National Aeronautics and Space Administration
Langley Research Center

News Researcher

A Weekly Employee and Contractor Publication

Volume 9 ❖ Issue 1 ❖ January 13, 1995

Materials Division's Polymer Technology Licensed to Triton Systems, Inc.

Technology developed on atomic oxygen (AO) resistant polymers has been licensed by Langley to Triton Systems, Inc. (TSI) of Chelmsford, Mass. These polymers have unique and unprecedented resistance to erosion by atomic oxygen present in low Earth orbit. The polymers have applications in film and fiber form as foundations for solar array and multi-layer thermal insulation blanket (MLI) material on spacecraft. Non-aerospace applications include such uses as corona-resistant wire coating and flame-resistant fibers. Triton Systems, Inc. initially plans to market the new materials for space applications.

Langley inventors of the new material are Dr. John W. Connell, Dr. Joseph G. Smith, Jr. and Paul M. Hergenrother, all of the Composites and Polymers Branch. The technology transfer process began under a Phase I Small Business Innovative Research (SBIR) program, Connell said, and has continued with the help of the Technology Applications Group (TAG).

Photo by Hubert Lloyd

Researchers Dr. Joseph G. Smith Jr. and Dr. John W. Connell of the Composites and Polymers Branch, who, along with Paul Hegenrother, invented the recently-licensed polymer, flank Ross Haghighat, president of Triton Systems, Inc. (TSI), following the licensing ceremony. At far left and right are Greg Manuel and Barry Gibbens of the Technology Applications Group, who have been working with TSI during licensing negotiations.

AO Resistant Structure

According to Connell, these new polymers offer significant advantages in weight savings, long term performance and reliability compared to state-of-the-art materials used in the applications mentioned above. "These polymers also have through-the-thickness atomic oxygen protection whereas materials in use today are protected from AO by thin coatings which can be damaged during fabrication and/or by micrometeroids and debris in space," he said.

To put this in perspective," Connell added, "film (typically 0.001-0.003 inches thick) widely used on spacecraft today will erode 0.001 inches during a 40-hour space shuttle exposure experiment if not covered with a protective coating. It is apparent that if the coating is damaged or imperfect, any underlying material exposed to AO will quickly erode away. During this same exposure experiment, the Langley/Triton developed polymer film of comparable thickness eroded only 0.00006 inches."

Self-Healing Properties

The composition of the polymer is such that, during exposure to AO, chemical reactions take place which quickly produce a thin oxide surface layer. This layer is very resistant to AO erosion; if it is damaged in space, the newly exposed polymer simply reacts with the AO and the oxide layer reforms to self heal. In addition, thin films of this material possess physical and mechanical properties comparable to those of other films used on spacecraft and therefore can utilize the same manufacturing and fabrication processes.

Polymer Thread/Fiber

The material performs similarly in thread or fiber form. The threads presently used on MLI blankets are made from the same polymers that are used in clothing and, like films used in space today, depend upon a coating for AO resistance. Glass threads, which are AO resistant, are sometimes used to stitch MLI blankets, but they have a weight penalty. Results obtained from exposure of MLI blankets on the Long Duration Exposure Facility (LDEF) in low Earth orbit showed that the polyester thread was severely eroded and the MLI blankets delaminated and lost their insulating effectiveness.

The Langley technology appears in two issued and two pending patents, now licensed by TSI. Further development of this technology by TSI will focus on film processing, film metallization and fiber spinning. These products, based on these films and fibers, will be marketed to the aerospace industry for use on spacecraft in low Earth orbit.

"TSI has performed a market survey to identify volume, customers, price sensitivity and competitors," said Ross Haghighat, president of TSI."We have also developed a process for preparing film of the quality and dimensions according to specifications of potential customers and TSI has been able to do this by forming a strong alliance with one of the leading film manufacturers in the United States." According to their analyses, TSI will be able to introduce film into this market for a price that is competitive with the state-of-the-art material presently used (see graph). The present market for AO resistant films is in excess of 0.5M square feet per year (~$13 million) and the total space market that includes all applications of AO resistant films and fibers is more than $25 million per year. TSI projects that NASA will net $100,000 for every 300,000 feet of the film that is sold. *(See Graph, Page 4)*

Customers Identified

Prime space contractors working on NASA-funded projects such as Space Station

Continued on Page 4

Robinson Chosen as Astronaut Candidate

Langley research scientist Dr. Stephen K. Robinson of the Fluid Dynamics and Acoustics Division is among 19 new astronaut candidates selected for the Space Shuttle program. The 1995 group consists of 10 pilots and nine mission specialists, including six civilians and 13 military officers. Robinson was selected as a civilian mission specialist. His reaction? "This is the culmination of a 20-year pursuit, but still it came as a shock," he said.

Dr. Stephen K. Robinson

Continued on Page 4

MCLT Begins Its Tasks

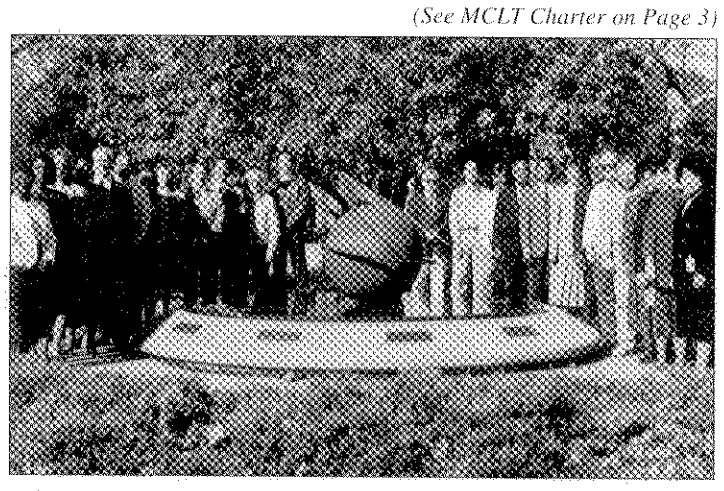
Because "diversity means everyone," according to Mike Chapman, chairperson of Langley's Multicultural Leadership Team (MCLT), the team will be defining processes and strategies to create a workplace environment that encourages contributions from all Center employees.

"Regardless of race, gender, religion, ethnicity, culture, or disability, everyone must have an opportunity to contribute to the products and services that Langley provides to the nation, our ultimate customer," Chapman said. "And because the nation is diverse, we must value that diversity as a matter of competitiveness and business survival." Therefore, the MCLT will ensure that Langley demonstrates its commitment to multicultural values in its management practices involving recruitment, retention, career development, awards, and recognition of its employees.

The MCLT was formed at Langley on September 29, 1994. Consisting of 26 civil service employees representing a cross section of Langley's diverse workforce, the MCLT is charged with developing a Center-wide diversity management plan ensuring everyone the opportunity to contribute to the Langley mission and to develop to his/her maximum career potential.

The MCLT members encourage anyone to contact them with regard to the charter or MCLT activities. The MCLT will be soliciting input directly from employees on constructive ways to reap the benefits of diversity at the Center.

(See MCLT Charter on Page 3)



MCLT group photograph includes Dr. Wesley L. Harris, seventh from right, Associate Administrator for Aeronautics, who visited the Center in November. Team members are (left to right): Alberta Reid; Glinda Calloway; Linda Blackburn, vice-chair; Mary Liggins; Jerry Nichols; Michael Mitchell; Michele Macaraeg; Pamela Davis; Doug Stanley; Robert Yang; Merven Pfeiffer; Kenneth Dudley; Larry Cooper; William Berrios; Edward Kerlin; Burnett Peters; Michael Chapman, chairperson; Alice Massey, Dr. Harris; Irving Abel; John Paul Phillips; Michelle Ferebee; Gloria Hernandez; Mary Anne Steuk; and Lisa Yu. Not pictured are Reginald Brown and Rosa Webster.

Around the Agency

NASA SIGNS CONTRACT WITH UKRAINE TO FLY SPACE WELDING TOOL — NASA has signed a contract with the Paton Welding Institute in Kiev, Ukraine, to develop a plan for flying a space welding tool aboard the space shuttle in October 1997. Specialists from the Institute will work with NASA engineers to design a flight experiment and conduct the required safety reviews. The Ukrainian Universal Hand Tool (UHT) is an electron beam welding device developed at the Institute. In 1984 and 1986, Salyut 7 cosmonauts performed the first electron beam welding in space experiments during extravehicular activities using the UHT. As currently envisioned, the experiment would involve a U.S. astronaut conducting sample welds on a variety of materials mounted in the cargo bay during a spacewalk. These sample welds would demonstrate the ability of the UHT to perform contingency or emergency repairs to simulated elements of the International Space Station. "When you consider the life span of some of our vital space assets, like the space station, being able to repair structures in orbit is an important capability," said George Levin, space welding experiment program manager at NASA Headquarters. "We will need the capability to conduct welding in space, and the Ukrainian technology is the state of the art in space welding."

NASA SELECTS PROJECTS FOR COMMERCIAL REMOTE SENSING – NASA has selected eight projects which could lead to new private sector applications of space-based and airborne sensing technologies. Named EOCAP '94, for Earth Observations Commercial Applications Program 1994, the projects represent the fourth cycle in a continuing program designed to increase a broader use of NASA-developed technology for gathering and analyzing valuable information about Earth and ocean resources through remote satellite or aircraft observations. The role of EOCAP in commercial activities is to provide financial and technical support to companies for a limited time in areas of remote sensing activities where there is substantial market risk in matching science and technology with commercial demand. EOCAP supports technical, market and business innovation to develop new products/services that serve emerging domestic and international markets. Winning proposals, in addition to high technical competence, typically exhibit strong business and marketing plans, product advisory boards to guide the product/service development and substantial financial commitments to the projects by the companies. The eight projects selected for negotiation are expected to lead to one-year funding cooperative agreements, with options to extend funding up to two additional years. The EOCAP solicitation is open to U.S. companies of all sizes. Six of the eight EOCAP '94 companies are categorized as small businesses.

TOPEX/POSEIDON BUILDS CRITICAL DATA BASE ON CLIMATE CHANGE – Scientists, using data from the U.S.-French oceanography satellite TOPEX/Poseidon, say they may have detected a rise in the average global sea level over the past two years. If scientists detect a global, long-term rise in sea level, they will be able to test theories about the effects of climate change. "A rise in global mean sea level is an important indicator of global change, because it can be caused by thermal expansion of the oceans and melting of glaciers and the polar ice caps," said Dr. R. Steven Nerem of NASA's Goddard Space Flight Center, Greenbelt, Md. "If a long-term rise in global mean sea level were detected, this would provide further evidence to support the global warming predicted by some climate models due to an increase in the 'greenhouse' gases." The satellite was launched on Aug. 10, 1992, to study how long-term ocean circulation affects climate change and it measures the sea-surface height along a groundtrack that repeats once every 10 days. The satellite also measures absolute sea level relative to the center-of-mass of the Earth.

In Memoriam

Joseph T. Guy Sr.

Joseph T. Guy Sr., 61, died Wednesday, Dec. 14. He was a native of Portsmouth and a lifelong Peninsula resident.

Guy retired in 1988 from Langley as a program schedule analyst after 38 years and was employed by Lockheed Corp.

George A. Doersch

Col. George A. Doersch, fighter ace during World War II and Langley's June 1994 colloquium speaker, died Thursday, Dec. 1, at age 73. His talk entitled "Air Power Changes Since World War II" described his wartime activities. A video of his presentation is available through the Technical Library by calling ext. 42389.

Royce H. Sproull

Royce Howard Sproull, 74, died Wednesday, Dec. 28. Born in Warsaw, Ohio, he was a resident of Grafton.

Sproull worked at Langley as a research engineer from 1948 until his retirement in 1978.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program is designed to permit employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. Please contact Lisa Allen at ext. 42610 for more information. Your annual leave donations are greatly appreciated.

The following Langley Research Center employees are approved leave recipients: James A. Allen; Jean G. Cridlen; Suzy Carpenter; Francine Garner; Brenda E. Gile Laflin; Melissa B. Rivers; Julian Roberson; Cassandra Stevens; Marie Storms; Darrell Wood; and from other agencies: Loc T. Nguyen.

In Memoriam

Robert J. Allen

Robert John Allen, 73, died Saturday, Dec. 24. Allen was a Peninsula resident for 17 years.

Allen was a pioneer in the development of laser remote sensing (lidar) systems for atmospheric measurements. In 1977, he began working with the Lidar Applications Group of the Atmospheric Sciences Division at Langley. He made major contributions to electronic instrumentation used in ground-based and airborne lidar systems until his retirement in 1993.

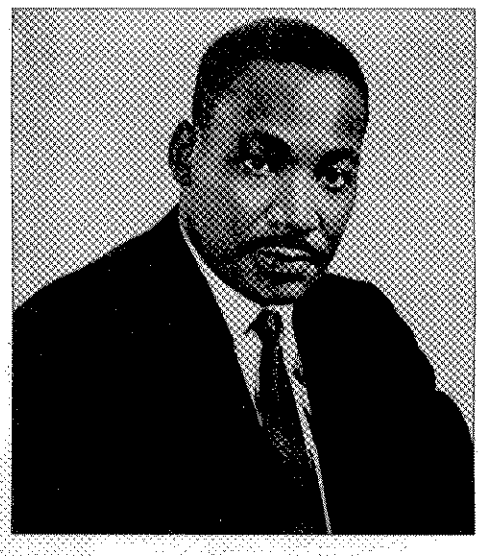
Henry S. Ogiba

Henry Stanley Ogiba, 73, died Monday, Dec. 26. A retired Lt. Col. in the U.S. Air Force, he was a native of New York Mills, N.Y., and a Hampton resident since 1959.

Ogiba worked as a computer systems specialist at Langley until his retirement in 1992.

Remembering . . . the man, the dream

BY VIVIAN B. MERRITT



Dr. Martin Luther King Jr. dreamed of peace and equality for all humankind. He believed everyone should have the freedom to reach for higher goals and the opportunity to climb to greater heights.

On the anniversary of his birth, celebrated in more than 100 nations, we honor his effort and encourage others to take up the torch. In his memory, let all of us at Langley work for a better today and a brighter tomorrow.

"The good neighbor looks beyond the external accidents and discerns those inner qualities that make all men human and, therefore, brothers."

— Martin Luther King Jr.

Announcements

Retirement Party

A party for Michael F. Card will be held Friday, Feb. 10, from 5 to 7 p.m. in the H.J.E. Reid Conference Center. A cash bar will be available. The cost is $12 per person and includes a gift. Gift only contributions of $2 are being accepted. Send gift contributions or party fee to Anne Rockey, Mail Stop 110, ext. 48990, by Feb. 1.

Retirement Party

A party for Alton T. Moore will be held Friday, Jan. 27, from 5 to 10 p.m. in the H.J.E. Reid Conference Center. The cost is $8 per person and a cash bar is available. A gift donation of $2 is being accepted. Send donations and party costs to William Salyer or Louise H. Sykes, ext. 43524, Mail Stop 425, by Jan. 20.

Retirement Party

A party for Sid Pauls will be held at the H.J.E. Reid Conference Center on Friday, Feb. 24, from 5 to 9:00 p.m. Details will be in the next issue of the *Researcher News*. For information, call Barbara Fryer at ext, 46112.

Letters

Retirement Thanks

From Ken Crumbly:

"Thanks for all the cards, gifts and, especially, the luncheons that were given on the occasion of my recent retirement from the Center. Clara and I will have many fond memories of some very top-notch people whom I had the pleasure to be associated with over the last 33 years. Thanks for everything!"

Researcher

The **Researcher News**, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001, is published every other Friday in the interest of all Langley staff and retirees. Submit contributions to the Editor, Mail Stop 146, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Ann C. Gaudreaux, The Bionetics Corp.

Assistant Editor. . . . . Susan A. Smigielski, The Bionetics Corp.

Photojournalist . . Carole Petrachenko Chapman, The Bionetics Corp.

Photographer . . . . . Fred Jones

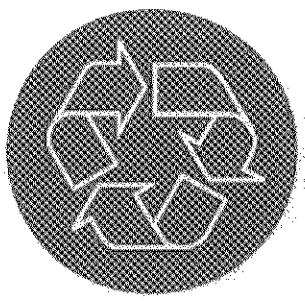
The privilege of advertising in this publication is restricted to the employees and retirees of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin.

All materials are subject to editing.

Yager Receives Manned Flight Awareness Team Award

Dr. Douglas Dwoyer, left, director, Research and Technology Group, recently presented Thomas J. Yager of the Landing and Impact Dynamics Branch with a Manned Flight Awareness Team Award. The team award was presented to Yager for his outstanding work on the Kennedy Space Center's Shuttle Landing Facility runway. The newly modified runway will allow shuttles to land on the runway despite crosswinds of up to 20 knots. The modifications to the runway potentially reduce the number of launch delays and scrubs due to high winds in case of Return-to-Launch-Site abort.

Pollution Prevention Progress Report: Paper Recycling



The Langley paper recycling project has completed its most successful year to date. Project Coordinator Dollie McCown of the Property and Transportation Branch said Langley collected 141 tons of white paper for recycling during fiscal year 1994. This compares with 58 tons collected the previous year. The Environmental Protection Agency estimates each ton of paper recycled saves 17 trees. According to McCown, "Langley receives top dollar from recycling white paper."

Sale of the paper generated approximately $20,000. Executive Order 12873, issued Oct. 20, resulted in Public Law 103-329 that now makes it possible for funds obtained through recycling activities to be retained by the generator to support pollution prevention projects.

Procedures for paper recycling are shown in the sidebar. All employees are welcome to call with comments and recommendations to improve the project. Contact McCown at ext. 43561, Mail Stop 381, or Bob Brown of the Office of Environmental Engineering, at ext. 43609, Mail Stop 429.

"Langley receives top dollar from recycling white paper."

How to Recycle White Paper at Langley

What is recyclable on Center?
- **white non-glossy paper (any color ink)**
- **white sections of carbonless forms**
- **computer paper, including green and white paper**
- **Langley telephone directories**
- **stapled white paper is acceptable**

What is not acceptable?
- **colored paper**
- **envelopes**
- **carbon paper, waxed paper, food wrappers, cups or tissues**
- **newspapers**
- **coated copier paper, thermal fax paper or other slick or glossy paper**
- **gummed labels, adhesives, glue bindings or cellophane**

What are the recycling procedures at Langley?

1. Set up an accessible collection point for each office. You will need:
- **a supply of empty copier or computer paper boxes or paper collection boxes ordered from supply (NSN 8115-00-179-0579). Boxes should be no larger than 18"x12"x12." Request used boxes, if available, when ordering from supply.**
- **Order NASA-LaRC Form 122A labels from supply.**

Coordinating with other offices in your building as appropriate, place your office collection boxes in a readily accessible area for general staff use.

2. Collect recyclable paper at your desk. You will need:
- **an empty copier paper box or other suitable container to collect recyclable waste paper. There are also pre-labeled desktop collection boxes (NSN 8815-01-347-7543) available from supply.**
- **Each employee can collect recyclable waste paper and periodically empty the box into office collection boxes. Remember to reuse waste paper first when possible.**

3. Prepare filled boxes for pick up.
- **When office collection boxes are filled, tape them closed. Attach NASA LaRC Form 122A to the box. Leave filled boxes in the hallway where they will be picked up each Wednesday. Or, if you are located off-site, call for pick up at ext. 45765.**

Need more information?
Call Dollie McCown at ext. 43561. For information on other recyclable items, call Bob Brown at ext. 43609.

Leslie Holland sits at her desk in the Office of Environmental Engineering where she has a container for recycling paper.

Multicultural Leadership Team Charter

The MCLT has created a charter, a living document, that will be adjusted over time, to maintain an optimal strategy for multiculturalism at Langley. The charter reads:

• The Langley Multicultural Leadership Team (MCLT) is responsible for developing a Center plan for an integrated set of activities and initiatives that demonstrate the commitment to multicultural values in the Center's management practices. These activities and initiatives shall also provide support to the program group diversity plans. The MCLT shall serve as an advisory body to the Center's senior staff.

• Its actions shall advance our fundamental goal of the creation of a multicultural work environment, where diversity is understood and valued, where a plurality of perspective is sought, and where each individual can fully develop his or her highest potential and make the maximum contribution to Langley's mission. This will result in Langley being the employer of choice for retaining and recruiting diverse employees.

Membership

The MCLT will be comprised of 26 members, 22 selected and four ex-officio, drawn from all organizational levels, and will reflect the diversity of our Center. The four ex-officio members will be the Equal Employment Opportunity Officer, the head of the Office of Human Resources and one representative from both the American Federation of Government Employees and the International Association of Machinists.

Members will serve three year terms, although with the initial establishment of the MCLT, the members will be appointed for one-, two- or three-year terms to provide for continuity. Members cannot serve consecutive terms, and a previous member will be eligible for renomination to the team after a one-year absence.

The chairperson will be elected by the membership of the team. Each MCLT chairperson shall serve a two-year term. The chairperson will serve as Langley's representative on NASA's Inter-Center Leadership Committee (ICLC). Each Group will nominate a diverse slate of employees from different levels of the organization for membership on the MCLT. Employee self-nominations will also be encouraged. A membership subcommittee of the MCLT will select new members. Nominees will be submitted by November 15 each year for appointment to terms beginning January 1.

Time Requirements

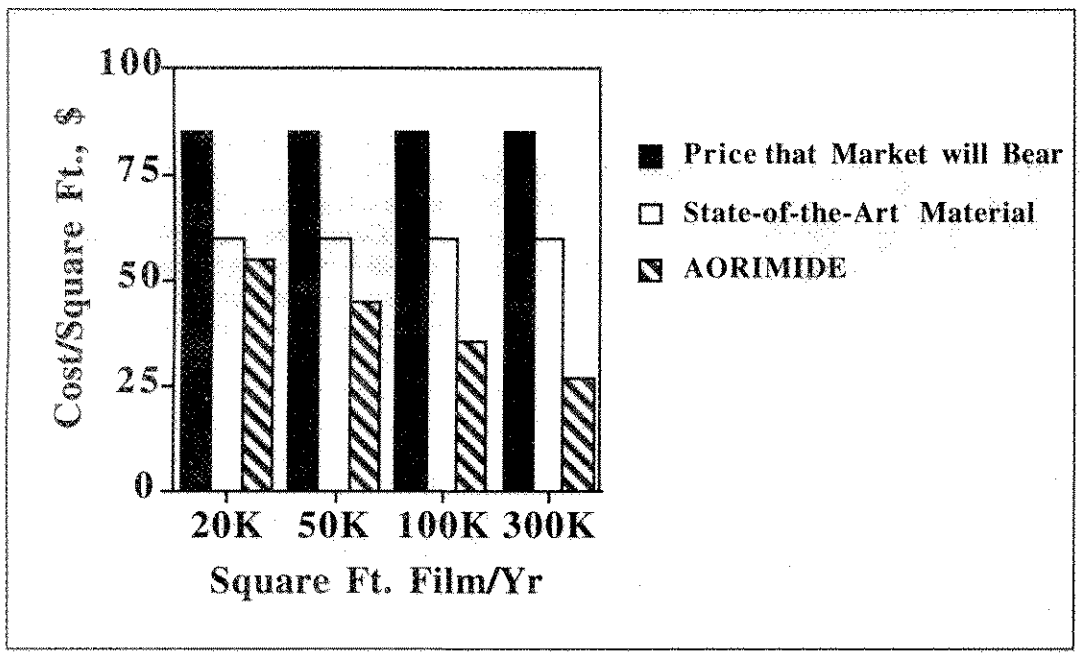
The MCLT will take approximately five percent of a member's time, averaged over a year. There will be regularly scheduled meetings, a two- to three-day annual retreat and other subcommittee or special activities as required. Group directors must ensure nominees will be able to make this commitment. The Deputy Director will make this required commitment clear in the call for MCLT nominations and in each appointment letter.

Roles and Responsibilities

- Draft a Center-level Diversity Plan, consistent with the Agency Plan, which articulates the Center's vision and goals in the area of multiculturalism.
  Update the plan annually.
- Advise and recommend training for Center personnel in multiculturalism.
- Provide oversight and coordination of all diversity related training at LaRC.
- Conduct benchmarking activities as appropriate.
- Conduct publicity activities.
- Serve as a focal point for multicultural issues and activities.
- Sponsor and encourage multicultural activities.
- Form subcommittees and focus groups as necessary.
- Maintain liaison with similar groups at other Centers.
- Serve as a role model of collaborative diversity.
- Serve as a forum for sharing ideas and highlighting those practices that work well.
- Continually assess Center processes and systems to identify and eliminate barriers to working together effectively as a culturally diverse group.
- Establish metrics to evaluate the Center's effectiveness in achieving a culturally diverse community.
- Perform a periodic self-assessment of the MCLT.

Polymers . . .

Continued from Page 1



Alpha , Earth Observation Satellite and privately funded commercial satellites have expressed strong interest in these new materials.

TSI is developing the AO-resistant thread to be used as stitching for MLI blankets. TSI has teamed with U.S. leaders in this area. These include the University of Akron (process development), a leading thread spinning company and Coats America (final thread processing). Coats America presently has contracts to produce coated polyester threads for MLI stitching to meet NASA specifications. "They already have the process and the know-how to make threads of the dimensions and quality needed, and they control more than 80 percent of that market. They have agreed to be partners in this activity instead of competitors," Haghighat said. The customer of this technology would be prime space contractors active in the development of MLI blankets for Space Station Alpha and future spacecraft.

Non-Aerospace Usage

Other potential uses for these new AO resistant materials exist in both aeronautical and non-aerospace applications. These include fire resistant fibers for aircraft interiors, hollow fiber supports used in high temperature/high pressure liquid separation modules for industrial separation processes, corona resistant wire coatings and microelectronic applications where direct adhesion to copper is required. The materials are presently in early stages of evaluation for these applications. Even though TSI only recently licensed this technology, they have sold more than 25 pounds of the polymer for evaluation in non-aerospace applications.

"This technology is beneficial to NASA," Connell said, "since it addresses concerns over long-term space environmental durability in low Earth orbit and provides increased reliability, performance capability and margin of safety in materials systems used on spacecraft without a weight penalty."

"This technology development process involved technology transfer and teaming of NASA, industry and customers to bring it to fruition," said Greg Manuel of the Technology Applications Group. "The ultimate beneficiary of this technology will be NASA since we are the major drivers and, in many cases the final customer, in spacecraft development and utilization."

Working with Langley

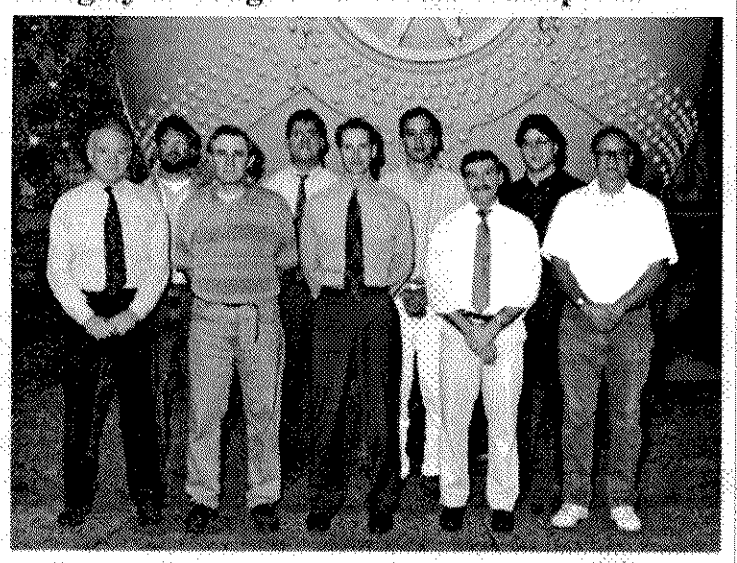
TSI's vice president of technology, Allan Shepp said "NASA is the easiest of all agencies with whom we have contracts to do business with. Contract negotiations have been streamlined through TAG, so it has been a breeze. Expensive and difficult testingof polymers has been shared."

We have had Langley contact and strategy discussions every step of the way with the researchers and TAG staff members," Haghighat added. "There is a sharp focus at Langley of their program objectives. We needed a space-qualified polymer and we all cooperatively went out and got it."

A Candidate for Invention of the Year

The beneficial properties and characteristics of atomic oxygen resistant polymers have been evaluated by the Technology Applications Group and presented to the Technology Council, along with information concerning licensing and commerciability. As a result, this invention has been selected as one of three Langley developments to be submitted as candidates for the 1994 NASA Invention of the Year. Submittals are due to be received by the NASA Headquarters Office of General Counsel by Jan.14.

Langley B-League's Softball Champions



The "Kahuna Crunchers" are the 1994 Langley "B" League Softball Champions. They are, front row, left to right, Jim Taylor, Wayne Melton, Staten Spruill, Gordy DeGear and Gerry Alexander; back row, Scott Berry, Richard Siebels, Scott Fears and Tim Warner. Not pictured are Ken Frink, Glen Diskin and Steve Krist.

Astronaut . . .

Continued from Page 1

The candidates were chosen from among 2,962 applicants. NASA sent 122 of the applicants to the Johnson Space Center in Houston for interviews and medical evaluations in June, July and August of 1994. Final selection was announced on December 8.

The candidates will report to Johnson on March 6 to begin a year of training and evaluation, followed by technical assignments within the Astronaut Office to further prepare them to be part of shuttle flight crews.

Robinson is a research scientist in the Multidisciplinary Design Optimization Branch, working on high-lift system design technology, blended wing-body transport integrated design, and propeller noise reduction. He also serves as a member of the Langley-based NASA General Aviation Program, where he leads development of the new General Aviation Aerodynamics and Acoustics workpackage.

In September 1993, Robinson went to the Massachusetts Institute of Technology (MIT) as a visiting research engineer on a one-year George M. Low Fellowship. There he joined the Man-Vehicle Lab Neurovestibular Sciences research team for the Spacelab Life Sciences 2 mission, flown on the shuttle in November 1993. This research focussed on microgravity effects on the human vestibular and vision systems. His MIT research also included EVA (extravehicular activity) dynamics for satellite capture and space construction. During the fellowship year, he also worked for the Department of Transportation's Volpe Transportation Research Lab in Cambridge, Mass., as a visiting scientist, he developed turbulence and wind models for flight simulation, cockpit human factors for GPS-guided instrument approach procedures and moving-map display development.

Robinson has been flying sailplanes, hang gliders, and powered aircraft since age 15 and owns three airplanes. "Flying has always been a major element of my life and to me, the shuttle program represents the ultimate flight experience," he said.

Robinson began his NASA career in 1975 as a co-op at Ames Research Center, Mountain View, Calif., working as a wind tunnel technician, an aerodynamics researcher and a programmer. He then served as a research scientist in the Ames Experimental Fluid Dynamics Branch from 1979 to 1990, doing fluid dynamics research, especially in the areas of compressible turbulence, wind tunnel experiments and instrumentation, computational fluid dynamics, turbulence modeling and direct numerical simulation, and scientific visualization.

He came to Langley in May 1990. He served as head of the Experimental Flow Physics Branch until 1993, working on transition and turbulence research for better prediction and control of flow over aerospace vehicles.

A native of Sacramento, Calif., Robinson earned a bachelor of science degree in mechanical/aeronautical engineering from the University of California at Davis, and masters and doctorate degrees in mechanical engineering from Stanford University. His dissertation was in the area of turbulence physics.

"Through the years, I have met a lot of extremely well-qualified people who have applied to the shuttle program, so I know I am very fortunate to be selected," Robinson said. "I'm looking forward to the challenge. I'll miss the Langley family and the Tidewater area, but I also can't wait to get started."

Another one of the 1995 candidates is Lt. Susan L. Still, an F-14 pilot in Fighter Squadron 101 with the in the U.S. Navy stationed at the Oceana Naval Air Station in Virginia Beach.

Langley Runners Club Race Results

The Atmospheric Sciences Division (ASD) team with 28 points won the Runners' Club 5-K Inter-Division Team Race held Dec. 1. Team members were Chip Trepte, Kathy Powell, Gale Harvey and Bill Grant. In second place was the Lockheed Engineering and Sciences Co. team with 45 points. The Space Systems and Concepts Division team was third with 47 points and the Wyle Laboratories team came in fourth with 55 points.

The fastest male runner was Chris Slominski of Computer Sciences Corp. with a time of 18:50. The fastest woman runner was Kathy Powell of Science Applications International Corp., running for ASD, with a time of 21:22.

Fiscal Year '94, a Noteworthy Year for Awards

BY KATE SPRUILL

Fiscal year 1994 proved to be an extremely busy year for Langley. Programs and projects were numerous and, as a result of the extraordinary efforts of employees, many successes were realized.

Center management was able to reward the outstanding contributions made by numerous individuals and groups. Recognizing sustained excellence in performance, the Center awarded 435 individuals with performance awards, including Dual Career Ladder Awards and 462 Quality Step Increases. In recognition of onetime special acts or services made by individuals and groups, 985 employees received Superior Accomplishment Awards. In June 1994, Langley instituted the Time-Off Award whereby employees are awarded time off for either onetime special acts or services or for sustained excellence in performance. During fiscal year 1994, 11 employees received Time-Off Awards, resulting in 168 hours being awarded. Finally, Team Excellence Awards, Langley Honor Awards presented in recognition of collective exemplary contributions, were given to eight groups with a combined total of 205 members, including government and non-government employees.

NASA Honor Awards, the highest level of recognition bestowed on an individual or group by the Agency, were presented to 56 Langley employees and contractors and 14 groups.

Education Telecasts Scheduled for 1995 School Year

The 1995 season schedule of "NASA...On the Cutting Edge" pre-college educational telecasts will feature presentations on the recent collision of comet Shoemaker-Levy, the environment and the diverse role of lasers in NASA technologies.

Now in its eighth season, "NASA...On the Cutting Edge" is a series of four, one-hour, live and interactive educational television programs broadcast via satellite to schools in all 50 states, Canada, Mexico and Puerto Rico between 4 and 5 p.m. Eastern time. Last season, over 2,000 educational institutions participated in the series.

The electronic field trips are one of NASA's major telecommunications projects, providing educators with resources for teaching mathematics, science and technology subjects. Participants learn about NASA programs through discussions with scientists and engineers. Aerospace education specialists demonstrate classroom activities and announce new education programs, products and activities available to teachers. The live broadcasts are interactive via telephone and NASA Spacelink—NASA's computerized library for educators.

The 1995 season schedule includes: *The GEE! in Microgravity*, Feb. 2; *Environmental Change: Earth Observing System*, March 16; and *Lasers: Learning with Light*, May 4.

Virginia Air and Space Center News

Virginia Air and Space Center — Langley's Official Visitor Center

Virginia Air and Space Center
Hampton Roads History Center

The Virginia Air and Space Center in downtown Hampton is the official Langley Visitor Center. To strengthen the relationship between researchers, scientists, engineers, technicians and Langley's customer, the public, a program has been initiated through the Office of Public Affairs and the center.

The program is a monthly series of technical presentations given in the evening at the center. These technical presentations will bring more relevance to NASA projects and displays at the center. Docents, educated to inform the general public about the technical work done at NASA and Langley, will be a tremendous asset to the air and space programs. Technical updates will cover a wide variety of topics, from atmospheric science study findings, to technology transfer, wind shear and general aviation.

The talks are scheduled and coordinated through Langley's Office of the Virginia Air and Space Center. Langley's Myra Walton is assigned as lecture series coordinator. She is working with Bert Smith, the center's volunteer/group coordinator.

The technical updates are scheduled for 7 p.m. on the second Monday of each month in the Orientation Theater at the center. Speakers who participate in giving technical presentations will qualify as part of Langley's Speaker's Bureau program. In late 1995, the center wants to develop an Aeronautical Film and Lecture Series.

For more information and to sign up as a speaker, contact Walton at the center at 727-0900, ext. 766.

Thunderstorm Detectives

Flying is much safer now, thanks to a team of dedicated scientists, mathematicians, engineers and policy makers who worked together to create a new system that detects and warns aircraft pilots of hazardous weather conditions. The system, called the Terminal Doppler Weather Radar (TDWR), enables pilots to avoid dangerous situations before they occur. *Thunderstorm Detectives*, a traveling exhibition on display at the center, documents this discovery through the use of video footage of dynamic weather processes, computer-aided thunderstorm simulators, scientific tools, hands-on devices and profiles of individuals who developed the TDWR system.

Visitors to the exhibition are greeted by large photo murals of towering cumulonimbus clouds and make their way through "Storm Dynamics," to experiment with computer-aided simulations of a thunderstorm and explore how storms grow, evolve, and "live out" their existence.

The "Microbursts" section of the exhibition, complete with a simulator, allows visitors to create their own small-scale microburst, and invites them to share in the discovery of a mysterious weather phenomenon.

In the "Terminal Doppler Weather Radar" section, visitors walk into a stimulated air traffic control tower and experience how the system works. A video examines how pilots benefit from the radar's weather information and warnings.

Thunderstorm Detectives will be at the center until February 5. Winter hours are 9 a.m. to 5 p.m., Monday through Sunday. Admission to the exhibits is $4 for adults, $3.50 for seniors and $2 for children four through 12.

Kudos for Media Awards

Langley's Mission Earthbound TV Series Is Finalist in International Competition

Mission EarthBound on-camera personnel are, left to right, Dr. Joel S. Levine, Camille M. Jennings and William R. Orton.

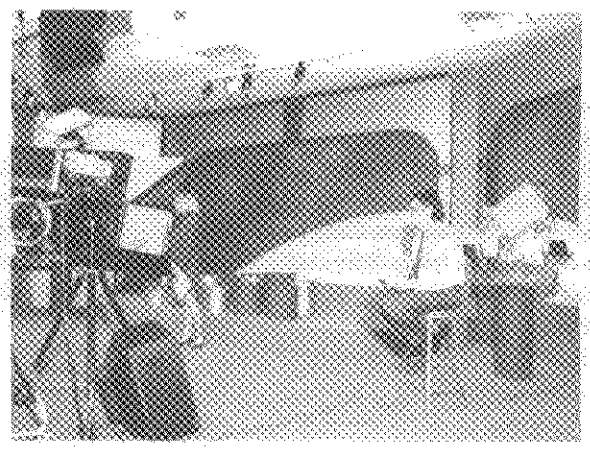
Mission EarthBound, the six one-hour television programs on atmospheric science and global change, was selected as a finalist in the 1994 Annual International Film and TV Festival of New York. The programs were developed at Langley and telecast on the Public Broadcast System from January to May 1994.

Mission EarthBound is in competition to win a gold, silver or bronze medal in the Distance Learning/Education category for the major award that honors achievements in educational and industrial programming. The final award will be announced at an awards banquet on Jan. 20 in New York. By achieving finalist status, the series has already won a Finalist Certificate.

Mission EarthBound was funded by NASA's Mission to Planet Earth (MTPE) Program Office and the Office of Education at NASA Headquarters. Mission EarthBound covered the origin and evolution of the atmosphere over geological time, the destruction of stratospheric ozone, global warming and the greenhouse effect and the environmental consequences of global biomass burning. The series highlighted Langley's atmospheric space experiments including ERBE, HALOE, SAGE, MAPS and LITE. The series featured atmospheric scientist Dr. Joel S. Levine of the Theoretical Studies Branch, who presented the atmospheric and global change science content; series host Camille M. Jennings of the Office of Education; and problem-based investigation teacher William R. Orton of the Rawls Byrd Elementary School in Williamsburg.

Funding for Mission EarthBound was based on a peer-reviewed proposal to NASA Headquarters written by Levine and Marchelle D. Canright of the Office of Education. Other Langley personnel involved in the production of the series included Michael O'Hara of the Video Production Section, and R. Brian Harrell and Lawrence M. Merrill of the Graphics and Design Section.

Mission EarthBound has been rebroadcast several times on the NASA Select Cable Channel and is being telecast in several European countries. Tapes of the series are available in NASA Teacher Resource Centers throughout the country.



On the Mission EarthBound television set with Jennings and Levine.

NAGC Blue Pencil Awards

The 1994 International Blue Pencil – Gold Screen Awards presented by the National Association of Government Communicators have awarded a second place in the Black and White Photography category to Carole Chapman with the Office of Public Affairs. The photo, titled "Student Observes Floating Magnet and Superconductor," was taken during National Engineer's Week. Chapman, a Bionetics Corp. employee, accepted the award at a luncheon on Dec. 5 in Washington, D.C.

Health Corner

Comprehensive Services Are Provided by the Occupational Medicine Clinic

BY PETE EDGETTE

In the next few months, the Health Corner will focus in detail on selected health services available. Here is an overview.

The staff of Langley's Occupational Medicine Clinic provides comprehensive preventive medical services for all eligible Center employees. Quality, timeliness, courtesy and sensitivity are well-known traditions of the clinic. It is operated under a contract with the Kelsey-Sebold Clinic under the auspices of the Langley Occupational Health Center. The clinic is staffed by two senior board certified preventive medicine physicians with specialization in aerospace medicine and occupational medicine. Other staff members are highly-trained and experienced. Two nurses are board certified occupational health nurses. Hours of operation are from 7 a.m. to 4:30 p.m., Monday through Friday.

Services Provided

The clinic staff and facilities provide complete occupational medical services to civil service employees and eligible contractor personnel. Services include:

- Basic annual physical examinations that include blood chemistry, urinalysis, complete blood count, audiogram, vision, electrocardiogram, height, weight, vital signs, hands-on examination and consultation. Customers may order a prostate-specific antigen test for $10 and a HIV test for $15. Pulmonary function testing and x-rays are provided if required for job protocols or if deemed medically indicated by a clinic provider.
- Treatment for acute/emergent illnesses and injuries.
- Routine allergy and immunization injections.
- Class I, II and III Federal Aviation Administration (FAA) exams
- Monthly and quarterly preventive medicine lectured by guest lecturers who are experts in their fields.
- A fully-equipped physical fitness center and staff trained in sports medicine
- Full-time interpreter for the culturally deaf
- On-site lectures in support of work area safety programs
- Optical dispensing services
- Colonoscopy examinations for individuals over 45 years old recommended every three to four years for individuals over 50 years old.
- Treadmill testing (exercise tolerance tests) up to 85 percent of maximum heart rate recommended every three years for employees over 50 years old or when recommended by staff physician
- Employee Assistance Program

How to Get Help/Information

The following telephone numbers may be used to inquire and obtain clinic services: health manager, ext. 43189; medical director/receptionist, ext. 43192/32193; appointments, ext. 43195; Fitness Center, ext. 46387; optical dispensing, ext. 43211; emergency room, ext. 43196; Employee Assistance Program, 826-8565; and workers compensation, ext. 43194.

The clinic does not replace or assume the role of an employee's private physician. Treatment for non-occupational or off-duty illnesses or injuries should not be delayed until the clinic opens. Employees should seek the services of their private physician for continuity of care purposes.

The clinic has a heavy demand for its services and appreciates clients keeping scheduled appointments. Cancellations are requested at least 24 hours in advance to allow time to fill the vacancy.

The present emphasis on streamlining government creates significant stress on employees. Getting the occupational medicine team involved in helping individuals reduce stress during the process of "doing more with less" can be very beneficial. Give the clinic a call.

Cancer

The word conjures up frightening images of pain, mutilation and certain death, but the truth is much more hopeful. Cancer can be cured and, in many instances, prevented altogether. Prevention, early diagnosis and, where required, early treatment are the keystones for control for cancer that affects both young and old.

Every home probably has smoke alarms in stalled to provide "early warning" of life-threatening fires. It's just as important to know the early warning signs of the most common cancers: lung, breast, prostate, colon, stomach, ovary and melanoma. These are some of the topics to be covered in the next medical seminar on Thursday, January 19 from 2 to 3 p.m. in the H.J.E. Reid Conference Center. Everyone is welcome to attend.

Engineer's Week February 19-25

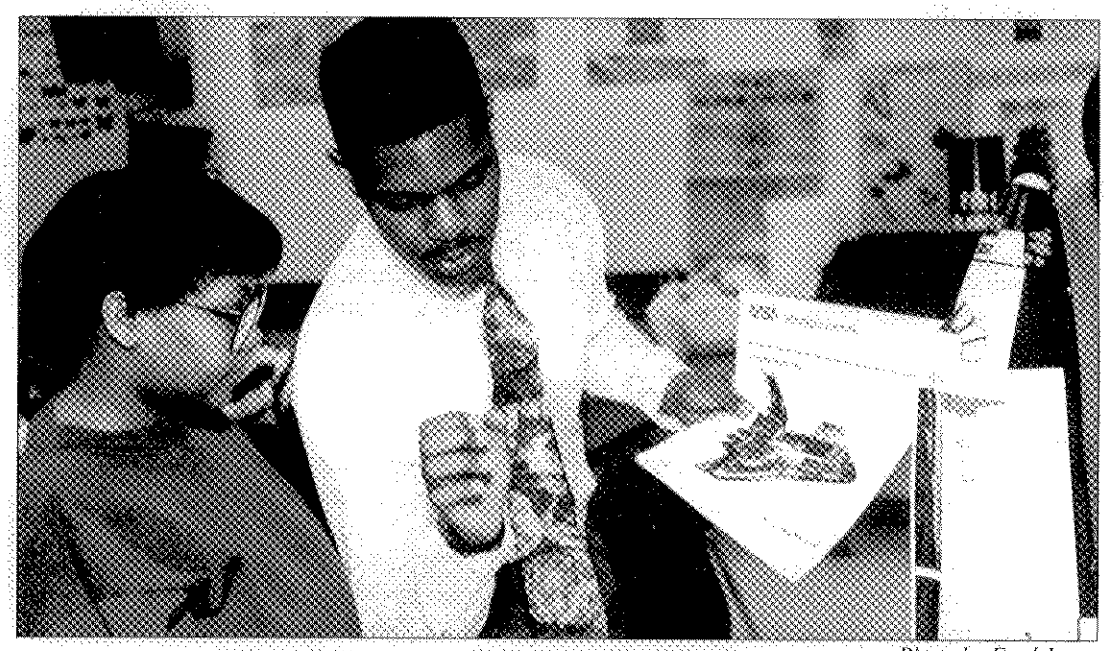


Photo by Fred Jones

Fernandus Rattliff talks about the space shuttle with an area student during National Engineers Week 1994. Rattliff was one of 240 Langley employees and contractors who volunteered last February to teach the importance of studying math and science. Registration forms for volunteers are being accepted until Jan. 13. Please send the forms to Cathy Schauer at Mail Stop 154 or the forms can be faxed to 47732.

Volunteers Honored at Holiday Luncheon

Photo by William Salyer

Operation Communication and Public Mail Center volunteers were honored at a holiday luncheon Dec. 16. Operation Communication volunteers assist with Center tours and have donated over 200 hours telling the NASA Langley story to more than 50 groups during 1994. Public Mail volunteers fill requests for information on Agency and Center programs from individuals across the U.S. and from many foreign countries. These volunteers have donated close to 500 hours during the past year. The honorees were, first row, left to right, Mary Levin, Gladys Hardrath, Patricia Williams, Rise Ramsey and Bob Miserentino; second row, Clarence A. Brown Jr., Myra Walton, Steve Devan and Steve Yaros; back row, Peggy Hewes, John Witherspoon, Nita Hamilton, Diana Freeman, Dick Whitcomb and Don Ward.

New Space Shuttle Model Tests Robotics

Langley robotics engineer Jeff Seaton of the Automation Technology Branch controls a remote manipulator arm (seen in the left window) from a mockup of the space shuttle's aft deck during a test of robotics maintenance technology for the International Space Station Alpha. In the bottom of the left window, a technician can be seen standing below the remote manipulator system. Langley engineers recently built the mockup to test the concept of a Dexterous Manipulator Test Bed to perform space station maintenance. It includes a hydraulic manipulator arm with an end effector tool used to grasp objects.

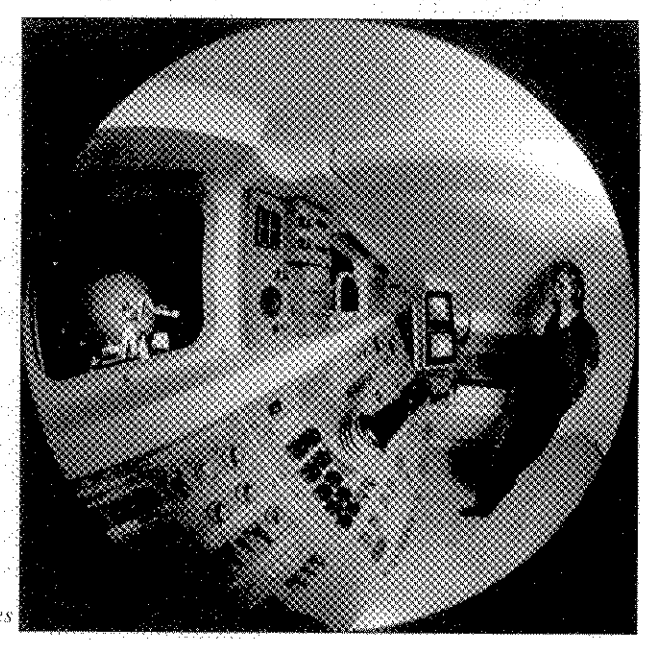


Photo by Fred Jones

Photo by Fred Jones

The photo above shows the F-16XL aircraft landing after its last research flight at Langley and prior to its delivery to Dryden Flight Research Center in Edwards, Calif.

Good-Bye Flight for F-16XL

BY MICHAEL FINNERAN

A wing panel with features designed to decrease the drag on airplanes at supersonic speeds also was delivered to Dryden Flight Research Center in Edwards, Calif., as part of Langley's work on a High-Speed Civil Transport.

The panel will be used on the F-16XL in flight testing this year to demonstrate supersonic laminar flow control. The panel is a product of Langley's High-Speed Research program. The panel will be installed on the port wing of the aircraft and tested at supersonic flight conditions. The panel is made of titanium skin and aluminum substructure.

The outer skin is perforated with about 10 million tiny holes, through which an imbedded suction system will draw a tiny portion of the air flowing over the wing. This will stabilize the airflow over the wing and prevent the airflow from becoming turbulent, which causes drag and increases fuel consumption.

Reducing drag allows an aircraft to use less fuel. Studies have shown that supersonic laminar flow control could reduce drag on a future supersonic passenger jet by as much as eight percent, resulting in enormous fuel savings. A three-company team of Rockwell, Boeing and McDonnell Douglas employees completed and delivered the panel to Dryden. Langley and Dryden are jointly performing the supersonic laminar flow research project. Dryden will begin installing the panel on the F-16XL in early 1995. Flight testing is scheduled to begin in September 1995.

The tests will enable designers of the next-generation High-Speed Civil Transport (HSCT) to enhance design codes and, if successful, incorporate this technology into the HSCT. The HSCT is a 300-passenger supersonic transport projected for service between 2005 and 2015.

The three-company industry team was awarded a contract in September 1992 to design and build the suction panel. The On-board Suction System Controller (OSSC) is scheduled for delivery to NASA in early 1995. It will automatically control 20 suction flow control valves to draw the required amount of air through the perforated skin. Flight researchers will have the ability to specify requirements for various regions of the suction panel and change them real-time during flight testing.

Photo by Susan Rickard

F-16XL pilot Phil Brown is doused with water following the flight by Lee Joyce and Dale Bowser.

Langley Wraps Up the Year in Style

Center Director and Mrs. Paul F. Holloway hosted a Holiday Reception in the Reid Conference Center December 16. Over 650 employees, contractors and retirees attended the celebration commemorating the 25th anniversary of the Apollo program.

Deputy Director and Mrs. H. Lee Beach share holiday greetings with retiree Dick Moberg. Senior Staff greeted guests and served refreshments for the annual event co-sponsored by the Langley Activities Association and the Langley Federal Credit Union.

Photos by Fred Jones

Mark Motter, Systems Analysis Branch, displays his winning ticket as Assistant Director Belinda Adams presents him with a framed Apollo Commemorative. Other door prize winners were John White, Operations Engineering Branch; Kelli Willshire, Subsonic Transportation Office; Lynn Curtis, Fluid Mechanics Operations Section; Sam McPherson, Management Information Systems Branch; and Betty Lassiter.

Holiday Thoughts Turn to Those in Need

BY MARNY SKORA

Langley employees made the recent holidays warmer and sweeter for others —those known only by their need.

A seven-year tradition started by members of the Acquisition Division and picked up by groups all over the Center ensured warm clothing for needy children on the Peninsula. Over 50 "angels" were selected from Salvation Army Angel Trees in local department stores and malls. These lucky kids were outfitted with warm clothing and some fun things to make their holidays warmer as well as brighter.

Photo by Fred Jones

Cafeteria Manager Donis Anders, left, and Jeanette George pack the last of the over 150 dozen cookies donated by Langley "bakers" to make the holidays a little sweeter for those in need.

Vehicle Dynamics Branch Chief Dana Dunham and her daughter had been selecting Angel Tree kids as a family tradition for years. After reading about the Center-wide initiative in the *Researcher News*, the effort expanded. "This year," reports Dunham, "several individuals in the branch joined in the effort." And that's how it was all over the Center. A recurring statement symbolized individual efforts — one never feels quite so good as when helping someone else.

So it was with holiday sweets, too. Day of Caring volunteer Jeanette George, Information Systems Division, decided to make an "extra batch" when doing her holiday baking this year. Her idea was opened to all employees through the Center's Community Service Program and the initiative was co-sponsored by the Langley cafeteria that donated the containers. "Cookie Power" netted over 150 dozen goodies for the Salvation Army's mobile kitchen.

In addition to cookies, the fruit that decorated the tables at the Director's holiday reception was also donated to the Salvation Army. The cookies and fruit helped treat 100 families in Hampton and about 175 homeless individuals in Newport News to something extra at an evening meal.

