DRYDEN

A small engine designed to propel a 12-foot unpiloted research vehicle at seven times the speed of sound has been built and "delivered" to Langley and Dryden Hyper-X program officials.

The "scramjet" engine is nearly 30-inches long. It was fabricated by GASL, Inc., Ronkonkoma, N.Y., as part of a contract to deliver flight and ground hardware for the Hyper-X program. The project is an ambitious research effort to demonstrate hypersonic propulsion technologies in flight.

The Hyper-X research vehicle contract is implemented for NASA by a team led by MicroCraft, Tullahoma, Tenn., and includes GASL; Boeing, Seal Beach, Calif., and Accurate Automation, Chattanooga, Tenn. A second contract, to Orbital Sciences Corp., Dulles, Va., will provide rockets to boost the research vehicles to test altitude.

The engine is the first hardware to be completed in the program and will be used in high-speed ground tests in Langley's 8-Foot High-Temperature Tunnel.

An identical engine is being fabricated now. It will be mated to its flight vehicle in February 1999 and delivered to Dryden, leading to the first flight of the program in early 2000.

Langley manages the five-year, approximately $170 million Hyper-X Phase I program. Dryden is responsible for vehicle fabrication and flight tests.

Three flights are planned – two at Mach 7 and one at Mach 10. The flight tests will be conducted within the Western Test Range off the coast of southern California. Each of three planned vehicles will be flown once.

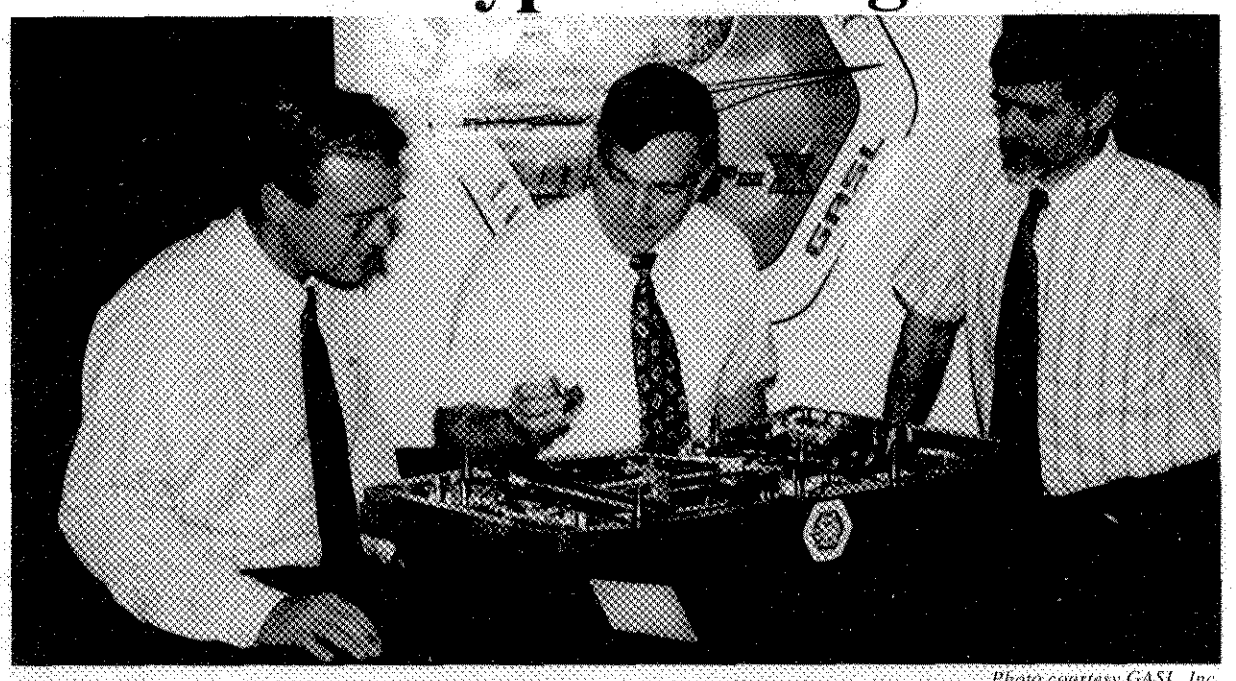

Photo courtesy GASL, Inc.

NASA Hyper-X program managers inspect a flight engine, the first hardware delivered to NASA as part of a multi-year Hyper-X contract with MicroCraft, Inc., Tullahoma, Tenn. Dryden's Joel Sitz, left, and Langley's Vince Rausch and Chuck McClinton traveled to GASL, Inc., Ronkonkoma, N.Y., the Hyper-X engine subcontractor, to formally accept deliv-ery. The engine will be transported to Langley for a series of wind tunnel tests in the 8-Foot High-Temperature Tunnel beginning in early 1999 prior to the first scheduled flight in early 2000.

Hyper-X vehicles, which have been designated X-43, will be boosted to their test point on the first stage of a modified Pegasus rocket built by Orbital Sciences Corp. It will be launched by the Dryden B-52 from an altitude of 19,000 to 43,000 feet depending upon the mission. For each flight, the booster will accelerate the X-43 to Mach 7 or 10 at altitudes up to 100,000 feet, where it will separate from the booster and fly under its own power.

Mach 7, or seven times the speed of sound, is about 5,000 mph at sea level. Mach 10 is about 7,200 mph at sea level.

Hyper-X program managers hope to demonstrate "air-breathing" engine technologies that could ultimately be applied in vehicle types from hypersonic (Mach 5 and above) aircraft to reusable space launchers. By comparison, the high-flying SR-71 reconnaissance airplane, which flies a little more than Mach 3, is the fastest air-breathing aircraft to date.

Although prior flight experiments conducted by the Russians using a rocket booster have demonstrated air-breathing engine operation at Mach 5 to 6 conditions, the X-43 will be the first free-flying demonstration of an airframe-integrated, air-breathing engine and will extend the flight range to Mach 10.

Extending air-breathing technologies to much greater speeds requires the development of scramjet engines, the engine that will propel the research vehicles. Unlike a rocket, which must carry its own oxygen for combustion, an air-breathing aircraft burns oxygen in air scooped from the atmosphere. Because of this, air-breathing hypersonic vehicles can be lighter and should be able to carry more cargo/payload than equivalent rocket-powered systems.

A ramjet operates by subsonic combustion of fuel in a stream of air compressed by the forward speed of the aircraft itself, as opposed to a conventional jet engine, in which the fan blades of the compressor section compress the air. The fuel for X-43 will be hydrogen.

A scramjet (supersonic-combustion ramjet) is a ramjet engine in which the airflow through the entire engine remains supersonic (faster than Mach 1 or the speed of sound).

Images of the Hyper-X/X-43 vehicle and additional information can be obtained at the following URLs:
For still photos: <http://lisar.larc.nasa.gov/LISAR/BROWSE/hyperx.html>; for animation: <http://lava/BROWSE/hyperx.html>; and a fact sheet: <http://oea.larc.nasa.gov/PAIS/Hyper-X.html>

Langley Contributed to 1997 Collier Trophy Winner

Langley researchers played a direct role in the Gulfstream V

Langley researchers made substantial contributions, especially in aero-structural and aerodynamic areas, to the development of the Gulfstream V (GV) aircraft, 1997 winner of the Collier Trophy.

As part of an agreement between Gulfstream Aerospace Corporation (GAC) and Langley, four successful tests associated with the GV program were conducted in the Center's wind tunnels between 1993 and 1995. Two tests in the Transonic Dynamics Tunnel (TDT) investigated the transonic flutter characteristics; and two in the Low Turbulence Pressure Tunnel (LTPT) investigated high-lift performance.

"Testing . . .Testing"

A 1/10-scale semi-span wing model of the GV aircraft was tested in TDT to support flutter clearance of the aircraft by validating flutter prediction methods. The first test of the model was used to obtain flutter data over a range of subsonic and transonic speeds (Mach = 0.60 to 0.90) for a baseline configuration. The second test concentrated on investigating the effects of a new advanced-design winglet on the flutter characteristics of the GV.

"Flutter is a dynamic oscillatory instability of a flight vehicle or lifting surface associated with the interaction of aerodynamic, elastic and inertial forces. It is self-sustained and can lead to a catastrophic failure of a vehicle or lifting surface, such as a wing," said Donald Keller, lead test engineer during the two tests at the TDT. "Because of the high-speed cruise capability of the aircraft, transonic flutter testing of a wind tunnel model prior to first flight was a key part of insuring that flutter would not occur on the aircraft," he said. "The successful testing of the Gulfstream V at the TDT was a result of the GV team who designed and oversaw fabrication of the model, and excellent support provided by the technicians at the TDT."

Continued on Page 4

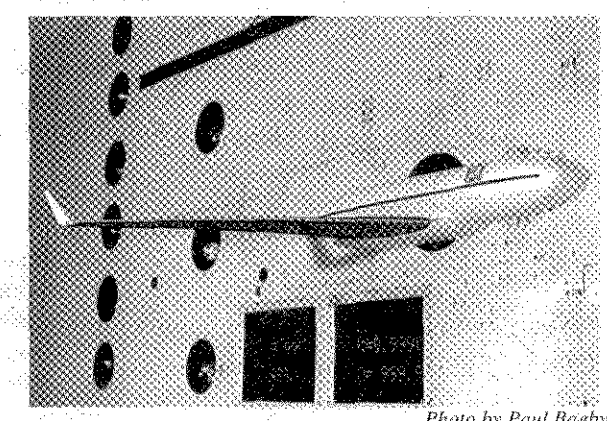

Photo by Paul Bagby

This 1/10th-scale model was tested in Langley's Transonic Dynamics Tunnel in 1993 and 1994. The semi-span model was constructed of a variable thickness aluminum plate to which balsa wood was bonded and contoured to form the proper supercritical airfoil. It was designed to flutter within the TDT operating boundary with flutter characteristics similar to those predicted for the aircraft.

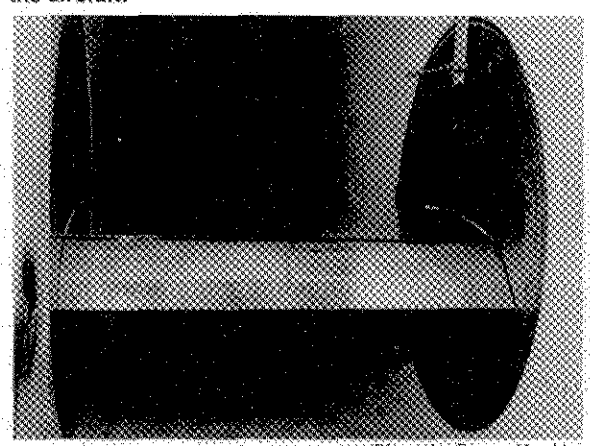

Photo by Peggy Hopkins

Gulfstream provided this 1/5th-scale model for testing in the Low Turbulence Pressure Tunnel (LTPT) in 1994 and 1995. Shown with a view looking upstream, the model provided data for the design of GV's high-lift system.

News Briefs

Around the Agency

CREWS NAMED TO SUPPORT 1999 SHUTTLES: Thirteen astronauts have been named to support upcoming Shuttle missions, STS-96, -97 and -98, slated for launch next year and dedicated to continuing the on-orbit construction of the International Space Station (ISS). Three-time astronaut Kent V. Rominger (Cmdr., USN) will lead the crew of STS-96, a logistics and resupply mission for the ISS targeting a mid-May 1999 launch. Brent W. Jett Jr. (Cmdr., USN) will command the crew of Endeavour for STS-97 in August 1999, continuing construction of the ISS. In October 1999, Discovery will continue expansion of the station when astronaut Kenneth D. Cockrell commands STS-98. For information on these astronauts, or any astronaut, see the NASA Internet biography home page at: <http://www.jsc.nasa.gov/Bios/>. For more information on the International Space Station, visit the home page at <:http://station.nasa.gov>.

NASA MAY POSTPONE GLOBAL SURVEYOR ANTENNA: Concern over the deployment mechanism for the high-gain communication antenna on the Mars Global Surveyor spacecraft has caused NASA managers to consider postponing the antenna's deployment in order to maximize the probability of mission success. The project team is studying a postponement of up to nine months in the antenna deployment, which currently is scheduled for March 1999. The spacecraft, now in orbit around Mars, uses the undeployed high-gain antenna to communicate with Earth, but the entire spacecraft must be turned to point the antenna toward Earth during each communication session.

NASA AND AIR FORCE AWARD JOINT CONTRACT: Kennedy Space Center announced Space Gateway Support (SGS) of Herndon, Va., has been selected for award of a government contract to perform base operations for Kennedy and the 45th Space Wing, which includes Cape Canaveral Air Station and Patrick Air Force Base. SGS is a joint venture of Northrop Grumman Technical Services, Herndon, Va.; ICF Kaiser Defense Programs, Inc., Fairfax, Va.; and Wackenhut Services, Inc., Palm Beach Gardens, Fla. In an unprecedented display of cooperation, two government agencies will combine resources and requirements to cut expenses, reinvest savings and consolidate functions with the objective of remaining competitive in a global launch market.

For more information, check the Internet for NASA's News and Information web page at <http://www.nasa.gov/releases/1998>.

MULTICULTURAL LEADERSHIP TEAM
MCLT
NASA LANGLEY RESEARCH CENTER

A fact about diversity from Langley's Multicultural Leadership Team: Women account for 46-percent of the U.S. labor force, up from 29-percent in 1950. Soon they will reach parity with men. Taken from "Facts About Diversity," National MultiCultural Institute. Come visit the MCLT web site at <http://mclt.larc.nasa.gov/>.

Announcements

Langley's Fair Exhibit Needs You

Volunteers are needed to staff NASA Langley aeronautics and space exhibits in the Commonwealth Technology Building at the Virginia State Fair, Sept. 24 to Oct. 4. Both administrative and technical employees are needed to staff the exhibits.

Volunteers will receive exhibit training at a volunteer orientation Sept. 17, at 10 a.m. in the Pearl Young Theater. Volunteer shifts are from 10 a.m. to 3 p.m. and 3 to 8:30 p.m. daily. Volunteers are asked to work only one shift/one day. Transportation and admission tickets are provided for all volunteers.

Volunteers need their supervisor's approval to staff an exhibit. Shifts have been set up so that no travel dollars will be required. For more information please contact Sandy Lemons at ext. 43957 or <s.c.lemons@larc.nasa.gov>.

Technology Works
Commonwealth Technology Center
State Fair of Virginia, Richmond
September 24 - October 4, 1998

Community Day of Caring Initiatives Allow All Langley Employees to Participate

Langley is once again participating in the Day of Caring's School Tools initiative. Employees are encouraged to purchase school supplies and drop them on the tables provided in the Cafeteria and the AeroDyner. School items such as pens, pencils, notebooks, crayons, markers and glue are requested. On Sept. 10, the donated items will be packaged and delivered to area schools for distribution to needy children on the Peninsula.

A Children's Book Drive, new this year, has been organized to collect new or gently used children's books. Books will be distributed through the Peninsula's Healthy Families Initiative. Collection boxes are located in the Cafeteria and the AeroDyner.

Both advance drives are being co-sponsored by the Office of Public Services and the Cafeteria. Those who can not participate in the Day of Caring can help with the annual volunteer effort.

Chuck Eldred Retirement Social

Chuck Eldred has decided to retire and to sail off into the sunset with Gail. A retirement social in honor of Chuck will be held Tuesday, Sept. 8, 5 to 7 p.m., in the Langley and Hampton Rooms of the H.J.E. Reid Conference Center. Cost of $12 per person/$20 per couple includes heavy hors d'oeuvres, cake and gift. Call Bev Sterling at ext. 44502 or Walt Engelund at ext. 44486 for reservations ASAP.

In Memoriam

Kenneth S. Mitcheltree

Kenneth S. "Ken" Mitcheltree, 81, died Friday, Aug. 14. He worked at Langley as a machinist until his retirement in 1982.

Richard K. Stoops

Richard K. Stoops, 68, died Tuesday, Aug. 4. He retired from Langley after 35 years and was owner/operator of Adner Express, Gloucester, and the North Star and Hy Co Markets, Mathews.

Robert E. Little

Robert E. "Bob" Little, 78, died Thursday, July 2. He retired as a technical assistant, Fabrication Division, in 1972 after 35 years of service.

Carlson, Bezos-O'Connor Leave for Massachusetts Fellowships

BY NANCY FINN

Two Langley employees prepare to attend fellowships this fall. Dr. Ann B. Carlson, special assistant to the chief of the Atmospheric Sciences Division (ASD) and Gaudy M. Bezos-O'Connor, technology commercialization project manager, of the Technology Applications Group (TAG), head to Massachusetts.

Carlson

Carlson

Carlson will be attending Harvard's Program for Management Development (PMD) in Boston. PMD stresses inter-relationships among business, government and the public. Participants will study international business environment, and receive training in modern management skills, methods and ideas.

"I hope to gain an international perspective on general management and trends, political environments and economic conditions relevant to public and private institutions operating on a global scale," Carlson said.

Carlson hopes to get management ideas that will improve her performance at NASA as well as an understanding of the environments in which NASA customers do business. "This should improve my ability to meet their needs and respond to their concerns," she said.

Carlson came to Langley as a summer intern working at the 16-Foot Transonic Tunnel in 1980. The next year, she returned as a thermal engineer in the Systems Engineering Division. She earned her doctorate from North Carolina State University, then transferred to the Aerothermodynamics Branch of the Space Systems Division where she pursued research in rarefied gas dynamics. In 1995 she became the assistant head of the Radiation Sciences Branch, ASD. Carlson has served as assistant chief of the Chemistry and Dynamics Branch (1997) and as assistant division chief from April to July 1998.

Bezos-O'Connor

Bezos-O'Connor

Bezos-O'Connor will be attending the Massachusetts Institute of Technology's Advanced Study Program Fellowship in Cambridge. The program allows her to mix class work, an industry project and the university licensing process. She hopes to gain an understanding of how global economic issues affect the use of technology.

"These insights will improve my ability to develop more effective technology selection, marketing and licensing strategies which will result in more commercialization successes for the Agency and increase U.S. market share and wealth for our industrial partners," Bezos-O'Connor said.

She came to Langley in 1983, and was a member of the Agency Heavy Rain Effects (HRE) Program Team for nine years where she acted as interpreter for the NASA/Spain Cooperative Research Effort, and senior researcher for the Aircraft Landing Dynamics Facility Large-Scale HRE Aerodynamics Test Program. Bezos-O'Connor transferred to TAG in 1994 where she has lead three tech transfer activities for Langley. She was responsible for NASA's first Automotive and Naval Technology Commercialization Partnerships. Bezos-O'Connor served as the Technology Opportunities Showcase '95 committee chairperson. She leads the Carbon-Carbon Piston Technology commercialization effort, and serves as the Center lead on the Agency Marketing Team.

News Researcher

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@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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Editor..... Ann C. Gaudreaux
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.

Teaming to Make a Difference

MARK J. SHUART, LANGLEY'S 1998 CFC CHAIRPERSON

Surely everyone at the Center has been on a team. Many of our technical accomplishments have been the result of team efforts including conducting studies of Shuttle tiles, developing sensors for wind shear, and completing calculations for entry into the Martian atmosphere. We have also effectively teamed at work to operate our wind tunnels more efficiently, to streamline our business operations, and to develop options for reorganizing the Center. Teaming may be what we call it today; Langley has always relied on groups of dedicated people working together to get the job done.

Many of you are also on teams outside of work. We can all be proud of the rich diversity of contributions from Center employees that help our communities. These tremendous contributions include unselfish commitments of time and support to children and youth, senior citizens, non-profit organizations and charitable causes. In fact, teaming is part of our culture that relies on groups of dedicated people working together to get the job done!

A natural extension of our community teaming is participation in the Combined Federal Campaign. Each year when we conduct the CFC, we ask the Center to form a single team that makes a difference. This difference is real and significant. Terry Morris from FETD is "living proof" of this difference and the national spokesman for the CFC this year. The theme of his message is "Living Proof," and the Center's commitment to making a difference is well represented by Terry. Also, the Center's CFC Coordinating Committee has been hard at work preparing for this year's campaign. We have set an aggressive goal of $288,000, a slight increase from last year's goal despite a reduction of employees. This is a realistic goal in light of our successful history and our commitment to making a difference. This year's campaign will occur during September 28 through October 9. The key to our success this year will be your participation!

Some of our best memories come from our teaming accomplishments. These may be at work or in the community. I urge each of you to join this year's CFC Team through your participation and generous contributions. This Teaming will make a difference here, now, across our world, and for years to come.

Photo by Sandy Gibbs

The 1998 Combined Federal Campaign (CFC) committee persons are pictured standing near the sign for the H.J.E. Reid Conference Center. The sign posts the date and time of the Kickoff Meeting for this year's CFC campaign. Committee members are, from left, Carissa Smith, recorder, Mark Shuart, chairperson, Earl Reese, CFC loaned executive, Terry Morris, CFC Kickoff speaker, Karen Credeur, Peninsula CFC liaison, Susie Henriksen, financial chairperson, and Pam Verniel, publicity. Not pictured are Bill Smith, vice chairperson, John McDonough, AFGE representative, and Richard Bennett, IAM representative.

Morris to Speak at Langley's CFC Kickoff

Terry Morris, Systems Integration Branch, illustrates why a contributor's pledge is so important through his very own personal success story. Abused, then abandoned as a child, he was given another chance in life after being placed in a foster home for boys supported by contributions to the Combined Federal Campaign (CFC). He is "living proof" that CFC works.

This foster home taught Morris about discipline, trust, love, and the importance of education . . . and it made the difference. He will be the keynote speaker for Langley Research Center's Combined Federal Campaign Kickoff. The kickoff will be at the H.J.E. Reid Conference Center on Friday, Sept. 18 at 9:30 a.m.

Morris received his bachelor of science degree in electrical engineering from Mississippi State University in May 1990, a master of science degree in electrical engineering from Old Dominion University in August 1995, and attended Massachusetts Institute of Technology under the George M. Low Fellowship Program from September 1995 through May 1996. He is currently working toward his doctorate in systems engineering at the University of Virginia.

He has worked in several divisions at Langley since 1985. His latest assignment is in the Flight Electronics and Technology Division. Some areas of his research expertise are high-speed aerodynamics, solar-pumped lasers, flight simulators and wind tunnel design.

Morris — On the Road Again — Nationally

He has worked with the CFC for a number of years. Morris is featured in this year's national CFC video as well as in the CFC's 1990 video. He is now a national CFC spokesperson with many speaking engagements lined up for the coming months. Some of the venues where Morris will share his experiences are: Department of Health and Human Services, Department of Defense at the Pentagon, Department of Transportation, Southern Mississippi University, Kessler Air Force Base, the Virginia Peninsula Kickoff, Stennis Space Center, Marshall Space Flight Center, Goddard Space Flight Center and Kennedy Space Center.

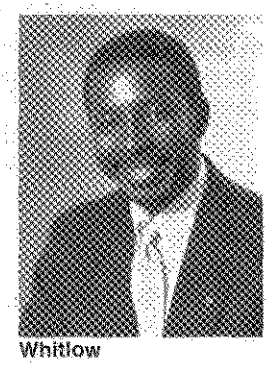
Whitlow Accepts Post at Lewis

Dr. Woodrow Whitlow Jr., chief of the Structures Division, has accepted the post of Director of Research and Technology at NASA Lewis Research Center, Cleveland, Ohio. He reports there this month.

Whitlow has had a distinguished and productive career in aeronautical research during his 19 years with NASA. His disciplines of expertise are computational and theoretical fluid dynamics, aerodynamics, unsteady flows, and aeroelasticity.

Whitlow assumed his current position in October 1997, and leads research that includes analysis, wind tunnel testing, and ground and flight experiments. His facility responsibilities include the Impact Dynamics Research Facility, Aircraft Landing Dynamics Facility, Transonic Dynamics Tunnel, Combined Loads Test System, Thermal Structures Laboratory, Structures and Materials Laboratory, Structural Dynamics Research Laboratory, Space Structures Research Laboratory and Helicopter Hover Facility.

Whitlow was a participant in the NASA Professional Development Program (PDP), and assigned to NASA Headquarters as program manager for Structures and Dynamics as well as for Astrophysics.



Whitlow

Whitlow began his professional career in 1979 as a research scientist at Langley, and earned the rank of senior research scientist. He developed methods for analyzing unsteady transonic aerodynamic flows and for predicting the structural response of aircraft.

Whitlow earned a bachelor's, master's and doctorate degrees in aeronautics and astronautics from the Massachusetts Institute of Technology (MIT). The American Institute of Aeronautics and Astronautics named Whitlow an Associate Fellow in 1993. He has received numerous other awards, including MIT's James Means Memorial Prize (1974), the U. S. Black Engineer for Outstanding Achievement in Government (1989), the NASA Exceptional Service Medal (1992), the NASA Equal Opportunity Medal (1996) and the National Technical Association Technical Achiever of the Year Award (1996).

Call for Papers: International Forum on Aeroelasticity and Structural Dynamics

The CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics is a major international event in aeroelasticity and structural dynamics.

The forum provides an international venue for scientists and engineers from government, industry and universities to exchange results of current studies and discuss directions for future research. Papers are sought in the following topic areas: unsteady aerodynamics and aeroelastic characteristics of aerospace structures; structural modeling and optimization; active control and adaptive structures; aircraft landing dynamics; certification and qualification; and validation testing.

Abstract Preparation

Papers that cover all aspects of aeroelasticity and structural dynamics are solicited. The program's technical content will include theoretical, numerical and experimental contributions that describe original research results and/or innovative design concepts. In addition, papers that provide in-depth reviews and timely surveys of appropriate subjects will be considered. Abstracts are due Oct. 9.

All abstracts should be sent to Dr. Woodrow Whitlow, Mail Stop 121, NASA Langley Research Center, Hampton, Va. 23681-2199, or fax (757) 864-7792.

More Information

For more detailed information, contact Emily Todd, conference manager, ICASE at <emily@icase.edu>. Visit the Forum website at: <http://www.icase.edu/workshops/AeroStDy.html>.

NASA Selects 25 Small Business Projects

NASA HEADQUARTERS RELEASE

NASA has selected 25 research proposals for negotiation of Phase I contract awards for NASA's 1998 Small Business Technology Transfer (STTR) Program. STTR is designed to stimulate technological innovation, help small businesses become better-qualified to assist NASA in its research and development, and increase private commercialization of federally funded research. The program also requires small businesses to conduct cooperative research and development by forming partnerships with a research institution.

Seven NASA field centers reviewed the proposals for technical merit, feasibility and relevance to NASA research and technology requirements. The selected firms will be awarded fixed-price contracts valued at up to $100,000 each to perform a one-year Phase I feasibility study.

Langley to Oversee Five Research Proposals

Five of the proposals selected for negotiation of contracts fall under the topic area of Structures and Materials and will be overseen by Langley. They are: EMF Technologies, Inc., of Williamsport, Pa., with the proposal "Controlled Isolation of Science Instrumentation Packages;" Etrema Products, Inc., Ames, Iowa, with the proposal "Advanced Magnetostrictive Composite Materials and Devices;" Foster-Miller, Inc., Waltham, Mass., with the proposal "Rapid Protyping and Manufacturing with Ultrasonic Tape Layered Object Manufacturing (UTLOM);" Montec Associates, Inc., Butte, Mont., with the proposal "Polyimide Spray-Foaming Process;" and United Applied Technologies, Inc., Huntsville, Ala., with the proposal "High-Resolution, Non-Contacting, Active Control Piezoelectric Membrane Space Reflectors."

The combined award total for the 25 Phase I contracts is expected to be $2,495,046. Companies which successfully complete the Phase I activities are eligible to compete for Phase II selection the following year. The Phase II award allows for a two-year, fixed-price contract up to $500,000.

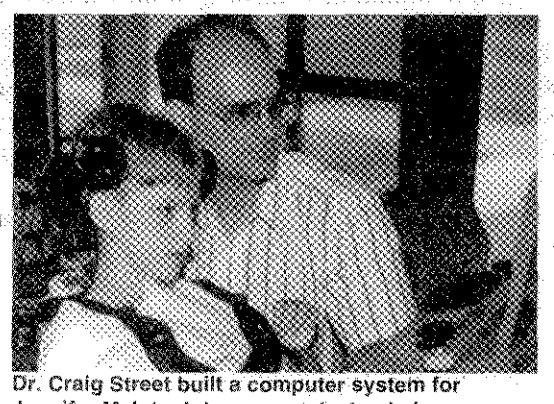
The 1998 solicitation closed in May. NASA received 130 proposals submitted by small, high-technology businesses from across the country.

The NASA STTR Program Management Office is located at the Goddard Space Flight Center, Greenbelt, Md., with executive oversight by NASA's Office of Aeronautics, NASA Headquarters, Washington, DC. Individual STTR projects are managed by the NASA field centers. A full list of companies selected for the program can be accessed on the Internet at: <http://sbir.nasa.gov>

Campers Learned Enabling Technologies at Computer Camp Sessions

BY JONATHAN D. CLAPP

Patricia Coale of United Cerebral Palsy of Southeastern Virginia (UCP) contacted Gerri Rankin, the disabilities manager in the Office of Equal Opportunity Programs. Coale was interested in scheduling visits to Langley for UCP's new Computer Camper program, following a suggestion made by Dr. Michele Macaraeg, Aerodynamic and Acoustic Methods assistant branch head.



Dr. Craig Street built a computer system for Jennifer McIntosh to communicate, do her homework, e-mail friends and surf the Internet.

Twenty-one campers visited the Center for four two-hour sessions during June and July. The campers ranged in age from 10 to 34. People with various disabilities participated in the camp, and learned how technology could open up possibilities for them.

Rankin arranged for a group of Langley employees, some of whom have disabilities, to speak to the campers and demonstrate the latest in both NASA technology and assistive technology. The presenters included Dr. Henry "Tex" Jones, Dr. Craig Streett, Larry Cooper, Lisa Jones, Peggy Overby, Jay Robinson, Larry Havrilesky, Shannon Arnold, Charlene Demiel, a LARSS student, Dr. Kevin Shepherd, Scott Striepe, Robert Balla and Michael Bell.

"Nothing was more fulfilling than seeing the expressions of awe and interest as these campers learned about the advancements in technology NASA had made," Rankin said.

Computer camper Donna Smith enters the H.J.E. Reid Conference Center followed by Patricia Coale, UCP assistive technology coordinator. Two volunteers, James Majority and Colin Wolfson, walk in beside camper Tiffany Cortapasso with volunteer Dorothy Grogan behind her.

Gulfstream V . . .

Continued from Page 1

The first test in Langley's LTPT was conducted in spring 1994, and a second in late summer 1995. The first series entry implemented a two-dimensional, 1/5-scale high-lift model to validate the computational fluid dynamic predictions used to design this aircraft's high-lift system, and to confirm the flap configuration and positioning. During this test a passive flow control technology was investigated as a possible means to extend the aircraft's high-lift capabilities. The technology, developed by Dr. John C. Lin, Flow Modeling and Control Branch, employs micro-vortex generators (MVGs) to enhance the effectiveness of high-lift systems.

In 1996, the Langley-developed MVG technology was extended by GAC aerodynamicists to the transonic range, enhancing the GV's high-speed buffet boundary and its maneuver capabilities in this regime. The adapted MVGs produced extremely high margins for buffet-free flight at the high-speed, high-lift edges of the flight envelope.

Thanks to Langley

Bill Shira, director of Flight Sciences at Gulfstream said, "Lin's vortex generator design extended the flight envelope of this aircraft, allowing us to meet our technical goals and assuring a successful product. I also would like to take this opportunity to acknowledge the outstanding efforts of those Langley LTPT team members and technician staff, led by test engineers Pam Phillips and Bill Sewell, who did an extraordinary job in directing and supporting the low-speed testing. These collaborative efforts with NASA have helped Gulfstream produce a high performance business jet with exceptional high angle of attack capabilities at both the low and high speed ends of the flight envelope."

The GV aircraft was brought quickly to the marketplace in 1997. During the first year of its introduction, Gulfstream – an American owned and operated company – has received orders for more than 100 GV aircraft valued at more than $30 million each.

"I am extremely pleased that a Langley-developed technology has made a contribution in such an exceptional, record-setting aircraft as the Gulfstream V," Lin said. "I am very proud to be part of the NASA/Gulfstream research team."

The National Aeronautic Association's Robert J. Collier Trophy, established in 1911, is awarded annually "for the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, or safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year." The trophy, on permanent display at the Smithsonian's National Air and Space Museum in Washington, DC, is considered the greatest and most prized of aeronautical honors in America.

Gulfstream V wins NAA Collier Trophy

The National Aeronautic Association (NAA) awarded the prestigious Robert J. Collier Trophy to Gulfstream Aerospace Corporation (GAC) and the Gulfstream V (GV) Industry Team in late spring. The award recognizes the top aeronautical achievement in the United States for 1997.

Gulfstream and the GV Industry team were recognized specifically "for successful application of advanced design and efficient manufacturing techniques, together with innovative international business partnership, to place in customer service the Gulfstream V – the world's first ultra long-range business jet."

NAA President Steven J. Brown emphasized that, "The Gulfstream V, with its proven world-class altitude and range capabilities, demonstrates the value of innovative development and partnership strategies in today's global business environment."

"Last year was great for Gulfstream and the Gulfstream V. We achieved full FAA certification, initial customer deliveries, and over 40 world and national records. I am very proud of our people and think this is fitting recognition in the 40th anniversary of our company," said Theodore J. Forstmann, chairman, Gulfstream Aerospace Corporation.

In 1992, Gulfstream Aerospace Corporation, a private U. S. company at the time, officially launched the GV program, committing the company to deliver a world-class product with stringent performance guarantees by 1997. To date more than 80 GV aircraft have been sold, with the first customer delivery of a fully completed GV in July 1997.

The Gulfstream V flies higher and farther than any other airplane in its class. The Langley-developed micro-vortex generators are shown on the outboard wings at about 45-percent of its chord (indicated by the arrow).

Minimizing the Harmful Effects of the Mercury in Fluorescent Light Bulbs

BY JACK JACKSON

Langley replaces old fluorescent light bulbs with bulbs containing up to 90-percent less mercury than the regular bulbs. Old bulbs are then recycled.

Fluorescent light bulbs are the most common form of lighting in offices and factories in the United States. Their widespread use is due to the fact that they are more cost effective, last longer, and give off more than three-and-one-half times more light than regular light bulbs. Their one drawback is that they contain mercury.

Mercury is a regulated substance by the U.S. Environmental Protection Agency because of its toxicity. Chronic mercury exposure can lead to several serious health problems, such as central nervous system breakdown, kidney damage, birth defects and genetic damage. The standard fluorescent light bulb contains approximately 22.8 mg of mercury. When tested for disposal, these light bulbs fail the Toxic Characteristics Leaching Procedure (TCLP) for mercury content and must be disposed of as hazardous waste.

Several companies started manufacturing low mercury light bulbs. The bulbs still contain between 2.3 mg and 10 mg of mercury in each bulb. Some of these bulbs pass the TCLP test for hazardous waste, but mercury is still mercury no matter how small the amount. Disposers of light bulbs containing any mercury must assume full liability for any pollution it creates. Even the low mercury light bulb manufacturers recommend that an approved recycling method for disposal of their bulbs.

The new low mercury bulbs at Langley are identified by their green ends. The Center recycles a large amount of light bulbs. In six months of 1996, Langley recycled 5,950 pounds of light bulbs; in 1997, 11,814 pounds of light bulbs. So far this year, 3,555 pounds of bulbs have been recycled.

For light bulbs that need to be replaced or old bulbs that need to be recycled, call EG&G at ext. 42615.

How do fluorescent light bulbs use mercury to produce light?

A fluorescent light bulb has mercury gas contained inside the bulb. When it contacts an electrical current, the gas reaches an excited state. As the gas returns to its normal state it emits radiation in the form of ultra-violet light. This light hits a phosphor coating on the inside of the bulb that causes the phosphor to glow. The glowing is the source of the light.

What are the methods for recycling fluorescent light bulbs?

There are three approved recycling methods for fluorescent light bulbs – stabilization, reclamation and total retort. Stabilization involves crushing the bulbs and mixing them with a reagent to reduce the leachability of the mercury. The bulbs are then sent to landfills that are able to accept hazardous waste because they have better liners and meet more stringent monitoring requirements.

Reclamation is the process of crushing the bulbs and segregating them into three wastes: glass, metal and powder. Mercury will remain almost entirely in the powder. The powder is then processed through a retort unit, which roasts the powder, then distills and refines it to a 99.9-percent purity level of high-grade elemental mercury. The glass and metal that still contain some mercury are sent to recycling facilities.

Total retort is the process by which the light bulbs from Langley are disposed. The process is the same as reclamation except that all three waste products, glass, metal and powder, are roasted to distill all of the mercury. The glass and metal are sent to recyclers and the mercury is triple-distilled to the 99.9% purity level. This process costs more than the other two because it is more involved, but it also recycles all of the mercury.

Langley Scientist-Sponsored Payload Flew on Student Balloon Launch

BY ANNE PIERCE

Langley scientists planned an experiment on the student-managed Virginia Student Balloon Launch Project.

By measuring the interaction between air and sea surface, Langley researchers are expanding the way scientists and the public acquire information about long-term climatology as well as short-term weather. Drs. Jim Garrison and Steve Katzberg, both of the Spacecraft and Sensors Branch, developed a remote sensing device called the Biostatic Scatterometer. Based on Global Positioning System (GPS) equipment and a constellation of satellites, the instrument processes information on a laptop computer using an antenna and a reflected GPS signal.

With its small size and low cost the device was used to take measurements in several areas of study including wind speed and wetlands mapping. The instrument has flown in aircraft, and was launched via the balloon 90,000 feet into the Earth's atmosphere from the Wallops Flight Facility, Wallop's Island, Va., August 20, 6:30 a.m. EDT.

The launch program was sponsored by the Virginia Space Grant Consortium, NASA Langley and other state educational entities. The Consortium co-funded this upper atmospheric research balloon mission with NASA to offer students the opportunity to manage and conduct a real world science mission and work with NASA scientists.

Experimental Student Balloon Launched

BY ANNE PIERCE, VIRGINIA SPACE GRANT CONSORTIUM

Courtesy Virginia Space Grant Consortium

The Virginia Student Balloon Launch program sent 100 pounds of payload into the atmosphere August 20.

Look up in the sky! It's a bird, it's a plane! No, it's a scientific balloon! That's right. This year's Virginia Space Grant Consortium Student Balloon Launch balloon soared successfully on Aug. 20, and students from Old Dominion University (ODU), Hampton University (HU), the College of William and Mary and Tidewater Community College (TCC), worked hard in the Virginia Student Balloon Launch Program to design and build the 100-pound payload launched into the Earth's atmosphere from the NASA Wallop's Flight Facility.

The balloon soared to about 93,000 feet during its four-hour flight. Once the balloon reached the 90,000 feet mark, NASA sent an electronic signal that deflated the balloon and caused it to drop to the ground. Students retrieved the balloon to examine the results of their experiments. Each experiment was 25 pounds of the payload's total weight.

The goals of this balloon launch were to produce scientifically valid experiments, provide "real world" experience for the students, and increase the public's awareness of science and engineering. Begun in 1993, the NASA Student Balloon Launch Program was developed with the future of science in mind.

Students from the College of William and Mary developed the air-sample experiment. They designed the canisters and valves to collect gases from the atmosphere. This experiment will identify different pollutants and ozone-destroying gases in the lower stratosphere of the Earth's atmosphere.

HU oversaw the remote sensing and imaging aspect of the launch. Students investigated the use of low-altitude imaging techniques and gathered information on how to enhance ground-truthing (the use of balloons instead of satellites for viewing the ground and verifying information) efforts used by the Environmental Justice Technology Center.

Students at TCC constructed a canister to hold the video and digital cameras that were sent up by the HU team.

ODU made several contributions to the launch project. First, they oversaw the installation of the two GPS systems. One was provided by Ashtech, which builds products for cars, boats, and fishing poles, and the other by NASA Langley. Both allowed researchers to track the balloon's location in flight. The team also designed the gondola – the structure that held the payload – and telemetry, a system that transmitted control information, temperature and pressure data, and live video feed. Ernie Dellenger, ODU senior, said, "I learned to work with a very large team. I also learned how to put designs together while working with and learning from scientists in other majors."

Major institutions contributing to the project included Langley, NASA Wallops Flight Facility, Virginia Center for Innovative Technology and the National Scientific Balloon Launch Facility of Palastine, Texas. Participating schools provided class credit and faculty for the project. The NASA Student Balloon Launch Program is sponsored by Office of Space Science, Office of Human Resources and Education and Office of Equal Opportunity Programs at NASA Headquarters.

The Student Balloon Launch Program was a project of the Virginia Space Grant Consortium, a coalition of Virginia universities, NASA Langley Research Center and other state educational entities. The consortium seeks, in part, to enhance the educational experiences of students by providing real world opportunities such as the research balloon mission.

For more information, go to the Internet: <http://www.vsgc.odu.edu>.

AdVentures

LANGLEY ALUMNI ASSOCIATION: The next meeting will be held Sept. 8 in the executive dining room at the Cafeteria with lunch at 11:30 a.m. and a brief meeting following at noon. For information, call the Alumni Association Office at 864-7330.

CONDO FOR SALE: Hampton; 1 BR, 1 bath w/ separate vanity; cathedral ceilings, balcony, all appliances, ceiling fans, security system, community pools and fitness center. Near Langley and I-64. Qualifying assumable loan of $313.00/month or $33,500. Call 827-1174.

HOUSE FOR SALE: Well-maintained rancher in Williamsburg. 3BR, 2 baths, 1 car attached garage, living room, family room w/ fireplace, eat-in-kitchen, cathedral ceilings, plentiful storage, deck, wooded lot on quiet cul-de-sac. $111,900. Contact: <http://www.worldreach.net/jantol/home.htm>, or call 229-8173.

CONDO FOR RENT: Willoughby Spit – Enjoy panoramic views of the bay from a beachfront condo w/ deck. Two BR, 1-1/2 baths, living room w/hardwood floors and fireplace and eat-in kitchen. All amenities including refrigerator, dishwasher, washer/dryer central air and heat. $650/mo. Call 595-3923.

HOUSE FOR SALE: In Hampton. 3 BR, 2-1/2 bath, on fish-stocked lake in Sanlun Lakes. 10 min. from Langley. Workshop, garden shed, large patio, deck and pier, fireplace, attached garage. 16,600 sq. ft., $114,000 w/all appliances. Call 865-9559.

HOUSE FOR SALE: Two-story, 3 BR Colonial house with 2-1/2 baths in historic Fox Hill, on quiet cul-de-sac. 10 minutes from Langley and near two beaches. $106,500. Call 850-8189.

OPERATION SMILE: Volunteers needed

Operation Smile needs you – volunteers are needed for ABC control, ID checks and beverage service during Hampton Bay Days – Friday, 9/11, 4 to 10 p.m., Saturday, 9/12, 10 a.m. to 10 p.m., Sunday, 9/13, noon to 7 p.m. For more information, call Laurie Tedesco, president of the Peninsula Chapter, Operation Smile, at 874-5532.

NASA SKI WEEK VIII: The eighth annual NASA ski week is January 30 through February 6, 1999 in Jackson Hole, Wyoming. Cost is $930 per person, double occupancy. For more information, contact Michael Schooley at 874-2726, e-mail at <schooley@erols.com>. All Langley personnel, friends, family are welcome.

BLOOD DRIVE REMINDER: Langley's next blood drive will be held on Sept. 23, from 9 a.m. to 3 p.m., in the H.J.E. Reid Conference Center. Civil service employees may charge their time to Job Order B-1004. For more information call ext. 43191.

AN IMPORTANT WALK: The Juvenile Diabetes Foundation is holding its annual "Walk To Cure Diabetes" September 19. The three-mile walk will be at Mt. Trashmore Park in Virginia Beach. Registration begins at 9 a.m., and the walk starts at 10 a.m. NASA Langley is organizing a team to walk in the event. All employees and contractors are encouraged to participate. For more information and to sign up, call the Fitness Center at ext. 46387.

NARFE MEETING: The National Association of Retired Federal Employees will meet Monday, Sept. 14 at the Midtown Community Center, McLawhorne Dr., Newport News at 10:30 a.m. The presentation will be "Your Dream Vacation – Where shall we go – What will we do?" For more information, call Catherine Askew, 247-1558.

WPL FALL CONCERTS: The Williamsburg Regional Library offers several upcoming concerts: Sept. 11., Cheryl Wheeler, folk/country singer-songwriter, tickets $12 adults, $6 under 16; Sept. 25, Pat Donohue and Steven Bennett, guitarists from "A Prairie Home Companion" house band, tickets $10 adults, $5 under 16; Oct. 2, John Gorka, singer-songwriter, tickets $14 adults, $7 under 16. For details and schedules folk/jazz concerts, check the WPL website at <www.wrl.org>. For tickets, reservations, directions or other information, call (757) 259-4070.

ADOPT-A-SPOT: Volunteers gave 528 hours to Hampton Clean City Commission's Adopt-A-Spot program in July. Participants included Langley contractors from SAIC and Science and Technology Corp. Special clean-up programs are one-time events sponsored by different groups. For more information about the Hampton Clean City Commission's litter collection and prevention efforts, call 727-6394.

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Center Snapshots

Photo/story by Jeff Caplan

Myron Ware, a contractor with Wang Government Services, has been working at the Center for the past five years. He graduated from Christopher Newport University with a degree in computer science. He left Cheatham Annex in Williamsburg to work at Langley. Ware is one several people tasked to re-engineer Langley's network infrastructure database tracking system. The system maintains all of the information contained on the computers and phone systems on the Center.

Included in his work is the ability to design software, program and network computers. He also helps out in the network support office several hours a week.

One of the loves in his life is surfing. He has been surfing for 17 years. Here, Ware enjoys the prestorm waves of Hurricane Bonnie off Virginia Beach.

What makes working at the Center exciting to him?

"Being able to design systems that people actually like to use." — *Myron Ware*

Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 18 ❖ September 18, 1998

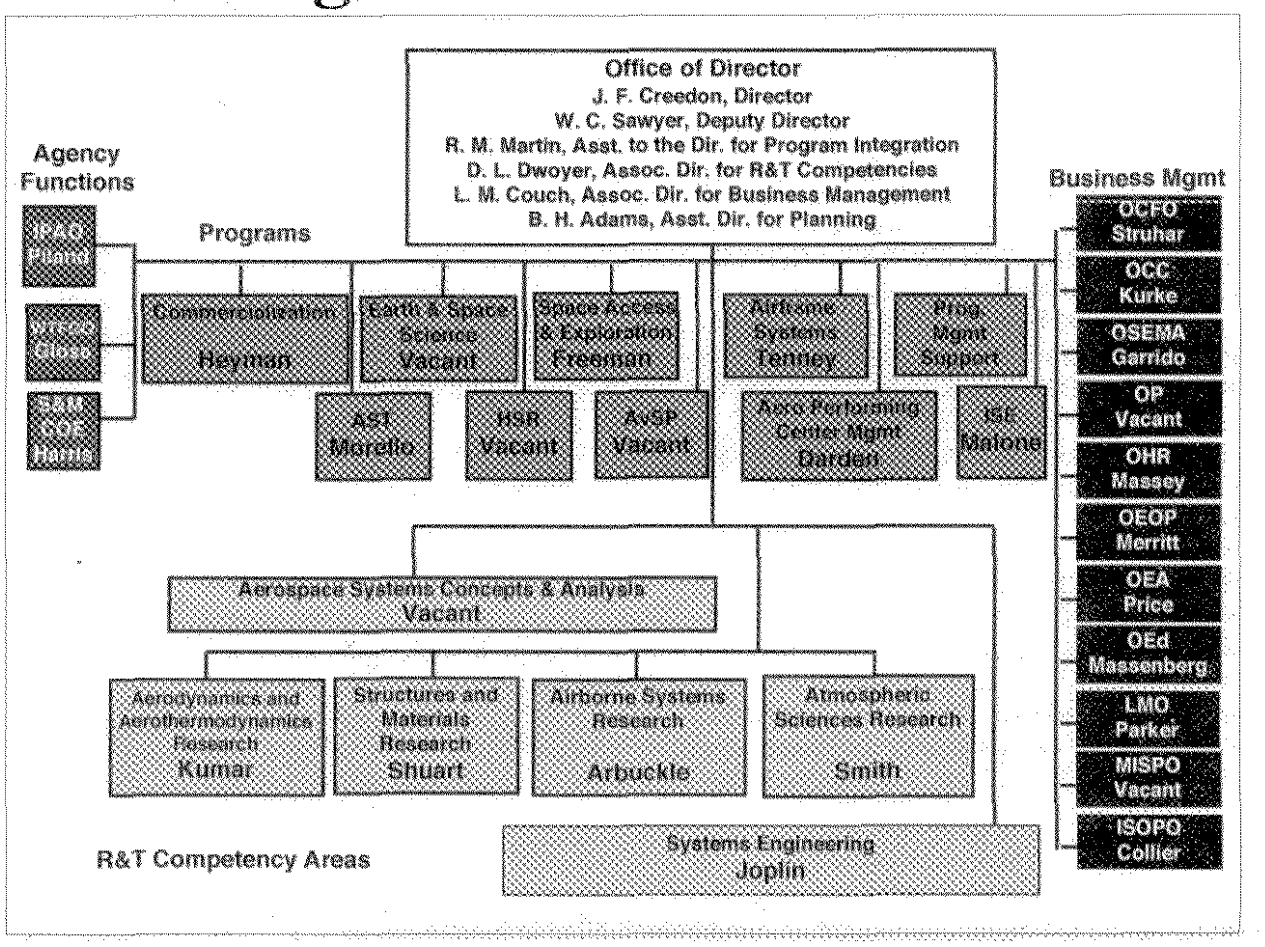
Director Announces New Organizational Model

Langley Director Dr. Jeremiah F. Creedon announced a new organizational model for Langley Sept. 4 at a Town Meeting in the H.J.E. Reid Conference Center. "We wanted to make sure that the Center was aligned along its core competency base, to increase the flexibility and efficiency of the organization, and to streamline the decision-making process," Creedon said.

He said that the process of reorganization was thorough, made sense in light of the implementation of ISO 9000 standards, and helped in the marketing of Langley to the outside world. "The new structure has clear points of contact. If someone wants to do business with people in airborne systems, for example, they will know directly how to find them," Creedon said. The process of reorganizing the Center was undertaken by the Reorganization Evaluation Team (RET) beginning last April.

Creedon said he waited until early September to make the announcements so that names could be placed with the redirection and realignment of offices, programs and divisions. He also wanted full approval from NASA Headquarters for the changes, and received it. "People wanted this process to go very quickly," he said, "but we wanted to take the proper steps to get it right."

Creedon also said that the Agency has started a new core competency study. "One important outcome of the study," he said, "will be to determine how many people we need to be excellent in our core competencies."



The new organizational model was presented by Center Director Creedon at a Town Meeting Sept. 4.

The Organizational Model

The Office of the Director will consist of Creedon, director; Wallace Sawyer, deputy director and acting associate director for Program Integration, Ruth Martin, assistant to the associate director for Program Integration; Dr. Douglas Dwoyer, associate director for Research and Technology (R&T) Competencies; and Lana Couch, associate director for Business Management. Dr. Belinda Adams will maintain the title of assistant director for Planning.

Four Major Focuses

Reporting to the appropriate person in the Office of the Director are four major focuses for Langley: Agency Functions, Program Areas, Research and Technology Competency Areas and Business Management.

The Langley offices that interface with Agency Programs – Independent Program Assessment Office, headed by Bill Piland; Wind Tunnel Facility Group Office, Blair Gloss; and Structures and Materials Center of Excellence, Dr. Charles Harris – are one major focus for Langley, according to Creedon.

Second are the Programs – Commercialization, formerly the Technology Applications Group, headed by Dr. Joseph Heyman; Earth and Space Science, vacant; Space Access and Exploration, Delma Freeman; Airframe Systems, Dr. Darrel Tenney; Program Management Support, to be announced; Advanced Subsonic Technology, Samuel Morello; High-Speed Research, vacant; Aviation Safety, vacant; Intelligent Synthesis Environment, Dr. John Malone; and Aeronautics Performing Center Management, Dr. Christine Darden.

Continued on Page 5

Hyper-X Featured in October Colloquium

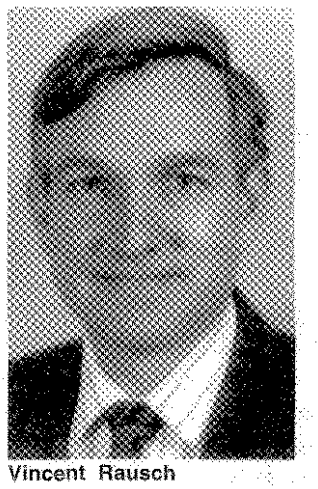
"Hyper-X: Flying at 7 to 10 Times the Speed of Sound" is the topic for Langley's October colloquium. The colloquium, featuring Hyper-X program manager Vincent L. Rausch, Col.USAF (Ret.), is scheduled for Tuesday, Oct. 6, 2 p.m., at the H.J.E. Reid Conference Center. The Sigma Series lecture at the Virginia Air and Space Center is on Monday, Oct. 5, at 7:30 p.m.

The Hyper-X Program

To reduce the cost of putting payloads in orbit, NASA is developing technology for an air-breathing engine that could be used in reusable space launchers. Rausch will give a brief history of hypersonic flight and mission applications, followed by an overview of the Hyper-X program goals, objectives, approach, participants and five-year schedule. He will also discuss technology challenges in the areas of aerodynamics, stage separation and propulsion. Finally, Rausch will address the flight experiments and program status. The joint NASA Langley-Dryden Hyper-X program will, for the first time ever, conduct Mach 7 and 10 flights of three airframe-integrated dual-mode scramjet-powered research vehicles.

About the Speaker

Rausch was named Hyper-X Program Manager at Langley in July 1996. From 1991-96, he was the assistant director for Aeronautics (High-Performance Aircraft) at NASA Headquarters.


Vincent Rausch

Previously, Rausch was the first director of the NASP (National Aero Space Plane) Inter-Agency Office in the Pentagon. Rausch is the recipient of the Air Force Legion of Merit, Defense Meritorious Service Medal, Air Force Meritorious Service Medal, Air Medal, Air Force Commendation Medal and the NASA Outstanding Service Award. He has a bachelor of arts degree from Coe College and a master's degree in business administration from Inter-American University. He is also a graduate of Air War College, Armed Forces Staff College, Air Command and Staff College and Squadron Officer School.

- **Colloquium: Tuesday, Oct. 6, 2 p.m., H.J.E. Reid Conference Center**
- **Sigma Series Lecture: Monday, Oct. 5, Virginia Air and Space Center, 7:30 p.m.**

Aviation Safety Motivates Conferences

BY KATHY BARNSTORFF

Almost everybody who flies has had some experience with two major aviation safety issues tackled recently in conferences, sponsored by Langley.

Hundreds of researchers, government officials and aviation industry representatives met to discuss aging aircraft and turbulence.

Aging Aircraft

The head of the Federal Aviation Administration kicked off the 2nd Joint NASA/FAA/Department of Defense Conference on Aging Aircraft in Williamsburg.

"As each day passes, and as the U.S. fleet continues to age, your work grows more vital still," FAA Administrator Jane Garvey told the world leaders in aviation safety research, aircraft design and manufacturing, fleet operation and aviation maintenance.

"When we started this push in 1988, after the Aloha Airlines accident, the U.S. large transport fleet

Continued on Page 5

News Briefs

Around the Agency

GALAXY CLUSTERS REVEAL FATE OF UNIVERSE: A survey of galaxy clusters by NASA's Hubble Space Telescope has found what could be some of the most distant clusters ever seen. If the distances and masses of the clusters are confirmed by ground-based telescopes, the survey may hold clues to how galaxies quickly formed into massive large-scale structures after the Big Bang, and what that may mean for the eventual fate of the universe. About 10 to 20 of the farthest clusters in the Hubble survey may be over seven billion light years away, which means that the clusters, and their populations of tens or perhaps hundreds of galaxies each, were fully assembled early in the history of the universe.

MORE CANDIDATES JOIN 1998 ASTRONAUT'S: A cadre of international astronaut candidates has arrived at Johnson Space Center to begin training as members of the 1998 Astronaut Class. The international candidates, from Brazil, Canada, France, Germany and Italy, will train as mission specialists for future space shuttle and International Space Station flight assignments. For complete biographical information on the astronaut corps, including these inter-national candidates, see the NASA biography home page at URL: <http://www.jsc.nasa.gov/Bios/>.

THREE NAMED TO KEY NASA ROLES: NASA Administrator Daniel S. Goldin has named Alan Ladwig Senior Advisor to the NASA Administrator, Edward Heffernan Associate Administrator for Legislative Affairs, and Lori Garver Acting Associate Administrator for Policy and Plans. Heffernan's appointment became official on Aug. 14, Ladwig's and Garver's on Aug. 28.

PROSPECTOR FINDS MORE POLAR ICE: The north and south poles of the Moon may contain up to six billion metric tons of water ice, a more than 10-fold increase over previous estimates, according to scientists working with data from NASA's Lunar Prospector mis-sion. Growing evidence now suggests that water ice deposits of relatively high concentration are trapped beneath the soil in the permanently shadowed craters of both lunar polar regions. Researchers believe that alternative explanations, such as concentrations of hydrogen from the solar wind, are unlikely.

SOHO SPACECRAFT CONTACTED: Contact has been re-established with the European Space Agency (ESA)/NASA Solar and Heliospheric Observatory (SOHO) spacecraft following six weeks of silence. Signals sent Aug. 3 through the NASA Deep Space Network (DSN) station at Canberra, Australia, were answered by SOHO at 6:51 p.m. EDT in the form of bursts of signal lasting from two to 10 seconds. Signals were recorded both by the NASA DSN station and the ESA station at Perth, Australia. Contact is being maintained through the NASA DSN stations at Goldstone, Calif.; Canberra; and Madrid, Spain. Although the signals are intermittent and do not contain any data information, they show that the spacecraft can still receive and respond to ground commands. More SOHO information can be found on the Internet at: <http://sohowww.nascom.nasa.gov/>.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

Letters

Thank You Note

From David G. Stephens: "My family and I want to thank everyone that helped me celebrate my recent retirement from Langley. I will always cherish my years with NASA and the deep friendships that have developed in the course of my career."

Blood Drive Reminder

Langley's next blood drive is Wednesday, Sept. 23, from 9 a.m. to 3 p.m., in the H.J.E. Reid Conference Center. Blood is urgently needed. The threat of Hurricane Bonnie caused many local blood drives to be canceled or postponed. Make a choice now to help save lives. Civil service employees may charge their time to Job Order B-1004. For more information call ext. 43191.

In Memoriam

Lawrence G. Williams

Lawrence Gail Williams, 63, died Saturday, Aug. 22. A native of Hampton, Williams retired from NASA Johnson Space Center after 40 years of service.

Alfred M. Tankersley

Alfred Maurice Tankersley, 85, died Saturday, Aug. 29. He was retired from NACA/NASA Langley.

Fritz Haber

Fritz Haber, 86, died Friday, Aug. 21.

Haber was one of the German scientists recruited after World War II to work on the U.S. space program. He researched the effects of space travel on humans, and his piggyback design for missile transport was used by NASA to carry the space shuttle on a modified 747 from its landing site in California back to the launch site in Florida.

Alfred E. Alexander

Alfred E. Alexander, of Bena, Va., died this past summer. He was a retiree of Langley NACA/NASA.

FWPC to Celebrate Hispanic Heritage Month

Langley's celebration of Hispanic Heritage Month will begin with guest speaker Belen B. Robles, immediate past president of the League of United Latin American Citi-zens (LULAC).

Robles will speak at the H.J.E. Reid Conference Center on Sept. 25, from 1:30 to 2:30 p.m., on the national theme, "Women in Leadership."

LULAC is the oldest and largest Hispanic organization in the United States, working to advance the economic conditions, educational attainment, political influence, health and civil rights of the Hispanic population. Robles is the Director of Community Relations for the U.S. Customs Service, El Paso District. She was the history-making first woman president of LULAC. She received a bronze Chamizal Medallion from President Lyndon Johnson in recognition of her efforts at the cabinet-level hearings on Mexican American Affairs in El Paso, Texas, in 1967. In 1973 Robles was listed in "Who's Who of the South" and, in 1974-75, "The World Who's Who of Women" and "One of the 10 Outstanding Women in Federal Service." Her attendance at NASA Langley will be in partnership with the Langley Air Force Base Hispanic Heritage Club. All civil service employees and contractors are invited to attend. NASA employees may charge their time to Job Order A5006.

Kincaid to Help Celebrate NASA's 40th Anniversary

BY KATHY BARNSTORFF

Photo courtesy of WVEC video

Jim Kincaid, former newsman with WVEC, will unveil a new stamp to celebrate NASA's 40th anniversary.

Former network newsman and long-time Hampton Roads anchorman Jim Kincaid will be the keynote speaker at a stamp ceremony commemorating NASA's 40th Anniversary at 11 a.m., October 1, in the H.J.E. Reid Conference Center. The ceremony will be followed by an employees' picnic.

Kincaid had a long association with NASA and its programs as a newsman for CBS affiliates, ABC network and WVEC-TV in Hampton Roads.

During the Mercury years Kincaid was in St. Louis and often covered McDonnell Douglas and the original seven astronauts.

He says that outside of his experience covering the war in Vietnam, the most significant story he covered during his 45-year career was the Apollo XI mission. "I was in Mission Control when Neil Armstrong and Buzz Aldrin walked on the moon. I can't tell you what that was like. It was almost unreal."

After Kincaid's speech, Hampton Postmaster Willard Davenport and Center Director Jerry Creedon will unveil a commemorative set of five space discovery stamps. The NASA Langley Exchange shop will sell special commemorative envelopes that employees can have hand-canceled at the event.

To cap off the celebration, a picnic will be held outside the conference center. With the help of the Langley Federal Credit Union and the NASA Langley Exchange most food items will cost only 40 cents in honor of NASA's 40th anniversary.

Langley 1998 CFC Notes

Virginia Peninsula CFC recipient agencies

Langley's Combined Federal Campaign (CFC) will begin Sept. 28 and run through Oct. 9. There will be representatives from the Virginia Peninsula CFC recipient agencies in the Cafeteria from 11 a.m. to 1 p.m. daily to answer questions about their agencies – a good time to learn about their challenges and successes. There also will be a Langley employee available in the Cafeteria during the campaign who can help with electronic pledging.

New this year for all CFC contributors will be the chance to get a 10-percent discount from the Exchange Shop. Contributors will receive a discount on all regularly-priced merchandise (excluding jackets and special services) during the CFC campaign. Your CFC receipt is required to qualify you for the discount.

CFC video available

During the CFC campaign, the CFC national video will be shown on Channel 7 on Langley's internal cablevision at 10 a.m. and at 2 p.m. daily. The video has four parts—President Clinton's Message, *Living Proof*, *Celebrate Living* and *Hearing the Call*. Langley employee, Terry Morris, is the featured speaker during the "Living Proof" segment. He will also be the keynote speaker for Langley's Kickoff, Sept. 18, 9:30-10:30 a.m. at the H.J.E.Reid Conference Center.

CFC Key Workers who want to show the video to their organizations can use Channel 7 at 10 a.m. or 2 p.m. or can obtain a copy from Pam Verniel at the H.J.E. Reid Conference Center or by calling ext. 46362.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@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.

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

A CFC Message from the Director

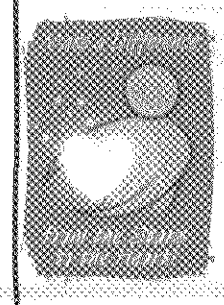
You Can Make A Difference

What would you do if you knew you could make a difference in someone's life?

We here at Langley have living proof that each of us can make a difference. Our own Terry Morris is that proof. Terry, an aerospace technologist in RTG's Systems Integration Branch, is the Cockpit Infrastructure Team Lead for the Agency's AGATE program. He is also this year's spokesperson for the Combined Federal Campaign.

In a video distributed nationwide, Terry tells his heart-rending story of abuse, despair and abandonment. That story has a happy ending — thanks to federal workers like you and me who contribute to CFC-sponsored organizations. CFC's Alpha House, its staff and CFC contributors gave Terry Morris the help needed to turn his life around. In fact, in addition to his job, Terry has recently finished coursework for a doctoral degree in systems engineering at the University of Virginia.

Sometimes it is hard to determine what each of us can do that will really make a difference. Terry is living proof that your contribution to the CFC can truly make a difference to someone who needs help.



The dollars this Center raises play a vital role in enabling more than a thousand health and human care agencies to help people — locally, nationally and internationally. The Combined Federal Campaign is worthy of our support.

— Jeremiah F. Creedon, Director

Living Proof . . .

Remembering the Kindness of Strangers

BY KATHY BARNSTORFF

It's been almost 30 years but Betty Joyner still remembers the kindness of strangers . . . those who came to the aid of her dying mother, unsolicited.

Because of that kindness, to this day, the retired NASA Langley employee contributes her money and time to one of the many United Way agencies supported by the Combined Federal Campaign.

Betty hasn't forgotten and willingly shares her story so others won't forget what a difference CFC dollars make.

It was 1969 when Betty's mother, Mary Pencola, was diagnosed with leukemia, a cancer of the blood and blood-forming tissues. Since then, according to the Leukemia Society of America, donations like those received through CFC have helped fund medical research that has dramatically increased the chances of surviving leukemia. Overall survival rates for leukemia have doubled since Mrs. Pencola's illness.

That research came too late for the 74-year old woman. But her daughter still has nothing but praise for the group leading the fight to cure leukemia.

"My mother had come to live with me during her illness. We were too proud to ask for help. We had two children. We were struggling," Joyner said. "One day we received a call from the Leukemia Society. A neighbor had told them my mother was a senior citizen. She didn't have much money."

"The woman from the Leukemia Society said they wanted to help. I told her it would be wonderful if you could buy Mother's medicine. She had to have three transfusions a week at $25 per transfusion. Plus her medicine was about $30 to $40 a week," Joyner remembers.

"When that lady came to my door it was almost more than I could imagine – that some stranger came to my door and said we can help," said Joyner.

Mary Pencola lived for eleven months after her diagnosis. From the day the Leukemia Society first called the Joyners, Betty said the society paid for all her medication. Joyner also remembers that the society representative called frequently, even helping out the day of Mrs. Pencola's funeral. "On the morning of the funeral, a knock came on the door. It was a lady from the Leukemia Society. She said I'm here to housesit while you go to the funeral."

Because of her experience Betty Joyner continues to volunteer for and give money to the Leukemia Society. "Whenever they call to do neighborhood collections I never say no. When we needed help they gave it to us, unsolicited."

Joyner is also still involved with NASA Langley people. She works for Eagle Aeronautics, a company staffed primarily by NASA retirees. She left Langley in 1986 after 25 years. She was the administrative assistant for the Director of Aeronautics.

Langley Continues To Use Electronic CFC Pledging

BY ROBIN K. LAND, SUSIE HENRIKSEN, AND ALAN LEYBOLD

In 1998, Langley civil service employees once again will be one of the few organizations in the nation making their Combined Federal Campaign (CFC) pledges using an electronic pledge form. For the past two years, Langley employees have demonstrated to CFC organizations around the country that electronic collection of pledges will work without a significant impact to the total dollar amount collected.

Get CFC Info On-Line

From the CFC home page contributors can view more information on how their CFC contributions help, and get CFC facts and figures or a list of CFC charitable agencies. Only NASA Langley civil service employees can access the CFC on-line pledge form from the link titled "Contribution Form On-line."

Use the CFC Shopping Cart

Enhancements to this year's pledge form include a more user-friendly interface, the capability for a contributor to view their prior year's contribution, enhanced on-line pledging instructions and enhanced front line reporting. In addition, the 1998 brochure has retained the enhanced search capability and the shopping cart feature instituted last year. Brochure users can search for individual pieces of information like charity name, code, descriptive information and even overhead percentage. The shopping-cart capability allows contributors to leave the pledge form and "shop" for CFC charities. Contributors can search for and select any agency and place it in their contribution shopping cart. Upon return to the pledge form, the contributor will find it pre-populated with the charity codes that were contained in their shopping cart – no more writing down agency codes and names.

Electronic Pledging

As always, electronic pledging is at the discretion of the contributor. CFC key people in each organization will have manual pledge forms for any contributor who wants them. Pledging electronically, however, will reduce the amount of time required to pledge by automatically calculating the contributor's total annual pledge amount, validating all entered agency codes, insuring all required information has been completed, and displaying names of agencies contributed to rather than just code numbers.

More importantly, the electronic version significantly reduces the cost of processing manual pledge forms and preparing manual reports. It eliminates the need to keypunch the contribution information into both the Langley payroll system and the Virginia Peninsula CFC pledge system. The development team asks that each contributor consider using the on-line pledge form to help reduce the costs of administering Langley's CFC campaign.

Training for coordinators and key people will be held at the H.J.E. Reid Conference Center on the following days: Sept. 21, 1 to 3 p.m.; Sept. 22, 1 to 3 p.m. and Sept. 25, 10 a.m. to 12.

The CFC brochure and pledge form will be available for the September 28 CFC kickoff. Both can be found at the new CFC web site address: <http://cfc.larc.nasa.gov/>.

The American Federation of Government Employees and International Association of Machinists encourage their Langley members to support this year's CFC.

The American Federation of Government Employees Local 2755 fully supports the efforts of the Combined Federal Campaign at NASA Langley.

Together we can make a difference in the lives of a tremendous number of people. United, through the CFC, we can accomplish what no individual could accomplish in a lifetime of giving. The CFC has proven in the past, and continues to prove today, what a community can do when it pools its resources. A gift to CFC is truly "the gift that keeps on giving."

Benjamin J. Schlichenmayer
President, American Federation of Government Employees, Local 2755

The International Association of Machinists (IAM) 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. During this era of downsizing and cutbacks, supporting this cause is most critical. Thus, the IAM membership has collectively agreed to 100 percent participation.

Tom L. Vranas
President, International Association of Machinists, Local PM 2829

Virginia Air & Space Center News

VASC Soars to News Heights

For the third time, the Virginia Air & Space Center ended its recent fiscal year with an operating surplus. The center also achieved a seven-percent increase in attendance with 364,000 admissions.

Executive director Kim Maher attributes the success to "strong community partnerships, aggressive marketing and the responsiveness of the museum's programs and films to the public's interest and needs."

Future plans for the center include a permanent exhibit on weather phenomena and the opening of phase three of *Up, Up and Away! Those Magnificent Flying Machines*.

Three new traveling exhibits will open at the center: *Hunters of the Sky* in October; *What Makes Music* in January; and *The Science of Oz* in May. Several IMAX films will also be featured including *EVEREST*, *Alaska: Spirit of the Wild* and *L5: First City in Space*.

New Board Members

The center welcomed four new board members to its Board of Directors at its annual meeting this summer. They are The Honorable Barry DuVal, secretary of Commerce and Trade, Commonwealth of Virginia; Donald Elliott, director and office manager, Lockheed Martin Corp.; Robert Kuhns, manager, Hampton office, The Boeing Company; and Stewart Mitchell, vice president and chief financial officer, Ferguson Enterprises, Inc. At the meeting a plaque, in honor of Sen. Hunter Andrews, dedicating the NASA Langley Educator Resource Center located at the Virginia Air & Space Center was installed.

Cosmic Volunteers Sought

Meet people, learn new things and serve the community in an educational and fun way by joining the center's Volunteer Program. Training begins Sept. 22 at 1 p.m. for weekday volunteers and Sept. 26, 9:30 a.m., for weekend volunteers. People are needed to serve as greeters, docents, office assistants, junior volunteers, in the Educator Resource Center and for special events.

Volunteers receive a 10-percent discount in the museum store, invitations to appreciation events and center membership after 100 hours of service. For more information/registration, call 727-0900, ext. 735.

Free Admission for NASA's 40th Anniversary

Saturday and Sunday, Oct. 3 and 4, the Virginia Air & Space Center has committed to free exhibit admission to all badged NASA staff, retirees and contractors. Badges must be presented at the admissions desk of the center for eligibility. This is free exhibit admission only, and does not apply to NASA family members. For information, call 727-0900.

Affirmative Procurement: Purchasing Products with Recycled Content

BY KRISTEN POULTNEY

If you are a credit card holder or if you purchase items by other means using appropriated Federal funds, then this information is important to you.

Federal agencies are required to purchase products with minimum recycled or recovered content materials as designated by the U.S. Environmental Protection Agency (EPA) by Executive Order 12873 and Section 6002 of the Resource Conservation and Recovery Act (RCRA). These products include such items as paper and paper products, non-paper office products, vehicular products and construction materials. A detailed list of all products is available at the Office of Environmental Engineering (OEE) Affirmative Procurement web site at <http://osemant1.larc.nasa.gov/procurement/>.

E.O. 12873 (Section 402) requires NASA to document the basis for failing to purchase designated items. Under RCRA 6002, there are four allowable exemptions from the procurement and use of the designated products. They include: unreasonable price; inadequate competition; product unavailability within a reasonable period of time; and failure of the product to meet reasonable performance standards. Any purchase of a designated product without the required recycled or recovered content level must be justified. Justification is documented by submitting a waiver form to OEE for approval. The waiver request form and instructions are available through the OEE web site.

Bankcard buy sheets will be reviewed on a routine basis since NASA is required to submit an annual report to EPA to demonstrate compliance with the Executive Order and RCRA. For additional information or any questions, call Kristen Poultney at ext. 48759.

HFB wins NASA Softball A League Championship

BY LOU GLAAB

In dramatic fashion, the HFB Softball team won the highly-coveted NASA Softball A League Championship for the 1998 season. This victory caps a long road to the championship spanning several seasons. This season HFB defeated the perennial champions (The Ballers) in the final championship game by a score of 20 to 5. In addition, HFB went undefeated in the tournament and outscored their opponents by an average of 11 runs per game. Talk of a repeat championship are already rampant.

Photo by Jeff Caplan

The HFB softball team members are: left to right, front row, Lou Glaab, Dutch Myers, Tim Alberts and Bob the mascot; back row, Darian Trimble, Jim Rogers, Pat Cosgrove, John Swartzbaugh, Mike Blythe, Dave Gingras, Brian Cheshire and Tommy Jordan. Not pictured are Scott Sealey, Joe Vega, John Costulis, Ray Zalemeda, Mike Brewer and Steve Sandford.

Langley Going for the Star!

BY BOB ALLEN

This is it! This week, Sept. 21 to 25, representatives from the Occupational Safety and Health Administration (OSHA) will visit Langley to assess the Center's eligibility for the OSHA Voluntary Protection Program (VPP).

The VPP is OSHA's premier recognition program. Only facilities that have developed and implemented outstanding health and safety programs are VPP-certified. There are three levels of VPP certification, Star (highest), Merit and Demonstration. Langley is going for the Star.

"Star certification will recognize that we have a world-class safety and health program," said Bert Garrido, head of the Office of Safety, Environment and Mission Assurance (OSEMA). "Most importantly, this effort will help us further reduce employee injuries, cut costs, and lead to improved morale and safer work practices."

In the last several weeks, each employee should have received a small, green-covered booklet called "Langley Research Center Employee Safety Pocket Guide." This guide is an important safety awareness tool and an excellent reference to ensure that the work that all Langley employees perform every day is completed safely and securely, yet effectively. Please read the safety guide, and keep it handy as an everyday reference.

The pocket guide provides an overview of Langley's safety and health policies and requirements. It is intended to serve as an important tool to ensure a safe and healthful workplace, but it does not replace detailed Agency and Center safety and health policies and regulations. All permanently-badged Langley personnel, including civil-service, temporary, co-located and contractor personnel should be familiar with its content and abide by its requirements.

"Our people are our most important resource, and we are totally committed to their safety," said Langley Center Director Dr. Jeremiah F. Creedon. "Our decision to pursue the VPP reflects that commitment."

Keep an eye on upcoming issues of the Researcher News. Periodically, OSEMA will highlight safety-related issues to clarify Langley's safety policies and procedures.

If you have safety-related questions or concerns, call 4SAFE from any Center telephone to talk to someone in the OSEMA. Several important safety and security telephone numbers are also listed in the box below.

Key Safety Telephone Numbers

Emergencies	911
Emergencies (Cell Phone)	45600
Emergency Dispatch Office (Non-Emergency)	45600
Office of Safety and Facility Assurance	4SAFE (47233)
Office of Environmental Engineering	43500
Office of Security and Public Safety	43420
Office of Safety, Environment and Mission Assurance	43361
Hazardous Weather Announcements	42111, 1-888-664-2111
Occupational Health Clinic	43192
Fire Chief	45756
Badge and Pass Office	42790
Duty Officer	44927
Digging Permits	47265
Receipt Inspection and Quality Assurance Laboratory	46887
OSHA (local office)	441-3820

Safety and health information is available on the OSFA website at: <http://128.155.44.11/OSFAHomePageStuff/OSFAHomepage.html>

New Center Organization . . .

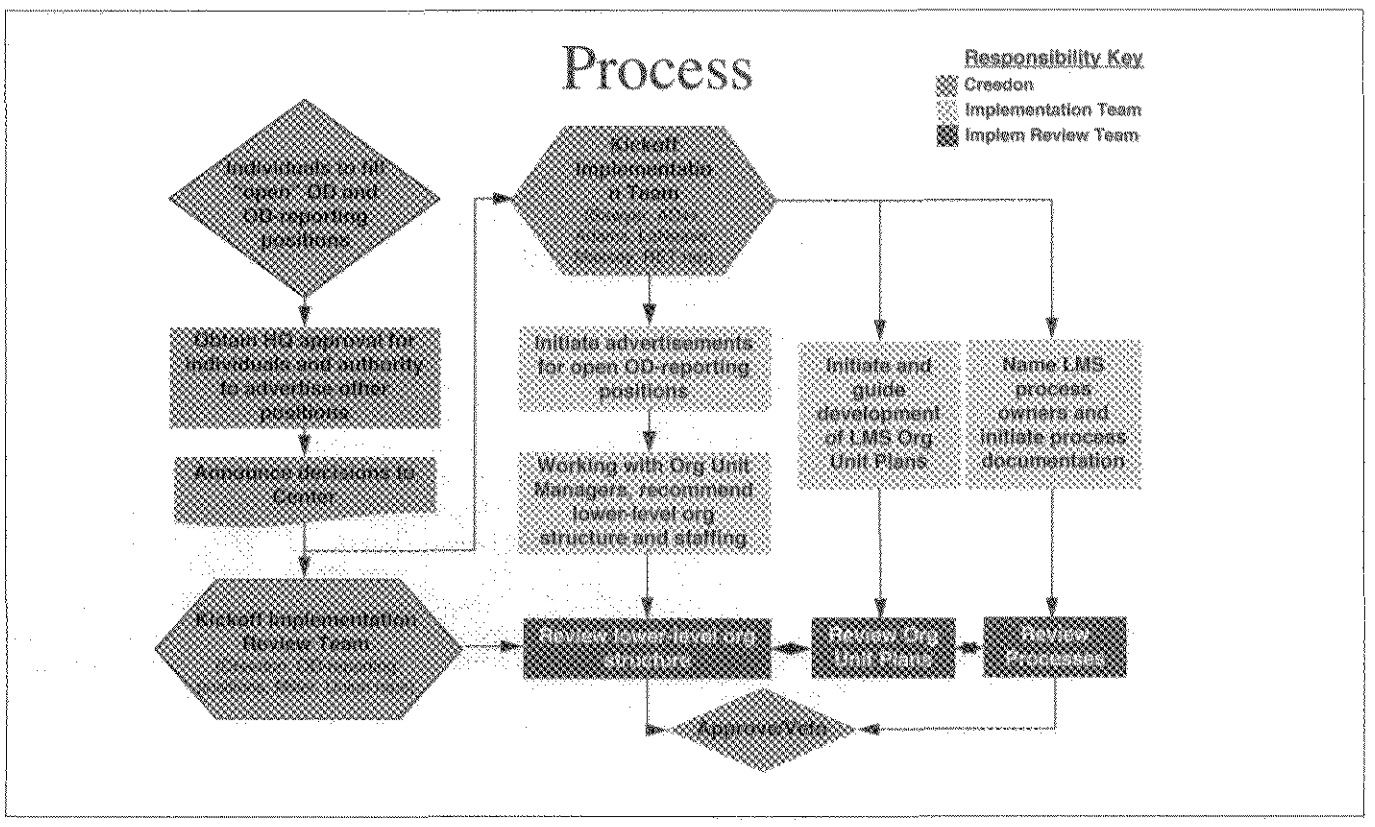
Continued from Page 1

The Program Management Support office is being added, according to Creedon, "to create an opportunity for improved efficiency on Center."

Six Research & Technology Areas were named as another major focus for the Center: Aerodynamics and Aerothermodynamics Research, headed by Dr. Ajay Kumar; Aerospace Systems, Concepts and Analysis, vacant; Structures and Materials Research, Mark Shuart; Airborne Systems Research, Douglas Arbuckle; Atmospheric Sciences Research, Dr. William Smith; and Systems Engineering, Sammie Joplin.

The new Business Management area will oversee 11 offices — Office of the Chief Financial Officer, headed by Joseph Struhar; Office of Chief Counsel, Kathy Kurke; Office of Safety, Environment and Mission Assurance, Humberto Garrido; Office of Procurement, vacant; Office of Human Resources, Alice Massey; Office of Equal Opportunity Programs, Vivian Merritt; Office of External Affairs, Gary Price; Logistics Management Office, Jeffrey Parker; Management Information Systems (MIS) Program Office, vacant; and ISO Program Office, Fayette Collier. The MIS office is being added to improve and oversee the Center's information systems.

Vacancies will be advertised and filled quickly as part of the implementation plan for the new organization.



The Process for the implementation of the new organizational model is seen above, along with the names of those who will start the process and keep it in motion. RET is the Reorganization Team, OD represents the Office of the Director and LMS stands for Langley Management Systems

Implementing the Plan

An Implementation Team, headed by Sawyer, will kick off activities to begin filling open positions. The team members will work with managers to recommend organizational structures and staffing throughout the Center branches and divisions. Reviews of both the implementation and the realignment of staff will take place throughout all units to see that the most effective use of Langley's employees is being made.

The Langley Management Systems (LMS) will contain the following key processes: implementation strategy and plan; program proposal and project management; R&T competencies management and product delivery; business competencies management and product delivery support; and measurement and analysis of performance.

An Implementation Review Team will review all organizational structures, all organizational unit plans and all LMS processes.

"We expect the new organizational model to be one of the best ways to let people know what the Center is all about," Creedon said, "because it recognizes both programs and R&T competencies. It is a good opportunity for integration of our work force and work commitments, and it is more in line with our business requirements like ISO 9000 and full-cost accounting."

Aviation Safety . . .

Continued from Page 1

totaled nearly 3,700 aircraft with an average age of 12.7 years. Today the fleet has grown to nearly 5,400 aircraft with an average age of 15.8 years," she said.

How to keep those planes safely flying is the goal of a 10-year-old FAA, NASA, industry and DoD partnership. The partners share the latest information and technologies to assure continued airworthiness of aging aircraft in military and commercial fleets.

"That joint effort has led to a more comprehensive inspection program for older aircraft through several airworthiness directive programs," Garvey said. "NASA contributed research on corrosion and fatigue interaction. The Navy provided the lead on training FAA inspectors in acceptable methods for controlling and preventing aircraft corrosion; specialists from industry and the FAA developed a comprehensive and systematic method to manage corrosion in the aging fleet. This partnership is working."

The NASA Aviation Safety Program (AvSP) is a partnership with the Federal Aviation Administration, the aviation industry and the Department of Defense. AvSP is working to develop useful, affordable technologies to help make travel safer on commercial airliners and smaller aircraft.

Acting NASA Deputy Administrator Jack Dailey spoke primarily about NASA's role in the partnership. "This is a perfect example of what we're trying to do to give our customers what they need. It's a new way for us to do business."

Rear Adm. Craig Steidle, Vice Commander of the Naval Air Systems command, stressed the importance of the participants' work to the military.

"This is the most important issue in aviation today. We must address this problem nationally."

Photo by Jeff Caplan

Buzz Wincheski, center, Nondestructive Evaluation Sciences Branch, demonstrates a rivet check system at the Aging Aircraft Conference in Williamsburg.

One way to do that, according to many of the 600 participants, is to continue holding technical sessions on approaches to fleet management, structural analysis methods and technologies for maintenance and repair like those during the three and a half-day Aging Aircraft Conference.

Turbulence

NASA, FAA and others have also called for a national initiative to work on the problem of turbulence. Turbulence is the leading cause of injuries to passengers and flight attendants. More than 180 government and aviation industry representatives met at the Pearl Young Theater to review existing turbulence programs, make a list of areas that need further investigation, and begin to explore ways and technologies to reduce injuries.

NTSB Vice Chairman Robert Francis was the keynote speaker for the Users' and Technologists' Workshop on Aircraft Turbulence Accident Prevention.

"I'm optimistic they're going to come up with a national plan," Francis said. He added the government/industry partnership that studied windshear in the 1980s is a good model for turbulence efforts. Langley played a lead role in windshear research.

Other speakers said technological advances since the 1980s will be able to further turbulence detection and accident prevention.

Watch Glenn Lift Off on STS-95

Photo courtesy Kennedy Space Center

Sen. John Glenn is connected to a special cap and suit to monitor the quality of sleep for future astronauts.

Employees and retirees are invited to view the launch of STS-95 at the Pearl Young Theater, 5 N. Dryden St. The theater will be open for viewing from noon to 4 p.m. Thursday, Oct. 29. The STS-95 launch is scheduled for 2 p.m.

STS-95 will mark the second flight into space for Sen. John Glenn. Glenn trained for his first flight at Langley with the other Mercury astronauts. Glenn will be joined on this flight by astronaut Stephen Robinson, a research scientist in the Fluid Mechanics and Acoustics Division before he was chosen for the 1995 Astronaut Candidate class. This will be Robinson's second flight into space.

For more information, please contact Catherine Watson at 864-6122 or view the STS-95 mission homepage at <http://shuttle.nasa.gov/>.

AdVentures

HOUSE FOR SALE: Renovated rancher in Wythe section, 2 BR, 1 bath, living room and kitchen, hardwood floors, enclosed front patio, privacy fence, large detached garage/workshop, near Chesapeake Bay in neighborhood with lots of trees. Reduced to $66,900. Call 247-5144.

FOR SALE: Two-story, 3 BR Colonial, 2-1/2 baths in historic Fox Hill on quiet cul-de-sac, 10 minutes from Langley and near two beaches. $106,500. Call 850-8189.

HOUSE FOR SALE: Kiln Creek on golf course, 2 BR, 2 baths plus loft w/wet bar and deck overlooking 5th fairway, eat-in kitchen. Great room w/skylight and gas fireplace, community pool and other amenities. $117,500. Must see – call 875-5217.

FOR SALE: Williamsburg rancher, 3BR, 2 baths, 1-car att. garage, LR, FR w/fireplace, eat-in-kitchen, lots of storage, deck, wooded lot. $111,000. Contact http www.worldreach.net/jantolhome.htm or call 229-8173.

COMPUTER FOR SALE: Power Macintosh 7100/66 AV. CD Rom, floppy drive, 250 MB hard drive, 16 MB RAM, AV Card, excellent condition. Keyboard and cables included. $550. Call 595-3923.

CONDO FOR RENT: Willoughby Spit - Panoramic bay views from beachfront condo w/deck, 2 BR, 1-1/2 baths, living room w/hardwood floors/fireplace/eat-in kitchen, all amenities including major appliances, AC and heat. $650/mo. Call 595-3923.

HOUSE FOR SALE: 3 BR, 2-1/2 bath, on lake in Sanlun Lakes, Hampton. 10 min. from Langley, workshop, garden shed, patio, deck and pier, fireplace, att. garage, 16,600 sq. ft., $114,000 w/all appliances. Call 863-9559.

NASA SKI WEEK VIII is 1/30 – 2/6/99 in Jackson Hole Wyo., $930 per person, double occupancy. Contact Michael Schooley at 874-2726 or e-mail at <schooley@erols.com>. All are welcome.

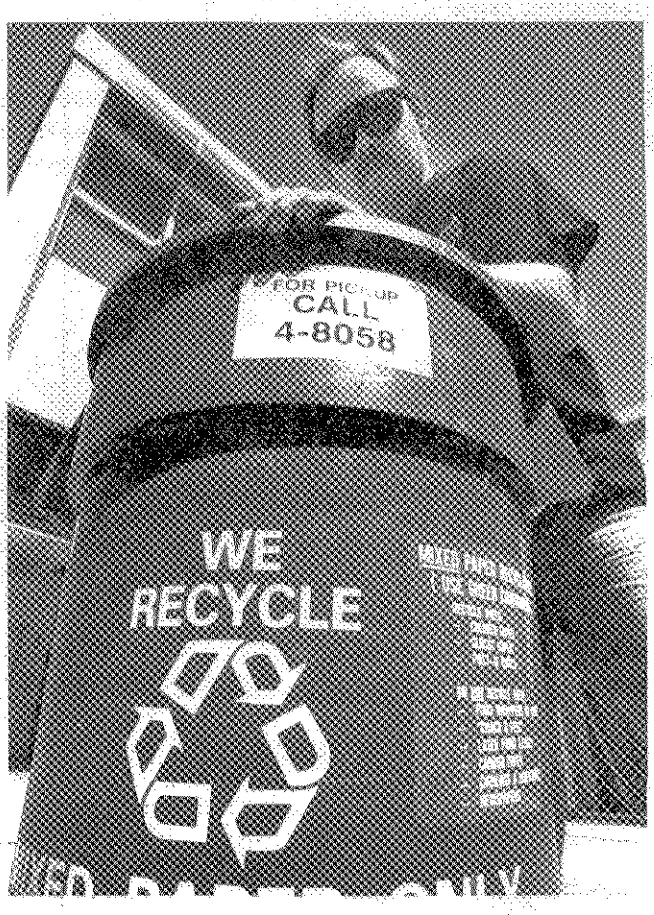
SUPER SPEAKERS: Christopher Newport University's Office of Continuing Education offers a "Super Speaker" series this fall: Sept. 22, Gen. Richard Hawley, commander, Air Combat Command; Oct. 27, Jim Spencer, columnist, Daily Press; Nov. 24, Robert White, The Kennedy Collection; and Dec. 14, Dr. Leah Bush, Norfolk medical examiner. A subscription to all four events is $25; or $10 per session. Each presentation is 7 to 8 p.m. in the Gaines Theater, with reception following for subscribers. To register, get more information, call Lisa Curry, 594-7153.

WENDWOOD FAIRE: The annual Wendwood Faire will be Sat., Sept. 26 at 320 Dominion Dr., Newport News, 9 a.m. to 4 p.m. Arts & crafts, children's activities, 75 gal. of homemade Brunswick stew, New Dominion Bluegrass band are part of the fun. For information, call 249-2246.

LaRC TECH EXPO '98 is Thurs., Sept. 24, 10 a.m. to 2 p.m., H.J.E. Reid Conference Center. All are invited, no fee.

LAA NEWS: LAA's lounge has a new name, "After Burners." Winner of the Name the Lounge Contest was Patricia Quigley. The lounge is in the H.J.E Reid Conference Center, Bldg. 1222 and opens daily at 4 p.m. Watch for the Grand Opening at the end of the month. Details will be posted on bulletin boards and in *LaRC This Week*. **BINGO:** Thursday nights in Bldg. 1222. Play instant win games for a chance at a NASCAR or Redskins jacket. Games start at 7 p.m. **ANNUAL TURKEY SHOOT** is scheduled for Sat., Oct. 24, 9 a.m.to 3 p.m. Details on bulletin boards or call ext. 46369. **AEROBICS:** Begin strength training with the LAA Aerobics Club group exercises. A weekly barbell-based class starts soon. The club will customize a workout for you. Saturday mornings feature Resist-A-Ball classes from 9:30 to 10:30 a.m. Evening classes are Tues. and Thurs. from 5 to 6 p.m. – all in the LAA Gym. For more information call ext. 42295. **FOOTBALL:** The LaRC Flag Football League is about to begin another season, and wants players for existing teams. The LAA-sponsored league is a 7-on-7 competition with minimal contact allowed. Games begin mid-September, Saturday mornings. The league is open to everyone. Contact David Sleight at ext. 48427 or <d.w. sleight@larc.nasa.gov>. **LAA BOARD** is accepting nominations for secretary/treasurer and social, arts and crafts chairperson, for two-year terms on the Executive Board. The board meets formally bimonthly, weekly in committees to conduct business/operations of LAA and its organizations. Nomination forms and position descriptions are available at the LAA Office in the H.J.E. Reid Conference Center. Nomination deadline is Oct. 6. Ballots will be mailed to all employees on Nov. 3. Results will be announced on Dec. 11. **RUNNING** competition begins in October with 10K and 2-Mile races. Schedules are posted on the Langley Runners Club Web Site. The competition is among all NASA Centers. All Langley employees can earn points for Langley. For information, see http://larc-exchange.larc.nasa.gov/laa/runners, contact Richard Shearer, ext. 47036, or <r.l.shearer@larc.nasa.gov>.

Center Snapshots



Photo/story by Jeff Caplan

Jack Jackson, Office of Environmental Engineering (OEE), is one of two contractors who collect recyclables around the Center. Jackson, who grew up in Chesapeake, received his associates degree in environmental science from Tidewater Community College while working at Norfolk General Hospital. He joined Science Applications International Corporation (SAIC) two years ago. Currently OEE collects paper, cardboard and printer toner cartridges. Another part of Jackson's job is supporting the hazardous and non-hazardous waste pickups from the satellite accumulation areas of buildings on the Center.

— *"I like interacting with the people on Center. I see a lot of people during the day at various buildings." Jack Jackson*

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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.

Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 19 ❖ October 2, 1998

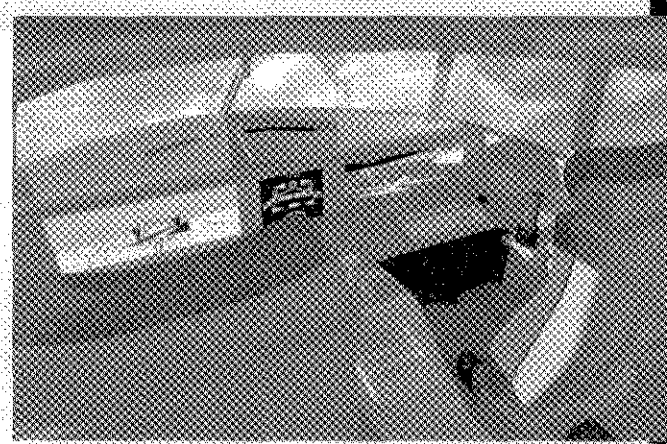
Langley Celebrates 40 Years with NASA, 1958-1998

By the time NASA was established on Oct. 1, 1958, Langley Aeronautical Laboratory had already pioneered concepts that made flying a "practical reality." There was plenty more aviation work to do, but on that day, NASA, and the newly-renamed Langley Research Center, added the challenge of sending humans into space and robotic spacecraft to distant planets. More missions would be added later.

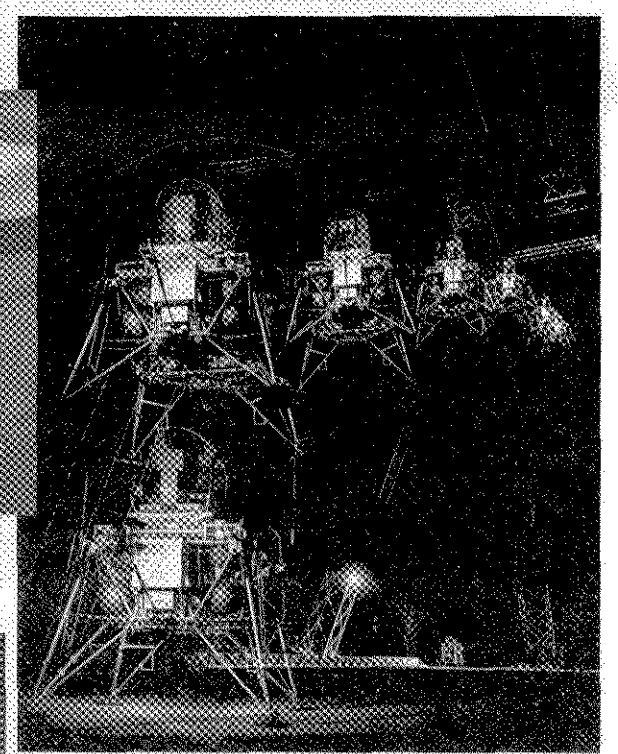
To mark NASA's 40th anniversary, a list of some of Langley's countless accomplishments is provided below. In the spirit of fair play, Langley employees are welcome to contribute their own one-line accomplishment not on this list to the managing editor at <h.k.henry@larc.nasa.gov> or 757-864-6120. They will be printed in an upcoming issue of the Researcher News .

October 1958 – Dissolution of the National Advisory Committee for Aeronautics (NACA) and establishment of the National Aeronautics and Space Administration (NASA); name change to NASA Langley Research Center
Nov. 5, 1958 – Langley's PARD division becomes core of new NASA Space Task Group for a manned satellite project.
November 1958 – Little Joe project started
1958 – Start of aircraft propulsive lift technology work
June 8, 1959 – First flight of X-15
Late 1950s – John Houbolt undertakes study of spacecraft rendezvous
Late 1950s – Start of Aircraft Noise Reduction research
Early 1960 – Man-in-Space program conceived and managed from Langley; Mercury astronauts begin training here
1960 – Emergency studies of Lockheed Electra discover that whirl mode failure was responsible for deadly crashes
July 1, 1960 – Launch of first Scout rocket
1962 – Supersonic Commercial Air Transport (SCAT) configuration studies begin
1962 – Hypersonic Research Engine (HRE) program starts
1962 – FX/F-111 program initiated
July 1962 – Decision to use Lunar-Orbit Rendezvous Plan
1963 – Rendezvous Docking Simulator operational (now a National Historic Landmark)
1963 – START (Spacecraft Technology and Advanced Reentry Test) program begins
March 1963 – NASA and FAA announce start of a joint study of supersonic transport (SST)
1964 – Vehicle Antenna Test Facility construction starts
1965 – Lunar Landing Research Facility (LLRF) operational (now a National Historic Landmark)
Mid-1960s – NASTRAN computer software system begins
August 1966 – First launch of Lunar Orbiter
1967 – Supercritical Wing concept announced (Richard Whitcomb)
1968 – Viking Project begins
Early 1970s – Crash studies at Impact Dynamics Facility (former LLRF) begin
1973 – Supersonic Cruise Aircraft Research program begins (SCAR)
1973 – Terminal Configured Vehicle Research Program created; TCV purchases a Boeing 737 (NASA 515) to use as a flying laboratory – to develop, test, and demonstrate advanced technologies for use by the commercial air transport industry).
Early 1970s – Research on X-24C concept begins
Mid-1970s – Research for Electronic Flight Display begins
1975 – Aircraft Energy Efficiency program starts
1983 – National Transonic Facility completed
1984 – Long Duration Exposure Facility (LDEF) launched into low-Earth orbit from the Space Shuttle to test space environment effects. LDEF retrieved on 1990.
1985 – National Aerospace Plane (NASP) program announced to develop hypersonic technologies
Early 1990s – Windshear and microburst flight tests begin
1990 – High Speed Research program contracts with industry for high-speed civil transport technology development
1994 – AGATE consortium created with industry, FAA and other organizations to revitalize U.S. general aviation industry
1994 – First use of lidar system for atmospheric studies from space with flight of Lidar-In-space Technology Experiment (LITE) payload aboard Space Shuttle Discovery
1994 – Halogen Occultation Experiment (HALOE) confirmed that CFC's are responsible for the Antarctic ozone hole
1996 – Hyper-X program established to demonstrate hypersonic propulsion technologies in flight
1997 – Mars Pathfinder uses Langley-developed atmospheric entry data and hardware for successful landing on Mars
1997 – National Aviation Safety Program established following White House Commission of Aviation Safety and Security

NASA 515, the Boeing 737, known as "Fat Albert," was used for more than 20 years as a flying research laboratory.

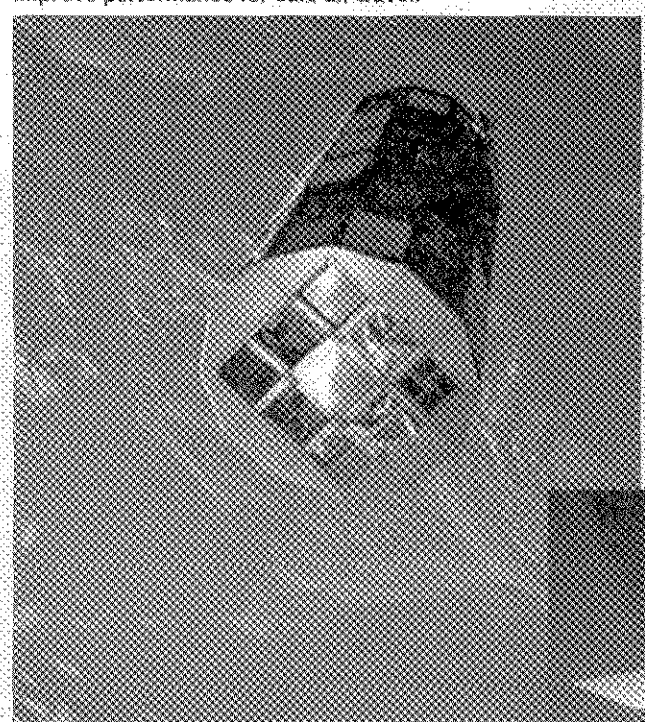


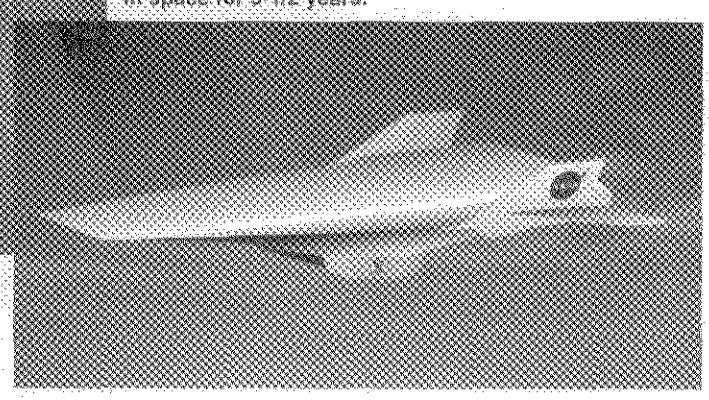
Safer air travel is the aim of the Aviation Safety Program, established in 1997, and led by Langley. Above is an artist's conception of an advanced crew interface designs to improve performance for safe air travel.