And goods weren't the only thing offered during this season of giving. Several Langley employees spent a couple of "eves" before Christmas at the Salvation Army facility on Big Bethel Road distributing the collected items.

However, "need has no season," Capt. Steve Long reminds those still basking in the glow of holiday giving. "The local community has a continuing need for food and clothing."

Long reports that the Salvation Army is in special need of non-perishable food and warm coats for children and adults. He and his staff operate an emergency canteen for the hungry and a shelter for the homeless. They give out bags of food daily to families in need and, especially at this time of year, help those on a tight budget with utility assistance.

Finally, another great need is time — time spent with others. Langley's Community Service Program will continue to pass along information on opportunities to help those who need help desperately. Thank you for your generosity all year long.

Happenings

Researcher News Schedule 1995

Deadline (noon)	Distribution
January 3	January 13
January 17	January 27
January 31	February 10
February 14	February 24
February 28	March 10
March 14	March 24
March 28	April 7
April 11	April 21
April 25	May 5
May 9	May 19
May 23	June 2
June 6	June 16
June 20	June 30
July 4	July 14
July 18	July 28
August 1	August 11
August 15	August 25
August 29	September 8
September 12	September 22
September 26	October 6
October 10	October 20
October 24	November 3
November 7	November 17
November 21	December 1
December 5	December 15

RIDE NEEDED: Starting immediately from Locust Avenue, Wythe area daily, flexible. Call Dave evenings at 247-3060.

INCOME TAX PREP: Member of National Association of Tax Practitioners, electronic filing and direct deposit at no extra charge. Small business bookkeeping; we travel to you, by appointment, call 874-3121.

FOUND: Car key on ring in front of Building 1220. Contact Doyle Franklin, e-mail d.b.franklin@larc, ext. 47476, Building 1268, room 1201.

PENINSULA SKI CLUB meets the second Thursday of each month: Feb. 9, March 9, April 13 and May 11. A social hour begins at 7 p.m., meeting at 8 p.m. at the Days Inn of Oyster Point. Ski trips are planed from January through April 1. Indoor tennis parties have also been scheduled through the club. For more skiing information, call John Kittler at 838-7406 evenings or leave a message; for tennis information, call Delores Warner at 587-5974 (home) or 482-6118 (work).

THE SCIENCE-BY-MAIL program is seeking volunteer scientists and engineers who are willing to correspond with groups of students (grades 4-9) on three science projects that will be distributed through the Science Museum of Virginia. Aside from postage, there is no cost to the volunteers. For more information contact Bart Singer, ext. 4231,6 or call Charlotte Pritchett at the Science Museum of Virginia at (804) 367-8956.

BLOOD DRIVE REMINDER: Wednesday, Jan. 25 from 9 a.m. to 3 p.m. in the H.J.E. Reid Conference Center. For more information, call ext. 43194.

FOR SALE: 1990 GMC Safari GT, silver, very sporty, power everything, trailer package, 61,000 miles, excellent condition, $9,500. Call 249-0612.

FOR RENT: House in Northampton area, 3 BR, one bath, living and dining rooms, den, fenced-in backyard, $525/mo. Available immediately. Call 827-5253.

LOST: Wedding band, white gold, inscription inside is *Elvia Duque 3-10-62*. Might have been lost near the parking lot of Building 1209. If found, call Marco at ext. 47247.

INCOME TAX PREP: Member of National Association of Tax Practitioners will prepare taxes; electronic filing and/or direct deposit at no extra charge. Will also do small business bookkeeping and travel to you, by appointment. Call 874-3121.

TIDEWATER CLASSICAL GUITAR SOCIETY welcomes Pablo Ortiz and Luis Zumbato from Costa Rica's Castell Conservatory Jan. 27 in Virginia Beach and Jan. 28 in Williamsburg. For tickets and information, call 625-2411 on the Southside or 566-3304 in Williamsburg.

FOR RENT: In Riverdale, 3 BR brick ranch, 2 baths, wall-to-wall carpet, kitchen appliances, central air, garage w/opener, large fence yard, $800/mo. Deposit required. Call 827-7485.

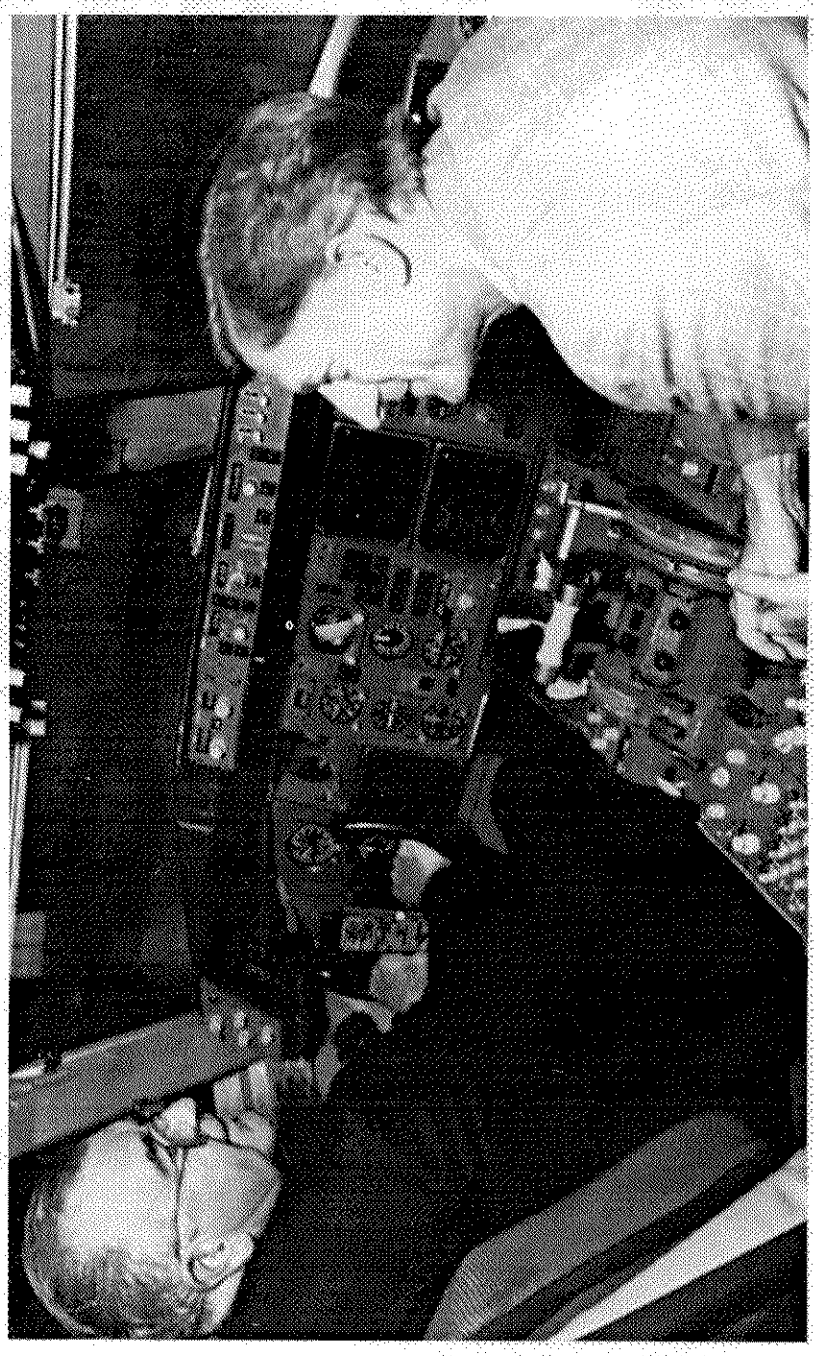


Photo by Fred Jones

Langley welcomed its newest research vehicle in dedication ceremonies Dec. 8. Above, Congressman Herb Bateman, left, gets a tour of the 757 cockpit from Harry A. Verstynen, chief of the Flight Operations and Support Division, following the event. The plane will be extensively modified to fly as a research lab.

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

Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

ACE ON-SITE NON-LARC
COPPEDGE, AUDREY S.
MAIL STOP 146

National Aeronautics and Space Administration
Langley Research Center

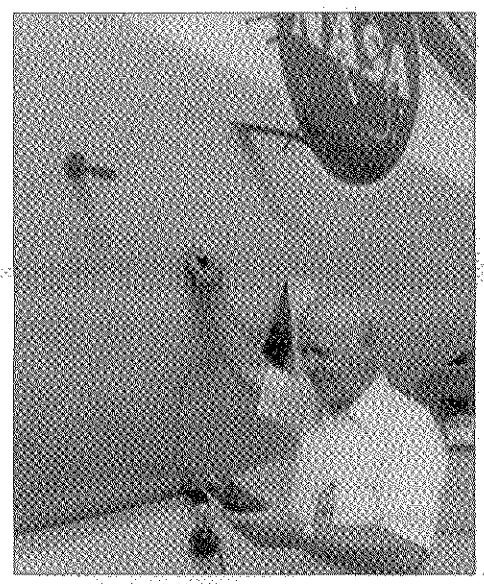
Langley Research Center News Researcher

Volume 9 ❖ Issue 2 ❖ January 27, 1995

TAG Commercializes Self-Nulling, Eddy-Current Technology in Record Time

Krautkramer Branson (KB), a subsidiary of the Emerson Electric Company, will make its first delivery of a KB Instruments "Crack Finder" to a customer late this month, less than six months after licensing the enabling technology from Langley and only 11 months after being selected as Langley's industry partner to commercialize the technology.

The Crack Finder is a compact, hand held instrument and probe designed for rapid scanning of metal surfaces to detect surface-breaking cracks. The self-nulling eddy-current technology on which the Crack Finder was based was developed by John Simpson of Lockheed Engineering and Sciences Co., Dr. Min Namkung both of the Nondestructive Evaluation Science Branch (NESB), Buzz Wincheski, James Fulton and Ronald Todhunter of Analytical Services and Materials, Inc. (ASM), and Jerry Clendenin of NESB.



Co-inventor John Simpson of the Lockheed Engineering and Sciences Co., demonstrates the Crack Finder, based on self-nulling, eddy-current technology developed at Langley.

Photo by Sandy Gibbs

The Technology

Langley has been investigating ways to enhance the airworthiness of America's aging commercial airline fleet by advancing conventional eddy-current techniques. Some of this research resulted in the self-nulling eddy-current device which is extremely sensitive to fatigue cracks in aluminum alloy plates. An eddy current is an electric current induced by an alternating magnetic field. Self-nulling means that the device automatically recalibrates to zero so that each imperfection produces a reading or reaction when it is detected. "It is different technology from other eddy-current procedures," Simpson said. "The self-nulling feature is a first and it makes the device highly accurate, reliable, simple and economical."

The Device

The self-nulling eddy-current device uses a unique driver-pickup coil configuration to produce the zero output voltage when unflawed material is inspected. Where a fatigue crack is present, a large output voltage is recorded. The probe consists of a driving or primary coil wound around a cylindrical ferromagnetic flux-focusing lens. In the interior of the lens, an AC voltmeter is connected to the leads of the high turn pickup or secondary coil. The unique feature is that the pickup coil is magnetically separated from the driving coil by the flux-focusing lens. The lens concentrates the field lines developed by the driving coil, shielding the pickup coil from the effect of the driving coil.

When the probe is placed above a conducting sample, a high density eddy-current ring forms at the outer edge of the pickup coil. If there is a flaw in the region of the test sample where eddy-currents are induced to flow, the magnetic field produced by the eddy-currents will induce a large output voltage. The eddy-current path created at the tip of a crack has been shown to produce the largest field values, making detection simpler.

Continued on Page 5

Langley Instrument Helps Confirm CFCs Cause Antarctic Ozone Hole

BY CATHERINE E. WATSON AND TONY REICHHARDT

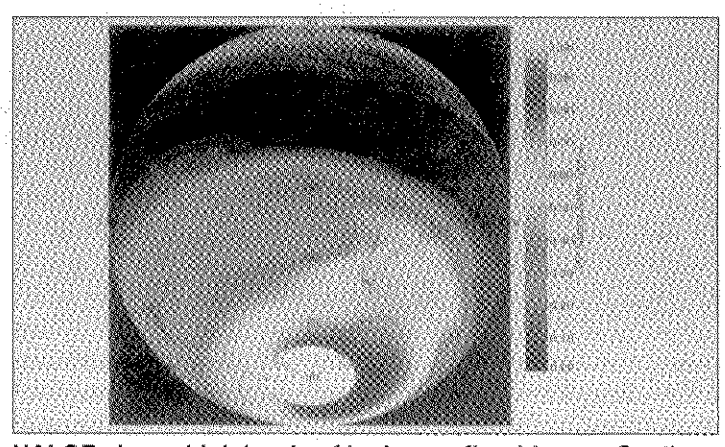
Measurements from the Langley Halogen Occultation Experiment (HALOE) instrument have helped confirm that chlorofluorocarbons (CFCs) are responsible for the annual Antarctic ozone hole. Three years of HALOE measurements helped confirm that CFCs are the largest source of ozone-destroying chlorine in the stratosphere, according to HALOE principal investigator Dr. James Russell.

HALOE confirmed CFCs as the source of the ozone-destroying chlorine by detecting fluorine gases in the stratosphere. One of these gases, hydrogen fluoride, has no significant natural sources and is created primarily by the breakdown of CFCs, which releases both fluorine and chlorine. The HALOE instrument, aboard the NASA Upper Atmosphere Research Satellite (UARS), measured high concentrations of stratospheric hydrogen fluoride in the region of the Antarctic ozone hole.

Using the Information

HALOE also measured the concentrations of hydrogen chloride, the main reservoir of chlorine in the stratosphere. Hydrogen chloride comes from both human-made CFCs and natural sources. A careful analysis of the ratio between hydrogen chloride and hydrogen fluoride, and how it varies over time, can reveal how much of the ozone-destroying chlorine in the stratosphere is due to human activity. Russell said an analysis of HALOE's hydrogen chloride and hydrogen fluoride measurements showed that almost all (80%) of the ozone-destroying chlorine in the stratosphere comes from the breakdown of CFCs.

Because chlorine also enters the atmosphere naturally - from sources such as the decay of algae in the oceans and from volcanoes - there had been some uncertainty as to how much of the total amount was due to human activities. The HALOE hydrogen chloride and hydrogen fluoride data helped end the scientific debate as to the source of chlorine in the stratosphere. "While these compounds have been measured previously from the ground, balloons and the shuttle," Russell said, "HALOE provided the first continuous, multi-year, global data set."



HALOE shows high levels of hydrogen fluoride over South America and in the tropics. The Halogen Occultation Experiment or HALOE measurements of the tracer gas, hydrogen fluoride, during the Antarctic Spring, Sept. 21 to Oct. 15, 1992, indicate a vertical sinking of air in the so-called "ozone hole." The ozone hole is not static, but the center of a moving vortex region that sometimes moves as far as the southern half of South America. Air currents further extend the effects of the ozone hole to the mid-latitudes and tropics. One of 10 experiments flying on UARS, HALOE has been providing data since October 1991.

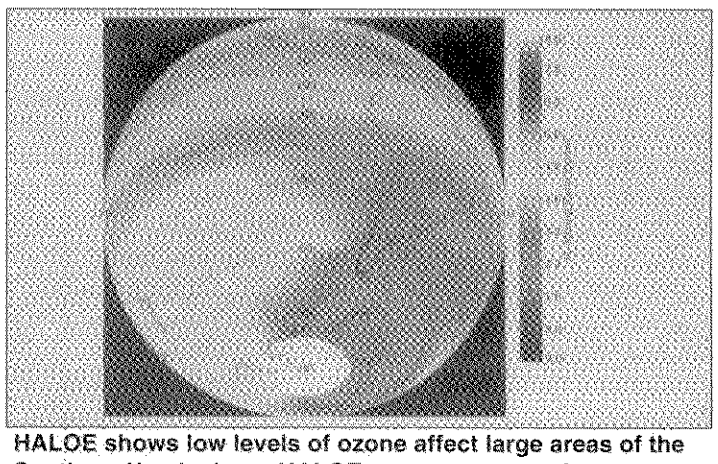
HALOE's Job

Langley's HALOE instrument has been returning critical data about the Earth's ozone layer since it was launched on UARS in 1991. Besides measuring ozone, hydrogen fluoride, and hydrogen chloride HALOE measures several other chemical compounds that either indicate ozone destruction or play a role in it. These include methane, nitric oxide, nitrogen dioxide, and water vapor. HALOE also measures the amount of small particles (called aerosols) in the upper atmosphere and the temperature profile.

The Ozone Hole

Since the discovery in 1985 of the ozone hole – a seasonal loss of ozone in the stratosphere over Antarctica – the world's attention has been drawn to this urgent environmental problem. Because the ozone layer protects life on Earth from the harmful effects of the sun's ultraviolet radiation, it is important to determine the causes and mechanisms of ozone loss, as well as the likelihood that populated regions of the world will be affected.

Continued on Page 4



HALOE shows low levels of ozone affect large areas of the Southern Hemisphere. HALOE measurements of ozone during Antarctic Spring, Sept. 21 to Oct. 15, 1992, indicate low levels of ozone at 15.5 miles (25 km) over large areas of the Southern Hemisphere as well as the Antarctic region, forming a so-called "ozone hole." The lowest levels of ozone are centered over the eastern part of Antarctica, however, relatively low ozone levels also extend over the southern tip of South America. The white area at the South Pole, centered around 90 degrees latitude, is an area where no measurements were made.

News Briefs

Around the Agency

TWO INTERNATIONAL CANDIDATES TO JOIN 1995 ASTRONAUT CLASS – Japanese astronaut Takao Doi, Ph.D., representing the National Space Development Agency of Japan, and Canadian astronaut David S. Williams, M.D., of the Canadian Space Agency, will join the newest group of astronaut candidates as mission specialists. The group consists of 11 mission specialists, including Langley's Dr. Stephen K. Robinson (see Jan. 13 issue), and 10 pilot candidates.

NASA, BOEING SIGN AGREEMENT FOR INTERNATIONAL SPACE STATION – NASA and Boeing Defense and Space Group, Missiles and Space Division, of Houston, Texas, completed negotiations and signed a $5.63 billion contract for the design and development of the International Space Station. We are extremely pleased to have a final agreement with our prime contractor," said Randy Brinkley, Space Station Program Manager. "The NASA and Boeing team members involved in drawing up the agreement did an outstanding job, and have incorporated unique features to reduce cost and to reduce risks to the taxpaying public." Under the agreement, Boeing is responsible for the integration and verification of the International Space Station system, as well as the design, analysis, manufacture, verification and delivery of the U.S. on-orbit segments of the station. Boeing will interact with NASA's international partners at a technical level to ensure physical, functional, safety and operational compatibility.

FIRST SHUTTLE LAUNCH OF 1995 SET FOR FEB. 2 – NASA managers set Feb. 2 as the official launch date for Space Shuttle Discovery on Mission STS-63. The date assumes successful completion of thruster changeout work scheduled to be finished later this week. The flight will feature a rendezvous with the Russian Space Station Mir in a dress rehearsal of missions that will follow later in 1995. In addition, the mission will see the third flight of the commercial SPACEHAB facility in which a number of microgravity research experiments will be conducted. Discovery's crew also will deploy and retrieve a free-flyer astronomy payload and two crew members will perform a five-hour spacewalk.

Black History Month Celebration

Beyond the Dream VII: "The Vanishing Black Male – Saving Our Sons"

Black Issues in Higher Education is presenting a two-hour videoconference on Wednesday, Feb. 1, from 1 to 3 p.m., as the national kickoff for the annual observance of Black History Month. The Office of Equal Opportunity Programs and the Employee Development Branch of the Office of Human Resources, is co-sponsoring this event at Langley.

The live telecast will feature renowned educators, authors, political activists and talk show hosts as they discuss the myths, stereotypes and realities surrounding the black male image as well as solutions to the problems they face in today's society.

Interested employees can view this broadcast over Langley Channels 15 and 16 in their own facilities, in the main cafeteria (Building 1213), or the Office of Education conference room (Building 1216, room 119). For more information, contact the Office of Equal Opportunity Programs at ext. 43290. Employees may charge their time to Job Order A5236.

An Update on the *Working Women Count!* Campaign

BY PATSY CAMPBELL

As Langley's Federal Women's Program manager, I wanted to share this unexpected, but most welcome, personal response I received from President Bill Clinton:

"Dear Ms. Campbell:

I want to thank you personally for your work as a partner in the *Working Women Count!* campaign. Because of your commitment and that of NASA, we heard from more than a quarter million working women in this historic effort to find out all we can about the concerns of women in the workplace.

The *Working Women Count!* campaign was very successful – – we learned from women workers themselves what they think about their jobs, what issues concern them, and what changes they would most like to see in the workplace. We now are working with Jim King, the Director of the Office of Personnel Management, to take further steps to make the federal government a model workplace for working women. I have also advocated initiatives that encourage the implementation of policies that create more family-friendly workplaces in the private sector.

Providing safe, healthy and family-friendly workplaces is a national priority. As we continue to reshape work force policy, I would like to call upon our partners who represent employers, women's groups and community and labor organizations to help us address the concerns that these working women have so eloquently expressed.

Together we can make better workplaces for all Americans."

Announcements

Retirement Party

A retirement party for Sidney F. Pauls will be held February 24, from 5-9 in the H.J.E. Reid Conference Center. The cost is $12 (includes gift) per person. Gift only contributions of $2 are being accepted. Send gift contributions/party reservation fee to Barbara Fryer, MS 103, 46113, by February 15, 1995.

Retirement Party

A party for Michael F. Card will be held Friday, Feb. 10 from 5 to 7 p.m. in the H.J.E. Reid Conference Center. The cost is $12 per person and includes a gift. Gift contributions of $2 are being accepted. Send gift contributions or party fee to Anne Rockey, Mail Stop 110, ext. 48990, by Feb. 1.

Retirement Party

Join Bob Hess and friends for a party, Tuesday, Feb. 21, 5 to 7 p.m. at the Langley Air Force Base Officers' Club, Heavy hors d'oeuvres will be served. Cost is $12 per person/ $22 per couple and includes a gift. For reservations or gift contributions, call Kim Kurtz or Joyce Reed at ext. 41733. Checks made payable to Anne Overbay at Mail Stop 476 are due by Feb 15.

In Memoriam

Ernest L. Greene

Ernest L. (Ernie) Green, 75, died Tuesday, Dec. 20.

Greene was a native of Gates County, N.C., and worked as an electronic technician in the computer division (ACD). He organized many of the Langley vacation tours and served as president of the Langley Activities Association for several years. Greene retired from Langley in 1989 after 35 years of service.

Alma Alexander

Alma Alexander died Thursday, Jan. 5, in Hampton. Alexander worked for many years as the receptionist at Langley Headquarters.

Wright Receives Suggester of the Year Award

Henry Wright of the Engineering Support and Facilities Project Branch was chosen as Langley's 1994 Suggester of the Year and presented with an award on Jan. 3.

The project, entitled "Modifications to Upgrade the 30- by 60-Foot Tunnel - Project Enhancements," involved modifications to the 30- X 60-Foot Tunnel. The project enhancements were originally unable to meet the necessary requirements within budget. Wright's solution was to suggest installing a high pressure air transfer line from Langley's west area to the east area. The pipeline has been installed. It has eliminated the need for four new compressors and, subsequently, a building to hold them, large amounts of hardware and operating expenses.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program is designed to permit employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. Please contact Lisa Allen at extension 42610 for more information. Your annual leave donations are greatly appreciated.

The following Langley Research Center employees are approved leave recipients: Carmen Batten, Suzy Carpenter, Jean Cridlen, Brenda Gile Laflin, Julian Roberson, Cassandra Stevens, Marie Storms and Darrell Wood; and from other Agencies: Susan Pauls Burnett and Loc T. Nguyen.

Do you serve on a Board?

As part of an Agency-wide effort, Langley is compiling a list of all employees who serve on community boards, such as the Combined Federal Campaign, school and university boards, the Red Cross, Girl and Boy Scouts, Big Sisters and Big Brothers, Salvation Army, the Virginia Air and Space Center, etc. Also important is whether participation is as an official NASA employee or as a volunteer. Having this information helps the Center gain a better picture of its outreach into the community.

If you are a board member, please send your name, the board name, your phone and mail stop numbers, your role on the board, whether you represent NASA or serve as a volunteer, and the purpose of your board/organization to Cathy Schauer, ext. 43314, Mail Stop 154 or fax 47732 by Feb. 17.

The information will be compiled and published in a future issue of the *Researcher News* and will be maintained in the Office of Public Services.

Letters

Retirement Thanks

From Chip Sibbers: "My heartfelt thanks to the many fine Langley folks with whom I have shared the good feelings resulting from the achievement of numerous team efforts during the past 31 years; the other good folks with whom I had the good fortune to associate; and especially to those who gave me support during the hard times. God bless! Thanks."

In Memoriam

Willie H. Sumner

Willie Harrison Sumner, 75, of Conway, N.C., died Dec. 27, 1994. Sumner worked at Langley until his retirement in 1977.

Researcher News

The **Researcher News**, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001, is published every other Friday in the interest of all Langley staff and retirees. Submit contributions to the Editor, Mail Stop 146, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Ann C. Gaudreaux
The Bionetics Corp.

Assistant Editor. . . . . Susan A. Smigielski
The Bionetics Corp.

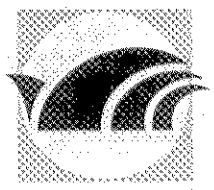
Photojournalist . . Carole Petrachenko Chapman
The Bionetics Corp.

Photographer . . . . . Fred Jones

The privilege of advertising in this publication is restricted to the employees and retirees of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin.

All materials are subject to editing.

Virginia Air and Space Center News



Virginia Air and Space Center
Hampton Roads History Center

"Hellfighters and Infernos"

The center is offering a special family event, "Hellfighters and Infernos," from 11 a.m. to 4 p.m. on Saturday, Jan. 28. The event is being held in conjunction with the IMAX® film *Fires of Kuwait* and is free with admission to the exhibits.

The program will feature fire fighting equipment, exhibits, displays and demonstrations. Children can participate in make-and-take activities and share fire safety tips with Smokey the Bear. Visitors will see antique fire equipment, and view videos on fire training. Children can dress in actual fire fighting gear.

Participants will include the Hampton Fire Department, the Department of Forestry, Langley Air Force Base, Amoco Oil Company, Hampton University Chemistry Department and the Naval Weapons Station, Yorktown.

Fires of Kuwait is an IMAX® film currently showing at the center daily. The film puts viewers in the heat of the action with the heroic firefighters from 10 nations who battle the blazing oil wells in the aftermath of the Persian Gulf War.

The center, located at 600 Settlers Landing Road, Hampton, is open from 9 a.m to 5 p.m daily. Admission to exhibits is $4 for adults and $2 for children ages 4 through 12. Admission to exhibits and to view Fires of Kuwait is $8 for adults and $5.50 for children. Call 727-0900 for more information.

Virginia Air and Space Center Receives International Architectural Award

For the first time in two decades an American firm recently won first prize in the Pan-American Biennial of Architecture in Quito, Ecuador. Mitchell/Giurgola Architects in New York City garnered the Architectural Design Grand Award for their design of the Virginia Air and Space Center, Langley's official visitor center. The building was designed in association with Peninsula architects Rancorn, Wildman, Krause and Brezinski.

In their decision, the jury cited the integration of aesthetics and technology as the basis of the award. The American firm shared a first prize with the Venezuelan architect Jorge Rimonti, for his eco-tourism camp dwellings. More than 180 invited entries from 15 countries in the Americas competed for the prize.

In recognition of the landmark honor, Steven Goldberg, a partner of Mitchell/Giurgola Architects, was the invited guest and keynote speaker at the 19th Convention of the College of Architects of the Republic of Mexico, held in Mexico City in December. He presented the Virginia Air and Space Center project as well as recent work of his firm, to an audience of more than 600 international architects.

In a letter to Langley, telling the Center about the prize, Goldberg wrote, "We were surprised and delighted with this honor. I wanted to let you know personally that the project received widespread acclaim at the convention. Please accept my congratulations and thanks."

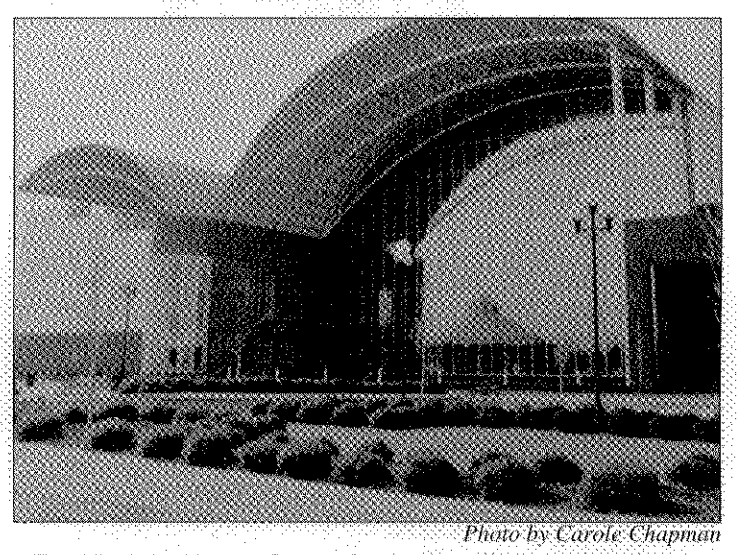


Photo by Carole Chapman

The Virginia Air and Space Center in downtown Hampton is Langley's official Visitor Center.

Engineers Are Exciting!

Engineers are exciting. That is why the Virginia Air and Space Center needs engineers to turn students on to the world of engineering and technology during Engineers Day, Saturday, Feb. 25, from 11 a.m. to 4 p.m. at the center.

We need engineers to volunteer to show students how they have turned ideas into reality.

To volunteer, call Rose-Marie Seawall at 930-4731, by Feb. 6.

Human Radiation Studies at Langley: Conclusions

The Background

Responding to a directive from President Clinton, and to instructions from NASA Headquarters, Langley formed an information search committee to review records and scour corporate memory for all possible instances of human radiation experimentation.

The search committee was organized by Darrell Branscome, director, Space and Atmospheric Sciences Program Group (SASPG), who established a team consisting of three technical people with experience in working with radiation, Sherwin Beck, Edmund Conway and Francis Cucinotta. Others involved were A. Gary Price, head of the Office of External Affairs; Margaret Hunt, Freedom of Information Act (FOIA) officer; Sally Mauldin of the Office of the Chief Counsel; and Willard Weaver, the SASPG technical assistant.

The Procedure

The committee requested by letter, electronic mail and through a *LaRC This Week* article, information from all current and former Langley employees and contractors. Committee members searched Langley records and holdings.

The corporate memory of both the search team and that of other members of Langley's staff were used as a basis to identify people or areas of research with any conceivable connection to human radiation experimentation.

Human Radiation Defined

The definition of the term "Human Radiation Experiments" was refined by Dr. Donald Robbins, Acting Director of Space and Life Sciences at Johnson Space Center, based on directions from the Human Radiation Interagency Working Group. Robbins said, "Human Radiation Experiments are all instances of substantial exposure of humans to ionizing radiation, whether the dose resulted from an experiment, therapy, accident or another mode."

The Search

Langley has been sending documents to the federal Records Center and to the National Archives for many years. Records of these document-transfers are stored in 305 folders. A complete search of these records was performed, according to Branscome. The Center's historical archives were searched, as well as the Radiation Safety Officer's files and the Center's correspondence files. Finally, with the help of the Technical Library staff, the Center's classified and unclassified reports were reviewed. One set of files, consisting of more than 40 boxes relating to the Space Radiation Effects Laboratory (SREL), were found in the archives of the College of William and Mary.

The Results

Four responses were generated by the letter to all Langley employees and contractors. The most important revealed one employee who had been adversely affected by radiation. While performing inspections of the X-ray recertification of welds on a Langley simulator and of the installation of a particle accelerator in one of the Center's facilities, he wore no film badge. He only shared a dosimeter with another inspector. He required extended medical treatment for radiation exposure.

Examination of SREL records revealed two instances of human exposure. The first was an accident, in which three people were exposed during accelerator installation. The second involved the College of William and Mary providing radiation therapy to cancer patients from Sloan-Kettering Memorial Hospital. The plans and procedures had been reviewed by the National Institutes of Health, the American Cancer Society, the State of Virginia and NASA. The patients had signed lengthy informed-consent documents, and the results were published in the journal *Cancer* by their physician from Sloan-Kettering.

A Langley-sponsored long duration test of life support technology at a contractor's site permitted incidental exposure for four to six people. The committee found that the participants had been properly trained and informed about the long- and short-term dangers of radiation. One participant stated that he had suffered no ill effects from the test, performed almost 25 years ago.

One Langley employee, who had been an official civil defense witness of an atomic bomb detonation test in 1955, was interviewed by members of Langley's committee. He retired in 1972 and was still going strong in 1994.

The file searches, interviews and formal solicitations provided no further leads to possible human radiation experiments at Langley.

The Conclusion

Four classes of radiation involving people have been found at the Center: the treatment of six cancer patients; an extended test that exposed six people; an atomic bomb test witnessed by one Langley employee; and two accidents, exposing a total of four people.

The cases of planned exposure were performed with conservative safety limits. One case of accidental exposure was judged, after careful review, not to have been hazardous; the other involved serious injury. However, both accidents were handled quickly and decisively, and led to the establishment of improved safety procedures.

"Finally," Branscome said, "no program of unauthorized human radiation experiments were discovered. We are happy to have had this opportunity to affirm the absence of any Langley involvement in unauthorized experiments and glad that other agencies are being asked to do the same."

Panels such as Langley's committee have been set up in several federal agencies and research laboratories under an interagency task force reporting to the President.

Technician Communication Terminal

Electronic Communication Access for Langley Technicians

The technician workforce will soon be on-line as a result of the Technician Communication Terminal (TCT) Project to provide electronic communications access as recommended by the LaRC Communications Quality Action Team. Providing this capability will be an important milestone toward LaRC's goal of effective and efficient communications for its employees.

The primary goal for this project is to improve the efficiency of communication among Langley technicians, their customers, and their line management by providing technicians access to and training for currently available Langley on-line services. These services currently include e-mail, electronic directory services, World Wide Web access, and access to Langley and NASA video channels. A second goal of this project is to design an enabling infrastructure for future improvements in communications and work processes relevant to the technician workforce.

Dr. Kristin Hessenius, director, Internal Operations Group, is funding this project. Dr. Belinda Adams, Assistant Director for Planning, is sponsor for the multi-organizational TCT Project Team. Project Team members include; Gretchen Gottlich, Information Systems Division (ISD) project leader, George Allison, Office of Human Resources, Jim Chamberlain, Research and Technology Group, Eric Everton, ISD, Alan Frizzell, Fabrication Division, Ronnie Gillian, Structures Division, Mickey Gardner and Lloyd Nelson, Operations Support Division, and Bob Thomas, Flight Operations and Support Division.

The TCT Project Team extends its thanks to the Communications and Networks Branch (CNSB)/ ISD for the tremendous support in the development of this project. CNSB has created over 1,000 e-mail addresses and provided Internet connectivity to more than 36 sites. The Uniform Resource Locator (URL) for the TCT home-page is: http://http://www.larc.nasa.gov/~ggott/tct/tcthome.html Please contact Gretchen Gottlich at g.l.gottlich@larc.nasa.gov or ext. 42303 for further information.

VAS Makes Call for Papers

The Aerospace Sciences Section of the Virginia Academy of Science is now soliciting papers for the 73rd meeting, May 23-25, at the Virginia Military Institute.

The papers will be part of a 15-minute presentation during the meetings and a one-paragraph abstract to be included in the published proceedings following the meetings.

Titles of proposed papers should be submitted by Feb 23. Abstracts will be due April 12. For more information, contact Henri D. Fuhrmann, ext. 45254, Mail Stop 248, fuhrmann@larc.nasa.gov

Mission EarthBound TV Series

Correction: The Mission EarthBound TV Series, a finalist in the 1994 Annual International Film and TV Festival, was a collaborative effort among Langley, Old Dominion University Academic Television and the Virginia Space Grant Consortium. Funding was provided by NASA Headquarter's Education Division and Mission to Planet Earth Office.

The series was connected through ODU's uplink to NASA Select and other networks around the country, including sites in Virginia. The story listed Langley as the sole producer of the series.

"Change, Challenge and Choice," The Art of Thriving in the Rapidly Changing '90s

Dr. Nate Booth

Dr. Nate Booth of Robbins Research International, Inc., a five-star consultant, will present two half-day sessions on "Change, Challenge, and Choice", on Feb. 8, at the H.J.E. Reid Conference Center, from 8:30-11:30 a.m. and 1:00-3:30 p.m.

Rapid change is a fact of modern corporate America. The corporations and people who view change as a challenge and make the appropriate choices will prosper emotionally and financially in the years to come. The first rule of business used to be "find a need and fill it". That rule doesn't work anymore. The rate of change in the world is too great; global competition is too intense; and customer/client expectations are too high. The first rule of business today, according to Booth, is "create a desire, then uniquely and quickly exceed it with value"! The "Change, Challenge and Choice" Program will inspire you to make the new first rule of business a reality for your organization. Here are a few of the powerful principles and strategies you will learn:

- The beliefs of the most successful change-utilizers in the world. Beliefs are the foundation upon which all action is based.
- The success strategies of corporations and individuals who use change to their advantage. Every worthy outcome has an optimal strategy to achieve it.
- The nine "Change Utilization Questions" you need to ask yourself to transform every change into an opportunity.
- How to use mental focus and physiology to keep yourself in a resourceful emotional state on a consistent basis. When people are in a resourceful state, resourceful performance is a natural result.
- The three steps in the change process that demand attention: letting go of the old trapeze bar; flying through the air; and catching the new bar.

Booth is the head corporate trainer for The Anthony Robbins Companies of San Diego. For the past 23 years, he has been studying, applying and coaching others in the art of thriving in times of rapid change. Booth has created more than 80 action-producing experiences for corporations and associations such as IBM, AT&T, Mutual of Omaha, Kraft Foods, Prudential Insurance and Eastman Kodak. He is the author of the book *Turning Resolutions Into Realities*, and with Tony Robbins, the co-creator of *The Body You Deserve Program.*

There is no need to preregister. Charge time to Job Order A5267. For more information, contact Patsy Campbell at ext. 43291, or your FWPC representative.

HALOE . . .

Continued from Page 1

Ozone Destruction

Ozone in the stratosphere is destroyed when it combines with chlorine, forming oxygen and chlorine monoxide. A single chlorine molecule can destroy 100,000 ozone molecules in its lifetime. The loss of stratospheric ozone means that more solar ultra-violet (UV) radiation reaches the Earth's surface. Since UV radiation has been linked to skin cancer, Russell said, there is a significant human health risk posed by ozone depletion. It has been estimated that a one percent decline in ozone levels can lead to a two percent rise in human skin cancer cases.

CFCs came into wide use in the 1950s as refrigerants, blowing agents for creating foam insulation, and as industrial cleaning agents.

In 1987, the nations of the world took action to halt ozone loss by signing the Montreal Protocols, which limited the use of CFCs. Subsequent amendments to the protocols have banned the production of CFCs and other ozone-destroying compounds beginning in 1996. Because chlorine lasts for many years in the stratosphere, however, the positive effects of this ban may not be seen until well into the 21st Century.

Russell said, "These and future observations made by HALOE will be crucial in understanding the strato-spheric effects of regulations on CFC usage."

Hubble Identifies Primeval Galaxies

New Clues to the Universe's Evolution Uncovered

Astronomers using NASA's Hubble Space Telescope as a "time machine" have obtained the clearest views yet of distant galaxies that existed when the universe was a fraction of its current age.

A series of remarkable pictures, spanning the life history of the cosmos, are providing the first clues to the life history of galaxies. The Hubble results suggest that elliptical galaxies developed remarkably quickly into their present shapes. However, spiral galaxies that existed in large clusters evolved over a much longer period — the majority being built and then torn apart by dynamic processes in a restless universe.

Astronomers anticipate that Hubble's observations will lead to a better understanding of the origin, evolution, and eventual fate of the universe. The Hubble observations challenge those estimates for the age of the universe that do not allow enough time for the galaxies to form and evolve to the maturity seen at an early epoch by the space telescope.

"The unexpected results are likely to have a large influence on our cosmological models and theories of galaxy formation," said Duccio Macchetto of the European Space Agency and the Space Telescope Science Institute (STScI). "The images are sufficient to provide a first determination of the properties of these very young and distant galaxies."

"This is compelling, direct visual evidence that the universe is truly changing as it ages, as the Big Bang model insists," said Alan Dressler of the Carnegie Institution, Washington, D.C. "Though much of the quantitative work can be done best with large Earth-bound telescopes, the Hubble Space Telescope is providing our first view of the actual forms and shapes of galaxies when they were young."

A series of long exposures, taken by separate teams trace galaxy evolution in rich clusters that existed when the universe was approximately one-tenth, one-third, and two-thirds its present age.

Entries Sought for R&D 100 Awards

R&D 100 Awards, besides being prestigious to the winning organization and the developer, generate considerable industry interest and can result in greater opportunities to transfer the technology. Langley has won 28 R&D 100 awards in the 32 years of the competition.

Langley employees who have developed product, material, process, software program or system of scientific or technical origin in 1995 are urged to submit an entry for Research and Development Magazine's annual R&D 100 Awards.

A panel of judges will select the 100 most technologically significant new developments of the past year from items submitted from organizations throughout the world.

February 17 Deadline

Individuals who may have questions about the candidacy of the proposed development or who need an entry form should call Greg Manuel of the Technology Applications Group (TAG) at ext. 43864. Completed entry forms should arrive at the TAG office by Feb. 17 to allow time to be checked for completeness. Submissions will then forwarded to meet the deadline and TAG will provide the entry fee.

Early Bird Deadline

Entries received in Chicago by Feb. 1 will be reviewed by a judging panel to see if additional information might help the judges better understand the product entry. Submittals with incomplete information will be notified by fax and allowed to submit additional information.

Winners will receive awards at a banquet in Chicago in September.

Self-Nulling Technology

Continued from Page 1

The Process

In late February 1994, KB was selected as Langley's partner for commercialization of the self-nulling, eddy-current technology using Langley's Commercial Opportunities Program (COOPPR) process. A memorandum of Agreement between Langley and KB to commercialize the technology was signed on July 26, and the technology was then licensed to KB on July 29.

The Crack Finder probe and instrument were introduced at the 1994 Fall American Society for Nondestructive Testing (ASNT) Show on Sept. 20, and a preliminary product bulletin was distributed. Customer response was very positive, according to KB's Eddy-Current Manager Dave Jankowski, especially from front line inspectors. "The key selling features of the Crack Finder, rapid scanning speed, simplicity of use, minimal operator training requirements and low cost, have all combined to make this a very popular instrument for the nondestructive testing market," Namkung said.

Working with Langley

Jankowski is pleased with the speed at which Langley's employees have responded to technical requests, often in less than 24 hours and, thus helped them bring their product to market so quickly. "There has been phenomenal cooperation by Langley's people," Jankowski said. "We couldn't have asked for anything more. They expedited the process greatly."

"KB has also defined several other products that can be based on the same technology which is consistent with the original suggestions made by the Langley researchers," said Frank Farmer of Langley's Technology Applications Group (TAG). "These products include a metal thickness gauge and a coating thickness gauge." According to representatives at KB, the principal application of the metal thickness gauge is expected to be in the detection of backside corrosion on aircraft skins. The KB metal thickness gauge is expected to be available this summer. "The rollout of the new products will increase KB's production output and create new jobs and sources of revenue for the company," said Jankowski. "KB will market, sell, and support the Crack Finder and other Simpson probe-based products on a worldwide basis through more than 100 sales representative organizations. The initial Crack Finder marketing and sales programs will target inspection of aircraft fuselage and support structures; steel mill rolls; and gears."

WIA/OPS Sponsor National Engineers Week Workshops

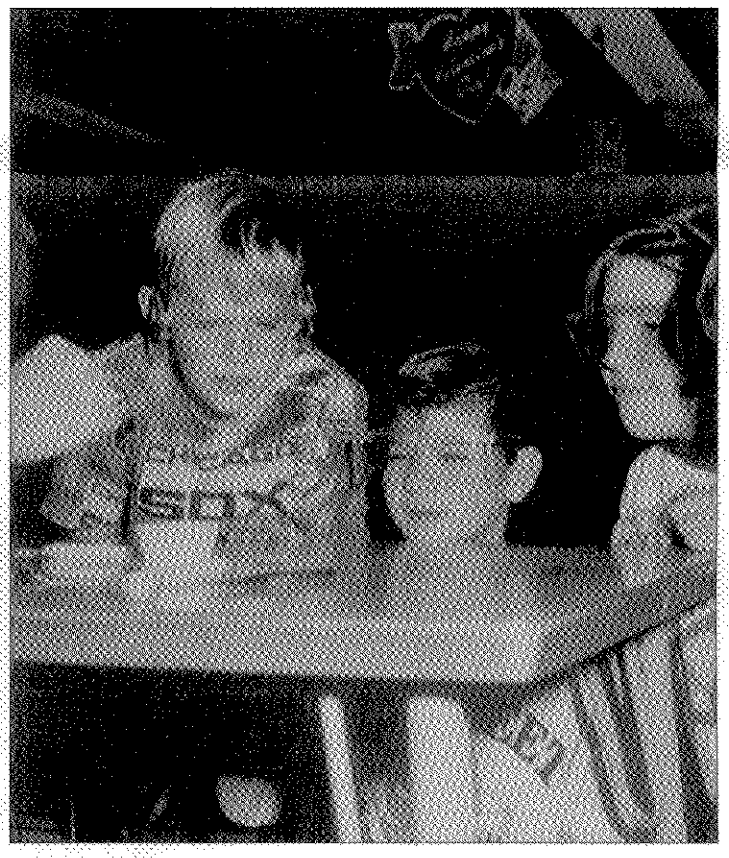
Two workshops co-sponsored by the Office of Public Services and the Hampton Roads Section of Women in Aerospace will be given Monday, Feb. 6 at 1:30 p.m. and Tuesday, Feb. 7 at 10 a.m. at the H.J.E. Reid Conference Center. The workshops are held annually to prepare Langley employees to go into local schools during National Engineers Week.

All Langley employees are invited to attend and employees who have volunteered to teach during this year's National Engineers Week will be given information and training to augment their presentations. Past participants will be on hand to share some tips for getting students involved in presentations.

Call ext. 43293 or ext. 43297 for reservations.

A Successful Presentation Includes Getting the Students Involved!

Come see how last year's National Engineer's Week presenters got their students involved and excited about science and engineering.



Students from Abingdon Elementary School (above) are captivated as Nancy Kruse demonstrates how superconductors are able to levitate magnets.

Abingdon Elementary School students observe the brittleness of rubber bands that have been dunked in liquid nitrogen.

Photos by Carole Chapman

Volunteers Still Needed for National Engineers Week

Due to an overwhelming response from area schools, volunteers are still needed to participate in National Engineers Week, Feb. 20-24.

The annual program is Langley's largest school outreach program. Last year about 25,000 students were taught by Langley employees and contractors.

Please send your completed form to Cathy Schauer at Mail Stop 154 or fax it to 47732. If you need a form, please call ext. 43293 or ext. 43297, or stop by the Public Mail Center in Building 1153, Room 115.

Happenings

A NEW YEAR OF FITNESS! The LAA Aerobics Club features bench aerobics, low-impact, weight training and nutrition counseling. Classes are Tuesday and Thursday from 5 to 6 p.m. in the LAA Gym, and on Saturday from 9:30 to 10:30 a.m. in the H.J.E. Reid Conference Center. Body composition analysis and cardio-fitness assessments are given to all members upon request. Instructors are certified in personal training and aerobics. All civil servants, contractors and their families are welcome. Call ext. 42295 for more information.

INCOME TAX PREPARATION: Call Nancy Taylor at 723-5227.

FOR RENT: In Riverdale, 3 BR brick ranch, 2 baths, carpet throughout, all kitchen appliances plus washer, finished garage, central air, gas hot water heat, large fenced-in yard, $800/mo., deposit required. Call 827-7485.

FOR SALE: 1991 Pontiac Grand Prix SE, black, all power, 23,000 miles, excellent condition, $8,950. Call 898-0689.

CEBAF SCIENCE SERIES: The winter and spring series of interactive evening seminars for science-minded students is as follows: *Waste You Just Can't Throw Away*, Feb. 14; *Remote Control with Computers*, March 14; and *AIDS: The Science, The Impact*, April 4. Each seminar is at 7 p.m. at CEBAF in Newport News. For parking and more information, call series coordinator Teresa Beatty at 249-7560.

FOR SALE: Brother word processor WP-75, spellcheck and floppy disk drive, w/ manual and original box, excellent condition, $250. Bell & Howell super 8 movie projector for 8 mm film, $35. VitaMaster freestanding workout system w/stairclimber and timer, $150. Call 642-0830.

VIRGINIA SYMPHONY and Richmond Ballet perform *Romeo and Juliet* , Feb. 11 at Chrysler Hall. Vocal superstar Kathleen Battle will be at Chrysler Hall Feb. 12. Tickets are available at the Exchange Shop, ext. 41585, or Symphony office at 380-0040.

FOR SALE: 1987 Buick Century, A/C, automatic transmission, 90,000 miles, runs great, needs body work, $1,995. Call 930-0251.

LANDLORDS NEEDED: Langley employees interested in renting a room, house, garage apartment, etc., to one or more of our program participants (college professors or students) for approximately 10 weeks this summer should call Debbie Young at ext. 45215.

CAR POOL MEMBER WANTED: Join the oldest, most congenial Williamsburg car pool. First Colony/ Kingswood/Rt. 5/Rt. 31 area. Call Carl Pearson at ext. 41389.

HOUSE FOR SALE: Azalea Gardens, Hampton, 3 BR brick, split ranch house, 2 baths, attached double garage, Florida room, large utility room on a large wooded lot. Asking $115,000. Call 722-0036.

LOST: A pair of gold and red glasses and a gold-tone dragonfly pin with jade body. Lost in December, possibly near Buildings 1202, 1244 or the child care center. Call Sharon Beskenis at ext. 41703.

PENINSULA SKI CLUB: Trips are planned through April. For information about ski trips and club information, call John Kittler at 838-7406.

AT FORT MONROE: Rev. Rodger R. Venzke, retired Army chaplain, and pastor of King of Glory Lutheran Church, Williamsburg, will be the guest speaker for the annual National Prayer Breakfast, at 6:30 a.m. at the Fort Monroe Officers' Club on Tuesday, Jan. 31. Tickets are available for a donation and can be obtained by calling 727-3785 or 727-2611.

INCOME TAX PREPARATION: Member of National Association of Tax Practitioners. Electronic filing and direct deposit offered at no extra charge. Small business bookkeeping done. We travel to you, by appointment. Call 874-3121.

TIDEWATER CLASSIC GUITAR SOCIETY presents Pablo Ortiz and Luis Zumbado on Friday, Jan. 27 at the Virginia Beach Center for the Arts, and on Sunday, Jan. 28 at the Williamsburg Regional Library Arts Center, at 8 p.m. both nights. Tickets are $7-$10 at the door or at the Theater Connection. For information or ticket reservations, call 625-2411, Southside, or 566-3304, Peninsula.

Retirement Reception

A party for Thomas H. Hall Jr. will be held Tuesday, Feb. 7, from 5 to 7 p.m. in the H.J.E. Reid Conference Center. The cost is $7 per person and a cash bar will be available. Hors d'oeuvres will be served. Gift and party donations will be accepted by June Howell, Mail Stop 418, ext. 42663, by Feb. 2.

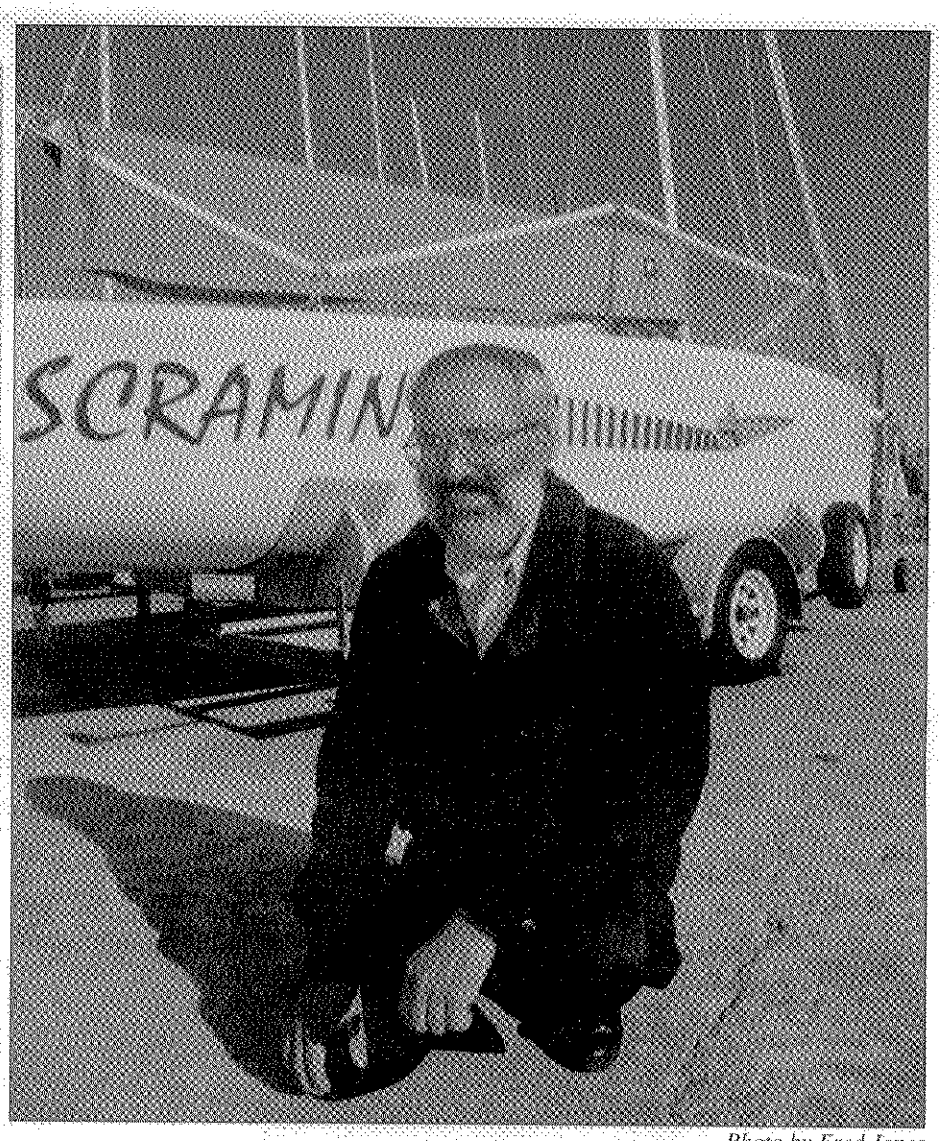


Photo by Fred Jones

Griffin Anderson, head of the Hypersonic Airbreathing Propulsion Branch is shown in front of his sailboat Melges 24, named "Scramin.'" Anderson, who races the boat locally, recently drove the craft down to Key West, Fla., to compete against other racing boats. He says the name is derived from the scramjet engines he has been working on for many years here at Langley and the aerodynamics link between to two vehicles. "It's also a challenge to run and race your own boat instead of crewing for someone else, he said. Anderson has been sailing since the 1940s and said, "The boat is high-performance, very competitive, fun to sail and a real 'rocket ship' under favorable conditions."

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher

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

Official Business. Penalty for Private Use $300.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 3 ❖ February 10, 1995

Have Lesson — Will Travel

BY MARNY SKORA

"Always go into the classroom with a gimmick!" That's the advice of Tedde Eckstrom, sixth-grade teacher at Yorktown Middle School. That's also "teacher talk" for how important it is to capture the audience's attention within the first couple minutes of any presentation.

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section is prepared to help speakers get off on the right foot. A library, instituted by the Precollege Education Committee, is filled with educational strategies. It contains close to a dozen lesson plans on popular subjects, complete with suggested demonstrations, interactive activities and, in some cases, a video tape.

NASA employees are in constant demand to share what they do in their careers with local students. Fortunately, our employees are generous in accepting these assignments. They do so both as a community service and to help shape the work force of tomorrow.

"The AIAA pre-packaged lessons minimize the work involved in putting together a dynamic presentation," says Education Committee librarian Alan Stockwell of Lockheed Engineering and Sciences Co. "The lessons, used throughout the year, are a derivative of the presentations given by AIAA/HRS members during Engineers Week, held annually in February."

To demonstrate how a computer works, Jim Rogers of the Structures Division designed a lesson in which students take on the role of the CPU, keyboard, monitor, etc., and "walk through" a typical computer program. He later adapted this technique to allow students to play the roles of the senses, neurons and synapses to demonstrate the inner working of the human brain.

Operation Support Division's Bob Baals built a specially designed three-way speaker to demonstrate basic acoustics principles. The woofer, tweeter and mid-range speaker can be controlled individually. Using a spectrum analyzer, students can not only hear, but see, changes in range.

Education committee member Cindee Gaffney, science teacher at Syms Middle School in Hampton, advocates the hands-on approach. She created a lesson for the library that uses a simple apparatus to allow students to launch balloon rockets, continually increasing the payload of pennies in a competition to get to the space station.

Prepared topics range from aeronautics to space communication. And, speakers can even dress the part. AIAA has purchased four flight suits that are available for loan from Langley's Public Mail Center. An immediate opportunity to participate in education outreach is this year's National Engineers Week School Visitation Program, Feb. 20 through 24. Response from schools has again been overwhelming. More volunteers are needed to teach a class, encouraging today's students to study science, engineering, math and communication.

To take a look at the offerings or to borrow a lesson, contact Stockwell at ext. 42893; e-mail at a.e.stockwell@larc.nasa.gov

Programs available:

Acoustics
Air Magic
Human Computer
Human Brain
Human Satellite
Let's Go Flying
Principles of Flight
Space Communications
Space Station: All Aboard?
Toys in Space
Also available:
flight suits

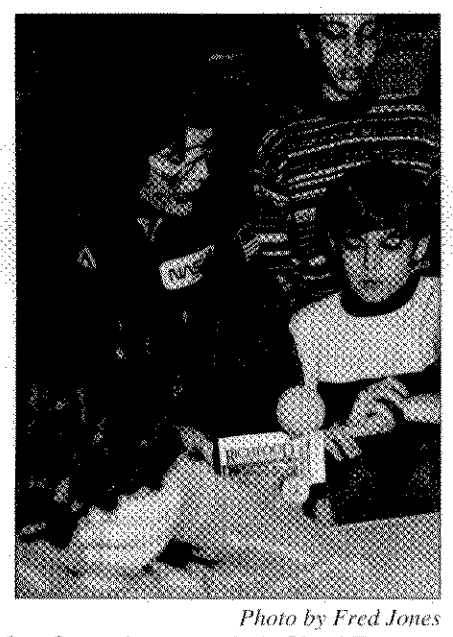


Photo by Fred Jones

AIAA Precollege Education Committee co-chair Cheri Tanner of the Acoustics Division wears a flight suit available for loan to employees presenting NASA lessons in area schools.

Human Language Technology Is the Topic for February Colloquium

"Navigating the Information Highway Using Human Language Technology," a Colloquium lecture, will be held on Tuesday, Feb. 28 at 2 p.m., presented by Dr. Victor Zue of the Massachusetts Institute of Technology (MIT). The Colloquium will be in the H.J.E. Reid Conference Center.

The Colloquium

Successful commerce on the information highway depends crucially on our ability to provide an effortless user interface, Zue said, so that ordinary people can access, process, and manipulate vast amounts of information for decision-making, purchasing, education and entertainment. A speech interface, in the user's natural language, is highly desirable because it is the most flexible, efficient and economical form of human communication.

However, many tasks that lend themselves to spoken input – making travel arrangements, for example, or selecting a movie – are in fact exercises in interactive problem-solving. The solution is often built up in increments, with both the user and the computer playing active roles. Therefore, several human language technologies must be developed and integrated to reach this goal. On the input side, speech recognition must be combined with natural language processing so the computer can understand spoken commands, often in the context of previous parts of the dialogue. On the output side, some of the information provided by the computer – and any of the computer's requests for clarification – must be converted to natural sentences, perhaps delivered verbally.

Zue's talk will present an overview of recent research at MIT on interactive conversational system development. Several systems, in application areas ranging from information retrieval to interactive transactions, will be demonstrated.

Dr. Victor Zue

The Speaker

Zue received a doctor of science degree in electrical engineering in 1976. Since then, he has held various teaching and research positions at MIT, where he is now a senior research scientist. He is also associate director of MIT's Laboratory for Computer Science, and head of its Spoken Language Systems Group.

Zue has conducted research in speech technology for more than 25 years. His main research interest is in the development of spoken language interfaces to facilitate graceful human/computer interactions, a subject on which he has extensively taught and written.

Over the past few years, his group has pioneered the development of systems that enable a user to interact with computers using spoken languages. Zue has served on many planning, advisory, and review committees for the Department of Defense, the National Science Foundation, and the National Academy of Science. He is a Fellow of the Acoustical Society of America. He also chairs the Board of Directors of the Linguistic Data Consortium. In 1994, he was elected Distinguished Lecturer by the Institute of Electrical and Electronics Engineers (IEEE) Signal Processing Society.

Sigma Series Lecture

"Carrying on a Meaningful Conversation with your Computer" will be Zue's presentation for the Sigma Series lecture, Feb. 28 at 7:30 p.m. at the Virginia Air and Space Center.

Computers are fast becoming a ubiquitous part of our lives, and our appetite for information is ever increasing. As a result, many researchers have sought to develop a convenient human-computer interface, so that ordinary people can effortlessly access, process and manipulate vast amounts of information for education, decision-making, purchasing or entertainment. A speech interface, in a user's own language, is ideal because it is the most natural, flexible, efficient, and economical form of human communication. However, many tasks that lend themselves to spoken input - making travel arrangements, for example, or selecting a movie - require user and computer to both play active roles in the "conversation." To reach this goal, several language-based technologies must be developed and integrated. On the input side, the computer must be able to recognize as well as understand the verbal input. On the output side, it must be able to provide the information as natural sentences, perhaps delivered verbally. This talk will present an overview of recent research at MIT on interactive conversational system development. Video tapes of several demonstration systems, in application areas ranging from information retrieval to interactive transactions, will be shown.

Volunteers Are Still Needed for National Engineers Week

Please send completed forms to Cathy Schauer at Mail Stop 154 or fax it to 47732. If you need a form, call ext. 43293 or 43297, or stop by the Public Mail Center in Building 1153, Room 115.

News Briefs

Around the Agency

SPACE SHUTTLE CREW SELECTED FOR TETHERED SATELLITE MISSION – Marine Corps Lt. Col. Andrew M. Allen will command Space Shuttle Columbia's STS-75 mission in early 1996 — the second flight of the Tethered Satellite System (TSS). This flight also marks the third devoted to orbital investigations using the United States Microgravity Payload (USMP). Joining Allen are Air Force Maj. Scott J. Horowitz, pilot; payload commander Franklin R. Chang-Diaz; Italian Space Agency (ASI) TSS payload specialist Umberto Guidoni; mission specialist Jeffrey A. Hoffman; and European Space Agency mission specialists Claude Nicollier from Switzerland and Maurizio Cheli from Italy. Chang-Diaz and Guidoni were named to the crew in August and October 1994, respectively. Four of the seven crew members flew on STS-46 in July/August 1992 — the first TSS mission during which the satellite was deployed to about 900 feet (274 meters) from the shuttle. The TSS project is a joint NASA/ASI effort managed by the Marshall Space Flight Center, Huntsville, AL. On STS-75, the five-foot diameter (1.6 meter) Italian-built satellite is scheduled to be deployed on the end of a 13-mile-long (20-kilometer) conductive tether to study the electrodynamic effects of moving such a tether through the Earth's magnetic field. The experiment also will test techniques for managing the tethered spacecraft at great distances.

Legacy of Love

An African-American Epic of Song and Dramatic Expression

The Fiscal Year 95 Multicultural Enrichment Seminar Series, sponsored by the Office of Equal Opportunity Programs, will present "Legacy of Love," an African-American Epic of Song and Dramatic Expression, on Monday, Feb. 27, from 1 to 3 p.m. in the H.J.E. Reid Conference Center. The guest lecturer, Gerri L. Hollins, a native Hamptonian, is an accomplished playwright, composer, professional singer, storyteller and educator.

This seminar, the third in a series of planned activities, expresses the creative power of African-Americans that has sustained them for more than 400 years in America. It explores, in part, the historical movement that brought them to America as slaves to become a labor force for cultivating the land and working to develop the growing industries of tobacco, cotton, rice, indigo and peanuts,

"Legacy of Love" tells the story of a spiritual people who were forced to adopt new religions, new languages and a new way of life, yet were able to use those circumstances to elevate themselves to freedom.

All employees are encouraged to attend and should charge their time to Job Order A5236.

Gerri L. Hollins

Announcements

Retirement Party

Join Bob Hess and friends for a party on Tuesday, Feb. 21, from 5 to 7 p.m. at the Langley Air Force Base Officers' Club. Heavy hors d'oeuvres will be served. The cost is $12 per person or $22 per couple and includes a gift. For reservations or gift contributions, call Kim Kurtz or Joyce Reed at ext. 41733. Make checks payable to Anne Overbay at Mail Stop 476 by Feb. 15.

Retirement Party

A party for Charlie Sweet, Ronnie Mills, Elbert Powell, Don Shortt and Willie Wright will be held Saturday, Feb. 25, from 5 p.m. until ? in the Langley cafeteria. Choice of prime rib or chicken Cordon Bleu. The cost is $14 per person and includes a gift. Gift- only contributions are being accepted. For details, call B. Kessler at ext. 48433, J. Moore at ext. 45499, J. Harris at ext. 46343, B. Beasley at ext. 46389, or A. Henderson at ext. 43721.

Retirement Party

A party for Janice Wunder will be held Feb. 28, from 5:30 to 7:30 p.m. in the H.J.E. Reid Conference Center. The cost is $7 per person and includes gift. Hors d'oeuvres will be served. Gift-only contributions or reservations can be sent to Charlene Ferguson, ext. 46111, or Carolyn Kurtz, ext. 42563, both Mail Stop 174, by Feb. 21.

Notice: Passes

Causeway passes are available for shuttle launches from the Office of Public Services, Olin Jarrett, Mail Stop 154, ext. 46320, o.jarrett@larc.nasa.gov

These passes allow access for one car and all its occupants to the causeway at the Kennedy Space Center. The launch pad is clearly visible across about 4 miles of water.

Upcoming launches are:

STS-67	March 2	1:36 a.m.
STS-71	May 24	5:14 a.m.
STS-70	June 22	11:13 a.m.
STS-69	July 20	12:06 p.m.
STS-73	Sep 21	10:37 a.m.
STS-74	Oct 26	3:56 p.m.

Announcements

Notice: Pauls' Party

Sid Pauls' retirement party, scheduled for February 24, 1995, has been postponed. Further notice as to rescheduling will be placed in *LaRC This Week* and *Researcher News* as soon as a new date is available.

Letters

Retirement Thanks

From Randy Grove: "Thanks for the wonderful reception, the much-more-than-expected gift, and the simulation model representing the past years. It was great to see everybody at the reception, both present and past employees. To all my friends during these 31 years at Langley, it's been fun. Thanks for everything (and especially for the added West Gate reception!)."

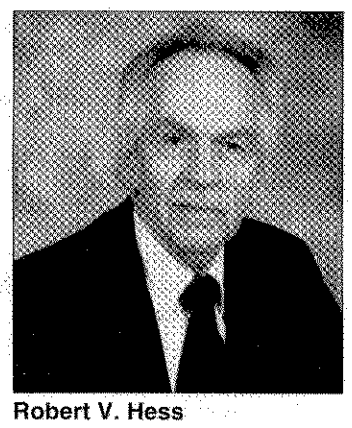
In Memoriam

Oneda M. Moore

Oneda Mae Moore, 64, died Sunday, Jan., 15. A native of Phoebus, she had been a Hampton resident until moving to Deland, Fla., in 1987.

Moore had retired from Langley as a librarian in 1975 after 29 years of service.

Hess Honored for 50 Years of Service



Robert V. Hess

Robert V. Hess, of the Aerospace Electronics Systems Division (AESD), is being honored this month for 50 years of service at Langley.

Hess is best known for his contributions in three major areas: fluid dynamics for aerodynamics and explosion phenomena; plasmas for reentry vehicles and space propulsion; and lasers and passive atmospheric sensors.

He began his NASA career in 1944 at the National Advisory Committee for Aeronautics (NACA), NASA's predecessor organization, after serving in the U.S. Air Force at Wright Field for two years. During his early years at Langley, he worked with internationally known high-speed aerodynamicists R.T. Jones, John Stack and Adolf Busemann, and is cited in *Engineer in Charge*, the history of Langley Aeronautical Laboratory, 1917-1958. "I am particularly proud of my first NACA paper," Hess said, "published in the 1940s, since I was a young pup. Excerpts from that paper were later included in two fluid dynamics text books. That was a good start for me, and it caught the eye of Adolf Busemann who became my mentor."

A native of Vienna, Austria, Hess conducted his undergraduate studies at the Vienna Polytechnic Institute. His father, a patent attorney who had practiced in the US, advised Hess to attend the Massachusetts Institute of Technology for graduate studies where he excelled in advanced fluid dynamics.

As head of the Laser Technology and Applications Branch, and other organizations, Hess developed a base of laser technology. He also supervised several programs in high-resolution spectroscopy and in-situ and remote atmospheric sensing with the collaboration of the Atmospheric Sciences and Instrument Research Divisions as well as aeronautical divisions.

In the late 1960s, Hess redirected his section from studies of plasma propulsion to the then-infant field of laser atmospheric sensing. The results were the first use of tunable dye lasers for Differential Absorption Lidar (DIAL) measurement of atmospheric species, tunable dye lasers for water quality measurement, development of the Laser Heterodyne Spectrometer (LHS), and early work on Doppler Lidar wind velocity technology for aeronautics and atmospheric sciences applications using CO_2 lasers with catalysts for long-life operation. He and his branch developed new solid state laser technology that has played an important role in the Lidar Atmospheric Sensing Experiment (LASE) project and eye-safe lasers for the wake vortices Terminal Area Productivity (TAP) program at Langley as well as the Laser Atmospheric Wind Sounder (LAWS) program at Marshall Space Flight Center.

Hess has widely published his findings during six decades. He is an internationally known expert in laser technology and atmospheric sensing and has helped organize international meetings on these topics.

Upon retirement on Jan. 3, Hess was awarded a Distinguished Research Associate position in the AESB, working with Glen Sachse. There Hess is focusing on the development of imaging passive sensors from space orbit.

"I greatly appreciate the opportunity to have worked with such outstanding people at Langley," Hess said. "Cooperation increases the creative energy in us all."

A retirement party for Hess is planned for Feb. 21. For information, call K. Kurtz or J. Reed at ext. 41733.

Researcher News

The **Researcher News**, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001, is published every other Friday in the interest of all Langley staff and retirees. Submit contributions to the Editor, Mail Stop 146, telephone 1 (804) 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor . . . . . Michael Finneran

Editor . . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor . . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising in this publication is restricted to the employees and retirees of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin.

All materials are subject to editing.

"Think Big" for National Engineer's Week

BY CATHARINE G. SCHAUER

"Think Big" and life's obstacles fade away one by one, according to one of the volunteers who will be visiting area schools this year during National Engineers Week.

Think: Future

Clyde Medley, an electrical engineer, tells the young students he visits in elementary and middle schools why it is important to "Think Big." He explains that students must develop their talents, have hope for the future, maximize their intelligence, never say you can't, and respect and search for knowledge.

Medley speaks from his heart and wants to give something back to the students and to the community — he's there to lend a hand and an ear. "My presentation on basic circuits goes beyond teaching students about the fundamentals of electrical wiring, how to read meters and how to recognize the different kinds of circuits. I want them to know that they are the next generation, and I am there to help them keep the world rolling along. They have to believe that if you put forth hard work you can achieve anything."

Some of the students have no role models or parent figures. "Some of the schools I visit have bars on the windows, no computers for student use, and poor materials. How can we expect them to love math and science?" Medley asked.

Make a Difference

"That is where I can make a difference. I can share my journey to get where I am today and let them know that their dreams can happen," he explained. "I can tell them truthfully how they can read for free at the library, how they can use math when they go to the grocery store, and how science relates to everyday life. When there is meaning, there is interest."

Medley's greatest reward from working with the students is posted proudly on his refrigerator at home. "It is a card made for me and signed by all the second grade students at B.M. Williams Elementary School in Chesapeake. That card is a reminder that I made a difference and an incentive to keep giving back to the community."

Good Role Models

Another Engineers Week volunteer is Fernandez Rattliff, an engineering technician, who says students are surprised to see someone from his culture that is also so young visiting the schools as role models. "In a way, I reinforce that all people can succeed, that you don't know what you can do until you try, and that you must always change your goals as you move along in life," he said.

Rattliff often visits disadvantaged high schools during Engineers Week. "I can relate to the students," he said. "When I tell them that I know what it is like not to have money, and that I became good at putting cardboard in the bottom of my sneakers so they would last a little longer, and that I have bought all of my clothes since I was age 12, I see looks of understanding and respect coming from the kids."

Learn and Work

His ability to relate to the students makes his presentation on "Why I Want to be Paid" meaningful. "I have an ear for what interests young people, and I may burst into song through rap, using a familiar tune and educational lyrics, to make a point about math or science," he said.

He reinforces that education is part of getting a job; the other is recognizing one's own value. He walks the students through what they want out of life and what those goals cost. "Numbers talk," he said, "and the students soon realize that flipping hamburgers at McDonald's won't do it for life." Practical understanding is important, and he makes points with NASA examples. "I may say the Space Shuttle is used to release satellites, and the satellites improve communication, some of which is enjoyed on cable television," Rattliff said.

Listen to the Future

"By being honest about my personal struggle to get a college education and have such a great job, I have seen students become teary-eyed as they identified with me," he said. "That makes a difference to me and to them."

"Engineers Week is a good opportunity to practice one's public relations skills, share NASA's work and support of math and science, and learn my own skills even better. Those high school students can really ask insightful questions," Rattliff concluded.

Women in Research

For Nancy Kruse, an electronics technician, volunteering began when her sister-in-law, who is a teacher, "ignited my interest and asked me to make a presentation to her class. I learned how to present to young children and was on my way to going to several schools for Engineers Week. I talk to children about six times a year."

Kruse gives a demonstration on "Piezo Electric Materials and Superconductors." She shows the students how the piezo material, which is used in a variety of items including stereo speakers, literally makes sound. "I let the piezo electric film play a Top 40 song, and it captures the students' attention right away!" she said. "They like it when I play songs they know, and they view me as a fun presenter rather than an older, serious type. That helps me make science fun.

A "Can-Do Attitude"

"Last year, a third-grade girl came up and hugged me after my presentation. She said that she liked me, liked science and liked NASA," Kruse recalled. "What more could anyone ask for?"

Presentations must be geared to the audience, Kruse said, "And I learned how to do that with practice. In the beginning, I was just too used to using technical words and forgot that they were not part of everyone's vocabulary. Now, I have worked out the ideal combination and see the excitement and interest in the eyes of the kids. My goal is to reinforce that using science and working at NASA are fun, and that learning math and science are the early steps to a good future. If I reach just one child, it is worth my time."

Reach Out – Touch

Shelley Canright, Langley's education programs officer, believes, "We play a key role in helping students see the relevance of math and science in real life. It is equally important that the students see the excitement of these areas in action. That is what makes Engineers Week so important to the students. We really do reach out and touch them."

Each person at Langley really can make a difference. Volunteers are still needed for Engineers Week. To share your time, call Cathy Schauer, Engineers Week project manager, at ext. 43314. Volunteers are welcome from all occupations at the Center, as each person shares skills that contribute to the mission of the agency and to a respect for the value of math and science in the world of work.

Health Corner

Interpreting Services Calendar Available in *Now-Up-To-Date*

The Occupational Medical Center, in an effort to improve the efficiency and availability of sign language interpreting services, is now offering to its customers an electronic calendar of the interpreter's schedule.

Customers may access the calendar through their own Now-Up-To-Date software package by going to "Network Options," selecting "Add," highlighting Building "1219," and highlighting "SASPG Calendar." Go under the "Category" menu, and select "Define Sets," then double-click on the "SL Interpreter and Holidays" categories to obtain a "checkmark." Click "OK" and allow a few minutes for the calendar to appear.

Langley's full-time interpreter is Annette Bene. She may be contacted by: phone, ext. 43973 (voice); TTY, ext. 43920; fax, ext. 49114; and e-mail or QuickMail, a.a.bene@larc.nasa.gov

Brown Bag Seminar

Dr. Joseph R. Angostinelli, Lt. Col., USAF, will speak at a brown bag seminar on Friday, Feb. 24 from 12 to 12:45 p.m. in the Executive Dining Room. Angostinelli will discuss preventive foot care, exercises and treatment. A key thing to remember, he said, is "that we only have two feet and they have to serve us for a lifetime." Angostinelli serves as the chief of Orthopedics/Podiatry Services for the 1st Fighter Wing at Langley Air Force Base.

Entries Sought for R&D 100 Awards

R&D 100 Awards, besides being prestigious to the winning organization and the developer, generate considerable industry interest and can result in greater opportunities to transfer the technology. Langley has won 28 R&D 100 awards in 32 years of competition.

Langley employees who have developed product, material, process, software program or system of scientific or technical origin in 1995 are urged to submit an entry for Research and Development Magazine's annual R&D 100 Awards.

A panel of judges will select the 100 most technologically significant new developments of the past year from items submitted from organizations throughout the world.

February 17 Deadline

Individuals who may have questions about the candidacy of the proposed development or who need an entry form should call Greg Manuel of the Technology Applications Group (TAG) at ext. 43864. Completed entry forms should arrive at the TAG office by Feb. 17 to allow enough time for them to be checked for completeness. Submissions will then be forwarded to meet the deadline and TAG will provide the entry fee. Winners will receive awards at a banquet in Chicago in September.

Mission EarthBound Series Receives New York Festival Award

A bronze medal was awarded to "Mission EarthBound," a teleconference series for teachers of and students in grades 4 through 8 at the prestigious 37th Annual International New York Festivals Awards Competition for Non-Broadcast Media and Television Programs and Promotion.

Mission EarthBound was a collaborative effort of Langley, Old Dominion University and the Virginia Space Grant Consortium. The program was produced by ODU's Academic Television Services. The Virginia Space Grant Consortium was a co-sponsor of the series. Mary Sandy, consortium director, assisted in managing the production. The series also was co-managed by Dr. Surendra Tiwari, eminent professor of engineering at Old Dominion.

In the live program segments, internationally known NASA Langley atmospheric scientist Dr. Joel S. Levine offered viewers insight into global change issues. Educator William R. Orton, an expert in the problem-based learning approach, demonstrated how to weave the program's print materials, vignettes and live broadcasts into an interdisciplinary curriculum unit that supported national educational reform.

The series was hosted and co-directed by Camille M. Jennings. The project was also co-directed by Marchelle D. Canright, NASA Langley's center education programs officer. Canright and Levine created the series.

Extensive creative support for the series was provided by NASA Langley's video and graphics sections. Funding was provided by NASA Headquarters Education Division and NASA's Mission to Planet Earth Office.

Happenings

WITNESS SOUGHT: Searching for a witness to an accident involving a blue Mazda and a white Honda at the entrance to the 7-11 store on the corner of Wythe Creek Blvd. and Armistead Ave., outside the NASA back gate. Time of accident was 4:30 p.m., Friday, Nov. 4. A statement from a witness would assist in the timely settlement of an insurance claim. Anyone with information please call Mark McMillin at ext. 44521 or fax 48671.

FOR SALE: Near James River, Newport News, custom-built on .9-acre lot, 5 BR, 2-1/2 baths, oversized garage, appraised $205,000. Call 930-2430.

FOR SALE: Troy State graduate school textbooks: *Practicing Public Management, Personnel Practices for the '90s, Understanding Public Policy, Democracy and Capitalism, Personnel Management in Government, Public Budgeting in America* and *Smoking and Politics*. All are in excellent condition. Call 898-8463, evenings.

SUMMER INTERNS SOUGHT: Science Applications International Corp. (SAIC)-Hampton is seeking highly-qualified upper level undergraduate and graduate students to participate in a Summer Intern Program, from May 30 to Sept. 1, in affiliation with an ongoing contract at Langley. Candidates may have experience, a degree, or be seeking a degree in earth sciences, physics, engineering, mathematics and scientific computer programming. Candidates must be U.S. citizens or eligible for employment with a U.S. government contractor. For applications or more information, contact Pam Ashworth, SAIC, at 825-0001 or fax 825-9129.

FOR SALE: Magruder Commons, 2 BR townhouse, near Langley, 1-1/2 baths, all appliances. Asking $59,900 or $2,500 and qualify assume 10% loan with PITI, $595/mo. Call 827-7417.

FOR SALE: Bahamas/Orlando travel package for two; $398 for both. Call 868-6705.

LAA ACTIVITIES: A Country Western dance, Feb. 17 at the H.J.E. Reid Conference Center, begins at 6:15 p.m. The cost is $3 per person. Bingo is every Thursday night in the Activities Center at 7 p.m. LAA Valentine Social Hour is Friday, Feb. 17, starting at 4 p.m. Entertainment by the "Hampton Express" Band at 5 p.m. The LAA Carnival: the LAA wants to revive its traditional carnival. Volunteers for a planning committee are needed. Experienced or not, people are needed to work on the effort. If interested, please call one of the following: Andrea Whitesides, ext. 46369, Skip Schroeder, ext. 47230, Rodney Russell, ext. 41241, Betty Lane, ext. 42537, or Al Shearing, ext. 42776.

FOR RENT: In Poquoson, 3 BR townhouse, 2-1/2 baths, eat-in kitchen, living/dining room, den w/fireplace, deck, storage building. Swimming pool and tennis on premises. Available March 1 at $750/mo. Rent negotiable with long term lease. Call 838-6000, evenings.

NASA NIGHT AT THE SYMPHONY, Friday, Feb.17, for Holst's *The Planets*. A special for all Langley employees, tickets 50% off (tickets only $15, regularly $29) at the Exchange Shop, ext. 41585. At Chrysler Hall, Norfolk, featuring Rudajev's *Concerto for Soprano Saxophone*, Debussy's *Rhapsodie*, and the U.S. premiere of Zhou Long's *Da Qu*.

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

GIRL SCOUT COOKIES: The Langley Service Unit Girl Scout Troop is selling cookies for $2.50 per box; eight varieties. For information or to place an order, call 865-0586.

INCOME TAX PREP: Member of the National Association of Tax Practitioners will prepare your taxes. Electronic filing and direct deposit offered at no extra charge. We travel to you, by appointment. Call 874-3121.

NOTICE: A program to replace defective Intel Pentium processors at Langley computers is underway. An arrangement has been made between Wyle Laboratories and Intel Corp. to replace, at no cost, all defective Pentium processors at Langley. Langley users that have Pentium processors can call Jim Leuci, Experimental Testing Technology Division, at ext. 44685. The plan is to compile a list of computers with the defective processors and Intel will provide replacements. Wyle Laboratories will install the new processors and defective ones will be returned to Intel.

CLOWN MINISTRY: A unique presentation of the Easter story, entitled "The Passion," will be presented by the Amazing Earl, a silent clown, at St. Mark Lutheran Church, Saturday, March 11 at 7 p.m. For more information, call St. Mark's at 898-4395.

LOST: Macgregor JNP 8-iron golf club, at LAFB red course, Jan. 1; reward. Call Joe at 850-1728.

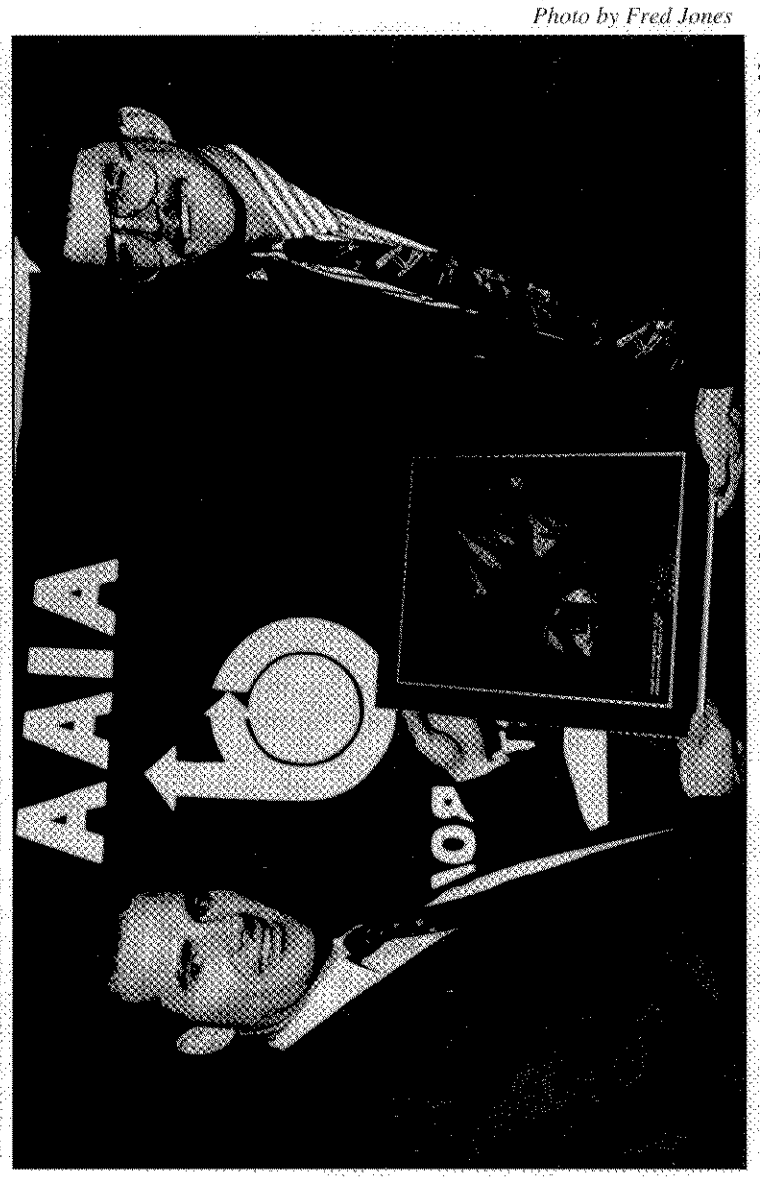
National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

New Researcher

27-01 RESEARCHER*NEWS
SKORA, MARY N.
MAIL STOP 159 ALGO 1053

Photo by Fred Jones



Christopher J. Faranetta, deputy managing director of American operations for Energia Ltd. in Alexandria, Va., accepts a plaque from Dan Vicroy, Vehicle Operations Research Branch. Energia is the American office of the Russian aerospace company known as Space Corp. Energia, which is the Russian prime operator/contractor of the Mir Space Station and the Russian prime contractor for the Russian section of the International Space Station Alpha. Faranetta discussed U.S./Russian joint space missions at a talk sponsored by the Hampton Roads Section of the America Institute of Aeronautics and Astronautics in January.

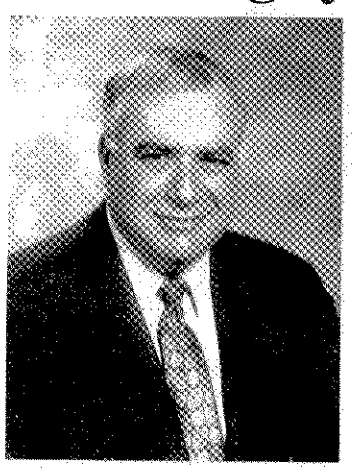
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 4 ❖ February 24, 1995

Director Addresses Langley's Future



As I hope everyone is becoming more and more aware, Langley – as well as the Agency and the federal government as a whole – is going through a period of very traumatic change. And, as I stated in my briefing Feb. 10, this chaotic period will probably be with us for at least two or three more years.

In the face of this uncertainty, I have decided not to hold the normal State-of-the-Center Address to employees in April. Instead, a series of special Employee Briefings similar to the Feb. 10 presentation will be held in the H.J.E. Reid Conference Center. These briefings may be scheduled with little notice, since I feel it is very important for every employee to be informed as quickly as possible as significant events occur. The sessions will be shown live on Langley cable vision and will be replayed over several days for those who missed the actual briefing.

I have been extremely pleased with the response to my Feb. 10 talk. I will do everything in my power to keep you immediately updated on the critical issues facing us. Even though the news has not been all positive, and could get worse, I have been overwhelmed by the patience and understanding of the Langley staff.

This is a very difficult period for all of us. However, I honestly feel that Langley can come out of this period of change much stronger, with a clearer mission and with a renewed opportunity to continue to make major contributions to our nation. The Agency is looking at many options to reduce the cost of doing business. Included in these is reviewing how each Center would change if we had to reduce our civil service and support service contractor work force by as much as 40 percent by the turn of the century. The upper limit (40 percent) could be viewed as the usual "worst case" scenario routinely used in contingency planning; however, it is relatable to the status of the budget and must be taken seriously.

We are all in this together. It is important for everyone to try to keep a positive attitude and help us replan our future, our mission and our reason for existence. As I have said repeatedly, Langley has the best people and facilities in the world. We must refocus and reenergize these resources. With sharply focused goals and major streamlining in the way we do business, combined with partnering with industry, other agencies and academia, Langley can lead NASA into the 21st Century.

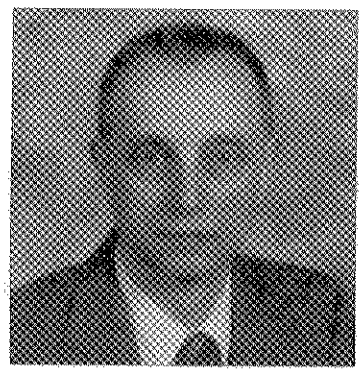
I sincerely thank you for your support. The changes we are facing are much bigger than Langley or the Agency. These are transitions of national proportion. Other developed nations are also undergoing major restructuring in areas such as aeronautics and space. But we have to endure – our nation is evolving and we are a vital part of that evolution and crucial to a successful future.

I promise to keep you informed as quickly as possible via personal briefings or by whatever means is most effective.

Paul F. Holloway
Center Director

See the NASA Administrator's Streamlining Speech, Budget Speech and 1996 FY Budget on pages 4 to 7. Also look for how to access the budget and specifics on the buyout.

Bushnell Appointed Senior Scientist



Dennis M. Bushnell

Longtime Langley researcher Dennis M. Bushnell, associate chief of the Gas Dynamics Division, has been appointed senior scientist. In his new position, he has been charged with three primary tasks at Langley: to advocate and stimulate research, to evaluate and help maintain the quality of research, and to ensure a continued research environment.

Bushnell said he was surprised at first when he received notice of the appointment. He said, "I am pleased to be able to contribute to the survival and continued viability of Langley."

Eager to jump into his new job, Bushnell shared that he had already received his marching orders. In addition to his usual duties as senior scientist, he has been asked by the directors to contribute to a renewed emphasis on longer-term/high-risk research which is the future of the Center, the Agency and aerospace technology. This research must be creative, inventive, and subjected to "real world" performance filters and, what he calls, the "giggle factor."

Focusing on the organizational aspects conducive to such research, he thinks ready access to and full utilization of information is critical. He also wants toleration of failure: "If

See **Bushnell**, *page 9*

Gray Selected As New Chief

Dr. Carl E. Gray, Jr.

Dr. Carl E. Gray, Jr., was selected by the Internal Operations Group (IOG) for the Senior Executive Service position of chief of the Facility Systems Engineering Division (FSED), effective Feb. 5. As the new chief of FSED, he is charged with planning, directing and coordinating division activi-

See **Gray**, *page 9*

Purchasing Moratorium

At the all-hands meeting called on Feb. 10, I announced that the Agency is placing a moratorium on a number of things that support but are not crucial for us to accomplish our mission. Initially, the moratorium will include such things as furniture, decorating, glossy brochures, videos made on contract, promotional items, computers and computer-related equipment. It is anticipated that the list could grow much longer.

I am sure that this moratorium will impact most of us. Such moratoriums (cutbacks) are hard to accept. But, I would like to ask you to join me in considering the options. Should we use our scarce funds to buy such items and services or to pay the salary to keep a colleague working in our organization? These are the hard choices we are being asked to make. We must face up to it — our funds are going to be reduced. The Agency is choosing — and I choose — to minimize the impact on our people. I am confident that you would make the same choice.

I am aware that employees sometimes ask their contractors to purchase equipment for them. In response to a direct question from a NASA employee on Feb. 10, I said that such action would be "career limiting" in the extreme. That afternoon, I addressed the Contractor Steering Council on streamlining and after a broad discussion warned them that computer procurement could also be "contract limiting."

Regarding the moratorium on computers, I would like to add one caveat. We will make some exceptions in this area. We will continue to purchase a very limited number of computers, related equipment and software essential to meet a mission critical goal. As an example, in several work areas, computers are as vital a tool as wind tunnels and fatigue labs. We will, therefore, strive to keep this equipment state-of-the-art. In addition, one of the Agency's "Guiding Principles for Re-Invention" is outreach. Likewise, we will continue to purchase minimal computer equipment to meet the High Performance Computers and Communications (HPCC) outreach program objective of helping expand computer technology in the nation's school systems. So, as I said, there will be exceptions, but they will be few and must be justified against one of the Agency's prime objectives or Guiding Principles for Re-Invention.

Again, I ask everyone to accept the inevitable — fewer funds, fewer people and fewer operational facilities. Moratoriums on certain items and services are going to become a part of the Agency's change and reduction process.

Paul F. Holloway
Center Director

Volunteers Are Still Needed Beyond National Engineers Week

Please send completed forms to Cathy Schauer at MS 154 or fax it to 47732. If you need a form, call ext. 43293, or stop by the Public Mail Center in Bldg. 1153, Rm. 115.

Programs available:

Acoustics
Air Magic
Human Computer
Human Brain
Human Satellite
Let's Go Flying
Principles of Flight
Space Communications
Space Station: All Aboard?
Toys in Space

Also available: ***flight suits***

News Briefs

Around the Agency

NASA/RUSSIAN SPACE AGENCY REACH AGREEMENT ON KEY STATION ELEMENT - NASA and the Russian Space Agency have signed a protocol complementing an agreement reached between Lockheed Missiles & Space Co. and Russia's State Research and Production Space Center (Khrunichev) for the U.S. purchase of the Russian Functional Energy Block (FGB). The FGB will be launched in Nov. 1997 as the first element of the Space Station.

SUCCESSFUL U.S.-RUSSIAN OZONE-MONITORING MISSION APPEARS OVER - More than three years after it began, the mission of NASA's Total Ozone Mapping Spectrometer (TOMS) aboard the Russian Meteor-3 spacecraft appears to be over. Recent attempts to revive the instrument, which failed in December, have been unsuccessful. Though monitoring of the device will continue through April, the instrument team has said it is unlikely that further efforts will succeed. Launched from Plesetsk in the former Soviet Union on Aug. 15, 1991, the TOMS instrument has already exceeded its design life of two years, providing important data and global maps of total ozone levels.

Quality Assurance Special Achievement Recognition (QASAR) Award

David Rabon, Mason and Hanger Inc., was awarded the distinguished QASAR (Quality Assurance Special Achievement Recognition) Award at the Safety, Reliability, and Quality Assurance Directors' Meeting held Jan. 24 at the White Sands Test Facility. Rabon noted that the award was won "due to team work and support from those who work for me and other branches within NASA."

He was nominated by the Safety, Environment and Mission Assurance Office for the "best of the best" QASAR Award. Rabon was one of twelve people nominated for Category 4: Most significant quality process or product improvement from a contractor employee.

Do You Serve on a Board?

As part of an Agencywide effort, Langley is compiling a list of all employees who serve on community boards, such as the Combined Federal Campaign, school and university boards, the Red Cross, Girl and Boy Scouts, Big Sisters and Big Brothers, Salvation Army, the Virginia Air and Space Center, etc. State whether you are participating as an official NASA employee or as a volunteer. Having this information helps the Center gain a better picture of its outreach into the community.

If you are a board member, please send your name, the board name, your phone and mail stop numbers, your role on the board, whether you represent NASA or serve as a volunteer, and the purpose of your board/organization to Cathy Schauer, ext. 43314, Mail Stop 154 or fax 47732 by Feb. 17.

The information will be compiled and published in a future issue of the *Researcher News* and will be maintained in the Office of Public Services.

LaRC Bloodmobile Begins New Year With A Bang!

Thank you for a great beginning to the new year. The bloodmobile held on Jan. 25 was another success and answered the call by the American Red Cross for the shortage of blood throughout the Peninsula.

Your continued support is greatly appreciated by many individuals—not only those you help with your blood donation, but also the Office of Occupational Health Services and the American Red Cross. Please mark your calendars with the remaining 1995 bloodmobile dates: March 22, May 24, July 26, Sep. 20, and Nov. 22.

We thank all NASA employees, retirees and contractors who continue to participate year round.

Volleyball to Start in March

The Spring season will be starting mid-March. All NASA personnel, NASA contractors and their immediate families are eligible to play. Please contact a league representative or the volleyball hotline at 44100 for more information.

BB league (Advanced): Susan Gorton, ext. 45059,
e-mail: s.a.gorton@larc.nasa.gov
B league (Adv./Intermed.): Steve Williams, ext. 46650,
e-mail: s.p.williams@larc.nasa.gov
C league (Intermediate): Gordy Degear, ext. 46075,
e-mail: g.g.degear@larc.nasa.gov
D league (Beginner): Dianne Snyder, ph. 827-4876,
e-mail: d.snyder@larc.nasa.gov
Men's league: Steve Williams (see B League above for info)
Women's league: Volleyball hotline, ext. 44100

Announcements

Notice: Passes

Causeway passes are available for Shuttle launches from Olin Jarrett of the Office of Public Services via MS 154, ext. 46320 or e-mail (o.jarrett@larc.nasa.gov).

These passes allow access for one car and all its occupants to the causeway at the Kennedy Space Center.

Requests should be made no earlier than three weeks before the launch. Upcoming launches are:

STS-67	March 2	1:36 am
STS-71	May 24	5:14 am
STS-70	June 22	11:13 am
STS-69	July 20	12:06 pm
STS-73	Sep 21	10:37 am
STS-74	Oct 26	3:56 pm

Retirement Party

A retirement party for Janice Wunder will be held Mon., March 20, from 5 to 7 p.m. in the H. J. E. Reid Conference Center. The cost is $7.00 per person and includes a gift. For gift-only contributions or party reservations, call C. Farquharson @ ext. 46111, or C. Kurtz @ ext. 42563.

PSI Seminar

The Peninsula Chapter of Professional Secretaries International (PSI) will host a seminar, "Surviving in the Workplace," Sat., March 18, at the Omni Hotel in Newport News, 8 am to 3:30 pm. Registration for non-PSI members is $35.00. Last day to register is March 6. Contact Patsy Campbell via phone ext. 43291, QuickMail or e-mail (p.l.campbell@larc.nasa.gov).

In Memoriam

Charles A. Clarke

Charles Albert Clarke, 86, died Nov. 23. Clarke was born in Baltimore, Md., and resided in Poquoson, Va. He began his NASA engineering career in 1941 at the 8-Foot tunnel where he worked until his retirement in 1968. He was also active in the Langley Activities Association as a mentor of the "Skyhawks," a men's basketball team during the 40's and 50's.

College Scholarships Available to Dependents of NASA Employees

March 31 is the deadline for submitting scholarship applications to the NASA College Scholarship Fund, a nonprofit organization set up to award scholarships to qualified dependents of NASA and former NASA employees, Agencywide.

To be eligible for consideration, applicants must be pursuing a course of study which will lead to an undergraduate degree in science or engineering at an accredited college or university in the United States.

Five scholarships will be awarded in the amount of $2,000 each for the 1995-1996 academic year. The renewable scholarship is for a maximum of $8,000 over six calendar years.

Applications should be submitted directly to the Johnson Space Center in Houston, Tex., and must be received no later than March 31. Late applications will be returned unopened.

For more information on eligibility requirements and selection criteria, or to receive application forms, call Sheri Bias in the Office of Human Resources at ext. 42554.

GIFT FROM MICHENER

The scholarship fund was established 13 years ago as a result of a substantial, unsolicited gift offer by the noted Pulitzer Prize winning author, James Michener. Many NASA employees have also contributed to the NASA College Scholarship Fund, primarily through the Combined Federal Campaign.

Former Freelance Writer Selected as New Editor of *Researcher News*

Joe Guarino, former freelance writer, editor and publisher, has been selected editor of the *Researcher News*.

As the new editor, Guarino brings a diverse background to Langley. Most recently, he was a freelance writer, doing articles for *Virginia Business Magazine*, *Peninsula Magazine* and *Living on the Virginia Peninsula*. He has also edited and published newsletters, brochures and user manuals for a variety of companies. Last year, he did a large press-release project for NASA. Other clients included Chick-fil-A, the Billy Graham Evangelistic Association and Youth Challenge.

Joe Guarino

In addition, he managed a year-long public relations campaign for the Hampton Roads Crusade for Christ which took place in Nov. 1994. He also directs a major fund-raising campaign for the largest Christian ministry on the Peninsula, Youth Focus, which primarily includes Young Life and The Gathering of Men.

Guarino, a Baltimore native, has lived and worked in The Netherlands and Japan. When in Tokyo, he was the chief editor and main staff writer for a small international magazine.

Currently, he, his wife, Susan, and their son, Marco, live in Denbigh.

Guarino, who works for Science and Technology Corp., succeeds Ann Gaudreaux, who accepted the position of development specialist with the Virginia Space Grant Consortium.

Researcher News

The **Researcher News**, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Va., 23681-0001, is published every other Friday in the interest of all Langley staff and retirees. Submit contributions to the Editor, Mail Stop 146, telephone 1 (804) 864-6126, fax 47732. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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

Middeck Active Control Experiment : Making Future Spacecraft Stable and Affordable

BY GREG STOVER

The Middeck Active Control Experiment (MACE) is an experiment which will be operated by the Shuttle crew in the middeck area where the crew exercises, eats and sleeps. MACE is scheduled for launch aboard Endeavour (STS-67) in early March. It will use the microgravity environment of the Space Shuttle to explore approaches for achieving high precision pointing and vibration control of future spacecraft and satellites. In particular, MACE extends the bandwidth of conventional rigid body instrument pointing and attitude controllers to include the flexible modes of the satellite. Since the success of such flexible control is intimately dependent upon the accuracy of the spacecraft model used for control design, MACE is essentially a spacecraft-modeling validation effort where success is determined by the control performance and predictability that is achieved in earth orbit. MACE was developed by the Massachusetts Institute of Technology; NASA's Langley Research Center; Payload Systems, Inc., of Cambridge, Mass.; and Lockheed Missiles and Space Co. of Sunnyvale, Calif. MACE builds upon the concept of the Middeck 0-Gravity Dynamics Experiment (MODE) which flew on STS-40, STS-48 and STS-62 as a dynamics test facility to characterize fluid, Space Station structure and crew motion dynamics in zero-gravity. MACE augments the MODE facility with real-time, digital-control capabilities.

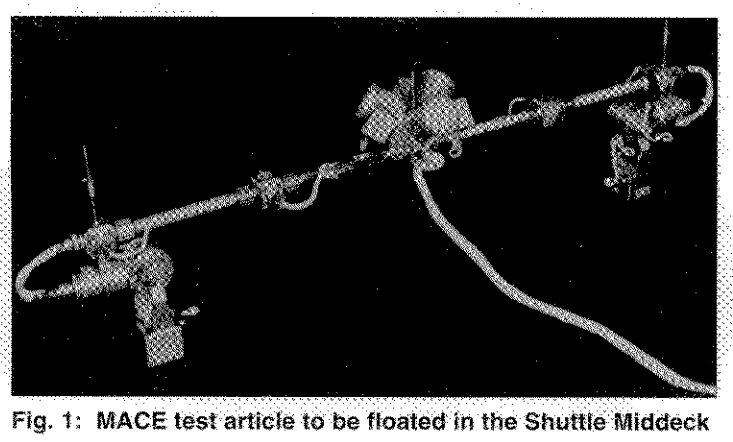


Fig. 1: MACE test article to be floated in the Shuttle Middeck

Figure 1 is a photo of the flight test article suspended for 1-g testing. Two instruments containing rate gyros are mounted to either end of the flexible structural bus using two-axis, direct-drive gimbals. A three-axis, reaction-wheel assembly (RWA) and a two-axis piezoelectric-bending strut are located near the center. Each strut is instrumented with strain gauges while each gimbal axis contains an angle encoder. A power and data umbilical cord, extending from the RWA to the bottom right of the photo, connects the actuators and sensors to the Experiment Support Module (ESM) shown in Figure 2. The ESM contains all experiment-sequencing, real-time control, data storage and crew-interface functions in a standard middeck locker. The control objective is to maintain the inertial pointing of one instrument while the other is undergoing either broad or narrowband excitation and slew maneuvers.

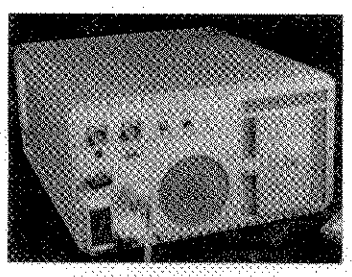


Fig. 2: MACE ESM

MACE is considered a secondary Shuttle payload and is stowed in four middeck lockers. One of the lockers is used for the Experiment Support Module (ESM) while the remaining lockers contain the Multi-Body Platform (MBP) and various other pieces of hardware used during the experiment. Once in orbit, the crew will remove the nine pieces of the MBP and assemble it in the middeck area.

A crew member will attach the test article to the ESM via a flexible umbilical cord and then utilize a hand-held terminal to control the experiment. The experiment is conducted by following a table which consists of many different experiment protocols. The crew member will utilize the hand-held terminal to enter the protocol number from the table and to execute the specific protocol. After the protocol has finished, the crew member will record his observations on the protocol table. At the end of certain flight days, the crew will transmit test data to the ground science team via the project-developed Ku-band Interface System (KIS). This device was developed as an interface to the Shuttle's Ku-band system for the purpose of high speed data transfer. Once the science team receives data from in-orbit, an intensive process occurs. This activity includes the creation of test article models from the in-orbit data and the construction of new spacecraft controllers. These events are performed in a 72-hour period after the data is first received. This period will culminate with the creation of new test protocols which will be transmitted back to the Shuttle via KIS for further testing on the multi-body platform. This unique approach to experimentation will prove future spacecraft control systems can be updated after being placed in orbit. After the final tests are performed, the crew will disassemble the test article and place the pieces back into the middeck lockers in preparation for Shuttle landing.