During a nighttime training session, a multiple exposure captures the movement of the Lunar Excursion Module Simulator (LEMS), designed at Langley. LEMS was a manned vehicle used to train Apollo astronauts on the characteristics of a lunar-landing type vehicle. The simulator was supported by the Lunar Landing Research Facility, a unique and imposing structure.

The Long Duration Exposure Facility (LDEF), at left, was the first spacecraft designed to place experiments in space for a long time and then return them to Earth for comprehensive laboratory analysis. It carried 57 multi-discipline experiments in space for 5-1/2 years.





An artists' concept of the Hyper-X is seen at right. The Hyper-X program was established at Langley in 1996. The program is a series of experimental flights to expand the boundaries of high-speed aeronautics and develop new technologies for space access.

Continued on Page 7

News Briefs

Around the Agency

STEPHENSON NAMED TO HEAD MARSHALL: Arthur G. Stephenson, president of Oceaneering Advanced Technologies, Houston, Texas, has been named to become the next Director of Marshall Space Flight Center, Huntsville, Ala. Stephenson has more than 30 years' experience as a manager in spacecraft and high technology systems. At Oceaneering, he was responsible for the company's work for government agencies such as NASA. His role also included overall responsibility for products and services ranging from astronaut tools and equipment to space flight robots; life support equipment; thermal protection systems for launch vehicles such as the Titan, Atlas and Delta; and special thermally-controlled robotic space facilities.

CONTRACTORS CHOSEN FOR SIM: The Jet Propulsion Laboratory (JPL), Pasadena, Calif., has selected Lockheed Martin Missiles and Space, Sunnyvale, Calif., and TRW Inc., Space and Electronics Group, Redondo Beach, Calif., for negotiations as industry team members for the Space Interferometry Mission (SIM). SIM is an innovative space system that will be launched in 2005 to measure precisely the location of stars and to search for planets orbiting nearby stars. SIM is part of the Origins Program in NASA's Space Science enterprise, a long-term program to enhance our understanding of the Universe and search for life beyond Earth. For more information about SIM, go to <http://huey.jpl.nasa.gov/sim/>.

MARTIAN MOON HIP-DEEP IN POWDER: New temperature data and close-up images of the Martian moon Phobos gathered by NASA's Mars Global Surveyor indicate the surface of this small body has been pounded into powder by eons of meteoroid impacts, some of which started landslides that left dark trails marking the steep slopes of giant craters. New temperature measurements show the surface must be composed largely of finely ground powder at least three feet (one meter) thick, according to scientists studying infrared data from the Thermal Emission Spectrometer instrument on the spacecraft. The new Phobos images and thermal spectrometer measurements are available on the Internet at: <http://www.jpl.nasa.gov>, <http://photojournal.jpl.nasa.gov/>, <http://www.msss.com/> and at <http://emma.la.asu.edu>.

NASA ACCEPTS STATION COMPONENT: The Unity connecting module, the first U.S.-built component of the International Space Station (ISS), moved a step closer to orbit this week when Boeing, Unity's manufacturer, officially handed over the "keys" to NASA. NASA officially accepted the module after review and certification of Unity's construction by NASA and Boeing station managers at NASA's Kennedy Space Center, Fla. Unity is scheduled for launch aboard Space Shuttle Endeavour on the STS-88 mission Dec. 3. It will be launched two weeks after the first station component, the U.S.-funded, Russian-built Zarya module, from the Baikonur Cosmodrome in Kazakstan, then mated to Zarya by astronauts to begin the five-year orbital assembly of the ISS. Unity is a critical component of the International Space Station, a six-sided connector with a berthing port on each side. *For more information, check the Internet for NASA's News and Information web page at <http://www.nasa.gov/releases/1998>.*

Announcements

Hispanic Heritage Workshop Stresses Communication

NASA Langley's celebration of Hispanic Heritage Month continues with a workshop presented by Jonathan Cruz, entitled "Differences in Communications' Styles Between Latinos and Anglos," Oct. 8, 1 to 3 p.m., at the H.J.E. Reid Conference Center.

The Spanish language title of the talk is "Te Conozco Bacalao." Te Conozco Bacalao is a talk that addresses the differences in nonverbal and verbal communications' styles between Latinos and Anglos and how these differences can cause misperceptions, misinterpretations and lead to a breakdown in communication. Cruz will provide an overview of the wrong ways to deal with the difference and provide tips on effective ways to deal with the differences.

The material is based on a book titled *Nonverbal Communication* by Dr. Carmen Judith Nine-Curt. All employees and contractors are invited to attend, but please register by calling Patsy Campbell, ext. 43291, or e-mail <p.l.campbell@larc.nasa.gov> by Oct. 7.

7th Space Conference Set for March 1999

The Aviation/Space and Defense Division of the American Society for Quality is planning its 1999 Conference on Quality in the Space and Defense Industries (CQSDI) for March 1 and 2 in Cape Canaveral, Fla. The 1999 CQSDI will focus on doing business in today's "better, faster, cheaper" environment. The conference is supported by NASA and DoD and presenters will represent both government and industry. Three panel discussions are planned. For more information, call Helen Schneider at (254) 776-3550 or e-mail <sgmeet@mail.airmail.net>.

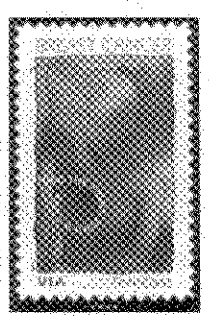
Oran Nicks Dies

Oran Wesley Nicks, former Langley Deputy Director from 1970 to 1980, age 73, died Sept. 23 outside Houston. He was the Director of the Space Research Center, Texas A&M University since 1985.

As the Center's deputy director, Nicks served as general manager for Langley, responsible for directing various research and technology activities and for institutional management of all facilities and equipment.

James E Byrd, wind tunnel test engineer in the 16-Foot Transonic Tunnel worked for Nicks at Texas A&M's 7X10 Low Speed Wind Tunnel. He said, " Nicks had great influence upon me and my career. I will never forget the experience of working with him. This is a very sad day for me."

Breast Cancer Awareness Month Features Speaker/Stamp



October is National Breast Cancer Awareness Month. A special presentation on the latest research and coping mechanisms for breast cancer will be given by Dr. Claire Carman, Oct. 16, from 1 to 2 p.m., H.J.E. Reid Conference Center.

Carmen is a breast surgeon in the Tidewater area. After re-ceiving her doctor of medicine degree from Texas A&M University, she did a residency at Eastern Virginia School of Medicine (EVMS). She completed fellowships in breast disease at the Faulkner Breast Center/Dana Farber Cancer Institute in Boston, Mass., and reconstructive breast surgery at EVMS.

NASA civil servants and contractors are invited to this program. Civil service employees may charge time to Job Order A5006.

USPS Breast Cancer Research Stamp

The U.S. Postal Service has issued a postage stamp to help raise funds for breast cancer research. The Breast Cancer Research stamp is the first U.S. stamp to have its net proceeds above the cost of postage earmarked for a research organization or cause. USPS will print 200 million stamps and hopes every stamp will be bought and used. The "semipostal" stamp costs 40 cents and is valid for postage in the amount of the 32-cent first-class letter rate. Net proceeds will be donated to the National Institutes of Health and the Medical Research Program of the Department of Defense.

Langley Represented at NASA Mentor-Protégé Conference

The Third Annual NASA Mentor-Protégé Conference was held in August in Burlington, Vt. Vernon Vann, Small Business specialist, Office of Procurement, represented the Center at the conference.

The purpose of the event was to foster the establishment of long-term business relationships between small, disadvantaged business subcontractors and NASA prime contractors. The theme of the conference was "Advancement through Alliance."

"The business community at-large this year has witnessed more corporate mergers, acquisitions and alliances than ever before," Vann said. "The Mentor- Protégé Program drives the expansion of resource and technology exchange and new opportunities among all businesses – large, medium and small."

Pat Haney, Lockheed-Martin, and Dr. Jalaiah Unnam, AS&M, co-chaired a workshop on Advantages of Multiple Relationships. Tony Dovie, SAIC, contributed to a panel discussion on Mentor-Protege Fundamentals. NASA Associate Administrator Ralph Thomas III presented certificates of appreciation to the "SAIC and AS&M Team" and the "Lockheed and AS&M Team" in recognition of "their contribution and outstanding support to the NASA Mentor-Protégé Program. The SAIC and AS&M team is the two-time recipient of the prestigious Goldin-Stokes Mentor-Protégé Award.

NASA CONNECTs with Students

BY DR. THOMAS PINELLI

NASA CONNECT is a series of live, interactive, 30-minute instructional satellite programs that use NASA projects, facilities and researchers to enhance the teaching of elementary and middle school math and science. CONNECT is a partnership of three NASA centers: Langley, Lewis and Marshall and various state-level math and science teacher associations. Hosted by Langley's precollege officer Dr. Shelley Canright, it is free to educators and students.

The 1998-1999 NASA CONNECT Series includes five programs with an aeronautics and space transportation technology theme. Four of the programs feature a live call-in segment. Each program contains a web-based, on-line, interactive component designed by Langley's Learning Technologies Project; and features a NASA guest researcher. Titles and the local broadcast dates follow: Plane Weather, 10/8; The Shapes of Flight, 11/10; Wherever You Go, There You Are, 12/17; Recipe for the Future, 2/11/99; and Quieting the Skies, 4/22; all are 10 to 10:30 a.m.

The series will be carried by Virginia's five PBS stations. Langley's Office of Education is the lead center in Code R for Distance Learning and Educational (Instructional) Technology. To learn more about NASA CONNECT and the 1998-1999 NASA CONNECT Series, visit the website at: <http://edu.larc.nasa.gov/connect>.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 to the editor via e-mail (a.c.gaudreaux@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.

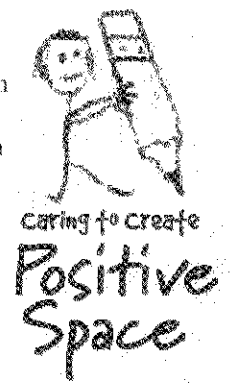
Photographer . . . . . Jeff Caplan
Science and Technology Corp.

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.

Living Proof

Creating a "Positive Space" at CHKD

BY MEGHAN WOODCOCK



Stepping off the elevator you immediately notice the happy nautical theme taking over the hallway. There are fish drawn on the carpet, paintings of children playing at the beach, and waves and portholes built into the architecture. All of it is a fun disguise to mask the fact that there are hospital beds at the end of the hall. The people at the Children's Hospital of the King's Daughters (CHKD) in Norfolk know how to make kids feel more at home. Unfortunately for many of their patients the hospital is home for months at a time — all the more need for positive reinforcement.

That's what Susanne Waltz thought when she formed the group "Positive Space" with other members from Langley's Graphics department.

Healing From Within

Waltz was in a car accident that left her with a chronic pain injury and a stack of medical and legal bills. "I was physically and financially left with the burden of paying for someone else's mistake," said Waltz. "The experience was so negative that I wanted to do something good to counteract all the pain and misery."

Waltz decided to turn her talent into a gift for the children at CHKD. "I wanted to see that the children who have chronic illnesses or pain could take away a fun souvenir from the hospital," explained Waltz. "They need something to make their next trip to the hospital less anxiety-filled."

The "Positive Space" group began visiting CHKD a year and a half ago to work on various art projects with the children. Members meet after work every third Thursday of the month to carpool to Norfolk.

Volunteer Larry Merrill believes the long day is worth it. "It is kind of tough," Merrill said. "You work all day and you're tired but after we're done we're always rejuvenated; the kids help energize you."

Caring To Create

Merrill came up with the "Positive Space" name and logo. "The kids are in pain and discomfort, they're away from home," Merrill explained. "So we go there and try to create a positive space for them to be in for a while. Also the artistic play on it . . . positive and negative space is used in composition in art. And of course 'space' also represents (part of) NASA."

"Positive Space" members meet parents and children in a common room that is used for both therapy and play. Some children require special medical equipment to participate. "There are a variety of health levels," said Steve Campbell, another volunteer. "A lot of times it's really hard to tell how they react. But the parents will interpret for us and come back and say, 'You might not be able to tell but he really liked it.'"

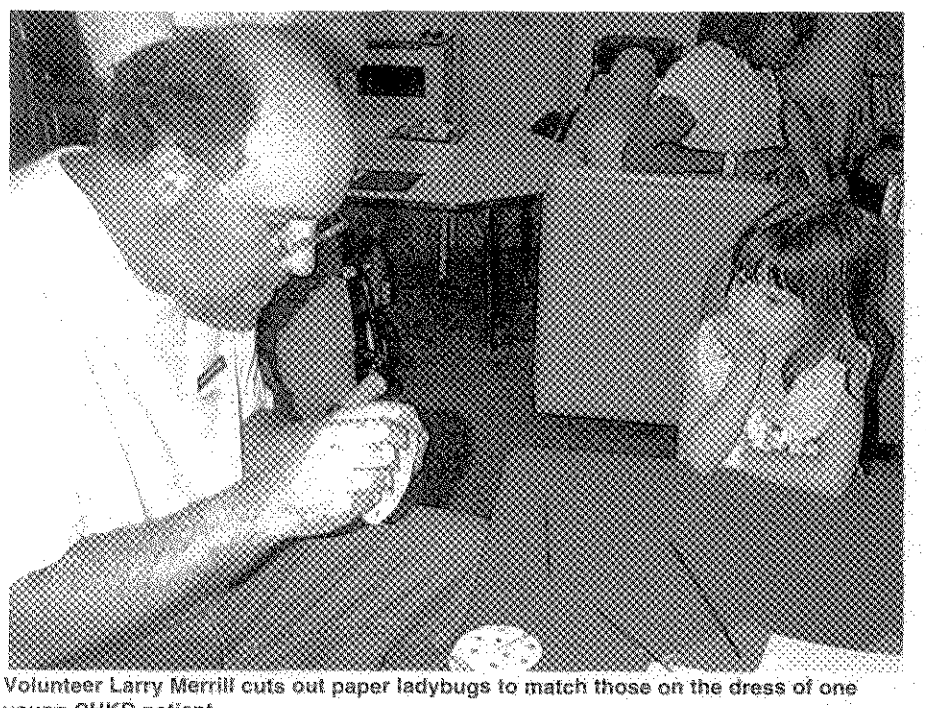
The group visits with up to 20 children in a night including bedside visits. The age range is anywhere from several months to 20 years old. Art projects have included: decorated pillow cases, puppets, tiny Christmas trees, clothespin people, mobiles, sand art, Halloween costumes, picture frames and more.

"Occasionally we'll theme an art project to the season or to a holiday," said Rod Adams, head of NCI Contract Graphics Services. "It's hard to find a project that suits such a large age group."

Extra T-shirts are always carried for older children or when an art project can't be brought to the bedside. "The T-shirts are our fail-safe," said Merrill. "We can bring in a T-shirt and draw whatever they want."

CFC Funding

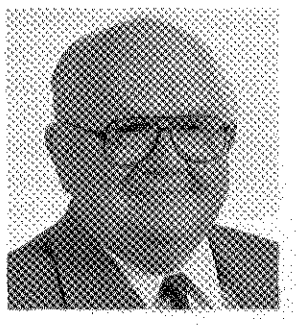
Materials for the art projects were originally paid out-of-pocket by members of the group. Now the group is funded with donations from local businesses. Donations to the CHKD can be made through the Combined Federal Campaign under code 6140.



Volunteer Larry Merrill cuts out paper ladybugs to match those on the dress of one young CHKD patient.

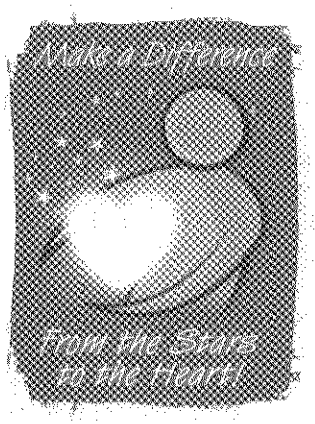
CFC — the Ultimate Investment

WILLIAM L. SMITH,
LANGLEY'S 1998 CFC VICE CHAIRPERSON



In my view, the Combined Federal Campaign (CFC) is the ultimate investment.

I think of the CFC as a mutual fund whose portfolio includes a rich set of community investments. Like all mutual funds, the CFC diversifies our investment in products, services and opportunities. Unlike all mutual funds, I believe the CFC guarantees great dividends and high yields. I see our investments leveraged through the lives and successes of the people it helps. Our own Terry Morris, this year's national spokesperson, is living proof that the CFC works.



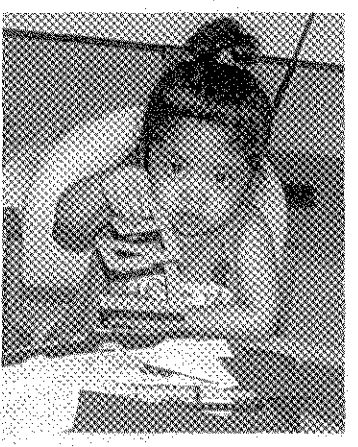
As contributors to the CFC, Langley employees form an investment team. Traditionally, our team has been a leader in the local area and within the federal community. To continue in a leadership role, our goals target increased employee participation as well as increased contributions from those who are already team members.

Please consider joining the Langley CFC investment team. And, if you are already a member, I am asking for your continued support.

Photos by Meghan Woodcock

Steve Campbell, above right, enlists the help of a 20-year-old patient in making lion and tiger cut-outs for a jungle-themed mobile. Tiny helping hands, right, assist a volunteer in making geometric designs.

How to Pledge Electronically



Langley employees will be among the few groups nationwide making their Combined Federal Campaign (CFC) pledges using an electronic pledge form.

From the CFC home page the contributor can view more information on how their CFC contribution helps, CFC facts and figures, or a list of CFC charitable agencies. Only NASA Langley civil service employees can access the CFC on-line pledge form from the link titled "Contribution Form On-line."

The pledge form includes a user-friendly interface, enhanced on-line pledging instructions, and better front line reporting. There is a search capability and shopping cart feature to search charity name, code, descriptive information and overhead percentage. The shopping-cart allows contributors to shop for CFC charities, and place it in their cart. Upon return to the pledge form, the contributor will find it pre-populated with the charity codes contained in their shopping cart.

CFC key people in each organization have manual pledge forms. Pledging electronically will reduce the amount of time required to pledge, validate all agency codes, ensure required information is complete, and display names and code numbers of agencies. Electronic pledging reduces the cost of processing forms, and preparing reports.

The CFC brochure and pledge form can be found at the new CFC web site address, http://cfc.larc.nasa.gov/

1998 Day of Caring

Day of Caring Mobilizes Volunteers; Community Benefits

BY MARNY SKORA

"Good to work with people who really care about other people and want to help them." – Joseph Falzone *"Gives you a different look at life; lets you know how blessed you are."* – Nita Langford *"Gave me an opportunity to do something for an outstanding organization"* – Sharon Stack *"Enjoyed meeting other NASA employees with whom I typically do not have daily contact."* – Robin Hardy *"The staff was so friendly and seemed to appreciate our help."* – Charlotte Tyeryar *"We worked hard! We made a difference."* – Dick Barger

Above are brief comments from some of the 179 Langley employees, retirees, contractors and friends who participated in the community Day of Caring. NASA Langley joined Newport News Shipbuilding, Sentara Hampton General Hospital and Riverside Regional Medical Center to sponsor this seventh annual event that mobilized 551 volunteers at 65 sites from Williamsburg to Newport News, Hampton to Portsmouth.

The day was coordinated by The Volunteer Center. Executive Director Elyse Brown estimates the value of volunteer time at $44,000 and dollars saved by the nonprofit agencies at more than $8,000. But the day is better measured by the impact the volunteers made on those who needed help. Day of Caring volunteers gave senior citizens the assistance that will allow them to continue living in their own homes; sent 200 children back to school with the proper tools; collected more than 850 donated books to support a project that will encourage parents to read to their children; provided one-on-one attention to U.S. veterans; and helped salvage almost 27,000 pounds of food, enough to feed 19,000 hungry Peninsula residents. They pruned, plumbed, painted; cleaned, calmed, comforted; sawed, sanded and sealed; dined, drove and delivered; hinged, hammered, but most of all, helped.

Linda Goodwin, Financial Management Division, spent the day at the VA Hospital helping veterans with varying stages of paralysis. Some needed help writing letters, shaving, eating their meals "just normal things we take for granted," said Linda. "I am blessed to have had this opportunity to meet such individuals."

Jim Rogers, Research and Technology Group, also volunteered at the VA. "I spent time with men who seemed to enjoy having someone to listen to their life stories." This was a sentiment shared by many. A group of Langley volunteers spoke with the volunteer coordinator and have made plans to go back.

Lisa Hawks, Materials Support Section, worked with a group from Riverside Hospital weeding, trimming trees and bushes and planting tulips at the Boys and Girls Club of the Peninsula. In addition to beautifying the Boys and Girls Club, Lisa learned a lot about the good the organization does and a lot about Riverside's outreach efforts.

Marian Jones, Facilities Technical Support Branch, helped the Newport News Department of Social Services arrange their community resource warehouse. She described her assignment as a "challenge, but a very rewarding one!" The department gathers donated items from businesses and community sources to distribute to the needy. When the volunteer crew finished, the warehouse looked like a different place. "This was my first time volunteering, but, it definitely will not be my last. I really felt good knowing that I somehow made a difference," she said.

Brenda Sullivan, Structural Acoustics Branch, helped at the home of a family with a child with cerebral palsy. She called them "a delightful family coping incredibly well with a difficult situation." She was so inspired that she returned to her apartment with a zest for cleaning. "But, that didn't last long," she said. "The feeling of accomplishment in helping other people has lasted much longer."

Longtime volunteer Artistine Lethcoe-Reid, Office of Procurement, called shortly before the Day of Caring to say she could not participate because of her heavy workload. "I did not want to be left out of this worthwhile endeavor," she said. So she did both! She came into work at 6:30 a.m., reported to her volunteer assignment at 9, returned to Langley at 1 p.m. and worked until 6. "It was a long day, but the effort was very rewarding."

Vincent Cowling, Fabrication Division, summed up the day well. "I would volunteer again because of the difference you can make in someone's life."

Photo by Ann Gaudreaux

Tom Yager, Structural Dynamics Branch, clears away brush as part of the clean-up crew assigned to Camp Skimino, Toano.

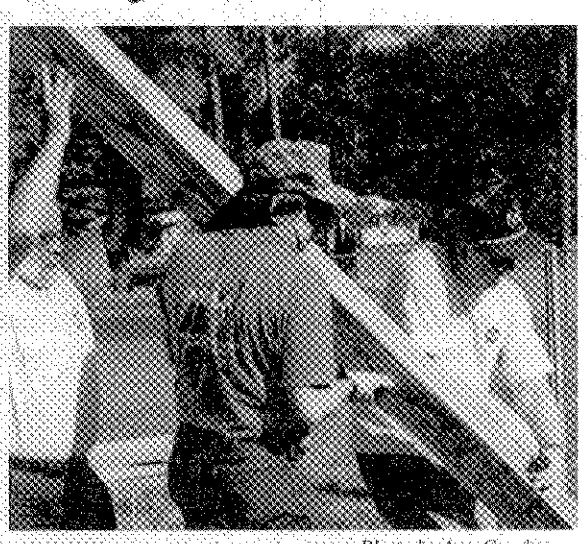


Photo by Ann Gaudreaux

Richard Chase, Operations Engineering Branch, David McLuer, NYMA, and Art Ritter, Systems Development Section, raise a support beam for a playground shelter built at Child Development Resources in Williamsburg.

At right, James Cassidy, Independent Program Assessment Office, top, and John Lamar, Configuration Aerodynamics Branch, remove layers of old flooring in an upstairs bathroom at the Salvation Army family shelter on Huntington Ave., Newport News. The duo worked in close quarters all day to prepare the surface for installation of a new vinyl floor.

Photo by Jeff Caplan

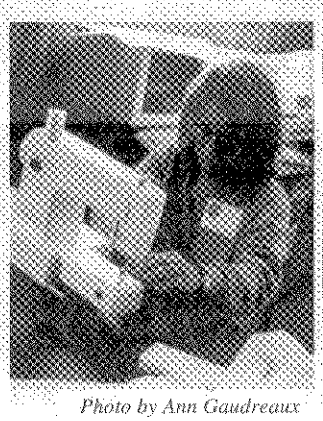


Photo by Ann Gaudreaux

Constance Webb, above, Acoustic Optical Chemical Branch, worked with Joycelyn Simpson Harrison, Composite and Polymeric Materials Branch, at the Langley Child Development Center. They cut large bed sheets and sewed them into smaller covers for cots used by the children for naps.

Thanks to all participants in Day of Caring

American Red Cross
James Fields M.G. Lawrence
American Red Cross, York/Poquoson Chapter
Ruth Amundsen Sharon Stack
Long Pham
Association for Retarded Citizens
TaShawn Bryant
Big Brothers/Big Sisters of the Peninsula, Inc.
Paul Burgus * Chuck Carpenter
Nola Graves Kim Kudlinski
Rob Kudlinski Eli Simon-Tov
Myra Walton Sandra Zumbrun
Boy Scouts of America, Colonial VA Council
Cindy Albertson Enette Doswell
Alice Eley Robin Hardy
Jennifer Hubble Laura Smith
Ramona White Alesia Williams
LaVenia Williams
Boys' & Girls' Club of Hampton Roads
Carolyn Helmetsie James Elliott
Joseph Falzone III *
Boys' & Girls' Club of the Va. Peninsula
Lisa Hawks
Center for Child & Family Services, Inc.
John Johnston Vivian Merritt
Child Development Resources (2 locations)
Richard Chase Patricia Emerson
Donna Gallaher Larry Huebner
David McLuer * Tom Moul
Art Ritter Chris Sandridge
Ray Scholz Deidre Sellers
David Sheldon Bill Smith
Anita Thomas Patricia Emerson
Children's AIDS Network Designed for Interfaith Involvement (CANDII)
Charlene Farquharson
City of Hampton (3 locations)
George Allison Karen Burch
Michelle Cohoon Martin Guardia *
Lana Hicks Carlos Liceaga
Eric Taliaferro * John Teter
EDMARC Hospice for Children
Katrina Bernstein Sherilyn Brown
Julie Johnson Kathleen Long Bullock
Julian Roberson Pamela Schmidt
Brenda Sullivan
Foodbank of the Virginia Peninsula
Deborah Ford Robert Holt
B. Allen Langford
Girl Scout Council of Colonial Coast
Tom Roberts * Tom Yager
Goodwill Industries of Hampton Roads, Inc.
Charlotte Tyeryar (retiree) Daniel Giesy
Sandra Keyes Artistine Lethcoe-Reid
Patricia Williams
Hampton Department of Social Services
James Allen Kara Latarella
Michelle Moore Henry Russell
Joni Williams Jessica Woods-Vedeler
Hampton Ecumenical Lodgings & Provisions
Scott Bartram Gene Monroe
Kurt Neitzke Charlie Scanlon
Hampton Healthy Families Partnership
Felecia Berry Stephanie Horvath
Christal Kellam Steve Lee
Langley Child Development Center
Audrey Coppedge * Meg Holloman
Michelle Munk Jeane Shanks *
Joycelyn Simpson Harrison
Sharon Smith Constance Webb
Leukemia Society of America
Dianne Check Rachelle Saunders
Paul Schutte
Maryview Nursing Care Center
Michelle Calloway Kathleen Connor Jerrils
Queenella Gray Sandy Hurst
Susan Jernigan Octavia Judge
Patricia Pahlavani Patricia Quigley *
Judith Watson
Mission Daystar
Ken Brentner C.T. Moore
Gail Temple
Newport News Department of Social Services
Velma Clark Sandra Foley
Marian Jones
Newport News Healthy Families Initiative
Angela Brown Kenneth Carroll
Yvonne Deliapenta Carl Gerhold
Joann Harris Kelly Hayhurst
June Howell Nancy Kaplan
Louise Sykes Geraldine Tucker
Newport News Link
Diane Griffin Larry Harvey
Wendy Pennington Helen Terrell
Northampton Community Center
Crystal Chamberlain Kenny Green
Gary Grew, friend Richard Barger
On the Hill Cultural Arts Center
Ginger Freeman
Peninsula Agency on Aging
Heide Ellis
Peninsula Habitat for Humanity
Russell DeYoung
Peninsula Marine Institute
Larry Zdanis Christopher Slominski *
Peninsula YMCA
Walter Baskin * Vaughn Behun *
Raul Mejia
Planned Parenthood
Ledora Akanni Brian Cheshire
John Lasley *
Portsmouth United Way
Kathy Kuykendoll
Safehaven, Inc.
Gloria Evans Mary (Susie) Henricksen
Donna McIntosh James Reeder
Ed Yarrington *
Teen Challenge
Carl Horne
The Salvation Army Peninsula Command
Jim Cassidy Edward Kirby
John Lamar Julie Bryant, LFCU
The Volunteer Center
Jo Legette Shirley Stephenson
Susan Campbell
United Way of the Virginia Peninsula
Elaine Crawford Pamela Davis
VA Hospital
Dennis Botkin George and Kelly Cowley
Vincent Cowling Carolyn Eby
Linda Goodwin Connie Jones
Thomas Jordan Nita Langford
Mary Liggins Angela Mason
Jim Rogers Anita Runkel
Jo Ann Woodcock Janis Yates
Virginia Living Museum
Brian Luoto Patricia Robinson
Rose Mustain
Y. H. Thomas Community Center
David Burnette * Bessie Nicholson
Nichelle Santiful Felicia Wright
Zoe Community Church
Kevin Johnson Tom Mitchell

*** indicates Langley contractor personnel**

School Tools and Book Drives Show Langley Cares

Photos by Jeff Caplan

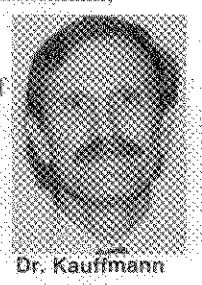
Once again, school tools were purchased and donated by Langley employees. Above, Cafeteria administrative assistant Christine Ebron and Nancy Finn, STC, helped pack up pens, pencils, notebooks, crayons, and other supplies that were delivered to area schools for distribution to needy children.

The new Children's Book Drive collected more than 850 new and used books that will be distributed through Peninsula's Healthy Families Initiative to families to encourage them to read to their children. Cafeteria cashier Nicole Brown checks out some of the donated books.

Engineering Technician Apprentice Program Graduates Contribute to Langley's Success

The 1998 graduating class of the Engineering Technician Apprentice Program (ETAP) officially completes its course of work/study at a graduation ceremony Friday, Oct. 9 at the H.J.E. Reid Conference Center.

Dr. Paul Kauffmann, associate professor, Department of Engineering Management at Old Dominion University will address the graduates on career management in technical fields.


Dr. Kauffmann

Kauffmann's research focuses on analysis of technology and operations management.

This year there are 10 graduates of the program.

Carlos M. Castillo is a mechanical technician in the Metals Application Technology Branch. He is currently assigned to the Aero-research Equipment Section. He has performed work for Thunder-COSMOS, National Transonic Tunnel (NTF), 16-Foot and Drobe Calibration Tunnels and High Speed Research (HSR) programs. Castillo received two Performance Awards during his apprenticeship.

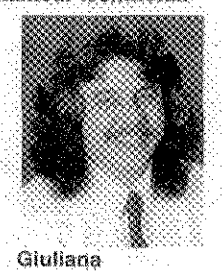
Castillo

Castillo earned an associate of applied science degree, mechanical technology from Thomas Nelson Community College (TNCC) and has served in the U.S. Army as an artillery officer. He graduates from the ETAP cum laude.

Crystal D. Chamberlain is a mechanical technician in the Structures, Materials and Flight Research Support Branch. She is currently assigned to the Thermal Structures Laboratory testing element-size structural panels subject to thermal and mechanical conditions. She has worked in the Structural Dynamics Lab, Transonic Dynamic Tunnel, Thermal Analysis Lab and Mechanical Analysis Lab. She earned an associate of applied science degree in mechanical technology from TNCC.

Chamberlain

Savior Joseph Giuliana Jr. is a mechanical technician in the Transonic Support Section. He supports projects in the 16-Foot Transonic Tunnel and the Jet Static Test Stand. He has worked in the 16-foot Transonic Dynamics Tunnel, Low Turbulence Pressure Tunnel, 8-foot Transonic Pressure Tunnel and 14- x 22-foot Subsonic Tunnel.

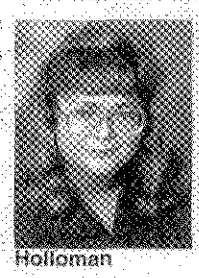

Giuliana

Giuliana has received Performance Awards for his achievements in the 16-Foot Transonic Tunnel, the 14- x 22-Foot Subsonic Tunnel, the 16-Foot Transonic Tunnel and the 8-Foot Transonic Pressure Tunnel. He received an Outstanding Performance Award, a Group Achievement Award and two Superior Accomplishment Awards, for work in the 14- x 22-Foot Tunnel and the LTPT.

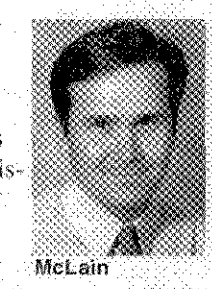
He holds a bachelor of science degree in civil engineering technology from Old Dominion University and an associate of applied science degree, mechanical engineering technology from TNCC. He graduates the Apprentice Program summa cum laude.

Margaret E. Holloman is a mechanical technician in the Models and Materials Technology Branch, and currently works in the Nondestructive Evaluation Section.

She has supported research in Langley's freon effort and cryogenic model filler materials for the National Transonic Tunnel. She performed nondestructive evaluation of components for HSR, Thunder, LaRC 757, Boeing 777 models and tunnel support hardware among others. Holloman was a contributor to research cited in the publication entitled "Investigation of Cryogenic Filler Materials in Instrumentation Grooves and Target Penetrations." She received a Superior Accomplishment Award for support of the NTF filler development program, and earned an associate of applied science degree in architectural technology, drafting and design and mechanical technology from TNCC. She graduates magna cum laude.


Holloman

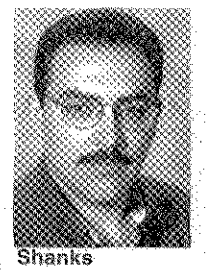
Christopher McLain is a mechanical technician in the Models & Materials Technology Branch currently assigned to the area of design and fabrication of Dynamic and Static Composite Research Models. He performed work on the RAH66 Comanche Model, F-18 Drop Model, V-Jet II Model, Blended Wing Body Transport Model and the Advanced General Aviation Transport Experiments (AGATE) display model.


McLain

McLain received a Performance Award for work on the 10.59 Energy Efficient Transport (EET) Semi-Span Research Program, along with a Certificate of Appreciation for fabrication of the AGATE display model.

He earned an associate of applied science, mechanical engineering technology from TNCC and is pursuing a bachelor of science degree in mechanical engineering. McLain is graduating from the program summa cum laude.

Greg Shanks is a mechanical technician in the Aerodynamics Research Support Branch. He supports projects in the National Transonic Facility (NTF), and has worked in the 16-Foot Transonic Tunnel, Unitary Plan Wind Tunnel and LTPT. Shanks has worked on the Boeing High Wing Military Transport testing at NTF and the European Transonic Wind Tunnel in Germany. He also supported the HSR Project and the HL-20.


Shanks

Shanks received several awards during his apprenticeship including two Performance Awards and three Superior Accomplishment Awards. All three Superior Accomplishment awards were for outstanding support of the National Transonic Facility schedule. In 1993, he received an On-the-Spot award for significant productivity and high quality workmanship relative to Unitary Wind Tunnel test projects and equipment improvements.

He holds an associate degree in applied science in mechanical engineering technology, cum laude, and an associate degree in arts/fine arts, both from TNCC. He graduates summa cum laude from the Apprentice Program.

Nina D. Tappan, the class speaker, is an electronic technician in the Electro-Optics and Controls Branch. She works with electro-optics, on the Fourier Transform Spectrometer Web and the National Polar-orbiting Operational Environmental Satellites System Airborne Sounder Testbed Interferometer with the Convection And Moisture Experiment 3 Mission (CAMEX-3). She has worked on the Photogrammetric Appendage Structural Dynamics Experiment, LIDAR Atmospheric Sensing Experiment (LASE) and F-18XL wing modification measurements.

Tappan

Tappan is a co-author on NASA Publication 1395, "Laser-Induced Damage Threshold and Certification Procedures for Optical Materials," June 1997. She received two Superior Accomplishment Awards, one for outstanding optical support to the LASE, the other for her performance and contributions to the Electro-Optics and Control Branch, as well as two Group Achievement Awards.

Tappan has an associate of applied science degree in electronics from TNCC.

Ronald Topping is a mechanical technician in the Experimental Research Facility Development Section, working on the Boeing 757 conversion and supporting the Flight Operations and Support Division and Differential Absorption (DACOM) Project. He has worked for the Atmospheric Ionizing Radiation ER-2 Flight Measurement Project (AIRE), X-33, OV-10, F-16XL, Boeing 737 Research Plane, UH-1H Helicopter and F-18 Drop Model Program.

Topping

Topping received a Team Excellence Award for AIRE and a Superior Accomplishment Award for the X-33 Thermal Protection System Research Program. He holds an associate of applied science degree in mechanical engineering technology from TNCC, and is an apprentice graduate from Newport News Shipbuilding in the sheet metal trade. He graduates the program magna cum laude.

Paul Tucker is a mechanical technician in the Gas, Fluid & Acoustics Research Support Branch. He works in the 31" Mach 10 and 15" Mach 6 Tunnels.

Tucker

Tucker has received three Performance Awards and a Superior Accomplishment Award for exceptional team performance in providing technical and operational support to Hypersonic Model Testing for X-33, X-34, X-38 and Hyper-X Agency programs. Tucker was awarded an On-the-Spot Award in recognition of high regard for model safety and supporting the Bell Tilt Rotor test in the 14 x 22-Foot Subsonic Tunnel. He also received a Team Excellence Award for the development and wind tunnel validation of an active flap rotor concept for helicopter blade/vortex interaction noise reduction.

He earned an associate of applied science degree in mechanical engineering technology from Thomas Nelson Community College. He graduates the ETAP summa cum laude.

William Scott Wallace is a mechanical technician in the Structures, Materials & Flight Research Support Branch. He is currently assigned to the Thermal Analysis Lab and has performed work in the Thermal Structures Lab. He has worked on HSR and RLV programs and the Small Crack Growth study.

Wallace

Wallace received a letter of commendation for his support of the High-Speed Research Project.

He holds a bachelor of science degree in computer science from Christopher Newport University and two associate of science degrees from Thomas Nelson Community College, one in engineering and the other in mechanical engineering technology. Wallace is currently pursuing a master of science degree in computer science from the College of William and Mary. He graduates the Engineering Technician Apprentice Program summa cum laude.

Langley's PDP Participants Honored at NASA HQ

A graduation ceremony July 20 for the 1997-98 Professional Development Program (PDP) class included 21 participants from eight NASA centers. Three of the graduates were from Langley. Standing with NASA Administrator Daniel Goldin, far left, they are, left to right, Frank Peri Jr., Doug Stanley and Carlos Liceaga.

PDP provides competitively selected NASA professional personnel with developmental work assignments, from four to 12 months in duration, away from their home installations. PDP's goal is to provide future NASA leaders with a broader perspective of the Agency and the impact of NASA programs on developing technology.

Goldin urged the graduates "to become effective leaders through advanced planning that accommodates professional and personal responsibilities."

AIAA HRS Invites Nominations for Award

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for the 1999 "Engineer-of-the-Year" award. One member of the AIAA/HRS is recognized each year through this award for distinguishing himself or herself in some facet of aerospace engineering practice.

The nominee shall have made a recent significant contribution to the art and science of aerospace engineering that is worthy of recognition; shall be an AIAA member; and shall not be a member of the AIAA HRS Council. The selectee shall be required to deliver the annual Matson Lecture, presented each year by AIAA HRS during National Engineers Week.

The AIAA HRS nominating committee will select one individual from the pool of candidates. Past winners of this prestigious local award were Dr. Kathy Abbott (1998) and Paul Holloway (1997).

Everyone is invited to submit a nomination by sending the name and phone number of a deserving candidate by Oct. 10. The nominating committee will contact the individual for more specific information. Please send information to Jeffrey D. Flamm, AIAA HRS Honors and Awards chair, at (757) 864-5955, or <j.d.flamm@larc.nasa.gov>.

Safety Reviewers Visit COLTS Facility

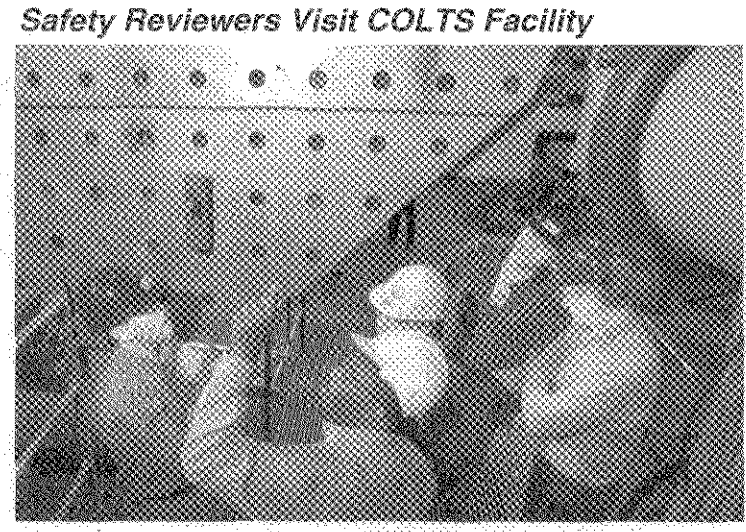


Photo by Jeff Caplan

Facility Safety Head Marshall Rouse, pointing, leads safety inspection team through Combined Loads Test Systems (COLTS) facility.

A team of representatives from the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) reviewed the COLTS complex Sept. 23 as part of a week-long safety review. Langley hopes to qualify for certification under OSHA's Voluntary Protection Program (VPP).

VPP is OSHA's premiere safety program. VPP participants are facilities that have designed and implemented outstanding health and safety programs. Langley seeks the highest level of certification, VPP's Star. Achieving Star certification would formally recognize Langley as one of the safest sites of its kind in the nation and the first federal site to receive such certification. Certification enables participants to "self-certify" their safety programs and practices. In exchange for overcompliance by employers, OSHA drops a facility from its routine annual inspection schedule.

VPP Star-certified sites are evaluated on site every three years, and their incidence rates are reviewed annually. Between evaluations, VPP work sites act as "mini-OSHAs," examining their own safety and health conditions. On average, VPP sites have 60- to 80-percent fewer lost workdays due to illness/injury than an average site of the same size in their industry.

Raptors Flock to the VASC

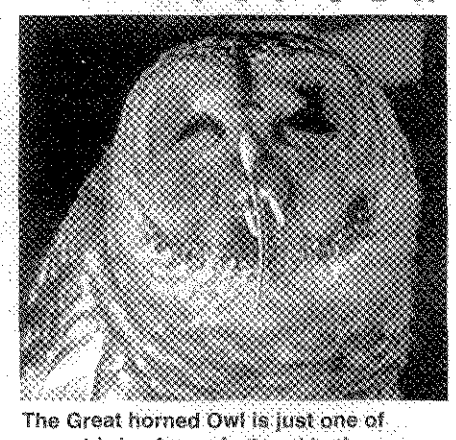
VIRGINIA AIR & SPACE CENTER

A new traveling exhibit *Hunters of the Sky* will be at the Virginia Air and Space Center through Jan. 10.

For thousands of years, birds of prey or raptors have maintained a grip on human imagination. They have been revered as divine messengers and reviled as scavengers.

Discover how these birds have adapted to their ecological niches. Explore where they live, what they eat, how they navigate and fly, how they nest and raise their young, how they find and capture prey with *Hunters of the Sky*.

To kickoff the opening of the exhibit, park rangers from Sandy Bottom Nature Park, Hampton, will be at the center Saturday, Oct. 3 presenting live birds of prey to the public.



The Great horned Owl is just one of many birds of prey featured in the *Hunters of the Sky* traveling exhibit.

Activities are free with paid general admission. For more information, call 727-0900.

Explorer Posts Open to Students

NASA Langley, in conjunction with the American Institute of Aeronautics and Astronautics, is proud to sponsor three Explorer Posts with the Colonial Virginia Boy Scouts of America, for students in the Hampton Roads area. The purpose of the Center's program is to provide the opportunity for young people to explore careers in aeronautics engineering, astronomy and computer science. The objectives of the program are: To expose Explorers to a scientific and technical environment; to provide the opportunity for Explorers to interact with engineers, scientists, and technicians; to provide actual work experiences for Explorers in chosen career interest areas; and to assist Explorers in developing their interest and abilities in science, math and technology. Post advisors offer guidance on school and curriculum choices, and may consult with Explorers in science fair projects.

Langley's Explorers meet October through May, and there is a fee of $25 for membership and dues. Enrollment is limited and applications are taken through October. This program is offered to students between the ages 16 and 20 years, who are U.S. citizens and who have a serious interest the career opportunities mentioned.

Aeronautics Engineering Post

In Post no. 2036, advised by Robert Weston, the Explorer will be exposed to the basic principles of aeronautics, with classroom activities, videos, tours, guest speakers and special projects. Explorers will also investigate the wide range of engineering careers at NASA and industry firsthand. Content areas may include: Basic principles of flight, wind tunnels, high-speed flight, stability and control, aircraft design, computer-aided aircraft design, flight simulators, radio-controlled aircraft construction and flight.

Astronomy Post

The Explorer will be introduced to the fundamentals of astronomy and receive an appreciation of all the scientific disciplines used in studying the Cosmos in Post no. 2136, advised by Robert Mack. The program consists of telescopic observation, lab exercises, slide and viewgraph presentations and "chalk talks." Careers in astronomy and associated fields will be explored. Content areas may include comets, lunar and solar eclipse, galaxies, star formation and evolution, supernovae, life on Mars, rotational lock and other gravitational interaction.

Computer Science Post

Garry Qualls advises Post no. 2236 where Explorers are exposed to various computer formats in the research environment. Post projects include homepage designs and interactive programming. The program includes tours, briefings, open discussions, guest speakers as well as extensive hands-on activities. Content areas are computer concepts, workstations and mainframes, languages, networking, web page design, graphics and animation.

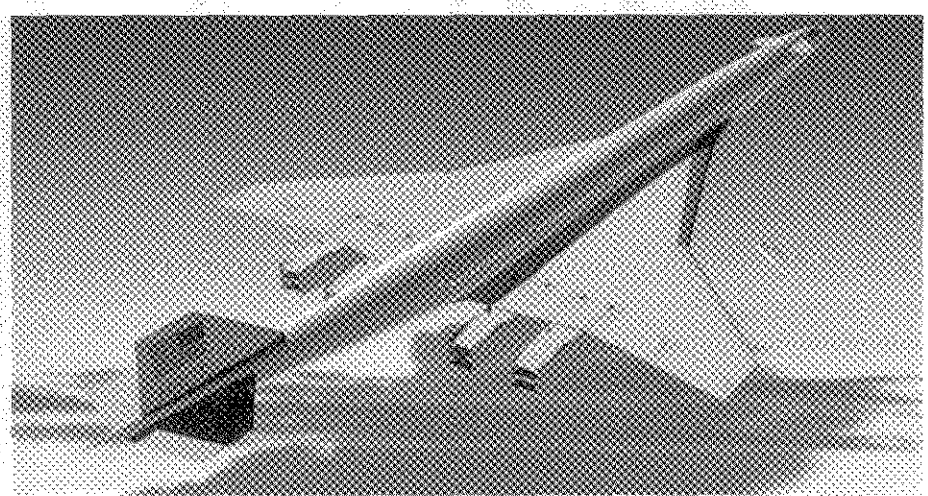
For information contact: NASA Langley Research Center, Patricia A. Link, Mail Stop 400, 17 Langley Blvd., Hampton, VA 23681, 804-864-8102 or e-mail:<p.a.link@larc.nasa.gov>.

NASA Explorer Post #2036, Computer Science, received a Blue Ribbon for planetary workshops at the 1998 Scout-O-Rama held at Naval Weapons Station, according to Post advisor Garry Qualls. NASA Explorer Post Programs prove "Your Attitude determines your Altitude." Two students, left, check out an astronaut's space suit modeled by a fellow Explorer.

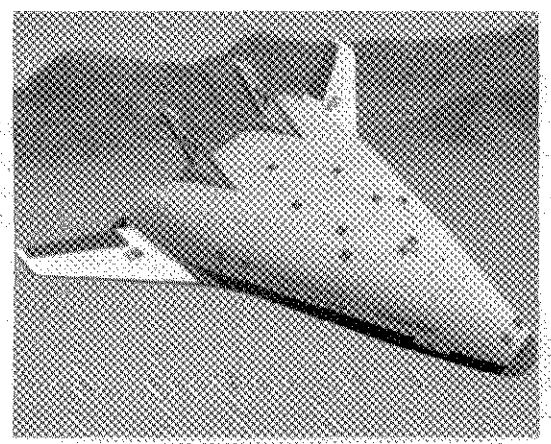
Celebrating NASA's 40 Years

Fortieth Anniversary
Pioneering the Future

The single-engine aircraft concept, above, is part of a NASA/FAA/industry cooperative effort to develop a new generation personal transportation aircraft.

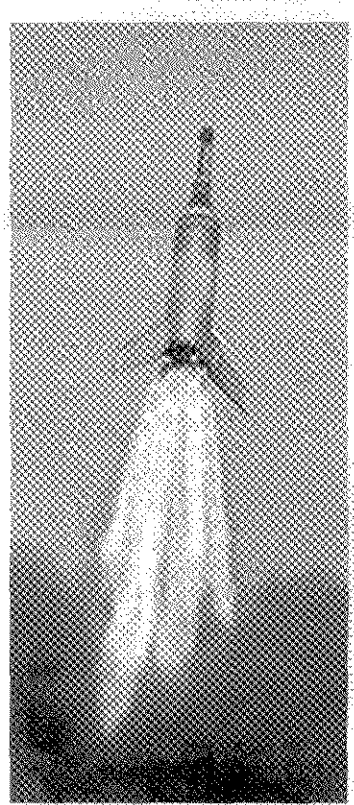


Above is an artist's concept of the High-Speed Civil Transport, a next generation commercial supersonic aircraft. The High-Speed Research Program is headed by Langley.