MACE has planned operations of 44 hours, spread over six flight days during the mission. The experiment is highly crew intensive. As such, the crew has received numerous hours of training to enable them to identify those activities of the test article which can assist the ground science team during their analysis.

In the past, control system performance has been limited by the flexibility in the system, due to a phenomenon known as control-structures interaction. MACE represents a space flight validation of new technology and has the potential for revolutionizing the performance of space-based systems that cannot afford the massive, rigidizing support structure which would otherwise be required. These earth-observing instruments have dramatically improved imaging capabilities for monitoring earth resources, pollution, ozone depletion and meteorological and oceanographic patterns. This technology will also benefit astronomical instruments envisioned to detect objects at the edge of the universe and locate planets around other stars. More practically, this technology is already finding application in aircraft gust alleviation, computer disk-drive head-vibration suppression, noise control, sensitive instrument isolation and precision machining. However, acceptance in the spacecraft community requires a comprehensive flight validation of this technology. The MACE program is designed to provide this flight validation.

For further information, contact the MACE project manager, Greg Stover, via ext. 47097 or e-mail (g.stover@larc.nasa.gov).

March Colloquium: Future Auto Technology

Robert N. Culver

Robert N. Culver, research planning manager for the Ford Motor Company, will present "Automotive Technology for the 21st Century" during a colloquium at 2 p.m., March 7, at the H.J.E. Reid Conference Center. He will discuss the four factors he believes will drive technological changes in automobile design in the next century.

The first two factors, the need to improve fuel efficiency while reducing vehicle emissions by an order of magnitude or more, are driven primarily by anticipated government regulations. The third factor, providing sophisticated driver-information needs, includes real-time traffic conditions and route guidance, which can be met with new electronic and communications technologies. The final factor, improving personal and vehicle safety, includes anti-theft and "limp-home" capabilities.

According to Culver, auto companies are forming cooperative ventures with each other, suppliers and government agencies, such as NASA Langley, to develop technology in each of the four areas. Above all, he believes the customer must be a part of the equation. Customer requests regarding cost, value and driving comfort must not be compromised by the new technologies.

Culver has worked for the Ford Motor Company since 1968 where he began his career as a quality control engineer in the Climate Control Division. After holding several positions in that division, he became principal engineer in 1977. The next year, he joined the Engineering and Research Staff as a staff planning associate. In 1983, he led the formation of the company's Corporate Technical Information System. From there, he moved to Manufacturing Strategy and Planning as a project manager in 1989. He assumed his present position in June 1992.

Culver is a native of Michigan and received a bachelor's degree in chemical engineering and a master's degree in business administration from the University of Michigan in 1968 and 1969, respectively.

Colloquium & Sigma Lectures: Schedule

Colloquium lectures are held on Tuesdays at Langley's H.J.E. Reid Conference Center. They are open to all NASA employees and contractors. Civil-service personnel should charge their time to A5266.

Sigma lectures are held on Tuesdays at the Virginia Air and Space Center (VASC) in downtown Hampton. They are free with no reservations required.

Feb. 28 Lectures

Colloquium: "Navigating the Information Highway Using Human Language Technology" by Dr. Victor Zue at 2 pm.

Sigma: "Carrying on a Meaningful Conversation with your Computer" at 7:30 p.m. After the lecture, VASC will have a special showing of the IMAX film, *"Destiny in Space,"* for $3.

March 7 Lectures

Colloquium: "Automotive Technology for the 21st Century" by Robert N. Culver, Research Planning Manager, Ford Motor Company, at 2 pm.

Sigma: "Automotive Technology for the 21st Century" by Robert N. Culver, Research Planning Manager, Ford Motor Company, at 7:30 pm. After the lecture, VASC will have a special showing of the IMAX film, *"The Blue Planet,"* for $3.

Accessing Past Colloquium & Sigma Lectures

If you are unable to attend any colloquium or sigma lecture, you may still access them from several sources. All colloquium lectures are videotaped, and can be checked out from the Library by calling ext. 42389. Also, notices concerning upcoming and recent colloquium and sigma lectures are available on the World Wide Web using a browser such as Mosaic or Netscape (http://wmkpc.larc.nasa.gov/lectures.htm) or from the NASA Langley Home Page (http://mosaic.larc.nasa.gov/larc.html).

State of the Agency II - Streamlining

Editor's Note: On Jan. 19, NASA Administrator Daniel Goldin presented the second in a series of State of the Agency messages over NASA TV to employees at all NASA facilities. The address is presented here in its entirety.

Last month, I gave the first of these Agency-wide talks. I spoke in broad terms about the transformation at NASA. This month, I want to get more specific.

One of the reasons I'm giving these talks is to get tough issues out in the open. I want to tackle some of the issues you may be wondering about. That way, fears can be aired. Questions can be answered. We can all pull together.

Today, I'm going to tackle one of our toughest issues. Streamlining.

I'm going to use four questions to talk about this. The first question is, "What is streamlining?" The second is, "Why are we doing it?" Third, "How are we going to do it?" And fourth, "What does all this mean to you?"

Let me start at the beginning. "What is streamlining?"

There are a lot of special terms used to define streamlining. But it's really just three things. It's downsizing. It's reorganizing. And it's finding new ways to do things.

NASA will do all of these.

Now for the second question. "Why are we doing it?"

We're doing it because Americans want a smaller, cheaper government. A government that does the right things, with the right number of people, at the right cost. Americans want government to be relevant.

Congress and the President have responded to that. They got the message, and they're making changes. Big ones. Very big changes. These changes affect NASA, but we're not alone. They affect every agency and department in government.

Let me start with some of the things Congress and the President have already done. The President proposed, and Congress passed, a law that calls for a cut in federal employees by the end of FY '99. Under President Clinton's reinvention, the government will shrink by 272,900 people. We'll have the smallest government we've had in years.

Cutting out 272,900 people is a 12-percent cut of all federal employees. But each agency's share varies. NASA's share is a 16.5-percent cut by the end of FY '99. That's over 4,000 people. The buyouts helped us a lot. They put us ahead of schedule. In fact, we're about a year ahead. We're where we should be by the end of FY '95. But we're not nearly done yet. We have about 2,500 more people to go. When we achieve that, we'll be the smallest we've been since the early Apollo years.

It's not just civil service getting cut back. Our contractors are in the same boat. For example, over the last year, Headquarters reduced its support contracts by roughly 25 percent: more than 300 jobs. The centers have made even deeper cuts.

The National Performance Review is another reason we're streamlining. It has specific recommendations for cutting government. For example, it tells agencies to cut their headquarters in half by the end of FY '99. It also says agencies should cut supervisors by 50 per cent. The same goes for administrative staff. And it says too many people are managing too few. Agencies have been challenged to reach a supervisor-to-employee ratio of one-to-15. Our goal has been set at one-to-11.

When all this first came out, NASA had a ratio of one-to-five. So we've got a ways to go. We'll be cutting back on supervisors.

These are just some examples of what the President and Congress have already done. We're dealing with the targets they've given us. But more cuts in government are coming.

Both the President and Congress want an even smaller government. In December, the President announced he wants to find an additional $76 billion in savings over the next five years. That's part of his tax-cutting plan.

We don't know yet if this will affect NASA. We may know more after the President's State of the Union speech later this month. We'll certainly know more when his budget plan comes out in early February.

Congress also wants to cut government further. Both Republican and Democratic leaders are talking about it very seriously.

But right now, we're working to meet the targets we've already been given. Of course, in order to have new programs, we'd have to downsize some areas even more than the Administration targets.

Let me go on to the third question. "How are we going to do it?" How are we going to cut NASA by 16.5 per cent and meet the other fundamental requirements of the Agency?

First, it's not clear we can rely solely on attrition. In the '70s and '80s, NASA faced similar challenges. Downsizing really took its toll.

Private companies doing a good job of downsizing aren't just relying on attrition. I've challenged our Center directors and Headquarters leadership to be innovative. We need management tools that will deliver a smaller but dynamic, relevant NASA. And do it fairly and humanely.

We're looking at ways to cut out some things we do and improve others. Let me tell you exactly what we're doing.

Like every other agency, NASA submitted a streamlining plan to Office of Management and Budget (OMB) in October. We used our Strategic Plan as the basis.

We told OMB we'd take a close look at NASA. We said we'd report back on what kinds of changes make sense for the Agency.

That's the stage we're in now. We're taking a close look at the Agency. There are many reviews going on right now. But there are three basics to streamlining.

One is the Civil Service and Support Contractor Zero Base Review. It's headed up by Dick Wisniewski, Deputy Associate Administrator for Space Flight. The scope of this review is tremendous. We're looking at everything the Agency does.

This is the exciting part of streamlining. We can totally reinvent ourselves. We can do whatever works. Everything is on the table. Nothing is sacred. We can change the way people are grouped. We can change the way they're managed. We can focus on what we do best and cut back the rest.

Our goal is to cut spending on things that aren't a priority. We'll shift that money into what's most important. In other words, we'll be more relevant. We'll be doing the things America wants us to do.

We're getting back to basics. We're asking fundamental questions: "What are we doing and why are we doing it? How can we do it better? Which jobs are necessary? How many people do we need to get the job done?"

Both the centers and Headquarters are doing self-assessments in which they ask themselves these questions.

We're not doing this review in a vacuum. Hundreds of people are involved. Cross-cutting teams are also at work. These are teams of experts from each center. They look at one area across the entire Agency. Like science or engineering or information systems. How could this one area be done better by the Agency? Maybe it should be handled out of one center. Or organized completely differently. These are the kinds of things the teams are considering.

The end result of all this will be targets and guidelines for the centers and Headquarters. The kinds of cuts that should be made and where. The areas that should be re-engineered. Ways we can improve our efficiency and effectiveness. We plan to make final decisions by the end of May.

The other two reviews focus on the Shuttle. The purpose of these reviews is to see how we can maintain or improve shuttle safety while reducing operating costs.

The main Shuttle review is headed by Bryan O'Connor, Deputy Associate Administrator for Shuttle. In this effort, each center looks at how it can do its part better. This review should be done by the end of January.

The second Shuttle review is led by Christopher Kraft, former director of NASA Johnson. This group will recommend a road map for how NASA should manage the Shuttle and space flight operations. Their recommendations should be final some time in February.

Now the fourth and final question. It's probably the most important. "What does all this mean to you?"

I'm going to be up front with you. We don't know all of what this means. We can't. The reviews I talked about aren't finished yet. And we don't have the last word on what the President and Congress want to do at NASA. There's a lot that's still up in the air.

Here's what we do know.

NASA will be smaller, and NASA will be different. We will have fewer people doing more complex work. This will require training for some. We won't do some of the things we do now. You've already seen that happen because of budget pressures. Some of the things that were in the '93 budget aren't in the '95 budget. We can't afford them. But the things we do will be outstanding. We'll maintain our superb quality.

We also know that Headquarters will be significantly smaller. Headquarters will stop doing some things altogether. Some things will be moved to the centers. Headquarters will be leaner, and the centers will be much more empowered.

Another thing we know for sure is that we'll maintain cultural diversity. Diversity isn't just a buzzword. It's not just a fad. It's important to the people of this Agency. It's important to the people of this country. This is America's space and aeronautics program. We're designed to serve our country and uplift its people. All of its people.

I've been getting some feedback about this. As we talk about bringing in more minorities and women, some of you have felt threatened. Some have felt shunted aside.

That isn't what's happening. We are becoming more inclusive, not less. Women and minorities have not had the opportunities others have had. We're changing that. We're opening the doors of NASA at all levels to the best person for the job. That doesn't mean that suddenly, we value one group and not another. That's not what diversity is. Diversity is including everybody. Each person gets to go as far as their talents can take them.

Another thing we know for sure is that employees will be respected. Human dignity is not expendable. People matter. You matter. Whether you've been here one year or 30, many of you have left your mark on NASA. You've done more than that. You've left your mark on this country. We're going to reach our targets with as little disruption as possible. Management and unions will be working together to help us do this. But we will reach our targets.

See **Streamlining**, *page 7*

NASA FY 1996 BUDGET (Millions of Dollars)

Summary

	FY 1995	FY 1996
HUMAN SPACE FLIGHT	5,514.9	5,509.6
SCIENCE, AERONAUTICS & TECHNOLOGY	5,943.6	6,006.9
MISSION SUPPORT	2,589.2	2,726.2
INSPECTOR GENERAL	16.0	17.3
NATIONAL AERONAUTICAL FACILITIES	400.0	
TOTAL BUDGET AUTHORITY	14,463.7	14,260.0
TOTAL OUTLAYS	14,239.4	14,125.3

Breakout

	FY 1995	FY 1996
HUMAN SPACE FLIGHT	5,514.9	5,509.6
SPACE STATION	1,889.6	1,833.6
Development	1,752.4	1,612.8
Construction of Facilities	[20.2]	[14.8]
Utilization Support	28.3	67.9
Operations	108.9	152.9
US/RUSSIAN COOPERATIVE PROGRAM	150.1	129.2
Russian Space Agency Operations	100.0	100.0
Mir Support	50.1	29.2
SPACE SHUTTLE	3,155.1	3,231.8
Shuttle Operations	2,415.3	2,394.8
Safety/Performance Upgrades	739.8	837.0
Construction of Facilities	[12.3]	[17.4]
PAYLOAD & UTILIZATION OPERATIONS	320.1	315.0
Spacelab	98.6	97.0
Tethered Reflight	7.4	3.8
Payload Processing and Support	36.3	30.3
Advanced Projects	12.2	12.2
Engineering and Technical Base	165.6	171.7

Figures in parentheses are included in the budget line item directly above.

	FY 1995	FY 1996
SCIENCE, AERONAUTICS & TECHNOLOGY	5,943.6	6,006.9
SPACE SCIENCE	2,012.6	1,958.9
PHYSICS & ASTRONOMY	1,195.5	1,131.1
Advanced X-Ray Astrophysics Facility	234.3	237.6
Global Geospace Science	40.0	5.4
Gravity Probe-B	50.0	51.5*
Offsetting Reduction		-51.5*
Payload & Instrument Development	53.9	33.1
Explorer Development	120.4	129.2
Mission Operations & Data Analysis	432.4	428.6
Research & Analysis	75.4	90.4
** SIRTF		[15.0]
Suborbital Program	67.2	106.7
** SOFIA		[48.7]
Information Systems	26.1	25.9
Launch Services	95.8	74.2
PLANETARY EXPLORATION	817.1	827.8
Cassini	255.0	191.5
Mars Instruments	2.1	1.4
Mars Surveyor Program	59.4	108.5
Mars Global Surveyor	[58.0]	[58.2]
** Future Missions	[1.4]	[50.3]
Discovery	129.7	103.8
Mars Pathfinder	[77.5]	[35.9]
Near Earth Asteroid Rendezvous	[52.2]	[31.3]
** Future Missions	[36.6]	
** New Millennium Spacecraft	10.5	30.0
Mission Operations & Data Analysis	117.2	127.8
Research & Analysis	108.4	109.1
Launch Services	134.8	155.7

* In October 1994, NASA requested that the National Academy of Sciences assemble a review panel to validate the technical feasibility and scientific merits of Gravity Probe-B relative to other science priorities within the NASA budget. Discussions are currently underway, with final results anticipated in mid-1995. In the event the panel recommends continuation of Gravity Probe-B, equivalent offsets within the NASA budget must be identified.

** Items indicated are proposed new initiatives.

Figures in parentheses are included in the budget line item directly above.

	FY 1995	FY 1996
LIFE & MICROGRAVITY SCIENCES & APPLICATIONS	483.1	504.0
Life Sciences	140.7	134.4
Microgravity Science Research	131.9	139.9
Construction of Facilities		[3.0]
Aerospace Medicine	7.0	7.0
Shuttle/Spacelab Payload Mission Management & Integration	113.0	85.4
Space Station Payload Facilities	90.5	137.3
MISSION TO PLANET EARTH	1,340.1	1,341.1
Earth Observing System (EOS)	591.1	591.1
EOS Data Information System	230.6	289.8
Earth Probes Development	81.6	36.9
Payload & Instrument Development	19.5	4.9
Earth Science	227.8	209.9
Operations, Data Retrieval & Storage	116.5	98.5
Global Observations to Benefit the Environment (GLOBE)	5.0	5.0
Advanced Communications Technology Satellite (ACTS)	2.3	
Construction of Facilities	17.0	17.0
Launch Services	48.7	88.0
SPACE ACCESS & TECHNOLOGY	642.4	705.6
Advanced Space Transportation	162.1	193.0
** Reusable Launch Vehicle	[128.5]	[159.0]
Spacecraft & Remote Sensing	144.3	177.5
Advanced Smallsat Technology	61.9	33.9
Space Processing	18.3	18.1
Flight Programs	49.1	76.0
Commercial Technology Programs	45.8	40.4
Small Business Innovation Research	123.9	129.1
Launch Services Mission Support	37.0	37.6
AERONAUTICAL RESEARCH & TECHNOLOGY	882.0	917.3
Research & Technology Base	366.3	354.7
Systems Technology	493.7	557.2
High Performance Computing & Communications	76.1	75.2
Numerical Aerodynamic Simulation	46.2	48.1

High Speed Research	221.3	245.5
Advanced Subsonic Technology	125.8	188.4
Advanced Composite Technology	24.3 [Included Above]	
Construction of Facilities	22.0	5.4

** Items indicated are proposed new initiatives.

Figures in parentheses are included in the budget line item directly above.

	FY 1995	FY 1996
MISSION COMMUNICATION SERVICES	481.2	461.3
Ground Network	273.4	268.8
Mission Control & Data Systems	175.8	162.2
Space Network Customer Services	32.0	30.3
ACADEMIC PROGRAMS	102.2	118.7
Education Programs	56.3	61.4
Minority University Research & Education	45.9	57.3
MISSION SUPPORT	2,589.2	2,726.2
SAFETY, RELIABILITY & QUALITY ASSURANCE	38.7	37.6
SPACE COMMUNICATION SERVICES	226.5	319.4
Space Network	111.6	206.7
TDRS Replenishment	[42.0]	[195.8]
Telecommunications	114.9	112.7
RESEARCH & PROGRAM MANAGEMENT	2,189.0	2,202.8
CONSTRUCTION OF FACILITIES	135.0	166.4
INSPECTOR GENERAL	16.0	17.3
NATIONAL AERONAUTICAL FACILITIES	400.0 *	—

* Legislation is being proposed to extend availability of these funds from July 15, 1995 until September 30, 1997. Figures in parentheses are included in the budget line item directly above.

NASA CONSTRUCTION OF FACILITIES BY APPROPRIATION FY 1996 BUDGET SUMMARY (Millions of Dollars)

	FY 1995	FY 1996
HUMAN SPACE FLIGHT	32.5	32.2
SPACE STATION	20.2	14.8
Construction of Neutral Buoyancy Laboratory (JSC)	20.2	14.8
SPACE SHUTTLE	12.3	17.4
Replace Chemical Analysis Facility (KSC)		7.5
Replace Space Shuttle Main Engine ProcessingFacility (KSC)		4.9
Modernize Firex System, Pads A and B (KSC)	4.8	5.0
Replace Components Refurbishment Laboratory (KSC)	7.5	
SCIENCE, AERONAUTICS & TECHNOLOGY	39.0	25.4
MISSION TO PLANET EARTH	17.0	17.0
Construction of Earth Systems Science Building (GSFC)	17.0	17.0
LIFE SCIENCES AND MICROGRAVITY		3.0
Construction of Addition to Microgravity Development Lab (MSFC)		3.0
AERONAUTICAL RESEARCH & TECHNOLOGY	22.0	5.4
Modernization of the Unitary Plan Wind Tunnel Complex (ARC)	22.0	5.4
MISSION SUPPORT	135.0	166.4
JOHNSON SPACE CENTER	4.3	5.3
Rehabilitate Utility Tunnel Structure & Systems	4.3	
Rehabilitate Electrical Distribution System, White Sands Test Facility		1.1
Replace Main Substation Switchgear & Circuit Breakers		4.2
KENNEDY SPACE CENTER	1.5	1.8
Modernize Payloads Hazardous Servicing Facility HVAC System	1.5	
Replace 15kV Load Breaker Switches	1.8	
MARSHALL SPACE FLIGHT CENTER	4.9	11.5
Modernize Metrology & Calibration Facility	4.9	
Restoration of High Pressure Air Compressor System		4.7
Restoration of Information & Electronic Systems Lab		6.8
STENNIS SPACE CENTER		1.4
Restoration of Canal Lock		1.4
GODDARD SPACE FLIGHT CENTER	5.0	5.5
Restore Exterior/Interior Systems, Buildings 3, 13, & 14	5.0	
Restoration & Modernization of Chilled Water Distribution System		3.0
Restoration of Primary Electrical Distribution System, Wallops Flight Facility		2.5
AMES RESEARCH CENTER		6.3
Restoration of Flight Systems Research Laboratory		6.3
DRYDEN FLIGHT RESEARCH CENTER	8.0	
Seismic Upgrade of Research, Development, & Test Bldg	8.0	
LEWIS RESEARCH CENTER		9.0
Rehabilitation of Central Air Equipment Building		9.0
JET PROPULSION LABORATORY	4.3	4.8
Modernize Condenser Water Systems, Southern Sector	4.3	
Replace Chillers, Various Buildings		4.8
REPAIR OF FACILITIES AT VARIOUS LOCATIONS, NOT IN EXCESS OF $1,500,000 PER PROJECT	30.0	35.0
REHABILITATION & MODIFICATION OF FACILITIES AT VARIOUS LOCATIONS NOT IN EXCESS OF $1,500,000 PER PROJECT	30.0	35.0
MINOR CONSTRUCTION OF NEW FACILITIES & ADDITIONS TO EXISTING FACILITIES AT VARIOUS LOCATIONS, NOT IN EXCESS OF $1,500,000 PER PROJECT	2.0	3.8
FACILITY PLANNING & DESIGN	10.0	10.0
ENVIRONMENTAL COMPLIANCE & RESTORATION	35.0	37.0

FY 1996 Budget Speech

Editor's Note: On Feb. 6, NASA Administrator Daniel Goldin presented the Fiscal Year 1996 Budget at a press conference. The speech is presented here in its entirety.

This FY 1996 budget request of $14.26 billion will allow us to deliver a strong aeronautics and space program that's relevant to America. We're doing some truly revolutionary things. And we intend to maintain our critical major activities.

That's the good news.

The tough news is that we will make fundamental changes at NASA to absorb future cuts. We'll be taking a cut of nearly $5 billion over the next five years.

Make no mistake. When this is over, NASA will be profoundly different. We're going to restructure the Agency. But the NASA that emerges will be better than ever.

NASA has been in the vanguard of the President's and Vice President's reinvention challenge. We've already cut our budget 30 per cent. We've already reduced our support contracts. We've already downsized our workforce. We've already eliminated low-priority programs.

As I testified before Congress last month, we've already started a revolution at NASA. This budget continues and accelerates that process. This budget asks us to do even more. We're stepping up to that challenge.

The White House recently announced a second phase of the National Performance Review. This phase is to examine the basic missions of government. We're already doing that. We have a vision for NASA, and a road map for change.

Here's what we're going to do:

• We're going to cut the structure of NASA. Given all the cuts we've already absorbed, this cut causes us to rethink the entire structure of the Agency. We will revolutionize the structure of NASA. Our workforce. Our relationship with our contractors. Our facilities. The way we do business here will have to change — and change dramatically.

Five billion dollars is a huge cut. We want to make the full reduction by restructuring NASA. Cutting our workforce, cutting on-site contractors, cutting facilities. This will be painful. It means NASA employees will lose their jobs. Contractors working at NASA, and at their own offices will lose their jobs.

I wish we could reinvent NASA without any disruption to any employee. I wish it were easy. But it isn't.

We hope to make all of the cuts through restructuring. If our analysis shows we can't, then and only then will we cancel programs.

We've already started a revolution at NASA. We're in the middle of a top-to-bottom review of the Agency to determine where to cut. We're looking at everything we do. Everything is on the table.

• In October, we began a zero-base review of our civil servants and contractors.

• Two teams are reviewing Shuttle operations. One began last September and the other last month. They're looking for ways to significantly cut costs while achieving safety equal to or better than today's level. Safety governs everything we do. It's our top priority.

• We're involved in the Federal Lab Review, to see how our R&D labs can be more efficient and effective. This review began in September.

We'll also make NASA less of an operations Agency and more of an R&D Agency. This process begins in FY 1996. Let me give you the highlights of how the FY 1996 budget starts us down the path:

• We're staging a revolution with the New Millennium spacecraft. There's no other word for it. This is a brand new era in spacecraft design. These small, agile spacecraft will be built on a bench, not in a high bay area. They'll be about a tenth of the cost, and about a tenth of the weight of today's spacecraft. They're like nothing that's ever been done before.

• The Reusable Launch Vehicle Technology Program is another ground breaker. The Shuttle is a magnificent and versatile spacecraft. But it's time to look to the next era in space. Reusable Launch Vehicles should make access to space affordable and open up the space frontier to industry and entrepreneurs.

And, the way we're working with industry is the wave of the future. We're going to work with industry to resolve high-risk development issues and then get out of the way. Industry will build and operate the launch vehicles. In the future, I expect that NASA will be just another customer for commercial launch services.

Finally, I want to talk about the remarkable progress we're making on the international Space Station. It's a model for NASA's new way of doing business, and it's right on track.

We overhauled the Station from top to bottom and redesigned it. We went with a single prime contractor. We built in real incentives for performance and real penalties for delays. We streamlined Station management.

And, we're building flight hardware. We're not debating it anymore. We're doing it. Stable funding has allowed us to keep the Station on track and on schedule.

I want to close by thanking the President for his leadership. He's given us clear, forceful direction. He's asking us to do what's most important to Americans and do it for less money. In fact, he's asking us to change NASA as we know it. And that's exactly what we're going to do.

Streamlining

Continued from page 4

Another thing we know about the new NASA is that it will be relevant. We will do what matters most to Americans. They'll value our programs. We will be good for America, and America will know it. Don't look at what's happening as a negative reflection on NASA. America has come into a different time. There are new pressures today. New ways of looking at things. Our country is changing. Our government is changing. An era is behind us, and a new one is beginning. There's no turning back. That's what America has said it wants. That's what we must deliver.

NASA is one of the most exciting places to work in the world. We serve our country as few others will ever do. We do incredible science. We drive cutting-edge technology. We strengthen America's economy. We create high quality jobs. We inspire the world, and we ennoble humanity.

That will not change. That's one guarantee I can make you. NASA will continue to make this country strong and its people proud.

Thank you.

The March 1995 Buyout Program

Editor's Note: The following letter, entitled "Opportunity for Separation Incentive Pay (Buyout)," is from the head of the Office of Human Resources. It was distributed Centerwide on Feb. 6 to all permanent Langley employees.

As you know, NASA offered buyouts to eligible employees from April to July of last year. The buyouts were successfully used to reduce the size of our workforce in line with reductions directed by the President and Congress. Additional reductions to our workforce, in conjunction with requests by our employees, have convinced us that an additional buyout opportunity would be of value. Since the legislation which authorizes buyouts expires on March 31, we must move quickly to offer and process these incentives.

Eligible employees who voluntarily leave NASA within the established timeframe will receive an amount equal to their calculated severance pay entitlement, up to a maximum of $25,000. A worksheet to determine the amount you could receive may be obtained from the Employee Relations Office, ext. 42603. Nontemporary employees with 12 months of NASA employment, who retire or resign, are generally eligible for separation incentives. If you accept a buyout, you may not be reemployed anywhere in the Federal service, including employment on a personal services contract for five years following your separation, unless you repay the full amount of the incentive (before taxes) to NASA.

Buyout applications will be accepted through March 24, 1995; however, priority consideration will be given to those employees who apply by March 8. If approved for buyout, those applying by March 8 must separate between March 15 and 31, 1995. The separation date for approved buyout applications received between March 9 and 24 will be March 31, 1995.

Although we hope to be able to grant these incentives to all interested, eligible employees, funding, full-time equivalents limitations, and mission needs may force us to make some difficult choices. We need to maximize the use of incentives for employees in areas which are targeted in the Administration's federal government downsizing efforts and maintain adequate skill balances in mission-critical areas. Generally, this means that high-level managers and supervisors, as well as employees in the administrative occupations targeted by the National Performance Review, will have priority over other employees.

If you are interested in a buyout, you may obtain an application form from the Employee Relations Office, Bldg. 1195C, Rm. 243. It is imperative that we know your decision quickly. You will be notified if your application has been accepted. If you are retiring, you will be given a retirement application when you submit your separation intent form. You are encouraged to submit a completed retirement application as soon as possible to provide sufficient time for administrative processing of your application. A retirement counseling/outprocessing session has been planned for the morning of March 17. It is anticipated that the retirement portion of the clearance process will be completed for the majority of the buyout takers at this session.

Additionally, NASA has received approval for "early out" retirements through September 30, 1995. Employees who are age 50 with 20 years of service or have 25 years of service at any age are eligible for early out. Civil Service Retirement System (CSRS) employees under age 55 who retire will lose 2 percent in retirement pay for each year under age 55.

Please note that on the subject of continuing enrollment in the Federal Employees Health Benefits Program (FEHB) after retirement, OPM has granted a waiver of the 5-year enrollment requirement for those employees retiring with a voluntary incentive payment "buyout" under the Federal Employees Workforce Restructuring Act of 1994 (P.L. 103-226). Employees

See **Buyout**, *page 8*

Contacting and Responding to Your Congressional Representatives: Do's and Don'ts

Federal Employees have the right as private citizens to communicate with their Congressional representatives. Conversely, federal agencies and employees operating in their official capacity are subject to numerous restrictions in communicating with Congress. Accordingly, it is very important that all official communications with Congress be handled through the Langley Office of External Affairs and that all private communications be handled without use of Government resources.

Employees who wish to communicate with members of Congress must do so during non-duty hours and use their own resources. The use of NASA letterhead or stationery is prohibited, as is the use of any government-owned property or communications services such as electronic mail, fax, telephone or postage stamps. Although it is permissible for employees to indicate that they are LaRC employees in such communications, employees should be careful to avoid any implication that they are acting in an official capacity.

Employees also must not use their official position or government resources to ask any contractor, industry group or academic institution to contact Congressional representatives on their or NASA's behalf.

Supervisors and fellow workers of employees who communicate with the Congressional representatives will respect their exercise of that right. Many such inquiries are forwarded to the Center by the Congressional representative for preparation of a response and they will be handled with the same dignity as other Congressional inquiries. All responses will be made back to the representative through the official channels - not directly to the employee except upon specific instruction of the Congressional representative.

Any questions relating to this matter should be referred to the Office of External Affairs @ ext. 46124.

How to Acquire a Copy of the NASA FY 1996 Budget

The NASA FY 1996 budget request briefing package, presented to the press and the public on Mon., Feb. 6, at 2 pm by NASA Administrator Daniel Goldin, is available via the Internet at the NASA Headquarters Public Affairs World Wide Web Homepage and FTP site.

The NASA budget briefing package is available over the Internet using Fetch or similar software at:

ftp.hq.nasa.gov

in the pub/pao/pressrel/1995 directory as 96budget.txt

or via Mosaic and the World Wide Web at the Headquarters Newsroom Homepage at URL:

http://www.nasa.gov/hqpao/newsroom.html

in the press release/1995 folder as 96budget.txt

The full printed version of the NASA FY 1996 Budget Request can be purchased from the NASA Headquarters Information Center by calling (202) 358-0000.

Buyout

Continued from page 7

who were enrolled in FEHB as of March 30, 1994, and retire no later than March 31, 1995, are covered by this waiver.

NASA is exploring the use of outplacement services (to include post-employment) for individuals taking the buyout. Over the next couple of weeks our personnel office will be gathering information on the outplacement programs available and will provide you with further information as it is available.

I wish to emphasize that separations for incentives are entirely voluntary. However, I am hopeful that these voluntary separations with incentives will alleviate the need to impose harsher remedies to achieve our restructuring goals.

If you have questions or would like additional information, contact Linda Park @ ext. 42605.

Students With Disabilities In Pursuit Of Science & Engingeering: Issues & Answers

By Dr. Liz Ward

Three Langley employees presented two sessions on issues facing students with disabilities in science and engineering at the Virginia Quality Education in Science and Technology (VQUEST) conference Feb. 2 in Norfolk. The informative talks stressed awareness, acceptance, accessibility, and resources. Educators, counselors, administrators, employers and parents need to recognize persons with disabilities as viable candidates for scientific or engineering careers.

Karen Bibb

An aerospace engineer in the Gas Dynamics Division and a PhD candidate at the Georgia Institute of Technology, Karen Bibb related her experiences as an able-bodied coed who was in an accident during her junior year at Georgia Tech. With subsequent loss of mobility, Bibb learned quickly that Georgia Tech was not the same hospitable environment she knew before the accident. She had to negotiate the same classrooms and buildings but with a different set of navigational tools. She communicated to the audience of precollege and university educators that physical impairment does not equal mental impairment. She urged educators to integrate, not segregate, and to approach all classroom planning with the attitude of accommodating the learning needs of each student, regardless of disability. Bibb has been active at Langley and in the local community in promoting access for persons with disabilities.

Jay Modi, PhD candidate in atmospheric sciences at the College of William and Mary, discussed his perspective as a blind student at both public and private institutions. With an undergraduate degree in mathematics and a strong admiration for the innovative Harvard National Calculus Project, Modi demonstrated his political and professional skills with the following incident. The Harvard project had produced a calculus text available only to sighted readers. He argued with project administrators that the text should be translated into Braille. He won the task and a visiting research faculty appointment to the College of William and Mary's Department of Mathematics. His Braille version of the calculus text has been published. While working at William and Mary, he met Langley atmospheric scientist, Dr. Joel S. Levine. Modi has since decided to change his doctoral program to atmospheric science and has been studying atmospheric chemistry and dynamics with Levine at Langley's Earth Observing System Data and Information System (EOSDIS) Distributed Active Archive Center (DAAC).

Dr. Liz Ward, Langley's NASA Space Grant Fellow, presented the National Science Foundation's (NSF) pilot project for students with disabilities, DO-IT (Disabilities, Opportunities, Internetworking and Technology), located at the University of Washington. The program provides high-school students with an on-campus summer experience and supplies Internet-linked computers and mentors for year-round interaction. The Seattle-based program has attracted international attention from people such as British physicist Dr. Stephen Hawking, who serves as a DO-IT mentor. The DO-IT program was the first of six NSF-funded projects designed to recruit and train students with disabilities interested in pursuing science, engineering or mathematics. Ward informed the audience of potential resources they might tap to meet local needs such as financial assistance to institutions, students and faculty available from the NASA Space Grant College and Fellowship Program and from the NSF's Program for Persons with Disabilities.

Speaking with the Langley personnel was Dr. David Lunney, Professor of Chemistry and director for the Science Institute for the Disabled at East Carolina University in Greenville, N.C. For over a decade, Lunney and several colleagues have been developing adaptive technology to make computers and laboratory experiences accessible for students with disabilities. Using various input and output devices, he has directly linked data acquisition and data analysis instruments to standard personal computers. In addition to his innovative use of data acquisition and analysis systems, he has established a lending library of adaptive technology equipment for precollege teachers in eastern North Carolina. Instead of purchasing the often expensive adaptations needed for their students with disabilities, the teachers can borrow the equipment. All of Lunney's projects are funded by the NSF.

If you would like more information on the DO-IT project, about Lunney's work, or about the NASA Space Grant College and Fellowship Program, please contact Liz Ward via ext. 43299 or e-mail (e.b.ward@larc.nasa.gov).

Discovery-Mir Images Available

Over a dozen images from the Shuttle Discovery mission can be accessed, downloaded and printed via the World Wide Web. Link to the NASA Public Affairs "Current NASA Mission" site. The URL for these images is: http://www.hq.nasa.gov/office/pao/NewsRoom/today.html

For more information on how to access, call (202) 358-4043.

Bushnell

Continued from page 1

you treat failure as an educational experience, it's useful and an essential part of the [creative research] process." Furthermore he thinks both management and financial support for such research must be worked.

THE SHORT TERM

Bushnell intends to take four short-term actions necessary to foster an appropriate environment for longer-term/high-risk research. First he will attempt to increase at-desk information access for researchers through re-engineering in project reliance for the Code R centers and Headquarter's STI program.

Second he will renew emphasis on high-risk/end-product research, as opposed to tools, for support by the DDF. He hopes to screen 20 to 30 new concepts each year to produce a substantial number of advanced approaches for inclusion in the research and technology base. He expects 20 to 30 percent of these new ideas will make the cut.

Third he will hold open house for communications by any means from any staff member on the subject of advanced research. He wants to know what others think should be done and how it should be done.

Finally he plans to continue contributing personally to on-going advanced research. He is involved in planning for horizon missions and advanced-concepts programs.

CAREER

Bushnell is just finishing up a year as associate chief of the Gas Dynamics Division. Before that, he served six years as associate chief of the Fluid Dynamics Division.

During his tenure as head of the viscous flow branch from 1973 to 1989, he spent 15 years on the Turbulent Drag Reduction program which he considers his most important contribution to NASA.

While in this position, he was selected in 1976 for the Massachusetts Institute of Technology's Sloan Fellows Program, which would have put him on the fast track toward management. However, he said he made one of the most important decisions in his life by declining so that he could stay in technical work.

Prior to this job, he was head of the Flow Analysis Section.

Bushnell came to Langley in 1963 to work on the Apollo program. After it ended, he decided to stay at Langley because it was "the best place to do research in aeronautics." And so he has remained here for his entire 32-year career. What is remarkable about his career is that he has served NASA at this base only and in the same building, 1247A.

A native of New Haven, CT, he graduated with the Hamilton and Pi Tau Sigma Awards and as a university scholar from the University of Connecticut in 1963. He earned a masters of science in mechanical engineering from the University of Virginia in 1967.

Bushnell has received honors from numerous institutions including AIAA (Sperry Award, Fluid and Plasma Dynamics Award), the Royal Aeronautical Society (Lanchester lectureship) and ICAS (Guggenheim lectureship). He is currently a Fellow at both AIAA and ASME. NASA awarded him the Exceptional Scientific Achievement Medal in 1981, six special achievement awards and six group achievement awards, among others.

He has four patents and three pending. He reviews and/or edits for over 30 publications and organizations and has written over 200 papers. He has presented, at invitation, over 100 seminars and lectures. He consults for 34 corporations and institutions. He has chaired or served on some 40 national and international scientific committees, and organized or served on 40 conference/symposium committees and panels.

Bushnell replaces Dr. Michael F. Card as senior scientist. ***RN***

Gray

Continued from page 1

ties. This includes responsibilities for the engineering and design of aerospace research-and-technology equipment as well as institutional facilities for aeronautical and space research such as research laboratories, wind tunnel facilities, special handling equipment, model supports and special test equipment.

CAREER

Before his new position, he served as branch head in FSED since 1991 and most recently as head of the Engineering Support and Facility Projects Branch. During the Agency Facility Study effort in 1993, he served as acting assistant chief of the Facilities Engineering Division with responsibility for day-to-day operations.

Gray began his career at Langley in 1969 as an engineering technician. In 1971, he transferred to the Army's Structures Laboratory (DOD) at Langley where he remained until 1980 when he was reassigned to the Structural Dynamics Division. In 1983, he was transferred to the Systems Engineering Division. Then he was selected head of the Structural Engineering Section in 1989 and head of the Structural Design Branch in 1991.

In addition to numerous Langley awards, Gray has also been recognized for his efforts by Johnson Space Center for his work on the Shuttle Thermal Protection System Cyclic Life Assessment Effort, by Ames Research Center for 40'x80'x120' Independent Design Analyses, by Lewis Research Center for support to the National Transonic Facility Mishap Investigation Board and by NASA Headquarters for the LaRC Evaluation of the Solid Rocket Motor Burn in Kennedy's VAB.

Gray earned a B.S., M.S., and a Ph.D. in engineering mechanics from Old Dominion University (ODU) in 1981, 1987, and 1991, respectively. He is now an adjunct professor at ODU. In 1981, ODU presented him with the Mechanical Engineering and Mechanics Faculty Award and the Engineering Faculty Award for Academic Excellence in Engineering.

He is a senior member of the AIAA and a member of four national engineering and academic honor societies. He has authored or co-authored over twenty engineering publications, and has given several technical talks at national meetings, symposiums and engineering workshops. During his career with DOD and NASA, he has performed structural and structural dynamics analyses for a wide range of ground-bases, flight and space programs.

OTHER IOG CHANGES

The IOG has also had other recent organizational and personnel changes.

The Small Purchase Facilitation Project Office (SPFPO) has been established. Ronald R. Krodel was appointed its project manager. The SPFPO reports to the director of IOG and is responsible for implementing the Center's reengineered Small Purchase Acquisition Process, which is a 4-year, Agencywide project.

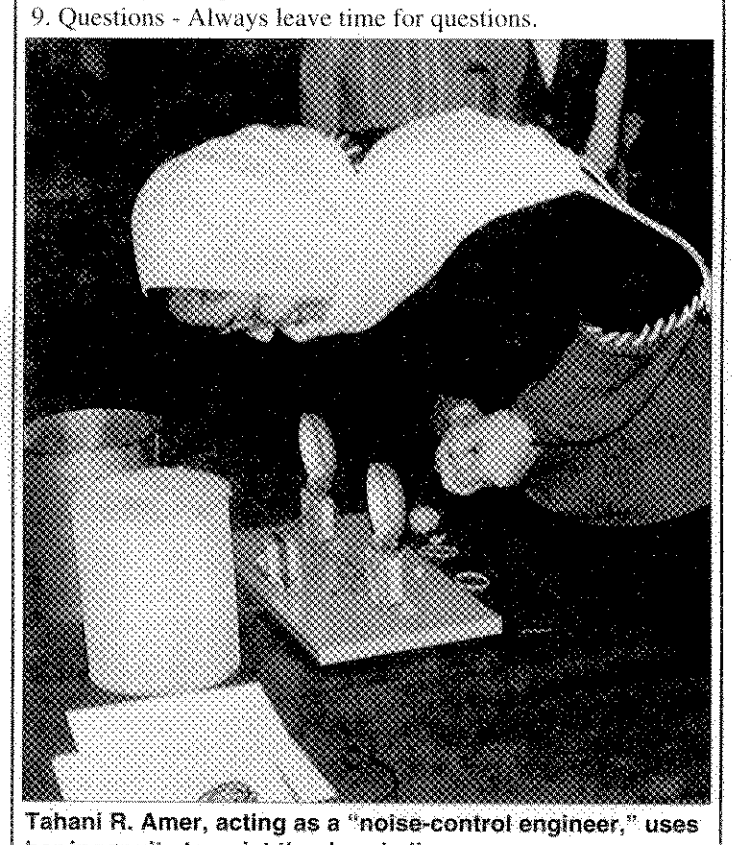
Other Center employees with major responsibility in the implementation of this process are: Kimberly D. Duncan, SPFPO (Logistics Representative); Delwin R. Croom, Jr., FD (Metrics/Benchmarking/Customer Rep.); Connie G. Stott, AD (Purchase/Bank-Card Representative); Jerome C. Hoerger, ISD (Systems Representative); Sandra S. Ray, AD (Consultant); and James H. Ogiba, FMD (Consultant). ***RN***

Engineers Week Workshop: Volunteers Learn Lots

Dr. Thomasena Woods

Engineers Week, Feb. 20 to 24, has been preceded in recent years by a workshop to prepare those volunteers who go into the community's schools to share their knowledge. This year, the workshop's guest speaker was Dr. Thomasena Woods, Science Supervisor for the Newport News Schools. She offered the following valuable pointers for making an effective presentation:

1. Activity - Bring something with you to involve the students. Students already have to sit all day. However, they will respond well if you have an activity for them to do or an object to pass around to the class.
2. Simplicity - Keep it simple.
3. Childhood - Try to bring pictures of you as a child. Students, especially younger ones, will relate better to you if they see that you, too, were once a child.
4. Hobbies - Share what you do in your spare time such as play basketball, fly airplanes, do gardening, etc.
5. Typical Day - Share what a typical day is like. Do you work on a computer or out in the field? Do you build things or design them?
6. Tasks - Share what is required to become an engineer, a scientist or a technician.
7. Courses - Share the applicable courses you took in high school and/or college to become an engineer, scientist or technician.
8. Salary Range - Students are very curious to know how much money you make. Give them a range from starting to average to high end.
9. Questions - Always leave time for questions.



Tahani R. Amer, acting as a "noise-control engineer," uses her ingenuity to quiet the door bell.

Happenings

RN DUE DATE: The due date to submit any articles, advertisements, photos or other information for the next issue is Tue., Feb. 28. The next issue will be distributed beginning Fri., March 10. Sending photos w/ captions to Mail Stop 146 would be helpful. Include your name and phone number. For best results, send to the editor, Joe Guarino, via QuickMail or e-mail (a.j.guarino@larc.nasa.gov).

NOTICE: A program to replace defective Intel Pentium processors at Langley computers is underway. An arrangement has been made between Wyle Laboratories and Intel Corp. to replace, at no cost, all defective Pentium processors at Langley. Langley users that have Pentium processors can call Jim Leuci, Experimental Testing Technology Division, at ext. 44685. The plan is to compile a list of computers with the defective processors and Intel will provide replacements. Wyle Laboratories will install the new processors and defective ones will be returned to Intel. The estimated turnaround time for this process is 30 to 45 days.

FOR SALE: 1985 Chevy Cavalier. Good condition, 126K mi., no A/C, dark blue, best for tooling around town. $1200 or best offer. Call Joe at 875-5585.

FOR SALE: Bahamas/ Orlando travel package for two, plus bonus roundtrip airfare to Jamaica or Acapulco. 100 per cent transferable. $398 per couple. Call Jenny at 868-6705.

FOR RENT: Room w/ cooking privileges; W/D available. On water in Hampton near shopping center. Call Mrs. Bittingham at 722-2440.

FOR RENT: Florida's Florida. Sanibel Is. Elegant ground floor condo on Gulf; pool, tennis, 1 BR, full kit, on-site mgmt, $625/wk, May-Oct. Call Dick at 565-1849.

FOUND: A "St. Leo College" keychain w/key in the cafeteria on Jan. 30. To claim, call Security at ext. 43420.

FOUND: 14 k-gold charm in Bldg. 1229 near Rm. 124 on Feb. 15. To claim, call Kim at ext. 42279.

CLOWN MINISTRY: A unique presentation of the Easter story, entitled "The Passion," will be presented by the Amazing Earl, a silent clown, at St. Mark Lutheran Church, Sat., March 11 at 7 p.m. For more information, call St. Mark's at 898-4395.

SKI TRIP: To Canaan Valley, W.Va., will be held Sat. & Sun., March 11/12. $164.00 fee includes bus trip, two-nights lodging (double oc.), three meals and two days' skiing. A bus will leave from the NASA cafeteria parking lot on Fri., March 10, at 5 pm. Contact Richard at 599-5585 for more information or mail your check to him at MS 397.

GIRL SCOUT COOKIES: Support the Langley Service Unit Girl Scout Troop during their main fund-raising event by purchasing Girl Scout cookies for $2.50 per box. Eight varieties from which to choose including a new low-fat cookie. For more information or to place an order, call 865-0586.

VA SYMPHONY: Virginia Symphony will perform "Mozart and More" at William & Mary, March 4, and at Hampton Roads Academy, Newport News, March 5. Program includes Mozart's *Symphony in C Major*, Nielsen's *Flute Concerto*, and Grieg's *Peer Gynt Suite No. 2*. Tickets $12 and $16 (20 per cent off) at the Exchange Shop, ext. 41585, or call the Symphony at 380-0040.

INCOME-TAX PREPARATION: Member of National Association of Tax Practitioners. Electronic filing and direct deposit offered at no extra charge! Small-business bookkeeping. We travel to you. For an appointment, call 874-3121.

GOLF: The kickoff meeting for the 1995 NASA Golf Association will be held in the Langley Room at the Activities Association building on Wed., March 1, from 5:30 to 7:30 pm. Snacks will be available with a cash bar. For information, call Tom Yager at ext. 41304.

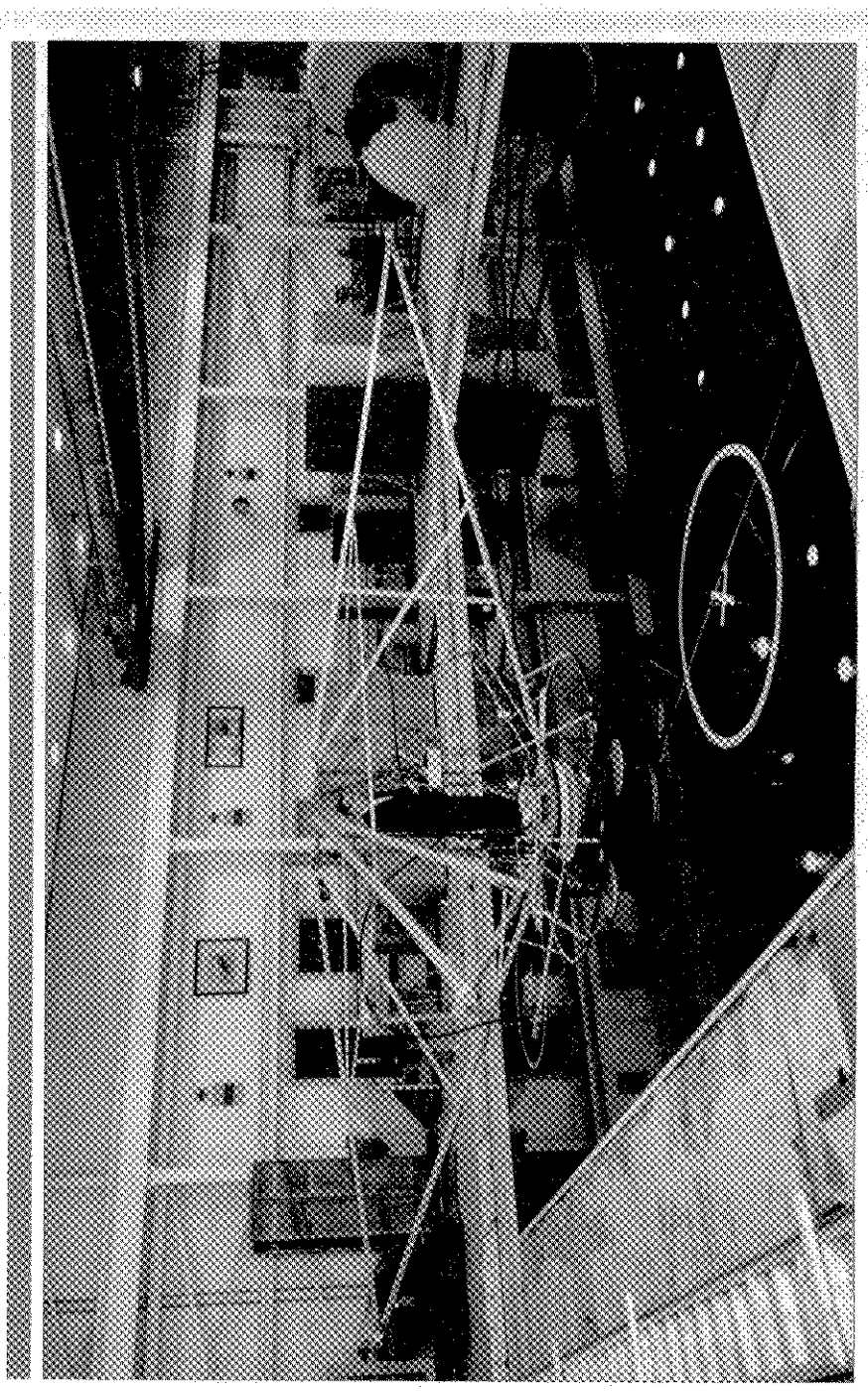
LOST: Greyish-brown wallet/ pouch w/personal items & ID in Bldg 1195. If found, please return to Donna at Mail Stop 126 or call ext. 47911.

YOU'RE INVITED!

See exciting, NASA-developed technologies during Public Day at Langley Research Center's Technology Opportunity Showcase (TOPS). Treat your family and friends to more than 100 exhibits on display at Langley. It's all part of EXPOTECH, a four-day event April 5 to 8 that highlights the diverse technology of the Virginia Peninsula.

DATE: Sat., April 8
TIME: 9 am. to 3 p.m.
PLACE: Hangar building
ADMISSION: Free

Public access will be limited to the Hangar.



Dr. Paul Hill is shown testing a lunar-flying-platform simulator on the epoxy floor in the high bay area of Building 1221-B. The 2-inch thick coat of acrylic resin was poured in the 1960s and is now being removed. The floor will be resurfaced and the bay area used as an anechoic room.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business. Penalty for Private Use $300.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 5 ❖ March 10, 1995

Researchers' Technology Turns Company Around

Just a few years ago, Langley researchers John Snoha and Bob Baucom, assisted by Erik Weiser, a co-op student from Georgia Technical University, developed a new technology for manufacturing complex parts using composite materials called expanding rubber composite fabrication. In October 1993, they displayed it at the Center's Technology Opportunities Showcase (TOPS).

During TOPS, a small, local defense firm, Técnico Corp., seeking a way to survive the defense cutbacks, learned about this technology. A relationship flourished over the next year and a half between Langley and Técnico. As a result, the two signed an exclusive licensing agreement in February which, in essence, has put the firm back on its feet and given it a potentially prosperous future.