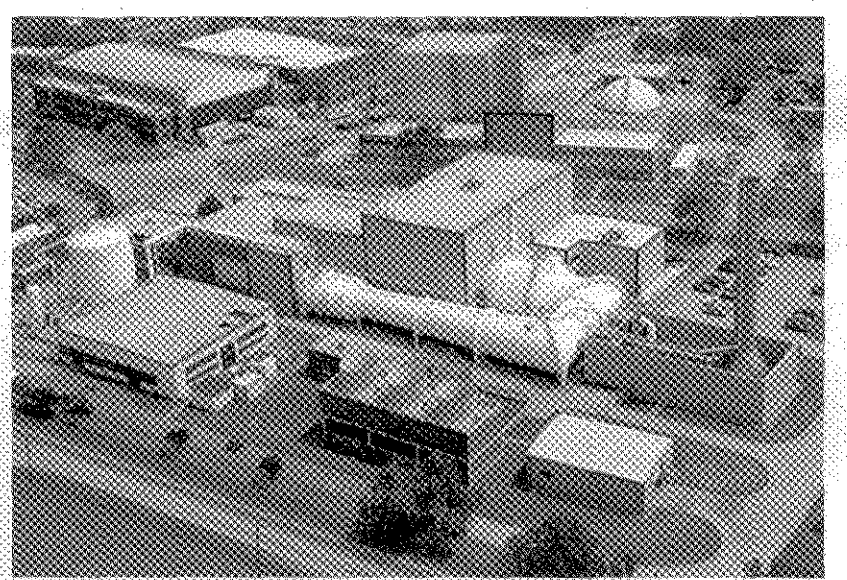


Aerodynamic and aerothermodynamic tests, tests of structures and materials and other testing at Langley has contributed to the design and construction of the X-33 advanced technology demonstration vehicle.

The original seven, the Mercury astronauts, first began training at Langley. They are, seated left to right, Virgil "Gus" Grissom, Scott Carpenter, Donald "Deke" Slayton and Gordon Cooper; standing, Alan Shepard, Walter Schirra and John Glenn. Glenn is scheduled to fly this month aboard STS-95 as the oldest person in space. (*See below*)



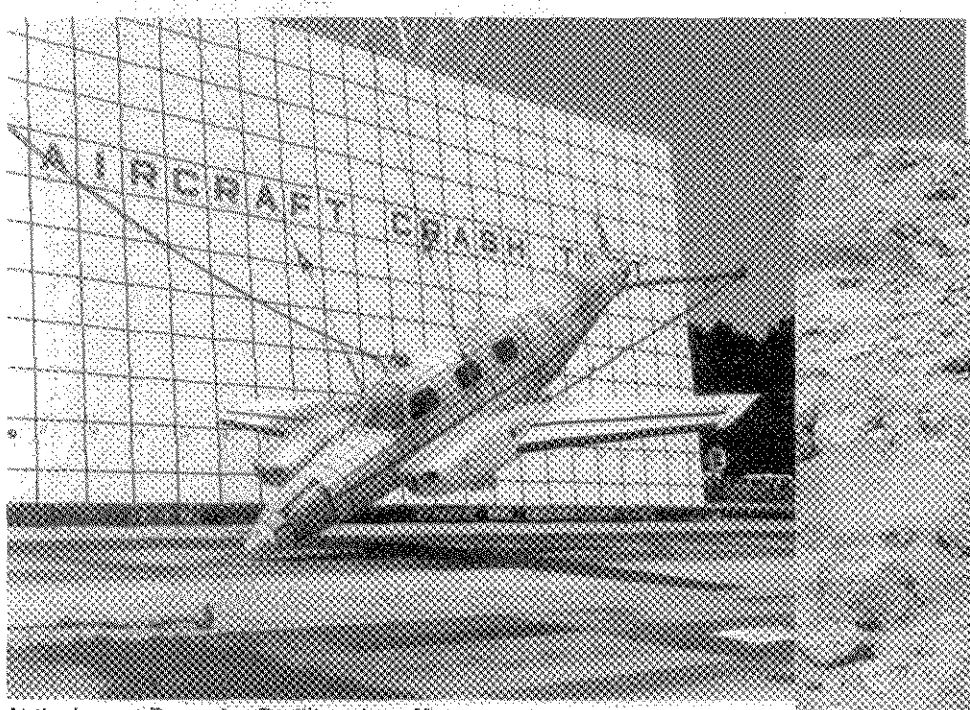
Research for the "Little Joe" launch vehicle, left, began in 1958. It was designed specifically to test the Mercury capsule configuration. Little Joe was "a new combination of four Sergeant solid rockets clustered in a single airframe" according to *Engineer in Charge*.



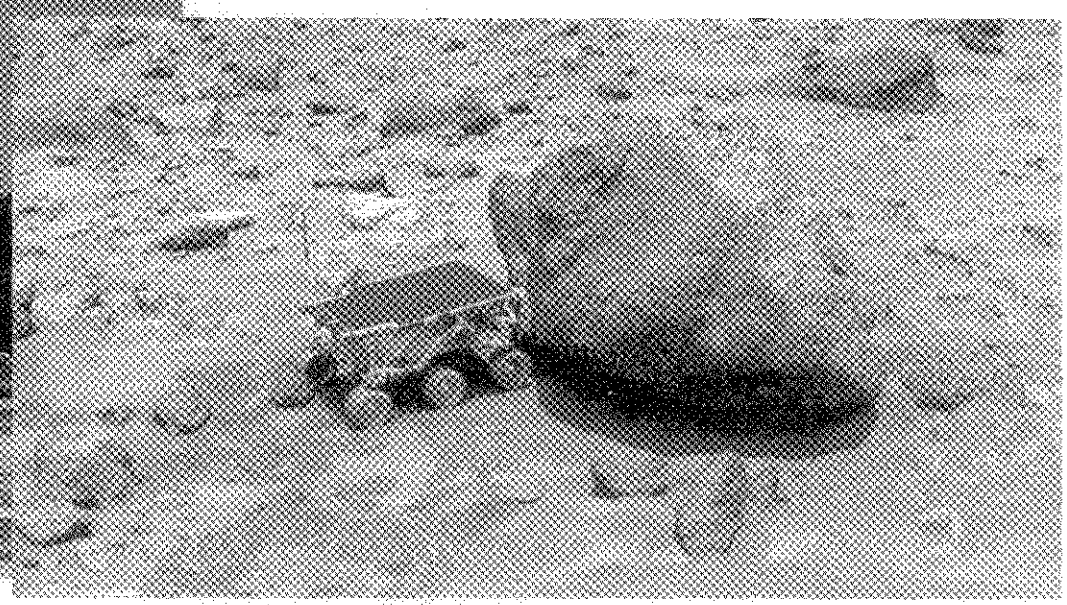
The National Transonic facility, completed in 1983, is the sight of many Langley wind tunnel tests. The NTF is a unique national facility, one of many on the Center. Langley's newest major wind tunnel uses super-cold nitrogen gas to accurately simulate flight through the speed of sound.

Watch Glenn Lift-Off Aboard STS-95

Employees and retirees are invited to view the launch of STS-95 at the Pearl Young Theater, 5 N. Dryden St. The theater will be open for viewing from noon to 4 p.m. Thursday, Oct. 29. The STS-95 launch is scheduled for 2 p.m. STS-95 will mark the second flight into space for Sen. John Glenn. Glenn trained for his first flight at Langley with the other Mercury astronauts. Glenn will be joined on this flight by astronaut Stephen Robinson, a research scientist in the Fluid Mechanics and Acoustics Division before he was chosen for the 1995 Astronaut Candidate class. This will be Robinson's second flight into space. For more information, please contact Kimberly Land at 864-9885 or view the STS-95 mission homepage at <http://shuttle.nasa.gov/>.



At the Impact Dynamics Facility, where Mercury astronauts once practiced walking on the moon, general aviation aircraft are crashed to test concepts for increased crashworthiness.



The Mars Pathfinder used Langley-developed atmospheric entry data and hardware for successful landing on Mars, July 4, 1997. Here the Sojourner Truth vehicle rolls up to the rock, known as "Yogi" during the successful Mars Pathfinder mission.

AdVentures

FOR SALE: Piano, console, Princess Ann style, cabinet in excellent condition. $1290. Call 898-6155.

NARFE MEETING: The National Association of Federal Retired Employees will meet Monday, Oct. 12, 10:30 a.m. at the Mid-Town Community Center, Newport News. For information, call Catherine Askew, 247-1558.

CAR FOR SALE: 1991 Mazda 626 LX, 2.2L 4 cyl., 5-speed, sunroof, power brakes, windows, locks, A/C, cruise control, new timing belt and CV joint, 91,500 miles, $3,900 OBRO. Call 867-6794; leave message.

CAR FOR SALE: 1997 Nissan Altima GXE, limited edition, 28,000 miles, AT, AC, power windows, locks, brakes and steering, CD player, $16,000. Call 596-5527.

LAA NEWS:

LAA Annual Turkey Shoot

The shoot, open to all NASA/LAFB employees, contractors, friends and family is Saturday, Oct. 24, 9 a.m. to 3 p.m., behind the H.J.E. Reid Conference Center. LAA provides the ammunition, and weapons secured in the range area. Purchase targets for $1 per round; best shot in the round wins a turkey. Put a ham on the table by purchasing a $2 ham round. Turkeys will also be raffled off for 50 cents per ticket. Hot food and cold beverages will be on sale. Bring the family out for a great day of target practice. Call 864-6369 for Center Rules, Regulations and LAA Policies.

LAA holds Grand Opening of "After Burners"

The LAA invites all employees, contractors, friends and family to come out and celebrate Friday Oct. 30, 4 to 9 p.m., Building 1222 for the grand opening of the LAA lounge, "After Burners." Music is by the Double Take Band, and promotional prizes and giveaways by M. Price Distributing. There will be a Halloween Costume Contest with prizes. The first 50 people to arrive will receive an exciting free gift. Cover charge is $1.

VIRGINIA CHORAL SOCIETY, lead by artistic director James Powers, opens its 1998-99 concert season with "A Night at the Opera: Beloved Choruses." Composers represented include Puccini, Verdi and Wagner. This concert will be presented Friday, Oct. 16 at 8 p.m. at Yoder Barn, Newport News; Saturday, Oct. 17 at 8 p.m. at St. Andrew Lutheran Church, Portsmouth; and Sunday, Oct. 18 at 4 p.m. at Williamsburg Regional Library. General admission is $10, seniors and students are $8. Tickets are available at the door. For more information, call 851-9114.

TOUR HISTORIC HOMES: Five homes in Newport News' North End will be open for tours Sunday, Oct. 25, from 12:30 to 5:30 p.m. Proceeds support preservation initiatives and public education programs. Tickets are $8 in advance, $10 that day. To purchase, for more information, or for nearest sales outlet, call 247-3277. Visit their web site at <http://seva.net/~nehhpa/>.

Office of Human Resources Sponsors Expo

The Office of Human Resources is conducting an Expo Nov. 5, in the H.J.E. Reid Conference Center from 9 a.m. to 2 p.m. New technologies and key programmatic resources will be displayed in an interactive format, allowing employees an opportunity to explore the human resource tools available to them as they face an ever-changing work environment. As part of the program, Dr. Kenneth Blanchard, a prominent international author, speaker, and business consultant will address the topic of his latest book: *Mission Possible: Creating a World-Class Organization While There's Still Time*. Dr. Blanchard delivers a compelling message: "To stay competitive, you not only have to pay attention to what you are doing now to perform better, but what you have to do tomorrow to stay competitive in the future." For more information, contact Elaine Gause, ext. 42591, <d.e.gause@larc.nasa.gov>.

NASA INTERCENTER COMPETITION - 1998 Fall Races are scheduled on the following dates: 10-KM races, Oct. 5, 15 and 22; 2-Mile races on Oct. 8, 13 and 19. Races start at 5 p.m. on Doolittle Rd. next to the Bldg. 1222 parking lot. The Intercenter Competition is held each spring and fall among the NASA Centers. All Langley employees, retirees, and on/near-site contractors earn points for the Langley team by participating. Runners, joggers and walkers welcomed. For information, call Richard Shearer at ext. 47036. Langley Runners Club Web Site: <http://larc-exchange.larc.nasa.gov/laa/runners>.

APPRENTICE GRADUATION

The 1998 graduation ceremony will be held Friday, Oct. 9, 2 p.m., in the H.J.E. Reid Conference Center.

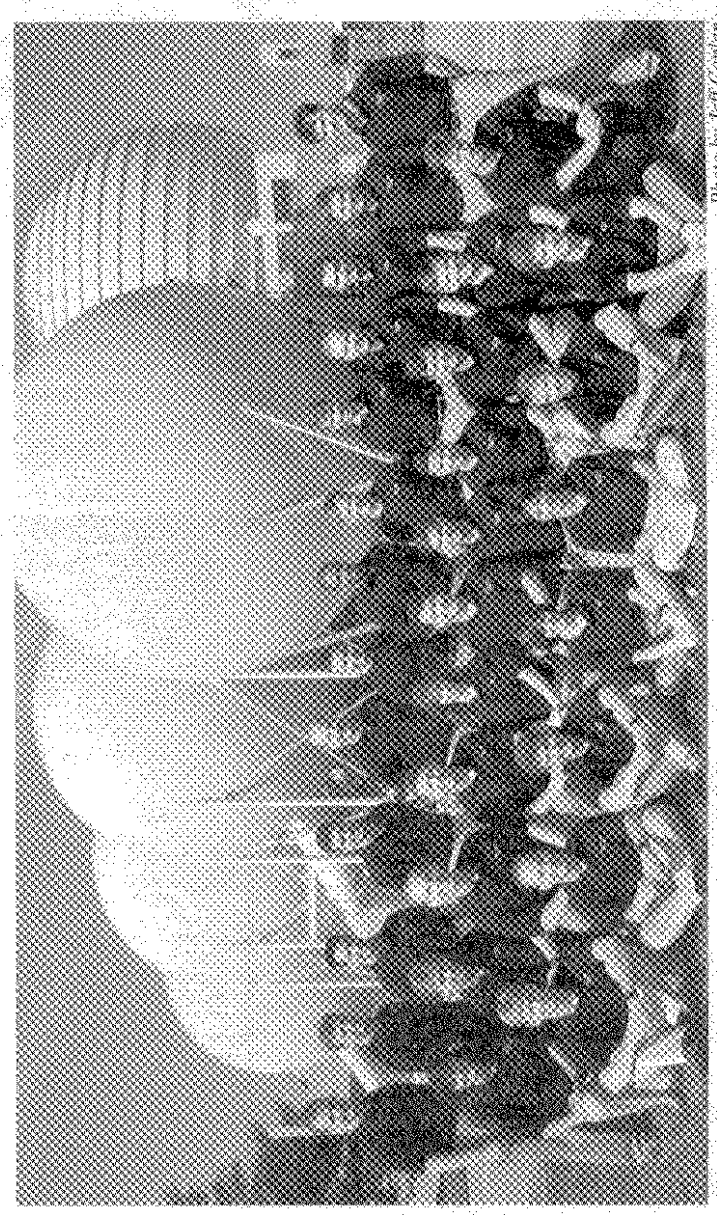


Photo by Jeff Caption

FUTURE ASTRONAUTS TOUR NASA CENTER: The newest space pioneers from five countries came to Hampton to tour Langley, the oldest civilian aeronautics laboratory in the U.S. NASA named 21 men and four women to the 1998 astronaut candidate class back in June. At least five have close ties to Hampton Roads, including Leland D. Melvin, formerly of the Nondestructive Evaluation Sciences Branch. This year's class includes eight pilots and 17 mission specialist candidates. Training alongside the U.S. astronaut candidates are a number of international payload specialists. All 31 are visiting NASA field centers across the country. The astronaut candidates are based at the Johnson Space Center in Houston, Texas.

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
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Researcher News

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Fortieth Anniversary
Pioneering the Future

National Aeronautics and
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Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 20 ❖ October 16, 1998

Langley – A Star Among Federal Agencies !

VPP
LaRC Going for the STAR!

BY BOB ALLEN

NASA Langley Research Center is poised to become the first federal work site in the nation to be formally recognized by the Occupational Safety and Health Administration (OSHA) as a participant in the OSHA Voluntary Protection Program (VPP).

On Sept. 25, Peter Brown, Region III OSHA team leader and head of the on-site Langley evaluation, announced that Langley will be recommended for Star status, the highest level granted in the VPP. The announcement marked the end of a fast-paced week featuring a rigorous safety and health program evaluation by the Region III OSHA team. The inspection highlighted the thorough preparation of the Office of Safety, Environment and Mission Assurance (OSEMA).

During the week of Sept. 21 to 25, OSHA team members visited numerous Langley facilities, reviewed and verified safety and health program documentation, and conducted more than 135 formal interviews with management, civil service employees, union representatives and contractor employees. The team's recommendation confirmed that Langley operates a safety and health program that meets the stringent VPP requirements. It also said Langley is committed to exemplary worker protection, including meaningful employee involvement and a management team that understands Star certification is a goal and a process.

The recommendation will proceed to the OSHA Region III regional administrator and then to the VPP national Office to seek final approval by the assistant secretary. After formal approval, Langley and OSHA will schedule a joint presentation ceremony.

"I am proud that Langley employees were able to convey to the OSHA VPP evaluation team members that we have had and will continue to have outstanding safety and health programs for each of our employees here at the Center," said Center Director Dr. Jeremiah F. Creedon. "I appreciate the efforts of all Center union, management, contractor and all other employees who made the OSHA visit such a success."

Photo by Sandy Gibbs

Deputy Director Wally Sawyer, Dave Miller, executive officer/technical, Office of the Director, and Alesia Williams, OSEMA, lead the applause after learning of Langley's Star certification from OSHA representatives.

"We should all be very proud to have been recommended for the Star level of recognition in OSHA's VPP," Creedon continued. "This is the highest level that we could have achieved, and we, being the first federal worksite to receive this recognition, are setting new standards of government performance."

The nine-member OSHA team reached a consensus in its recommendation of Langley as a Star work site. Brown cited Langley's safety program as "one of the best we've seen," and characterized the Langley evaluation as one of the easiest undertaken to date, despite the unique variety and complexity of work performed at the Center. This was due to Langley's pre-evaluation preparation and the assistance provided to the team in understanding Langley's technologies. After the approval process is complete, Brown added, Langley will join an "exclusive club" of "top notch performers" in the safety world.

The OSEMA team, which led the effort to achieve Star certification, was very pleased by the news of the forthcoming recommendation.

"This success was due to the Center-wide team efforts of labor, management, and contractors working to ensure a safe and healthful workplace," said Bert Garrido, head of OSEMA. "I'd like to express gratitude to all those who participated in the visit preparations or in the on-site evaluation."

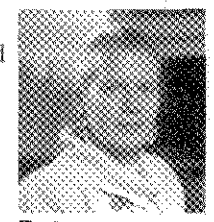
November Colloquium Reports on Search for Extraterrestrial Intelligence

Dr. Jill Tarter, director, Project Phoenix at the SETI (search for extraterrestrial intelligence) Institute will speak at a colloquium Tuesday, Nov. 3 at 2 p.m. in the H.J.E. Reid Conference Center.

Since 1995, SETI's Project Phoenix has been using pairs of large radio telescopes around the world to conduct comprehensive searches for evidence of signals from other technological civilizations. They have now examined about half of an initial list of target stars with a sensitivity adequate to detect signals as strong as their terrestrial radars coming from the most distant targets (155 light years). Results to date are negative. They have embarked on a five year observing program utilizing Arecibo Observatory, Puerto Rico, and the Lovell Telescope at Jodrell Bank, which enables even greater sensitivity.

Project Phoenix is also conducting a series of internal workshops designed to provide guidance for the next few decades. In the near future, project members will build new signal detection systems at a number of wavelengths and construct novel new arrays of antennas for continuous observing.

One of these arrays will also serve as a prototype to demonstrate the breakthrough technologies necessary to construct a collaborative, international astronomical array with extremely wide bandwidth and several meters of collecting area, at an affordable cost. Such an instrument could simultaneously conduct SETI, radio astronomy and spacecraft tracking. The colloquium will explain what work Project Phoenix has done, and how they are planning for the future.



Tarter

Sigma Series Lecture — "SETI: Science Fact, Not Fiction"

The Nov. 3 Sigma Series lecture, "Search for Extraterrestrial Intelligence: Science Fact not Fiction," will also be given by Dr. Tarter at 7:30 p.m.that same day at the Virginia Air and Space Center. It is free and open to the public.

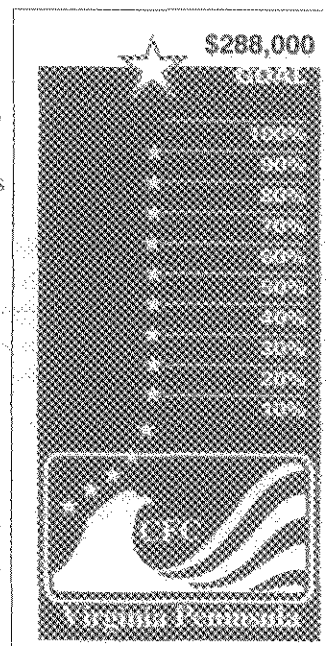
Abstract aliens abound on the movie screens, but in reality we still don't know if we share our universe with other sentient creatures, according to Tarter. Intelligence is very difficult to define, and impossible to directly detect over interstellar distances. Therefore, SETI is an attempt to detect evidence of another distant technology. If such evidence is found, SETI researchers will infer the existence of intelligent technologists. For the past 36 years, the SETI community has had a very pragmatic definition of intelligence – the ability to build radio telescopes! Radio signals are not the only possible way to detect a technology across the vast distances that separate the stars, but given our own current technological state, it remains the best way.

About the Speaker

Dr. Tarter is an astronomer and one of the world's leading researchers in SETI. She is a founder of the SETI Institute in Mountain View, Calif., where she is Director of Project Phoenix, a privately funded search for extraterrestrial life using radio telescopes.

Tarter received a bachelor of engineering physics with distinction from Cornell University and a master's degree and doctorate in astronomy from the University of California at Berkeley. Her major field of study was theoretical high energy physics. She was a postdoctoral fellow at the Ames Research Center, and has made major scientific advances in astronomy, including her pioneering research on so-called "brown" dwarf stars.

For her pioneering research in SETI, Tarter has received two NASA Public Service Awards.



News Briefs

Around the Agency

LMSO AWARDED SPACE OPERATIONS CONTRACT: In yet another major step to save the American taxpayer money, NASA has awarded a $3.44 billion contract to Lockheed Martin Space Operations Co., Houston, Texas, to manage the Agency's space operations activities. The contractor will manage all of NASA's data collection, telemetry and communication operations supporting its Earth-orbiting satellites, planetary exploration, and human space flight activities. The contract shifts management responsibility from five NASA centers to a single entity, which is an unprecedented step for an operation of this magnitude.

NASA CONTRIBUTES TO WAR ON CANCER: In observance of October as Breast Cancer Awareness Month, NASA will release information on new ways aerospace research and technology is helping in the understanding, detection and treatment of all types of cancer. A NASA fact sheet available on the Internet highlights diagnostic technology currently available and features NASA research and technology that may improve cancer diagnosis, surgical procedures and drug therapies in the future. The website address is: <http://www.nasa.gov/women/welcome.html>. Five critical cancer experiments will be conducted on the upcoming Space Shuttle mission, STS-95, currently targeted for launch on Oct. 29. A fact sheet describing these experiments will be available closer to launch.

GAMMA-RAY FLARE BLASTS EARTH: An intense wave of gamma rays, emanating from a catastrophic magnetic flare on a mysterious star 20,000 light years away, struck the Earth's atmosphere Aug. 27, providing important clues about some of the most unusual stars in the Universe. Scientists said the gamma radiation posed no health risk to humans. The wave of radiation emanated from a newly discovered type of star called a magnetar – dense balls of super-heavy matter, no larger than a city but weighing more than the Sun. More information on magnetars or the Aug. 27 event is available on the internet at <http://www1.msfc.nasa.gov/NEWSROOM/> and <http://www.magnetars.com/>.

X-33 AEROSPIKE ENGINE TESTS BEGIN: A critical milestone was achieved with the first successful powerpack test of the X-33's Linear Aerospike Engine at Stennis Space Center, Miss. Engineers and technicians at Stennis conducted a successful 2.81-second powerpack test Oct. 1. The test was designed to calibrate the liquid hydrogen and liquid oxygen fuel turbo-pumps and test facility settings, as well as to verify valve timing to prime the gas generator. This marks the beginning of a program to test engines leading to flights of the X-33 beginning next year. Powerpack tests are critical in the development of the Linear Aerospike Engine because various performance levels can be tested in parallel with the engine fabrication and design. This individual component testing capability is one of the key benefits of the gas generator power cycle selected for X-33 application.

For more information, check the internet for NASA's News and Information web page at <http://www.nasa.gov/releases/1998>.

Announcements

Career Center Events for October-November

The following courses are available for October and November: Thursday, Oct. 22, Negotiating Salary and Benefits, 9 a.m. to noon; Wednesday, Oct. 28, Effective Communication Between Engineers and Technicians, 9 a.m. to noon; Thursday, Nov. 3, Resume Reality, 9 to noon; Wednesday, Nov. 18, Making Yourself Indispensable, 9 a.m. to noon; Friday, Nov. 20, Interview Basics, 9 to noon; and Tuesday, Nov. 24, Conflict Management, 9 a.m. to noon.

The seminars are authorized NASA and Langley training events. Participation is open to all NASA federal civil service personnel and their spouses. Please register in advance. Phone: ext. 45000, Fax: ext. 45040, Bldg. 1312, next to the Credit Union

Visit their web site: <http://www-ctapc.larc.nasa.gov>.

Reminder:
STS-95 is scheduled to launch with Sen. John Glenn aboard Oct. 29 at 2 p.m. The Pearl Young Theater is open from noon to 4 p.m. for those who want to watch the launch. For more information, call Kimberly Land at 864-9885.

Halloween at the VASC

VIRGINIA AIR & SPACE CENTER

Enjoy ghosts, goblins, treats and more at the Virginia Air and Space Center's Seventh Annual Sci-Fi Halloween Bash, Saturday, Oct. 31 from 4 to 7 p.m.

Activities include a candy scavenger hunt, make-and-take activities, costume contests and a haunted house. Prizes include a pair of tickets to *Phantom of the Opera* at Chrysler Hall.

The Sci-Fi Bash cost is $3 for the general public and $2 for members. The event is presented by the VASC, 106.9 – The Fox radio station and Super Kmart Centers.

The center is located at 600 Settlers Landing Road, Hampton. For more information, call 757-727-0900 or 1-800-296-0800. Visit the VASC home page at <http://www.vasc.org>.

In Memoriam

Jesse L. Mitchell

Jesse Lafayette Mitchell, 76, died Tuesday, Sept. 22. He was a graduate of Auburn University and a space and technology adviser to President Eisenhower. In 1947, Mitchell began work at NACA, Langley Memorial Aeronautical Laboratory, in the Pilotless Aircraft Research Division and then at NASA headquarters.

Millard E. Babb

Millard "Ed" Babb, 64, died Tuesday, Sept. 29. After serving in the U.S. Marine Corps, Babb worked at Langley as part of the design and test teams for the Apollo lunar orbiter and the Space Shuttle program.

Billie B. King

Billie Bentley King, 71, died Saturday, Sept. 5. She was a Hampton resident since 1942. She worked at NACA before joining Revlon Corp.

Roy L. Taylor

Roy L. "Sarge" Taylor, 68, died Monday, Sept. 7. A retired Air Force veteran, he worked at NASA Langley and the Norfolk Naval Shipyard.

Garnell A. Anderson Jr.

Garnell Arthur "Art" Anderson Jr. died Monday, Sept. 14. He retired from the Army after 20 years of service then worked at Langley as a security guard before retiring in 1988.

NASA Fiscal Year 1999 Appropriations Approved

BY LEE RICH

For months, predictions about the chances of passage for each of the 13 appropriations measures that annually fund Government departments and agencies have included the $94 billion Veterans Affairs, Housing and Urban Development, and Independent Agencies bill (H.R. 4194), under which NASA is funded, in the "veto" or "Continuing Resolution" category . However, the House approved H.R. 4194 Oct. 6, the Senate approved the measure Oct. 8, and the President signed the bill into law Oct. 9.

NASA was awarded $13.665 billion for FY '99 – $5.48 billion for Human Space Flight; $5.65 billion for Science, Aeronautics, and Technology; $2.71 for Space Station. Among stipulations in the bill: a general provision to provide indemnification and cross-waivers of liability for the X-33 and X-34 programs, and the renaming of the Lewis Research Center as the John H. Glenn Research Center at Lewis Field. Call the Office of External Affairs at ext. 46529 for more information.

General Safety Requirements

The following safety rules are excerpts from the Langley Research Center Employee Safety Pocket Guide.

- Comply with all warning labels, signs, or barriers. Do not cross over areas cordoned-off by barrier tapes or ropes.
- Do not pour any chemicals or other hazardous materials down facility sinks, drains, or into the environment. Call the Office of Environmental Engineering at ext. 43500 for disposal.
- Wear appropriate personal protective equipment for the assigned job task, such as safety eyeglasses or goggles, hearing protection, safety shoes, gloves, hard hats, respirators, or harnesses.
- Use proper lifting techniques. Keep a wide stance. Bend the knees, keeping the back straight. Lift with the legs. Never twist. Keep loads as close to the body as possible. Make sure to work as a team when lifting oversize loads or loads over 50 pounds.
- Pedestrians should stay on sidewalks or concrete areas when walking between facilities and cross streets only at designated crosswalks.

To receive a copy of the Employee Safety Pocket Guide, call ext. 4-SAFE, (47233).

Take Time to CONNECT

The Langley Office of Education is producing a series of educational television programs called NASA CONNECT. They will be broadcast in the local area over the PBS station WHRO Channel 15. To find a short description of each program and the broadcast schedule, check out the CONNECT web site: <http://edu.larc.nasa.gov/connect>.

Notes on the RN Mailing Lists

The following information is a reminder to all readers.

For additions, deletions, corrections or changes of address to Standard Distribution Lists (SDL) 26, 55 or 110, send them to the Researcher News editor, Mail Stop 293, NASA LaRC, Hampton, Va. 23681-2199, call (757) 864-8150, or e-mail <a.c.gaudreaux@larc.nasa.gov>.

For additions, deletions, corrections or changes to SDLs 27 or 402, the on-Center distribution lists for the Researcher News, etc., turn to the back of the Langley Telephone Directory, page 142, complete Form 41, and send it to Mail Stop 446, Facilities Program Development Office.

The SDL number is found above each addressee's name on the mailing label. This may alleviate confusion among some of the RN's readers.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 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 (a.c.gaudreaux@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..... Ann C. Gaudreaux
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.

Good Samaritan/Retiree Received His Training from Red Cross

BY PAM VERNIEL

What do you think of when someone mentions the Red Cross? You probably think of bloodmobile drives and assistance during floods, fires and hurricanes. While that is correct, the Red Cross does much more. It provides food, clothing, shelter and other emergency needs — free of charge.

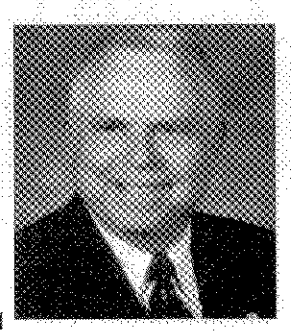
The Red Cross also provides emergency service 24 hours a day, seven days a week to families of the military oversees. Congress mandated the Red Cross in 1905 to provide military contact such as transmitting messages regarding sick or deceased family members.

The American Red Cross has six bloodmobile drives at Langley each year. During fiscal year 1998, 1,372 units of blood were collected from 251 employees. Red Cross volunteers provide support work such as registration, labeling blood, greeting people, making sandwiches and serving beverages.

Other Red Cross services include classes on AIDS, canoeing, life guarding, pet first-aid, babysitting, lawn mower safety, lifesaving, first-aid, basic safety and cardio-pulmonary resuscitation (CPR).

One Person Makes a Difference

Dr. George Brooks' story is one example of how important these classes are. Brooks retired from Langley in 1974 as Director for Structures. After retirement, he received more than 35 hours of training from the Red Cross. The training certified him to teach CPR and basic safety classes. He also learned basic first aid procedures — not to move a person who is suffering from trauma or an accident until learning the nature of the illness or injury, unless the person is in immediate danger. His training also taught him how to recognize signs of internal injuries, identify toxic materials and know what antidotes are needed, respond to choking victims, check for broken bones, splint arms and legs, recognize heart-attack symptoms, and help a person having a seizure. His training paid off when he encountered three emergencies.



In 1990, Brooks helped an auto accident victim, in 1992 he helped a person having a seizure, and in 1993 he helped another auto accident victim.

The person who had a seizure was preparing coffee at a board meeting when she collapsed. Brooks knew to keep the person calm and to reassure her that emergency medical workers were on their way.

In both automobile accident cases, people were thrown from their cars. The first case occurred while Brooks was traveling to Charlottesville on Interstate 64. He saw a woman's car upside down, straddling a ditch. After determining that there were no major injuries, he moved the woman away from the car because gas coming from the car could cause a fire or explosion.

The second auto accident occurred when he was on Interstate 64 near the Williamsburg Pottery. Brooks found the accident victim lying in a water-filled ditch. He determined that the person had no broken bones and then moved him out of the water. He assisted him until State Police paramedics arrived.

The most important thing Brooks learned was to know what to do in an emergency. He said that taking classes at the Red Cross is like having a life insurance policy. "You pay your premiums to cover the possibility of having a disaster in your life," he said. "The Red Cross trains you so that if you ever run into a situation where people are injured or their lives are threatened, you are prepared."

Your CFC contribution to an organization like the American Red Cross can make a difference. It can determine whether someone in need receives help.

CFC Kicks Off With "Living Proof"

Photo by Jeff Caplan

CFC chairperson Mark Shuart, left to right, national CFC spokesperson and the keynote speaker at Langley's kickoff Terry Morris, Assistant Center Director Dr. Belinda Adams and Jack Clough, program director, United Way of the Virginia Peninsula, display a cake with the CFC logo. Langley's campaign goal is $288,000.

Langley Showcases Space Stamps at 40th Anniversary Celebration

Former network newsman and longtime Hampton Roads anchorman Jim Kincaid spoke at the stamp ceremony in commemoration of NASA's 40th anniversary Oct. 1, in the H.J.E. Reid Conference Center. The new stamps, a set of five space discovery stamps, were unveiled by Center Director Dr. Jeremiah Creedon and Hampton Postmaster Willard Davenport.

Following the ceremony, the Langley Exchange shop sold commemorative envelopes that contained a special 40th anniversary cancellation as well as sets of collectible stamps.

The ceremony was followed by an employees picnic on the conference center grounds, where many food items were sold for 40 cents in honor of NASA's anniversary.

Former WVEC-13 news anchor Jim Kincaid addressed attendees at the stamp unveiling, and reminisced about his years covering NASA events.

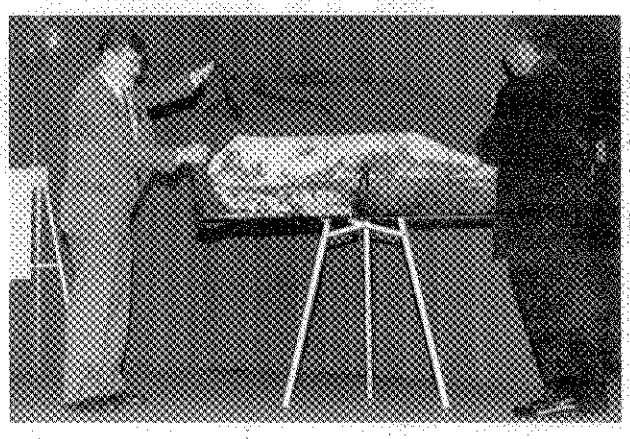


Photo by Peggy Hopkins

40 NASA
Fortieth Anniversary
Pioneering the Future

Dr. Jeremiah Creedon, left, Center director, and Hampton Postmaster Willard Davenport unveil five new space discovery stamps, the U.S. Postal Services' recognition of NASA's 40th anniversary.

How to Pledge Electronically

Langley employees can make their Combined Federal Campaign (CFC) pledges on-line using electronic pledge forms. The CFC brochure and pledge forms can be found at the new CFC web site address, <http://cfc.larc.nasa.gov>.

CFC
Virginia Peninsula

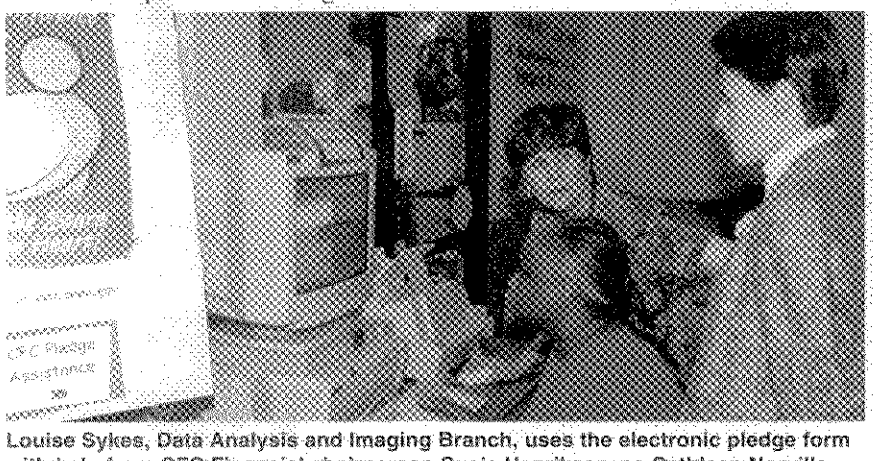


Photo by Sandy Gibbs

Louise Sykes, Data Analysis and Imaging Branch, uses the electronic pledge form with help from CFC Financial chairperson Susie Henriksen, as Cathleen Norville, Lockheed Martin, looks on.

Eighth Annual Writers' and Readers' Luncheon, Book Sale and Signing at CNU

Eighth Annual Writers' and Readers' Luncheon, Book Sale and Signing, sponsored by the Newport News Branch of the American Association of University Women, will be held Saturday, Nov. 14, at Christopher's in Christopher Newport College Student Center, Newport News, Va. Featured speaker at the luncheon will be Jim Spencer, columnist for the Daily Press. Luncheon will be at noon and the cost is $20.

Book sales and signing by local authors will be held 11 a.m. to noon, also in Christopher's. Come to shop for that special gift and have it autographed even if you can't stay for lunch. Book selections typically include children's books, romances, inspiration works, histories and poetry.

For a reservation, please send a check by Nov. 6 written to AAUW Newport News Branch to AAUW Writers' Luncheon, 200 Harwood Drive, Yorktown, Va. 23692. For more information call 898-3556 or 245-6187. Proceeds will benefit the Education Foundation of American Association of University Women.

Administrator Goldin's Statement on NASA'S 40th Anniversary

Forty years ago, in 1958, the National Aeronautics and Space Administration was created with the boldest and most noble of missions: to pioneer the future. We were told to explore new frontiers and enhance life here on Earth. We were asked to instruct; we were expected to inspire. Forty years later, thanks to an American public with an unquenchable thirst for knowledge and a relentless sense of adventure, NASA has delivered.

Think about this: 40 years ago, jet passenger service was a novelty. Global communications meant a telephone line laid across the bottom of the Atlantic Ocean. When NASA was first getting started, the only way to track hurricanes was to fly planes directly over and into the storms. Our universe — even the cosmic neighborhood just above our atmosphere — was a mystery. In 1958, sending humans to the moon was pure science fiction.

But we dared to dream. We imagined what could be possible. And then along with our partners in industry and academia, we went to work.

In 1998, hundreds of millions of people ride American jets each year and new designs for flight go higher, faster and farther than ever before. Global space communications have helped create a global community. Weather satellites can detect the early evolution of an El Niño condition months in advance. There are still many mysteries to be solved, but Voyager, Galileo, the Hubble Space Telescope and other planetary and astronomy missions have circled neighboring planets, given us our first direct evidence that black holes exist, and begun to peer back at the very beginning of our universe. A space program that is 40 years old has sent astronauts to the moon, robots to Mars, spacecraft to the furthest reaches of our solar system, and soon will help build the International Space Station. And for every step we take out there, we have contributed to a better quality of life right here. That is true whether it be the "spin-off" technology that helps us detect breast cancer earlier, or the child who looks up and knows that no longer is the sky the limit; it is the stars and beyond.

NASA has had a great 40 years, but what the American people can be most proud of is this: when it comes to pioneering the future, we are just getting started. What will always define this aeronautics and space program — and this country — is our firm belief that there will forever be something to invent, somewhere to discover, someplace to visit.

Rest assured, NASA will do its best in the next 40 years to find out just what and where that will be.

AIAA Foundation Announces Design Winners – GWU JIAFS Graduate Students Take First and Second Place

The American Institute of Aeronautics and Astronautics (AIAA) Foundation recently announced the winners of its 1997-98 Student Design Competitions. Administered by AIAA's Student Programs Department, the competition is part of a wide-reaching program that recognizes excellence in aerospace engineering study at the undergraduate and graduate level.

Competition winners Brandon Stille and William Eadie, standing, and Kandyce Smith and Jeff Parker display their AIAA awards with Robert Sandusky, center.

The AIAA Foundation Graduate Team Aircraft Design Competition first and second place winners were graduate students from The George Washington University's Joint Institute for the Advancement of Flight Sciences (JIAFS). JIAFS is a cooperative effort between Langley and GWU. Their project was the team design of an Unmanned Strike Fighter.

First place team leaders were William J. Eadie and Brandon Stille with team member Kandyce Smith. Their aircraft title was "No-see-um." Second place team leaders were George Cancro and Jaime Sanchez with team member Jeff Parker. The title of their aircraft was "SUS-4 Sting Ray." The first place team split a $2,500 award, and the second place team received $1,500.

Their projects were undertaken as part of an aircraft design course series taught by Professor Robert Sandusky of JIAFS. The first semester covers conceptual design and is offered here in the spring semester. The second semester provides more detailed methods of preliminary design, and is presented in the fall semester.

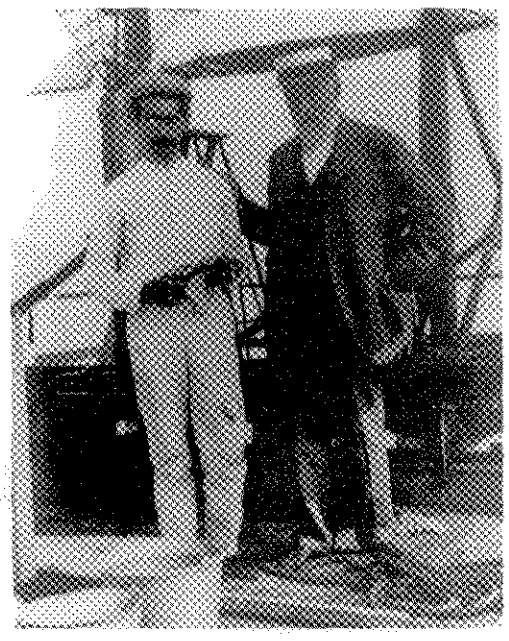
Judged by members of AIAA Technical Committees, AIAA Foundation Student Design Competitions seek to increase the practical skills of aerospace engineering undergraduate and graduate students in both individual and team conditions.

Specific Requests for Proposal (RFP) are issued and either teams of three to 10 or individual undergraduate/graduate 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.

Samuel Pierpont Langley Lends LaRC his Name

BY BRUCE BARKSTROM

Forty years ago, Langley Memorial Aeronautical Laboratory, part of the National Advisory Committee for Aeronautics, became NASA Langley Research Center.



Samuel Pierpont Langley (1834 - 1906), right, is shown with his chief mechanic and pilot of his Aerodrome vehicle, Charles M. Manly.

One century ago, Samuel Pierpont Langley (1834 to 1906) published a book called "The New Astronomy" about the discoveries astronomers were making with such new devices as spectrometers, bolometers and calorimeters. But who was Samuel Pierpont Langley?

One hundred years ago Langley was one of America's most prominent scientists. He began his scientific career in Ohio as an astronomer. He was interested in measuring how much energy was radiated by the sun. He built calorimeters, instruments to measure the sun's radiation.

His "new astronomy" was an interest in the chemistry and physics of celestial objects, rather than in the classical approach of measuring the positions and motions of objects on the celestial sphere.

Langley built bolometers to measure similar energy on stars. The bolometers he built are similar to the detectors that Langley scientists use to measure the Earth's radiation budget. Langley was interested in heavier-than-air flight. He convinced officers in the U.S. Navy to sponsor airplane building and testing using his design. He competed with the Wright brothers to build the first manned airplane that could fly on its own power. History has told us who won that contest.

At the time of The New Astronomy's publication, the radiation law of Stephan and Boltzmann, a law that relates the absolute temperature of an object to the power it was radiating, was still unknown; quantum mechanics was still a quarter century away, and the source of solar energy was a mystery, with scientists having no inkling about nuclear energy. Photographic spectroscopy was just beginning.

Langley was a pioneer in the measurement of the solar constant. The first two chapters of his book still resonate with our human experience, even though some of the numbers he derives would later be revised. In mid-life, he moved to Washington, D.C. and became the third secretary of the Smithsonian Institution.

The New Astronomy still holds many interesting perspectives on solar energy, sunspots and the human relationship to the environment.

The following quote from this book gives a good flavor of his writing, still clear and forceful today: "Is there not a special interest for us in that New Astronomy which considers these things, and studies the sun, not only in the heavens as a star, but in its workings here, and so largely in its relations to man?

"Since, then, we are the children of the sun, and our bodies a product of its rays, as much as the ephemeral insects that its heat hatches from the Soil, it is a worthy problem to learn how things earthly depend upon this material ruler of our days. But although we know it does nearly all things done on the earth, and have learned a little of the way it builds up the plant, we know so little of the way it does many other things here that we are still often only able to connect the terrestrial effect with the solar cause by noting, what events happen together.

"We are in this respect in the position of our forefathers, who had not yet learned the science of electricity, but who noted that when a flash of lightning came a clap of thunder followed, and concluded as justly as Franklin or Faraday could have done that there was a physical relation between them. Quite in this way, we who are in a like position with regard to the New Astronomy, which we hope will one day explain to us what is at present mysterious in our connection with the sun, can as yet often only infer that when certain phenomena there are followed or, accompanied by others here, all are really connected as products of one cause, however dissimilar they may look, and however little we know what the real connection may be."

The www site for the CERES S'COOL project contains both a description of Langley <http://eosweb.larc.nasa.gov/education/Langley.html> and a collection of excerpts from "The New Astronomy". Just find the link that leads to "Langley's Writings."

Fortieth Anniversary
Pioneering the Future

Take Me to the Fair!

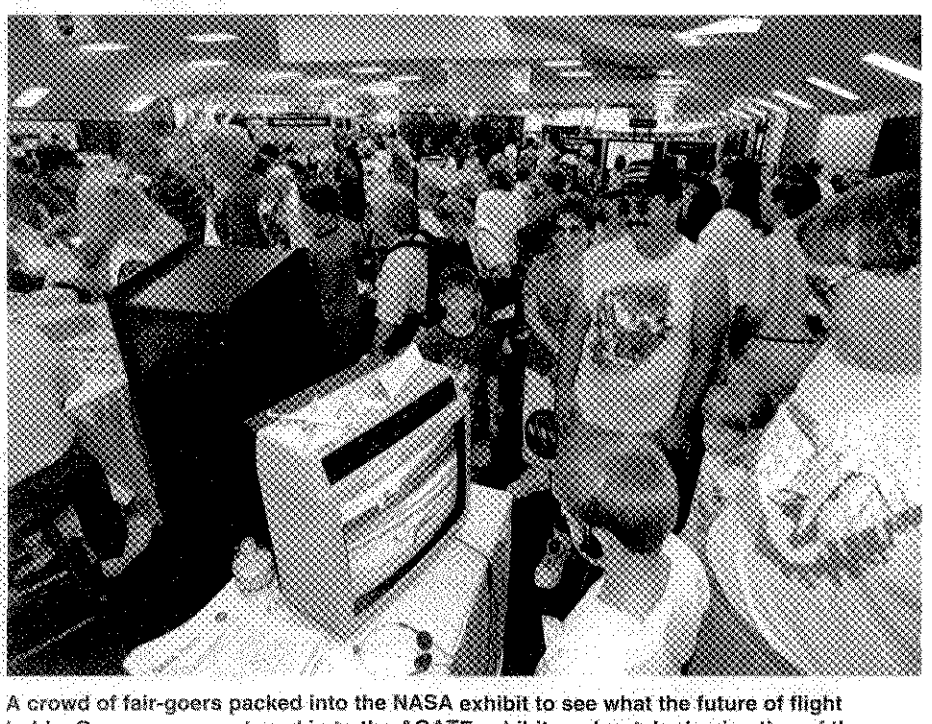
For the third year, Langley participated in the Virginia State Fair, highlighting Langley technologies in a large exhibit area in the fairgrounds Technology Center.

About 140 volunteers staffed the 10-day event and gave away tons of Langley and NASA information to visitors to the booth. Volunteers included civil service employees, contractors, retirees and Virginia Air and Space Center employees.

Langley exhibits included the HL-20 Full-Scale model, Blended Wing Body and High-Speed Civil Transport models, a children's Principles of Flight exhibit, a working Infrared Camera, Advanced General Aviation Transport Experiments (AGATE) model and cut-out, a conventional and a computerized wind tunnel with X-33 wind tunnel model, a Fabrication Division display, teacher information packets, NASA Spinoff display and Spinoff books, a Low Visibility Landing and Surface Operations (LVLASO) cockpit simulator and an International Space Station virtual tour. The Virginia Air and Space Center also had educator demonstrations and a Simulation Ride Vehicle called "Glacier Run" available.

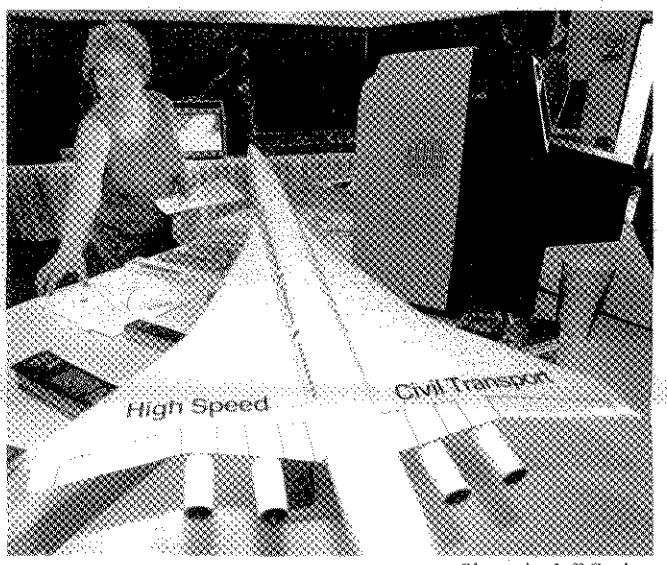
Astronaut Dr. Charlie Camarda, a former Langley researcher, spent two days talking to fair visitors about the space station and autographing hundreds of photos.

Of the half-million people that attended the fair, more than 300,000 came to the Technology Center to see the NASA Langley exhibits as well as those of its neighbors like the Virginia Department of Transportation, Virginia Commonwealth University.