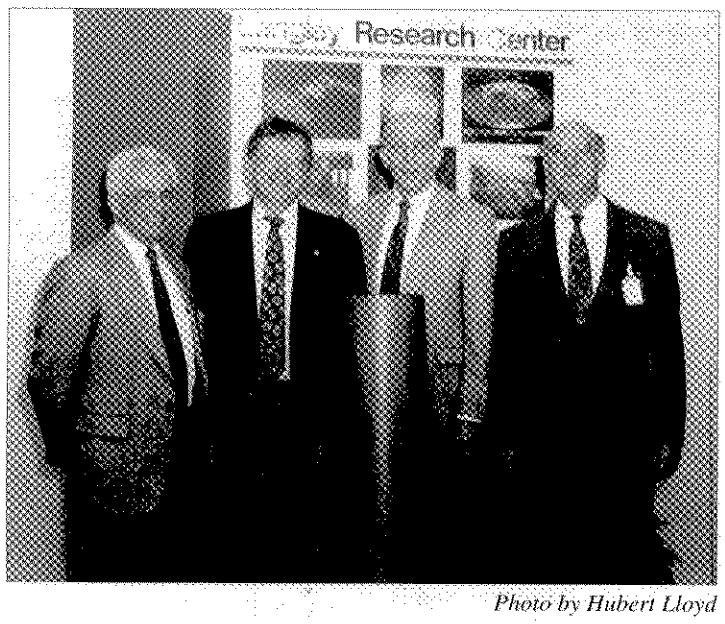


Photo by Hubert Lloyd

From left, Rafael Torrech III, president of Técnico Corp.; Dr. Joseph Heyman and Charles Blankenship, Langley's Technology Applications Group; and John Hildebrandt, Técnico's business development manager, stand behind a test article successfully manufactured using a new, Langley-developed technology. Torrech and Blankenship signed an exclusive licensing agreement in February.

Técnico

Técnico Corp. is a small minority-owned company headquartered in Chesapeake, Va. Since its inception, it has worked on traditional ship overhaul and repair activities. In 1991 and 1992, it generated income of $7 million a year. In 1993, its income dropped to $4 million due to defense cutbacks. That was also the same year Técnico learned about Langley's new technologies at TOPS.

Using Langley's technology, Técnico has turned its future around by adding advanced fabrication technology for composites to its ship-repair business. Projections are that Técnico will earn over $9 million in 1995 and possibly $50 million by late 1995 or 1996.

The Relationship

The cooperative relationship between Técnico and Langley led to Técnico's production of a test article that may lead to several new contracts with the military.

Following TOPS, Técnico worked side by side with Langley researchers Snoha, Baucom and Weiser to learn about the new method of manufacturing. Applying this composite technology to a Navy submarine component, Técnico reduced a two-inch-thick, 200-pound component made of titanium to a composite part weighing only 21.5 pounds.

At a critical time during Técnico's production of their prototype test article, several technicians in Langley's Polymer Technology Section - Tom Hall, Mark Frye, Sam Harper and Lee Bryant - provided crucial support which assisted in the successful fabrication of a high-quality product. These technicians provided technical leadership regarding material selection, procurement, processing and application, which enabled Técnico to improve their capabilities at utilizing Langley technology.

The Future

Following successful testing of the composite component for the Navy, Técnico anticipates an order for 600 articles. Técnico has already received an order from Kaman Sciences Corp. of Colorado Springs, Colo., to fabricate composite components for defense missiles.

In addition, Técnico has been identified as "mentor/protégé" by Loral-Vought to build the mid-section of the new Erint missile to replace the Patriot missiles used during Desert Storm. Funding for this formal program is $1.1 million for a two-year start-up program which will use the Langley-developed technology.

Técnico, occupying plant facilities in an enterprise zone, intends to initiate training programs in composite technologies drawing employees from the local areas. This will provide new technology infusion which is highly needed in the Tidewater area to stabilize the impact of recent defense cutbacks.

Volunteers Are Still Needed Beyond National Engineers Week

Please send completed forms to Cathy Schauer at MS 154 or fax it to ext. 47732. If you need a form, call ext. 43293, or stop by the Public Mail Center in Bldg. 1153, Rm. 115.

Programs available:

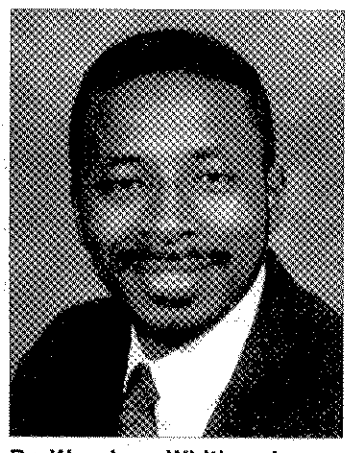
Acoustics
Air Magic
Human Computer
Human Brain
Human Satellite
Let's Go Flying
Principles of Flight Space Communications
Space Station: All Aboard?
Toys in Space

Also available: *flight suits*

Whitlow Named Deputy Director Of Aeronautics Program Group

Dr. Woodrow Whitlow Jr. has been named deputy director of the Aeronautics Program Group, sharing responsibilities for leading aeronautics strategic planning and coordination for implementation at Langley.

Whitlow assumed the job after serving as director of the Critical Technologies Division in the Office of Aeronautics at NASA Headquarters in Washington, D.C., since May 1994.



Dr. Woodrow Whitlow Jr.

During his 15-year career with NASA, Whitlow has developed expertise in computational and theoretical fluid dynamics, aerodynamics, unsteady flows and aeroelasticity.

From April 1993 to May 1994, he was head of the Aeroelastic Analysis and Optimization Branch at Langley. One of his key accomplishments was starting a program to include computational fluid dynamics methods into the aircraft optimization process. He also implemented a multidisciplinary program for computational fluid-structure interactions using multi-processor computers.

Whitlow was head of the Unsteady Aerodynamics Branch from December 1991 to April 1993. He was also vice chairman of the NASA Access-to-Space independent review team that evaluated U.S. launch capabilities and proposed strategies for meeting America's long-term launch needs.

Whitlow served as assistant

See **Whitlow**, *page 5*

U.S. Senate Productivity and Quality Award for Virginia

Board members from the U.S. Senate Productivity and Quality Award (SPQA) for Virginia met with senior leaders, union presidents and employees on Feb. 10 at the H.J.E. Reid Conference Center. They came to gather additional information to confirm that the productivity and quality efforts outlined in Langley's application were indeed taking place.

Langley prepared and submitted an application for this award at the suggestion of the Baldrige examiners who visited the Center last fall for the Agency's external continual improvement self-assessment process.

Employees from all Langley organizations set up a "virtual tour" of the Center for the board members. It provided an opportunity to interact with the staff and to see first-hand the productivity and quality tools and processes outlined in the 17-page application. In this application, employees had to describe all they do by answering 50 questions in eight criteria.

The award has four categories that include both private and public organizations. Finalists for the medallion in each of the four categories will be announced at the annual awards conference and banquet in April.

Photo by Fred Jones

From left, SPQA board members Sharon Degroot and Bob Osborn watch as Langley's Luat Nguyen, far right, shows the results of the Federal Laboratory Review. Standing behind are Langley's Greg Manuel, left, and Dr. Jack Fishman.

News Briefs

Around the Agency

NASA TO CONDUCT LARGE-SCALE WIND TUNNEL TESTS OF X-32 - Wind tunnel tests will begin this summer on the X-32, a proposed 21st Century supersonic jet fighter. Up to three eight-week tests of the X-32 Common Affordable Lightweight Fighter will be conducted at Ames Research Center, Moffett Field, Calif., in the National Full-Scale Aerodynamics Complex (NFAC) 80-foot by 120-foot wind tunnel. One additional eight-week test is planned at the NFAC's Outdoor Aerodynamic Research Facility. The X-32 could be introduced around 2010.

"The idea is to have a conventional take-off and landing aircraft that could be configured for short take-offs and vertical landings," said Douglas Wardwell, an Ames aerospace engineer. The short take-offs and vertical landings version of the new aircraft could share a common fuselage and engine with the conventional take-off and landing aircraft, but use a powered-lift propulsion system for vertical landings.

Tests of the proposed $120-million X-32 are part of the Joint Advanced Strike Technology program. The goal is to demonstrate technologies and operational concepts to make military aircraft more affordable. The program's participants are the Advanced Research Projects Agency, the Department of the Navy and Department of the Air Force.

NASA will provide wind tunnel time and personnel to conduct requested tests at NASA facilities and also will provide technical expertise to support the program.

Wind-tunnel tests of X-32 small-scale models have already been conducted at many test facilities including Ames, Langley and Lewis Research Center, Cleveland, Ohio.

HUBBLE FINDS OXYGEN ATMOSPHERE ON JUPITER'S MOON EUROPA - Astronomers using NASA's Hubble Space Telescope (HST) have identified the presence of an extremely tenuous atmosphere of molecular oxygen around Jupiter's second moon, Europa. The planets Mars and Venus are the only other two solar system objects beyond Earth known to have traces of molecular oxygen in their atmospheres. This detection was made by a team of researchers at the Johns Hopkins University and the Space Telescope Science Institute, both in Baltimore, and is reported in the Feb. 23 issue of the journal "Nature."

"Europa's oxygen atmosphere is ... barely 100- billionth that of the Earth," said principal investigator Doyle Hall, of Johns Hopkins. "If all the oxygen on Europa were compressed to the surface pressure of Earth's atmosphere, it would fill only about a dozen Houston Astrodomes."

Scientists had predicted that Europa might have an atmosphere containing gaseous oxygen, but had to wait for Hubble's sensitive instruments for confirmation. The HST researchers caution that the detection should not be misinterpreted as evidence for the presence of life on the small, frigid moon.

Europa is approximately the size of Earth's Moon, but its appearance and composition are very different. The satellite has an unusually smooth and nearly craterless surface of solid water ice. Mysterious dark markings crisscross the surface, giving the moon a "cracked eggshell" appearance.

The Hubble observations will be invaluable for scientists who are planning close-up observations of Europa as part of NASA's Galileo mission, which will arrive at Jupiter in Dec. 1995. During its initial entry into the Jovian system on Dec. 7, Galileo will fly by Europa at a distance of less than 22,000 miles (35,000 kilometers).

NASA SCIENTISTS TO CONTROL RUSSIAN ROVER EXPLORING VOLCANO - From a laboratory in California, NASA scientists planned to drive a modified Russian planetary rover around the most active volcano on Earth. Scientists at Ames Research Center, Moffett Field, Calif., will use Russia's modified Marsokhod rover to conduct field tests simulating remote-controlled exploration of the Moon and Mars from laboratories on Earth. Tests were to be conducted Feb. 13 to 18 in Hawaii Volcanoes National Park on the Big Island of Hawaii.

The Marsokhod is capable of traversing Martian and lunar terrains. The same Russian team that developed the successful Lunakhod rovers has been developing the Marsokhod for possible future missions to Mars. Its superior mobility makes it suitable for more ambitious lunar investigations.

"The combination of the Russian rover chassis with western avionics is an excellent example of the benefits ... possible from international cooperation," said John Garvey, project manager for the McDonnell Douglas team sponsoring the use of the Russian chassis for the activities in Hawaii.

"The rover takes advantage of new technologies from other programs like last year's Clementine mission to the Moon and NASA's upcoming Mars Pathfinder," he added. Both are examples of small, capable, relatively cheap spacecraft for planetary exploration. "We now have a sophisticated prototype of a long-distance rover that could start exploring the Moon in the very near future."

SPACE RADAR STUDIES ARCHEOLOGICAL SITE IN CAMBODIA - Images from the international Space Radar Laboratory (SRL) may help researchers find previously unknown settlements near the ancient city of Angkor in Cambodia. The radar data was obtained during the October flight of the Space Shuttle Endeavour, processed and sent to the World Monuments Fund (WMF) in January. The WMF had approached the radar science team about observing the Angkor area after SRL's first flight in April 1994. "I had read about the radar mission ... and instantly surmised that it would have applications to the international research efforts at Angkor," said John Stubbs, program director for the fund.

Angkor, a vast complex of more than 60 temples dating back to the ninth century A.D., served as the spiritual center for the Khmer people. At its height, the city housed an estimated population of one million people and was supported by a massive system of reservoirs and canals. Today, Angkor is hidden beneath a dense rain forest canopy. Its temples have been ravaged by weather, war and looters. Its extensive irrigation system has fallen into disuse.

"The radar's ability to penetrate clouds and vegetation makes it an ideal tool for studying Angkor," Stubbs said. "I can see the canal-and-reservoir system very clearly in the radar imagery, and preliminary analysis reveals what may be evidence of organized settlements of large tracts of land to the north of the present archeological park which, until now, has gone unnoticed."

The radar data will be used by the WMF, the Royal Angkor Foundation and research teams from more than 11 countries to understand how the city grew and then fell into disuse over 800 years.

New Point of Contact for Metrication Efforts Named

Charles E. Cockrell, chief engineer of the Office of Safety, Environment and Mission Assurance, has been appointed the new point-of-contact for metrication efforts at Langley. The announcement comes upon the pending retirement of Dr. Richard E. Snyder, the recent contact. Cockrell can be reached via phone at ext. 43361, e-mail (c.e.cockrell.sr@larc.nasa.gov), fax at ext. 48918 or mail at Mail Stop 421.

Charles E. Cockrell

Retirement Parties

Ballew

Hear Ye! Hear Ye! An informal "retirement" party will be held for Allison Ballew on Fri., March 31, from 1 to 3 p.m. in Bldg. 1195B, Rm. 234. Impromptu songs and poetry welcomed. Come enjoy the final gig of her government career. For more information, call C. Cowan at ext. 42546 or S. Briglia at ext. 42478.

Donadio

A retirement social for Sullivan R. Donadio will be held Wed., March 29, from 12:30 to 2:30 p.m. in Bldg.1232A, Rm. 207. The cost is $2. For reservations or gift-only contributions, contact N. McHatton at ext., 44561 or Mail Stop 399 by March 23.

Middleton

Friends and associates of David B. Middleton are invited to a retirement party on Wed., March 22, beginning at 6 p.m. at the Fort Monroe Officers' Club. Cost is $16 per person or $29 a couple, including a gift,. For gift-only contributions or reservations, contact T. Jones at ext. 44004 or Mail Stop 489 by March 15.

Wunder

A retirement party for Janice Wunder will be held Mon., March 20, from 5 to 7 p.m. in the H.J.E. Reid Conference Center. The cost is $7 per person, including a gift. For reservations or gift-only contributions, call C. Kurtz at ext. 42563 or C. Farquharson at ext. 46111.

Gregory

A retirement party for Ray W. Gregory will be held Fri., March 31, noon to 1:30 p.m. in Bldg. 1230, Rm. 270. The cost is $3.50 per person including a gift. For reservations or gift-only contributions, contact C. Satterwhite at ext. 44580 or Mail Stop 235A by March 24.

Women's History Month Celebrated

The Federal Women's Program Committee (FWPC) will celebrate Women's History Month with the Annual Female Achievers' Panel and the FWPC Awards Ceremony on Tue., March 21, 1 to 3 p.m. at the H.J.E. Reid Conference Center. Panelists and nominees for the Supervisor and Employee of the Year Awards will be announced in *LaRC This Week*. The Hampton Roads Section of Women in Aerospace will host refreshments following the ceremony. Civil servant employees can charge time to Job Order A5267. For more information, contact Patsy Campbell at ext. 43291, or your FWPC representative.

Letters

From Alton Moore:
"Thanks to everyone that arranged my retirement party and made it a very special evening that I and my family will long remember. I was overwhelmed to see so many friends. I deeply appreciate all the support and fun times from the Center staff and co-workers during the past 39 years. God bless. Thanks!!"

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), Mail Stop 146, telephone 1 (804) 864-6126 or fax 1 (804) 864-7732. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Miichael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising 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.

NASA, FAA, Others Join Forces to Revitalize General Aviation Industry

The general aviation industry provides more than 540,000 jobs, $40 billion of economic input and serves 120 million people every year. And that is despite a 15-year decline in its health.

Changes

General aviation thrived in the late 1950s and 1960s, but it peaked in 1978 when nearly 18,000 aircraft were built. Since then, many changes have occurred. Half the manufacturing jobs have been lost. The number of public-use airports has declined by one per cent annually. The production of new airplanes has dropped to some airports. Liability concerns have driven manufacturers from the business. The increasing cost and time required for proficiency has driven the number of pilots into decline.

"Without innovation enabled by technological advancement, general aviation within the United States will fail to respond to opportunities from expanded use and is destined to continue its decline," concludes the NASA Aeronautics Advisory Committee Task Force on General Aviation.

Forces for the Future

NASA and the general aviation industry, working with the Federal Aviation Administration (FAA) and universities, have joined forces to reverse this decline by developing a stronger relationship aimed at maintaining U.S. leadership in global aeronautics.

As with all federal agencies, NASA has been challenged by the Administration and Congress to enhance its relevance to its industry customers and partners, and to explore new ways to make government less costly, more flexible and faster in responding to needs.

The General Aviation Program

For simplicity, this initiative is called the general aviation program. Officially, it is the Short Haul Aircraft General Aviation/Commuter Element of the NASA Advanced Subsonic Technology Program. The initiative includes a family of experiments that are to be called the Advanced General Aviation Transport Experiments (AGATE).

The AGATE Consortium, a unique public-private joint research-and-technology venture, is operated by NASA with industry leadership in planning, conducting and cost sharing in the technology development and deployment. AGATE is one of the nation's largest member consortia, with over 40 principal members and over 100 associate and supporting members. In addition to cost sharing from industry, the NASA Small Business Innovation Research and Small Business Technology Transfer programs lead by NASA Headquarters, Code X, have established general aviation-specific support for the AGATE Consortium, significantly enhancing the program's effectiveness in the small business community. The benefits to the government and industry partners include greater speed in development of consensus and priorities, leveraging of resources, greater speed and relevance in technology transfer, and streamlining of procurements. The Federal Acquisition Regulations and Freedom of Information Act do not apply to the streamlining efforts. AGATE is at the forefront of NASA's efforts to reinvent government.

The focus of the AGATE program is a single-point, light, all-

See **General Aviation**, *page 4*

Discovery-Mir Images Available

Over a dozen images from the Space Shuttle Discovery mission can be accessed, downloaded and printed by the public via the World Wide Web.

Images showing the dramatic night time lift off of Discovery, scenes of crewmenbers working in space and photos of the Mir Space Station are available by linking to a NASA Public Affairs "Current NASA Mission" site. Images for this mission will be updated. Images of future NASA Shuttle missions will be placed at this site for access by the media and the public.

The URL for these images is:

http://www.hq.nasa.gov/office/pao/NewsRoom/today.html

The Headquarters Public Affairs Home Page, which provides general information about NASA with links to other Agency Web pages, can be accessed at URL:

http://www.nasa.gov/hqpao/hqpao_home.html

Questions about access should be directed to (202) 358-4043.

Non-Invasive Biomedical Instrumentation Commercial Opportunity Program (COOPPR)

Langley's capabilities in the development of non-destructive testing systems using acoustic and optical methods have generated five technologies that solve important problems in medical diagnostics. These technologies, which NASA is interested in licensing and/or cooperative development include:

Non-Invasive Evaluation of Diaphragm Function
Diagnosis of Pressure Ulcers
Non-Invasive Intracranial Pressure Measurement
Circumferential Pressure Probe for Urodynamics
CCD Mosaic for Digital Mammography

A COOPPR will be held March 13 and 14 here at the Center to present these technologies to private industry. For information, call Frank Farmer at ext. 42490.

World's Scientists to Study Burning and Global Change at Conference in Williamsburg

BY DR. JOEL S. LEVINE

Over 200 scientists from two dozen countries will meet at the Williamsburg Lodge, Williamsburg, Va., March 13 to 17, to discuss and assess the impact of biomass burning on the composition and chemistry of the atmosphere and on global climate. The Chapman Conference on Biomass Burning and Global Change was planned and organized by the Atmospheric Sciences Division, Langley, and is sponsored by the American Geophysical Union, a Washington-based atmospheric, earth and space sciences professional organization with more than 25,000 members worldwide. The conference is co-sponsored by NASA, the U.S. Environmental Protection Agency, the International Global Atmospheric Chemistry Project and several "local" institutions, including the Science Museum of Virginia and Virginia Quality Education in Science and Technology (VQUEST), both in Richmond, and the College of William and Mary. The conference was organized and will be chaired by Dr. Joel S. Levine of the Atmospheric Sciences Division.

Langley researchers have pioneered research in biomass burning for almost a decade, and have participated in international biomass burn experiments in Africa, Brazil and Siberia over the last three years. In addition, Langley atmospheric remote sensing instruments flying on the Space Shuttle, including MAPS and LITE, have measured gases and particulates produced by biomass burning and assessed how they are transported through the entire atmosphere.

Over 125 scientific papers will be presented at the conference, including nine from researchers in the Atmospheric Sciences Division, including Edward V. Browell, Donald R. Cahoon, Wesley R. Cofer, Vickie S. Connors, Jack Fishman, Dorene O. Neil, Jennifer R. Olson, Charles H. Whitlock and Levine.

As part of the education and public awareness aspect of the conference, a special free public evening lecture, "Biomass Burning and Global Change," will take place at the Williamsburg Lodge on Mon., March 13, from 7:30 to10 p.m. This lecture and subsequent interviews with conference participants will form the basis of a Public Broadcast System (PBS) television program, "Biomass Burning and Global Change," which will be produced by local PBS-affiliate station, WHRO/TV in Norfolk. The program will be telecast on the PBS network in April to celebrate the 25th anniversary of Earth Day.

For more information on the conference or the public lecture, contact Levine, Atmospheric Sciences Division, at ext. 45692.

LAA Aerobics Club

March is National Nutrition Month, featuring bench and low-impact aerobics, with nutrition handouts from the American Dietetic Association given to each class. Body composition analysis, cardio assessment and nutrition analysis are provided for members. Civil servants, contractors and their families are welcome.

Classes are held in the LAA Gym on Tue. and Thu. from 5 to 6 p.m. and on Sat. from 9:30 to10:30 a.m. For more information, call ext. 42295 .

YOU'RE INVITED!

See exciting, NASA-developed technologies during Public Day at Langley Research Center's Technology Opportunity Showcase (TOPS). Treat your family and friends to more than 100 exhibits on display at Langley. It's all part of EXPOTECH, a four-day event April 5 to 8 that highlights the diverse technology of the Virginia Peninsula.

DATE: Sat., April 8
TIME: 9 a.m. to 3 p.m.
PLACE: Hangar building
ADMISSION: Free

Public access will be limited to the Hangar.

Health Corner

Change and Associated Stressors

Lately, change is the word of the day at Langley. How we cope with downsizing, buyouts, reorganizing, etc., is paramount to our sound physical and mental health.

Change, whether personal or professional, often involves the normal feelings of anxiety, worry, anger and depression. For everyone involved, problem-solving abilities and coping strategies will be challenged. Ultimately everyone will achieve some resolution to their problems.

Two identical workshops will be held to address the stressors that accompany change, steps to resolutions, as well as, tips for handling stress and building a healthy lifestyle.

They are scheduled for March 23 at the H.J.E. Reid Conference Center from 9 to 10 a.m. and 1 to 3 p.m. These can be charged to JO A5256.

Bloodmobile Still Needs Support

Your continued support is greatly appreciated by many individuals—not only those you help with your blood donation, but also the Office of Occupational Health Services and the American Red Cross. Please mark your calendars with the remaining 1995 bloodmobile dates: March 22, May 24, July 26, Sep. 20, and Nov. 22.

We thank all NASA employees, retirees and contractors who continue to participate year round.

Langley Software Technology Transfer: Policy and Metrics

BY L. KERRY MITCHELL AND P. DANIEL SYDOW

Editor's Note: This is part one of a two-part series on software technology transfer. Part two discusses a pilot project, the Langley Software Server, and the new thrust into software commercialization. It will appear in the March 24 issue.

In these times of renewed interest in technology transfer and meeting our customers' needs, greater attention is being paid to Langley-developed software as a key technology asset. No longer simply a means to an end, software is now recognized as a vast, and largely untapped, resource. The pervasiveness of software and the variety of forms it can take present special challenges and opportunities to those who work to transfer and commercialize it.

Software Releasing Policy

Software release from the Center is governed both by NASA and Langley regulations. At the Agency level, releasing policy is given in NMI 2210.2B, and at the Center level in LMD 1200.20. The NMI covers software that required more than $50,000, or equivalent staff time, to develop and is at a "near commercial" level, in terms of ease of use and documentation. Programs in this category are generally to be submitted to NASA's Computer Software Management and Information Center (COSMIC).

Under certain circumstances, Langley is allowed to release software directly to its customers rather than going through COSMIC. These "free release" exceptions are spelled out in the NMI, and generally concern small codes, research or developmental programs, and releases for use in cooperative agreements. Software can also be released if Langley receives something in return, such as code validation or suggestions for improvements.

All computer software free releases need to go through the Center-designated Software Releasing Authority (SRA). This person has the power and authority to approve distribution of software from the Center, and checks to ensure that releases are done in accordance with the rules and regulations. These rules generally state that released software is only to be used by the intended recipient and shall not be further distributed without written approval from Langley. Also, any release to a foreign entity must also be approved by NASA Headquarters.

Software Transfer Metrics

Under free release, there were 308 releases in 1994, up from 289 in 1993. This group consisted of releases to 33 states and six NASA centers. Roughly half of the releases were to government agencies or for government projects. Of the balance, approximately half went to primary aerospace companies (Boeing, McDonnell Douglas, etc.). The remainder, or about 25 percent of the free releases, represent code transferred to non-primary aerospace companies, used for non-government purposes.

Langley historically has led the Agency in submittals of software to COSMIC, with about 20 percent of the total. In 1993, Langley submitted 20 packages, but this dropped to 11 in 1994. Uncertainty of COSMIC's future probably contributed to this downturn. COSMIC is still operational, but NASA Headquarters is reviewing COSMIC and its role in NASA's technology commercialization efforts.

For More Information

With the retirement of C.J. Shoemaker in January 1995, the Center's SRA is L. Kerry Mitchell of the Technology Applications Group (TAG). For questions about software release, contact him via phone at ext. 43625, or e-mail (l.k.mitchell@larc.nasa.gov). Software technology transfer and commercialization issues or questions can be addressed by P. Daniel Sydow, also in TAG, via phone at ext. 43180 or email (p.d.sydow@larc.nasa.gov).

Government Strategic and Quality Management Principles

BY CHRIS WILLIAMS, NASA HQ

The National Performance Review called for the creation of a President's Management Council (PMC) to improve the overall management of the executive branch and ensure that the reforms of the National Performance Review (NPR) are implemented. On Oct. 1, 1993, the President signed the executive order officially establishing the PMC and calling for the designation of chief operating officers to serve as representatives. chief operating officers report directly to their agency heads and are usually second in command or the agency's chief-of-staff. NASA's representative to the PMC is Acting Deputy Administrator Gen. Jack Dailey.

One of the major tasks given to the PMC was to ensure that strategic and quality management principles were effectively implemented across the executive branch. As part of its mandate, the PMC has the responsibility to drive the strategic transformation of the federal government across departments and agencies by using quality principles such as customer focus, process improvement and performance evaluation.

Supporting the PMC in this effort is the Federal Quality Institute (FQI) whose direction from the PMC was to bring the best ideas, tools and principles to the table to help agencies become the "best in the business." To do this, the FQI partnered with federal agencies and over 100 "change management" experts, such as Peter Drucker and John Garner, to develop educational templates which each agency can tailor to meet its culture and key business issues.

The first element of this training, "Creating a Customer-Driven Government," will be offered to NASA employees beginning in the spring of 1995. This course includes material on the following key topics:

An Overview of Change
Visioning the Future and Assessing Current Reality
Focusing on Customers
Planning Strategically and Measuring Performance
Empowering the Work Force
Managing Processes and Aligning Systems
Analyzing and Using Information
Leading and Managing the Organization
Transforming In a World of Change
Making It All Happen

To deploy this training, NASA has decided to use internal NASA trainers. This approach best meets our needs because it provides the Agency with just-in-time, in-house, available experts who can tailor the course to meet differing organizational needs and provide follow-up consulting. The following five people at Langley have been selected to receive "train-the-trainer" training in Hagerstown, Md., from Feb. 26 through March 3:

Cecelia Fletcher
Christyl Johnson
Irwin Schauer
Susan Voigt
Milam Walters

Langley's TQM facilitator network will then develop an implementation plan.

In addition to the "Creating a Customer-Driven Government" training, other special topic workshops, including Benchmarking, Business Process Reengineering, The Human Side of Downsizing, Labor-Management Partnerships, Cultural Change and Valuing Diversity, and Putting Customers First, will be made available to installations and employees, as requested.

The first phase of this training was conducted on Oct. 26, 1994, when the NASA Senior Management Group (SMG) received their own uniquely designed Leadership Executive Overview, created in partnership by the FQI and representatives from NASA's Codes F and T. As part of this training, the SMG participated in a hands-on exercise that enabled them to create specific priorities for the 15 implementing strategies contained in the NASA Strategic Plan.

The purpose of the FQI training is to meet the quality/continual improvement needs of the participants. Just as the SMG's training was specifically designed around the requirements of NASA senior managers, so will the upcoming training courses be tailored to quality/continual-improvement needs of NASA employees. Trainers will work with their centers and individual organizations to make this training relevant, timely and useful to the participants.

For more information on this upcoming training, contact Mike Glenn at ext. 48555 or Irwin Schauer at ext. 42552.

General Aviation

Continued from page 3

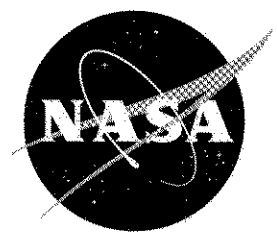
weather transportation aircraft. Over its eight-year duration, the program will provide the foundation for industry leadership in technologies for improved utility, safety, affordability, performance and environmental compatibility in general aviation aircraft.

Cockpit technologies, for example, would respond to the need for more intuitive displays and controls to reduce the cost and time for obtaining and maintaining all-weather flying skills. These might include multi-function displays, touch-panes interface, voice interface, computerized decision aids and a single-lever power control.

The goal of the program is to increase the availability of general aviation transportation to more people, in more weather conditions, to more places. Where scheduled air carriers serve 384 airports in the United States, general aviation serves over 18,000 landing facilities. The AGATE program would tie together the infrastructure, aircraft and pilot technologies for an enhanced, intelligent, general aviation transportation system. The benefits are to spread the mainstream of business, commerce, trade and tourism to the nation's smaller communities not directly served by the scheduled air carrier system.

The overall general aviation program takes a holistic approach to the many issues that have hurt the industry in recent years. For example, the program takes into account the need to upgrade the air-traffic-control system, perhaps by applying new technologies for air-traffic-management systems that would simplify all-weather flying for single-pilot operations.

Langley is the lead center for the general aviation program. Principal contacts for the program are Dr. Bruce J. Holmes, program manager, and Michael Durham, deputy program manager. For more general information on the program, contact Holmes via Mail Stop 407.



NASA Administrator Offers Downsizing Update

Employees Urged to Take Buyout

***Editor's Note**: On Feb. 28, NASA Administrator Daniel Goldin delivered the Downsizing Update. The speech is presented here in its entirety.*

I've been getting some feedback about downsizing at NASA. There's some confusion about what's going on, and how serious it is.

I want to clear up the confusion. And set the record straight. The situation is very serious. You need to know just how serious, so you can make decisions.

I've heard people talking about newspaper articles. The articles say that making personnel targets won't be hard. In fact, NASA is ahead of schedule. That sounds pretty good, doesn't it? So you may think everything's O.K. Everything is safe. There's nothing to worry about. No big changes anytime soon.

That isn't true. There are big changes ahead, and soon. And there will be job losses. Significant losses.

We are doing well on personnel targets. But that isn't what drives us. The budget drives us. Let me explain.

Over the last several years, we cut our five-year budget projection by 30 percent. That's a lot. To do it, we canceled programs. We restructured others, like Advanced X-Ray Astrophysics Facility (AXAF) and Cassini. We set up procurement reforms. We made some big changes.

But we have a new $5-billion cut to absorb. That means we'll have to make even more dramatic changes.

We have two options. One, we could cut deeply into remaining programs. We would do less, but maintain employees and facilities. In other words, we'd be a hollow infrastructure. And we'd lose support with the White House, Congress and the American people. This option is a dead end.

The second option is to recognize that America wants a smaller, more efficient government. They want us to do brilliant things with fewer people. That's the option we chose. That's what we will do.

We will try to make our budget cut without touching programs. Instead, we'll cut jobs and facilities. We have to. The future of NASA depends on being relevant. It depends on being in tune with what America wants. Jobs and facilities will be cut first. And cut deep.

We've made a commitment to this strategy. We've briefed the White House and Congress on it. Our 1996 budget briefings discussed it. It's really going to happen. Jobs and facilities will go first.

It wasn't an easy decision. And the times ahead won't be easy. We are restructuring the entire Agency. We're going to do business differently. The roles and missions of field centers will be very clearly defined. The field centers, and the whole Agency, will be more responsive, more agile, and more relevant. NASA will undergo big changes. Some of them will be painful.

My biggest concern is that you'll come to me later, wishing you'd taken the buyout. You'll say you didn't know how serious things were. Now, you're leaving the Agency after all. But you don't have the benefits of the buyout.

That's why I'm talking to you today. I don't want that to happen. I want you to know now just how serious things are.

You may have heard we're looking at different options. Ways to encourage eligible people to retire. We did explore options, but many weren't feasible.

For example, we looked at reducing penalties for early retirement. But that requires legislation. And Congress isn't considering legislation like that. Even if they do, it'll be too late to help us.

The bottom line is this. The buyout is the only realistic incentive available. There isn't going to be a better offer down the road.

Our buyout authority expires on March 31. It's the last one we'll have. There is no apparent support for more buyouts in Congress. If a buyout makes sense for you, now is the time to do it.

As I said in my last talk, we don't have all the answers yet. The zero-base review is still going on.

But make no mistake — big changes are ahead. People will lose their jobs. Headquarters will be half the size it is now. The centers will be significantly smaller, too.

All this will happen sooner than you think. We can't wait. We're in the midst of a major restructuring, driven by a tight budget. We're positioning NASA for tremendous change. This is an incredible undertaking. We don't have the luxury of maintaining excess staff.

The $5-billion cut is tough enough. But it may get even worse. Right now we're working with the President's budget request for 1996. But Congress hasn't acted. Congress could cut our budget even more. Our budget is not going to get better. If anything, it's going to get worse.

We already have a hiring freeze on. We just sent letters to Senior Executive Service (SES) employees at Headquarters, warning them they could be reassigned. Similar letters are coming to SES employees at NASA centers. On Feb. 21, we sent letters to all employees, telling them how serious things are.

We don't want to do a Reduction-In-Force. But we are preparing for that possibility. We have to. We have to be ready.

If you have decided to leave, I want to remind you we're working with an out-placement company. They've been very successful in placing people. There is help available to you.

This is not an easy speech for me to make. But it's my responsibility to let you know that the situation at NASA is serious. More serious than you may think.

I want you to have the best possible information now, before the buyout runs out. I know there's a lot to weigh — what's best for NASA and what's best for you.

I wish there were easy answers. I wish the changes ahead could be made without disruption or pain. But they can't. There will be pain. There will be job loss.

It's time for soul-searching. We're ready to help you any way we can. Personnel and out-placement staff want to help. You have resources.

But there are tough decisions to be made. And it's time to step up and make them.

Thank you.

Whitlow

Continued from page 1

head of the Aeroelasticity Branch from September 1990 to December 1991. From August 1989 to September 1990, he took part in the NASA Professional Development Program (PDP) and was assigned to NASA Headquarters, where he was program manager for Structures and Dynamics and program manager for Astrophysics.

Whitlow began his career at Langley in 1979 as a research scientist and earned the rank of senior research scientist before participating in the PDP.

He is a graduate of the Massachusetts Institute of Technology (MIT) in Cambridge, Mass., where he earned bachelor, master and doctoral degrees in aeronautics and astronautics. Whitlow has written nearly 40 technical papers, most notably on unsteady transonic flow and aeroelasticity.

He has been invited to make presentions describing his research at domestic and international forums. Whitlow has served on the MIT Department of Aeronautics and Astronautics Visiting Committee and is a member of the MIT Educational Council.

The American Institute of Aeronautics and Astronautics (AIAA) named Whitlow an associate fellow in 1993. He has received numerous other awards, including the MIT James Means Memorial Prize, the U.S. Black Engineer for Outstanding Achievement in Government and the NASA Exceptional Service Medal.

Whitlow has served as an adjunct professor of mechanical engineering and mechanics at Old Dominion University in Norfolk since 1988.

He is an AIAA member.

Buyout Update and Changes

***Editor's Note**: The following message was sent via e-mail on Feb. 24 to all permanent Langley employees from the head of the Office of Human Resources.*

A letter from our Administrator dated Feb. 21 and a letter from the Office of Human Resources dated Feb. 23 will be distributed in the mail system on Mon., Feb. 27. Since everyone has not seen a fax transmission of the Administrator's letter, we are including portions of his letter below.

"I am eliminating the priorities and numerical limits Agencywide so that more employees can take advantage of this opportunity. We will approve all applications from employees who meet the minimum legal requirements. There will be only one application deadline, March 24, and employees may leave any time between now and March 31, 1995. Finally, 12 months of continuous federal, rather than NASA, employment will be required.

"You may have heard that other agencies are permitting large numbers of employees to delay their separation date. I will only approve requests for extension to those few individuals who perform mission-critical functions which cannot immediately be picked up by other employees. We need the smaller workforce sooner than later for budgetary reasons.

"I strongly urge you to give serious consideration to this last opportunity for buyout. If substantial numbers of employees do not use this option to separate voluntarily, we will be forced to consider more drastic downsizing measures."

Daniel S. Goldin

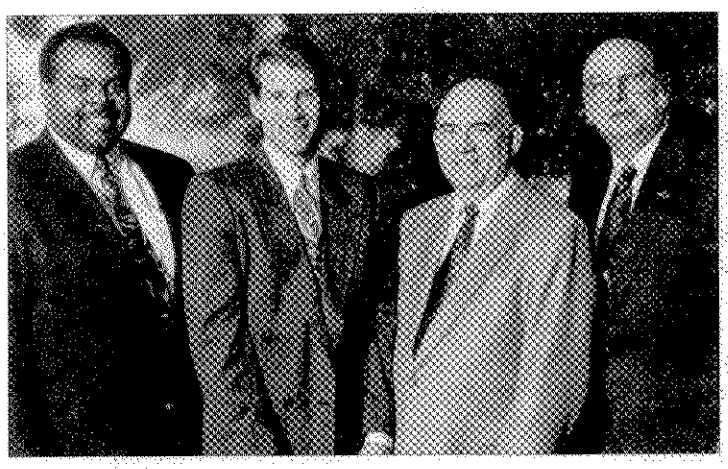
Below is the letter from the Office of Human Resources:

The change in policy has eliminated the need to submit buyout intent forms. Employees may separate, with a buyout, at any time between now and March 31, 1995; however, all separation applications must be received not later than March 24, 1995. Employees retiring with a buyout need to submit a completed retirement application to the Employee Relations Office (ERO), Building 1195C, Room 243. Employees who are resigning should contact the Technical Support Section, ext. 47614, to obtain the appropriate resignation forms.

Employees who have already submitted their retirement applications and wish to change their retirement dates should visit ERO to initiate these changes. It is imperative that ERO know your decision quickly. You are encouraged to submit a completed retirement application as soon as possible to provide sufficient time for administrative processing of your application. A retirement counseling/outprocessing session has been planned for March 17. This session is for those who have made definite plans to retire and have submitted a completed retirement application to ERO. The session will begin promptly at 8 a.m. The agenda provides for outprocessing with representatives from ERO, Payroll, Security and Occupational Health. Attendees must bring their clearance forms and whatever performance appraisals that are readily available. Additionally, guest speakers include representatives from IRS, Social Security, LFCU, NEBA, etc.

If you have questions or would like additional information, contact ext. 42708 or 42605.

Manned Flight Awareness Honorees



From left, Melvin J. Ferebee, Jr., Patrick A. Troutman, H. Harris Hamilton II, and James A. Holland received award certificates and honoree pins from Astronaut Andy Thomas at the STS-63 Manned Flight Awareness event on Jan. 31.

VASC News

VASC Board Names New Director

Edwin C. Kilgore, president of the board of directors of the Virginia Air and Space Center (VASC) and Hampton Roads History Center, announced today the board's selection of Kim L. Maher as executive director/CEO of the center effective Feb. 24. Maher is former executive director of the Museum of Discovery and Science in Fort Lauderdale, Fla.

Virginia Air and Space Center
Hampton Roads History Center

As director of Hampton's $30-million center, Maher will oversee operations and planning for the 110,000-square-foot facility on the waterfront in Hampton's revitalized downtown. The VASC is the official NASA Langley visitor center, which includes a 300-seat IMAX theater, aerospace and history exhibits, and the NASA teacher-resource center. The center, an independent, not-for-profit educational institution, opened in 1992 and attracts 250,000 visitors a year.

Maher assumed directorship of the Florida museum in 1981 and directed its growth from a small children's museum to its current stature as a $32-million science center and IMAX theater serving 557,000 visitors a year. She was instrumental in developing public/private partnerships which resulted in $11 million in state educational funding and $8 million in general-obligation bond funding for the new facility.

Under Maher's leadership, the Museum of Discovery and Science opened its new 85,000-square-foot facility in 1992 on time, within budget, and without capital debt. Attendance and revenues increased each year, bucking a national trend for reduced attendance after an attraction's grand-opening year.

Maher is a two-term president of the Florida Association of Museums and a state director for the Southeastern Museums Conference. She was named a "Woman of Distinction" by *South Florida Magazine* in 1994 and "Woman of the Year" by Women in Communication, Inc., in 1990. She also received the Fundraising Excellence Award from the Florida Association of Nonprofit Organizations, Inc., in 1994. Maher is a graduate of the University of Florida and a native of Washington, D.C.

Langley Personnel Honored in Aviation Week

The following appeared in the Jan. 23, 1995, *Aviation Week*, featuring their 1994 Aerospace Laureates, honoring individuals and teams who made substantial contributions in the field of aerospace. Nominations were submitted by *Aviation Week* editors.

"... Dave Hinton, Les Britt and Emedio Bracalente of NASA's Langley Research Center; and [another] for certification and installation of the first predictive wind shear system in revenue service. It should warn pilots 10 to 15 seconds before they enter wind shear, based on Doppler processing."

Notable Quote

"Businesses that don't make full use of all segments of the population . . . are destined to waste their people and watch their profits go down the drain." (R. Roosevelt Thomas, Jr., President, American Institute for Managing Diversity)

Women of AWT Celebrate 50 Years

Photo by Sandy Gibbs

The women who worked 50 years ago at the Atmospheric Wind Tunnel (AWT) gathered last summer for a reunion. Pictured here are, first row, from left: Elizabeth Kitwell Taylor, Eleanore McKinstry Andrews, Virginia Finch, Edna Lishman, Rene Rhodes Conner, Sarah Whitley Hill, Margaret Spear Diederick, Louise Straghan Privette; and, second row, from left: Alberta Menzies Smith, Edith Turner Smith, Mary Frances Mikell Sleeman, Margaret Farmer Ivey, Hazel Redding, Louise Paul Freeman, Jean Scott.

When the men of Langley went to war, the women came to work. Some were model readers who were tasked with reading the scales as engineers conducted their experiments. Others were computer workers, working on "unusual machines."

The AWT was on the east side of Langley, where the Air Force is located. When the tunnel became obsolete in the mid 1940s, most of the women transferred to the 7 x 10-foot tunnel on the west side.

Disability Program Requests

The NASA Diversity Plan is being printed into an alternative format for purposes of distribution to all employees with sight impairments. The Office of Equal Opportunity Programs needs to identify the number of employees who would require Braille or large print at the Center. If you require the alternative format, please contact the office as soon as possible: Diane via phone at ext. 47718, QuickMail (Diane Forrest) or e-mail (d.e.forrest@larc.nasa.gov), or Gerri via phone at ext. 43289, QuickMail (Gerri Rankin) or e-mail (g.m.rankin@larc.nasa.gov).

The Center is also working on a plan to prioritize the facility modifications for accessibility. Not everyone with a mobility concern has self-identified on SF-256. Therefore, if we do not know where you are located, we may have omitted your building in our listing for future modifications. These changes will include elevators, ramps/lifts, automatic door openers, accessible water fountains, accessible bathrooms, signage and door levers. If you would like to ensure the facilities you work in and visit most often are accessible under our new prioritization plan, contact Diane or Gerri at the Office of Equal Opportunity Programs.

Mason & Hangar Named Semifinalist in National Quality Cup

Mason & Hanger, America's oldest engineering, construction and management company, was cited in January among the country's best manufacturers with 18 of its practices named "Best Manufacturing Practices" (BMP) by the U.S. Center of Excellence, operated by the Department of Commerce, the Department of the Navy, and the University of Maryland. Their findings said:

> "*Quality is an attitude*" definitely describes all facets of business at Mason & Hanger. This attitude permeates every aspect of not only what the company does, but more importantly, monitoring and measuring how well it is done. Mason & Hanger's quality management system is one of the most extensive ever documented by the BMP program.

Mason & Hangar has also been selected from among more than 350 national and international companies as a semifinalist in the "National Quality Cup," better known as the "USA Today Quality Cup." The award is sponsored by the Rochester Institute of Technology and USA Today. Selection was based on Mason & Hangar's manufacturing operations of the Iowa Army Ammunition Plant (IAAP). Winner of the National Quality Cup will be showcased in the May 5 issue of the *USA Today*.

Mason & Hangar provides CLASSIC services for Langley: consolidated logistics, administrative, security, scientific information and metrology services.

Volunteer Leave Transfer Program

The Voluntary Leave Transfer Program permits employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. Call Lisa Allen at ext. 42610 for more information. Annual leave donations are greatly appreciated.

The following Langley employees are approved leave recipients:

Carmen Batten
Suzy Carpenter
Jean Cridlen
Catherine Cronin
Patricia Deyerle
Julian Roberson
Cassandra Stevens
Marie Storms
Scott Wallace
Darrell Wood

Other Agencies:
Susan Pauls Burnett
Loc T. Nguyen

Eleven Langley Employees Earn Advanced Degrees through Center's Graduate Study Program

Eleven Langley staff members recently earned advanced degrees through the Center's Graduate 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 advanced degrees while at Langley. Approximatley 1,520 employees have been awarded master's or doctoral degrees through the program.

Celeste M. Belcastro

Christine M. Belcastro

Doctoral degrees have been awarded to two employees: Celeste M. Belcastro, Information and Electromagnetic Technology Division, received a Ph.D. in electrical engineering from Drexel University, and Christine M. Belcastro, Flight Dynamics and Control Division, received a Ph.D. in electrical engineering from Drexel University.

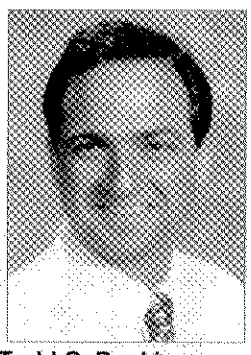
Master's degrees were awarded to the following employees: Ledora R. Akanni, Acquisition Division, received a M.S. in management from Florida Institute of Technology; Constance B. Basnett, Information Systems Division, received a M.B.A. from the College of William and Mary; Todd C. Denkins, Aerospace Mechanical Systems Division, received a M.S. in mechanical engineering from Virginia Polytechnic Institute and State University; Jane I. Druen, Acquisition Division, received a M.S. in contract and acquisition management from Florida Institute of Technology; James R. Florance, Structures Division, received a M.S. in aerospace engineering from Georgia Institute of Technology; Gail S. McQuigg, Scientific and Technical Information Division, received a M.A. in English, professional writing emphasis, from Old Dominion University; Gilda A. Miner, Materials Division, received a M.A. in chemistry from The College of William and Mary; Carrie K. Walker, Aeronautics Program Group, received a master's degree in engineering management from Old Dominion University; Henry S. Wright, Facility Systems Engineering Division, received a M.S. in Astronautics from George Washington University.

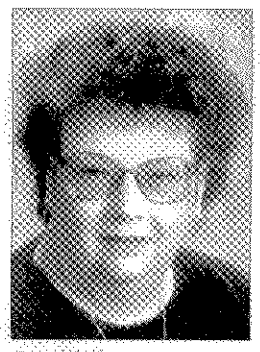
The Employee Development Branch congratulates these individuals for the long hours and hard work necessary for this accomplishment. Such work not only brings additional expertise to Langley, but also enhances the individual's professional growth and career development.

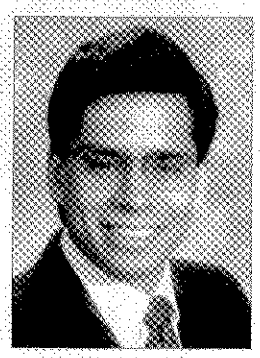
For information on the Center's Graduate Study Program, call George Allison at ext. 42594.

Ledora R. Akanni

Constance B. Basnett


Todd C. Denkins

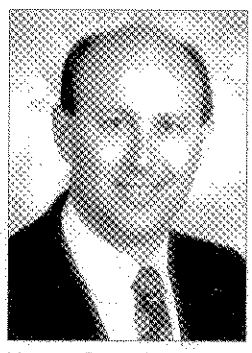

Jane I. Druen


James R. Florance

Gail S. McQuigg

Gilda A. Miner

Carrie K. Walker


Henry S. Wright

Spearman Named 1994 Aerospace Engineering Outstanding Alumnus

M. Leroy Spearman, an aerospace technologist in the Aeronautics Systems Analysis Division at Langley, was presented the 1994 Aerospace Engineering Outstanding Alumnus Award by Auburn University for "recognition of your half-century contribution to the field of aerodynamics at NASA's Langley Research Center."

M. Leroy Spearman

Career

Spearman recently completed 50 years of government service with NACA/NASA. He is currently assigned as a senior technical specialist in the Systems Analysis Branch. He is recognized as an authority in the fields of aerodynamics, stability and control, and performance of aircraft, spacecraft and missiles. He has conducted wind tunnel research investigations throughout the subsonic, transonic and supersonic speed ranges.

Spearman began his career in 1944 with NACA in the Atmospheric Wind Tunnel where he made some of the first tests of swept wings in the U.S. In 1945, he wrote his first paper which was to be followed by more than 260 throughout his career. He was transferred to the new 7 x 10-foot tunnel in 1946 where he continued his study of swept wings and went on to conduct some of the earliest transonic tests using the transonic-bump technique.

In 1948, he was transferred to the new 4 x 4-foot supersonic pressure tunnel where he extended his aerodynamic studies to supersonic speeds. There he was responsible for stability and control studies that had an impact on essentially every supersonic aircraft built in the U.S. He made the first supersonic tests of the variable sweep wing concept, canard configurations and missiles, and some of the earliest tests of supersonic transport concepts.

In 1963, he was assigned to assess the status of foreign technology which, over the years, has had a significant effect on the direction taken by some U.S. programs. In 1974, he was assigned to the High-Speed Research Division Office as chief scientist for military and foreign technology.

Spearman is a member of the American Institute of Aeronautics and Astronautics, the Air Force Association, the Auburn University Alumni Engineering Council and the Virginia Academy of Science. He has been honored by all these groups and has received a number of NASA awards as well.

Researcher Honored by Engineers

Dr. Roop N. Gupta, a senior research engineer at Langley, was named a Fellow of the American Society of Mechanical Engineers at its Jan. 24 meeting. The Fellow grade is conferred upon a member with at least 10 years active engineering practice who has made significant contributions to the field.

Dr. Roop N. Gupta

Gupta joined Langley in 1970. His expertise in viscous, diffusing turbulent flows helped in analyzing many significant problems, including that of ozone depletion in the stratosphere. He made important contributions to the areas of turbulent reactive flows, maneuverability and control of high-speed vehicles while teaching at the Indian Institute of Technology.

Since his return to Langley in 1981, Gupta has been involved with the development of computational tools for high-temperature gas flows with application to the design of advanced aerospace vehicles. He has also made significant contributions and is widely recognized for his research on high-temperature dynamics and gas properties.

Happenings

RN DUE DATE: The due date to submit any ads, articles, photos or other information for the next issue is noon, Tuesday, March 14. The next issue will be distributed beginning Friday, March 24. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

FOR RENT/LEASE: Townhouse (well maintained). Mallard Point. Conveniently located just 7 minutes from Langley and Fort Monroe. Beautiful view of water. 2 bedrooms, 1-1/2 bath, living room/dining room combination, dishwasher, microwave, washer/dryer, ceiling fans, central heat and air, stove, refrigerator, carpeted floors, fenced backyard, fireplace, and more. NO PETS PLEASE. Availability March 1. $525 monthly. Phone: 727-9187.

FOR SALE: 1985 Chevy Cavalier. Good condition, 126K mi., no A/C, dark blue, best for tooling around town. $1,200 or best offer. Call Joe at 875-5585.

FOR SALE: Bahamas/ Orlando travel package for two, plus bonus roundtrip airfare to Jamaica or Acapulco. 100-percent transferable. $398 per couple. Call Jenny at 868-6705.

FOR SALE: 4BR, 2-1/2 BA, tri-level on quiet cul-de-sac. Two-car garage w/ auto opener; fenced backyard w/ playset; indoor laundry room; eat-in-kitchen; Booker-Syms-Kecoughtan schools. $118,000 or assumable FHA loan at 7-1/2 %. 307 Willow Oaks Blvd. Call Dean at 851-1517.

FOR SALE: VITAMASTER Exercise bike w/ friction control and odometer. $50. Call Les at 877-4372.