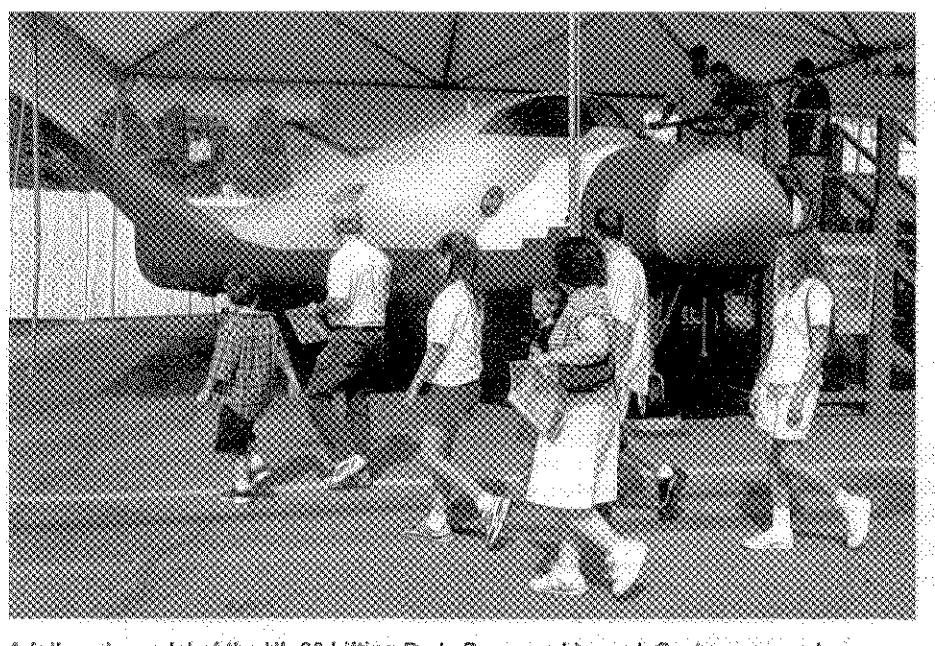
A crowd of fair-goers packed into the NASA exhibit to see what the future of flight holds. One young man tuned in to the AGATE exhibit and watched animation of the single-engine aircraft concept sweep across the screen while others took glider kits, NASA fact sheets and other information about Langley programs.

Astronaut Dr. Charlie Camarda, a former Langley researcher, spent all day Sept. 26 and 27 talking to Fair visitors about the space station and autographing hundreds of photos. Roz Henley, age 3, is delighted with her photo of Camarda. She displays it as her brother Johnny, age 3, and her mother, Barbara talk with the astronaut.

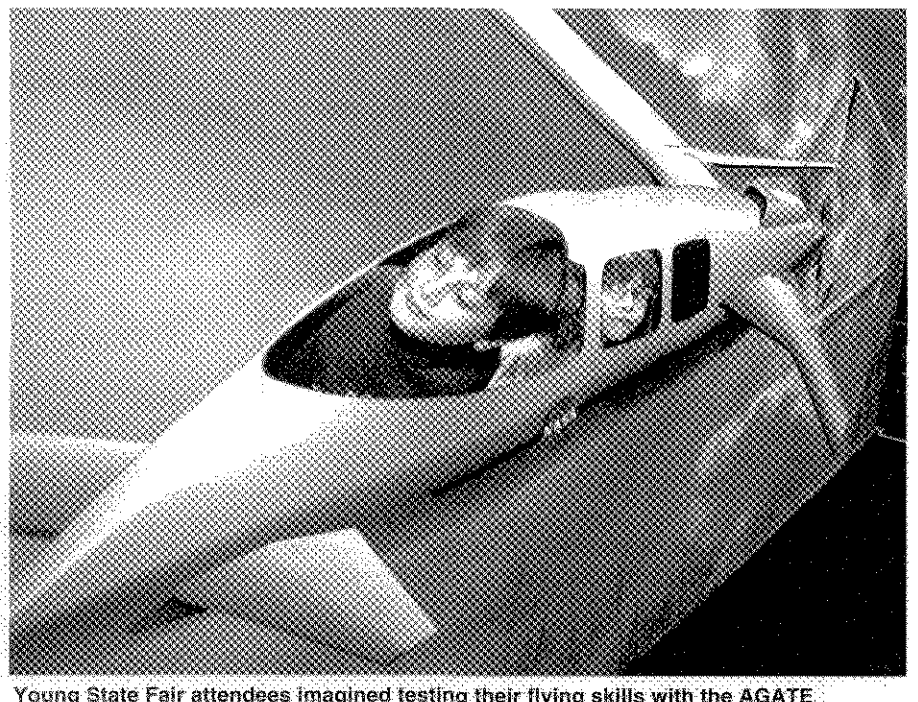


Photos by Jeff Caplan

Visitors to the NASA Langley exhibit gathered literature on current projects including NASA's future supersonic passenger jet. The aircraft would fly 300 passengers at about 1,500 miles per hour, more than twice the speed of sound. As envisioned, it could cross the Atlantic or Pacific in less than half the time of modern subsonic jets and at a ticket price less than 20 percent above slower flights.



A full-scale model of the HL-20 Lifting Body Personnel Launch System was a show-stopper outside the State Fair's Commonwealth Technology Center. Thousands climbed a small set of steps to peek inside the space vehicle model. Developed at Langley as an enhanced lifting body candidate for manned orbital missions, the HL-20 was designed for low operations cost, improved flight safety and conventional runway landings.



Young State Fair attendees imagined testing their flying skills with the AGATE (Advanced General Aviation Transport Experiments) concept aircraft. Parents lined up to take photos of their children "piloting" the airplane. AGATE hopes to increase the availability of light aircraft to more people, in more weather, to more places. The AGATE consortium is a unique partnership of government, industry and academia established to develop new ways of reviving the general aviation industry.

AdVentures

FOR SALE: Grafton end unit townhouse, 2 BR, 1-1/2 baths, greatroom w/fireplace, eat-in kitchen, deck and privacy fence, well landscaped yard. $70,000. Call 258-0453.

NASA SKI WEEK VIII: The annual agencywide ski trip is scheduled for the week of Jan. 30 through Feb. 6 at Jackson Hole, Wyo. Price is $930 per person double occupancy. Contact Michael Schooley at 874-2736 or <Schooley@erols.com>.

WANTED: To borrow June 1992 issue "National Geographic" magazine or other pictures of Lake Baikal or Aral Sea. Call the Credeurs at 868-7347.

SOFTBALL TEAM: All softball team members and their families are invited to a Softball Party, Tuesday, Oct. 27 from 5 to 9 p.m. at the pavilion behind the Reid Conference Center. It is free to all team members/families. Refreshments will be provided. Call Dave Myers for more information at ext. 44544.

PARTNERSHIP SOUGHT: '79 pressurized, turbocharged Cessna 210 (6298P); total time: 3800, SMOH: 1200, PPOH: 4/97, annual: 4/98, all logs, no damage history. Avionics: C-400, 400B, autopilot with coupled VOG, GS, LORAN, RNAV; dual comms, dual NAVs, transponder, other systems; radar, dual altimeters, dual vacuum, hot prop, de-ice boots, oxygen, electric door seals, Riley intercooler; seats 6; service ceiling 23,000 ft.; cruise 195 knots. One partner price, $55K; expense allocation: general maintenance divided equally, annuals/overhauls prorated by hours flown; located PHF. Call Bill Smith at (757) 874-7294.

HAUNTED HOUSE: The Sandy Bottom Nature Park Haunted House will be open Oct. 17 to Nov. 1. Proceeds benefit several community-based organizations. Admission is $5, $4 with a donation of three or more canned goods, $3, children 10 and under. For more information, call Ronnie Stephenson at 614-7529.

LAA NEWS: **Annual Turkey Shoot** is Saturday, Oct. 24, 9 a.m. - 3 p.m. behind the Reid Center, ammo provided. Secure your weapon in the range area. Call 864-6369 for Center rules, regulations and LAA policies. **After Burners** Grand Opening is Friday, Oct. 30, 4 - 9 p.m., Bldg. 1222. Music and promotional prizes by M. Price Distributing, Halloween costume contest prizes; cover charge $1. The **LAA** is accepting nominations for Secretary/Treasurer and Social, Arts and Crafts chairperson and chairperson for Clubs and Leagues to serve two-year positions on the Executive Board. Call ext. 46369 for more details. **Fall Fitness:** This month begins training for a specially designed toning and strength class this fall. Each class has key elements for fat-loss, aerobics and muscle toning. Class on Saturday, Oct. 24 will be in the Cafeteria due to the Turkey Shoot.

TCGS NEWS: Tidewater Classical Guitar Society opens its season with a concert by Judicaël Perroy. He will perform Friday, Oct. 16 at Contemporary Art Center of Virginia, Virginia Beach, and Saturday Oct. 17 at Williamsburg Regional Library Arts Center, 515 Scotland St. Concerts begin at 8 p.m. Tickets, $12 regular, $10 members, $8 student/senior – available at the door. For information or reservations, call 627-6229 (Norfolk), 566-3304 (Wmsbg).

An Invitation to the C-130J Ceremony

A Lockheed Martin ceremony to recognize NASA's advanced technology contributions to the C-130 Hercules Program will be held Friday, Nov. 6 at Langley's Flight Research Hangar.

The ceremony will take place from 10 to 11:00 a.m. in the hangar. In commemoration of this event, Lockheed Martin Corp. will have a C-130J open for tours from 8 to 9:45 a.m. and 1:30 to 3:00 p.m. Special demonstration flights will be from 11 a.m. to 1:15 p.m. All employees and retirees are invited to tour the aircraft and attend the ceremony. Refreshments will be served in the hangar.

SKYWATCHERS ASTRONOMY CLUB hosts a free evening of telescopic viewing Oct. 30, 8 p.m. until midnight, at the club's observatory, Building 1231A. A variety of telescopes will be set up for this event; no reservations are required. Everyone over age 16 must show civil service, military or government contractor (with after-hours authorization) photo identification at the main NASA gate. For more information, call Marilyn Ogburn at ext. 41175.

VA. SYMPHONY: The Virginia Symphony opens the Peninsula-based Mozart & More series Wed., Oct. 28 at Jamestown High School, and Friday, Oct. 30 at HRA. The family series opens Oct. 31 in Norfolk's Harrison Opera House. Season brochures available at the Exchange Shop/cafeteria. For information, call the symphony office at 623-2310.

PENINSULA SKI CLUB: 11 ski trips are planned in Virginia, in the U.S. & Europe. Call Bill Hunter, 874-0913, for info.

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Researcher News

National Aeronautics and
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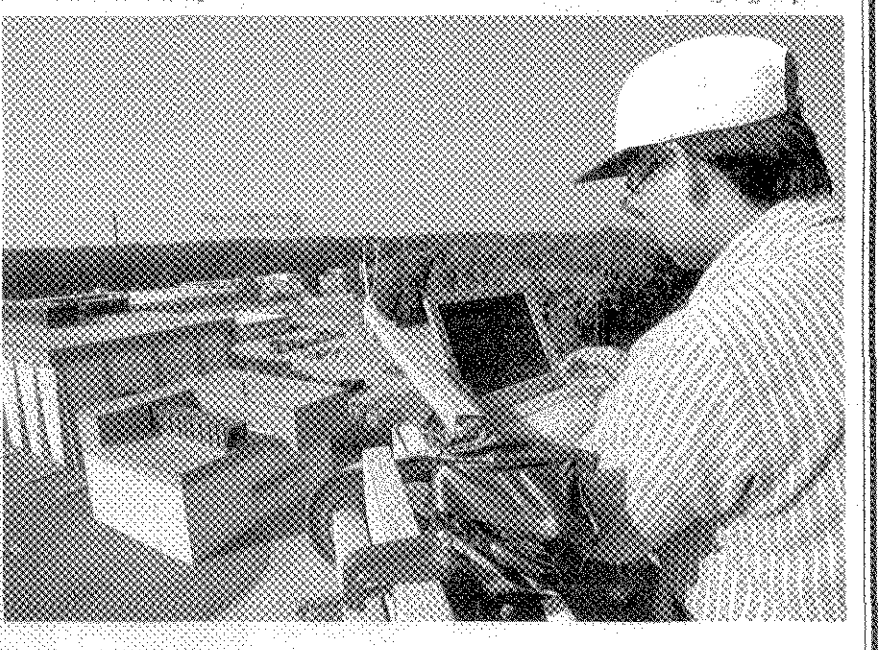
Center Snapshots

Photo by Jeff Caplan



Chi Nguyen of the Research Triangle Institute **(RTI) works with a 3-axis sonic anemometer that will be used to compute atmospheric turbulence (eddy dissipation rate and turbulent kinetic energy) for the Aircraft Vortex Spacing System (AVOSS) project. Specifically, it is being used as a validation tool for techniques under development, by AESD and RTI, for atmospheric turbulence measurements using the Langley Wake Vortex Lidar facility. Techniques for measuring approach corridor wind and turbulence profiles are being developed by the Wake Vortex Lidar Team and will be tested locally before a deployment to the John F. Kennedy International Airport, New York, this month. This dual use of one sensor to measure wakes and atmospheric variables will reduce the cost and complexity of operational AVOSS systems.**

Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 21 ❖ October 30, 1998

Two NASA Pilots Fly Russian Tu-144LL Supersonic Airliner

In early September two NASA pilots became the first Westerners to fly Russia's supersonic transport airplane, the Tupolev Tu-144LL. The Tu-144LL Flying Laboratory was modified by the Tupolev Aircraft Design Bureau in 1995-96 to perform flight experiments as part of NASA's High-Speed Research (HSR) program, which is developing technologies for the next-generation supersonic passenger jet.

The two research pilots are Robert Rivers of Langley's Simulation and Research Aircraft Division, and Gordon Fullerton of Dryden Flight Research Center, Edwards, Calif. Fullerton was a NASA astronaut for 17 years before joining the Dryden staff as a research pilot in 1986. Rivers has been a research pilot at Langley since 1990.

Before coming to Langley, Rivers worked at Johnson Space Center as a research pilot whose duties included training astronaut pilots to land the space shuttle orbiter. Both men have extensive experience in a variety of aircraft.

Accompanying the pilots were three engineers – Bruce Jackson, Langley's Dynamics and Control Branch; Tim Cox, Dryden; and Norm Princen, Boeing, worked closely with Tupolev's Vladimir Sysoev in developing the very complex flight profiles for the research missions.

"As a test pilot I relished the opportunity to fly a unique aircraft and the Tu-144LL certainly fell into that category. Actual flight experience in this large supersonic aircraft helped us do a better job evaluating proposed designs of a future SST," Fullerton said.

"I thoroughly enjoyed, and feel very fortunate to have had the opportunity to fly the Tu-144LL this fall," Rivers said. "The handling qualities experiment in which Gordon Fullerton and I participated should contribute very positively to the ongoing High-Speed Research program. As important was the chance to work with the Russian pilots and engineers who impressed me with their skill, dedication and genuine friendliness in spite of the serious economic problems they face."

The NASA team stands in front of the Tu-144LL. They are, left to right, Tim Cox, Dryden Flight Research Center; Norm Princen, Boeing; Rob Rivers, Simulation and Research Aircraft Division; Gordon Fullerton, Dryden Flight Operations; Vladimir Sysoev, Tupolev engineer; and Bruce Jackson, Dynamics Control Branch. At right, the supersonic aircraft takes to the sky.

Photo courtesy NASA Dryden

The Tu-144LL follow-on program is jointly funded by NASA and the Boeing Commercial Airplane Group. The original Tu-144LL flight program involved eight experiments – six aboard the aircraft and two ground test engine experiments. Between November 1996 and February 1998 the Tu-144LL flew 19 research flights. The follow-on Tu-144LL program will encompass eight flights, focusing on extensions of experiments from the first project and two new experiments to measure fuel system temperatures and to define in-flight wing deflections.

"I was most impressed with Vladimir Sysoev, the Tupolev flight test engineer, with whom the American engineering team had daily meetings to plan and conduct the flight experiments," Jackson said. "He knew his aircraft very well, and was eager to support our desired flight profiles and maneuvers, but was careful not to let us push outside the envelope of the Tu-144. Despite the language barrier, we developed a mutual respect and admiration for each other."

Rivers returned from Russia at the end of September and gave this update:

Continued on Page 5

TGIR Conference Reports Aero and Space Technology Progress

One year ago, NASA set 10 aeronautics and space transportation goals that will have a dramatic impact on the United States into the 21st century. On Oct. 9, Lewis Research Center in Cleveland hosted a "Turning Goals Into Reality" conference to present the goals' progress.

More than 300 representatives from NASA, universities and industry, who helped develop the 10 outcome-based goals, along with airlines, aircraft maintenance companies, air cargo firms and other government organizations, came together to review and assess NASA's technology programs, partnerships and overall progress.

Langley Garners Five Awards

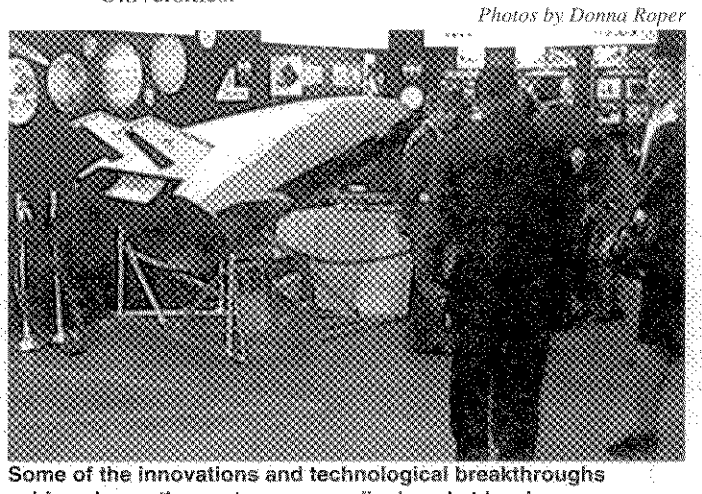
As part of the conference, NASA presented awards to industry and university and government teams that have made significant contributions or accomplishments in aviation research. Five were awarded to groups at Langley.

For accomplishments in aviation safety – The NASA Airframe Structural Integrity Program Team, including Langley, Lockheed Martin Missiles and Space, Cornell University and the University of Texas.

For accomplishments in environmental compatibility/emissions – The High-Speed Research Combustor Configuration Team of NASA's Lewis Research Center, GE Aircraft Engines and Pratt & Whitney.

For accomplishments in environmental compatibility/noise – The Advanced Subsonic Transport Engine Systems Noise Reduction Team of Langley and Lewis Research Centers, FAA, Allison Engine Company, AlliedSignal Engines, AYT Corporation, Boeing Commercial Airplane Group, Fluidyne, BF Goodrich Aerospace, GE Aircraft Engines, Lockheed Martin, Northrop Grumman, NYMA, Pratt & Whitney and the Virginia Consortium of Engineering and Science Universities.

Photos by Donna Roper



Some of the innovations and technological breakthroughs achieved over the past year were displayed at Lewis.

One of several panel discussions was led by Center Director Dr. Jerry Creedon, far right. Panelists included, left to right, Robert Spitzer, Boeing; Mike Benzakein, GE Aircraft Engines; Charles Huettner, FAA; and Creedon.

For accomplishments in affordable air travel – The Composite Wing Team of Langley and Boeing Commercial Airplane Group.

For accomplishments in high-speed travel – The PETI-5 Development Team of Langley.

For accomplishments in general aviation – The Advanced General Aviation Transport Experiments Consortium (AGATE) of Langley and Lewis Research Centers, AGATE Alliance and the FAA.

The NASA Administrator's Award was presented to the Center-TRACON Automation System Team of NASA's Ames Research Center, Langley and the

Continued on Page 3

News Briefs

Around the Agency

ANTARCTIC OZONE DEPLETION SETS RECORD: NASA and NOAA satellites show that the Antarctic ozone thinning covers the largest expanse of territory since the depletion developed in the early 1980s. The measurements were obtained this year between mid-August and early October using the Total Ozone Mapping Spectrometer (TOMS) instrument onboard NASA's Earth Probe (TOMS-EP) satellite and the Solar Backscatter Ultraviolet Instrument (SBUV) aboard the NOAA-14 satellite. Preliminary data from the satellites show that this year's ozone depletion reached a record size of 10.5 million square miles (27.3 million square kilometers) on Sept. 19. For more information, go to <http://toms.gsfc.nasa.gov>.

HUBBLE SEARCHES FOR FARTHEST GALAXIES: Stretching the vision of the Hubble Space Telescope farther across space and further back into time than ever before, astronomers have peered into a previously unseen realm of the universe. A "long exposure" infrared image taken with Hubble's Near Infrared Camera and Multi-Object Spectrometer (NICMOS) has uncovered the faintest galaxies ever seen. Astronomers believe some of these galaxies could be over 12 billion light-years away – making them the farthest objects ever seen. A powerful new generation of telescopes will be needed to confirm the suspected distances. Prior to the NICMOS observation, a 10-day-long exposure called the Hubble Deep Field was the telescope's benchmark for the "deepest" view into the universe. For more information search: <http://oposite.stsci.edu/pubinfo/1998/32>.

"WHITE OVALS" TAKE SCIENTISTS BY STORM: As powerful hurricanes pummel coastal areas on Earth, NASA space scientists are studying similar giant, swirling storms on distant Jupiter that have combined to spawn a storm as large as Earth itself. Three separate cold storms, called "white ovals" because of their color and egg shapes, have been observed in one band around Jupiter's mid-section for 50 years. Two of the storms recently merged to form a larger white oval, according to scientists studying data from NASA's Galileo spacecraft, the Hubble Space Telescope, and the Agency's Infrared Telescope Facility atop Mauna Kea, Hawaii. Images and information on the Galileo mission are on the Internet at the Galileo website: <http://www.jpl.nasa.gov/galileo>.

SOFTWARE SCALPEL HELPS OPERATIONS: A "software scalpel," combined with clear, accurate, three-dimensional (3-D) images of the human head, is helping doctors practice reconstructive surgery and visualize the outcome more accurately. Using the new approach, a physician wearing 3-D glasses can see an image of a patient's head from all angles on a computer monitor, or on the surface of a large "immersive" virtual reality work bench. Virtual reality is a computer-created environment that simulates real-life situations.

NASA DEVELOPING BREAST CANCER DIAGNOSTIC TOOL: A NASA-Stanford University team is in the preliminary stages of developing a smart probe that can be used for breast cancer detection and analysis. The probe is designed to 'see' a lump, determine by its features if it is cancerous, and then quickly predict how the disease may progress. Researchers say surgeons may be able to insert the computerized tool's needlelike tip into breast lumps to make instant diagnoses and long-term cancer predictions. The researchers say that, once the smart probe has been adequately tested in the laboratory, doctors will begin testing the device on human beings, perhaps by early 1999. *For more information, check the Internet for NASA's News and Information web page at <http://www.nasa.gov/releases/1998>.*

Announcements

Magazine Spotlights Federal IT Successes

A new web site, Access America Online Magazine, <http://www.accessamerica.gov>, hit the information highway in October. It features weekly human-interest stories about how federal agencies are using information technology (IT) to deliver services to their customers and increase productivity. The theme is based on Vice President Gore's vision of an electronic government in his 1997 report, *Access America: Reengineering Government through Technology*.

The new publication is the result of a partnership that includes the Government Information Technology Services Board, Chief Information Officers Council, National Partnership for Reinventing Government and the Federal Communicators Network.

Information technology stories from employees of any government agencies are welcomed. Send them to Pat Wood, National Partnership for Reinventing Government, (202) 694-0063, or <pat.wood@npr.gov>.

CONNECT with OEd

The Office of Education is producing a series of educational television programs called NASA CONNECT that will be broadcast over the PBS station WHRO Channel 15. For schedules and descriptions, go to: <http://edu.larc.nasa.gov/connect>.

Volunteers Sought

Volunteers are sought to help restore the NASA XV-6A Kestrel, the Harrier predecessor. Sanding and re-painting are most needed. The plane is at Hampton's Air Power Park, Mercury Blvd. near LaSalle Ave. For more information call MSgt. Etley Jenkins at 764-3065.

Mammography Screening to be Offered

The Office of Occupational Health Services announces the scheduling of mammography screening. This on-site service is open to all Langley employees, contractors, retirees and family.

The Riverside Mobile Mammography van will be in the parking area between the health clinic and cafeteria Dec. 8, 9, 10, 16 and 17; Jan. 5, 12, 14, and 26 and Feb. 25. Cost is $75 and payment may be made by cash, check or Visa/MasterCard.

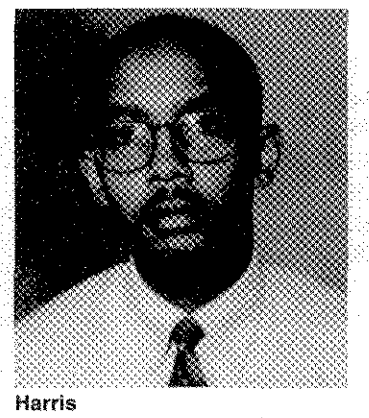
Make an appointment during working hours by calling Riverside Diagnostic Center at 594-3900. Tell Riverside that you are with NASA.

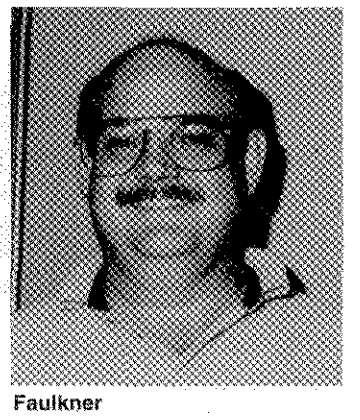
Most health benefit plans will only cover one mammogram per year, so it is important for you to verify your plan's particular coverage and requirements, and then schedule a mammogram accordingly. Services provided include: breast self-exam training, mammographic exam, interpretation by a board-certified radiologist and individual reports to patient and primary physician. The process will take about 15 minutes onboard the van.

At the time of your scheduled mammogram, bring the following information: doctor's name, address and telephone number, and health card to file for health benefits. If pre-certification is required from a physician, have that documentation available. Civil service employees may charge the time for the screening to Job Order B1008. For any questions, call Alice Eley at ext. 43191 or Karen Ridlon at ext. 43194.

Two Langley Employees Receive FY'98 EEO Award

Rodney T. Harris, Facilities Program Development Office, and Joseph M. Faulkner, Fabrication Division, received Langley's Fiscal Year 1998 Equal Employment Opportunity Awards "in recognition of demonstrated sensitivity to the disabled and overall support of the goals of equal employment opportunity."


Harris


Faulkner

Call for Nominations — The 1999 Discover Awards

The Discover Magazine Awards for Technological Innovation celebrate the outstanding innovations of our time. These awards single out the scientists, engineers and inventors who all too often are the unsung heroes of the technological age. Do you know of a noteworthy new invention, technology or innovative product? You are invited to nominate innovations from your organization. All innovations nominated for these awards should solve a well-defined problem or meet a clearly defined objective.

Deadline for submission is Nov. 4. For additional information or a nomination form, contact Sherry Sullivan at ext. 42556 or e-mail <s.l.sullivan@larc.nasa.gov>.

Call for Nominations – The 1999 National Medal of Technology

The National Medal of Technology is the nation's highest honor for technological achievement. The President of the United States first presented this prestigious award to America's leading innovators in 1985. Since then the medal has been a celebration of the extraordinary achievements of these trailblazers, fostering a national legacy and inspiring future innovators.

The medal is awarded for technological breakthroughs resulting in the creation of new or significantly improved products, processes or services. Economic impact is elemental to the work of all medalists. Outstanding achievement in fostering and managing human resources to advance technological innovation is also recognized.

If you know of a candidate who has made an extraordinary contribution to society through his or her technical vision and prowess, then you should participate in this year's nomination process. Contact Sherry Sullivan at ext. 42556 or e-mail at <s.l.sullivan@larc.nasa.gov> for a nomination package or for additional information. The deadline for this submission is Nov. 15.

CNU Offers LabVIEW Classes in December

Christopher Newport University is offering two LabVIEW classes – a three-day class in G-programming in LabVIEW and a two-day class in Advanced G-programming and Data Acquisition.

For information, contact Dr. Jeffrey Beyon, 594-7168, <jbeyon@pcs.cnu.edu> or Randall Calon, 594-7188, <rcalon@pcs.cnu.edu>.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 <a.c.gaudreaux@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.

Three from Langley Honored

NASA Unveils "Superstars of Modern Aeronautics" Painting

Twelve NASA scientists and engineers, selected as "Superstars of Modern Aeronautics," were recognized in a ceremony at Lewis Research Center where a painting was unveiled.

The painting, by artist Alexander Bostic, highlights NASA's Aeronautics program, and was created to recognize a few of the many talented individuals who have contributed to the excellence of the United States' civil and military aircraft and air transportation system.

The Superstars

The "superstars," former or current NASA employees representing the four aeronautics centers, were chosen for their significant contributions to aeronautics programs in the past 50 years. Recognized are: Drs. Robert Jones, Jolen Flores and Karen Gundy-Burlet from Ames Research Center; Edwin Saltzman, Marta Bohn-Meyer and Dr. Kenneth W. Iliff from Dryden; Dr. Richard Whitcomb, Dr. Kathy H. Abbott and Dr. James C. Newman, Jr., from Langley; and Albert Johns and Drs. John Adamczyk and Simon Ostrach from Lewis.

A poster was designed from the original painting that will be used by educators to encourage their students to consider the many diverse careers in the aeronautics field. Biographical sketches with the subjects' educational background, technical achievements and contributions, current work assignment and interests are printed on the back of the poster. The "Superstars of Modern Aeronautics" poster is the third in a series of career awareness posters created by the Education Division at NASA Headquarters.

Three from Langley Named Aero Superstars

Drs. Kathy Abbott, James Newman Jr. and Richard Whitcomb are three Langley researchers featured on the new NASA "Superstars of Modern Aeronautics" poster, (*see above*).

Abbott (10) joined Langley in 1980 where her research focused on developing computer-based tools and systems for cockpit automation, and improving human-computer interactions. She was the principal researcher for the diagnostic portion of the "Faultfinder," a concept to help flight crews manage aircraft system faults. The project received an R&D 100 Award in 1991. Abbott currently is on assignment with the FAA as national resource specialist for cockpit human factors.

Newman, (11) a senior scientist in the Mechanics of Materials Branch, has performed stress analyses of materials and structural components used in aircraft and the space shuttle system. Many of the crack solutions in the American Society for Testing Materials Standards for fatigue and fracture testing were developed by Newman and his Langley colleagues. He now works on aspects of fatigue and fracture mechanics of metallic materials.

Whitcomb (3) is best known for his pioneering contributions to aeronautics, including the conception, development and validation of the Area Rule, the supercritical airfoil and winglets. His concepts have substantially increased performance for a wide range of subsonic and supersonic aircraft. For his discovery and verification of the Area Rule, Whitcomb received the Collier Trophy, the most prized aeronautical honor in America, in 1954.

A Message from LaRC's CFC Loaned Executive

Although I am a "new kid on-the-block" (only a year and a half at Langley), I was honored when asked to serve as the Langley 1998 Combined Federal Campaign (CFC) Loaned Executive. I thought it would be a pleasant experience and an opportunity to get out of the office and see more of the Virginia Peninsula. That it was, but more importantly, it was a valuable opportunity to meet real, caring people. By now you should all have seen the Terry Morris story "Living Proof" on Langley cable or when meeting with your Key Worker. Terry is truly amazing, and his caring ways and winning smile are contagious to all he meets.

I met Terry while working as part of the Langley CFC Team. This team organizes and runs the campaign. It is made up of literally hundreds of our co-workers, from Mark Shuart, the campaign chair, to the individual Key Worker in your workplace. It involves secretaries, managers, researchers, unions, group directors and the Center Director. Each is a volunteer for the cause and expresses their caring through their efforts to make Langley's campaign the "Best on the Peninsula."

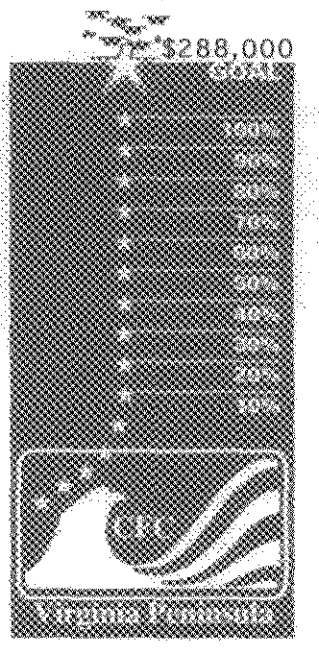
I met hundreds of other campaign workers at all of the other 60 or so federal agencies located on the Peninsula. Some agencies are as small as two or three people, some are as large as 10,000 people. Many are long-time permanent residents, some are here for two or three years, and some will leave when their ship is repaired. Large or small, long-time or short, they all care about helping their neighbors.

I also met the "Pros," Jack Clough and Beatrice George, in the United Way office. They are the "overhead" for the CFC, although their time and cost is spread over three other campaigns as well. This is Jack's 18th CFC campaign, and he is a marvel to behold. I was amazed that so much is accomplished, for so many, by so few. Of course, they don't do it alone. In addition to me, the Air Force has loaned Maj. Larry Hamilton, and industry and local governments have loaned a dozen or so other executives.

The most important people I have met fall into two groups — those that "Care and Share," and those that benefit from CFC sharing. At some point, we will all benefit from CFC. So the next time you look in the mirror, I trust that you will see someone that belongs to both groups.

I want to thank the management of Langley Research Center for giving me this opportunity to serve, my co-workers in the Independent Program Assessment Office who picked up the slack when I took this job, and everyone who contributed to make the 1998 Combined Federal Campaign a success.

— Earl Reese, Independent Program Assessment Office NASA 1998 Combined Federal Campaign Loaned Executive



1998 CFC Stats

The 1998 CFC status is:
Goal: $288,000
Amount Pledged: $300,651.76
Overall % Participation: 58.73%
Percent of Total Goal: 104.39%
Average Contribution: $220.26
The campaign continues through Oct. 30 to give more employees a chance to participate. Total pledges last year were $323,577.24 and participation by employees was 67.30%.

TGIR Reports Progress . . .

Continued from Page 1

FAA for its accomplishments in improving aviation system capacity.

In order to provide an opportunity for the Agency's stakeholders, the general public, educators and students to participate, the conference was cybercast live through NASA's Learning Technologies Channel. (*See TGIR educational article on Page 5.*)

More activities, NASA Facts, educational resources and the Aeronautics and Space Transportation Technology Annual Progress Report 1997-98, can be found on the conference Web site at: <http://www.hq.nasa.gov/office/aero/conf98/>.

NASA AND FAA JOIN FORCES

During the conference, Goldin and FAA Administrator Jane Garvey signed an agreement that establishes a new partnership in pursuit of improved aviation safety, airspace system efficiency and aircraft environmental concerns. An FAA/NASA Executive Committee was established and will be responsible for the executive direction and oversight of joint aviation and future space transportation research and development efforts.

Eleven Employees Earn Advanced Degrees through Center Program

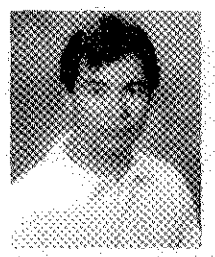
Eleven Langley staff members have earned advanced degrees through the Center's Advanced Study Program.

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. About 1,539 employees have earned master's or doctorate degrees through the program.

Victor Alberto Carreno, Flight Technology Division, earned a doctor of philosophy in computer science from the University of Cambridge, England; James Reeder, Materials Division, earned a doctor of philosophy in mechanical engineering from Texas A&M University; Paul Miner, Flight Electronics Technology Division, earned a doctor of philosophy in computer science from Indiana University; Peter Padilla, Flight Dynamics and Control Division, earned a doctor of philosophy in applied mathematics from Old Dominion University (ODU); and William Wilkie, U.S. Army Research Laboratory, earned a doctor of philosophy in aerospace engineering science from University of Colorado.

Master's degrees were awarded to the following employees: Alicia Allen, Office of Space and Atmospheric Sciences Program Group, earned a master of arts degree in human resources from George Washington University; Aileen Biser, Information Systems and Services Division (ISSD), earned a master of science degree in computer science from ODU; Kerry Gough, ISSD, earned a master of science degree in computer science from the College of William and Mary; Diane Hope, Facility Systems Engineering Division, earned a master of science degree in material science from the University of Virginia; David Myers, Space Systems Concepts Division, earned a master of science degree in theoretical and applied mechanics from the University of Illinois; and Donna Phillips, Office of Human Resources, earned a master of arts degree from George Washington University.

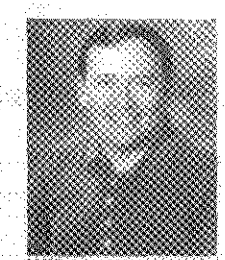
The Employee Development Branch offers congratulations to these individuals for the long hours and hard work necessary to achieve these accomplishments. Such work not only brings additional expertise to Langley but also enhances the individuals' professional growth and career development. For information about the Center's Advanced Study Program, call George Allison at ext. 42594.


Carreno

Miner

Padilla

Reeder


Wilkie

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Allen

Biser

Gough

Hope

Myers

Phillips

Aeronautics Enterprise Reorganizes and Changes Name

NASA HEADQUARTERS RELEASE

NASA has renamed the Office of Aeronautics and Space Transportation Technology to the Office of Aero-Space Technology, and reorganized it to better meet the Agency's goals.

In announcing the reorganization, associate administrator for Aero-Space Technology Spence Armstrong said, "When NASA Administrator Dan Goldin asked me to take this position, he told me there were three objectives that he wanted to see accomplished within the first months of my tenure.

"First, Mr. Goldin wanted me to personally be an advocate for the Reusable Launch Vehicle programs to effect a cheaper means of access to space. Secondly, he wanted to see more synergy between the traditional Aeronautics role and the Space Transportation Technology role, which had been added to the office's responsibility as a result of an earlier Headquarters reorganization. Lastly, Mr. Goldin wanted to see progress in achieving the 10 goals that NASA had established for the office about a year ago. Specifically, he wanted to see 'road maps' or plans to achieve each goal, and asked me to reorganize as necessary to achieve them," Armstrong said.

Meeting the Goals

To accomplish these objectives, Armstrong sought the advice and consultation of the office's executive board which is comprised of the directors of NASA's Ames Research Center, Dryden Flight Research Center, Langley Research Center, Lewis Research Center and Marshall Space Flight Center plus Headquarters' division directors. The board quickly recognized and accepted that the enterprise needed to have a management focus that highlighted achieving its goals rather than the traditional method of overseeing individual programs. They offered two major reorganization recommendations: that a Goals Division be established to measure the progress toward achieving the goals; and also that an Institution Division be formulated so Headquarters would have a more significant role in taking care of institutional problems at the Field Centers such as facilities, infrastructure and employee issues. Another division, the Programs Division, will monitor the office's various programs.

The 10 goals that NASA established for the enterprise include eight goals that deal with aviation, one with access to space and another with space transportation. NASA will work closely with the Federal Aviation Administration and other government agencies and industry partners to develop the technology necessary to attain these goals.

Voluntary Leave Transfer Program — A Continuing Success

Langley employees are extremely generous when it comes to helping a friend or coworker. Their continued generosity to the Voluntary Leave Transfer Program (VLTP) shows it.

The VLTP allows employees and their families to handle medical emergencies without experiencing a substantial loss of income due to the unavailability of paid leave. The program is designed so that civil service employees can transfer or donate their accrued annual leave to an employee experiencing a medical emergency. Without the program, many employees could not afford to be with family members when they need to be or to remain out of work in an unpaid status due to a personal medical emergency.

To Qualify

To qualify as a leave recipient: An employee who has exhausted all of his/her earned annual and sick leave and who expects to be out for 24 hours or more in an unpaid status because of a medical emergency may qualify as a leave recipient.

An employee who has exhausted all of his/her earned annual leave and expects to be out for 24 hours or more in an unpaid status to care for a family member experiencing a medical emergency may also qualify. In this case, the employee does not have to exhaust all of his/her sick leave; but the employee must use the limited sick leave available for family care under the Federal Employees Friendly Family Leave Act before applying.

Employees must submit NASA LaRC form, Voluntary Leave Transfer Program Application and appropriate medical documentation to their supervisor. The supervisor will review and recommend on the application that the employee become a leave recipient. The supervisor then forwards the application to the Personnel Management Branch for approval. Once the process is complete, the employee may begin receiving donated annual leave. As an approved VLTP recipient, donated annual leave must be used for the purposes of the medical emergency only, not for personal or vacation purposes. If donated leave is misused, an employee may be terminated from the Program and the transferred leave received would be returned to the donors on a pro-rata basis.

To Donate Leave

Employees who want to donate annual leave must complete Langley form, Request to Donate Leave. It specifies the number of hours and the name of the leave recipient. Compensatory time or credit hours cannot be donated. Approved leave recipients are listed in the LaRC This Week at website: <http://ltw.larc.nasa.gov>.

Some Limitations

There are limitations for transferring annual leave as follows:

- Employees may not donate leave to their immediate supervisor.
- Employees may not donate more than 1/2 of the total annual leave that they accrue during the leave year. That is, employees with three years or less service (earns four hours biweekly) may donate no more than 52 hours during any one leave year. Employees with three to 15 years service (earns six hours biweekly) may donate no more than 80 hours during any one leave year. Employees with 15 years of service or more (earns eight hours biweekly) may donate up to 104 hours during any one leave year.
- Employees who are projected to have annual leave that is subject to forfeiture at the end of the leave year may donate no more than the lesser of 1/2 of the amount of annual leave that would be accrued during the leave year, or the number of hours remaining in the leave year (as of the date of transfer) for which the leave donor is scheduled to work and receive pay.

The Voluntary Leave Transfer Program is successful and will continue to be because of Langley employees' concern and generosity toward their friends and co-workers. For more information about the program, call the Personnel Management Branch at ext. 42558 or ext. 43194.

Turning Goals Into Reality for Everyone

BY DR. SHELLEY CANRIGHT

The NASA Administrator and the Aero-Space Technology (AST) Enterprise sponsored an inaugural *Turning Goals Into Reality* (TGIR) conference at NASA Lewis Oct. 9. (*See story Page 1*)

One year ago, in a speech presented before the World Aviation Conference, NASA Administrator Goldin indicated that he wanted to share with the public the national goals (Three Pillars to Success) and the progress being made towards them. He wanted this communication to be done through different forms like annual forums and the internet.

The development of the TGIR Conference was the springboard for developing an electronic outreach plan that included events tailored for three groups: K-12 education, university/industry and general public. The best of conventional media was combined with computer and Internet technology to create a new interactive media that provided opportunities to distribute knowledge and collect feedback. The outcome ranged from making people aware of NASA's knowledge to helping them use this knowledge.

A TGIR Conference web site was created and served as the central point for listing and connecting to the various audiences. Showcased are sample track events that Langley coordinated and produced in support of the TGIR conference and its electronic outreach plan.

I Chat, You Chat, We All Chat with NASA

Three chat sessions designed to familiarize interested university faculty and students, industry and the general public on each of the Three Pillars and 10 Technology Goals were offered on a weekly basis leading up to the Oct. 9 TGIR Conference Day. These chat sessions, produced under the direction of Jeff Seaton, Langley's Learning Technologies Project Office, used several Langley program managers as featured guests during the one-hour chat sessions.

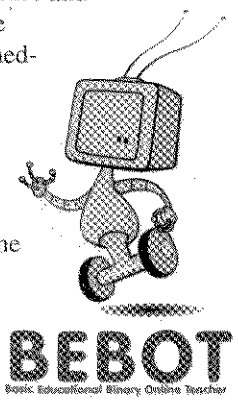
Each "ichat" session has been archived and the transcript and graphics can be accessed at the TGIR ichat URL: <http://www.hq.nasa.gov/office/aero/conf98/ichat.htm>. The three pillar chat sessions included discussions related to: Global Civil Aviation with featured LaRC guests Mike Lewis and Cindy Lee; Revolutionary Technology Leaps with featured guests Drs. Christine Darden, Bruce Holmes and John Malone; and Access to Space, about opening space to commercialization and exploration missions.

A total number of 221 persons registered for the ichat sessions, including participants from 36 states and 55 from outside the country.

Kids Corner

Stop by NASA Langley's Kids Corner, <http://kidscorner.larc.nasa.gov/> and meet B.E.B.O.T. – which stands for the Basic Educational Binary Online Teacher – who can be found around this web site to guide students, educators, and parents during their online visit to Langley. The design and animation featured on Kids Corner are the work of graphic animator Larry Merrill, Media Concept Group. Kids Corner is a partnership of Office of Education, Learning Technologies Project Office and Media Concept Group.

Visitors to Kids Corner can see samples of the different types of research facilities and careers found on Center. Online projects, tours and chats are scheduled for students to join. For students who want to get their hands dirty, a special virtual aerocamp is available for them to attend – no sleeping bags needed – just creativity and some math and science know-how. Campers are invited to complete a series of activities that culminates into the first ever online Air Olympiad!



The intended target audience for Kids Corner is students, grades 5-8. The web site has been embedded into a motivating aeronautical context to promote the study and application of mathematics and science.

NASA CONNECT

NASA CONNECT is an award-winning instructional series produced by OEd. NASA CONNECT links math and science concepts and skills to the workplace, joins classrooms with NASA researchers, and supports national math and science standards. A special program to support the TGIR Conference was added to the series. The program *Plane Weather* involved students in aviation safety. NASA and FAA researchers introduced students to the math and science behind aviation weather and demonstrated how meteorological conditions, such as icing, influence flight. Students explored the relationship between science and technology, and the tools and technologies used by engineers studying aircraft icing to reduce its affects on aircraft operations. Highlights include an examination of several research programs.

Plane Weather was a collaboration of four NASA installations: Ames Research Center, Headquarters, Langley and Lewis Research Center. Other partners include the FAA and The Weather Channel. To reach CONNECT: <http://edu.larc.nasa.gov/connect>.

Tu-144LL . . .

Continued from Page 1

"It was an outstanding mission in which all of the research objectives were achieved. The success of the mission resulted from superb teamwork by Dryden's, Boeing's and Langley's team of engineers and pilots."

A log of their flights follows – Fullerton and Rivers flew three missions.

During the Sept. 15 flight, Fullerton flew the Tu-144 to Mach 9 and Rivers was an observer in the cockpit. The two hour and 45 minute flight evaluated the aircraft's handling qualities while simultaneously collecting data on ground effects and aeroacoustic phenomena. The two flew a number of approaches and successfully achieved all research objectives.

On the Sept. 18 flight, Rivers flew the aircraft to Mach 2 for 20 minutes at 54,000 to 57,000 feet. He evaluated handling qualities, aeroservoelastic effects, dynamic aircraft responses and flew a number of approaches in a variety of configurations. All research objectives were achieved.

During the Sept. 24 flight, Fullerton also flew the aircraft to Mach 2. On this flight, frequency response data was collected followed by a number of different landing approaches. All research objectives were achieved.

The customary postflight "rocking" of pilot Rob Rivers, following his Mach 2 flight, was led by Alexander Pukhov, head of the Tu-144LL project, and his maintenance crew. Crew members also tossed Rivers cane in the air but were careful to hold his broken leg during the festivities.

Rivers said, "The Tu-144LL is a remarkable aircraft, especially since it was designed 35 years ago. It is the only airplane in the world that is capable of sustained flight at Mach 2, and has the capacity to carry thousands of pounds of research instrumentation. The NASA team learned a great deal from the Russians' method of operations."

"I was very impressed by the ability of the Tupolev personnel to operate under conditions that we consider almost unworkable," Rivers said. "They have essentially no paper or other office supplies, few computers, no viewgraph machines or VCRs, no heat, and are infrequently paid. Their flight reviews are conducted without any handouts or presentations, something unheard of at Langley. Total quality management is practiced out of necessity, and they have an efficiency that is truly amazing. The bottom line is, they successfully operate one of the world's only Mach 2 transport airplanes in an environment that is difficult to comprehend from our experience."

"It was a great honor for me to get a chance to work in Russia with these outstanding individuals, both Russian and American," Jackson summed up.

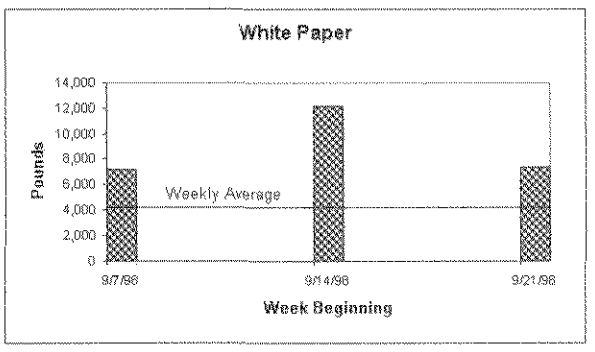
NOTE: *A related Tu-144 story appeared in the Aug. 21 issue of the Researcher News. It addressed the NASA experiments on-board and other HSR team members.*

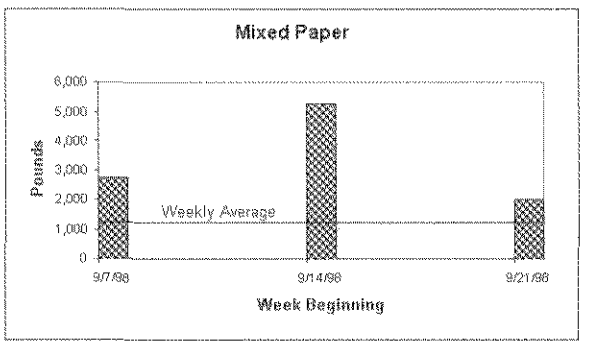
VPP Creates Recycling Boom

BY KIM TAYLOE

The Langley recycling program experienced a boom in collection activities due to Langley's Safety Stand-Down Day Sept. 11, in the preparations for the Occupational Safety and Health Administration's Voluntary Protection Program inspections. White paper, mixed paper, cardboard and toner cartridges significantly exceeded weekly averages. The following charts illustrate the increase for some of the recyclables collected by the Office of Environmental Engineering beginning Sept. 7 and ending Sept. 25, 1998.

Center personnel are commended for their efforts to support good housekeeping at the Center and Langley's recycling programs. More information about the recycling program can be found at <http://osemant1.larc.nasa.gov/Recycle/>.





AdVentures

PENINSULA SKI CLUB: Eleven ski trips are planned to resorts in Virginia, eastern U.S., western U.S. and Europe. Call Bill Hunter at 874-0913 or check the *LaRC This Week* home page for more information.

FOR SALE: '91 Mazda 626 LX, 5-speed, sunroof, power brakes, locks, windows, A/C, cruise, 91,900 mi., new timing belt, CV joint, muffler, $3,900 nego. Accent rug, 9' x 12', hunter green w/cream border, used one year, like new, moved, doesn't fit in new home, $350 new. Will sell for $150. Call 867-6794.

SAILBOAT CREW: Employee seeking an opportunity to crew aboard a 24-foot or larger sailboat, from Hampton or Norfolk. In return, will help with maintenance. Call Jim High at 583-5234.

INTERN SOUGHT: SAIC, Hampton, seeks upper level undergraduate and graduate students for its Summer Intern Program, mid-May to August '99, in affiliation with a Langley contract. Candidate sought with experience, a degree or seeking a degree in: atmospheric science, mathematics, physics, scientific computer programming, electrical or mechanical engineering, and be eligible for employment with a U.S. government contractor. For an application or information, contact SAIC Summer Intern Program at (757) 825-0001, fax (757) 825-4968 or e-mail <saic+intern@larc.nasa.gov>.