INCOME-TAX PREPARATION: Member of National Association of Tax Practitioners. Electronic filing and direct deposit offered at no extra charge! Small-business bookkeeping. We travel to you. For an appointment, call Don at 874-3121.

INCOME-TAX PREPARATION: Member of National Association of Enrolled Agents. Call Nancy Taylor at 723-5227.

CLOWN MINISTRY: A unique presentation of the Easter story, entitled "The Passion," will be presented by the Amazing Earl, a silent clown, at St. Mark Lutheran Church, Saturday, March 11, at 7 p.m. For information, call St. Mark's at 898-4395.

VIRGINIA CHORAL SOCIETY: To celebrate 300 years of the English Chapel Royale, the society will feature the works of composer Henry Purcell (1659-1695). Additional works by Blow, Clarke, Humphries and Locke will be performed by the chorus under the direction of Debra Carr, artistic director. Join the VCS for "Mr. Purcell & His Friends" on Fri., March 17, at Trinity Episcopal Church in Portsmouth and Saturday, March 18, at St. Mark Lutheran Church in York County. Both concerts begin at 8 pm. There will be a matinee on Sunday, March 19 at Trinity Lutheran Church in Newport News at 3 p.m. Tickets are available at the door. General admission $7, family $18 (admits 4), senior citizens, students and military $5. Call 1-800-400-4VCS for further information.

VIRGINIA SYMPHONY: Classical Masterworks concert March 17 and 18 at Chrysler Hall features Berlioz' *Symphonie Fantastique* and Bartok's *Violin Concerto No. 2*. VA Symphony Pops March 11 and 12 in Norfolk and Virginia Beach with music of John Philip Sousa. Tickets for either event start at $12. Call the Exchange Shop (20-percent discount) at ext. 41585, or the Symphony at 380-0040.

GOLF: The NASA Golf Association will hold its first 1995 tournament at Langley AFB Eaglewood golf course on Friday, March 24. A shotgun start is planned for 1 p.m. with a four-person, captain's choice format. At conclusion of play, a steak dinner, included in the entrance fee, will be at the club house. This is the first of 10 tournaments, each played on a different course, during the golfing season. If you want to play, contact Gary Bayless at ext. 41221 or Tom Yager at ext. 41304 before the tournament deadline of March 15.

MISSING: College text book on heat transfer. Return it to F Howard at MS 170, or call ext. 45560 days/838-4813 nights.

The next **TOWN MEETING** will be Friday, March 17. Look for time and place in *LaRC This Week* and other modes of communication.

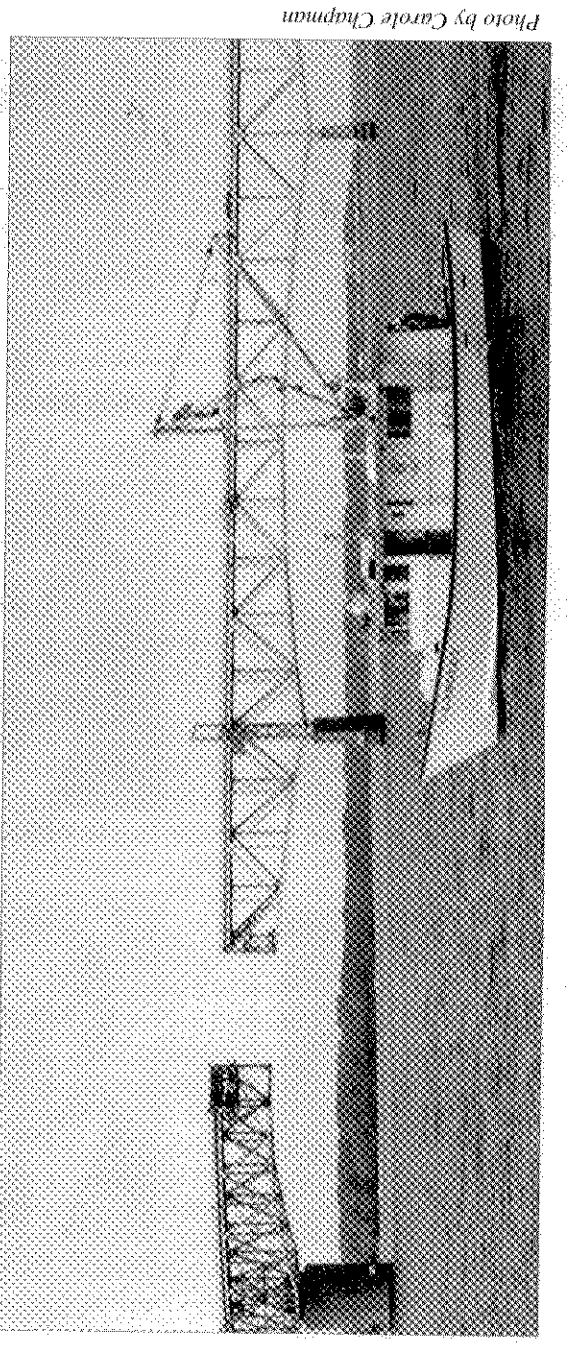
LAA SOCIAL: A pre-St. Patty's Day Social Hour will be held Friday, March 10, from 4 to 8:30 p.m. Entertainment will begin at 4:30 p.m. with music by The Boots & Lace Band featuring the Mann Sisters.

LAA DANCE: The next country & western dance will be held Saturday, March 18, at the H.J.E. Reid Conference Center. Doors open at 6 p.m. Cost is $3 per person.

FREE TO A GOOD HOME: Unable to care for lovable male, 3-year-old Pekingese. Two young children would like to visit occasionally. Call Teresa at 865-6391.

LOST: A carton containing an IR 100 awards plaque, Neuro Shell development software and other items was lost in a move. If found, please call Doug Garner at ext. 41683.

Photo by Carole Chapman



The SS Langley has been living a second life since its donation to The College of William and Mary's Virginia Institute of Marine Sciences (VIMS) at Gloucester Point, Va. For the last 10 years, the Langley has been part of a comprehensive Environmental Protection Agency study of Chesapeake Bay water quality in conjunction with the University of Maryland and Old Dominion University. "Living out on the water twice a month, three days at a time, in all kinds of weather, has forged a close bond of affection for the boat by the VIMS scientists," says George Pogonis, Marine Superintendent of Vessels at VIMS. The Langley is outfitted with state-of-the art electronic equipment for measuring water quality right on the boat. "Because she's only 44-feet in length, she maneuvers like a sports car. She can be in and out of a place before a 300-foot research vessel could get in." In addition, the Langley is used in such projects as the VIMS/LaRC "Water Wings" in which turbulence behind a wing anchored ibeneath the surface in the river current was used to mix oxygen into York River water. Donated to VIMS in the early '80s, the Langley was used in LaRC's now-defunct Marine Applications Technology Division to collect water samples in corroboration of data obtained through remote sensing technology.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business. Penalty for Private Use $300.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 6 ❖ March 24, 1995

The Buyout Party

All employees are invited to join the Center's buyout recipients, their families and friends at the Buyout Party, Friday, March 31, from 3 to 7 p.m., at the H.J.E. Reid Conference Center.

Saying good-bye to old friends is never easy. Going to a party to wish them the best for the future, however, is fun.

Langley Alumni president Dr. George Brooks will host a short program planned with the retirees in mind.

The party features heavy hors d'oeuvres, a cash bar and the Hampton University Band.

The event is sponsored by the Langley Activities Association and Langley Research Center. No reservations or contributions are necessary.

Invitation to the Buyout Party

Date
Friday, March 31

Time
3 to 7 p.m.

Place
H.J.E. Reid Conference Center

Sponsors
Langley Activities Association
Langley Research Center

Host
Langley Alumni Association

Program
A brief presentation by Dr. George Brooks, President, Langley Alumni Association

Music
Hampton University Band

Refreshments
Heavy hors d'oeuvres and cash bar

Invitees
All buyout recipients, family and guests
All employees

Community Invited to TOPS Public Day at Langley Hangar

See exciting, NASA-developed technologies during Public Day on Saturday, April 8, at the Technology Opportunity Showcase (TOPS). Treat your family and friends to more than 100 exhibits on display from 9 a.m. to 3 p.m. in the Hangar.

The day has been set aside for both the local community and visitors from middle-schools through colleges. Exhibitors will be on hand to explain the "how" of their exhibits.

No registration is required for Public Day, and admission is free. Public access is limited to the Hangar, however.

The technologies on display have many applications outside NASA, in both aerospace and non-aerospace industries. Some of these technologies are being used by companies locally and nationwide, having been provided by Langley as part of an effort to help U.S. businesses gain a competitive edge in an increasingly global marketplace.

TOPS
TECHNOLOGY OPPORTUNITIES SHOWCASE
NASA LANGLEY RESEARCH CENTER

Volunteers Help Shape Our Future

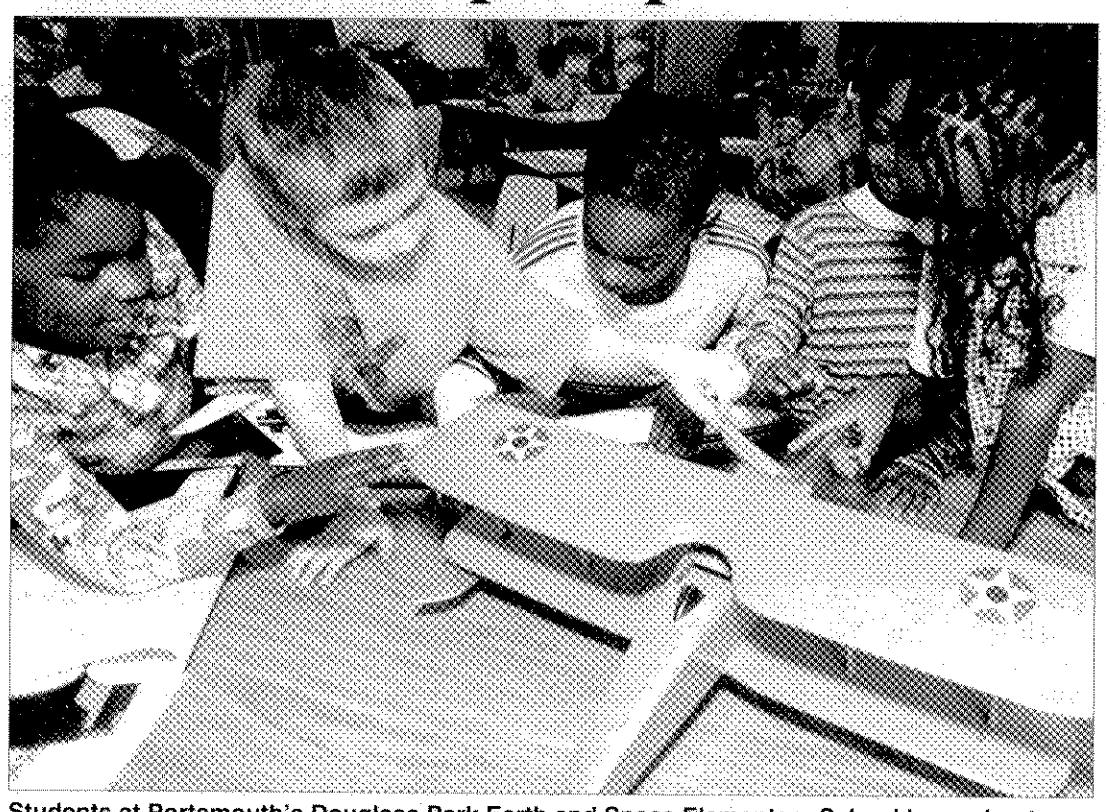


Photo by Fred Jones

Students at Portsmouth's Douglass Park Earth and Space Elementary School learn about flight while examining a biplane model. As part of National Engineers Week, the school honored NASA and its support of math and science education by designating a "NASA Day" for the school. For more on National Engineers Week, see pages 4 and 5.

NASA and Peninsula Engineers Council Host Career Days

BY PETER D. THOMAS

More than 400 high-school students participated in Career Days, Feb. 22 and 23, sponsored by Langley and the Peninsula Engineers Council (PEC).

Students from grades 10, 11 and 12, representing 23 public, private and home schools, were enthusiastic participants. They were treated to meaningful presentations from speakers and received answers to their questions on a one-on-one basis from 39 exhibitors.

John Zinskie, president of the PEC, and Dr. Samuel Massenberg, director of Langley's Office of Education, welcomed the students. Massenberg provided the Center's overview, mission and work. Roger Eshelman, director of Nuclear Engineering from the Newport News Shipbuilding and Dry Dock (NNSDD) and 1994 Engineer of the Year, was the keynote speaker. His topic was "The Anatomy of a Career in Engineering."

A panel discussion followed during which Nancy Kruse, Langley electronics technician, Terry Morris, Langley electrical engineer, and Dave Willis, NNSDD electrical engineer, shared their cooperative- or apprentice-education experiences with attendees.

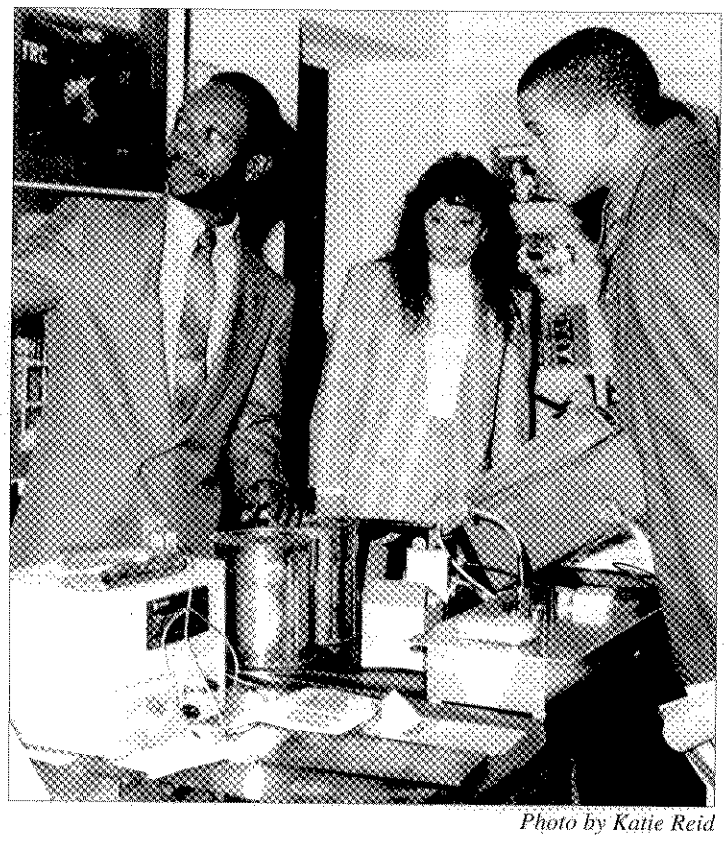


Photo by Katie Reid

Craig Neal, left, explains a facet of his job to a fascinated high-school student as Melanie Law Horne observes. Neal, from the Operations Section of the Aeroacoustics Division, and Horne, from the Operations Section of the Aerothermodynamics Division, were participants in the recent Careers Days held at Langley. The Peninsula Engineers Council co-hosted the event Feb. 22 and 23.

Finally, students were encouraged to visit the exhibitor booths. Comments such as "What you earn is dependent on what you learn," "Earn while you learn," and "Invest in yourself" were provided as sage advice for all concerned.

Around the Agency

MOBLEY NAMED NASA CHIEF ENGINEER - David H. Mobley has begun his duties as chief engineer at NASA Headquarters under a rotational assignment. He will report directly to the administrator and will be responsible for overall review of the technical readiness and execution of all NASA programs. He will ensure that the development efforts and NASA mission operations are being planned and conducted on a sound engineering basis with proper programmatic controls.

Mobley has been serving as technical assistant to the center director for Space Station activities at the Marshall Space Flight Center, Huntsville, Ala. He is a technical advisor to the Space Station program manager at the Johnson Space Center, Houston, Texas, and has been tasked with establishing an advance NASA Liaison Office in Moscow.

Retirement Parties

Gregory

A retirement party (cake and punch) for Ray W. Gregory will be held Friday, March 31, noon to 1:30 p.m. in Bldg. 1230, Rm. 270. Cost is $3.50 per person including a gift. For gift-only contributions or reservations, contact Carol Satterwhite by March 24 via phone at ext. 44580 or Mail Stop 235A.

Ballew

Hear Ye! Hear Ye! An informal "retirement" party will be held for Allison Ballew on Friday, March 31 from 1 to 3 p.m. in Bldg. 1195B, Rm. 234. Impromptu songs and poetry are welcome. Come and enjoy the final gig of her government career. For more information, call Cynthia Cowan at ext. 42546 or Shirley Briglia at ext. 42478.

Pauls

A retirement party for Sid Pauls will be held Friday, April 7, 5:30 to 8:30 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres will be served. Cost is $12 per person or $2 for a gift. Please send money by March 31 to Barbara Fryer at Mail Stop 103. For more information, call her at ext. 46113.

Smith-Taylor

A retirement party for Rudeen Smith-Taylor will be held Thursday, April 20, beginning at 6 p.m., in the Williamsburg Room at the Langley Officers' Club. Price is $18 per person or $34 per couple including a gift. For gift-only contributions or reservations, contact Kendall Sherman at ext. 44447 or Mail Stop 479 by April 17.

Spruill

A retirement reception for Bob Spruill of the Simulation Systems Branch will be held Friday, March 31, 2:30 to 4 p.m. in Bldg. 1268A, Rm. 2120. For gift contributions, contact Stacey Prince via phone at ext. 47494 or Mail Stop 125B, or Sonia Herndon via phone at ext 47493 or Mail Stop 125B, by March 29.

Nealy

A retirement party for John E. Nealy will be held Tuesday, March 28, beginning at 4 p.m., in Bldg. 1250, Rm. 118. Cost is $5 per person, including a gift, or $2 for a gift only. Please send money by March 14 to Jennifer Hubble at Mail Stop 420. For more information, call her at ext. 48333.

Darnell

A retirement party for Wayne L. Darnell will be held Friday, March 31, beginning at 4 p.m., in Bldg. 1250, Rm. 118. Cost is $5 per person, including a gift, or $2 for a gift only. Please send money by March 14 to Jennifer Hubble at Mail Stop 420. For more information, call her at ext. 48333.

Harrison

Ed Harrison invites his colleagues and friends to join him for a drink and light hors d'oeuvres in celebration of his retirement on Monday, April 3, 5 to 7 p.m. at the H.J.E. Reid Conference Center. Those who plan to attend, call Jennifer Hubble by March 20 at ext. 48333.

Solomon, et al.

A retirement social for Charles Solomon, Harry Walthall, Robert Swaim, Robert Turner and Carson Rector will be held Tuesday, April 18, in Bldg. 1238. A short program will begin at 11:30 a.m., followed by a buffet lunch. Cost is $4 per person. For gift-only contributions or reservations, contact Carol Ficklen by April 10 via phone at ext. 45440 or Mail Stop 390. Make checks payable to Carol Ficklen.

Moore

Friends and associates of C.T "Tom" Moore are invited to a retirement social on Friday, March 31, 5 to 7 p.m., in the private dining room of Bldg. 1213. Cost is $7 per person including a gift. For gift-only contributions or reservations, call M. Foster at ext. 43343 or J. Greco at ext. 43018.

Rinehart

Join Bob and Lorraine Rhinehart for a social at the Englewood Golf Course Clubhouse on Langley Air Force Base on Friday, April 14, 4 to 6 p.m. honoring Bob's retirement. Hors d'oeuvres and drinks will be available. Call JoAnn Hudgins by April 7 at ext. 42968, if you plan to attend.

Cooper and Ficklen

A retirement reception for Ned Cooper and George Ficklen of the Simulation Systems Branch will be held Friday, March 31, 1:30 to 2:30 p.m., in Bldg. 1268A, Rm. 2120. For gift contributions, contact Stacey Prince via phone at ext. 47494 or Mail Stop 125B, or Sonia Herndon via phone at ext. 47493 or Mail Stop 125B, by March 29.

Two Pilots

Two Langley pilots are flying the coop! A double-header retirement party for Dick Yenni and Lee Person is in the makings. Mark your calendars for May 6. Anyone with memorabilia, comments or roasting material, contact Mary Beth Wusk via phone at ext. 43830 or e-mail (m.e.wusk@larc.nasa.gov) or Luci Crittenden via phone at ext. 41776 or e-mail (l.h.crittenden@larc.nasa.gov).

RN Articles and Ads Due Tuesday after this Issue

The due date to submit any ads, articles, photos or other information for the next issue is noon, Tuesday, March 28. The next issue will be distributed beginning Friday, April 7. Send photos with captions to Mail Stop 146. Include your name and phone.

Readers are encouraged to submit articles on topics of interest to everyone on the Center. To assist you, a story generator form is available.

For best results, send articles and ads to Joe Guarino via QuickMail or e-mail (a.j.guarino@larc.nasa.gov).

Letters

From Barbara Fryer:

"Dear Friends,

"I have decided to retire on March 31 and I would like to take this opportunity to tell you how much you have meant to me and my career at Langley Research Center. Over the years, I have made so many many friends that it would be impossible to contact everyone individually. Many of you I have met professionally, but many I have met through the softball teams/games and the casino (where I was in charge of the blackjack tables for so many years). All of you have added true value to my outlook on life and to my career at Langley. I truly have been blessed and I thank you all for all of your kindnesses during my time here at Langley."

From Vernelle Robinson:

"Thomas and I thank you and yours for your prayers and concern (and other acts of kindness) during his recent recovery from two strokes within the past three weeks. Your/our prayers have been answered. Thomas is home; he's improving.

"Again, thank you!"

From Brenda Gile Laflin:

"Thanks to all employees who donated to the voluntary leave program. I especially would like to express my thanks to Frank Jordan, Charles Fox and Susan Gorton. Your thoughtful kindness allowed me to be with my baby until her good health was established. I cannot say enough to express how much it means to Kelly and me."

From Mike Card:

"I want to thank all of you for attending and contributing to my retirement party. The tributes and gifts were very much appreciated, and it was great to see so many people from old times and new. It was truly an evening to remember and savor over the years."

Announcements

United Way Report

Copies of the United Way of the Virginia Peninsula Annual Report to the Community are available at the Public Mail Center in Bldg. 1153.

SWE Conference

The Society of Women Engineers will have its 1995 National Convention and Student Conference in Boston, Mass., from June 27 to July 1. For registration information and a preliminary program packet, or if you are interested in attending, contact Patsy Campbell via phone at ext. 43291, QuickMail or e-mail (p.l.campbell@larc.nasa.gov).

Astronomy Club to View the Heavens

The Skywatchers Astronomy Club will host an evening of telescopic viewing of the heavens on Friday, April 7, 8 p.m. until midnight at the club's observatory, Bldg. 1231. A variety of telescopes will be set up for this free event which is open to the public. No reservations are required. Children are welcome. If the sky is cloudy, the event will be postponed until the following evening. For more information, call Marilyn Ogburn at ext. 41175.

Just the Facts

Researcher News Distributed Widely

Have you ever wondered how many copies of Langley's *Researcher News* are distributed? Approximately 8,700 copies are distributed to four groups of people every two weeks. The first group, civil service employees, receives 3,100 copies. The next group, on-site non-civil service personnel, receives 2,300 copies. The third group, retirees, receives 2,200 copies. The final 1,100 copies are sent to other NASA centers, industry and universities.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and advertisements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising 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.

Colloquium to Feature Industry View on High-Speed Research

The aerospace industry's efforts to develop a supersonic passenger jet will be the subject of a lecture that starts at 2 p.m. Tuesday, April 4, at the H.J.E. Reid Conference Center as part of Langley's Colloquium Series.

"The High-Speed Research (HSR) Program: An Industry Perspective" will be presented by Robert E. Spitzer, vice president for engineering at Boeing Commercial Airplane Group.

Robert E. Spitzer

The talk will also be delivered as part of the Sigma series of free public lectures starting at 7:30 p.m. at the Virginia Air and Space Center in downtown Hampton. After the lecture, the space center will hold a special showing of the IMAX film "*Grand Canyon*" for $3.

All NASA employees and contractors are invited to attend the colloquium. Civil service personnel should charge their time to A5266.

The High-Speed Civil Transport is predicted to have a big impact on long-range air transportation. This future aircraft must meet stringent criteria to ensure commercial viability, environmental compatibility, airline economics and public acceptability.

As part of its charter to develop and validate aerospace technologies, NASA has accepted the challenge and created the HSR program, an effort combining the best talents of both government and industry.

Phase I of this program addressed the environmental issues surrounding commercial supersonic flight. The results have been positive, encouraging the beginning of HSR Phase II. This is an in-depth study of critical enabling technologies: greater propulsive thrust without exceeding criteria for noise and emissions, lightweight structural materials that can withstand high temperatures, flight systems permitting higher lift and less drag, and a new flight deck designed to control and monitor the high-speed flight path and provide better pilot situational awareness in the airport area.

While NASA is developing the technology for such an aircraft, industry will decide whether to design and build one.

See **Colloquium**, *page 6*

Awards Ceremony Announced

Langley's Annual Honor Awards Ceremony will be held on Monday, April 3, at 1:30 p.m., in the H.J.E. Reid Conference Center.

The March 6 edition of "LaRC This Week" reported that Gen. John R. Dailey, USMC (Ret.), NASA's Acting Deputy Administrator, would deliver the keynote address. However, due to a scheduling conflict, he will be unable to attend. The Center is pleased to announce that A. Thomas Young, executive vice president of Lockheed Martin Corp., has agreed to participate in our ceremony and deliver the address.

NASA Honor Awards will be presented to 53 individuals and 13 teams. Other individuals who will be recognized include Langley's 1994 H.J.E. Reid Award recipients, the recipients of the 1995 Contractor's Excellence Award for Quality and Productivity, and a 55-Year Length-of-Service Award recipient.

Seating is limited. Therefore, the ceremony will be broadcast via the Center's video distribution system, Channel 4.

Time spent in attendance should be charged to JO A5207.

Questions regarding the ceremony should be forwarded to Kate Spruill at ext. 42606 or Lisa Allen at ext. 42610.

Gleaton Earns Certification, Becomes Langley's Fifth CPS

Photo by Katie Reid

Congratulations to Charlene Gleaton, seated on the left, for earning the Certified Professional Secretary (CPS) designation. Recently, Langley's four certified professional secretaries, Delores Harris, Alberta Reid, Carol Ficklen, standing left to right, and Brenda Graham, seated on the right, presented flowers, balloons and a plaque to Gleaton for her outstanding achievement. The CPS exam is offered two times a year in May and November. As of November 1994, it has become a 1-day exam.

Langley Tech Transfer Will Help Firms Improve Product Design

A Los Angeles-based firm has signed an agreement with Langley to use NASA-developed technology that will help industries worldwide speed up and improve the design of a wide range of products, from cars to coffeemakers.

Langley signed the cooperative agreement with The MacNeal-Schwendler Corp. (MSC), one of the world leaders using computer software to simulate the performance of structural and mechanical systems.

Under the three-year agreement, MacNeal-Schwendler will receive Langley-developed technology for modeling structural systems. The company plans to program that capability and incorporate it into its most popular product, a structural analysis computer program called MSC/NASTRAN. With this new capability, MacNeal-Schwendler customers will be able to create computer models more quickly and easily. In addition, their computer simulations will be more accurate.

Many industries design products by simulating their performance on a computer before building costly prototype models.

"For example, during the design of a new car, a computer model of the vehicle could be crashed into a computer model of a barrier. The results [are then] studied to see if passengers in a real automobile would have been injured," said Dr. W. Jefferson Stroud, of the Computational Structures Branch, Structures Division, which is where the technology was developed. "The designer could use that information, together with results from many other computer simulations, to arrive at a design that meets cost and performance targets.

"This is a good marriage between technology and what both NASA and MSC want to get out of the project," Stroud added. "We'll be able to move this important technological development into the general mainstream of design engineering."

The type of software sold by MacNeal-Schwendler is used by industries around the world, including shipbuilders, automakers, aerospace firms, consumer-products companies, and many more. The transfer of technology to non-aerospace companies is part of a new effort at Langley to develop U.S. competitiveness in a global market.

Langley Hosts Local MATHCOUNTS Competition

BY PETER D. THOMAS

The Virginia Society of Professional Engineers (VSPE) with the support of the Society of American Military Engineers (SAME) and Langley's Office of Education conducted the local MATHCOUNTS competition for 13 Peninsula middle schools on Feb. 18 at the H.J.E. Reid Conference Center. MATHCOUNTS seeks to stimulate interest in mathematics for 7th- and 8th-grade students.

Each team has four members competing for individual and team awards. The competition is divided into three sections. The Sprint Round is a 40-minute test of 30 questions. The second round, the Target Round, involves each individual solving eight problems distributed in groups of two problems over a 30-minute period. The final round, the Team Round, involves each team working together to solve 10 problems over a 20-minute period.

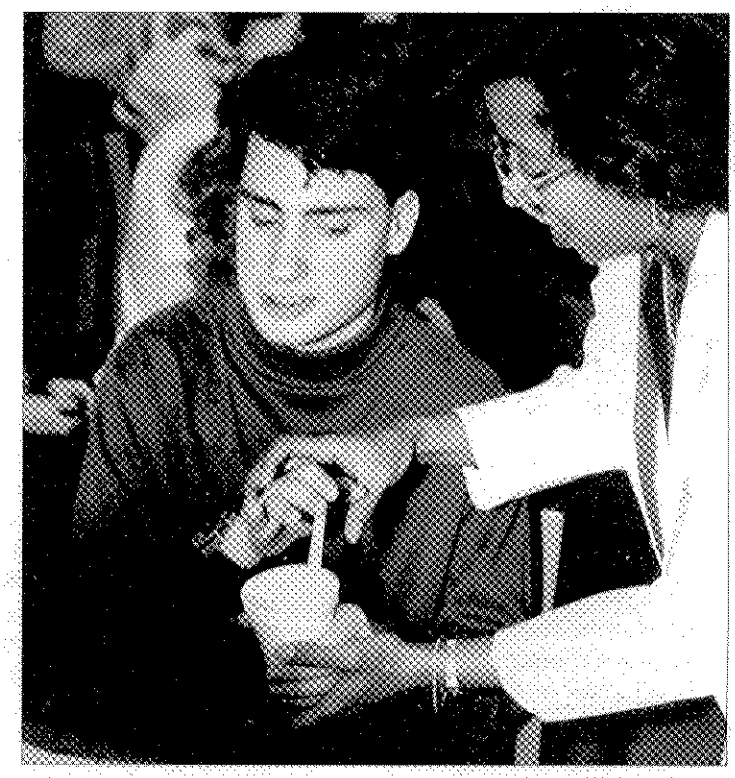
The top 10 individual students and their middle schools were: Mark Arduini, Hines; Walt Lin, Hampton Roads Academy; Thomas Smitherman, Queens Lake; Megan Madras, Hampton Roads Academy; Joey Saha, Queens Lake; Yvonne Wu, Queens Lake; Glen Wilson, Dozier; Alex Haislip, Berkley; Bruce Daniels, Toano; and Mark Hardman, Hines.

The top five middle schools were: Hampton Roads Academy, Newport News; Queens Lake, Williamsburg; Hines, Newport News; Berkley, Williamsburg; and Peasley, Gloucester.

Local sponsors of the competition included: Langley, SAME, Buchart-Horn, Inc., ECI Engineers, Richmond Engineering, Inc., Spiers and Waltz, Environment, Inc., Reid and Cornwell, Ltd., Malcolm Pirnie, Inc., and Gannett Fleming, Inc. Without the financial and personal support of these local firms, this competition would not have been possible.

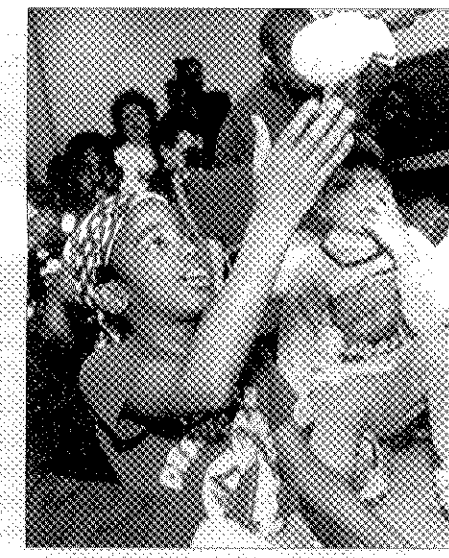
The team from Hampton Roads Academy and individuals Mark Arduini, Thomas Smitherman and Joey Saha represented the Peninsula at the state competition held Sat., March 11, at Virginia Power's Innsbrook facility.

CIVIL SERVICE * William F. Adkins * Ledora R. Akanni * Elvin L. Ahl * Tahani R. Amer * Richard R. Antcliff * Robert A. Baals * Scott Bartram * Steven Bauer * Willard Bauserman * Michael Bell * Laurence J. Bement * Verner P. Boone * Morton W. Boston * Darrell R. Branscome * Carey Buttrill * Donald R. Cahoon * Michelle Calloway * Robert L. Calloway * Mark H. Carpenter * Bill Chambers * Janet Connelly * Bruce A. Conway * Lawrence B. Cooper * James M. Corliss * Larry Cowen * Vincent L. Cowling * Taumi Daniels * Pamela Davis * Richard E. Davis * Russell J. Deyoung * Glenn S. Diskin * Marcia Domack * David Dress * Dana J. Dunham * David C. Duxbury * Marco A. Egoavil * Elka B. Ertur * Richard A. Everett * Melvin J. Ferebee * Christian M. Fernholz * Robert L. Fox * Archibald L. Fripp * Debbie M. Garrett * Guillermo A. Gonzalez * Gretchen L. Gottlich * Donner Grigsby * Robert M. Hall * Charles E. Harris * Stephen F. Harvin * Sidney E. Holloway * John C. Hoppe * Michael C. Hudson * Monica Y. Hunter * William W. Hunter * Mark A. Hutchinson * Anthony M. Ingraldi * Richard G. Irby * Mac Jackson * Peter F. Jacobs * Samuel James * Charles E. Jenkins * Gregory S. Jones * Henry E. Jones * Jerome T. Kegelman * Guy T. Kemmerly * William B. Kluge * Rachel L. Knudsen * Grady J. Koch *



Trish McDaniel, right, assists a blind student at Hampton's Virginia School for the Deaf and Blind as he tries making his own ice cream. The student later received a NASA certificate of participation in braille.

"Yes, Virginia, you can make steam without boiling the water!" This second-grader, left, dressed in protective glasses and robe, watches the results. She and other students from Hampton's Capt. John Smith Elementary School enjoyed National Engineers Week.



A deaf student at Hampton's Virginia School for the Deaf and Blind watches a frozen balloon defrost.

The Success of Engineers Week Earns "Thank You" for Volunteers

BY CATHARINE G. SCHAUER

So often, people take on tasks and never have the opportunity for feedback. That is not the case with the 217 volunteers who shared their time and expertise as "Teacher for a Day" during National Engineers Week 1995. Students' reactions reinforced the importance of the time civil servants, contractors, retirees and others spent with them.

For some students, the programs helped them make lifetime decisions. For others, the presentations opened a whole new world filled with creativity and challenge. Subjects they once thought boring and difficult, math and science, were brought to life.

The success of the Center's National Engineers Week program was two-fold. First, students and teachers in 177 schools, compared with 155 schools in 1994, had first-hand contact with a variety of professionals, including engineers, researchers and technicians. Students were also exposed to the importance of doing their best in school, especially in math and science. Second, the volunteers experienced the reward of making a difference, seeing the excitement in the eyes of the students when they talked about NASA, and receiving thank-you letters and drawings from the students, teachers and administrators.

The willingness of the volunteers to share their time and expertise made this program work. That support was especially important during a year in which the Agency has been undergoing many changes. With 28 fewer volunteers this year, Langley still reached out to more schools than it did in 1994.

Special thanks to the volunteers, some of whom participated on their own time, to the managers and supervisors for helping make this effort successful, and to the American Institute of Aeronautics and Astronautics for sponsoring the National Engineers Week Workshop.

National Engineers Week is teamwork at its best. Thank you to all 217 volunteers whose names are listed on these two pages.

John J. Korte * Nancy M. Kruse * John E. Lamar * Allen M. Larar * Barry S. Lazos * Elizabeth Lee-Rausch * Carlos A. Liceaga * Michael J. Logan * Mark T. Lord * Julius B. Lovell * George L. Maddrea * Michael J. Mann * Angela J. Mason * Anthony J. Maturo * Byron L. Meadows * Clyde G. Medley * Steve W. McCoy * Marcus O. McElroy * Anna-Maria McGowan * Mark L. McMillin * Naomi McMillin * James B. Miller * Robert Miserentino * Michael Mitchell * Gene S. Monroe * Allan T. Morris * James N. Moss * Mark A. Motter * Thomas M. Moul * Vivek Mukhopadhyay * Harold C. Neal * Doreen O. Neil * Gim Shek Ng * Clifford J. Obara * Jennifer R. Olson * Wendy F. Pennington * Royal A. Peterson * Merven N. Pfeiffer * Joe W. Posey * Kathleen C. Powell * Daniel W. Pritchard * Robert A. Rivers * James L. Rogers * James R. Rooker * Christopher L. Rumsey * Jeffrey M. Seaton * William T. Shinn * David D. Shuster * Walter A. Silva * Joycelyn O. Simpson * Marny M. Skora * Sandra Smalley * M. Leroy Spearman * Douglas O. Stanley * Weldon L. Staton * Brian K. Stewart * Olaf O. Storaasli *

National Engineers Week

All photos by Fred Jones

Nancy Kruse shows a second-grader at Hampton's Capt. John Smith Elementary School how piezo electric materials make sound. The material, which looks like a thick piece of foil, is hooked up to a mini-tape recorder. Then, as the student listens to her favorite song, she folds the material with her fingers until the reception of the song is clearest. A very common item in which piezo electric materials are used is a stereo speaker. Kruse also coordinated the National Engineers Week Workshop.

Sharon E. Tanner * Ping Tcheng * Ken K. Tedjojuwono * Darrel R. Tenney * Geoffrey M. Tennille * James C. Townsend * Sang Q. Tran * Michael D. Uenking * William M. Vance * Dan D. Vierov * Marvin C. Waller * Milam J. Walters * Myra L. Walton * Martin R. Waszak * Peter L. Weiland * Karen S. Whitley * Carol D. Wieseman * Wesley A. Wigginton * William L. Willshire * William A. Wood * William F. Wood * Glenn Woodell * Thomas J. Yager * Steven F. Yaros * Katherine C. Young * W. Robert Young * Otto Youngbluth, Jr.

RETIREES * Steve Devan * Abe Leiss * Harold N. Murrow * William H. Phillips * Richard Pride * William Sleeman *

CONTRACTORS & OTHERS * **Analytical Mechanics Associates, Inc.** * John B. Deaton * Terence A. Ghee * Carol R. Kalil * Julie A. Young * **Biometics Corp.** * Deborah G. Douglas * **The College of William & Mary** * April H. Baugher * Catherine C. Fay * Karen A. Harrington * Michael S. West * **Computer Sciences Corp.** * Frank S. Preston * **Computer Technology Associates, Inc.** * Jeffrey Antol * **DynCorp** * Tim Davis * Stephanie L. Heath * Leonard T. Lockhart * Brian A. MacDonald * Cittoria McCoy * **Dynamic Engineering, Inc.** * David Mullins * Bill Reed * **EG&G Langley, Inc.** * Edwin H. Binder * Debbie Burke * J. Richard Wrobel * **Science Applications International Corp.** * Larry L. Gordley * **George Washington University** * Gerald R. Holmes * Craig A. Hunter * **INet, Inc.** * Karen K. McCarter * Clarke H. Morledge * **Kelsey-Seybold** * Leroy P. Gross * **Lockheed Engineering & Sciences Co.** * Melvin L. Bailey * David M. Christhilf * Scott B. Dorsey * Edward F. Hogge * Ian O. Macconochie * James W. Russell * Mia Siochi * David V. Sobata * Alan Stockwell * Mohammed A. Takallu * Jay Titlow * **Mason & Hanger Services** * Vaughn P. Hendricks *

"Who wants to try the slime first?" Students from Yorktown's Mt. Vernon Elementary School saw the fun side of science and technology as Karen Harrington showed them how to make slime and silly putty.

NASA Space Grant * Elizabeth Ward * **National Research Council** * Dianne J. Deturris * Trish McDaniel * Patrick E. Rodi * **Old Dominion University** * Stanley J. Miley * **RFSGF - City of Hampton** * Lynn E. Allsbrook * John S. Austin * Mervette McCoy * **Science and Technology Corp.** * D. Scott Bickford * **Unisys** * Randy F. Lawson * **Vigyan, Inc.** * Benedetto L. Divito * Mike Fox * Keith D. Hoffler * Dinesh Naik * **Virginia Engineering Consortium Schools** * Jennifer Young * **Wyle Laboratories** * Randy Edwards * John Iacobucci *

Christyl Chamblee Johnson demonstrated lasers to sixth-graders at Norfolk's Northside Middle School. Here a student holds his hand in front of a laser to see if the beam reflects off his hand.

Speakers' Bureau

SPEAKER	ORGANIZATION	TOPIC January
Wallace Sawyer	Va. Peninsula Chamber of Commerce	HSCT
Bruce Fisher	MCI Flight Operations at Dulles International Airport	Lightning Effects on Aircraft
Thomas G. Campbell	Citadel	Electromagnetic Research at Langley
Rodney T. Harris	Professional Construction Estimators Institute	Metric Transition in the Construction Industry
Vickie Connors	Women in Aerospace	MAPS
Vickie Connors	Trace-A-Data Workshop	Global Distribution of CO Mixing Ratio During April/October 1994 Shuttle Flights
Richard E. Davis	Palmer Middle School	The Solar System
Mary Ann H. Smith	Trinity Lutheran School	Weightlessness
Joel Levine	CEBAF Science Series	Earth on Fire
Joel Levine	Temple Beth El	Environmental Update 1995
SPEAKER	**ORGANIZATION**	**TOPIC February**
Scott Wagner	American Federation of Government Employees	NASA Total Quality Initiative
Joe Zawodny	IEEE	SAGE III—A Part of EOS
Bruce Fisher	Newport News Kiwanis Club	Lightning and Thunderstorms
Dan Vicroy	Aberdeen Elementary	History of Satellite Exploration
Richard Eckman	Poquoson Exchange Club	Ozone

Health Corner

Jones to Speak on Back Pain and Prevention

Lower back pain is one of the most common reasons for consulting a physician in the industrialized world. The direct cost of medical care and the indirect cost to society of absenteeism from work due to backaches are significant.

Most back pain and disability of the lower back is mechanical in nature. The spine functions to support two-legged mankind in sitting, standing, walking, bending and every aspect of the performance of daily living. It is subservient to the forces of gravity and must conform to these forces with the minimum exertion of energy. It must minimize the ravages of wear and tear and perform repeated tasks without failure.

Dr. Don Jones will discuss the techniques of back pain prevention through physical fitness. Jones, the director of the Sentara Health and Fitness Center, will speak Wednesday, April 12, at 2 p.m., in the H.J.E. Reid Conference Center. For more information, call Pete Edgette at ext. 43194.

House Speaker's Lectures Available

The text of U.S. House Speaker Newton Gingrich's college lectures from Reinhart College on innovation and technology are available on the Internet at this address: http://www.pfff.org

Colloquium & Sigma Lectures: Schedule and Access to Past Lectures

Colloquium lectures are held on Tuesdays at Langley's H.J.E. Reid Conference Center. They are open to all Langley employees and contractors. Civil-service personnel should charge their time to A5266.

Sigma lectures are held on Tuesdays at the Virginia Air and Space Center (VASC) in downtown Hampton. Admission is free with no reservations required.

April 4 Lectures

Colloquium: "The High Speed Research Program: An Industry Perspective" by Robert E. Spitzer, vice president of engineering, Boeing Commercial Airplane Group, at 2 p.m.

Sigma: "The High Speed Research Program: An Industry Perspective" by Robert E. Spitzer, vice president of engineering, Boeing Commercial Airplane Group, at 7:30 p.m. After the lecture, VASC will have a special showing of the IMAX film, *"Grand Canyon,"* for $3.

Accessing Past Colloquium & Sigma Lectures

If you are unable to attend any colloquium or sigma lecture, you may still access them from several sources. All colloquium lectures are videotaped and can be checked out from the Library by calling ext. 42389. Also, notices concerning upcoming and recent colloquium and sigma lectures are available on the World Wide Web using a browser such as Mosaic or Netscape (http://wmkpc.larc.nasa.gov/lectures.htm) or from the NASA Langley Home Page (http://mosaic.larc.nasa.gov/larc.html).

Colloquium

Continued from page 3

As vice president for engineering of the Boeing Commercial Airplane Group (BCAG), Spitzer is responsible for a broad range of research and development activities for new airplane products, including technology processes, technology development, program planning and business development.

Spitzer previously served as vice president for technology of BCAG, and as vice president for engineering of the Wichita division. He joined Boeing in 1965 and gained experience in both the commercial and military sectors, including the 737 program, the NASA Augmentor Wing STOL research airplane, the USAF YC- 14 and the B-2 program.

In addition to holding a master's of science degree in management at the Massachusetts Institute of Technology in Cambridge, Mass., with the Sloan Fellowship program, Spitzer has bachelor's and master's degrees in aeronautical engineering from the University of Illinois and an aeronautical engineering graduate degree from the California Institute of Technology in Pasadena.

Spitzer is a member of the American Institute of Aeronautics and Astronautics and the Society of Automotive Engineers.

Teacher-Education Students Can Qualify for Financial Support

Students who are planning to teach math, science or technology education may qualify for up to $1,000 under a new scholarship program from the Virginia Space Grant Consortium (VSGC).

The VSGC has established for this purpose an undergraduate scholarship program to complement its existing science and engineering-based scholarships at its universities and community colleges. The scholarship program, made possible through state funding, will award up to $15,000 for the 1995-96 academic year to deserving students at Virginia's five Space Grant colleges: The College of William and Mary, Hampton University, Old Dominion University, University of Virginia and Virginia Polytechnic Institute and State University.

Awards are one-year, non-renewable scholarships limited to a maximum $1,000 student stipend for full-time undergraduate students (minimum of 12 credit hours). Since this award is intended to encourage students to enter teaching, students may apply during their senior year in high school or in their sophomore year in a community college, with the award contingent on their matriculation at a Space Grant college and entrance into a teacher certification program. Students currently enrolled in a Space Grant college can apply when they declare their intent to enter the teacher certification program. Those students enrolled in a Space Grant college's career transition program leading to a degree in education are also eligible to apply.

Students eligible for support must be in a track that would qualify them to teach in a pre-college setting. Priority will be given to those majoring in technology education, mathematics or earth/space/environmental science. Successful scholarship recipients should have grade-point averages of at least 3.0 on a 4.0 scale. Since an important purpose of this program is to increase the participation of underrepresented groups in science, math and technology education, the VSGC especially encourages applications from these students.

Applications are due to the VSGC by May 1. They may be obtained by contacting the VSGC at 2713-D Magruder Blvd., Hampton, Va., 23666, or via phone at 865-0726, fax at 865-7965 or e-mail (vsgc@pen.k12.va.us). The Virginia Space Grant Consortium is a non-profit coalition of Virginia colleges and universities, the state community college system, NASA, state government agencies and other organizations with wide-ranging aerospace interests. The consortium works to improve math, science, technology and engineering education in Virginia and to build the Commonwealth's aerospace-related research infrastructure. Consortium members are The College of William and Mary, Hampton University, Old Dominion University, the University of Virginia, Virginia Polytechnic Institute and State University, NASA Langley Research Center, Virginia's Center for Innovative Technology, the State Council of Higher Education for Virginia, the Virginia State Department of Education, the Virginia Community College System, the Science Museum of Virginia, the Virginia Air and Space Center, the Virginia State Chamber of Commerce, the Mathematics and Science Center, and the Virginia Center for Public and Private Initiatives.

LAA Aerobics Club

March is National Nutrition Month, featuring bench and low-impact aerobics, with nutrition handouts from the American Dietetic Association given to each class. Body composition analysis, cardio assessment and nutrition analysis are provided for members. Civil servants, contractors and their families are welcome.

Classes are held in the LAA gym on Tuesdays and Thursdays from 5 to 6 p.m. and on Saturdays from 9:30 to 10:30 a.m. For more information, call Michele Macaraeg at ext. 42295.

VA Symphony

The Virginia Symphony will perform Mussorgsky's *Pictures at an Exhibition*, Hindemith's *Mathis de Mahler* and Liszt's *Concerto No. 1 for Piano and Orchestra* at Chrysler Hall, March 31 and April 1. The program will feature David Buechner as soloist. Tickets from $12 to $27 (20 percent discount) are available at the Exchange Shop, ext. 41585. Saturday, April 8, is your chance to perform with the Symphony during a play-along-a-thon as part of the Symphony Marathon Weekend. For information, call the Symphony office at 380-0040.

Langley Software Technology Transfer: Pilot Project and Software Commercialization

BY L. KERRY MITCHELL AND P. DANIEL SYDOW

Editor's Note: *This is part two of a two-part series on software technology transfer. Part one appeared in the March 10 issue. It included the software releasing policy and software transfer metrics.*

In these times of renewed interest in technology transfer and meeting our customers' needs, greater attention is being paid to Langley-developed software as a key technology asset. No longer simply a means to an end, software is now recognized as a vast, and largely untapped, resource. The pervasiveness of software and the variety of forms it can take present special challenges and opportunities to those who work to transfer and commercialize it.

Pilot Project: Langley Software Server (LSS)

In the early summer of 1994, an interorganizational team was formed to assess the impact on Langley by the potential NASA Headquarters defunding of the Computer Software and Management Information Center (COSMIC) which plays such a prominent role in the NASA Management Instruction (NMI) 2210.2B.

The interorganizational team, sponsored by Dr. Michael F. Card, former chief scientist, consists of representatives from the Information Systems Division, the Technology Transfer and Patent Counsel Teams of the Technology Applications Group (TAG), and several researchers involved in software development at the Center. The N-team decided to initiate a pilot project that would permit the transfer of software via the Internet. An implementation sub-team developed the Langley Software Server (LSS), which is now officially available via the World Wide Web. The LSS is accessible from several World Wide Web pages including the Langley Home Page, or directly at http://www.larc.nasa.gov/LSS/.

Modeled after the successful Langley Technical Reports Server, the LSS permits software developers to include a description of their software in the form of a searchable abstract and serve their software via the Internet from a central source, provided no distribution restrictions apply. The LSS provides Langley with the capability to distribute valuable software to an even greater number of users than before and gather user metrics automatically. The server functions automatically and is in operation 24 hours a day, seven days a week. This distribution capability is an important feature to the Technology Transfer Team in TAG because it provides not only a powerful distribution channel, but also a simple mechanism for users to provide valuable feedback on Langley's software technology. Such feedback can significantly affect key software-commercialization efforts at Langley.

New Thrust: Software Commercialization

Last year, Gregory Reck, acting associate administrator for advanced concepts and technology, announced some exceptions to the NMI 2210.2B. One is to disseminate NASA-developed computer programs to American companies interested in utilizing the programs for commercialization. Since that announcement, Langley has had several algorithms transferred to American companies for commercialization, including the Eigensystem Realization Algorithm (ERA), the Paladin Tactical Decision Generation System and the Computational Mechanics Testbed Finite Element Interface Technology. ERA, which takes structural vibration test data and, after analysis, presents it in a form useful to the researcher, was transferred to Synergistic Technology, Inc., of California, to be included as a module of their commercial modal-analysis program. Paladin, a knowledge-based tactical decision generator that replaces one pilot in a two-pilot combat simulator, was transferred to FAAC, Inc., of Michigan, to develop flight simulation software for entertainment purposes. The Finite Element Interface Technology, which overcomes the difficulties that arise when attempting to connect dissimilar meshes, was transferred to MacNeal-Schwendler Corp. (MSC), of California, to be implemented into its software program, MSC/NASTRAN.

For More Information

With the retirement of C.J. Shoemaker in January 1995, the Center's Software Releasing Authority is now L. Kerry Mitchell in TAG. For questions about software release, contact him via phone at ext. 43625, or e-mail (l.k.mitchell@larc.nasa.gov). Software technology transfer and commercialization issues or questions can be addressed by P. Daniel Sydow, also in TAG, via phone at ext. 43180 or e-mail (p.d.sydow@larc.nasa.gov).

In Memoriam

Walt C. Long

Walt C. Long died Friday, Feb. 17, 1995, at the age of 62.

A native of Wilmington, N.C., he retired from Langley in 1979 after 24 years of service.

He received his bachelor's degree in electrical engineering from North Carolina State University in 1955. After graduating, he began his career with Langley as an aerospace technologist. He then became a senior systems and design engineer for the Flight Electronics Division. He was responsible for the critique and review of analog, digital and microprocessor design as well as development for ongoing flight projects in aeronautics and space. In addition, he was instrumentation project engineer for the Explorer XI and worked on the Magellan Space Project that was responsible for mapping Venus.

Long received a letter of commendation from President Richard Nixon for his work on the Apollo.

He is survived by three daughters, all in Hampton, and three grandchildren.

William E. Craig, Jr.

William E. Craig, Jr., died Thursday, March 2, at the age of 74. A native of Pittsburgh, Pa., he lived on the Peninsula for 52 years.

Craig received his bachelor's of science degree in engineering from the University of Pittsburgh in 1943. He was stationed in the South Pacific from 1944 to 1947 where he served as a cryptographer in the Army Air Corps. Then he served NASA, formerly NACA, for 37 years. He was proud of being a "NACA nut." After retiring as an industrial engineer, he served NASA as a consultant on defense contracts.

Craig was a founding and charter member of Our Lady of Mt. Carmel Catholic Church. He actively supported and contributed to the Sisters of the Poor Clare Monastery.

Craig was preceded in death by his first wife, Clara Lutz Craig, mother of his five children. He is survived by his second wife, Celina Cassidy Craig, mother of his eight Cassidy stepchildren. He is also survived by three sisters and ten grandchildren.

Alfred B. Vig, Jr.

Alfred B. Vig, Jr., died Thursday, March 2, at the age of 71. A native of Mayville, N.D., he was a Peninsula resident for 33 years.

Vig retired from NASA as a mechanical engineer in October 1985 after 20 years of service.

He was a member of St. Mark's Episcopal Church and a member of the American Legion.

He is survived by his wife of 50 years, Antona Vig, of Hampton, two daughters, one son, nine grandchildren and eight great-grandchildren.

Sarah M. Roberson

Sarah M. Roberson, died Monday, March 13, at the age of 59. Roberson was a native of Newport News.

Roberson retired from NASA as an accounting technician in 1995 after 20 years of service.

She was a member of First Baptist Church and the Agape Sunday School Class.

She is survived by her husband, J.R. "Rudy" Roberson, two children, one sister and three grandchildren.

American Helicopter Society Funds Trip

The American Helicopter Society's Hampton Roads Chapter will provide partial funding to members who plan to attend the 51st Annual Forum and Technology Display, May 9 to 11, in Fort Worth, Texas. Call 898-5510.

NASA Launch Manifest Available

NASA's Office of Space Flight released a new listing of planned space launches in the February 1995 Payload Flight Assignments NASA Mixed Fleet Manifest. The new manifest includes payload flight assignments for the Space Shuttle through 1998 and NASA Expendable Launch Vehicles missions through 2002. It also includes the seven scheduled Shuttle-Mir missions with all Shuttle-Mir flights being assigned to Space Shuttle Atlantis. The manifest is available in the newsroom at Headquarters and the field center newsrooms. For information, call (202) 358-4043.

Internship Teleconference to Promote Science and Engineering

Are you interested in science and engineering (S&E)? A teleconference for employees, undergraduate students and secondary-school students interested in pursuing graduate programs in S&E will be shown Monday, March 27, 11 a.m. to 12:30 p.m., in Bldg. 1194A, Rm. 106. Teachers who want to foster an interest in S&E careers among their students are also encouraged to attend.

The teleconference is a tape-delayed broadcast of a course entitled "Graduate School: The Internship." It will be shown over Channel 15 in four segments. The first segment will cover the nature of internships and their value. The second one will address the advantages and dangers of internships. The third will discuss what employers get and give with internships. The final segment will be a panel discussion focusing on key elements that make internships work for everyone.

No registration is necessary for this class. If you would like to have your official Record of Training updated with this course, please send an Application for On-Site Training, Langley Form 24, to Sharon Murphy at Mail Stop 137. The broadcast will also be recorded and available in the Learning Center at a later date. For more information, contact George Allison at ext. 42594.

University Jazz Ensemble Performs

The Hampton University Jazz Ensemble will perform March 31 at the LAA Social Hour. Make plans to attend and enjoy these youthful musical talents from 5 to 8 p.m.

Diversity Factoid

Cornell Women

Cornell University has sustained an enrollment of 20 percent women in their graduate engineering program over the past 10 years. Last year, 17 percent of its graduate class in mechanical and aerospace engineering were female. This was reported in the Annual Report of the Graduate School, Cornell University, 1993-1994.

Happenings

FREE TO A GOOD HOME: Unable to care for lovable male, 3-year-old Pekingese. Two young children would like to visit occasionally. Call Teresa at 865-6391.

LOST: A carton containing an IR 100 awards plaque, Neuro Shell development software and other items was lost in a move. If found, please call Doug Garner at ext. 41683.

FOUND: Key ring with three keys in the parking lot at Bldg. 1263. To claim, call Security at ext. 43420.

MISSING: College textbook on heat transfer. Return to F. Howard at Mail Stop 170, or call ext. 45560 or 838-4813.

FOR RENT/LEASE: 2BR, 1-1/2BA townhouse at Mallard Point. Beautiful view of the water. Conveniently located seven minutes from Langley and Fort Monroe. LR/DR combination, fireplace, dishwasher, microwave, washer/dryer, ceiling fans, central heat and air, stove, refrigerator, carpeted floors, fenced backyard and more. No pets please. Available now. $525/mo. Call 727-9187.

FOR RENT/SALE: 2BR, 1-1/2BA, end-unit townhouse in York Crossing. LR, E/I kitchen w/fireplace, washer/dryer, dishwasher, refrigerator. $595/mo. neg. plus deposit. Available immediately. Possible assumption if prefer to buy. Call 890-0994.

FOR RENT: Relax on Sanibel Island, Fla., in elegant beach-front condo. Full kitchen, 1BR, tennis, pool, on-site management. May to October. $625/week. Brochure available. Call Dick at 565-1849.

FOR SALE: 4BR, 2-1/2 BA, tri-level on quiet cul-de-sac. Two-car garage w/auto opener; fenced backyard w/playset; indoor laundry room; E/I kitchen; Booker-Syms-Kecoughtan schools. $118,000 or assumable FHA loan at 7-1/2 percent. Willow Oaks Blvd. Call Dean at 851-1517.

FOR SALE: 3-BR, 2BA rancher on private cul-de-sac in Millside area of York County. By owner. Approx. 1,700 sq. ft. Two-and-a-half-car garage; great room w/cathedral ceiling and brick fireplace. $134,900. Call Kristine at 898-9224.

TAX PREPARATION: Member of National Association of Tax Practitioners. Electronic filing and direct deposit offered at no extra charge! Small-business bookkeeping. We travel to you. For an appointment, call Suzanne at 874-3121.

TAX PREPARATION: Member of National Association of Enrolled Agents. Call Nancy Taylor at 723-5227.

FOR SALE: 2BR townhome in central Hampton. Low maintenance. All appliances. Excellent condition. Priced to sell. Call Gary at 838-9328.

FOR SALE: 3BR, 2BA home in York County, close to Langley. Thousands spent on upgrading. Will help with closing. $77,000. Call Ray at 827-7184 or page at 521-4374.

FOR SALE: 4BR, 3.5BA 2,900-sq.-ft. home on 1/2-acre lot in Woodlake Crossing, York County. Two-car garage w/auto openers, front porch, two decks, two master suites. LR, FR, DR, breakfast area. Tabb schools. Many upgrades. Call Rich at 867-7699.

FOR SALE: 3BR, 2BA home in desirable neighborhood of Newport News. Six-foot privacy fence, two-tiered custom deck, above-ground pool, beautifully landscaped. LR, FR, DR, E/I kitchen w/bar. One-car garage. W/W carpeting. Exc. move-in condition. and good schools. $91,500. Anne Drive. Call Laura at 595-2863.

ROOMMATE WANTED: Female seeks same to share 3BR home in Poquoson. $250/mo. + 1/2 utilities. Full house privileges. No smokers please. $100 deposit. References. Call Margarette at 868-8101.

FOR SALE: VITAMASTER Exercise bike w/friction control and odometer. $50. Call Les at 877-4372.

TO BUY: Wanting to buy and preserve technical books, reports and papers on subsonic aircraft in the following areas: helicopters, VSTOL aircraft, general aerodynamics, drag reduction, aircraft design, boundary layer control, high lift, stability and control, and cockpit integration. Call Todd at 826-1556.

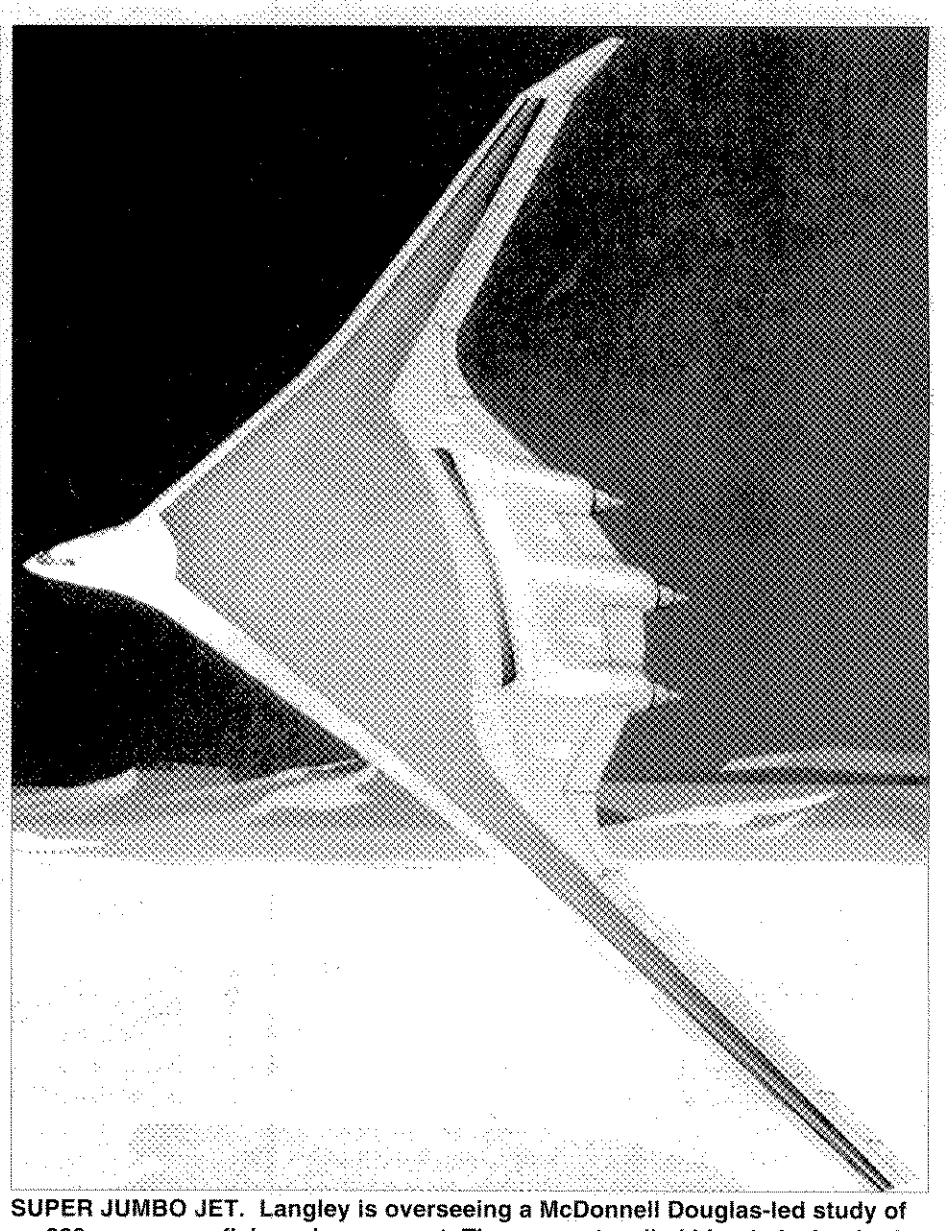
FOR SALE: 1993 Ford F150 XLT burgundy truck w/8-foot bed and step bumper. V8, auto transmission, cruise control, air cond. Power windows, brakes and steering. 22,000 miles. Asking $14,000. Call Jerry at 898-8459.

FOR SALE: 1992 Chevy Caprice Classic. Fully loaded, including two front 8-way power seats. 40,000 mi. Silver color. Excellent condition. Warranty still in effect. List price: $13,125; my price: $12,125. Call S. Clevenson at 596-8319.

FOR SALE: Craftsman riding lawnmower with rear bagger system, 11 HP, five speeds, 38-inch cut. Excellent condition. Call Debbie at 867-8904.

RIDE NEEDED: Daily ride needed from Old Oyster Point Rd. at J.Clyde Morris Blvd. to Langley. If anyone would like to start an informal carpool or help in any way, call Nicholas Jones at ext. 49371.

BINGO: Fun begins every Thursday at 7 p.m. in the Activities Center.



SUPER JUMBO JET. Langley is overseeing a McDonnell Douglas-led study of an 800-passenger flying wing concept. The concept, called blended-wing-body, is one of several novel ideas for efficiently increasing the size of future commercial transports. It would be shaped like a multi-deck flying wing instead of the conventional transport. Technical work on the 3-year, $3-million study began in January.

Researcher News

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

Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

National Aeronautics and Space Administration
Langley Research Center

News Researcher

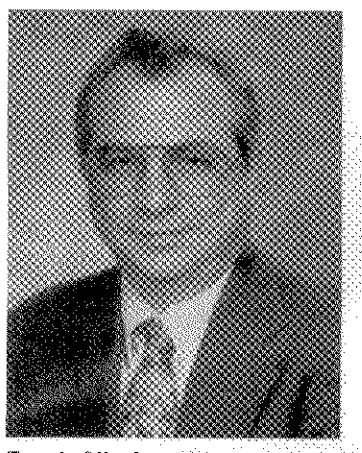
Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 7 ❖ April 7, 1995

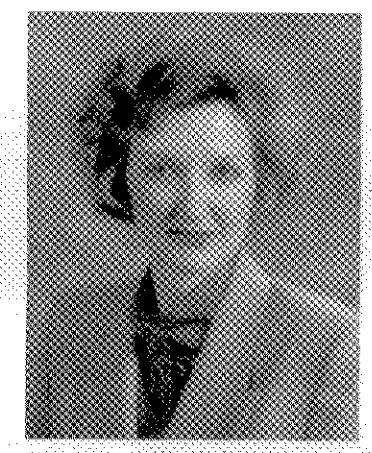
NASA Honors Excellence

Langley hosted the Annual Honor Awards Ceremony on Monday, April 3, in the H.J.E. Reid Conference Center. NASA Honor Awards were presented to 53 individuals and 13 teams. Other individuals who were recognized included Langley's 1994 H.J.E. Reid Award recipients, the recipients of the 1995 Contractors Excellence Award for Quality and Productivity and a 55-Year Length-of-Service Award recipient. The Center was pleased to have A. Thomas Young, executive vice president of Lockheed Martin Corp., deliver the keynote address.

Outstanding Leadership Medal

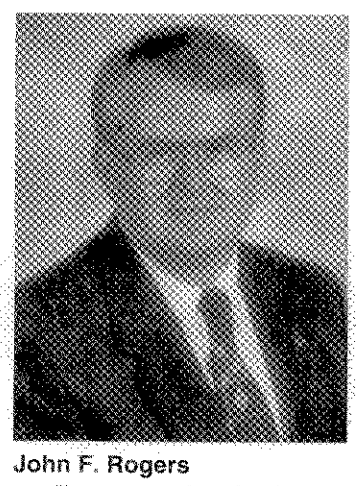


Frank Allario
For outstanding vision, contributions, and leadership enabling the use of advanced LIDAR technology and systems for global studies of the Earth's atmosphere

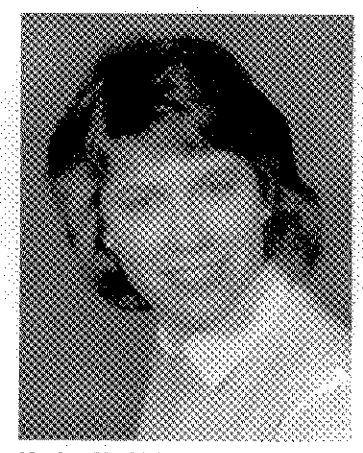


Kristin A. Hessenius
For outstanding leadership in the creation and management of the new Internal Operations Group and in the transition of Langley's reorganization

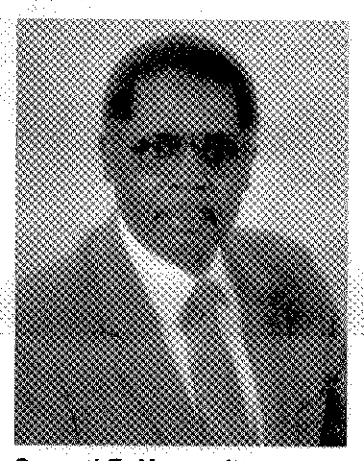
Luat T. Nguyen
For outstanding leadership and management of research on high-performance military aircraft resulting in significant advances in technology for the Nation's military programs



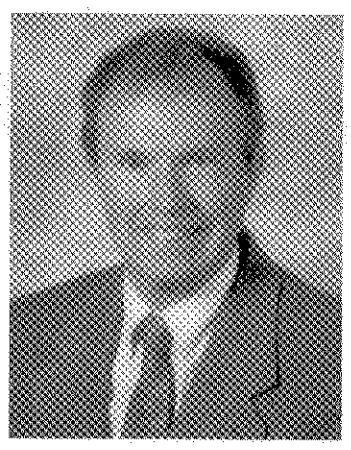
John F. Rogers
For outstanding leadership of the Lidar In-Space Technology Experiment (LITE) leading to the extremely successful Shuttle flight on STS-64



Kathy H. Abbott
For outstanding contributions as a researcher, and later as a manager, in the aircraft flight management systems discipline



Samuel E. Massenberg
For outstanding leadership in the creation and execution of NASA programs which have significantly motivated students at all educational levels toward scientific and engineering careers



David G. Stephens
For outstanding leadership and sustained technical contributions in developing NASA's aircraft acoustics and noise-reduction technology programs

H.J.E. Reid Award

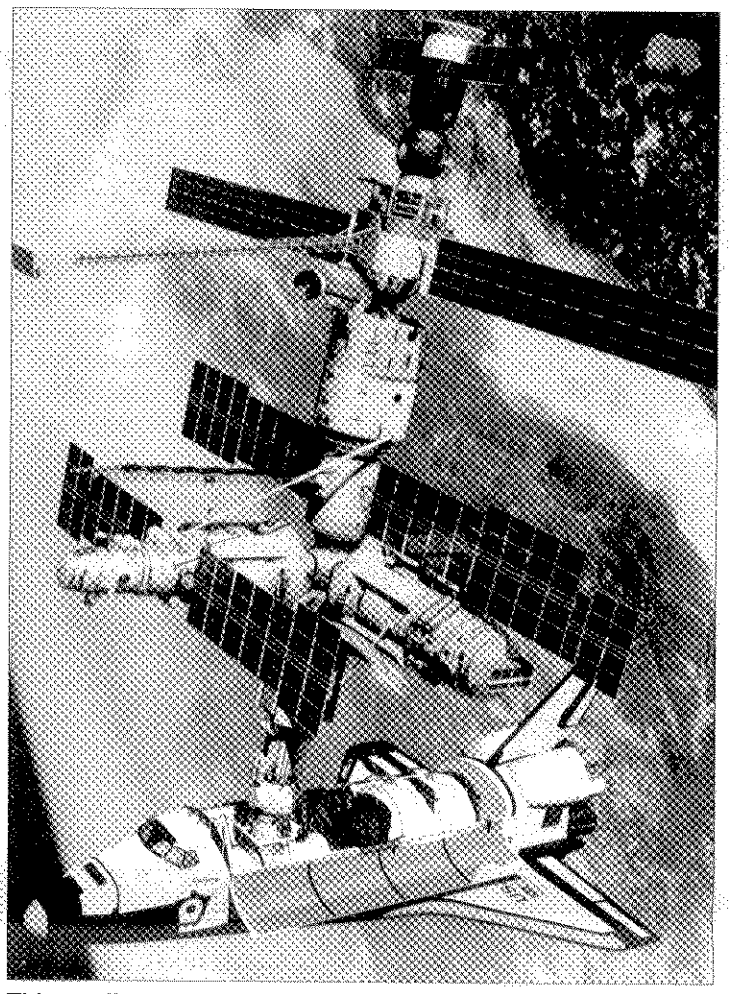
The H.J.E. Reid Award recognizes the outstanding scientific or engineering paper first-authored by a Langley employee or group of employees. The award this year was presented to Martin G. Mlynczak and Susan Solomon for the outstanding paper entitled "A Detailed Evaluation of the Heating Efficiency of the Middle Atmosphere."

Getsug Honored for 55 Years of Service at NASA

Joseph Getsug was awarded the 55-Year Service Award "in grateful recognition and appreciation of faithful service to the National Aeronautics and Space Administration and to the Government of the United States of America."

Awards Continued on Pages 4 to 6

Shuttle Docks with *Mir*



This configuration is a technical rendition of the Space Shuttle *Atlantis* docked to the Kristall module of the Russian *Mir* Space Station. The STS-71/*Mir* Expedition 18 is a joint U.S.-Russian mission scheduled for June 1995. The Space Shuttle/*Mir* combination is part of the International Space Station, and will be the largest space platform ever assembled.

X-ray Man Penetrates over 300 Years of Bronze

What takes hospitals one-thirtieth of a second to do can take Langley's X-ray man at least several minutes to do. Bob Berry, engineering technician in the Nondestructive Evaluation Section, normally uses special X-ray machines to find cracks and defects in everything from spacecraft parts to pipes to wings. In mid-March, he put his high-tech contraptions to an unusual test.

Pot of Bronze?

Some people seek a pot of gold. Others, like David Harvey, are interested in a pot of bronze. Harvey, conservator of metals and arms with the Colonial Williamsburg Foundation (CWF), brought a bell-metal skillet to Berry. Harvey suspected the skillet to be approximately 375-years old. With Berry's X-rays, Harvey would be able to make a case for his supposition or lose his pot of gold.

Harvey was seeking several pieces of information about his skillet. Because the bottom appeared to have a seam, had it been replaced? Because the handle had a two-inch section near the body which also appeared to have a seam, had the handle been broken and repaired?

Berry penetrated the bronze pot with his X-ray machines to provide the answers. First he used his 160-kilovolt X-ray machine. When he returned with the film, very little was discernable. Using his more powerful 300-kilovolt X-ray machine and a longer exposure, Berry produced a photo of the skillet's structure which answered many questions.

Instead of the pot being broken and repaired, Berry helped Harvey determine that his skillet was probably genuine, very rare and original one-piece construction.

See **X-ray Man**, *page 3*

Around the Agency

ASTRONAUT BAKER TO REPLACE SEGA AS NASA MANAGER IN RUSSIA - Astronaut Michael A. Baker will replace Dr. Ronald M. Sega as the NASA manager of operational activities at Star City, Russia, near Moscow. The transition coincided with the launching March 14 of Norman E. Thagard and two cosmonauts aboard a Soyuz rocket for a three-month stay aboard Russia's space station *Mir*. In his new position, Baker will support training and preparations of NASA astronauts at the Gagarin Cosmonaut Training Center (GCTC), Star City. He will also be the primary interface between NASA and the GCTC management, coordinating all training and other operations including NASA or contractor personnel in Star City.

NEW SPACE SHUTTLE MAIN ENGINE READY FOR FLIGHT - NASA has successfully completed testing a new high-pressure liquid-oxidizer turbopump and is ready to fly an upgraded main engine on its first Space Shuttle flight in June 1995. NASA completed final certification of the new turbopumps on March 15. The new pumps have gone through a test program that is equivalent to 40 Space Shuttle flights. By achieving this milestone, NASA reached the final step in certifying the turbopumps for flight.

X-33 COOPERATIVE AGREEMENTS SIGNED - NASA continues on a fast track with its Reusable Launch Vehicle technology program, signing three cooperative agreements to design the next generation space booster known as the "X-33." The agreements were signed with Lockheed Advanced Development Co., McDonnell Douglas Aerospace, and Rockwell International Corp. Over the next 15 months, the Agency will work with these companies on concept definition and design of the X-33, a vehicle intended to demonstrate the technology required for a 21st-century commercial reusable space launch system.

Retirement Parties

Smith-Taylor

A retirement party for Rudeen Smith-Taylor will be held Thursday, April 20, beginning at 6 p.m., in the Williamsburg Room at the Langley Officers' Club. Cost is $18 per person or $34 per couple including a gift. For gift-only contributions or reservations, contact Kendall Sherman via phone at ext. 44447 or Mail Stop 479 by April 17.

Two Pilots

Two Langley pilots are flying the coop! A double-header retirement party for Dick Yenni and Lee Person is in the making. Mark your calendars for May 6. Anyone with memorabilia, comments or roasting material, contact Mary Beth Wusk via phone at ext. 43830 or e-mail (m.e.wusk@larc.nasa.gov) or Luci Crittenden via phone at ext. 41776 or e-mail (l.h.crittenden@larc.nasa.gov).

Solomon, et al.

A retirement social for Charles Solomon, Harry Walthall, Robert Swaim, Robert Turner and Carson Rector will be held Tuesday, April 18, in Bldg. 1238. A short program will begin at 11:30 a.m., followed by a buffet lunch. Cost is $4 per person. For gift-only contributions or reservations, contact Carol Ficklen via phone at ext. 45440 or Mail Stop 390 by April 10. Make checks payable to Carol Ficklen.

Lovelace

On the occasion of his retirement, Woody Lovelace invites his friends, both old & new, to join him for cocktails and hors d'oeuvres in the H.J.E. Reid Conference Center on Friday, April 21 at 5 p.m.

Rhinehart

Join Bob and Lorraine Rhinehart for a social at the Englewood Golf Course Clubhouse on Langley Air Force Base Friday, April 14, 4 to 6 p.m., honoring Bob's retirement. Hors d'oeuvres and drinks will be available. Call JoAnn Hudgins at ext. 42968 by April 7, if you plan to attend.

Spencer

A retirement dinner for Brenda Spencer will be held Wednesday, April 26, at the H.J.E. Reid Conference Center. Cost is $14 per person including a gift. Social hour will begin at 6 p.m., followed by a dinner and program at 7. For gift-only contributions or reservations, call Lucy Watkins at ext. 43438, or contact Nola Graves via phone at ext. 48482 or Mail Stop 123 by April 21.

Buckley

A retirement party for Dr. John D. Buckley will be held Saturday, April 8, in the Williamsburg Room at the Langley Officers' Club. Social begins at 6:30 p.m. followed by dinner at 7. Cost is $18 per person or $34 a couple including a gift. For gift-only contributions or reservations, contact Nadine McHatton via phone at ext. 44561 or Mail Stop 399 by April 6.

Johnson

A retirement party for Eloise L. Johnson will be held Friday, April 28, at 5:30 p.m., at Sammy & Nick's Restaurant, 2718 W. Mercury Blvd., Hampton. Order from the menu. For gift-only contributions or reservations, contact Susan Stewart via phone at ext. 42518 or Mail Stop 444A by April 19.

Blair, et al.

Join the Financial Management Division in a retirement farewell for Sylvia Blair, Marion Chaltry, Shirley Davis, Peggy Langford and Marie Storms, Friday, April 28, at the Fort Monroe Officer's Club. Social hour begins at 6 p.m., followed by dinner at 7. Cost is $14 for baked chicken or $16.50 for London broil. Price does not include a gift contribution. For gift-only contributions, reservations or signing of the retirement albums, contact M. Aldrich via phone at ext. 48278 or Mail Stop 108, or L. Oliver via phone at ext. 47973 or Mail Stop 108 by April 21.

Bruce

A retirement social for Robert A Bruce will be held Tuesday, May 16, at 5:30 p.m. at the H. J. E. Reid Conference Center. Cost is $10 per person including a gift, or $2 for a gift only. For gift-only contributions or reservations, contact Gloria Ragsdale or Pamala Howard via Mail Stop 436 by May 10.

In Memoriam

Anna T. Peterson

Anna T. Peterson died Friday, March 3, at the age of 57. A lifelong resident of the Peninsula, Peterson worked as a secretary for NACA, the predecessor to NASA. She also volunteered for 17 years in the libraries of the Newport News public schools. She was a member of Ivy Memorial Baptist Church. Peterson is survived by her husband of 35 years, John B. Peterson, Jr., one daughter, one son, her mother and one sister.

Letters

From Elbert (Egore) Powell:

"I would like to thank everyone who attended my retirement party; it was an event that I will always remember.

My friends and coworkers did a super job organizing the party and I appreciate all of the gifts that I received.

I miss the daily contact with my NASA friends, especially the Drive Control Group. You guys are the greatest and I love you like family."

From Susie Carpenter:

"I would like to sincerely thank everyone who donated their leave to my benefit. The leave was a 'life-saver' when I needed it the most."

From Donald Progar:

"I would like to thank all my friends and coworkers at Langley Research Center who made my retirement luncheon such a memorable occasion. Your friendship, the luncheon and the gift certificate were greatly appreciated and will serve as a reminder of the many years spent at Langley."

From M. Patricia Turgeon:

"A great big thank you for the fruit basket and candy dish from Acquisition Division as well as the many thoughtful cards received from all my friends, including EG&G. All is very much appreciated and certainly boosted my operation period. Thanks to all of you!"

In Memoriam

Robert N. Conway

Robert N. Conway died February 15, at the age of 77. Born in Rochester, N.Y., in 1917, he was a resident of the Peninsula for 56 years.

After graduating from Rensselaer Polytechnic Institute in 1939, Conway began a 34-year career at the Langley Memorial Aeronautical Laboratory of the National Advisory Committee for Aeronautics (later the NASA Langley Research Center). His early work focused on aerodynamics, making important contributions to several efforts in the early 1940s to improve propeller aerodynamics on American military aircraft. He spent much of his career in the Langley Budget Office where he served as the Center's budget officer for several years. He retired in 1973 as the Center's assistant director for administration.

An avid sailor, Conway was a member and past commodore of the Hampton Yacht Club. He enjoyed many years of sailing in the Chesapeake Bay, Atlantic coastal waters and the Bahama Islands. He was a member of St. John's Episcopal Church in Hampton where he served for many years as an usher and offering counter. Earlier, he served as a committeeman for Boy Scout Troop 20 in Hampton.

Conway was preceded in death by his wife of 49 years, the late Janet Conway. He is survived by three sons, one of which works at Langley, three daughters-in-law, a brother, and seven grandchildren.

James William Huggett

James William Huggett, died January 31, at the age of 71. Huggett lived in Poquoson, Va. A Navy veteran of World War II, Huggett retired from Langley after 35 years. At Langley, he was instrumental in the development and execution of the Work Control Office of the Operations Support Division. For 10 years, he worked on the Scout Missile project. After retirement, he enjoyed a second career as a waterman.

Correction

In the March 24, 1995, issue of the Researcher News, we reported that the American Institute of Aeronautics and Astronautics (AIAA) sponsored the National Engineers Week Workshop. In fact, the workshop was sponsored by Women in Aerospace with tremendous support from the AIAA.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and advertisements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising 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 Wishes Recent Retirees Well

Langley wishes to thank all of its civil servants who retired in December and January for their service, hard work and effort over the years. We will miss you. We hope all goes well for you in your retirement.

Retired in December

Name	Activity
Joseph W. Drewry	Atmospheric Studies Branch
John Fryer, Jr.	Structures & Materials Research Support Branch
Elbert B. Powell, Jr.	Electrical Systems Contracts Section

Retired in January

Name	Activity
Frank R. Batten	Model Instrumentation & Systems Branch
Gary P. Beasley	Aeronautics Program Group
Dr. Michael F. Card	Chief Scientist, Office Of Director
Betty J. Crowley	Acquisition Support Branch
John W. Eves	Polymer Technology Section
William E. Felty	8-Foot High-Temperature Operations Section
Richard B. Geissinger	Contractual Resources Section
Randall D. Grove	Simulation Systems Branch
Thomas H. Hall, Jr.	Operations Support Division
Robert V. Hess	Aerospace Electronic Systems Division
Ronald C. Mills	Facilities Electrical Support Section
Alton T. Moore	Imaging & Photo Technology Section
Robert A. Myers	Placement & Position Management Branch
Frank M. Plott	Contractual Resources Section
William L. Poole	Antenna & Microwave Research Branch
Dr. Henry G. Reichle, Jr.	Chemistry & Dynamics Branch
Charles J. Shoemaker	Technology Applications Group
Donald B. Shortt	Electrical Support Branch
Charles W. Sibbers	Projects Controls Branch
Frank H. Supplee, Jr.	Data Systems & Instrumentation Support Branch
Charles A. Sweet	Tunnel Drives & Operations Section
Thomas S. Williams, Jr.	Cockpit Technology Branch
Willie E. Wright, Jr.	Plant & Power Distribution Section
Janice R. Wunder	Placement & Position Management Branch

Garner to Judge R&D 100

Langley's H. Douglas Garner has been selected to participate as a judge for *R&D Magazine's* 33rd R&D 100 Awards. The awards event is the premier program for recognizing the most technologically innovative products and processes introduced over the past year. The R&D 100 award is often referred to as the "Nobel Prize of Applied Research."

As a judge, Garner will have the opportunity to review product entries from leading industrial, government, and academic organizations. He will be listed as a judge in the September issue of *R&D Magazine*. He will also receive a plaque for his participation.

Garner joined the staff of the National Advisory Committee for Aeronautics, NASA's predecessor, in 1944. He served as head of the Automatic Controls Laboratory and as controls consultant for the Mercury capsule, the Scout space vehicle and the Lunar Orbiter vehicle. He is assigned to Langley's Aerospace Electronic System Division, where he consults and researches in the field of general aviation instrumentation and control.

H. Douglas Garner

Garner is the author or co-author of more than 30 technical publications and holds 10 aerospace-related patents. He has received four NASA Special Achievement Awards and the Experimental Aircraft Association's Stan Dzik Memorial Award. He has also received two R&D 100 awards and NASA's Exceptional Service Medal. He is listed in Gale Research's *Who's Who in Technology*.

Retirees Can Join Alumni Association

The Langley Research Center Alumni Association (LaRCAA) looks for ways to help the community. During the coming year, it hopes to continue finding opportunities to support the Galaxy of Gifts Program which is jointly sponsored with Langley, the Association for Retarded Citizens and the NASA Alumni Association. It will also look to support Langley, the Annual United Way Campaign and the Virginia Air and Space Center.

LaRCAA's membership policy reads as follows:

LaRCAA shall be open to:

1. All former employees of NASA Langley Research Center and its predecessor, the Langley Memorial Aeronautical Laboratory of the NACA.
2. Current employees of Langley who qualify for retirement under current regulations.
3. Contractor employees who work, or worked, at Langley and would qualify for membership if they were or had been Langley employees.
4. Surviving spouse of individual who qualified for membership under categories 1, 2 or 3.

If you are interested in joining, contact LaRCAA at Mail Stop 496, NASA LaRC, Hampton, Va., 23681-0001.

Discover Magazine Selects Weinstein

Leonard M. Weinstein of the Experimental Methods Branch has been selected as one of five finalists in the technological innovation category for the 1995 DISCOVER Award. The award, presented by Discover Magazine, is for Weinstein's In-Flight Schlieren Photographic Technique. Approximately 4,000 entries were received for seven categories. The five finalists in each category will attend an awards ceremony in late April where the winner in each category will be selected. The ceremony will be held at Walt Disney World Epcot Center's new attraction, Innoventions.

Lab Notebooks Must Be Returned

All individuals terminating employment at Langley, whether through the buyout, retirement or resignation, must return their Langley laboratory notebooks. If you have one, it must be returned to the Office of Patent Counsel before you leave the Center.

Please mail the notebooks to Mail Stop 212, Hampton, Va., 23681, or bring them to Bldg. 1229, Rm. 148. For more information, call Elaine McMahon at ext. 43226.

FWPC to Salute Secretaries

The Federal Women's Program Committee (FWPC) is sponsoring its Annual Salute to Secretaries on April 24, 7:30 to 9:30 a.m., at the Activities Center. All civil service and contractor secretaries are invited to join the FWPC for networking and refreshments. Langley employees may charge their time to JO A5267. For more information, contact Kendall Sherman via phone at ext. 44447 or QuickMail.

Langley Research Center FWP Federal Women's Program

X-ray Man

Continued from page 1

"Bob's X-rays give us stronger evidence that the skillet is a genuine article from over 300 years ago," commented Harvey. "I feel the probability at this point is up to the 90 percent range." What seemed to the naked eye to be obvious demarcations turned out probably to be rough casting.

CWF also consulted Berry for plans to put an X-ray lab in its new conservation building to be built by late 1996.

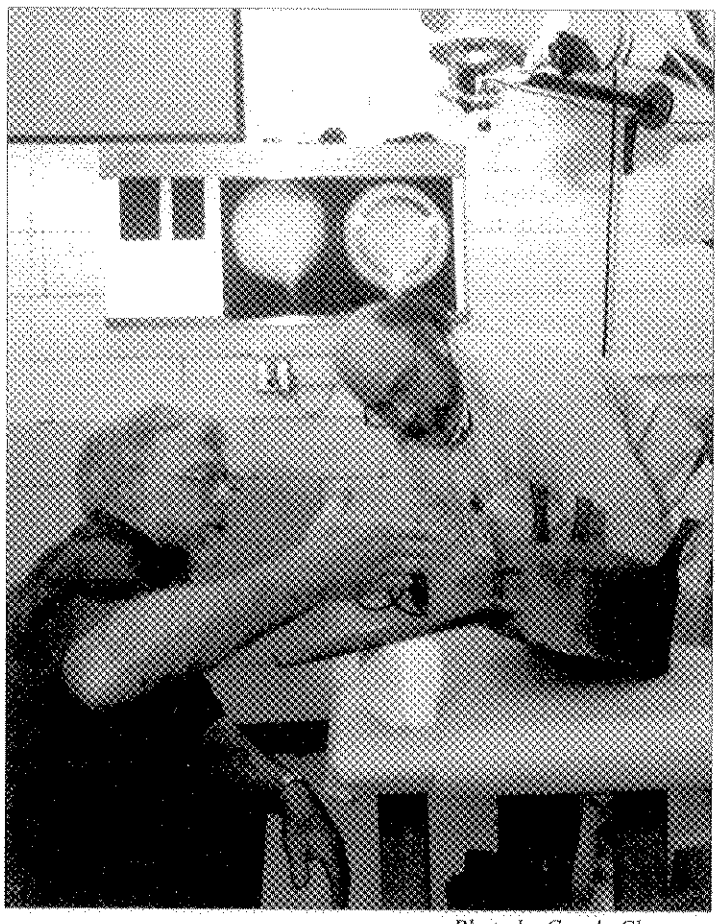
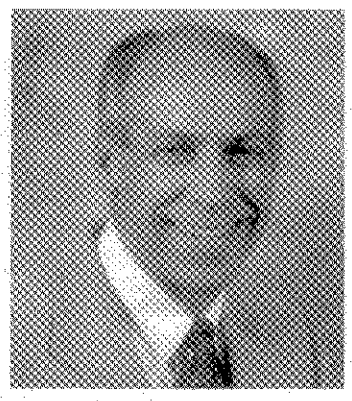


Photo by Carole Chapman

X-ray man Bob Berry, left, discusses the age of a bronze pot with conservator David Harvey. The film in the background helped the team deduce its age to be about 375-years old.

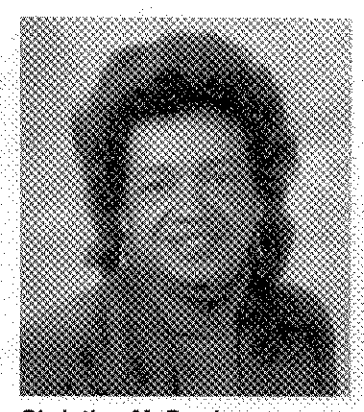
Exceptional Service Medal

Gary P. Beasley
For exceptional service in planning and managing Flight Systems Directorate programs

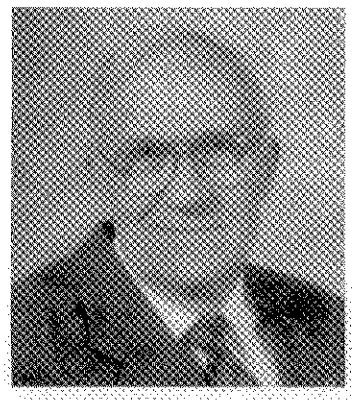


Philip W. Brown
For superior airmanship and engineering excellence resulting in significant aircraft safety and performance technology transfer to the U.S. aircraft industry

Shirley B. Crockett
For exceptional service as secretary of the Technology Applications Group

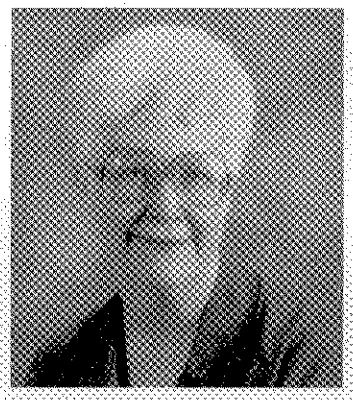


Christine M. Darden
For outstanding technical contributions and personal dedication to the field of sonic boom technology

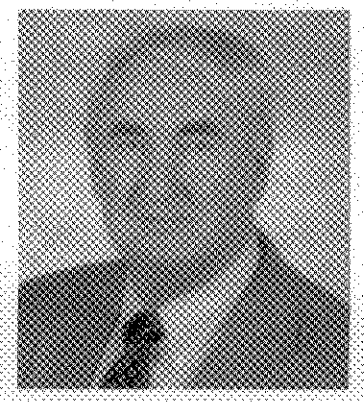


Marvin B. Dow
For exceptional leadership and initiative in the development of manufacturing and design methodology for cost-effective composite primary structures for commercial transport aircraft

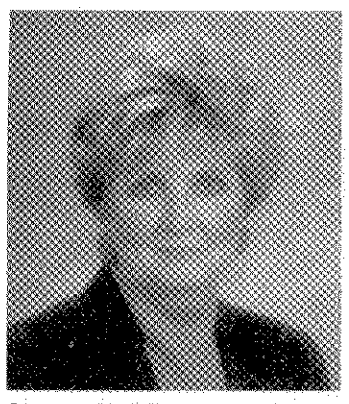
Rosemary C. Froehlich
For significant sustained performance contributing to improvements in the acquisition process



Barbara A. Fryer
For exceptional service as secretary, Office of the Director



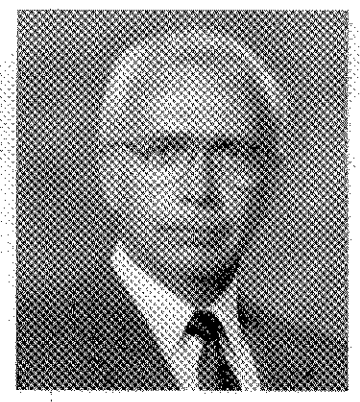
Kenneth D. Hedgepeth
For exceptional contributions to Agency and Center flight projects and for helping achieve Langley's highest and most successful flight rate in recent history



Sharyn M. Hilstrom
For exceptional service in management of several key Center contracts and the Advanced Aircraft Program

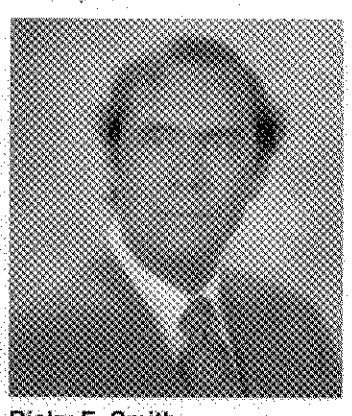
Nita W. Langford
For exceptional administrative contributions to the Lidar In-Space Technology Experiment (LITE) leading to the successful demonstration of NASA's first space-based lidar system

William E. Parady
For sustained excellence in providing maintenance and quality assurance services which have contributed significantly to the success and safety of NASA's flight research programs

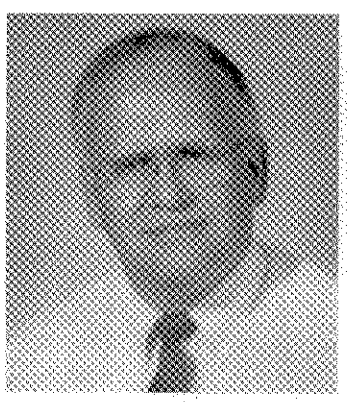


William M. Piland
For exceptional contributions and leadership in the development of a world-class aerothermodynamics capability for the nation

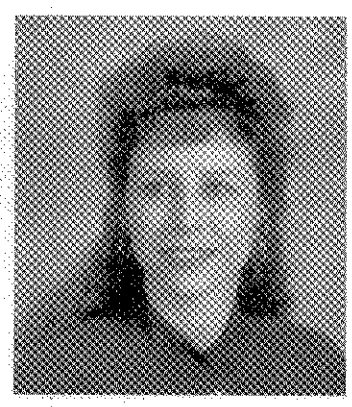
Pamela L. Rinsland
For outstanding leadership in instrument development contributing significantly to advancements in atmospheric research



Ricky E. Smith
For exceptional service to NASA's Advanced Composites Development Programs in support of the High-Speed Civil Transport Program

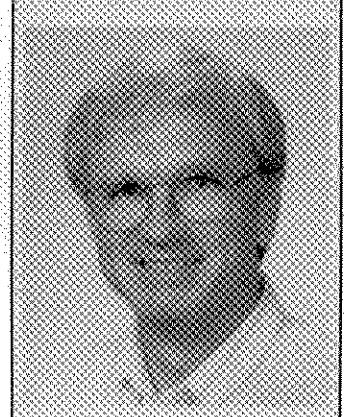


Joe D. Watts
For exceptional service and overall contributions in the direction and management of research and technology programs for high-speed aircraft



Sherri L. Yokum
For exceptional performance in support of the Hypersonic Vehicles Office

Exceptional Scientific Achievement Medal



James A. Coakley
For outstanding contributions to the understanding of the role of aerosols, clouds and radiation in the Earth's climate system

Kevin P. Shepherd
For exceptional contributions to the development of sonic boom criteria for future high-speed civil transport aircraft

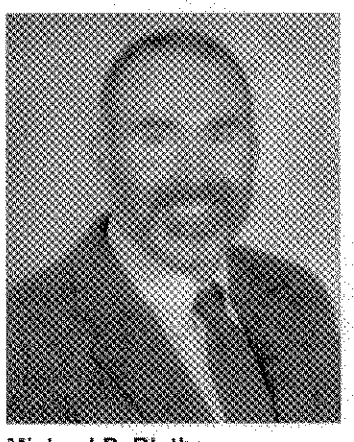
Public Service Group Achievement Award

SpaceTec LITE/MAPS Missions Operations and Integration Development Team
For outstanding contributions to the development and implementation of the Mission Operations and Integration Plans of the Lidar In-Space Technology Experiment (LITE) and the Measurement of Air Pollution from Satellites (MAPS) experiment

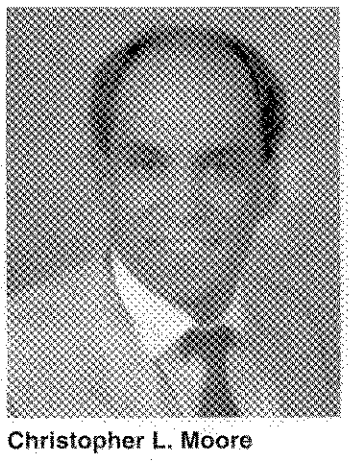
Karen D. Brender
For outstanding leadership and innovative achievements greatly contributing to the national space effort
(photo unavailable)

NASA Honor Awards

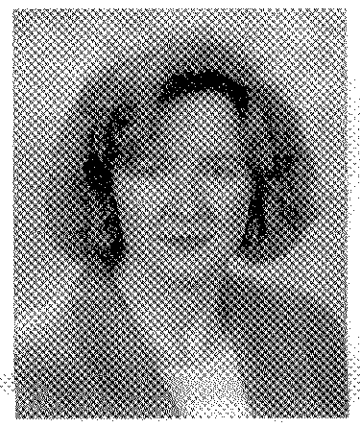
Exceptional Engineering Achievement Medal



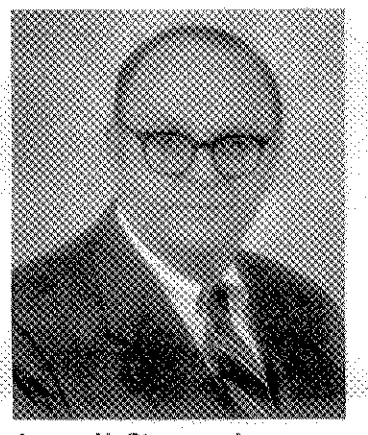
Michael P. Blythe
For superior technical contributions, management and personal dedication to the development and operation of the Aft Optics and Electronics subsystems for the Lidar In-Space Technology Experiment (LITE)



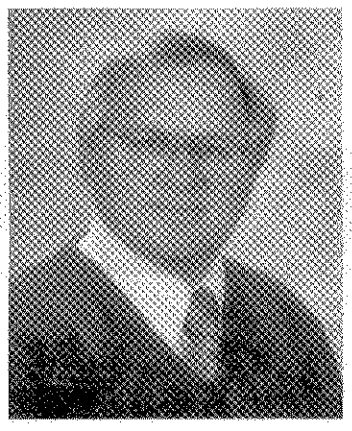
Christopher L. Moore
For engineering excellence in the successful development and operation of the Laser Transmitter Module for the Lidar In-Space Technology Experiment (LITE)



Kathryn Stacy
For development of unique quantitative analysis techniques of light sheet images from flow visualization experiments

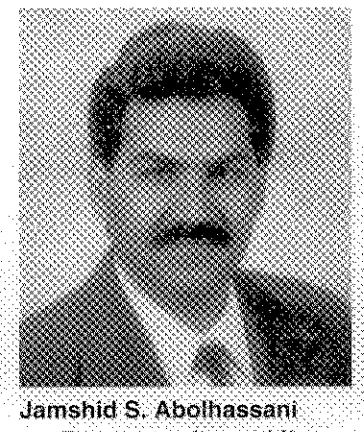


James H. Starnes, Jr.
For developing reliable composite structures design technology for commercial transport aircraft

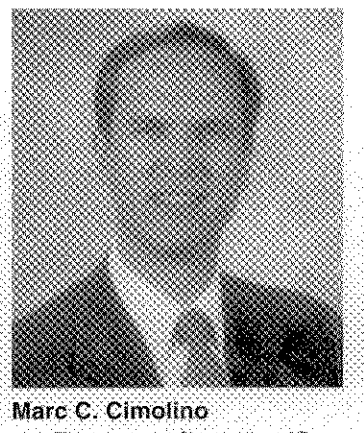


Allan R. Wieting
For exemplary leadership and judgment in engineering the solution to flow quality problems in the 8-Foot High Temperature Tunnel

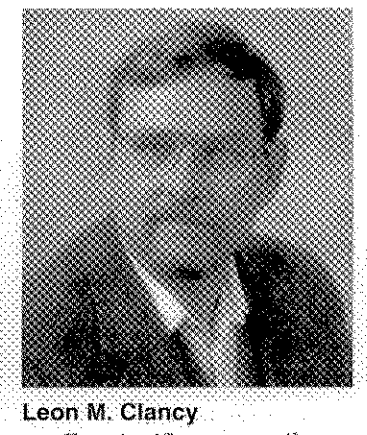
Public Service Medal



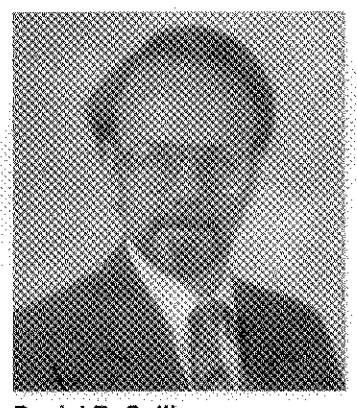
Jamshid S. Abolhassani
For outstanding public service through the development and application of advanced surface modeling and grid generation methods



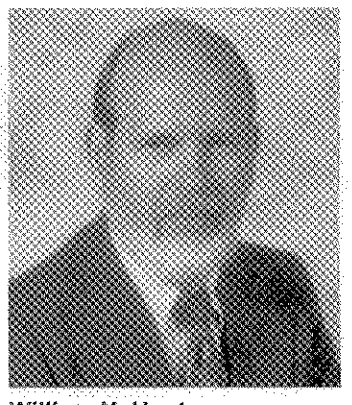
Marc C. Cimolino
For outstanding scientific, engineering and technical leadership in the development and shuttle deployment of NASA's LITE LTM for the application of global remote sensing of atmospheric aerosols



Leon M. Clancy
For significant contributions in developing a low-cost communication network that allows a practical High Performance Computing and Communications Educational Outreach Program at Langley



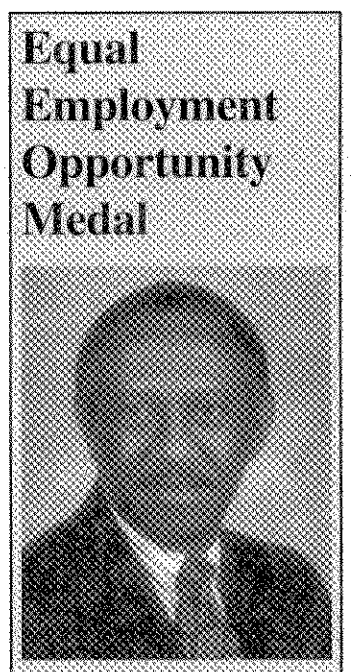
Daniel R. Collins
For innovation in the implementation of the Langley automated relational database Management Information System



William H. Hunt
For exceptional contributions in translating the complex scientific requirements into the instrument design and operation for the Lidar In-Space Technology Experiment (LITE)

Richard C. Ernst
For exceptional contributions in the development of a Helmholtz Resonator for the 8-Foot High-Temperature Tunnel that significantly reduced combustion chamber pressure fluctuations
(photo unavailable)

Equal Employment Opportunity Medal



Matthew M. Winston
For outstanding achievement in service, counseling, and personal commitment to the goals of Equal Employment Opportunity and its implementation at Langley Research Center

Group Achievement Award

Advanced Studies Procurement Team
For exceptional innovation, dedication and teamwork in completing a major procurement effort for the Advanced Aircraft Program within a highly accelerated schedule

CSI Team for EOS AM-1 Performance Enhancement and Jitter Reduction
For outstanding contributions to the prelaunch structural dynamics analysis and pointing jitter predictions for the Goddard Space Flight Center EOS AM-1 Project Office

Earth Observing System and Data Information System Distributed Active Archive Center Team
For outstanding contributions to the design, development, validation, operation, and documentation of the Langley distributed Active Archive Center segment of the Earth Observing System and Data Information System Version 0 release

General Aviation Joint Sponsored Research Agreement Team
For pioneering the development and implementation of management processes for the General Aviation Joint Sponsored Research Agreement

HPCCP K-12 Educational Outreach Team
For significant contributions in the implementation of the highly successful High Performance Computing and Communications Educational Outreach Program at NASA Langley Research Center

Lidar In-Space Technology Experiment Development Team
For outstanding accomplishment in the design, fabrication, integration, and mission operations of the highly successful Lidar In-Space Technology Experiment (LITE) payload on STS-64

See **Group Award**, *page 6*

Contractors Excellence Award for Quality and Productivity

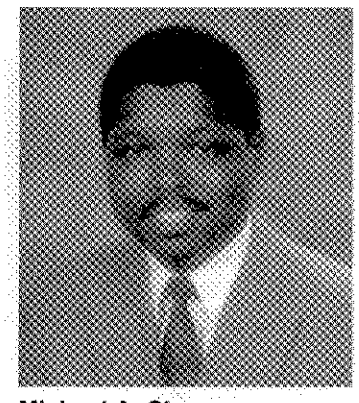
The Contractors Excellence Award for Quality and Productivity recognizes contractors who have demonstrated sustained excellence and outstanding achievements in quality and productivity for three or more years.