HOUSE FOR SALE: 1,500 sq.ft. 3BR, 2-1/2baths, FR/gas fpl, DR, bkfst nook, oak cabinets, 2-car garage, gas heat/hot water, shed, in Grafton, $136,000. Call 898-1814.

COLLOQUIUM REMINDER

Dr. Jill Tarter of the Search for Extraterrestrial Intelligence (SETI) Institute will talk about her work Tuesday, Nov. 3, 2 p.m. in the H.J.E. Reid Conference Center. **Sigma Series Lecture:** "SETI: Science Fact, Not Fiction" will be presented Nov. 3, 7:30 p.m., at the Virginia Air and Space Center.

WRL NEWS: Eclectic music is on tap with Eddie from Ohio at the Williamsburg Regional Library. Too energetic to be labeled just "folk," not angry enough to be pegged "alternative," Eddie from Ohio visits the Williamsburg Library Arts Center Theatre for a concert Friday, Oct. 30 at 8 p.m. Tickets are $12 for adults, $6 under 16, and may be reserved by calling 259-4070. Celebrate the 100th anniversary of George Gershwin's birth and anticipate Duke Ellington's 1999 centennial with an evening of jazz featuring vocalist Stephanie Nakasian and the Hod O'Brien Trio. The concert, at the Williamsburg Library Arts Center Theatre, is Saturday, Nov. 7 at 8 p.m. Tickets are $10 ($5 for those under 16), reserved by calling 259-4070. More information on this concert, and on other library programs, can be found on the Internet by using your favorite search engine to locate Williamsburg Regional Library or directly at <http://www.wrl.org>.

VIRGINIA SYMPHONY: JoAnn Falletta leads the Symphony in Tchaikovsky's Symphony No. 5 on Nov. 7/8. Rita Moreno joins the Symphony for performances Nov. 14/15. Symphony season brochures available at the Exchange Shop or in the cafeteria. For other events /information, call the ticket office at 623-2310.

NARFE: National Association of Federal Retired Employees meets Nov. 9 at 10:30 a.m., Mid-town Community Center, McLawhorne Dr., Newport News. Speaker topic is "Blue Cross, Blue Shield – Open Season."

ALUMNI NEWS: NASA civil service and contract retiree Alumni Association's next luncheon meeting is Tuesday, Nov. 10, 11:30 a.m. in the cafeteria executive dining room. A talk, "Investments, Taxes, Gifts" will be given by Eric Bartok of Merrill Lynch. The December meeting is scheduled for Wednesday, Dec. 9 at Steve's Steak House, 11847 Jefferson Ave., Newport News. This will be the annual holiday luncheon. Members and spouses/guests are invited. For more information, call the Alumni Office at 864-7330.

Career Center to Close in November

The Career Center announces it will close Nov. 20. We have enjoyed our association with the fine NASA personnel, and want to extend an invitation to team leaders, managers and individuals to use the Career Center services fully in the coming month.

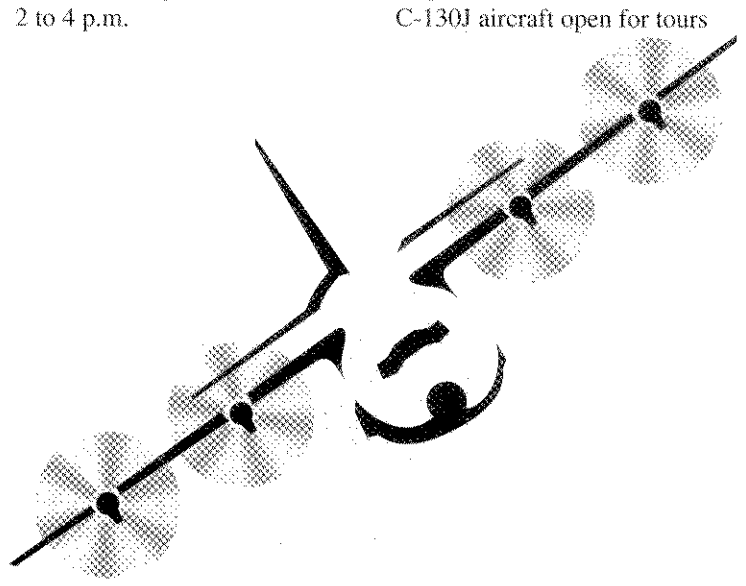
The Career Center offers individual and group assistance developing internal and external career skills, interpersonal skills, outbound skills and performance management skills. A list of our scheduled workshops may be found on the CTAPC home page at: <http://www-ctapc.larc.nasa.gov/calendar.htm>. To schedule a tailored workshop for your team or one-on-one counseling sessions, call the center at ext. 45000. The Career Center will discontinue its full range of services at the close of business on Nov. 20. Thank you for allowing us to serve you.

– Career Center Staff

Lockheed Martin ceremony to recognize NASA's advanced technology contributions to the C-130 Hercules Program

LOCATION: Flight Research Hangar, NASA Langley
DATE: Nov. 6, 1998
PROGRAM: The ceremony will take place from 10 to 11 a.m., Building 1244 at Langley. The keynote speaker will be Micky Blackwell, president of Lockheed Martin Aeronautics Sector. Also speaking will be Code R Associate Administrator Gen. Spence Armstrong and Air Combat Command Gen. Hawley. In commemoration of this event, the Lockheed Martin Corp. will have a C-130J open for tours. Special demonstration flights are also planned. All employees and retirees are invited to tour the aircraft, attend the ceremony, and enjoy refreshments in the hangar. See schedule below.
SCHEDULE:

8 to 9:45 a.m.	C-130J aircraft open for tours
10 to 11 a.m.	Ceremony
11 a.m. to 12:30 p.m.	Flight demonstration #1
12:30 to 1:30 p.m.	Flight demonstration #2
2 to 4 p.m.	C-130J aircraft open for tours



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National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 22 ❖ November 13, 1998

Langley Veterans Salute Glenn's Return to Space

BY KATHY BARNSTORFF

The eyes of the world focused on America's space program again during NASA's latest shuttle mission, STS-95.

Langley employees, past and present, also watched closely as Discovery lifted off Oct. 29. Many gathered in the Pearl Young Theater where they were watched and questioned by photographers and reporters from four television stations and three newspapers in Hampton Roads and Richmond.

At least a dozen employees who worked at Langley the first time John Glenn orbited the earth rooted for their former colleague on his historic return to space.

They waited anxiously when a stray aircraft delayed Discovery. Nineteen minutes later the room broke out into cheers and applause as the space shuttle made a picture perfect lift-off. "You couldn't have painted it any better," one exclaimed.

The veterans and others in the theater stayed in their seats until the orbiter was off the screen, its crew of seven, including Glenn and former Langley Experimental Flow Physics branch head Steve Robinson, (*see back page*) safely on the way.

"I was hoping it would keep right on going. I was very apprehensive that something may go wrong and I wanted to get up and yell and lead the group in 'Godspeed, John Glenn,'" commented Jesse Kent. He retired from Langley in 1980 after 39 years.

John Houbolt left Langley twice, in 1963 and 1985. He taught Glenn and the rest of the original Mercury 7 astronauts a short course in celestial navigation. "Some were very jovial, joking all the time. Others were more serious," Houbolt said. "You could tell Glenn had the beginnings of being a senator or political kind of career."

Retirees and employees watched the STS-95 launch in the Pearl Young Theater. Some retirees reminisced about the days of Mercury and working with John Glenn as they saw Discovery's flawless lift-off. Glenn served as a mission specialist during his second trip in space.

Photo by Jeff Caplan

"I was happy to be here, thankful that Glenn's having another chance, proud of him for doing so," added Houbolt about the Discovery launch. "He did a great job. You can't help but have emotions when things like this are going on. You said . . . keep going, keep going – and it did and it worked flawlessly. That attests to the great work the ground crew has been doing during all these flights."

Many agreed it was exciting to see Glenn return to space, but they said his first trip was more nerve-wracking.

"When we sat there watching the Mercury shots it was a lot more emotional because it was a first-time thing. We've seen so many of shuttle shots that it isn't as emotional, but you like to see things work right," said Fred Jones. Jones took photographs at Langley for 38 years until he retired in 1997.

Continued on Page 2

Flying the Mig-29 and SU-27

December Colloquium Features Russian Exchange

Rogers E. Smith, acting director for Flight Operations, Dryden Flight Research Center, Edwards, Calif., will speak about his experiences earlier this year participating in a test pilot exchange program in Russia at the Dec. 1 colloquium, 2 p.m. in the H.J.E. Reid Conference Center.

While visiting Russia Smith flew the Mig-29 and SU-27 aircraft as part of the exchange. He also hosted a Russian pilot at Dryden and will discuss that visit as well. His talk will cover design philosophy, pilot training differences and the performances of the aircraft.

Smith is a co-project pilot on two major aeronautical programs at Dryden, the integrated thrust vectoring, F-15 "ACTIVE" and the SR-71 High-Speed Research programs. He was associated with Langley in 1967 as a research pilot, and has specialized in the areas of advanced flight control systems, stability and control and flying qualities.

Smith has also been a project pilot on the X-31 Enhanced Fighter Maneuverability Demonstrator project and the F-104 aeronautical research aircraft. He was also a project pilot on the X-29 Forward Swept Wing, the Advanced Fighter Technology Integration F-16 (AFTI F-16) and the AFTI F-111 Mission Adaptive Wing research programs.

Currently president of the Society of Experimental Test Pilots and a member of the American Institute of Aeronautics and Astronautics, Smith has authored more than 30 technical papers.

Langley 1st Fed Worksite Named to OSHA's VPP

OSHA NEWS RELEASE

NASA Langley became the first federal government site to join a select group of worksites recognized for excellence in workplace safety and health.

Assistant Secretary of Labor for Occupational Safety and Health Charles N. Jeffress announced that Langley has been approved for membership in the Occupational Safety and Health Administration's Voluntary Protection Program (VPP) Star Program.

"The federal government should lead the way when it comes to occupational safety and health in America. We are proud that the Langley Research Center, with its first-class safety and health program, is helping to do that. We want to recognize other programs like this in the federal sector," said Jeffress.

Langley's safety and health program protects about 2,300 federal workers and 1,100 contract employees against such hazards as high-velocity air in wind tunnels, temperature extremes, radiation, elevated noise levels and high-voltage electricity. The Center has injury and illness rates about 70 percent below that of similar private laboratories.

In evaluating the safety and health program for VPP, an OSHA team found excellence in safety and health management, employee training and involvement and appropriate resources.

Two unions represent Langley employees, the American Federation of Government Employees Local 2755 and International Association of Machinists and Aerospace Workers Local PM 2829.

Private sector participants in VPP have shown that the OSHA program is a smart allocation of resources. Federal worksites approved for VPP will not be targeted for programmed inspection.

VPP
LaRC Going for the STAR!

SBIR Impacts Virginia

BY KATHY BARNSTORFF

Forty-eight new small business proposals have been chosen to support Langley research efforts. They are included in 345 projects selected by NASA's 1998 Small Business Innovation Research (SBIR) Program for Phase 1 contract negotiations. The combined award total is expected to be about $24 million.

Langley proposals support 10 areas with research projects that range from "Low-cost Aircraft Identification and Surveillance System" to "Improved UV Generation in NLO Crystals" to "High Accuracy Fiber-Optic Sensor Model Force Balance System for Wind Tunnels."

SBIR seeks to stimulate technological innovation, increase the use of small business, including women-owned and disadvantaged firms to meet federal research and development needs, and increase private-sector commercialization of the results of research.

The 1998 solicitation closed July 7. NASA received 2,335 proposals from small businesses across the United States. Thirteen Virginia firms submitted 18 winning proposals.

Hampton Roads companies including Tao of Systems Integration, Inc., High Technology Corp. and Analytical Services & Materials, Inc. won six SBIR awards.

Northern Virginia firms submitted five winning proposals. Blacksburg companies had four and Charlottesville firms won three.

NASA's 10 field centers reviewed proposals for technical merit and feasibility and relevance to NASA research and technology requirements. The selected firms will be awarded fixed-price contracts valued up to $70,000 each to perform a six-month Phase 1 feasibility study.

Listings of the companies selected can be accessed on the Internet at URL: <http://sbir.nasa.gov>.

News Briefs

Around the Agency

SOHO NEARLY BACK IN BUSINESS: New high-quality pictures of the Sun, taken earlier this week from the Solar and Heliospheric Observatory (SOHO), have raised hopes that the mission may soon be returned to scientific operations. Engineers have successfully reactivated nine of the 12 instruments on the European Space Agency/NASA SOHO mission, which has been out of commission for nearly four months after contact was lost on June 24. Images from the Michelson Doppler Imager and the Extreme Ultraviolet Imaging Telescope on SOHO are posted on the Internet at:< http://sohowww.nascom.nasa.gov>.Information on the recovery of SOHO can be found at: <http://sohowww.nascom.nasa.gov/operations/Recovery//operations/Recovery/>.

JUPITER'S MOON MAY HIDE SALTY OCEAN: Jupiter's second largest moon, Callisto, may have a liquid ocean tucked under its icy, cratered crust, according to scientists studying data gathered by NASA's Galileo spacecraft. The Galileo findings reveal similarities between Callisto and another of Jupiter's moons, Europa, which has already displayed strong evidence of a subsurface ocean. Galileo flies by Callisto four more times between May and September of 1999, which may yield more clues about the possibility of a Callisto ocean. The latest Galileo exterior images of Callisto, released on Oct. 13, and a new artist's concept of a cutaway view of the moon's interior are available on the Internet at the Galileo website: <http://www.jpl.nasa.gov/galileo>.

FIRST ISS MODULE MOVES TO LAUNCH PAD: The International Space Station today moved to the doorstep of space as the first U.S.-built station component, the Unity connecting module, was moved to the launch pad to be loaded onto the Space Shuttle Endeavour. Endeavour, scheduled for launch on Dec. 3 with an international six-person crew, will carry Unity to a rendezvous and attachment with the Zarya control module. More information on the space station is available at <http://station.nasa.gov/>.

NASA HELPS "HOT" CITIES COOL DOWN: Environmental planning for the 2002 Olympic games, strategies to reduce ozone levels, focused tree-planting programs and identification of cool roofs are early spinoffs from a NASA urban study just concluding in three U.S. cities. Researchers from NASA's Marshall Space Flight Center, Huntsville, Ala., flew a thermal camera mounted on a NASA aircraft over Baton Rouge, La.; Sacramento, Calif.; and Salt Lake City, Utah. The thermal camera took each city's temperature and produced an image that pinpoints the cities' "hot spots." Salt Lake City is using the early results to help plan sites for the 2002 Olympic Games. Images related to the study can be found at: <http://www.nasa.gov/newsinfo/urban.html>. More information on the study and research updates can be found on the new Marshall Internet Web site at URL: <http://www.msfc.nasa.gov/news >.

For more information on the above news items, check the Internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

"Toys For Tots" Drive Begins Soon

BY SANDRA LEMONS

The Marine Corps Toys for Tots Campaign is off to an early start this year! The local Marine Corps Reserve Center, located at 75th Street and Warwick Boulevard, Newport News, stands ready to deliver "Toys for Tots" Toy Barrels to local civic clubs or organizations.

This is the 51st year of the Toys for Tots Program. Last year, 3,500 needy children in this area received a toy or gift thanks to this program and the generous donations by citizens of the community. The Marine Corps Toys for Tots Campaign believes that "Every child deserves a little Christmas." Help the children of this area, ages one to 14, know that you care by donating a new unwrapped toy this year. Toy water guns, liquids or food items cannot be accepted.

Call the command if your organization or civic group would like to receive Toys for Tots posters and a barrel for toy donations. A drop-off date/time and pick-up date/time will be scheduled at your convenience. The 1998 Toys for Tots Coordinator at the Marine Corps Reserve Center is Staff Sergeant Orr, 757-247-6641 ext. 233.

Mammography Screening to Be Offered

The Office of Occupational Health Services announces the scheduling of mammography screening. This on-site service is open to all Langley employees, contractors, retirees and family.

The Riverside Mobile Mammography van will be in the parking area between the health clinic and cafeteria Dec. 8, 9, 10, 16 and 17; Jan. 5, 12, 14 and 26 and Feb. 25. Cost is $75 and payment may be made by cash, check or Visa/MasterCard. Make an appointment during working hours by calling Riverside Diagnostic Center at 594-3900. Tell them that you are with NASA.

Most health benefit plans will only cover one mammogram per year, so it is important for you to verify your plan's particular coverage and requirements, and then schedule a mammogram accordingly. Services provided include: breast self-exam training, mammographic exam, interpretation by a board-certified radiologist and individual reports to patient and primary physician. The process will take about 15 minutes onboard the van.

At the time of your scheduled mammogram, bring the following information: doctor's name, address and telephone number, and health card to file for health benefits. If pre-certification is required from a physician, have that documentation available. Civil service employees may charge the time for the screening to Job Order B1008. For any questions, call Alice Eley at ext. 43191 or Karen Ridlon at ext. 43194.

IN MEMORIAM

Percy J. Crain

Percy J. Crain, 85, died Sunday, Oct. 25. Crain graduated from Georgia Institute of Technology and began working at NACA in 1939. He served as chief of the mechanical service division and of engineering and technical services. He became director of systems engineering and operations in 1970. He developed the Langley apprentice program, and retired in 1972.

Carter N. Catlett

Carter Nelson Catlett, 81, died Monday, Oct. 26. He graduated from the Virginia Military Institute, and served with the 2nd Cavalry, U.S. Army, in World War II. He worked for NASA for 38 years and retired in 1984.

Louise Privette

Louise Privette died Saturday, Oct. 31. She worked at NACA from 1945-49.

OHR News

Employee Benefits Happenings

• Federal Employees Retirement System (FERS) Open Season – Allows Civil Service Retirement System (CSRS) employees to transfer to FERS. Open season began July 1, and closes Dec. 31, 1998.

• Thrift Savings Plan (TSP) Open Season — Allows eligible employees to begin participation in, and change amount and/or allocation of contributions among the three investment funds. Open season runs from Nov. 15, 1998, until Jan. 31, 1999.

• Federal Employees Health Benefits (FEHB) Open Season — Allows eligible employees to enroll, change from one plan or option to another, change from self only to self and family, or any combination of these changes. Open season opened Nov. 9, and runs until Dec. 14, 1998. Elections become effective Jan 3, 1999.

• FEHB Health Fair — An informal Health Fair, where employees can talk to representatives of various health plans to assess which plan would best meet their needs, will be Thursday, Nov. 19, at the H.J.E. Reid Conference Center from 1 to 4 p.m.

For questions or more information on these topics, contact Linda Park at ext. 42605, or e-mail <l.h.park@larc.nasa.gov>.

Leave Scheduling and Necessary Approvals

BY OFFICE OF HUMAN RESOURCES

The current leave year ends January 2, 1999. 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 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 approved urgent 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 Nov. 21, 1998. 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 deny leave. Such occurrences should be rare events having significant program cost or schedule impact or involving safety issues. Approval must be obtained prior to canceling or denying leave in the "use-or-lose" category. Use-or-lose annual leave may be denied or canceled only if the Office of the Director determines that an urgent work situation exists. Requests for Director's approval should be routed through appropriate organizational channels to OHR, 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.

Glenn . . .

Continued from Page 1

Former NASA associate administrator Ed Kilgore was head of the Flight Vehicle Systems Division during the Mercury years. He weighed in with the last word on the public debate over Glenn's mission. "It got to be, in the press, an argument between politics and science. That wasn't a relevant argument at all. The thing that NASA needed to prove was that anybody can go into space, even people as old as I am . . . That's what we've proven. The argument between politics and science – totally irrelevant."

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 <a.c.gaudreaux@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.

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.

Researcher News Pullout Guide

Information Super Highway

The information age flourishes at NASA Langley with its four electronic imaging systems.

Langley Image Scanning, Archival and Retrieval (LISAR), NASA Image eXchange (NIX), NASA GALAXIE and Langley's Animation and Video Archive (LAVA) open worlds of visual information to any Langley employee with a computer and a need or curiosity to see what's out there – within this Center's image archives as well as those throughout all of NASA.

The *Researcher News* presents this user's guide to these four resources as a passage to the cutting-edge worlds of electronic imaging.

LISAR archives hundreds of images

Langley's research finds greater accessibility on line

BY MARY SPRACHER

The Langley Image Scanning, Archival and Retrieval (LISAR) system allows NASA personnel and the general public to access a growing repository of images.

The most advanced on-line NASA image repository at its creation in 1995, LISAR has since been emulated by other centers, some of which have benefited from the direct transfer of LISAR technology and software.

Langley's system has undergone a transformation to take advantage of the latest technological advances, said Langley computer engineer Bill von Ofenheim.

LISAR, located on the Internet at ***http://lisar.larc.nasa.gov***, offers a bank of images, dating back to NACA's first wind tunnel in 1920, as well as accompanying textual information.

"LISAR provides a window to the world on Langley's leading edge research and technology, further promoting and enhancing Langley's relevance," von Ofenheim said.

User options

Upon accessing LISAR's homepage, users have the option of browsing the system's library of digital images, searching the library, adding an image to the library, reviewing frequently asked questions, submitting comments or questions and viewing copyright information.

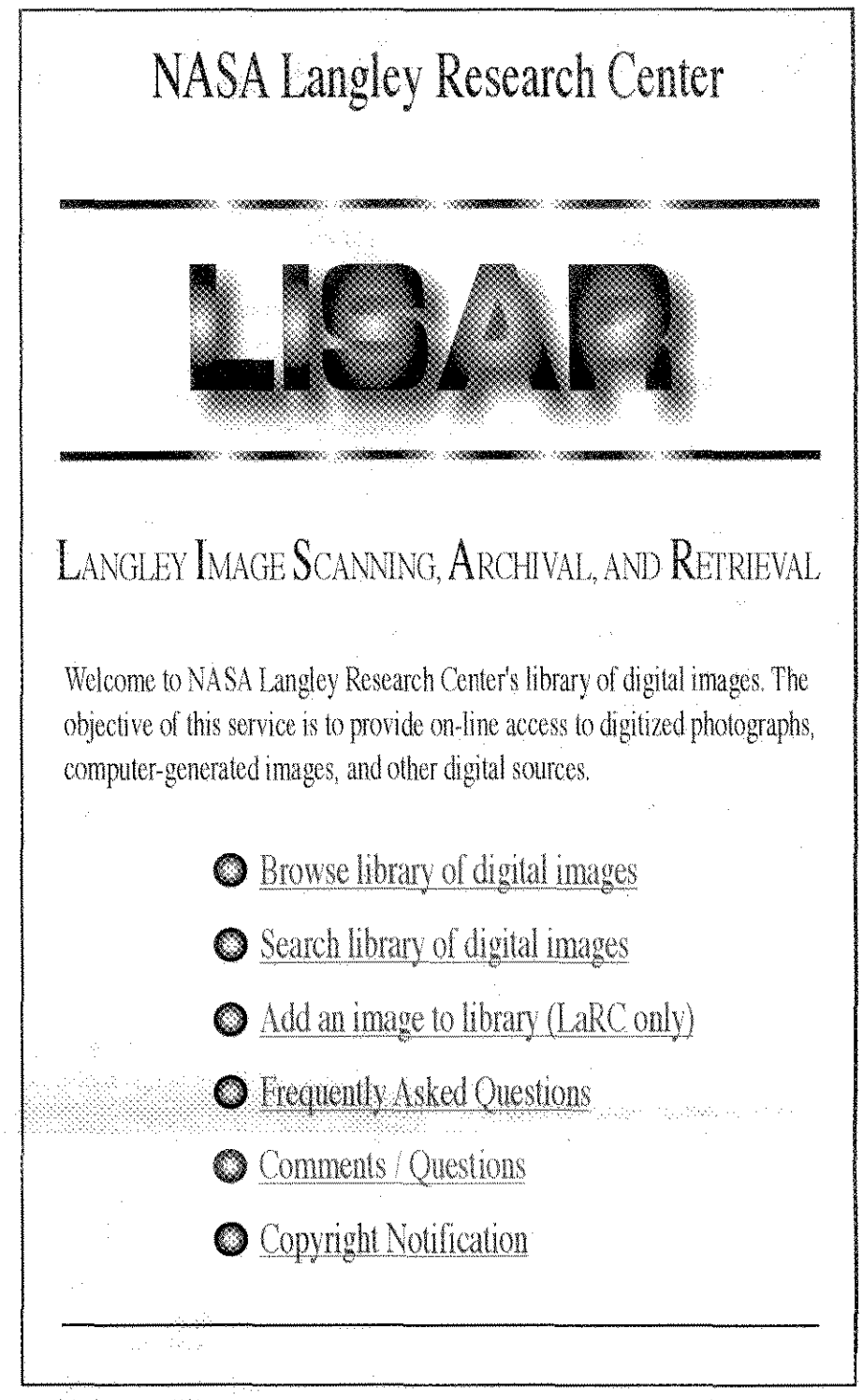
The browse option allows LISAR users to choose from pre-selected areas of interest such as aircraft, facilities or new images. The user selects an area of interest, and then a collection of featured images representing that area appears. These images are provided in small "thumbnail" resolutions in order to allow for quick previewing and fast downloading. Users may choose to view images in larger formats when necessary.

LISAR's search option lets users conduct either a simple or a complex search of the system. For a simple search, the user need only provide basic search criteria. For a complex search, the user provides more specific criteria, including any combination of image title, description, key words, image number or dates.

The images provided through browsing and searching in LISAR are accompanied by a title and an image number. Users may choose to view more information including dates, descriptions, related key words, source information and points of contact.

For Langley users only

Two LISAR features – printing and adding images – are available only to users with Langley e-mail accounts in the "larc.nasa.gov" domain. After viewing an image, Langley users may choose to print it. To print an image found in LISAR, the system user will need to enter his e-mail account, specify the number of copies needed, provide delivery instructions and choose a print format – either 8 x 10 print, 8 x 10 viewgraph, 4 x 5 negative or 35mm slide. While LISAR does not have poster printing capabilities, it does provide thorough information about area stores where posters can be printed.



LISAR users will see the above home page when they enter the image archives system.

Langley personnel may also add images to the LISAR repository. The system advises, "if you would normally request an 'L' number for your image, then it is a good candidate for inclusion in LISAR." Users wishing to add an image must complete a multi-part form including e-mail account, information about the point of contact for the image, image source, creation date, descriptions, title and key words. After this form is filled in and sent, the user will be advised electronically on how to complete the electronic submission process.

How to use LISAR

- Go to ***http://lisar.larc.nasa.gov*** on the internet.
- To browse, click on "browse library of digital images," then choose one of the pre-selected areas of interest.
- To conduct a simple search, click on "search library of digital images," then type in a key word related to the images for which you are searching.
- To conduct a complex search, click on "search library of digital images," then enter any combination of image title, description, key words, image numbers and/or dates.
- For more information, contact Bill von Ofenheim at w.h.c.vonofenheim@larc.nasa.gov or at ext. 46712.

http://lisar.larc.nasa.gov

NIX provides images from other centers

Database links agency resource inside, outside NASA centers

BY MARY SPRACHER

The NASA Image Exchange (NIX) is a new on-line collection of NASA digital images and animation which allows both NASA personnel and the public to simultaneously search NASA's multiple photographic databases at the Agency's various centers.

Led by the Scientific and Technical Information Program Office at Langley (the Lead Center for NASA's STI program), NIX was made possible through a voluntary association consisting of personnel from STI, public affairs offices, the World Wide Web, photographic services, graphic services and libraries from all 10 NASA centers.

NIX provides an umbrella over existing digital image databases at the centers, said Lynn Heimerl of Langley's STI Program Office. After the addition of 360,000 images from Johnson Space Center and 200 images from the John C. Stennis Space Center, NIX now searches databases of more than 450,000 NASA images.

The 10 NASA centers whose image repositories are already directly connected to the system include Langley, Lewis and Ames Research Centers, Dryden Flight Research Center, Goddard Space Flight Center, Johnson Space Center, Stennis Space Center, Kennedy Space Center, Marshall Space Flight Center and the Jet Propulsion Laboratory, Heimerl said.

User options

Upon accessing the NIX home page at ***http://nix.nasa.gov***, users may choose to browse the image databases, enter specific search criteria, write their own comments, or review system options, copyright information or frequently asked questions.

To browse, users must choose a general category, such as a certain research area. After an area is chosen, the system displays a collection of thumbnail images pertaining to that field. Each image is accompanied by a title, an image number, general information and the NASA center from which it came. Users may click on a thumbnail image to view a larger version or may follow direct links to the NASA center photo galleries that provided each image.

NIX users conducting more specific searches can enter key words and the system will then find related images. Such a search enables the user to further narrow the field of images to be chosen from, while browsing provides a wider, more general selection of images.

System options allow the user to designate which centers' databases NIX should search and to limit the number of hits per center, images displayed per page and number of pages to be displayed. Users may also determine an allowable response time, thereby including slow centers in the search, or may choose to view text only.

Under the FAQ (frequently asked questions) heading on the NIX home page, users can find a complete listing of NASA centers and their areas of specialization. This information further allows for accurate and efficient searches. The FAQ screen also lists points of contact for each of the centers so questions or problems with their respective images may be addressed directly to them.

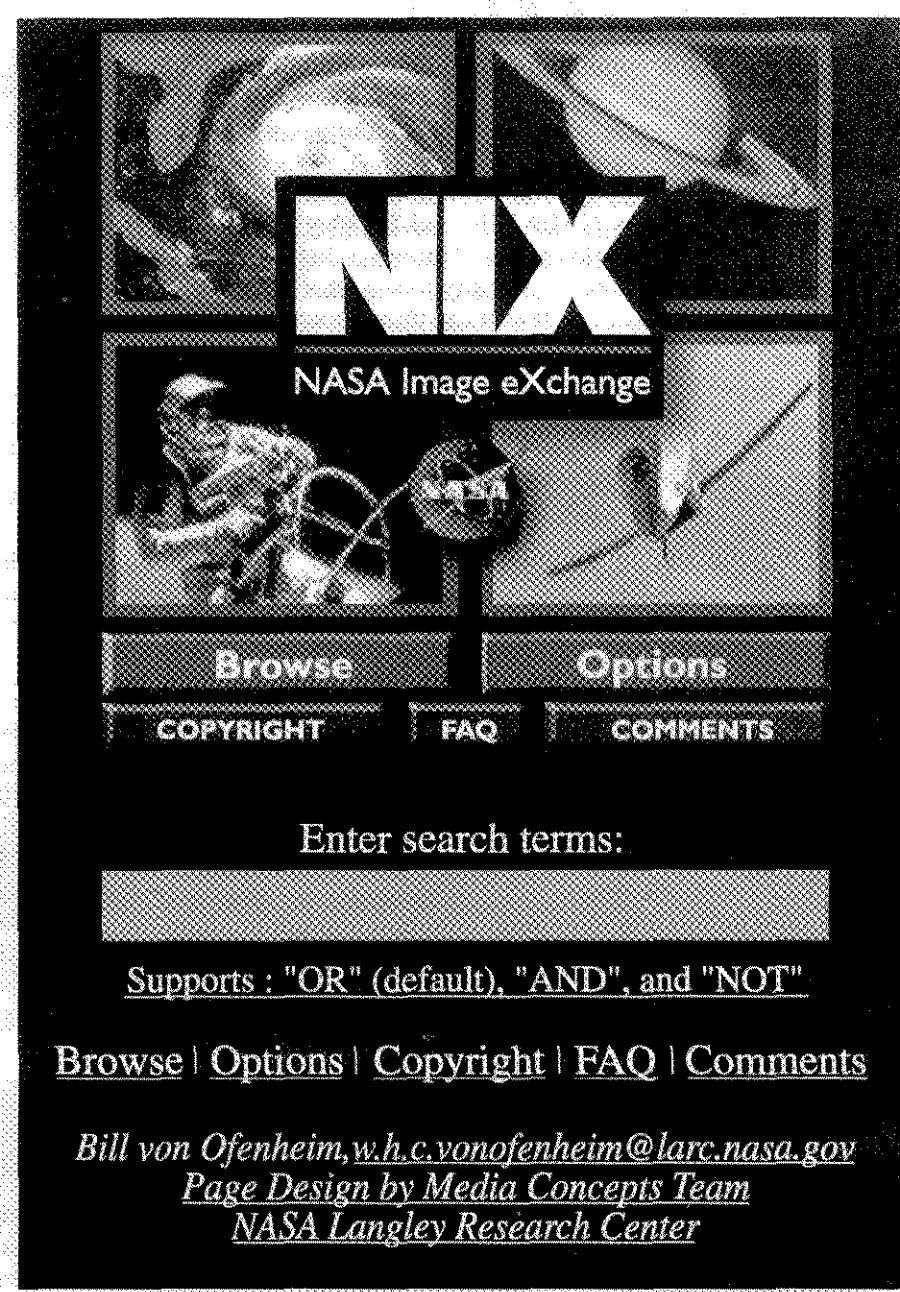
Customer service desk

NIX has established a customer service desk to assist customers, Heimerl said. The e-mail address for the Lead Center Information Desk at Langley is sti+leadcid@larc.nasa.gov. This information desk handles requests for information about NIX either directly or by referring customers to the respective center. Requests for prints of NIX images are referred to the respective center's NIX contact or the appropriate public affairs office.

A 'cool pick'

NIX has been listed in NASA Spacelink's "Cool Picks" at ***http://spacelink.nasa.gov/Spacelink.Cool.Picks/.index.html.***

"NIX has become a very active site," said Bill von Ofenheim, technical lead for NIX. "Customer comments have included, 'NIX is wonderful. NASA hits one out of the park with this site!' and 'I think that this Web site is fabulous. Keep up the good work with my tax dollars.'"



NASA Image eXchange users will see this home page when they enter the system.

NASA centers linked directly to NIX:

- ▲ Ames Research Center
- ▲ Dryden Flight Research Center
- ▲ Goddard Space Flight Center
- ▲ Jet Propulsion Laboratory
- ▲ Johnson Space Center
- ▲ Kennedy Space Center
- ▲ Langley Research Center
- ▲ Lewis Research Center
- ▲ Marshall Space Flight Center
- ▲ Stennis Space Center

How to use NIX

▲ Go to ***http://nix.nasa.gov*** on the Internet.

▲ To browse, click on "browse," then choose one of the general categories.

▲ To conduct a search, enter key words related to the images you are searching for in the test box under "enter search terms."

▲ For more information, contact the NIX customer service desk at sti+leadcid@larc.nasa.gov.

http://nix.nasa.gov

GALAXIE contains worlds of photos

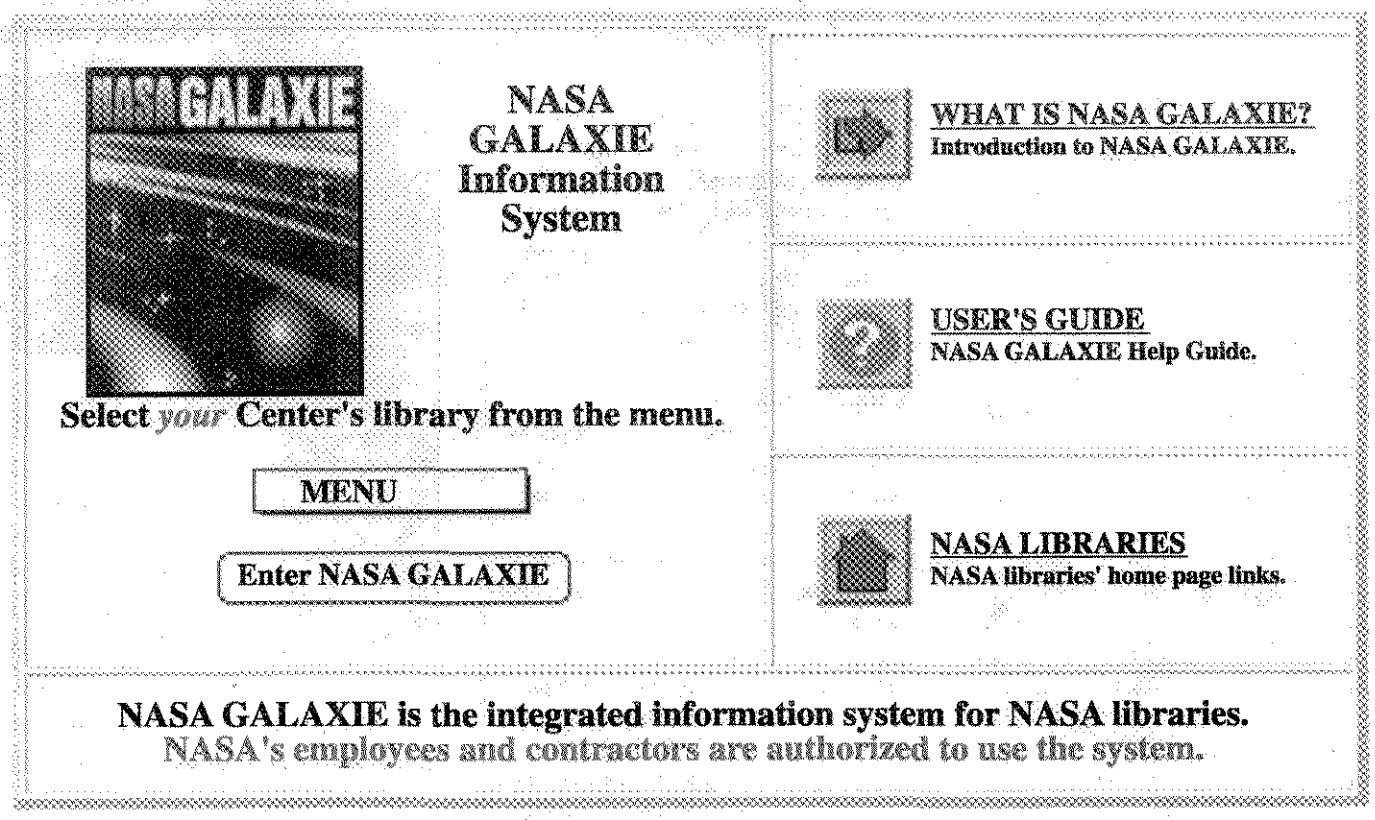
Langley images available NASA-wide

The Technical Library catalog known as NASA GALAXIE accesses about 40,000 records from 1980 to the present, plus some earlier records, for archived images at Langley. More than 1,000 of the photo archive records contain displayed digital images.

NASA GALAXIE is available to employees and contractors at all of the Agency's centers, but is not accessible to the general public. To support research efforts at NASA, the photo archive records indexed images in both LISAR and NASA GALAXIE and provides access to more than 500,000 negatives for NASA and public use.

NASA's conversion to GALAXIE from the previous 4th Dimension system was completed in early spring 1996.

The system is most useful to NASA personnel searching for images of tests, events, buildings and people at NASA, or for images of NASA-supported projects, said Cheryl Zebrowski, head, Library Technical Services. It primarily supports research for NASA Langley, and it's the most thorough system for searching for images that were created from 1980 to the present.

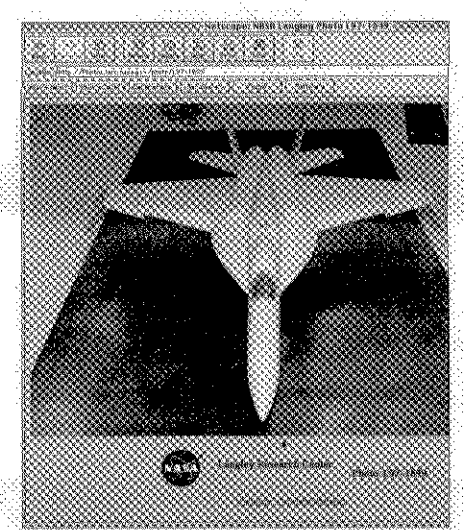


This is the NASA GALAXIE home page that users will see when they enter the system.

Print/capture function

NASA GALAXIE also features a print/capture function, used to download and print screens of information. The user can check the boxes next to the numbered list, as instructed on the screen, to capture the records desired.

The direct print feature does not work outside of the library, but downloading sends recorded information to the screen or to a disk, from where it can be printed. The feature also allows users to send records to themselves via e-mail, said Zebrowski.



This screen represents an image found in the list returned from a sample GALAXIE search for F-18 models.

Easy access

"GALAXIE supports complex searches and gives a rapid response," she said. "It is a very effective system for finding images to support research projects here at Langley, and is easily available to all of our users."

In addition, the Technical Library on Center frequently offers GALAXIE courses for those who would like to gain expertise in using the system.

"We also offer reference services to support more complex requests and searches for historic material which may not be entered into GALAXIE yet," added Zebrowski.

"We want to work with all of our users here at Langley to make this the best system possible," she said. "If anyone has suggestions about the system or photos they would like to add to the photo archive, they are more than welcome to contact us."

For assistance with searches or for more information, call Zebrowski at ext. 49554, Alicia Tarrant at ext. 47963 or the Technical Library reference desk at ext. 42356.

Search tips for using GALAXIE

◆ **L numbers** – *Do not* use leading zeros in a number, e.g., use L97-23, not L97-023. If a search for the exact number does not find a record, try a search with the last digit replaced with a $, e.g., L96-353$. This search finds the group of records containing that number, e.g., L96-3537 through L96-3540.

◆ **Word** – Use model name, test name, project name, researchers' names or words describing the subject of the image. For complex searches, use "and," "or" or "not" between words, e.g., "aircraft not model." For portraits, type last name followed by "and portrait," e.g., "Johnson and portrait."

◆ **Image** – All photos archived since May 1996, except for portraits and awards photos, have at least one digitized image per record. Many other records also have digitized images attached. To see records with images, type "and URL" after your search terms, e.g., "L97 and URL."

◆ **View** – When a list of photo records is retrieved, click the "view" button to see the record. Records with digitized images have a URL at the bottom of the record. Click on the URL to bring up a screen-sized version of the image.

How to use GALAXIE

◆ Go to ***http://nasagalaxie.larc.nasa.gov*** on the internet. Go to MENU, select Langley and click on "Enter NASA GALAXIE."

◆ In the Access Choices screen, click on the "Photo Archive" button to search only the photo archives.

◆ Use the "Word or Phrase" search to locate words or numbers anywhere in the record.

http://nasagalaxie.larc.nasa.gov

LAVA erupts with archived animation, videos

Moving images flow on line at Langley

BY MARY SPRACHER

Langley is in the process of initiating another electronic image archival system. However, Langley's Animation and Video Archive (LAVA) will provide computer-generated animations and digitized videos, not photographs.

While Langley computer engineer Bill von Ofenheim has been considering creating such an archive since he began work on the Langley Image Scanning, Archival and Retrieval System (LISAR) in 1994, it has only been within the past year that work on LAVA has truly gotten underway.

Located on the internet at ***http://lava.larc.nasa.gov/***, LAVA provides QuickTime animations and videos.

"LAVA will provide worldwide access to dynamic imagery and audio created at Langley as a compliment to the static images available from LISAR," von Ofenheim said. "The only access previously available was a brief textual listing which could not convey the same information available in an actual clip from a video, film or animation."

Close cousins

Created with the same developer as LISAR, LAVA is similar in format to the photographic archive. Upon accessing the LAVA site, users may choose to browse, search, add an animation, submit comments or questions or view frequently asked questions and copyright information. Users can also follow links from the site directly to Langley's home page or to the NASA Image eXchange (NIX).

Much like in LISAR, the LAVA browsing function allows users to choose from selective areas of interest, and the search function lets users conduct either simple or complex searches of the archive.

For simple searches, users need only enter a key word, while for complex searches, they may enter any combination of title, description, key words, LAVA number, video/log number or dates.

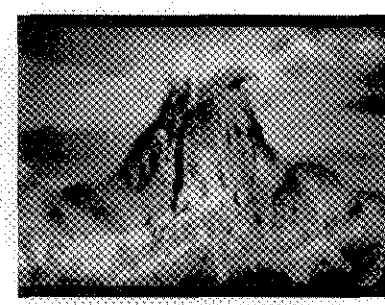
Browse and search results provide basic information, and a thumbnail image which, when clicked on, allows the user to view a QuickTime clip.

Langley capabilities

LAVA users with Langley e-mail accounts also have the ability to add an animation to the archive. To do so, users must fill in a multi-part form about your submission, including information such as contact information, source information, the date the clip was created and a description.

"LAVA consists of QuickTime clips in multiple resolutions," said von Ofenheim, "to provide decent response times on everything from slow modem connections on up."

NASA Langley Research Center



Langley Animation & Video Archive

Welcome to NASA Langley Research Center's (LaRC) archive of computer generated animations and digitized videos.

- Browse
- Search
- Add Animation (LaRC only)
- Frequently Asked Questions
- Comments / Questions
- Copyright Notification

This is what users will see when they enter the LAVA home page.

How to use LAVA

▲ Go to ***http://lava.larc.nasa.gov*** on the internet.

▲ Select "Browse."

▲ Select "New LAVA Animations."

▲ Click on thumbnail image to view small QuickTime, or select a higher resolution to view.

http://lava.larc.nasa.gov

Electronic Photography Laboratory provides images to LISAR, GALAXIE

BY MARY SPRACHER

Langley's Electronic Photography Laboratory (EPL) was established to meet the growing need of the center's personnel to acquire, retain and disseminate research images in electronic form, and to accelerate the transition to digital photography at the Center.

The EPL provides state-of-the-art digitization of photographic positives and negatives, and electronically processes digital images produced by scanning, digital camera or computer. Electronic images from the EPL are the major source of images for NASA GALAXIE and the Langley Image Scanning, Archival and Retrieval System (LISAR).

The EPL, part of the Data Analysis and Imaging Branch, Information Systems and Services Division, is in the photo lab, building 1155. EPL personnel work closely with the photography staff and Langley's photo archivist, Alicia Tarrant.

Photo by Jeff Caplan

Rick Hoff, photographic technologist

EPL services include film scanning, processing electronic images by optimizing tone and color correction, enhancing visual data, extracting visual data, creating and retaining standardized master image files, transferring images to LISAR and NASA GALAXIE, processing files for prints and working with special application requirements.

Digital pictures are processed from raw files, just as conventional pictures are processed from negatives, according to Rick Hoff, photo technologist. However, digital image processing allows far greater control of the tone reproduction process than does conventional processing. Better separation of densities can be achieved when making black-and-white pictures from color originals depicting different color objects with the same overall degree of darkness. Also, digital pictures use no chemistry to process and can be transmitted over the internet and telephone lines.

Langley photographs placed in the Langley Photo Archive are assigned an "L-number" and entered into the Photo Archive database. When an electronic image is requested from an L-numbered negative, the EPL scans the negative at a high resolution, processes the scanned image and creates a master file. This file is placed in the LISAR database from which it can be accessed through NASA GALAXIE (for viewing only), the LISAR Web interface, and the NASA Image eXchange (NIX).

The EPL creates a screen resolution scan of a representative print from each L-numbered job which is transferred to NASA GALAXIE. Customers may request that the EPL scan and process older negatives from the Photo Archive. Since all negatives are publicly accessible outside the NASA community, the requester must sign a release form. New negatives have a release signed at the time they enter the collection.

For more information, call Rick Hoff at ext. 49207 or 43524.

Langley Wins Employer/Employee of the Year

BY MEGHAN WOODCOCK

Langley recently received two awards from the Hampton Mayor's Committee for People with Disabilities. In an awards ceremony held at the Holiday Inn in Hampton Oct. 30, Sammie Joplin, director, Internal Operations Group (IOG), received the "Stephen T. Capo Employer of the Year" award on behalf of the IOG. Lawrence B. "Larry" Cooper, Nondestructive Evaluation Branch, received the "Employee of the Year" award.

The purpose of the Employer of the Year award is to honor the business that has done the most to enhance the employment of people with disabilities within the past year. The IOG was nominated for its support and employment of the largest number of individuals with disabilities of the five Groups on the Center, and for upholding the Center's standing as the premiere Center throughout NASA for hiring the largest number of individuals with targeted disabilities.

The IOG's support comes from all levels of management. There have been two senior managers who have served as chairperson of the Disability Program Advisory Committee, and at least five middle-level supervisors who continue to support their disabled employees by participating in and attending programs sponsored for employees who are disabled.

The "Employee of the Year" award was created to recognize an employee with a disability who within the past year has displayed exemplary skills, leadership, initiative and courage necessary to help advance opportunities for all people with disabilities.

Sammie Joplin accepted the Employer of the Year award on behalf of the Internal Operations Group.

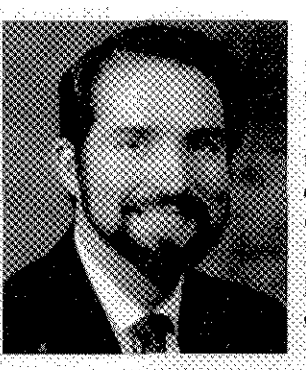
Photos by Jeff Caplan

Larry Cooper received the Employee of the Year award from the Hampton Mayor's Committee.

Cooper was nominated for performance above and beyond the norm in support of the disabled. He has served on the Langley Research Center Satellite Committee for People with Disabilities (SCPD) and the Disability Program Advisory Committee (DPAC) for the past 15 years. He advised in the modification of buildings that house employees who are disabled. Cooper has also mentored high school and college students and frequently speaks to school groups about NASA's mission. Cooper is known for dedicating numerous hours (frequently after-duty hours) to disability-awareness programs.

Langley Over The Top for CFC Goal

MARK J. SHUART, LANGLEY'S 1998 CFC CHAIRPERSON



Congratulations to all the participants in this year's Combined Federal Campaign! The time, efforts and generous contributions of the LaRC Team have resulted in our exceeding this year's campaign goal of $288,000. I would especially like to thank the members of the CFC Steering Committee and everyone that helped with the electronic pledging for all their hard work to realize our goal. I have truly enjoyed working with all of you.

We can be especially proud of our accomplishment. We had a focus this year of reaching the campaign goal in a short period of time. Because of your support, we achieved more than 96 percent of the campaign goal within the first two weeks of the campaign and reached the campaign goal in two weeks plus two days. This is a new standard for LaRC and clearly indicates that reaching the campaign goal in a two-week period is achievable. Also, electronic pledging is a standard for us. This year, we have made terrific strides in improving this capability and have set an example for federal agencies across the country. As evidenced by the outside contacts, the interest in LaRC's electronic pledging approach is growing each day!

Finally, it has been a privilege for me to chair the Center's campaign this year. Thank you and well done!

The CFC status is:
Goal: $288,000
Amount Pledged: $311,865.76
Overall % Participation: 61.02%
Percent of Total Goal: 108.29%
Average Contribution: $219.93

Photo by Jeff Caplan

The 1998 CFC committee, left to right, Carissa Smith, Pam Verniel, Susie Henriksen, Karen Credeur, Bill Smith, Earl Reese, Richard Bennett and Mark Shuart thank employees for their contributions.

Meet Langley's New Conference Manager

BY PAM VERNIEL

The four main conference facilities at Langley are under new management. Science and Technology Corporation (STC) has hired Andrea Carden to schedule the H.J.E. Reid Conference Center, the Pearl Young Theater, the Executive Conference Center and Room 200 in the 7 X 10 Facility.

Carden began her job as the new conference manager Oct. 1. She has a bachelor of arts degree in recreation, hospitality and tourism management from Christopher Newport University. Carden has worked locally in the hospitality industry since 1989, where she served as a restaurant manager at Kingsmill Resort and for Colonial Williamsburg. At Colonial Williamsburg she also served as night manager and achieved her goal of joining the Conference Services Department at the Williamsburg Inn and Lodge. After leaving the lodge, she worked as a sales consultant for a wine distributor.

"Although I enjoyed that job," Carden said, "I knew I wanted to return to planning conferences. That is what has brought me to Langley." Asked why she enjoys conference planning, she replied, "I like working with people and find the job rewarding and continuously challenging."

Call Carden at ext. 46362 in the H.J.E. Reid Conference Center to hold a meeting, conference, social, luncheon or dinner. She can also reserve a block of rooms at local hotels for conference groups. The four on-site facilities that Carden reserves have a total of 13 rooms. An alternative to make reservations is to go to Lantern via the Langley internet homepage. Once at Lantern, it is easy to click on scheduling and reserving conference rooms, and selecting a building. This web site shows the location, floor plan and capacity of each room, services and technical support available.

Carden

In 1998, 1,014 events were attended by 59,446 people.

The Office of Public Services and STC are responsible for the Center's conference contract management for on- and off-Center meetings and conferences. STC can provide administrative assistance for a variety of meeting needs through the issuance of a purchase request. Contact Carden to discuss what requirements you have and she will explain how she can assist you and what can be provided under contract if needed. "I am excited to be here and look forward to working with everyone," she said.

Netherlands Aerospace Delegation Tours Langley

Photo by Peggy Hopkins

Center Director Dr. Jeremiah F. Creedon, far right, hosted a delegation from the Netherlands on Oct. 21. Represented were the Netherlands Director General of Industry and Technology, Netherlands Agency for Aerospace Programs, Fokker Space, Netherlands Aerospace Laboratory, Netherlands Embassy, TNO National Laboratories and Ministry of Economic Affairs. The group, shown above in the 31-inch Mach 10 Tunnel, included Langley's Ron Merski, Scott Holland and Tom Horvath.

AdVentures

FOR SALE: Nearly new Baldwin Overture Spinnett Organ. New—$2,400; asking $700 or best reasonable offer. Call 898-8463 after 6 p.m.

FOR SALE: Acura '92 Integra RS, AC, 88,000 mi., new tires & brakes, $7,900 neg. Call 766-3474.

NASA BASKETBALL: The 1999 NASA Basketball Association season begins soon. Preseason practice starts in December, regular season games in January. Games are played Monday through Thursday evenings and Saturday afternoons. To register a team or for information see the web site at <http://larc-exchange.larc.nasa.gov/laa/bball/>, or Dana Gould, ext. 47747, d.e.gould@larc.nasa.gov>.

FOR SALE: Grafton, 207 Riverside Dr., exc. condition, 1,500 sq. ft., 3BR, 2-1/2 baths, FR/gas fpl, DR, breakfast nook, custom oak cabinets, new windows, many extras, 2-car garage, gas heat and hot water, 12'x 20' shed, private backyard, $136,000, by owner. Call 898-1814.

VOLUNTEERS SOUGHT: Volunteers are needed to help in the restoration of the NASA XV-6A "Kestrel," the predecessor to the Harrier, specifically sanding and repainting. The aircraft is at Hampton's Air Power Park, located at the intersection of LaSalle Avenue and Mercury Boulevard. For more information call MSgt. Etley Jenkins at 764-3065.

Roll Up Your Sleeves!

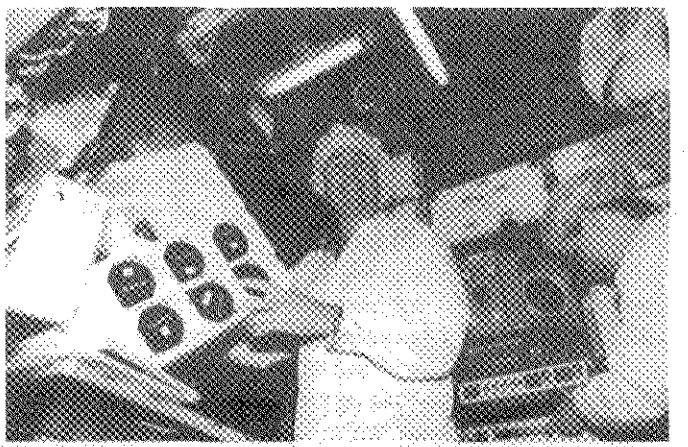
The next Blood Drive at Langley is scheduled for Wednesday, Nov. 25 from 9 a.m. to 3 p.m. in the H.J.E. Reid Conference Center. All NASA employees, retirees and contractors are asked to join in boosting the area's blood supply in preparation for the holiday season. Donors are entitled to a ticket in the turkey raffle. Civil service employees may charge their time to Job Order B-I004. Express your thanks by donating some life-saving blood to others.

WRL NEWS: Guitarist Charlie Byrd is at the Williamsburg Library Theatre Friday and Saturday, Nov. 13&14 for two 8 p.m. concerts. He'll be joined by percussionist Jae Sinnett and bassist Jimmy Masters. Tickets are $15 for adults, $10 under 16, and may be purchased at the library at 515 Scotland Street or reserved by calling (757) 259-4070. Tickets are also sold at The Coffeehouse in the Williamsburg Crossing Shopping Center. Byrd is recognized as a music legend throughout the world. More information on this concert and other library programs is on the internet at <http://www.wrl.org>.

MEMBERSHIP NIGHT: The Bayside Enlisted Club at Langley Air Force Base will have a Membership Night dinner Nov. 18, 6 to 9 p.m. Members are free; guests $10.95. For more information, call 766-1220 or 764-3550.

CHESAPEAKE BAY RAILROADERS holds a 25th year celebration open house and flea market Nov. 21-22. For information, call 898-0717.

INCOSE MTG.: The Hampton Roads Chapter of the International Council on Systems Engineering (INCOSE) will meet Nov. 19, 6 to 8 p.m., in the H.J.E. Reid Conference Center. Speaker Dr. Robert A. Warren, technical director for Expertise, Inc., will talk about "System Engineering and its implication for the Expert Witness." He is an accident reconstruction expert with extensive test, deposition and trial experience. He consults on marine engineering and pleasure boat accidents, design and acquisition of complex systems and science, technology and systems engineering management. A social in the Langley Activities Center lounge begins at 6 p.m. Warren will speak at 6:30. Attendance is open to everyone. For information about Warren's talk, visit <http://seva.net/~incose/meeting-98-11-19/warren-bio-001a.html>. For INCOSE information, go to <http://www.seva.net/~incose/, e-mail Al Motley <a.e.motley@larc.nasa.gov> or Dan Fontaine fontaine_dr@nns.com>.



Former Langley employee Stephen K. Robinson, Ph.D., checks out a container inside the SPACEHAB at the Payload Processing Facility. Robinson was a mission specialist aboard STS-95 which included research payloads such as the Spartan solar-observing deployable spacecraft and Hubble Space Telescope Orbital Systems Test Platform as well as the SPACEHAB module with experiments on spaceflight and the aging process.

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New Researcher

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MAIL STOP 146

Center Snapshots

Photo by Jeff Caplan

Cindy Williamson started working at Langley 14 months ago after leaving her job as a U.S. Navy contractor. She grew up in Marrietta, Ga., and received a bachelor of science degree from Georgia Institute of Technology and a doctorate from the University of Alabama, both in analytical chemistry.

Currently a civil service employee in the Atmospheric Sciences Division, she is working with SAGE III. Specifically, Williamson is working on lunar occultation techniques, water vapor spectroscopy and reducing signal-induced noise in photomultiplier tubes.

* * * * * *

"What do I like most about working at Langley? The interesting, significant and diverse research projects."
— Cindy Williamson

Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 12 ❖ Issue 23 ❖ November 27, 1998

NASA and Industry — Partners in C-130 Technology

Lockheed Martin C-130 Langley visit a symbolic 'thanks' to NASA

From the first design of the C-130 in the early 1950s, research and advanced technology from four NASA centers played an important role in the C-130 Hercules program.

Today the C-130 is operated in both military and civilian versions in 65 countries. The newest version, the C-130J, is a direct descendant of the legacy of cooperation between NASA and Lockheed Martin.

A short "thank-you" ceremony was held Friday, Nov. 6 at Langley's hangar. The visiting C-130J flew up from Lockheed's Marietta, Ga., facility.

James Blackwell, president of Lockheed Martin Aeronautics Sector, who started his career at Langley, said the C-130J "has a lot of NASA technology ticking inside it. It shows a fruitful partnership between NASA and industry."

Lockheed Martin drew from fundamental research performed by NASA's four research centers – Langley, Dryden Flight Research Center, Lewis and Ames Research centers – in designing the significantly-improved C-130J. The low-cost, high-performance update of this versatile airlifter will soon join the air forces of the United Kingdom, Australia, Italy and the United States, according to Lockheed Martin. A commercial variant has been certified by the FAA for commercial use.

Aeronautical concepts conceived by NASA over the last 40 years have been incorporated by Lockheed Martin into the venerable C-130 (*See sidebar right*). Exhibits in the hangar highlighted these and other technologies adopted for the C-130.

Photos by Jeff Caplan

Center Director Dr. Jeremiah F. Creedon pilots the C-130J during an exhibition flight with a little help from Lockheed pilot Ed Delehant.

C-130 Technology

Four NASA centers: Langley; Dryden Flight Research Center, Edwards, Calif.; Ames Research Center, Mountain View, Calif.; and Lewis Research Center, Cleveland, Ohio, contributed technology to the C-130 in four major areas

Composite Structures and Materials
Center-wing box, propellers, trailing wing edges, flap sections and computer modeling for design and structural analysis

High-Lift/Powered-Lift Technologies
Externally blown flaps, ducted propellers and over-wing blowing to maintain operational advantage in short field takeoff and landing; aerodynamic boundary layer control to explore a higher-lift wing flap design; short-takeoff-and-landing (STOL) performance; and developmental flight testing of an unducted propeller

Aerodynamic Technologies
Basic airfoil and empennage designs; wing laminar flow for more efficient wing structure design; acoustic characteristics for a series of advanced propeller designs; and analytical tools and techniques for long, productive life

Advanced Concepts Flight Simulators
Head-Up Display (HUD) and glass cockpit featuring liquid crystal flat-panel displays

Mary Beth Wusk, Aerosol Research Branch, above, and her daughter Grace, take a tour around Lockheed Martin's new C-130J outside Langley's hangar. At right, Congressman Owen Pickett, 2nd Congressional District, praised the C-130 at Langley, and added, "I join you in my high regard for this aircraft. This venerable aircraft is nowhere near the end of its usefulness to this country."

The aircraft visit was seen as a "thank you" to NASA employees for the agency's contributions.

"NACA's and NASA's aim was to study and obtain solutions to the problems of flight," said Center Director Dr. Jeremiah Creedon. "This is true of the Hercules program, too. And to have a partner return to thank us for technology is great."

NASA Deputy Administrator Gen. Spence Armstrong said during the ceremony, "We don't build aircraft, we just do the technology to allow them to be built better."

News Briefs

Around the Agency

CREW NAMED FOR EARTH-MAPPING MISSION: An international cadre of astronauts will support a mission to map the Earth's surface when Endeavour launches on the STS-99 mission in September 1999. Commander Kevin Kregel, pilot Dom Gorie and mission specialists Janet Kavandi, Ph.D., Janice Voss, Ph.D., Mamoru Mohri, Ph.D. (NASDA), and Gerhard P. J. Thiele (ESA) have been named to the Shuttle Radar Topography Mission. During the mission, the crew will use specialized radar equipment and other electronics to map 80 percent of the Earth's land mass, extending from the southern tip of Greenland to the northern edge of the Antarctic Circle. Data targets will be spaced approximately every 90 feet and the resulting image should be accurate to within 30 feet of the height of the terrain. For additional information on the STS-99 crew, or any astronaut, see the NASA Internet biography home page at URL: <http://www.jsc.nasa.gov/Bios/>. (Release 98-197)

NASA ASTROBIOLOGY SHOWERS ATTENTION ON LEONIDS: In November, NASA scientists conducted unprecedented, detailed aircraft and ground measurements of the Leonid meteor storm. Leonid meteors originate from a trail of dust and debris in the wake of the comet Tempel-Tuttle, which orbits the Sun every 33 years. The Earth crosses this trail every November, but every 33 years the debris trail is especially dense, sometimes resulting in a meteor storm. "Shooting stars" streak through Earth's upper atmosphere at rates of up to thousands per hour. This year, Earth was expected to pass a region just behind the comet and outside of its orbit, a favorable set of conditions for a larger-than-normal storm event. More information on the Leonid meteor storm and the mission can be found on the worldwide web at: <http://www-space.arc.nasa.gov/~leonid/>. (Release 98-202)

NASA SELECTS EARTH SCIENCE CENTERS: The Office of Earth Science has selected nine public/private consortia throughout the U.S. to form seven Regional Earth Science Applications Centers (RESACs). RESAC will use NASA's Earth science results, technologies and data products to help resolve issues with regional economic and policy significance and to support regional assessments supporting the U.S. Global Change Research Program. Selection of the RESACs is the first of a number of planned NASA initiatives to develop new methods for bringing together research, service and user communities to apply NASA research results to practical, near term problems. (Release 98-193)

TECHNOLOGY HELPS STAR-SPANGLED BANNER: A NASA infrared camera developed to explore Mars is helping the Smithsonian Institution in its three-year project to preserve the Star-Spangled Banner. The camera, built at Goddard Space Flight Center, took images of the historic flag in infrared light to help preservationists identify deteriorated and soiled areas. The camera, the Acousto-Optic Imaging Spectrometer (AIm$S), was developed by Dr. David Glenar. Considered a national treasure, the Star-Spangled Banner flew over Fort McHenry in Baltimore during the War of 1812, and inspired the words that became the U.S. national anthem. Despite good care at the Smithsonian's National Museum of American History (NMAH), the flag is deteriorating from decades of exposure to light, air pollution and temperature fluctuations. After the preservation effort is complete, it will be returned to a newly renovated Flag Hall at the NMAH in Washington, D.C. (Release 98-201)

For more information on the news items above, check the internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

President Urges Organ and Tissue Donation

All federal agencies are encouraged by President Clinton to support the National Organ and Tissue Donation Initiative. The initiative includes a new effort by the federal government to increase the awareness of organ and tissue donation among federal employees.

Each year, the number of organs donated for transplant in the U.S. falls short of the need. Thousands of people are waiting for a healthy organ to replace a failing kidney, heart, lung, liver or pancreas. Sadly, about 10 Americans die each day waiting for an organ, and the waiting list continues to grow.

Organ transplantation is a true success story. Advances in medical science, including tissue matching and the use of immunosuppressant drugs to reduce the threat of organ rejection, mean that transplantation is now a viable treatment option. More than 80 percent of people who receive a kidney from a deceased donor and 90 percent of people who receive a kidney from a living donor live at least five years following surgery. Organs and tissue from one donor now can save and improve the lives of up to 50 people.

How to become an organ and tissue donor

Indicate your desire to be an organ and tissue donor on a signed donor card, driver's license, will, living will or other legal document.

Second, and more important, discuss this decision with family members, so that they know to honor your wish to give the gift of life when the time comes. Even if there is a signed document, family members should know that donation will not occur without their consent.

The U.S. Department of Health and Human Services has begun a national effort with partners from all sectors of society to educate citizens about the value of organ and tissue donation. To find out more about organ and tissue donation, visit the U.S. Department of Health and Human Services website at <http://www.organdonor.gov> or call toll-free 1-888-90-SHARE.

LaRC Garners More Mayor's Awards

Kathy Powell, Office of Education, and chairperson of the Outreach Committee, Satellite Committee for People with Disabilities, received a Certificate of Appreciation from the Hampton Mayor's Committee for People with Disabilities at a luncheon held Oct. 30.

Nominations Sought for 1999 R&D 100 Awards

Nominations are being sought for the 1999 R&D 100 Awards. The purpose of this award is to select the 100 most technologically significant new products in the world.

NASA Langley employees who have developed any products, material, process, software programs or system of scientific or technical origin in 1998 are urged to submit an entry for Research and Development Magazine's annual R&D 100 Awards. Products must have been available for sale or licensing during the calendar year preceding the judging.

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.

Langley has won 31 of these prestigious awards in the 33 years of the competition. The Center's most recent awards were: In 1997 for PETI-5; in 1996 for THUNDER; in 1995 for LARC-SI; in 1994 for Self-Nulling Eddy Current Instrument, RAINBOW high Displacement Actuators and DeltaTherm 1000.

For more information about this award or to get a form, check the R&D 100 Awards website at:<http://www.manufacturing.net/magazine/rd/rd100/100win.htm>.

More Important Information

• March 1, 1999 deadline – Individuals who are uncertain of the candidacy of their proposed development, or who need an entry form should call Sherry Sullivan of the Technology Applications Group (TAG) at ext. 42556. Completed entry forms should arrive in the TAG office by March 1, 1999 to allow time to be checked for completeness and forwarded to meet the deadline. The TAG Office will provide the entry fee.

• Early Bird Deadline – Entries received in Chicago by February 1, 1999 will be reviewed by a judging panel to see if additional information might help the judges better understand the product entry. Submitters with incomplete information will be notified by fax and allowed to submit additional information.

Winners will receive awards at a banquet in Chicago in October 1999.

AIAA Sponsors Wright Bros. Lecture

The American Institute of Aeronautics and Astronautics (AIAA) annual Wright Brothers Memorial lecture will by given by Dr. Richard Bradley of Lockheed Martin, "father" of the modern jet fighter, Dec. 17, 1 p.m. in the H.J.E. Reid Conference Center. All are welcome to attend. This year, 1998, is the 95th anniversary of the first powered flight.

The lecture will trace the evolution of fighter aircraft from a technology and design engineering standpoint. Some of the major advances and events that changed the rules, from World War II to the present, will be highlighted.

The future for fighters will be discussed based on recent U.S. Air Force Scientific Advisory Board studies and trends in technology and changing environments.

In Memoriam

Carl S. Larsen

Carl Samuel Larsen, 58, died Saturday, Nov. 14. A Norfolk native, he was a lifelong Peninsula resident.

Larson worked as an engineering technician in the Aeroacoustic and Hypersonic Propulsion Support Section since 1980. Larsen was a Vietnam veteran and retired from the Air Force in 1980 as a Chief Master Sergeant after 22 years.

"Carl was a very technically competent technician who consistently demonstrated initiative and pride in his work," said his supervisor, Barry Hogge, head of the Gas, Fluid and Acoustics Research Support Branch.

Carl S. Larsen

"Through his efforts at the Flow Impedance Tests Lab, significant advances were made in developing acoustic liner technology supporting the noise reduction milestones for both the Advanced Subsonic Technology and High-Speed Research Programs. Carl will be sadly missed both professionally and as a friend. Our heartfelt sympathy goes out to his family and loved ones."

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 <a.c.gaudreaux@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.

Blanchard Addresses OHR EXPO

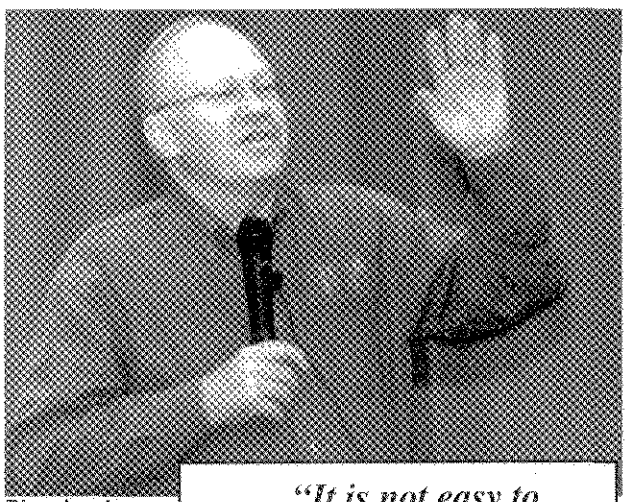

Blanchard

Photo by Jeff Caplan

> ***"It is not easy to change, and you are kidding yourself if you think it is."***
> *— Dr. Kenneth Blanchard, author of "The One-Minute Manager"*

Hundreds of employees attended the Office of Human Resources EXPO Nov. 5 in the conference center.

The EXPO was touted as an organizational development experience and its purpose was to help contribute to individual and collective resilience in the face of continuous organizational change.

Employees were encouraged to share ideas and strategies that enhance productivity and improve work-life quality.

Many employees stopped by each of the eight booths to pick up a few "freebies" as they learned more about key programs within the Office of Human Resources, like the newest technologies within the human resources arena, including the Electronic Meeting System and "Smartboards."

Employees were given the opportunity to request changes in their official personnel folders and in the Employee Express system. Personnel and employee development specialists were available to answer questions about fellowships, telecommuting, Family Leave Programs, health issues and many other topics.

Dr. Kenneth Blanchard, a prominent international author, speaker and business consultant addressed participants. Using the topic of his latest book: "Mission Possible: Creating a World-Class Organization While There's Still Time," he stirred attendees into action with creative exercises and his dynamic presentation.

"To stay competitive, you not only have to pay attention to what you are doing now to perform better, but what you have to do tomorrow to stay competitive in the future," Blanchard said. He called for honesty in working with employees, showing them what they have to gain by change.

"It's time to do more with less," Blanchard said, "and get creative about resources. We are only limited by our minds."

Visit the OHR Expo Web Site at: <http://ohr.larc.nasa.gov/OHREXPO>, to find more detailed information.

December Colloquium/Sigma Series Lecture Features Russian Flight Test Exchange

Rogers E. Smith, acting director for Flight Operations at NASA's Dryden Flight Research Center, Edwards, Calif., will speak about his experiences earlier this year participating in a test pilot exchange program in Russia. His talk is scheduled for Tuesday, Dec. 1 at 2 p.m. in the H.J.E. Reid Conference Center. Smith will repeat the lecture as part of the free Sigma Series at the Virginia Air and Space Center, 7:30 p.m. that same evening.

Smith is a co-project pilot on two major aeronautical programs at Dryden. He was associated with Langley in 1967 as a research pilot, and specializes in the areas of advanced flight control systems, stability and control, and flying qualities.

Smith

He is president of the Society of Experimental Test Pilots and a member of the American Institute of Aeronautics and Astronautics.

Guitar Society Presents . . .

The Tidewater Classical Guitar Society will present the Amadeus Duo Friday, Dec. 4 at the Williamsburg Regional Library Arts Center, 515 Scotland St., and Saturday, Dec. 5 at the Chrysler Museum Theater, Norfolk. This duo has been delighting audiences since 1991. The concerts begin at 8 p.m. with a 'Meet the Artist' reception afterward.

Tickets - $12 regular, $10 members, $8 student/senior - are available at the door. For information/reservations, call 627-6229 (Norfolk), 566-3304 or go to <http://www.widomaker.com/tcgs>.

In Memoriam

Richard Adams

Richard Ray Adams, 61, died Thursday, Nov. 5. A Peninsula resident for 37 years, Adams retired from Langley as an aerospace engineer after 30 years of service.

Mark R. Nichols

Mark R. Nichols, 82, died Monday, Nov. 16. A graduate of Auburn University, Nichols retired from Langley as chief of the full-scale research division after 34 years. For 16 years, he was charged with the development and research utilization of most of Langley's wind tunnels. He provided research and analytical support for U.S. military and intelligence communities, the FAA and U.S. aircraft industry.

NASM Honors Whitcomb/Pathfinder Team

BY DEBORAH DOUGLAS AND MEGHAN WOODCOCK

The Smithsonian Institution's National Air and Space Museum (NASM) honored retired Langley aerodynamicist Dr. Richard T. Whitcomb and the Jet Propulsion Laboratory's (JPL) Mars Pathfinder Team Nov. 5 with its annual trophy. The trophy, sponsored by Lockheed Martin, is awarded for lifetime achievement and current achievement in aerospace science and technology. The award ceremony took place in the NASM in Washington, DC.

This year several aerospace celebrities were on the selection committee such as Senator John Glenn, physicist James Van Allen, discoverer of the Van Allen Radiation Belts, and pioneer aviator Fay Gillis Wells.

Museum Director Vice Admiral Donald Engen, USN (ret.), introduced former "Good Morning America" anchor David Hartman as the evening's master of ceremonies. Hartman spoke with wonder and enthusiasm for the evening's honorees. "It gives me goosebumps," Hartman said, "when I think about the extraordinary imagination and dedication of these individuals being honored."

The Pathfinder Team was honored for "successfully demonstrating new technologies and concepts for use in the exploration of Mars." Dr. Anthony Spear, retired project manager for the Mars Pathfinder Team, accepted the award on behalf of the team members. In his remarks he made numerous personal comments about the individual members, including Langley's Bobby Braun, Vehicle Analysis and Planetary Exploration Branch, and invited them to stand and be recognized.

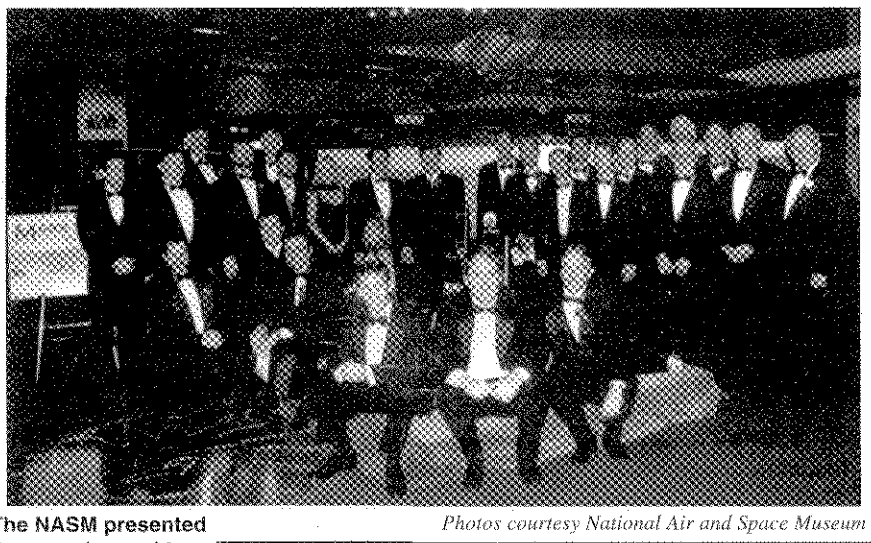
The Mars Pathfinder Team accomplished the first successful landing on Mars in more than 20 years. The team demonstrated a number of new technologies, including the use of airbags for soft landings. Sojourner, the first rover on Mars, was deployed. It provided the first chemical analyses of rocks on Mars' surface.

Whitcomb was honored "for his research and technological innovations in aerospace engineering, particularly in the field of high-speed flight." Whitcomb thanked the museum for a "totally unexpected but most welcome honor." He had spent his day meeting with curators touring the museum and he expressed his enthusiasm for the museum's gallery "How Things Fly" which features a working supersonic wind tunnel, complete with Schlieren system, as well as models explaining Whitcomb's "area rule".

Whitcomb concluded his brief remarks by emphasizing the importance of Langley. Langley was his intellectual home, he said, and his accomplishments had been possible because he was part of an extraordinary team of engineers, technicians and computers. "Good supervisors make all the difference," Whitcomb said, "and I was fortunate to have several."

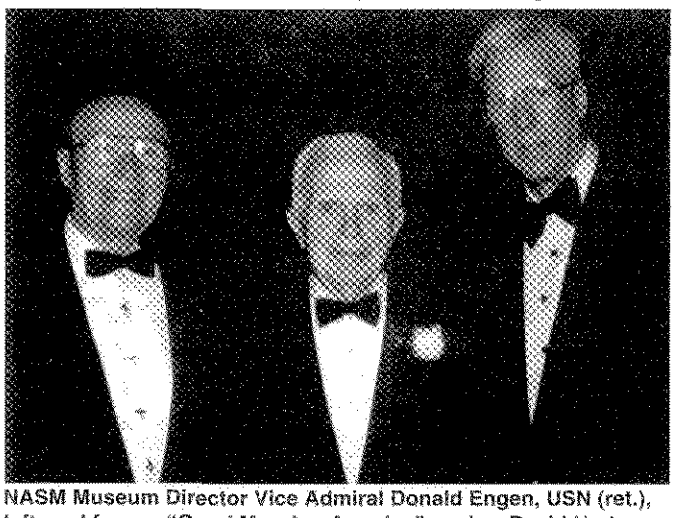
A research engineer at Langley for 37 years, Whitcomb contributed several of the most influential advances in aerospace engineering of the post-World War II era. His research and innovations — particularly in the field of high-speed flight — have had a powerful and lasting impact on both military and commercial aviation.

Center Director Dr. Jeremiah F. Creedon was among the first to express his congratulations to Whitcomb and the JPL team. Many former NACA/NASA employees were also present. The Center is proud of Whitcomb and Braun and joins the chorus of congratulations to the two for this well-deserved honor.



Photos courtesy National Air and Space Museum

The NASM presented its annual award to the Mars Pathfinder Team for current achievement. Langley's Bobby Braun is seated front row, center left. The team was honored individually and as a group during the ceremony in Washington, D.C.



NASM Museum Director Vice Admiral Donald Engen, USN (ret.), left, and former "Good Morning America" anchor David Hartman, right, award the NASM lifetime achievement trophy to retired Langley aerodynamicist Dr. Richard Whitcomb.

Searching for Chemical Substitutes

BY KRISTEN POULTNEY

American industry has gone green. There are many more "environmentally friendly" chemical alternatives on the market today than five or 10 years ago. NASA Langley has made great progress in replacing hazardous or environmentally harmful products with nonhazardous or less harmful products.

With a wide range of new products on the market, finding an alternative should be easy. Many products are advertised as "environmentally friendly" or "biodegradable" or "nontoxic." It can be difficult to sort out manufacturers' claims from the truth. The substitution concept becomes a little more complex, however, when a balance must be struck between the substitute's performance and the hazards they may present to worker health or the environment. Staff at the Office of Environmental Engineering (OEE) can help you select and evaluate chemical substitutes.

Three factors are used to evaluate a possible chemical substitute – the technical performance of the alternative, the human health and safety concerns and the environmental impact and regulatory issues. Personnel in each facility are responsible for evaluating the alternative product's technical performance. They are the experts and are best qualified to decide if the new material or product does the required job. Industrial hygiene staff reviews the product for human health and safety concerns.

OEE staff reviews the product for any environmental/regulatory concerns. To assist in the evaluation obtain as much information as possible about the process and equipment by asking questions such as:

- What is the current process?
- Why is the substitute needed?
- What is the purpose of the chemical?
- What is the material composition of the parts in contact with the chemical (plastic, metal, elastomer)?

If you need assistance in your search for a less hazardous or nonhazardous substitute, contact Kim Tayloe at extension 48710, e-mail at k.tayloe@larc.nasa.gov. There are also several sources that can be used for assistance. The Defense Supply Center Richmond (DSCR) publishes the Defense Logistic Agency's Environmental Products Catalog which lists manufacturer, product name, potential replacements and applications, NSN numbers, unit of issue, and prices. For a copy call (800) 352-2852. Below are some available web sites that can provide valuable information.

Envirosense Solvent Substitution Data System: <http://es.epa.gov/ssds/ssds.html>; EPA, Stratospheric Protection Division: <http://www.epa.gov/ozone/title6/snap/>, Defense Supply Center Richmond: <http://www.dscr.dla.mil/products/epa/eppcat.htm>.

GWU Announces Spring Offerings

The George Washington University School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences at Langley offers the following degrees: master of science, engineer and doctor of science in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the spring semester are Dec. 14 to 18 and Jan. 4 to 8. For course schedule and information, call the GW-NASA office at 864-1982, e-mail <jiafs@larc.nasa.gov>, fax 864-5894, URL: <http://www.seas.gwu.edu/seas/jiafs/spring.html>.

LaRC Researcher Reviews ISS Launch/Assembly

Pat Troutman, leader of the International Space Station (ISS) Work Group, Spacecraft and Sensors Branch, will give a presentation on "The International Space Station: Past, Present and Future," Wednesday, Dec. 9, 10 to 11 a.m., in the Pearl Young Theater. He will describe the launch and assembly process for NASA's most challenging project.

The presentation will cover the ISS mission and associated research capabilities along with an account of how the station program evolved into its current multinational configuration. ISS' assembly sequence and associated elements and proposed contingency plans for potential reduced Russian participation will be reviewed.

October Speakers Bureau Report

The Speakers Bureau reports these activities for October: Henry Jarrett spoke to 99s Mid-Atlantic Region about "Highways in the Sky – Personal Air Transportation for the 21st Century." Robert Mckinley Jr. spoke at the Shenandoah Valley Aviation Association and the Ruritan Club, Smithfield, about "Blended Wing Body." Debbie Martínez, spoke to the Virginia Air & Space Center's Office of Education about "Careers at NASA." Greg Jones spoke to the Virginia Tech Engineering Science and Mechanics Department, about "Noise Reduction in Cavity Flows using Active Flow Control." Greg Fletcher spoke to students at Rosemont Middle School, Norfolk, about "Science, careers, and happenings at NASA." Ed Prior spoke at the Church of Christ Men's Fellowship quarterly meeting with an "Overview of NASA programs." Roger Hathaway spoke at Old Dominion University's Department of Electrical and Computer Engineering about "Education support opportunities at NASA for graduate study." Bobby Braun spoke to the Mechanical and Aerospace Engineering Department at North Carolina State University in Raleigh about "Design and operation of the Mars Pathfinder and Mars Global Surveyor spacecraft and development of the Mars Climate Orbiter, Mars Polar Lander and Mars Microprobes." Jane Hogge spoke to students at Princess Anne Elementary, Virginia Beach, about "John Glenn's flight on STS-95."

Virginia Air and Space Center News

VIRGINIA AIR & SPACE CENTER

Take Flight with Holiday Science Camps

The center is offering Holiday Science Camps for children ages 7 to 12. A perfect gift, the camps include hands-on activities, make-and-take projects, team building, an IMAX film and science demonstrations.

The following Saturday day camps and three-day camp will be offered:

- Astroblast, Saturday, Dec. 5, 10 a.m. to 3 p.m. – Discover the future of space exploration, design an international space station, have a close encounter with a robot, and create Martian space decorations.
- Chilly Willy, Saturday, Dec. 12, 10 a.m. to 3 p.m. – Investigate the supercold world of outer space, build space tools, design a musical instrument that can be played in space, and make liquid nitrogen ice cream.
- Just Plane Birds, Saturday, Dec. 19, 10 a.m. to 3 p.m. – Birds, planes, dinosaurs fly – experience what it takes to fly and design an airplane to launch on a team-built airport.
- El Niño and Beyond, Saturday, Dec. 26, 10 a.m. to 3 p.m.– Investigate how scientists track weather and design your own weather satellite while discovering the role weather plays in tornadoes, hurricanes, floods and heat waves.
- Rovin Robots, December 28, 29, 30, 10 a.m. to 3 p.m. – Get totally robotic while exploring the many important roles robots play on Earth and in outer space, design an assembly-line robot and participate in robot races. For registration and information, call (757) 727-0900, ext. 730.

Star Station One Education Center to Open at VASC

The center has been chosen as Virginia's only Star Station One education center, one of 60 museum participants chosen for a site. The national Star Station One program is designed to build awareness of the International Space Station (ISS). As Virginia's site, the center will offer timely demonstrations and programs to educate and excite people about ISS.

The ISS is the largest international peacetime project in history with 16 countries contributing resources and hardware to the endeavor. By 2004, ISS will be a state-of-the-art multipurpose laboratory in Earth orbit that will provide a facility for discoveries in fields of science, technology and medicine.

Star Station One's public education program is sponsored by the Boeing Company. Each partner site will be given a scale model of ISS for display during the construction of the station. Larger 1/50th scale "build-as-you-go" modules will be used in public ISS demonstrations. After three years, the center will have constructed a complete ISS model including its living quarters, working spaces and research modules.

For the next three years, the center's education department will provide a series of interactive demonstrations that will focus on ISS issues.

For a schedule of events, call the Virginia Air and Space Center at (757) 727-0900.

Earn Your Wings by Adopting an "Angel" – Cookie Power

Help Brighten the 1998 Holiday Season

BY SANDRA LEMONS

The time has come for the Langley tradition of "earning our wings" to begin for the 1998 holiday season.

Again this year we have an opportunity to "adopt" Angel Tree kids. A Salvation Army program, Angel Trees are set up in local department stores, malls and churches. The Langley Angel Tree will be set up in the cafeteria and the tree will be decorated with tags in the shape of angels. The tags carry age and size information about needy children whose holiday "wish" may not be otherwise granted.

Last year more than 3,000 Peninsula children were helped through the Angel Tree program. Because the Salvation Army guarantees a toy for every child, the emphasis is on warm clothing — jeans, sweatshirts, hats, mittens, boots.

Consider pulling a tag from the Langley Angel Tree to ensure a needy child is warm this holiday season.

Here's how you can help:

- Choose an angel tag from the tree in the cafeteria
- Purchase a gift of new clothing; do not remove price tags
- Put your unwrapped purchase in the clear bag and affix the angel tag
- Place your gift under the Langley Angel Tree by Friday, Dec. 18.

Gifts will be delivered to the Salvation Army Friday afternoon, Dec. 18. For more information on the Angel Tree program, call Sandra Lemons, Office of Public Services, at ext. 43957.

Share the Spirit

Help sweeten someone's holiday. Bake "an extra batch" of cookies or your favorite holiday treat for someone less fortunate. The Cafeteria and the Langley Community Service Program are again sponsoring Cookie Power.

The treats are an added bit of cheer for those who depend on others for their food. The Salvation Army feeds 200 homeless people daily. While the need is yearlong, this is an opportunity to make the holiday season special.

Here's how you can help:

- Pick up a plastic container at the cafeteria display
- Fill it with your holiday cookies
- Freeze or bring the filled container to the cafeteria for storage
- Return all containers to the cafeteria by Friday, Dec. 18

Treats will be delivered to the Salvation Army at Friday afternoon, Dec. 18.

Employees Add to Langley's "40 Years with NASA" List

BY KEITH HENRY

Last month, we invited readers to add to our list of Langley accomplishments since NACA became NASA in October of 1958. Both present and retired NASA Langley employees responded, as witness the entries below. More than one person contributed the Viking Lander date – apologies for missing that one.

1972 – The CH-46 VALT (VTOL Approach and Landing Technology) Program completed the world's first helicopter automatic landing.

1975 – First solar occultation experiment from space by the Stratospheric Aerosol Measurement project team onboard the Apollo-Soyuz flight. There are several articles in the library about this experiment. Conducted jointly with the University of Wyoming, it was the proof flight experiment for the SAGE satellites.

July 20, 1976 – First of two Viking landers touches down on Mars.

1980 – 8-Foot Transonic Pressure Tunnel used to verify that Shuttle ceramic tile thermal protection system will survive launch, by simulating flow through maximum pressure and engine vibration simultaneously. (reference Combined Loads Orbiter Test conducted by Percy "Bud" Bobbitt)

October 5, 1984 - First of three ERBE (Earth Radiation Budget Experiment) launches on the ERBS Satellite, along with the SAGE II instrument, deployed from the Shuttle Challenger by Sally Ride. (Note: The ERBE Nonscanner on ERBS is still operating.)

December 1, 1984 - Joint NASA/FAA Controlled Impact Demonstration (CID) full-scale, remotely-piloted, crash test of a Boeing 720 transport.

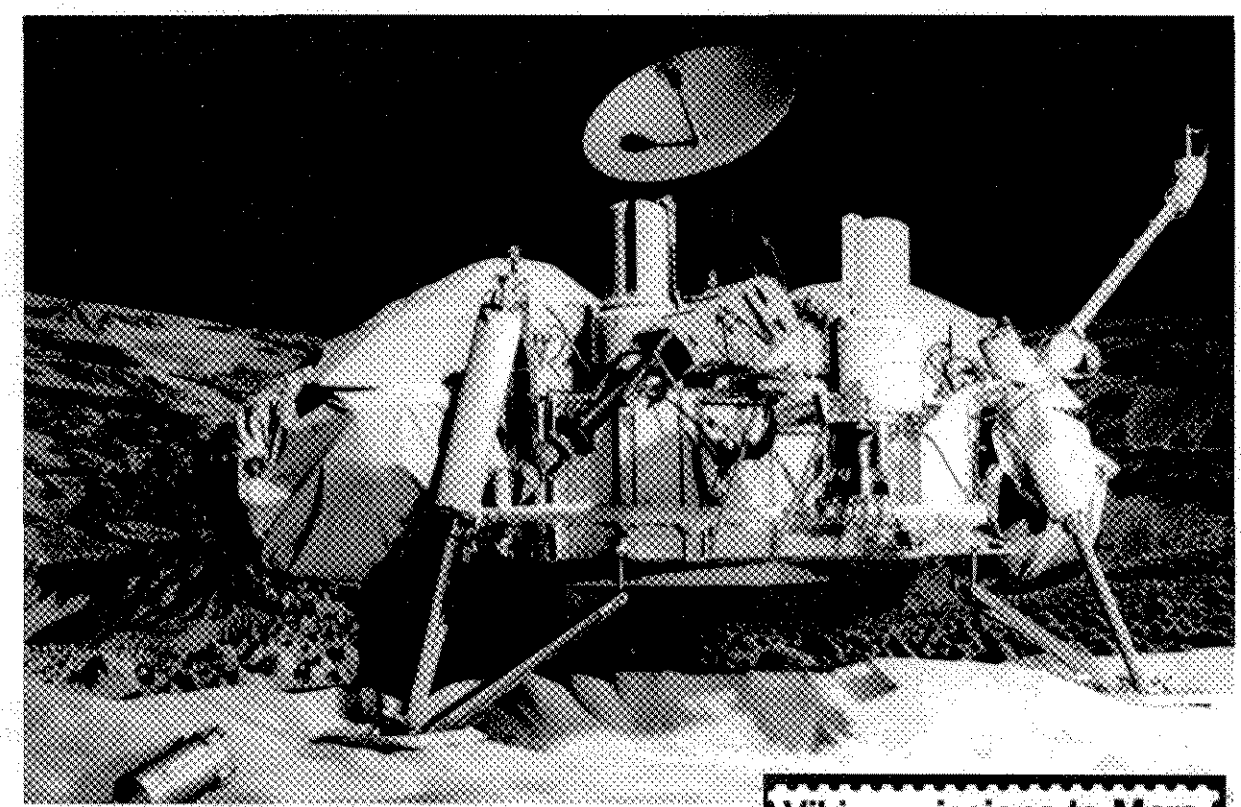
No Date - Micrometeoroid satellites

1993 – First tethered flight experiment in space. Langley End Mass Payload suspended 20 km from the second stage of an Air Force Delta GPS mission. (SEDS—Small Expendable Deployer System; this mission was a joint Marshall and Goddard Space Flight Centers, Langley project.)

November 27, 1997 – First launch of the CERES (Clouds and Earth's Radiant Energy System) instrument on the TRMM (Tropical Rainfall Measuring Mission) satellite from a Japanese launch site.

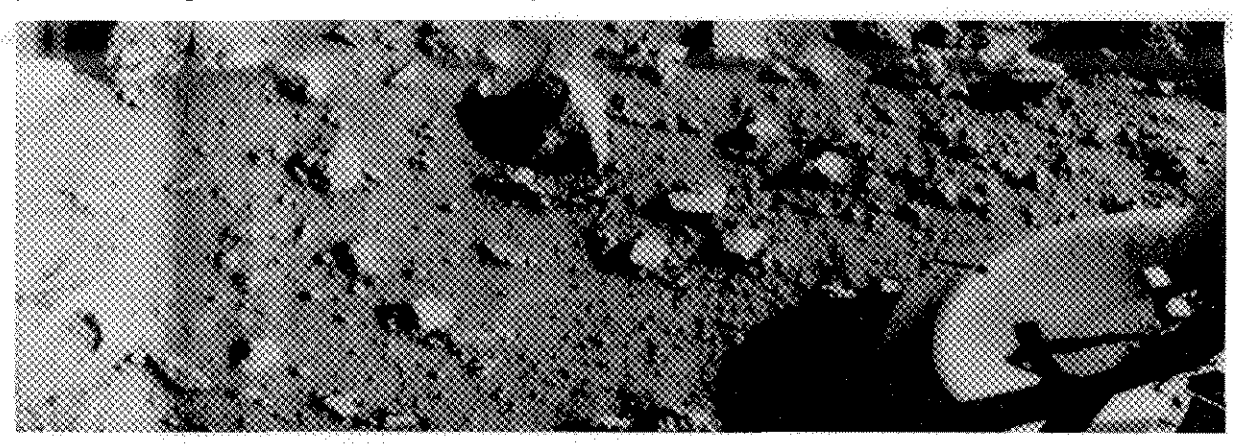
No Date - "Something representing our role as a Center of Excellence in Structures & Materials."

No Specific Dates – "Every one of our R&D 100 (formerly IR-100) awards."



A model of the Viking lander in 1976 shows a larger craft than Mars Pathfinder's Sojourner Truth rover that landed on Mars July 4, 1997. At right, a U.S. postage stamp commemorated the historic event.

Below is the first photograph ever taken on the surface of the planet Mars. It was taken by Viking I minutes after the spacecraft landed successfully July 20, 1976. The center of the image was about five feet from the Viking Lander. Both rocks and finely granulated material, sand or dust, can be seen. The large rock in the center is about four inches across and shows three rough facets. There are a number of other furrows, depressions and other places with fine-grained material elsewhere in the photo.



Researcher News Schedule 1999

Deadline	Issue #	Distribution
January 4	1	January 15
January 18	2	January 29
February 1	3	February 12
February 15	4	February 26
March 1	5	March 12
March 15	6	March 26
March 29	7	April 9
April 12	8	April 23
April 26	9	May 7
May 10	10	May 21
May 24	11	June 4
June 7	12	June 18
June 21	13	July 2
July 5 (6)	14	July 16
July 19	15	July 30
August 2	16	August 13
August 16	17	August 27
August 30	18	September 10
September 13	19	September 24
September 27	20	October 8
October 11	21	October 22
October 25	22	November 5
November 8	23	November 19
November 22	24	December 3
December 6	25	December 17

Safety First: Langley Traffic Rules

The following excerpt is from the Langley Research Center Employee Safety Pocket Guide.

Langley Traffic Rules

• Employees shall ride bicycles on the right side of the road. Riding bicycles on the sidewalks is prohibited.

• Observe posted speed limits — 10 mph when approaching entry gates; 10 mph in parking areas; 15 mph when approaching exit gates; 25 mph on Center roadways unless otherwise posted.

• Employees operating motor vehicles on the Center are required to possess a valid state driver's license and to wear seatbelts at all times.

• Privately-owned motor vehicles operated on the Center and registered in the State of Virginia must comply with Virginia State Inspection requirements. Vehicles registered in other states must comply with the inspection requirements of those states.

• Motor vehicle operators must yield the right-of-way to pedestrians.

• Park only in authorized or designated areas. Do not park on the grass.

To obtain a copy of the Employee Safety Pocket Guide, call the Office of Safety and Facility Assurance at ext. 47233 (4-SAFE). In emergencies, employees are asked to dial 911. For non-emergencies, the Emergency Dispatch Office can be reached at ext. 45600.

Health Corner

December's Brown Bag Seminar: Seasonal Affective Disorder (SAD)

The days are getting shorter, winter is approaching, and the holiday season is upon us. For many it is the time to celebrate; however, for a few individuals, their mood is far from that.

Some people are affected by a condition called Seasonal Affective Disorder (SAD), more commonly known as "winter blues." This condition is described as a seasonal disruption of emotions wherein a person has symptoms of depression that are exacerbated during fall and winter, and generally abate during the spring and summer.

A Brown Bag luncheon will be held in the cafeteria, Dec. 9 at noon. Patricia Meszaros, a licensed clinical social worker from the Reach Employee Assistance Program, will be making a presentation on SAD. All NASA civil service personnel and contractors are invited to attend, so please bring your lunch and come to learn more about this condition.

"Ole Timers" Meet for Coffee

The "Ole Timers" Coffee will be held Saturday, Dec. 19 at 9 a.m. to noon, in Building 1244, Room 121. For information, call Susie Carpenter at 864-3876.

AdVentures

CAR FOR SALE: 1997 Nissan Altima GXE LTD, 4-door, AT, PW, PL, PB, A/C, CC, 30,000 mi., best offer. Call 596-5527 after 7 p.m.

HOME FOR SALE: Poquoson, 4 BR, 3,300+ sq. ft., 4 BR, 3 baths, huge bonus room, heated pool, about 4 acres, asking below appraisal, $232,500. Call 868-4356.

TRUCK FOR SALE: 1986 Ford F150, 8' bed, 6 cyl., AT, PS, PB, runs fine, body fair, $1,550. Call 481-7587.

FOR SALE: Beanie Babies, currents, 5/98 new releases and retireds, $8 and up. Call 865-0586.

THE NUTCRACKER: Chamber Ballet of Williamsburg will present "The Nutcracker" at Phi Beta Kappa Memorial Hall, College of William and Mary, Saturday, Dec. 19, 2:30 and 8 p.m. and Sunday, Dec. 20, 2:30 and 7:30 p.m. To reserve tickets, call 229-1717. For information on the ballet, go to: <http://www.worldreach.net/jantol/chamber.htm

FOR SALE: Computer system: Pentium II (not Celeron) - 300 MHz, 64-Mb mem, 11.5-Gb HD, ATI Expert-98 8-Mb AGP video, 17-in monitor, 34x CD-ROM, 56K USR modem, 3-D stereo sound w/ampl. speakers, Windows 95, MS Office 97 SBE, Norton Anti-virus, more, $1,680. Call 890-2540 eves.

HOUSE FOR SALE: Brick rancher, 3 BR, with fireplace, backs up to Deer Park in Beaconsdale Meadows, Newport News, $85,000. Call 723-5227.

VIRGINIA SYMPHONY Holiday Concerts – Beethoven, Barber & Brahms, Saturday, Nov. 28 at Chrysler Hall; Handel's Messiah, Dec. 11 and 12; Holiday Pops Dec. 17, 18 and 19; Family Holiday Festival concert Dec. 19 at 2:30; and a New Year's Eve Gala at Harrison Opera House. Symphony season brochures available at the Exchange Shop or in the cafeteria. For other events or information, call the Sym-phony Ticket Office at 623-2310.

YORKTOWN CELEBRATES CHRISTMAS: Colonial Yorktown will hold a Christmas Open House Saturday, Dec. 5 from 10 a.m. to 7 p.m. Ticket price of $8/$10 the day of the event includes tours of eight homes and historic houses, trolley rides and entertainment. For information, call Sandra Jones at 898-7947.

NASA ALUMNI NEWS:

• The Langley civil service and contractor retiree alumni association meeting, an annual holiday luncheon, is Dec. 9 at 11:30 a.m. at Steve's Steak House, 11847 Jefferson Ave., Newport News. Call the Alumni office at ext. 47330 by Dec. 1 to make reservations and menu choice. Cost is $11 per person and will be collected at the restaurant. For more information, call Steve Devan at 898-9290.

• NASA Langley Personnel Division retirees' annual Christmas luncheon will be at Ft. Monroe Officers Club, Dec. 10 at 11:30 a.m. Cost is $6.90 per person for the buffet and beverage. Call Steve Devan at 898-9290 for information and reservations.

LAA NEWS: **After Burners** is open daily at 4 p.m. Don't miss out on Mug Mondays – join the After Burners Mug Club and get beverages for just $1 all night; Two for Tuesdays – from 5 to 5:30 p.m. receive two beverages for the price of one; Wednesdays are Wacky with 50 cent beverages from 4:30 to 5:30 p.m.; Thursday Night Bingo in the H.J.E. Reid Conference Center auditorium, features specials, everything from hamburgers and hot dogs to gyros and pizza; Friday nights feature $1 specials.

• A special **Children's Holiday Celebration** will be Saturday Dec. 12, 3 to 5 p.m. in the H.J.E. Reid Conference Center. Entertainment includes a holiday puppet show by Rainbow Productions, face painting, balloon twisting, arts and crafts, a sing-along and karaoke. A holiday character costume contest (Rudolph, Santa, Mrs. Claus, elf, angel, etc.) makes everyone eligible to win three fun gifts. A special visit from Santa is planned. For planning purposes, an RSVP to ext. 46369 is requested.

• Mark the calendar for a **Holiday Party**, Friday, Dec. 18, 4 to 9 p.m. in the Reid Center audi-torium. Planning a holiday party for the office? Contact the LAA at ext. 46369, to take care of the details.

• Ring in the new year Thursday, Dec. 31 in the Reid Center auditorium with a Country Western **New Year's Eve Bash**. For details and ticket information, call Jerry Nichols at ext. 44577.

• **LAA Aerobics Club** – November brings strength training classes, designed to work all major muscle groups. The format is for beginners and advanced exercisers. Saturday Resist-A-Ball classes target abdominal and back strengthening as well as cardiovascular conditioning. Join us for a well-rounded fitness program. Classes – Tuesday and Thursday, 5-6 p.m., Saturdays, 9:30-10:30 a.m. in the LAA Gym. For information call ext. 42295 or 47333.

• The **NASA Basketball Association** (NBA) is planning the 1999 season. Check out: <http://larc-exchange.larc.nasa.gov/laa/bball/>. To register a team or get information, contact Dana Gould at <d.c.gould@larc.nasa.gov> or ext. 47747.

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Researcher News

National Aeronautics and
Space Administration
Langley Research Center
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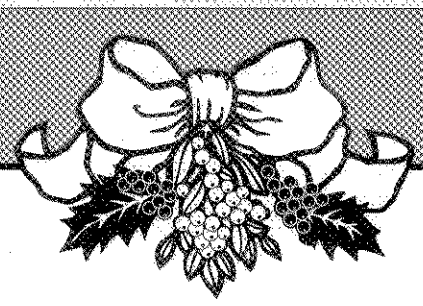


In celebration of the holiday season, the Director of Langley Research Center, Dr. Jeremiah F. Creedon, cordially invites all NASA civil service employees, retirees, and contractors to attend a reception at the H.J.E. Reid Conference Center Friday, December 18, 1998, from two-thirty to four o'clock

Sponsored by the Langley Activities Association and the Langley Federal Credit Union

Fortieth Anniversary
Pioneering the Future

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

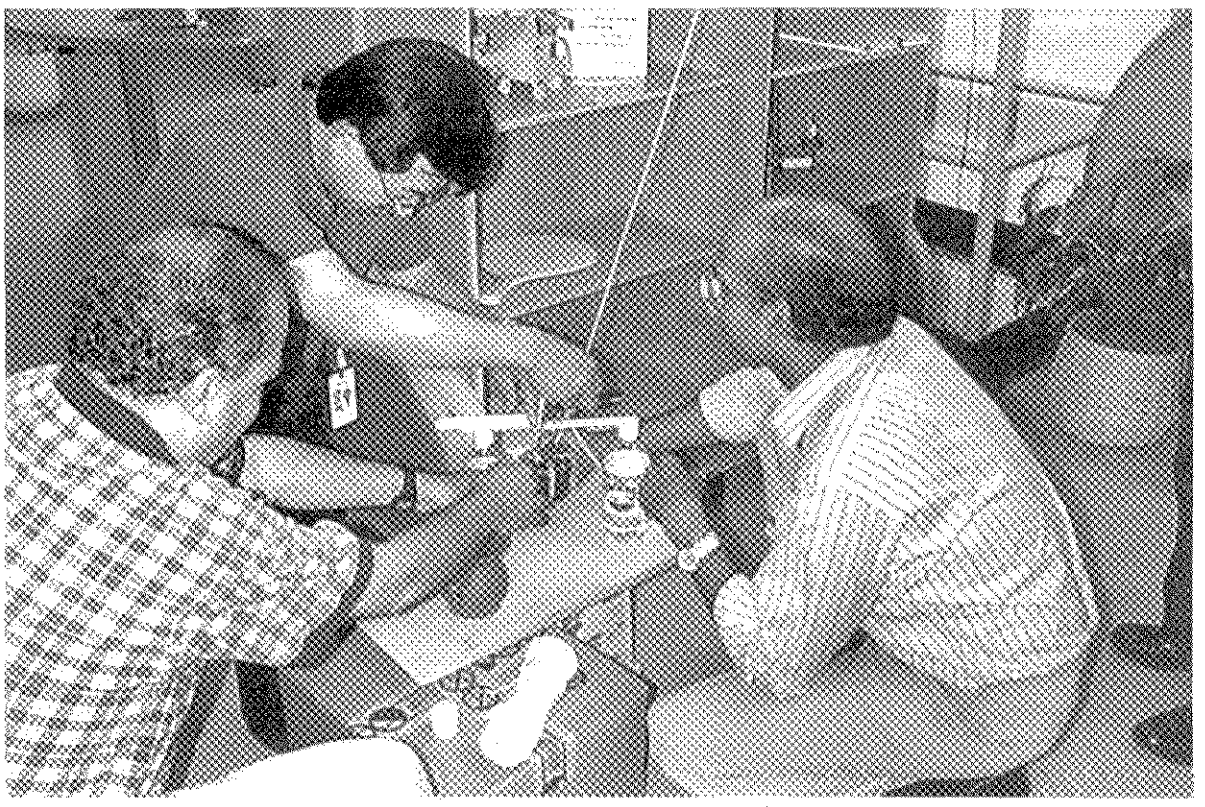
Volume 12 ❖ Issue 24 ❖ December 11, 1998

Wind Tunnel Enterprise: A New Way of Working

NASA Langley's four-year effort to re-engineer its major wind tunnels and their operations is resulting in significant benefits in reliability, production, cost of operation, data quality and customer satisfaction. The latest sign of progress is the announcement this month of a Wind Tunnel University, reported on this page.

Operation of most major wind tunnels has been consolidated under the management of a single organization to provide customer-oriented testing services with a single point of contact and increased emphasis on schedule commitments and service/product deliveries. This has resulted in improvements across all facilities through standardization, use of common tools and test techniques, and sharing of resources.

The Wind Tunnel Enterprise concept, established early in the wind tunnel re-engineering effort, has successfully focused on inducing cultural changes in the Langley wind tunnel community.



Photos courtesy of Langley Navigation Center staff

Stu Flechner, Jim Yu and Ajay Kumar team up in a Wind Tunnel Enterprise exercise to demonstrate that visualizing a physical model of a complex process can make the process more real and understandable.

WTE: A Virtual Organization

In its basic concept, the WTE represents a virtual organization that allows participation of the customers, the investors (or stakeholders) and the providers of wind tunnel testing services in the overall management of wind tunnel operations at the Center.

The mission for the WTE is "to provide reliable, accurate research information to the aeronautical community in a timely manner. To accomplish this requires a focus on increasing productivity, cost effective operations, technical support that adds value, and the development of new facility capabilities and test techniques." Specific goals directed at productivity, cost, data quality and customer satisfaction were established.

Wind Tunnel
ENTERPRISE
NASA Langley Research Center

A Langley Navigation Center was also established in June 1995, based on the Management Center concept of MG Taylor Corp. The center provides an environment that fosters new and innovative ways in which people think, decide, and work together to accomplish organizational goals. It uses the concept of the DesignShop™ (a trademark of MG Taylor Corp.) which is a structured, intense and short duration (1 to 3 days) meeting designed to effectively produce desired outcomes at relatively low cost.

'Knowledge Workers' Guide Process

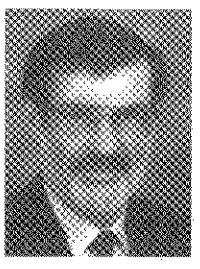
The Navigation Center is staffed by "Knowledge Workers," drawn from the Center staff, who are trained to design and conduct these DesignShops™ to produce best possible outcomes. The Navigation Center has been used routinely by the WTE to address a number of technology implementation issues and reinvention of test processes.

Since the start of re-engineering in 1994, significant gains have been made in increased productivity and customer satisfaction and reduced cost per data point. Although the WTE was making good progress in wind tunnel operations at Langley, it was felt necessary in the spring of 1997 to revisit the goals of WTE, established in 1995, in view of the changes in the internal and external environment.

A DesignShop™ was conducted in July 1997 to better define and implement the Wind Tunnel Enterprise concept and to develop a more comprehensive set of goals that included all aspects of wind tunnel testing services – namely, technical, operational, managerial and cultural. A process-based governance

Continued on Page 4

Director's Holiday Message to Employees



The holiday season offers an opportunity for both celebration and reflection. As I look back on the past year and beyond, I believe we at Langley Research Center have a great deal to celebrate.

Forty years ago this past October, NASA was established. The impetus was to beat the Russians in the great race to space.

The creation of NASA had double significance for us here at Langley. On Oct. 1, 1958, this lab had already been in business for 40 years studying the "problems of flight with a view to their practical solution." In addition, researchers here – in the early 50s – were already pioneering rocket technology and designing space stations.

Today, the International Space Station is headline news. John Glenn, who originally trained here, returned to space in October. Aviation safety has never been a higher priority. Langley employees, past and present, have played pivotal roles in these endeavors.

Industry continues to look to us for aircraft that are more maneuverable, quieter, more energy efficient and cheaper to manufacture, maintain and fly. The nation and the world are counting on us to provide critical support in the study of our home planet. And we are contributing to the development of advanced space transportation and the spacecraft of tomorrow.

We are able to assume critical leadership roles because of you – Langley's outstanding civil service and contractor employees. Because of you, NASA Langley is certainly "pioneering the future."

On behalf of the entire Langley Senior Staff, I wish each of you and your family a safe, happy and healthy holiday season. Further, we wish you a new year that is both challenging and fulfilling.

— Jeremiah F. Creedon
Director

Wind Tunnel University Established

A Wind Tunnel University (WTU) was announced Dec. 10 as part of NASA Langley's Wind Tunnel Enterprise (*see accompanying story*). The University's mission is to "self-sustain and grow competencies of the wind tunnel staff and to enhance a culture of excellence in wind tunnel technology and operations through research and shared teaching/training/mentoring, and learning among constituents of the WTE."

A pilot program was launched in June to develop and test a process to select courses, faculty and participants. An Advisory Board and Curriculum Committee have been established. The committee is responsible for conducting a skill-gap analysis based on current and future skill requirements to establish the course curriculum.

Courses will cover a broad spectrum of topics from specific technical areas on test techniques to project cycle-time reduction, modern design of experiment and statistical process control. Courses will range from a few days to several weeks and will include classroom and on-the-job instruction. They will be carefully scheduled to minimize impact on the wind tunnel operations schedule. The Employee Development Branch of the Office of Human Resources is providing much needed support.

News Briefs

Around the Agency

LANDSAT-7 LAUNCH SCHEDULED: NASA has selected a new launch date of April 15 for the Landsat-7 Earth science satellite. The launch, originally scheduled for this month, will take place from Vandenberg Air Force Base, Calif., on a Delta II launch vehicle. The Enhanced Thematic Mapper Plus (ETM Plus), the science instrument on Landsat-7, will continue a database of high-resolution Earth imagery begun in 1982 by the Landsat-4 thematic mapper. Scientists will be able to use the archive of imagery from the Landsat missions to better understand the behavior of the global environment. Landsat images provide information for the needs of business, science, education, government and national security. (Release 98-209)

DEEP SPACE 1 PROPULSION SYSTEM STARTS: The ion propulsion system on NASA's Deep Space 1 spacecraft came to life Tuesday, Nov. 24, and has continued to run smoothly. The engine started up in response to commands sent to the spacecraft. After running overnight in low-thrust mode, engineers commanded the engine to switch to higher-thrust modes. The team originally powered up the engine Nov. 10, but the system shut itself off after running for 4-1/2 minutes. Engineers believe that the engine probably shut itself off because of contamination between the two high-voltage grids at the rear of the advanced engine. (Release 98-215)

MINIATURIZED TRANSMITTER TO HELP SAVE BABIES: Early next year, a NASA-developed "pill transmitter" is expected to begin monitoring mothers and their babies following corrective fetal surgery. The "pill" will monitor body temperature, pressure and other vital signs in the womb, radioing the critical information to physicians. Ames Research Center is developing the pill, which is about 1/3-inch across and 1-1/3-inches long, in cooperation with the Fetal Treatment Center at the University of California, San Francisco. A smaller pill will be developed that can be used by astronauts so that NASA can track their vital signs during space travel. (Release 98-208)

ER-2 SETS NEW ALTITUDE RECORD: A NASA ER-2 aircraft set a new world altitude record for medium weight aircraft Nov. 19, reaching 68,700 feet, almost twice the cruising altitude of most airliners. The record was made by an ER-2, tail #806, based at Dryden Flight Research Center, during an airborne science mission to measure different components in the atmosphere, such as water, ozone and other atmospheric particles. The new record surpassed the old record of 62,500 feet, flown by a Canadian P-42 aircraft in 1988. An official from the National Aeronautics Association (NAA) observed the record-setting event and will process the formal certification with the Federal Aeronautique Internationale. (Release 98-210)

"DOWN UNDER" IS HST TARGET: Turning its penetrating vision toward southern skies, the Hubble Space Telescope has peered down a 12 billion light-year long corridor loaded with a dazzling assortment of thousands of never-before seen galaxies. The observation, called the Hubble Deep Field South (HDF-S), doubles the number of far-flung galaxies available to astronomers for deciphering the history of the universe. This new far-look complements the original Hubble "deep field" taken in late 1995, when Hubble was aimed at a small patch of space near the Big Dipper. The new region is in the constellation Tucana, near the south celestial pole. It will take months for astronomers to digest what new secrets of the universe are within this latest look. At first glance the HDF-S appears to validate the common assumption that the universe should look largely the same in any direction. Images and photo captions associated with this release are available on the Internet at: <http://oposite.stsci.edu/pubinfo/1998/41> or via links in <http://oposite.stsci.edu/pubinfo/latest.html> or <http://oposite.stsci.edu/pubinfo/pictures.html>. (Release 98-206)

For more information on the news items above, check the internet for NASA's News and Information Web page at <http://www.nasa.gov/releases/1998>.

Announcements

Health News

TB Alert Issued for Travelers to Russia

BY ARTHUR WYCOFF

As reported by the Center for Disease Control and Prevention Oct. 20, a Russian Health Ministry official announced that 2.5 million Russians are now infected with tuberculosis (TB). Since there are persons at the Center who travel to Russia on official business, the Occupational Health Clinic urges these persons to have pre-travel and post-travel TB tests.

A TB test is simple and straightforward. It involves a skin test in which a small amount of fluid is injected under the skin in the arm, and an evaluation of any reaction 48 to 72 hours after the test is performed. Testing any time prior to the travel is appropriate. The Health Clinic recommends post-travel testing 12 weeks after returning from Russia. Please contact one of the clinic nurses at ext. 43193 for more information.

GWU Announces Spring Offerings

The George Washington University School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences at Langley offers the following degrees: master of science, engineer and doctor of science in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, and structures and dynamics. Registration dates for the spring semester are Dec. 14 to 18 and Jan. 4 to 8. For course schedule and information, call the GW-NASA office at 864-1982, e-mail <jiafs@larc.nasa.gov>, fax 864-5894, URL: <http://www.seas.gwu.edu/seas/jiafs/spring.html>.

In Memoriam

Lola M.B. Copeland

Lola Maxine Breeding Copeland, 80, died Friday, Nov. 27. She had been a volunteer at Langley's Visitor Center.

Jeanette T. Genung

Jeanette Tyus Genung, 64, died Saturday, Nov. 28. Genung retired from the Industrial Relations Office in 1986 after 22 years of service.

William K. Douglas

William Kennedy Douglas, 76, died Sunday, Nov. 15. Douglas was the Air Force doctor who cared for the seven original astronauts at Langley, and one of the earliest practitioners of space medicine. He was personally responsible for the medical care and flight preparation of the Mercury Seven.

Josephine W. Grow

Josephine Wright Grow, 86, died Friday, Nov. 20. She was a NASA Langley retiree.

Gene W. Sparrow

Gene Winningham Sparrow, 69, died Saturday, Nov. 21. A resident of Stoneville, N.C., Sparrow worked in the Space Analysis Branch and the Space Mechanics Division.

Nominations Sought for 1999 R&D 100 Awards

Nominations are being sought for the 1999 R&D 100 Awards. The purpose of this award is to select the 100 most technologically significant new products in the world.

NASA Langley employees who have developed any products, material, process, software programs or system of scientific or technical origin in 1998 are urged to submit an entry for Research and Development Magazine's annual R&D 100 Awards. Products must have been available for sale or licensing during the calendar year preceding the judging.

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.

Langley has won 31 of these prestigious awards in the 33 years of the competition. The Center's most recent awards were: In 1997 for PETI-5; in 1996 for THUNDER; in 1995 for LARC-SI; in 1994 for Self-Nulling Eddy Current Instrument, RAINBOW High Displacement Actuators and DeltaTherm 1000.

For more information about this award or to get a form, check the R&D 100 Awards website at:<http://www.manufacturing.net/magazine/rd/rd100/100win.htm>.

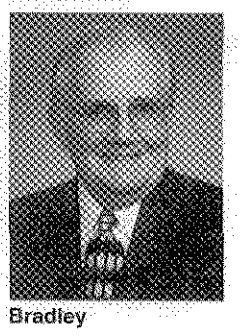
More Important Information

• March 1, 1999 deadline – Individuals who are uncertain of the candidacy of their proposed development, or who need an entry form should call Sherry Sullivan of the Technology Applications Group (TAG) at ext. 42556. Completed entry forms should arrive in the TAG office by March 1, 1999 to allow time to be checked for completeness and forwarded to meet the deadline. The TAG office will provide the entry fee.

• Early Bird Deadline – Entries received in Chicago by Feb. 1, 1999 will be reviewed by a judging panel to see if additional information might help the judges better understand the product entry. Submitters with incomplete information will be notified by fax and allowed to submit additional information.

Winners will receive awards at a banquet in Chicago in October 1999.

AIAA Sponsors Wright Bros. Lecture


Bradley

The American Institute of Aeronautics and Astronautics (AIAA) annual Wright Brothers Memorial lecture will by given by Dr. Richard Bradley of Lockheed Martin, "father" of the modern jet fighter, Dec. 17, 1 p.m. in the H.J.E. Reid Conference Center. All are welcome to attend. This year, 1998, is the 95th anniversary of the first powered flight.

The lecture will trace the evolution of fighter aircraft from a technology and design engineering standpoint. Some of the major advances and events that changed the rules, from World War II to the present, will be highlighted. The future for fighters will be discussed based on recent U.S. Air Force Scientific Advisory Board studies and trends in technology and changing environments.

SBIR/STTR Course Offered in Virginia

A SBIR/STTR proposal preparation course will be presented Jan. 14, 9 a.m. to 5 p.m. at the Boar's Head Inn, Charlottesville. Attendees will learn in a step-by-step approach how small businesses can prepare a competitive proposal. The cost is $50 per person and includes coffee, lunch and a workbook. Space is limited. Call K.C. Das to register and for information at (804) 371-5599.

Researcher News

The *Researcher News* is an official publication of Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001. 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 <a.c.gaudreaux@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.

Ceremony Officially Opens 757 ARIES Flying Laboratory

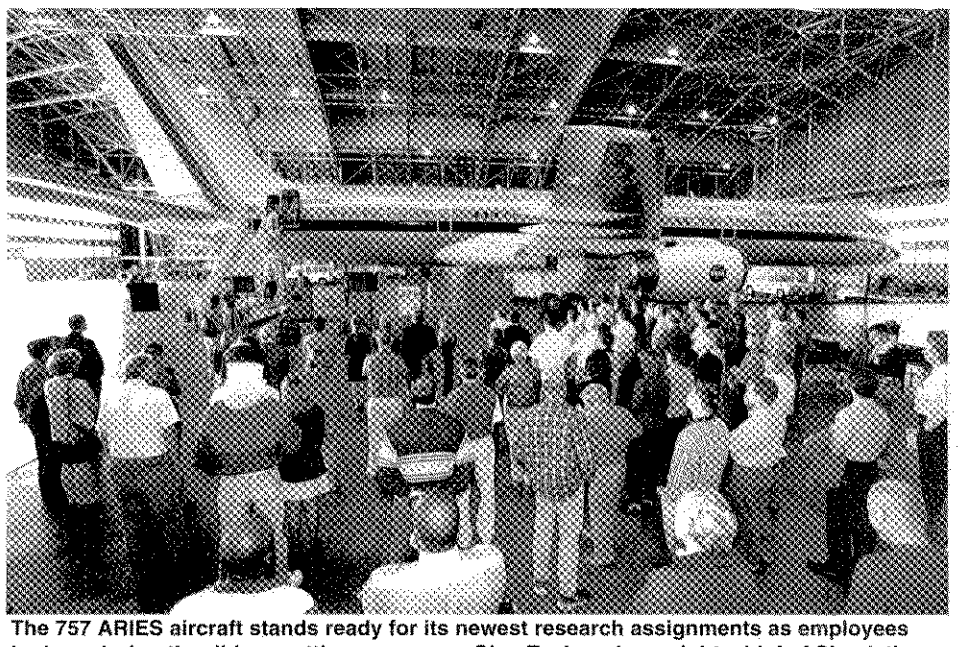
An official ribbon-cutting ceremony Nov. 23 opened the Boeing 757-200 aircraft as NASA's newest "flying laboratory."

Center Director Dr. Jeremiah Creedon christened the lab ARIES, for Airborne Research Integrated Experiments System. ARIES is being modified for a broad range of flight research programs to be conducted over the next 20 years. NASA's 757 replaces the 737-100, retired in 1997 after 23 years of airborne research.

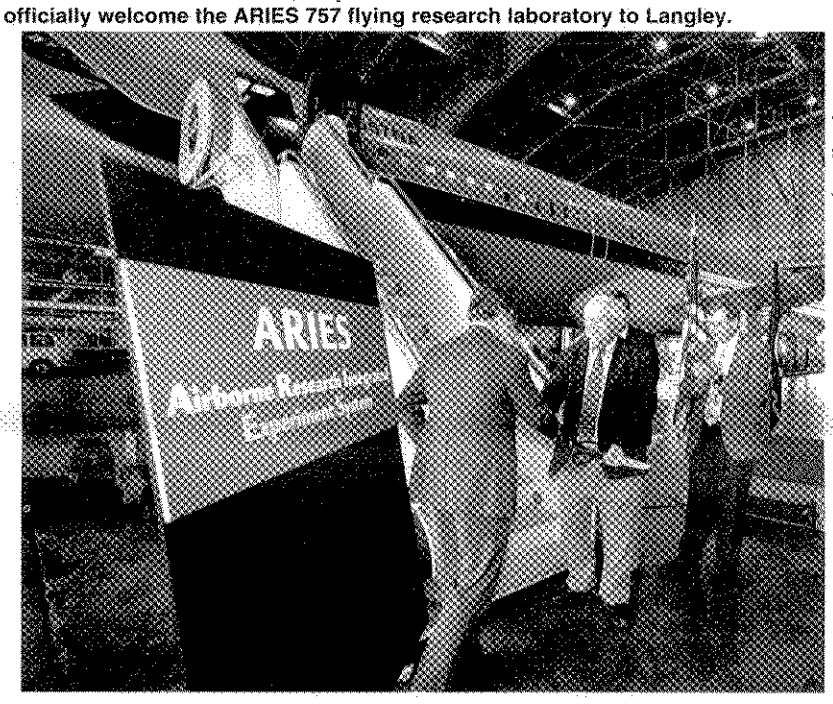
Creedon noted that the 757 is a more robust airplane. It is representative of the modern commercial air fleet, offers more data collection capability, can climb faster, fly higher, and has more electric and cooling power. The work done over the past two years by the Langley staff converted a revenue-producing airplane into a flying research lab.

Creedon cited members of Simulation and Research Aircraft, Aer-ospace Mechanical Systems, Fabrication, Aerospace Electronic Systems, Flight Electronics Technology and Flight Dynamics and Control Divisions for the teamwork that enabled the transformation of the aircraft.

ARIES will be used to conduct research to increase air safety, operating efficiency and compatibility with future air traffic control systems. It serves as a vital tool in support of the Agency's Aviation Safety and Aviation System Capacity Programs. With its state-of-the-art electronic systems, ARIES will support research and development of aeronautical subsystems for the airline industry and airframe and systems manufacturers.



The 757 ARIES aircraft stands ready for its newest research assignments as employees look on during the ribbon-cutting ceremony. Glen Taylor, above right, chief of Simulation and Research Aircraft Division, helps Center Director Dr. Jeremiah Creedon cut the ribbon to officially welcome the ARIES 757 flying research laboratory to Langley.



Photos by Jeff Caplan

About the 757

Purchased in 1994, the airplane has been modified through the years, and has been used for some research programs including:

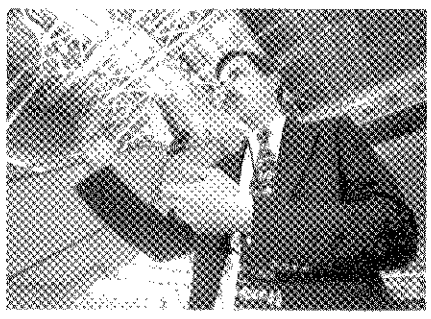
- Flight tests using Global Positioning System (GPS) satellite data to perform automated landings of the airplane;
- The study of jet-engine contrails to determine their effects on the atmosphere;
- Testing of a system to improve the safety and efficiency of aircraft during takeoff, taxiing and landing by giving pilots a computerized map showing airport ground operations.

Future Research

Future research will focus on technologies to improve air safety and efficiency, including:

- Evaluation of a system that would provide pilots with better weather information;
- Testing of a weather-accident prevention system;
- Development of an error-proof flight deck;
- Runway friction research.

ARIES is an integral part of the Transport Research Facilities (TRF) at Langley. TRF is a set of research tools used in the simulation-to-flight concept. Simulation to flight incorporates software, hardware, ground-based flight simulators and the airborne capability offered by the 757.



Doug Arbuckle, below, Director for Airborne Systems Research, talks about the future research capabilities of the ARIES flying laboratory during the ceremony.

757 ARIES Facts

- Four research documentation video cameras are installed on ARIES, three in the cockpit, one on the tail. Eight video recorders support the cameras, flight displays and other data collection.
- Twelve test pallets/ research work stations are in the baseline layout. Others are added depending on research needs.
- The 757 is 155'3" long and 44'6" high at its tallest point, the tail. It measures 124'10" from wingtip to wingtip.
- The aircraft originally seated 201 passengers. Its design range is 4,550 miles. Maximum fuel capacity is 11,526 gallons.

Help Brighten the 1998 Holiday Season

BY SANDRA LEMONS

The time has come for the Langley tradition of "earning our wings" to begin for the 1998 holiday season.

Again this year we have an opportunity to "adopt" Angel Tree kids. A Salvation Army program, Angel Trees are set up in local department stores, malls and churches. The Langley Angel Tree is set up in the cafeteria. The tree is decorated with tags in the shape of angels. The tags carry age and size information about needy children whose holiday "wish" may not be otherwise granted.

Last year more than 3,000 Peninsula children were helped through the Angel Tree program. Because the Salvation Army guarantees a toy for every child, the emphasis is on warm clothing — jeans, sweatshirts, hats, mittens, boots.

Consider pulling a tag from the Langley Angel Tree to ensure a needy child is warm this holiday season.

Here's how you can help:

- Choose an angel tag from the tree in the cafeteria
- Purchase a gift of new clothing; do not remove price tags
- Put your unwrapped purchase in a clear bag and affix the angel tag
- Place your gift under the Langley Angel Tree by Friday, Dec. 18.

Gifts will be delivered to the Salvation Army Friday afternoon, Dec. 18. For more information on the Angel Tree program, call Sandra Lemons, Office of Public Services, at ext. 43957.

Share the Spirit

Help sweeten someone's holiday. Bake "an extra batch" of cookies or your favorite holiday treat for someone less fortunate. The cafeteria and the Langley Community Service Program are again sponsoring Cookie Power.

The treats are an added bit of cheer for those who depend on others for their food. The Salvation Army feeds 200 homeless people daily. While the need is yearlong, this is an opportunity to make the holiday season special.

Here's how you can help:

- Pick up a plastic container at the cafeteria display
- Fill it with your holiday cookies
- Freeze or bring the filled container to the cafeteria for storage
- Return all containers to the cafeteria by Friday, Dec. 18

Treats will be delivered to the Salvation Army Friday afternoon, Dec. 18.

Weiler Named AA for Office of Space Science

NASA HEADQUARTERS RELEASE

NASA Administrator Daniel S. Goldin recently named Dr. Edward J. Weiler as Associate Administrator for NASA's Office of Space Science. He has served as acting Associate Administrator since Sept. 28.

In this capacity, Weiler is responsible for providing overall executive leadership of NASA's Space Science Enterprise. This enterprise aims to achieve a comprehensive understanding of the origins and evolution of the Solar System and the Universe, including connections between the Sun and the Earth, the beginnings of life and the question of whether life exists elsewhere beyond Earth. It also is charged with communicating this knowledge to the public.

Weiler was appointed as Science Director of the Astronomical Search for Origins and Planetary Systems theme within the Office of Space Science in March 1996. He will continue to serve as the program scientist for the Hubble Space Telescope until a replacement for that position is selected. Weiler joined NASA in 1978 as a staff scientist.

Virginia Air & Space Center News

VASC – A Year-Long Gift

Ho, ho, hold on to your seats as the Virginia Air and Space Center, Busch Gardens and Water Country USA team up to present two unique holiday gifts for the price of one.

Get free Busch Gardens/Water Country USA season passes or day tickets with the purchase of a VASC membership. Blast-off to a year full of giant screen IMAX films, unlimited admission to science exhibits and thrilling rides. For example, a family value is the $100 Planetary membership that includes a season pass to Busch Gardens/Water Country USA.

Busch Gardens/Water Country USA discount season passes are also available. The offer varies depending on the membership level purchased. Valid while supplies last. Call (757) 727-0900, ext. 718 for information.

VIRGINIA AIR & SPACE CENTER

Other Great Gifts

Looking for a holiday gift for the person who has everything? Purchase a personalized paver. One solid brass engraved plate will give the gift that lasts forever at the discounted rate of $50. Pavers make great gifts for the holidays as well as for memorials, births, birthdays, weddings, anniversaries, graduations and retirements.

Pavers are durable, interlocking bricks that create the Virginia Air and Space Center's main courtyard. Because the center is Langley's official Visitor Center, there is a private NASA section where your paver can be placed. Call Sharon Gates at 727-0900, ext. 718 to order by phone or for more information.

Wind Tunnel Enterprise . . .

Continued from Page 1

model was developed for the enterprise that more completely integrated the producers, investors and stakeholders. In addition to continued focus on productivity and cost, some of the new challenges accepted as part of the revised goals included an order of magnitude reduction in total test cycle time, making the WTE a desirable environment in which to work, developing alliances with other wind tunnel service providers, providing world-class testing services to its customers and establishing a 'Wind Tunnel University' to create a learning environment. (*See Page 1 story entitled Wind Tunnel University Established.*)

Toward 'Lean' Teamwork

The WTE needed a catalyst for fundamental change in the wind tunnel testing process, as well as a vehicle to train current and future wind tunnel testing personnel at all skill levels. The change needed is that from a "mass production" to a "lean production."

In the mass production environment, workers are specialized in tasks, individual rather than team performance is stressed, focus is often on task rather than the mission success, and opportunity for personal growth can be limited.

In the lean production environment, teamwork is highly valued. Each worker understands the team objective as a whole and the work done by his/her teammates. Learning and growth are emphasized, and each member can assume the responsibility of the entire team. It is the belief of WTE leaders that the ambitious goals set for the Enterprise can be achieved only if a "lean production" type of environment is fostered for wind tunnel services.

This requires the creation of a learning environment much like a university, in which it is possible to sustain and grow the skills of the WTE staff to meet the demands for reduced test cycle times and improved quality in times of ever-decreasing resources.

Re-Engineering Results

"The wind tunnel re-engineering effort, launched in 1994, is showing remarkable results," said Langley's Ajay Kumar, process-owner for the WTE, "due to the dedicated efforts of many people involved in wind tunnel operations or their use. It is the direct result of empowerment cascading down from the senior level of management to the people directly responsible for the work. Although significant progress is being made, many challenges remain in order to fully realize the potential of the WTE."

The WTE Leaders' Team invites all personnel involved in operations and applications of wind tunnels to become more active participants in the enterprise activities in order to provide world-class testing services to our customers of which the entire Langley Research Center can be proud.

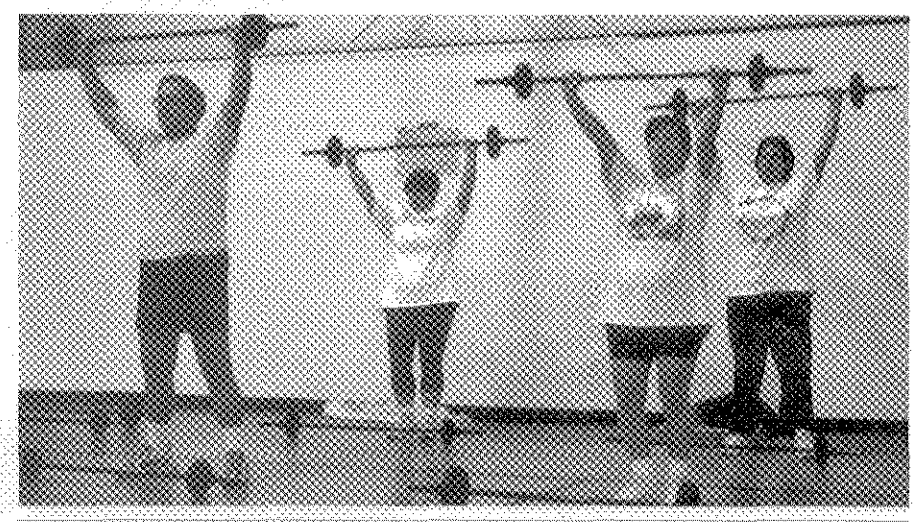
Dr. Doug Dwoyer, left, and Jeff Hill present a team report during the goal-setting DesignShop™ last year in the Langley Navigation Center, Building 1212.

Aerobics Club Offers Barbell Strength Training

Strength training in a weight room for most folks is either a favorite form of exercise or one that is purposely avoided. But everyone needs strength training to prevent bone loss (osteoporosis), maintain functional strength, and achieve any long-term effective fat loss. A format introduced by the LAA Aerobics Club has brought rave reviews from both women and men. This new strength training class uses barbells with varying weights (traditionally reserved for the weight room) so that all levels of strength and fitness can be accommodated. The training also maintains a group class format with motivating music traditionally reserved for pure aerobics.

The LAA Aerobics Club began exercise classes in April 1990. Founders Drs. Michele Macaraeg and Craig Streett maintain certification in personal training and aerobics to assure that classes reflect current research on fat-loss through safe and effective exercise formats. The weekday barbell strength training and weekend Resist-A-Ball classes are offered in very few gyms and health spas.

Step aerobics and low-impact are also a part of the classes offered. "Our goal is to make exercise effective and, more importantly, safe and fun for the non-athlete," Macaraeg said. Classes are Tues./Thurs. from 5 to 6 p.m. and Sat. from 9:30 to 10:30 a.m. in the LAA gym. Call ext. 42295 or 47333 for information.



Reminder: Recycled Paper Requirement for Office Papers Increases at the End of 1998

BY KIM TAYLOE

President Clinton signed Executive Order (EO) 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition Sept. 14. The EO will strengthen efforts to protect the environment and promote economic growth through the purchase of recycled and environmentally-preferred products.

As the nation's largest paper purchaser, the federal government has a special responsibility to lead the way in building markets for recycled goods. As of Jan. 1, the federal government is directed only to purchase recycled paper. This single action will save up to a half-million trees per year, reduce air and water pollution, and curb emissions that contribute to global warming.

The printing and writing papers regulated by this EO include: high-speed copier and offset paper, forms bond, computer printout and carbonless paper, file folders, white wove envelopes, writing, office and book paper, cotton fiber paper and cover stock. These papers should contain 30 percent postconsumer materials and no less than 20 percent beginning Dec. 31. When purchasing these items, look for specifications or labels that indicate the product complies with or exceeds the minimum content levels.

Copiers at Langley are required to handle recycled paper as defined in the EO. The use of recycled content paper should have no bearing on the copier's performance level. Concerns or questions pertaining to copiers on the Center should be addressed to Lucy Watkins, Langley copier manager, at ext. 43438 or <l.b.watkins @larc.nasa.gov>. For information on buying recycled prod-ucts, contact Kristen Poultney at extension 4-8759 or <k.j.killough@larc.nasa.gov>.

Wind Tunnel Enterprise Information

For more information about Langley's Wind Tunnel Enterprise, visit the WTE website at **<http:/wte.larc.nasa.gov>.**

Tech East '98 Expo Highlights New Technologies

BY THAYER SHEETS

Tech East '98, recently held in Boston, Mass., brought some 7,500 participants to view such events as Photonics East, the only optics and photonics* exhibit in the Northeast; Electronic Imaging, the East Coast's premier annual imaging exhibit; and the New England Design and Manufacturing Expo, the first major design engineering exposition in the heart of the New England high-tech corridor. The New England Expo featured new products and services to help engineers meet their design, prototyping, testing, and production challenges. Coupled with these events was the Ninth Annual Technology Transfer conference — America's premier showcase of new and next-generation technologies available for license and commercial development.

Small Business Tech Expo

As a part of these activities, the Small Business Tech Expo was held. It represented the first annual showcase of resources and technologies to launch new products and partnerships. In seeking financing and investment opportunities, marketing expertise and consulting services, and how to tap into the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, small business entrepreneurs were invited to participate in concurrent sessions. The sessions ranged from the basics of proposal writing, financial planning and intellectual property protection to one-on-one sessions with NASA and other federal SBIR/STTR managers, procurement specialists and participating company representatives. Participants discussed opportunities for funding, subcontracting, and partnering to gain strategic insight for moving SBIR technologies to market.

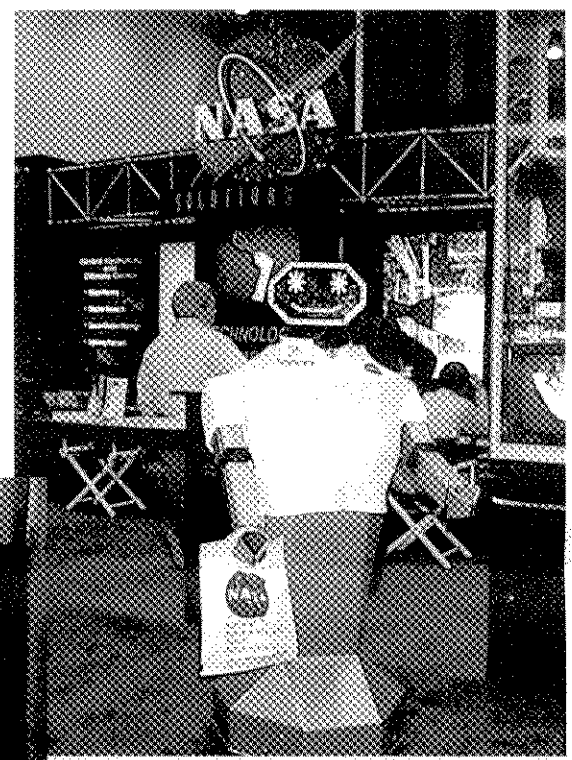
NASA Success Stories

NASA displayed an SBIR exhibit featuring the best of their success stories. NASA representatives were also actively engaged in the one-on-one sessions and exhibited for the first time the NASA Small Business Solutions Center.

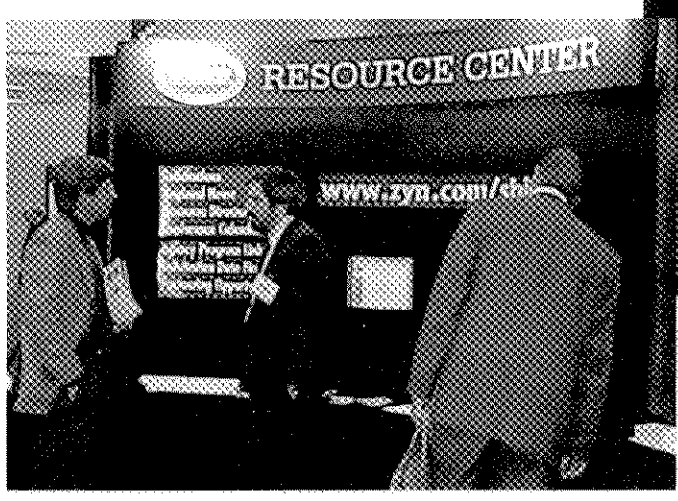
In addition to NASA's technology commercialization network, the National Science Foundation provided an SBIR Resource Center to assist small high-tech firms in their search for resources and strategic partners for their research and development programs. Conceived by NASA Headquarters SBIR/STTR Program Executive Carl Ray, the solutions center was one of the most commented-on features of the exposition, according to the organizer of the Small Business Tech Expo, Del DelaBarre. The display featured NASA technologies developed through the SBIR/STTR programs and current displays of program opportunities, while virtually serving as a guide to other small business resources at Tech East.

** Photonics is the field of study that develops technology to harness light for energy, high-speed telecommunications and more.*

Thayer Sheets, far right, NASA SBIR/STTR New Initiatives Manager at Langley, and Gene Pawlik, SBIR Program Special Assistant, second from left, talk with small business owners at the Hynes Convention Center in Boston.



A roaming robot , left, from Marshall Space Flight Center greeted visitors to the various NASA booths at the convention.

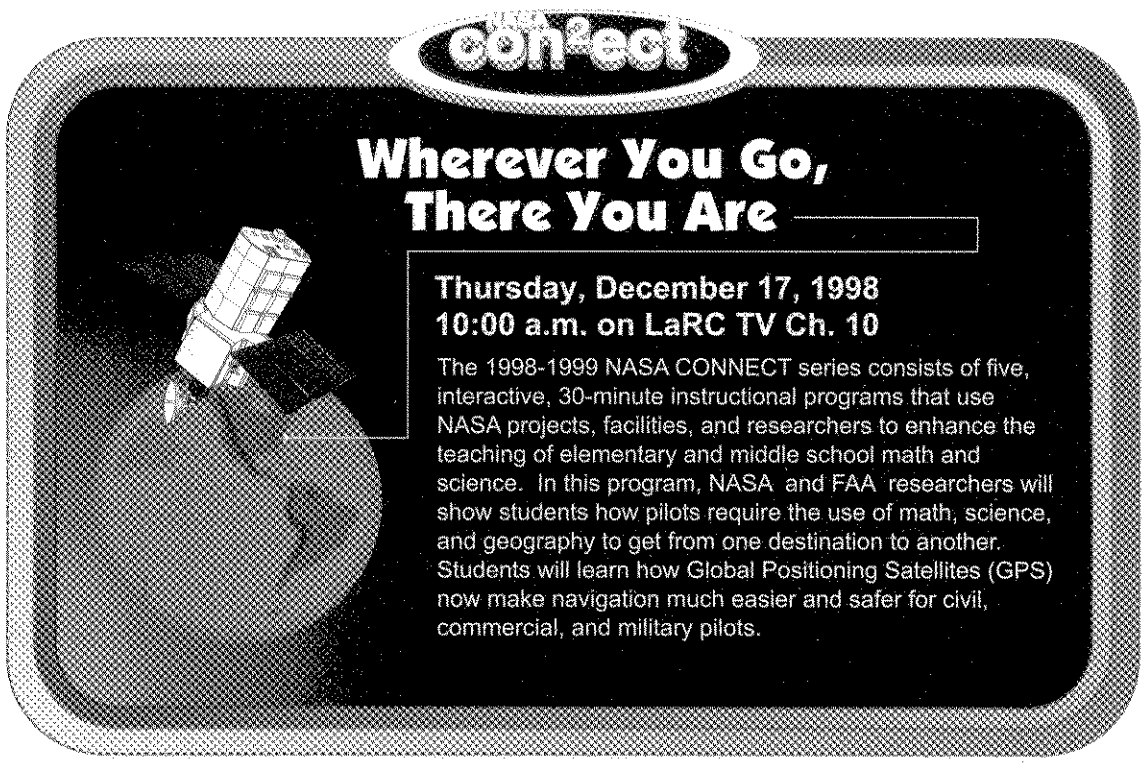


NASA Small Business Solutions Center exhibit, left, was set up with a database that provided keyword searches to help match small businesses to possible government/industry SBIR participants. For example, participants could plug in the keyword "aeronautics" and the database came up with possible aeronautical spinoff technologies that could be commercialized. The database should be available to the public around Jan. 1.

Researcher News Schedule 1999

Deadline	Issue #	Distribution
January 4	1	January 15
January 18	2	January 29
February 1	3	February 12
February 15	4	February 26
March 1	5	March 12
March 15	6	March 26
March 29	7	April 9
April 12	8	April 23
April 26	9	May 7
May 10	10	May 21
May 24	11	June 4
June 7	12	June 18
June 21	13	July 2
July 5 (6)	14	July 16
July 19	15	July 30
August 2	16	August 13
August 16	17	August 27
August 30	18	September 10
September 13	19	September 24
September 27	20	October 8
October 11	21	October 22
October 25	22	November 5
November 8	23	November 19
November 22	24	December 3
December 6	25	December 17

NASA CONNECTs with Teachers and Students



AdVentures

FOR RENT/LEASE: Well-maintained Mallard Point townhouse, 2 mi. from Langley/Ft. Monroe. 2BR, 1-1/2 baths, LR/DR combination, central heat/AC, fans, carpeted, fenced yard, storage, fireplace, etc., available 1/1/99, no pets, $540/mo. Call 727-9187.

HILTON HOME FOR SALE: 4-BR, 3-floor home in historic Hilton Village for sale by owner at 54 Hopkins St., asking $112,500; has 2 full baths, laundry room/pantry, screened back porch with French doors, private driveway, fenced backyard, gas heat, excellent condition. Call 596-7936.

HOME FOR SALE: Brick rancher, 3BR, fireplace, backs up to Deer Park in Beaconsdale Meadows, Newport News. $85,000. Call 723-5223.

NASA SKI WEEK: Only a couple of open spots for the Agency-wide ski trip to Jackson Hole, Wyo., remain. The trip is Jan. 30 through Feb. 6, and open to all NASA personnel, family and friends. Cost is $880, double occupancy. Contact Michael Schooley at 220-0465 (w.) and 874-2736 (h.), or e-mail <schooley@erols.com>.

NARFE MEETING: The National Association of Federal Retired Employees will have a Christmas luncheon at the Hampton Quality Inn, Mercury Blvd. Monday, Dec. 14 at 10:30 a.m. Tickets are $11. Call Catherine Askew at 247-1558 for information.

THE NUTCRACKER: The Chamber Ballet of Williamsburg will present "The Nutcracker" at Phi Beta Kappa Memorial Hall at the College of William and Mary Saturday, Dec. 19, 2:30 and 8 p.m. and Sunday, Dec. 20, 2:30 and 7:30 p.m. To reserve tickets, call 229-1717. For more information on Chamber Ballet, visit their Web site at: <http://www.worldreach.net/jantol/chamber.htm>.

VIRGINIA SYMPHONY Holiday Concerts: Handel's Messiah Dec. 11 and 12; Holiday Pops Dec. 17, 18 and 19; and Family Holiday Festival concert Dec. 19 at 2:30 p.m. There is a New Year's Eve Gala at the Harrison Opera House. Symphony season brochures are available at the Exchange Shop or in the cafeteria. For other events or information, call the Symphony Ticket Office at 623-2310.

LAA NEWS: The After Burners **Holiday Party**, Friday Dec. 18, 4 to 9 p.m. in the H.J.E Reid Center auditorium is open to all NASA/LAFB employees, contractors, friends and family. It features DJ Lanny Scott, special holiday beverages and free munchies. Dress in holiday attire and have a chance to win a great gift. Call ext. 46369 to reserve a group table.

Ring in the New Year with a Country Western New Year's Eve Bash, Thursday, Dec. 31, in the H.J.E. Reid Conference Center. For tickets and more information, call Jerry Nichols at ext. 44577.

WRL PROGRAMS: "The Drawing Workshop: An Ensemble of Pictorial Statements," 42 works by 26 artists enrolled in art courses at the Darden College of Education, Old Dominion University, are on display Dec. 4 to Jan. 3 in the Williamsburg Library Arts Center.

Children's Programs: Winter Crafts – A special storytime with a craft for ages 3 to 7. Come make a birdfeeder for the hungry winter birds, Friday, Dec. 11 at 4 p.m. at the Williamsburg Library and Friday, Dec. 18 at 4 p.m. at the James City County Library. The Richmond Theatre Company presents: "Return of the Gingerbread Boy," Saturday, Dec. 19 at 10:15 a.m. at the James City County Library.

Upcoming Concerts: Jae Sinnett Trio with guest saxophonist Chris Potter, Dec. 18 and 19 at 8 p.m., an evening of new music. Tickets are $10 for adults and $5 for those under 16, at the Williamsburg Library Theatre. Virginia Saxophone Sinfonia performs Dec. 20, 2 p.m. at the WL Theatre. The ensemble includes members of the Williamsburg Saxophone Quartet and the Phoebus Saxophone Quartet. Archer's Meadow kicks off the "Virginia Voices" series Jan. 9 celebrating Williamsburg's 300th anniversary with music that highlights the Old Dominion's musical traditions. Ticket price: $8/adults, and $5 for those under 16. 8 p.m. at WL Theatre.

The Williamsburg Library: 515 Scotland Street, Williamsburg, and the James City County Library: 7770 Croaker Road, Williamsburg. For information: <www.wrl.org>.

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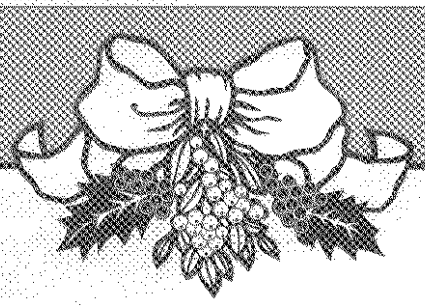

In celebration of the holiday season, the Director of Langley Research Center, Dr. Jeremiah F. Creedon, cordially invites all NASA civil service employees, retirees, and contractors to attend a reception at the H.J.E. Reid Conference Center Friday, December 18, 1998, from two-thirty to four o'clock

Sponsored by the Langley Activities Association and the Langley Federal Credit Union