This year's awards were presented to **Dynamic Engineering, Inc.**, accepted by David Mullins, and **Unisys**, accepted by Rolf Duerr and Robert B. Tattle.

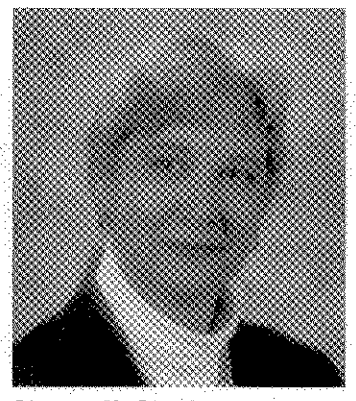
NASA Honor Awards

Exceptional Achievement Medal

Chuck L. Carpenter
For outstanding contributions and personal dedication in the development of the flight and test software for the Lidar In-Space Technology Experiment (LITE)



Michael A. Chapman
For outstanding contributions in innovation, technical design, and improved operational efficiency of the National Transonic Facility through implementation of a new open architecture data system

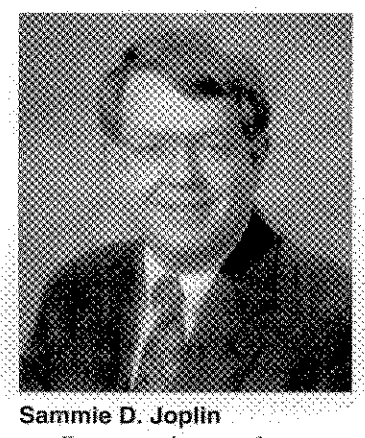


Sharon K. Crockett
For exceptional achievement in directing the development of the Lidar In-Space Technology Experiment (LITE) receiver and coordinating the LITE contamination control activities

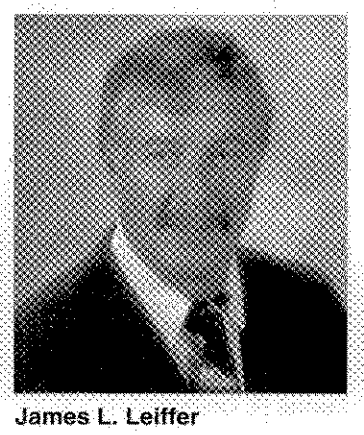
Glenn A. Gates
For outstanding leadership, management and technical contributions to the development, design, construction and activation of the West Area High Pressure Air System

John A. Greco
For outstanding Product Assurance Management support to the successful Lidar In-Space Technology Experiment (LITE) Mission (STS-64)

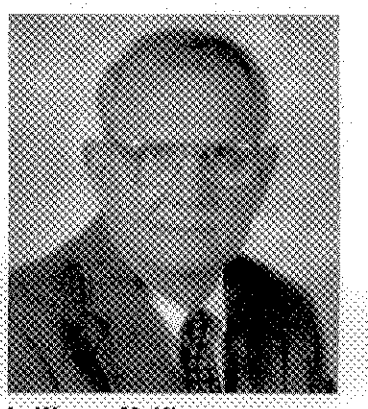
Joseph S. Heyman
For exceptional performance in leading the Center's newly formed Technology Applications Group



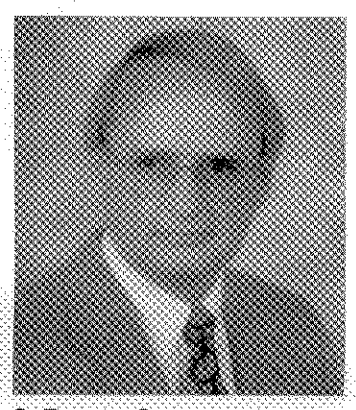
Sammie D. Joplin
For exemplary performance in leading the Facility Study Office efforts in meeting national aeronautics needs for a new national wind tunnel complex



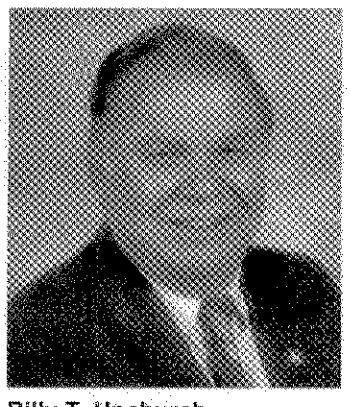
James L. Leiffer
For exceptional Quality Assurance Specialist support to the successful Lidar In-Space Technology Experiment (LITE) Mission (STS-64)



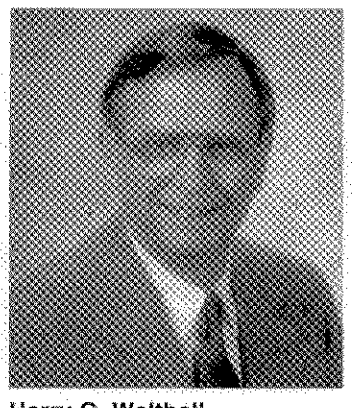
L. Wayne McKinney
For outstanding leadership and exemplary technical contributions critical to the success of the National Facilities Study



S. Eugene Sutton
For sustained exceptional performance in electronics fabrication and packaging of space flight hardware

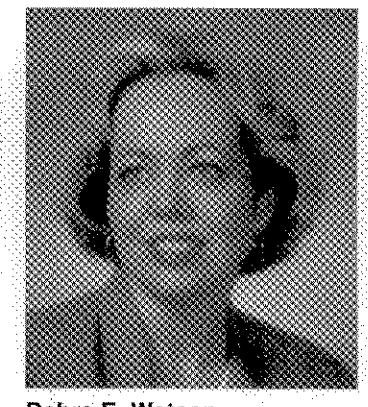


Billy T. Upchurch
For outstanding contributions in pioneering the development and transfer of Low Temperature Catalyst and Gas Permeable Polymer Material Technology

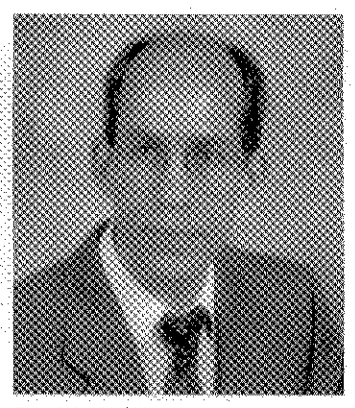


Harry G. Walthall
For outstanding achievement in the design, development, fabrication, and testing of a ground water seepage metering instrument

Gary P. Warren
For outstanding leadership and sustained technical contributions in developing and implementing the highly successful High Performance Computing and Communications Educational Outreach Program at Langley



Debra E. Watson
For outstanding achievement in the development and implementation of budget policies and procedures in support of the Center's mission



David M. Winker
For exceptional service as Deputy Project Scientist for the Lidar In-Space Technology Experiment (LITE) leading to the successful development and flight of the first spaceborne atmospheric lidar system

Group Award

Continued from page 5

LITE Science Steering Group and Langley Science Support Team

For outstanding contributions to the study of the atmosphere with the Lidar In-Space Technology Experiment (LITE) on Space Shuttle STS-64

NASP Concept Demonstration Engine Test Team

For outstanding accomplishments in testing the NASP Concept Demonstration Engine in the 8-Foot High-Temperature Tunnel

Small Expendable Deployed System (SEDS) II End Mass Payload Team

For the management, design, development, and flight support of the SEDS II End Mass Payload, NASA's multi-orbit 20 km tethered spacecraft experiment

The Measurement of Air Pollution from Satellites (MAPS) Experiment Team

For the success of the MAPS experiment aboard the Space Shuttle Endeavour's STS-59 and STS-68 missions which provided unique synoptic global measurements of tropospheric carbon monoxide in support of NASA's Mission to Planet Earth

The "Why Reach for the Stars" Elementary Education Team

For outstanding contributions to the NASA education vision through the development and implementation of an elementary education curriculum in science and engineering

8-Foot High-Temperature Tunnel Flow Quality Team

For exceptional dedication and technical innovativeness in the timely elimination of severe flow non-uniformities in the Langley 8-Foot High-Temperature Tunnel enabling the NASP Concept Demonstration Engine flow quality criteria to be exceeded

U.S. Senate Staffer to Give Briefing on Cuts and Downsizing at NASA

Tim Kyger, senior staff of the Senate Commerce Subcommittee on Science, Technology and Space, will provide a briefing on the direction the subcommittee is taking under the new Republican chairman, Conrad Burns of Montana. NASA's programs are authorized through this subcommittee. Kyger will discuss the effects of cuts and downsizing on NASA. A question-and-answer period will follow the briefing.

The briefing will occur on Tuesday, April 18, 1 to 2 p.m., in the H.J.E. Reid Conference Center. All Langley and contract employees are invited to attend. Langley employees may charge their time to JO A5266.

Before coming to his present position in late 1994, Kyger was science advisor to Rep. Dana Rohrabacher (R-CA) who serves on the House Science Committee's Space and Aeronautics Subcommittee.

The Congress Connection of the Hampton Roads Section's American Institute of Aeronautics and Astronautics is sponsoring this event.

Mir Transit Predictions Posted on ASO

The home page of the Amateur Satellite Observer (ASO) has been activated. The Mir transit predictions for April, which will occur around the15th, are posted. The URL for the ASO home page is: http://jebyrd.larc.nasa.gov/index.htm

For more information, call Jim Byrd at ext. 45961.

LAA Aerobics Club Offers Spring Classes

Join the LAA Aerobics Club this spring and take part in body-sculpting classes, circuit training, and cardio-interval classes, all in a bench aerobics or low-impact format. Every class includes weight or resistance training for upper and lower body. In addition, powerwalking classes are featured during this beautiful spring season. Don't forget to chart your fitness progress with the body composition analysis and cardio assessment given before class. Classes are Tuesdays and Thursdays, 5 to 6 p.m., and Saturdays, 9:30 to 10:30 a.m. Powerwalk classes are Tuesdays and Thursdays, 4:45 p.m., and Saturdays, 9:15 a.m. All classes meet in the LAA gym. For more information, call Michele Macaraeg at ext. 42295.

American Helicopter Society Funds Trip to Texas

The American Helicopter Society's Hampton Roads Chapter will provide partial funding to members who plan to attend the 51st Annual Forum and Technology Display, May 9 to 11, in Fort Worth, Texas. For more information, call Bob Powell at 898-5510.

Runners Club Announces Spring Races

The NASA Intercenter Competition Spring Races are scheduled as follows. The 10-km races are on April 10, 20, 24 and May 4. The 2-mile races are on April 13, 17, 27 and May 1. The 2-mile run/walk on May 1 is cosponsored by the Langley Fitness Center to start National Fitness Month. Races start at 5 p.m. on Doolittle Road. All Langley employees, retirees, on-site contractors and co-ops earn points for Langley by participating in this Agency-wide competition. Walkers are welcome. For more information about these races or the Runners Club, call Richard Shearer at ext. 47036.

Karate Club Offers Classes

The Langley Karate Club invites you to discover Cuong-Nhu Oriental Martial Arts. Classes are held at the LAA gym Mondays and Wednesdays, 5 to 7 p.m. NASA employees, co-ops, contractors and their immediate families are welcome. Children must be at least 12-years old. A new beginner class will start April 3. New students will be accepted until April 26. For more information, stop by the gym during class time or contact Roy Albang at ext. 46160 or at 596-7736.

FWPC Cites Supervisor and Employee of the Year

Photo by Katie Reid

The Federal Women's Program Committee (FWPC) honored winners and nominees of its Supervisor of the Year and Employee of the Year Awards in March. From left, George Helfrich, Supervisor of the Year Nominee, Diane Griffin, Employee of the Year, Stewart Harris, Supervisor of the Year, and Virginia Marks, Employee of the Year Nominee. Charlene Gleaton, far right, was honored for recently earning the title of Certified Professional Secretary.

The Federal Women's Program Committee (FWPC) celebrated Women's History Month with its Annual Female Achievers' Panel and FWPC Awards Ceremony on Tuesday, March 21, at the H.J.E. Reid Conference Center. The awards ceremony was officiated by the FWPC chair, Julie Williams-Byrd, electronics engineer in the Aerospace Electronic Systems Division. She was assisted in award presentations by Burnett W. Peters, Jr., head of the Office of Equal Opportunities Programs (OEOP), and Patsy Campbell, FWP manager.

S. Stewart Harris, head of the Electronics Technology Branch, was awarded the FWP Supervisor of the Year Award for such outstanding accomplishments as setting an example for other Center supervisors by attending Federal Women's programs regularly and encouraging his employees to do so. Other nominees for this award included Dr. George F. Helfrich, leader of the Patent Counsel Team in the Technology Applications Group; and Jeffrey A. Parker, head of the Property and Transportation Branch.

Diane Griffin, engineering technician in the Materials Research Operations Section, was awarded the FWP Employee of the Year Award for such outstanding accomplishments as advancing from secretarial co-op student trainee in 1979 to apprentice graduate in 1987 and then to full journey-level status as an engineering technician. The other nominee for this award was Virginia B. Marks, staff assistant in the High-Speed Research Project Office.

Winners were presented a FWPC plaque and a complementary Virginia Air and Space Center membership. All were presented a certificate signed by Paul F. Holloway, Center director.

Charlene L. Gleaton was recognized for passing all six parts of the Certified Professional Secretary exam, and attaining the CPS title. She was awarded a FWPC plaque.

At the end of the program, Peters announced his retirement effective March 31. He thanked his entire staff by name for their dedication and excellent work. He also shared his gratitude to the Center for their support of the Equal Employment Opportunity Program. Campbell returned the thanks by acknowledging the mentoring and support Peters had given the OEOP staff and numerous students and employees at the Center. She dedicated the day's program to Peters.

For a video of the ceremony, call Patsy Campbell at ext. 43291.

Symphony Hosts Play-along-a-thon

The Virginia Symphony will host a free Play-along-a-thon as part of the Symphony Marathon Weekend, Saturday, April 8. Take advantage of this chance to perform with the symphony.

The symphony will perform Classical Masterworks concerts at Chrysler Hall, April 15, featuring Prokofiev's *Cinderella* and joined by the Louisville Ballet, and April 21 and 22, featuring Beethoven's *Symphony No. 4*. Tickets at a 20 percent discount are available at the Exchange Shop. Call ext. 41585.

Tennis Club Plans Social

The Langley Tennis Club is sponsoring a "get acquainted" social on Friday, April 21, 4 to 7 p.m., at the LAA's picnic shelter #1. All tennis players are welcome to come and find out about our tournament schedule and other activities. Club officers will be on hand to answer all questions. The courts will be available for play if weather permits. You can pick up a club membership form at this social or call either Don Petrine at ext. 42575, Marco Egoavil at ext. 47247, or Tom Yager at ext. 41304.

CPR Classes Scheduled

CPR classes for certification at all levels are scheduled for April 12 and 13. To register, please send an Application For On-Site Training (Form 24) to Sharon Murphy at Mail Stop 137.

Diversity Factoid

"Any company that wants to maintain a competitive edge must retain its best and brightest ... by making sure there are no artificial barriers - glass ceilings or walls - to advancing up the corporate ladder." (Executive Recruiting Firm of Allerton Heneghan & O'Neill, Chicago, Ill.)

Happenings

TOPS PUBLIC DAY
LANGLEY HANGAR
SATURDAY, APRIL 7
9 A.M. TO 3 P.M.

TAX PREPARATION: National Association of Tax Practitioners member. Electronic filing and direct deposit offered at no extra charge! Small-business bookkeeping. We travel to you. Call Suzanne at 874-3121.

TAX PREPARATION: National Association of Enrolled Agents member. Call Nancy Taylor at 723-5227.

TAX PREPARATION: Highly experienced, degreed accountant. Small-businesses bookkeeping. Confidential and very reasonable. Call Marilyn at 825-0669.

LOST: If anyone knows the whereabouts of the machine that is used to mark lines on the athletic fields, call Roger Lepsch at ext. 44520.

FOR SALE: Horseman 4 x 5 view camera and accessories. Besseler 4 x 5 enlarger. Omega 35mm enlarger. Timers and many dark room supplies and accessories. Call Andy Powell at 898-4130.

FOR SALE: 1993 Ford F150 XLT burgundy truck w/8-ft. bed and step bumper. V8, auto transmission, cruise control, air cond. Power windows, brakes and steering. 22,000 miles. Asking $14,000. Call Jerry at 898-8459.

FOR SALE: 1992 Chevy Caprice Classic. Fully loaded, including two front 8-way power seats. 40,000 mi. Silver color. Exc. condition. Warranty still in effect. List price: $13,125; my price: $12,125. Call S. Clevenson at 596-8319.

FOR SALE: Craftsman riding lawn mower with rear bagger system, 11 HP, five speeds, 38-inch cut. Exc. condition. Call Debbie at 867-8904.

FOR SALE: Six new and never used dining chairs, two with arms and four side chairs. Formal, parsons style, fully upholstered. Contemporary style would fit in any period. Cost over $1,300, asking $695. Call Mac at 877-7912.

FOR SALE: 2BR townhome in central Hampton. Low maintenance. All appliances. Excellent condition. Priced to sell. Call Gary at 838-9328.

FOR SALE: 4BR, 2BA, 1,700-sq.-ft. home in Wythe section of Hampton. Totally renovated kitchen, detached two-car garage, full second floor ready to finish. $0 down, $0 closing costs. Call Paul at 988-3760 or Jay at 868-7610.

FOR SALE: 3BR, 2BA, 1,700-sq.-ft. rancher on private cul-de-sac in Millside area of York County. By owner. Two-and-a-half-car garage; great room w/cathedral ceiling and brick fireplace. $134,900. Call Kristine at 898-9224.

FOR SALE: 4BR, 3.5BA, 2,900-sq.-ft. home on 1/2-acre lot in Woodlake Crossing, York County. Two-car garage w/auto openers, front porch, two decks, two master suites. LR, FR, DR, breakfast area. Tabb schools. Many upgrades. Call Rich at 867-7699.

FOR SALE: 3BR, 2BA home in desirable neighborhood of Newport News. Six-ft. privacy fence, two-tiered custom deck, above-ground pool, beautifully landscaped. LR, FR, DR, E/I kitchen w/bar. One-car garage. W/W carpeting. Exc. move-in condition. Good schools. $91,500. Anne Drive. Call Laura at 595-2863.

FOR SALE: 3BR, 2BA home in York County, close to Langley. Thousands spent on upgrading. Will help with closing. $77,000. Call Ray at 827-7184 or page at 521-4374

FOR SALE: 4BR, 2-1/2 BA, tri-level on quiet cul-de-sac. Two-car garage w/auto opener; fenced backyard w/playset; indoor laundry room; E/I kitchen; Booker-Syms-Kecoughtan schools. $118,000 or assumable FHA loan at 7-1/2 percent. Willow Oaks Blvd. Call Dean at 851-1517.

FOR SALE: Approx. 1-acre waterfront lot. Beautifully wooded with large trees and mountain laurel on navigable Diascund Creek near mouth of Chickahominy River. The Colonies subdivision in New Kent County. $135,000. Call Mac at 877-7912.

FOR RENT/SALE: 2BR, 1-1/2BA, end-unit townhouse in York Crossing. LR, E/I kitchen w/fireplace, washer/dryer, dishwasher, refrigerator. $595/mo. neg. plus deposit. Available immediately. Possible assumption if prefer to buy. Call 890-0994.

FOR RENT: Relax on Sanibel Island, Fla., in an elegant beach-front condo. 1BR, pool, tennis, full kitchen, on-site management. May to October. $625/week. Brochure available. Call Dick at 565-1849.

FOR RENT: 3BR, 2BA oceanfront cottage in Outer Banks/Kitty Hawk, N.C. Private boardwalk to uncrowded beach, outside hot/cold shower, cable color TV, fully equipped kitchen, screened porch, roofed deck, dune deck. $700/wk. Owned by Gertrude and Francis Rogallo. Call (919) 261-7068 after 2 p.m.

ROOMMATE WANTED: Female seeks same to share 3BR home in Poquoson. $250/mo. + 1/2 utilities. Full house privileges. No smokers please. $100 deposit. References. Call Margarette at 868-8101.

TO BUY: Wanting to buy and preserve technical books, reports and papers on subsonic aircraft in the following areas: helicopters, VSTOL aircraft, general aerodynamics, drag reduction, aircraft design, boundary layer control, high lift, stability and control, and cockpit integration. Call Todd at 826-1556.

LAA DANCE: Country western dance on Saturday, April 15, starting at 6:15 p.m. Cost is $3 per person. No outside drinks in building.

LAA EASTER EGG HUNT: On Saturday, April 15, noon to 2 p.m. For children one to 10-years old. A free ticket for each child must be obtained. Tickets available at the LAA Office. Each child must bring his or her own basket.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business. Penalty for Private Use $300.

Mr. Moon Man

By Blanche Gladue, age 92

We guided our rocket by the stars
just to find out who you are,
Mr. Moon Man.
You did spread your welcome mat
and didn't send us quickly back.
We tread your sail, raised our flag high,
miles and miles up in the sky.
We will return again some day;
your brilliant light will show the way.
Unfold again your welcome mat
as before; don't send us back.
For it is then we will explore
in passing through your open door
So that all mankind will know
just what makes you shine and glow,
Mr. Moon Man.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-Weekly Employee and Contractor Publication

Volume 9 ❖ Issue 8 ❖ April 21, 1995

Buyout Challenges Future

Well, the 1995 buyout has come and gone. Personally, it is both a sad and a happy time. It is sad because so many of our tremendously talented and motivated employees have left. Yet, I am happy for those who chose to leave, since they have the opportunity to do many of the things that all of us dream of doing, whether it is travel, catching up on things at home, spending more time with the family or starting a new career.

For the Center, the aftermath of the buyout is a time of reassessment and considerable restructuring. We lost many talents and skills and energy, all of which will be very hard to replace. Already I am hearing about voids and gaps on both the research and administrative side of the Center. Now we in management must adjust to the losses and reassess the Center's skill mix to meet the many challenges of the coming years.

It was very nice to see such a large turn out at the Buyout Party on March 31. We owe special thanks to the Langley Activities Association and the Alumni Association for sponsoring and hosting this event. Everyone must have had a very good time, since I have never been in the H.J.E. Reid Conference Center when it was so noisy.

And finally, on behalf of those who took advantage of the buyout and those who considered it, I would like to express a special thanks to the Human Resources Division and all others who helped with the buyout process. It was a lot of work and I think it went very smoothly. Many thanks.

Again, I wish all those who left us last Friday the very best, and I ask those remaining to help fill the voids and keep us on track to handle the challenging times ahead.

Paul

Paul F. Holloway
Center Director

High TOPS

Photo by Daniel Axelrad

A view from the Hangar catwalk during Langley's Technology Opportunities Showcase (TOPS). The 3-day event attracted more than 900 business attendees and over 2,300 area residents. See story and photos on page 5.

See photos of the Buyout Party on page 4.

See the list of Buyout retirees on pages 6 to 7.

Secretaries Saluted All This Week

The Federal Women's Program Committee (FWPC) is sponsoring its Annual Salute to Secretaries on April 24 at the H.J.E. Reid Conference Center from 7:30 to 9:30 a.m. All civil service and contractor secretaries are invited to join the FWPC for networking and refreshments. Langley employees may charge their time to JO A5267. For more information, contact either Kendall Sherman via phone at ext. 44447 or QuickMail, or your organization's FWPC representative.

THE WHITE HOUSE

WASHINGTON

Secretaries Week, 1995

Greetings to everyone celebrating Professional Secretaries Week, 1995.

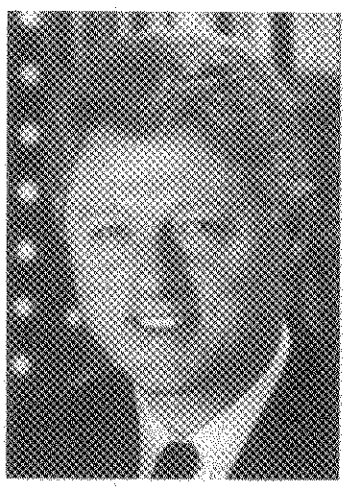
Each year, we welcome this opportunity to recognize the invaluable contributions that secretaries and other administrative personnel bring to our society. With boundless skill and endless patience, you keep our offices and our businesses running effectively. Providing crucial support to both the public and private sectors, you have earned the respect and gratitude of your fellow workers throughout the world.

I join with them in commending secretaries everywhere on your achievements. True professionals, secretaries regularly demonstrate their enthusiasm and commitment to excellence, ensuring that offices and businesses everywhere will grow in efficiency and prosperity, ready to meet the challenges of the new global economy.

Best wishes for a rewarding week.

Bill Clinton

Langley Research Center
FWP
Federal Women's Program



Waldal Joins Human Resources as Assistant Personnel Officer

Catherine Waldal

Catherine Waldal joined Langley as assistant personnel officer in the Office of Human Resources (OHR) on April 2. Her responsibilities primarily include internal personnel operations. She will handle many of the day-to-day operational activities within the office, such as those affecting process and procedures as well as organizational issues. She will assist the office head in planning, directing and coordinating all aspects of the operations and administration within OHR.

Waldal brings 28 years of knowledge and experience in human resources management from the U.S. Department of Transportation (USDOT). Prior to coming to Langley, she served as director of the Office of Personnel in the USDOT Federal Transit Administration.

Before that assignment, she worked for the U.S. Coast Guard, first as a field personnel officer in Kodiak, Alaska, then in Seattle, Wash., and as the deputy director for Civilian Personnel in Washington, D.C. While in Washington, she worked on several national task forces which oversaw a massive organizational change in both the Coast Guard and Federal Transit Administration.

"NASA is about to go through lots of organizational change. I'd like to see it done in a win-win situation where the people are cared for."

A native of Alaska, Waldal attended the University of Alaska in Anchorage, and Seattle City University in Seattle. She is also a graduate of the National Defense University, Industrial College program and has attended the Federal Executive Institute.

News Briefs

Around the Agency

COOPERATIVE AGREEMENT SIGNED FOR X-34 - NASA and Orbital Sciences Corp., Dulles, Va., have signed a cooperative agreement to jointly develop the "X-34," a small, reusable space booster that will serve as a test bed to demonstrate reusable launch-vehicle technology. The Reusable Launch Vehicle technology program will implement the National Space Transportation Policy, issued by the White House in 1994, and accelerate the development of new launch technologies and concepts to contribute to the continuing commercialization of the national space-launch industry.

Flight tests for the X-34 are planned for late 1997, with launch expected by mid-1998. At that time, technology test-bed applications will feed directly into plans for developing a larger, next-generation reusable launch vehicle. NASA's Office of Space Access and Technology, Washington, DC, manages the Reusable Launch Vehicle technology program. The Marshall Space Flight Center, Huntsville, Ala., is the host center for the X-34 program. Langley plays a key role in the program as well, which will be featured in a future issue of the *Researcher News*.

X-33, X-34 CONTRACTORS SELECTED FOR NEGOTIATIONS - NASA has selected four companies to enter into negotiations for two rockets that could evolve into the first new launch system developed by the United States since the advent of the Space Shuttle. The fast-track X-33 and X-34 programs will feature innovative government/industry partnerships that could lead to work-horse, reusable launch systems for the early 21st century.

"The innovative 'fast track' procurement process resulting in these selections is a true harbinger of how the 21st-Century 'faster, better, cheaper' NASA intends to conduct its business," said NASA Administrator Daniel S. Goldin. "Within a two-month period, X-33 and X-34 Cooperative Agreement Notices were issued, proposals were submitted, and selections made." The three X-33 selectees are: Lockheed Advanced Development Co., Palmdale, Calif.; McDonnell Douglas Aerospace, Huntington Beach, Calif.; and Rockwell International Corp., Space Systems Division, Downey, Calif. The X-34 selectee is Orbital Sciences Corp., Dulles, Va.

The goal of NASA's Reusable Launch Vehicle (RLV) technology program is to enable significant reductions in the cost of access to space to promote the creation and delivery of new space services and other activities that will improve U.S. economic competitiveness. The RLV technology program is part of the National Space Transportation Policy, issued by the White House in 1994.

ROTHENBERG NAMED DEPUTY DIRECTOR OF GODDARD - Joseph H. Rothenberg has been selected the new deputy director of NASA's Goddard Space Flight Center, Greenbelt, Md. His appointment is effective April 24. Rothenberg is currently serving as executive vice president of Computer Technology Associates, Inc., Space Systems Division, Lanham, Md., a position he has held since leaving Goddard in February 1994. For four years immediately prior to leaving, he was associate director of flight projects for the Hubble Space Telescope (HST) at Goddard. In this position, he directed the development and execution of the first successful servicing mission of the HST.

Bryant Named New AF Liaison

R. Barry Bryant *Photo by Carole Chapman*

R. Barry Bryant has been appointed to run the Air Force liaison office at Langley. A Portsmouth native and Old Dominion University graduate, he returns to familiar surroundings in his new role.

Bryant will serve as a link between the Air Force and NASA laboratories, supporting the initiation of research programs on studies that would benefit Wright Laboratories (WL) and Langley.

He will accelerate specific research on priority Air Force programs by collecting data on projects being accomplished by Langley's labs considered of vital interest to various Air Force commands. His quarterly reports will contain pertinent technological information describing Air Force and ongoing Langley test activities as advanced information for the various WL directorates and NASA.

Bryant was a simulation systems engineer assigned to the Control Integration and Assessment Branch at Wright-Patterson Air Force Base, where he worked as the chief computer-systems architect for the simulation computers. He led a team to develop and test the Simulation Network Analysis Program computer, which will be used to measure latencies associated with distributed interactive simulations and change the way the Department of Defense views network simulations.

Bryant can be reached at the Chief Air Force Liaison Office at ext. 45212.

Retirement Parties

Kallick

A retirement social for Jackie Kallick will be held Monday, May 8, 5:30 to 7:30 p.m., in the H.J.E. Reid Conference Center. Refreshments and hors d'oeuvres will be served. Cost is $9 per person including a gift. For reservations, contact Diane Wieting via phone at ext. 46052 or Mail Stop 114 by April 28.

Owsley

A retirement part for Gordon Owsley will be held Monday, May 15, 6 to 9 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and cake will be served. Cost is $10 per person including a gift. For gift-only contributions or reservations, contact Charlene Gleaton via phone at ext. 45620, Junilla Applin via phone at ext. 47082, or either via Mail Stop 432 by May 5.

Heard

A retirement picnic to honor Doug Heard will be held Sunday, April 30, 3 p.m., at the LAA picnic grounds. Cost is $5 per adult. Retirement-album signature sheets are available for signing. For gift-only contributions or reservations, contact Judith Watson or Sherry Cox via phone at ext. 43116 or Mail Stop 190 by April 25.

Howser

An informal retirement social for Lona M. Howser of the Information Systems Division will be held Thursday, April 27, 1 to 2:30 p.m., Bldg. 1268A, Rm. 2120. Cake and punch will be served. Friends, acquaintances and co-workers are invited to drop in to wish Lona well. No payment is necessary for this function per Lona's request. For more information, contact Geoff Tennille via phone at ext. 45786 or Mail Stop 125.

Clevenson, et al.

A retirement buffet luncheon to say a fond farewell to four Structural Acoustics Branch (SAB) employees, Sherm Clevenson, Ed Daniels, Jack Leatherwood and Harold Lester, will be held Wednesday, May 10, beginning at 11:30 a.m., at the Ming Gate Restaurant, 2800 W. Mercury Blvd., Hampton. Cost is $6.25 per person. No gift contributions are required as gifts will be handled by the SAB staff. Retirement-album signature sheets are available for signing in the SAB office, Bldg. 1208, Rm. 102. To sign up, call Lori Jones or Jennifer Tawney at ext. 43575 by May 5. Send cash or check payable to Lori Jones at Mail Stop 463.

Peterson

A retirement luncheon for Robert M. Peterson will be held Wednesday, April 26, 11:30 a.m. to 1:15 p.m., at the Old Country Buffet in Todd Center. For gift-only contributions or reservations, contact Susie Carpenter via phone at ext. 43876 or ext. 43900 or via Mail Stop 255.

Carter

A retirement dinner party for Arlen Carter of the Atmospheric Sciences Division will be held Tuesday, May 9, in the Williamsburg Room at the Langley Air Force Base Officers' Club. Social hour begins at 6 p.m., followed by dinner at 7. Cost is $16 per person, not including a gift. For gift-only contributions or reservations, contact Tammy Parker via phone at ext. 42698 or Mail Stop 401A.

Stewart, et al.

A retirement pig-pickin' for Bob Stewart, Jim Kiss and George Willis, will be held Wednesday, May 3, beginning at 4:30 p.m., at Shelter #1 in the Activities Bldg. picnic area. Cost is $9 per person including gifts. For reservations, contact Cheri Wood via phone at ext. 43333 or John Crosby via phone at ext. 43451 by April 25.

Person and Yenni

Two Langley pilots are flying the coop! The double-header retirement party for Lee Person and Dick Yenni will be held Saturday, May 6, 6 to 11 p.m., at the H.J.E. Reid Conference Center. Come enjoy barbeque, country/western music and lots of ol' flying memories! Cost is $12 per person. For more information, call Mary Beth Wusk at ext. 43830 or Luci Crittenden at ext. 41776.

Clough and Snead

A retirement social for Jean Clough and Carolyn Snead will be held Wednesday, May 10, 4:30 to 7 p.m., in the Williamsburg Room at the Langley Air Force Base Officers' Club. Cash bar and heavy hors d'oeuvres will be available. Cost is $7 per person including a gift. For gift-only contributions of $3 or reservations, call Marny Skora at ext. 43315 or Jenny Branch at ext. 43309 by May 3.

Letters

From Bob Doggett:

Barbara and I sincerely thank everyone who participated in successfully launching me into retirement. I may have vibrated some, but I surely didn't flutter. Memories of the lovely luncheon, nice gifts, delightful reception, kind words and send-offs will always be cherished by us.

From Mrs. Marvin Finch:

The family of Marvin S. Finch wishes to express their thanks to each of you who have been so kind to remember us in our time of sorrow. Your participation in Marvin's services, cards and prayers will help us through the days to come. May God bless each of you. In Christian love,

Virginia Finch

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Center Salutes Community Service Volunteers

BY MARNY SKORA

America's social problems are not going away. Crime and violence are on the rise. Students are dropping out of high school in alarming numbers. And many of today's students are ill-prepared for meaningful jobs.

The federal government has not been able to solve the growing problems — but federal employees are making a difference . . . one day, one individual, one volunteer activity at a time.

NASA's National Service Office (NSO) has spearheaded the Agency's effort to accept its responsibility as a good neighbor. One of the goals of NSO is to engage Center employees more effectively in volunteer initiatives aimed at solving serious community problems. And, at Langley, it's working.

Langley has one of the Agency's most aggressive programs and it's growing. The Center's Community Service Program, quite simply, builds on the propensity of Langley employees and retirees to get involved in the communities where they live.

A survey of civil servants in 1992 showed that Langley employees volunteer over 1,200 hours per month on their own time. Retirees were surveyed in 1993. Sixty-seven percent of those who responded were already involved in volunteer activities.

Since that baseline was established, the Center has sponsored several community service initiatives that have made it easier for employees to volunteer. As part of National Volunteer Week, April 24 to 28, we have highlighted three of those programs and the volunteers who have made them a success.

Photo by Fred Jones

THEY DISTRIBUTE. Alumni Association member Cornell Burcher helps Troy Collier, Youth Challenge executive director, select products for area youth programs.

Day of Caring Highlights Needs in Local Area

Langley stepped up to sponsorship of the 1994 Community Day of Caring last September. Nearly 100 Center employees spent a day doing whatever was needed. At Habitat for Humanity, volunteer work brought a family closer to living in their own home. A Boy Scout camp and neighboring Girl Scout facility were put in working order. At a child development center, a unique playground was constructed for those with special needs.

School items were packaged and distributed to needy children to give them a good start for the academic year. Volunteers installed smoke detectors in homes designated at-risk for fire. Volunteer painters beautified, inside and out, homes for senior citizens, the mentally retarded, human service agencies and a shelter for the homeless. A huge commodities-distribution effort provided food to needy families on the Peninsula.

Finally, many volunteers provided direct service to veterans at the Veterans Administration Hospital, children at day-care centers, those suffering in hospice centers, senior citizens who would otherwise be lonely and students who needed special tutoring. This intense day of community service was a small example of the volunteer opportunities available all year long.

Carol Scott, American Red Cross manager, summed up the feelings of community agencies, when she wrote to Center Director Paul Holloway praising the volunteer effort of Penny Murphy. "Our thanks to Penny and to you for your support of the Day of Caring. Your employees helped make the day a success!"

Galaxy of Gifts Brings Products to People

The Langley Alumni Association in partnership with the United Way and the Association for Retarded Citizens (ARC) has mounted a community service effort that places product overruns and donated goods in the hands of nonprofit agencies and, ultimately, people in need.

Since kickoff of the project in October 1994, 75 nonprofit agencies have joined in the effort. The first shipment included office products, computer software, clothing, small appliances and personal care items. Products valued at $23,750 were distributed in the first month of operation. As of March 1, Galaxy of Gifts had provided about 30 agencies a savings of over $75,000 on goods necessary to provide critical services to more than 252,000 clients in the local area.

Gifts in Kind America, the national sponsor, is interested in making the Galaxy operation a local distributor in their network to better leverage community service dollars. "Langley retirees helped draft the business plan, solicit member organizations, select inventory and set up and staff the viewing area and the warehouse," says retiree and Galaxy ambassador Duncan McIver. "The next milestone is to recruit area corporations to donate products directly to the local partnership."

Engineers Week Links Students with "Teachers"

The fifth annual Engineers Week School Visitation program matched 217 volunteers with students in 177 local schools in February. The goal of the program was to make science, math and technology relevant to today's students, helping them prepare to prosper in an increasingly technological world.

Volunteers came from the ranks of scientists, engineers, technicians, support personnel, civil servants, contractors and retirees. The task was monumental as teachers from all 12 local school districts responded to the invitation to have a NASA speaker. Teacher evaluations marked the effort's success. Comments ranged from "my students now see applications of math and science in the real world" to "I enjoyed it as much as the kids" and "could we have more volunteers?"

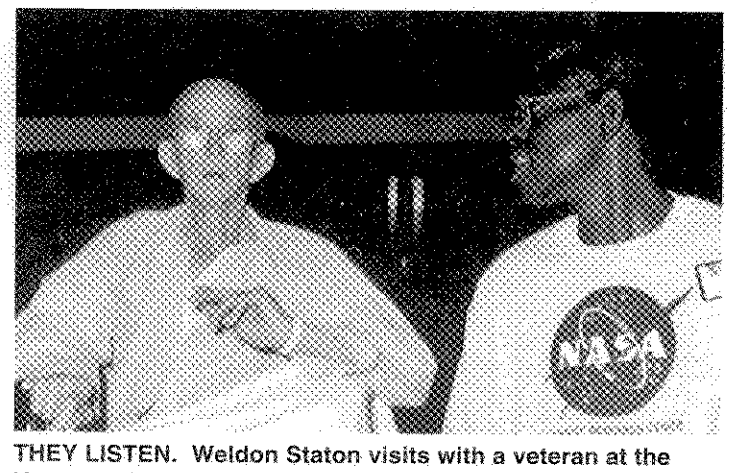


Photo by Katie Reid

THEY LISTEN. Weldon Staton visits with a veteran at the Veterans Administration Hospital and then treats him to a picnic lunch coordinated by the USO of Hampton Roads.

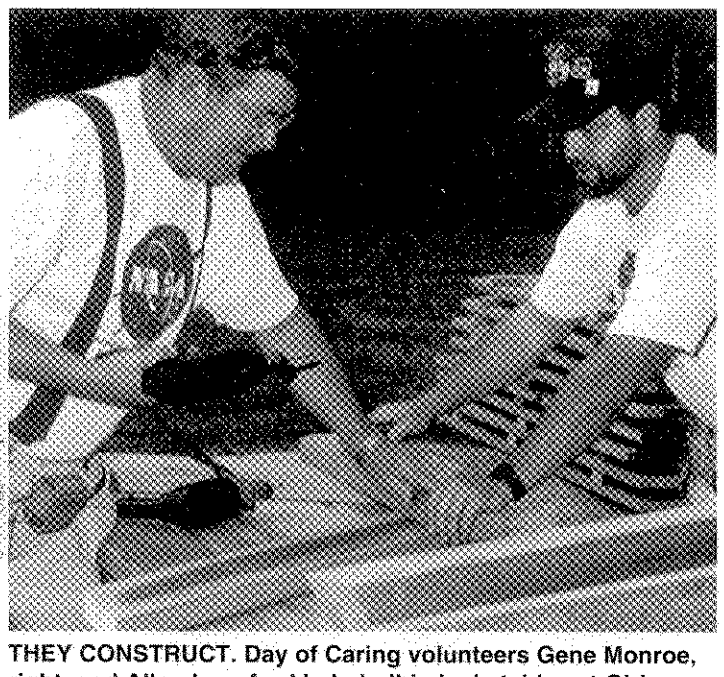


Photo by Peggy Hopkins

THEY CONSTRUCT. Day of Caring volunteers Gene Monroe, right, and Allen Langford help build picnic tables at Girl Scout Camp Skimino.

Photo by Katie Reid

THEY COOK. Lisa Peckham, at right, stirs the pot that will soon be mashed potatoes to adorn the turkey dinner that will feed hungry families at the Salvation Army Peninsula Command.

THEY MAKE MAGIC. Below, Engineers Week volunteer Nancy Kruse assists a second-grader at Capt. John Smith Elementary School with a scientific experiment that will open a whole new world of discovery for him and his classmates.

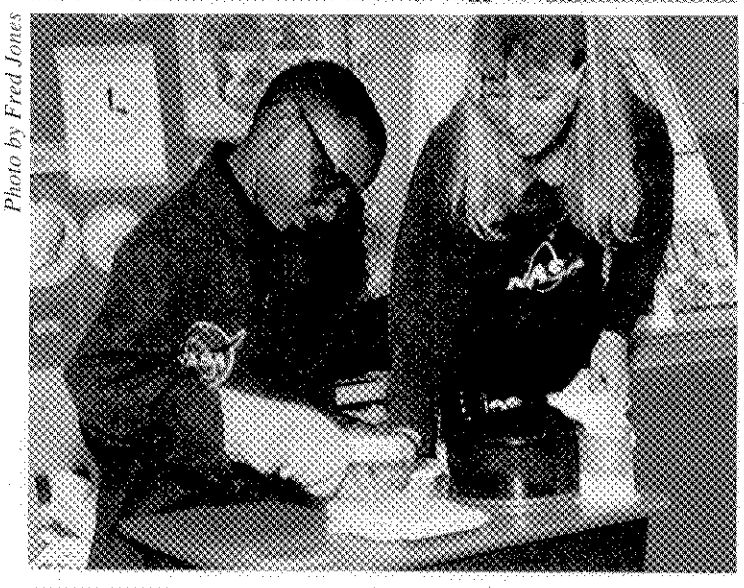


Photo by Fred Jones

How Can I Help?

BY NANCY FINN

Glad you asked that question! The needs of the community are many, and the opportunities for community service are great. You can assist in a community emergency, get involved in a one-day effort or volunteer on an ongoing basis.

For your convenience, information on volunteer opportunities has been compiled in a central location just outside the Public Mail Center, Building 1153, Room 115. Brochures outline programs of nonprofit agencies from health related initiatives sponsored by the American Cancer Society and the Red Cross to youth-oriented programs of the Boys and Girls Club and the YMCA.

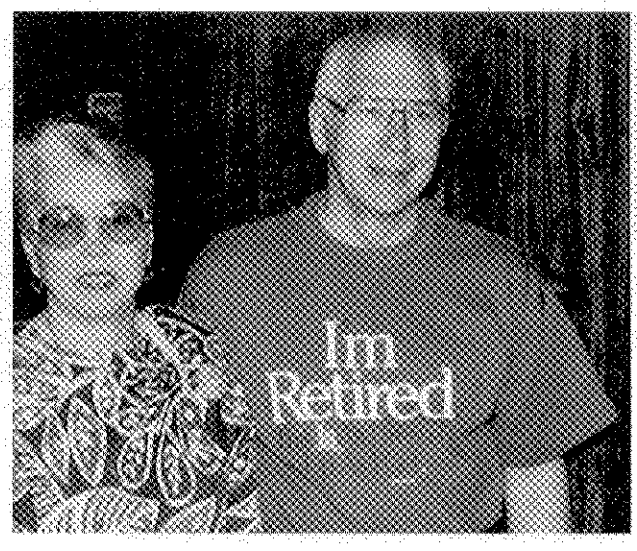
Organizations need volunteers to provide a helping hand with plenty of activities that range from delivering a hot lunch to shut-ins for Meals on Wheels to employing special skills such as rewiring a house for Housing Partnerships. Still, more volunteers are needed to interact one-on-one with senior citizens, children from single-parent households or families of hospice patients.

Volunteering is infectious! It reaps rewards for the volunteer as well as the recipient. It's even been known to boost morale, increase awareness of the needs of others, improve productivity and provide a source of personal pride. Try it! You'll like it!

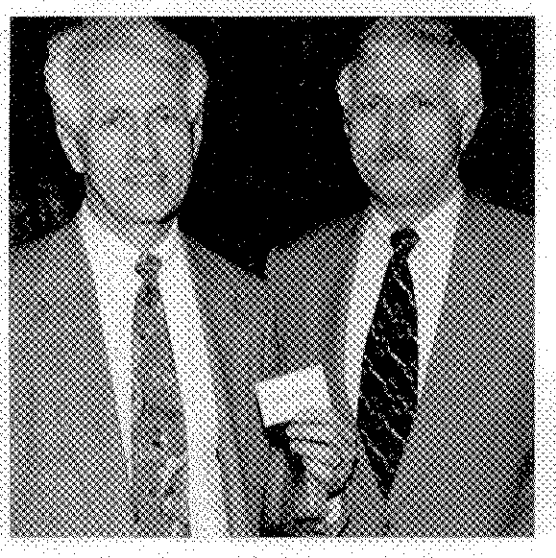
The Buyout Party

Photos by Fred Jones

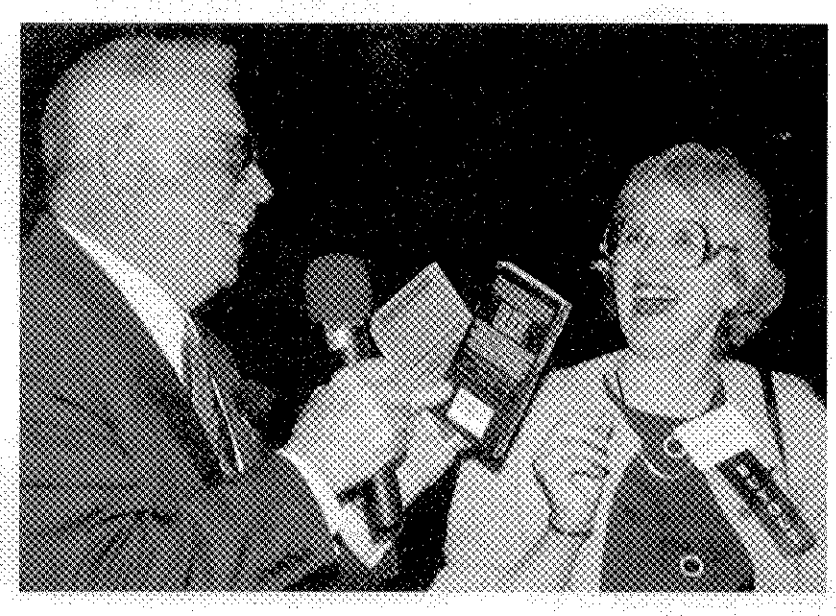
Above, Sherman A. Clevenson, right, receives a door prize from Dr. George Brooks, president of the Langley Alumni Association. Clevenson would have served NASA 50 years in June.



"I'm retired. This is as dressed up as I get." Dave Butler, with his wife, Carolyn, is already practicing his new lifestyle as a retiree.



Right, the Clark twins keep the photographer guessing who's who. Leonard, left, took the buyout. Lenwood stayed.



Right, Frances T. Messner, right, receives a "wildcat" door prize from Dr. George Brooks, president of the Langley Alumni Association.

NASA Electra Takes the Buyout

BY CATHERINE E. WATSON

The NASA Electra aircraft, a research workhorse for more than 16 years, joined several hundred of its fellow employees last month and bid a fond farewell to NASA. This reporter had a recent opportunity to speak with the Electra and got a bird's-eye view of some Langley research history.

CW: You've flown for the government for over 30 years, more than 14,000 flight hours.
Electra: Yes indeed. I started my flying career with the Federal Aviation Administration (FAA) in the early 1960s. Some of my peers were having wing problems and the FAA called me in to investigate. We were able to find a fix, of course, and, when the experiment was over, I decided I'd stay on with the government. That's when the FAA sent me to the South Pacific to certify navigation and landing avionics at FAA airports.
CW: Then you transferred to Wallops in 1978 to do atmospheric research, right?
Electra: Actually, I started off flying range surveillance for the Wallops rocket range and did that throughout my career. In the early 1980s, though, Langley was doing some atmospheric remote-sensing work, and they needed a test platform. I was used to flying all over the place stuffed to the gills with electronics, so I was the natural choice to lead the program.
CW: What sort of work did you do for Langley in the beginning?
Electra: Well, at that time, remote sensing from an aircraft was fairly new. We knew we could measure chemicals in the atmosphere using a variety of techniques, such as lasers. After all, they'd done it in the labs at Langley. The hard part was making a laser system small enough to fit aboard. It was tough going at first, but we learned from our mistakes pretty quickly.
CW: You didn't just test lasers.
Electra: Oh no, lots of different remote sensing techniques. In 1982, I flew a variety of instruments, most of them developed at Langley, to study the spread and composition of the Mexican El Chichon volcanic plume. Over the years, I helped test instruments for measuring carbon monoxide, ozone, methane, all sorts of atmospheric gases, and aerosols, too. In the late 1980s, I was fitted with a nose boom to measure atmospheric turbulence. The researchers used that data, along with onboard chemical measurements, to figure out whether the area I was flying over was putting a chemical into the atmosphere or taking it out of the atmosphere. All state-of-the-art stuff, mind you. Langley really led the way in developing atmospheric remote-sensing, and still does!
CW: I flew on you for six weeks during the summer of 1990, over the tundra of northern Canada...
Electra: ABLE-3B, one of the Arctic Boundary Layer Experiments. We got a lot of great data from those experiments, flying over the Arctic, Alaska, northern Canada. I've spent a lot of time in the northern latitudes. Luckily, it was usually during the summer and I was away from Wallops during mosquito season!
CW: You've flown south of the equator as well.
Electra: Quite a bit actually. I flew missions over Brazil and the South Atlantic during the Amazon Boundary Layer Experiments in the 1980s. One time, I lost an engine flying over the Amazon at night. That gave all the researchers something to talk about! The other three engines brought us home, though. Let's see. Later in 1992, I flew over Brazil and the South Atlantic again, and even southern Africa, during TRACE-A, looking at the effects of all the biomass burning they do in the dry season. Last time I was down south was during the LITE mission in September of last year. It was great knowing that some of the early research, of which I was part, helped put a laser system aboard the shuttle, and that I was flying below making sure they were doing it right! It was a fantastic last mission.
CW: What will you do now, with all this free time?
Electra: I'm not sure yet. Right now, I'm waiting for the folks at the General Services Administration to find a spot for me. My NASA days are over, but I still want to feel useful. I'll probably do some kind of volunteer flying, or maybe get a job with a contractor. That's such a cliché, isn't it!
CW: Well, whatever you do, I hope you'll come back on occasion and check up on us, make sure we're doing it right.
Electra: You can count on it. I'll rock my wings so you'll know it's me.

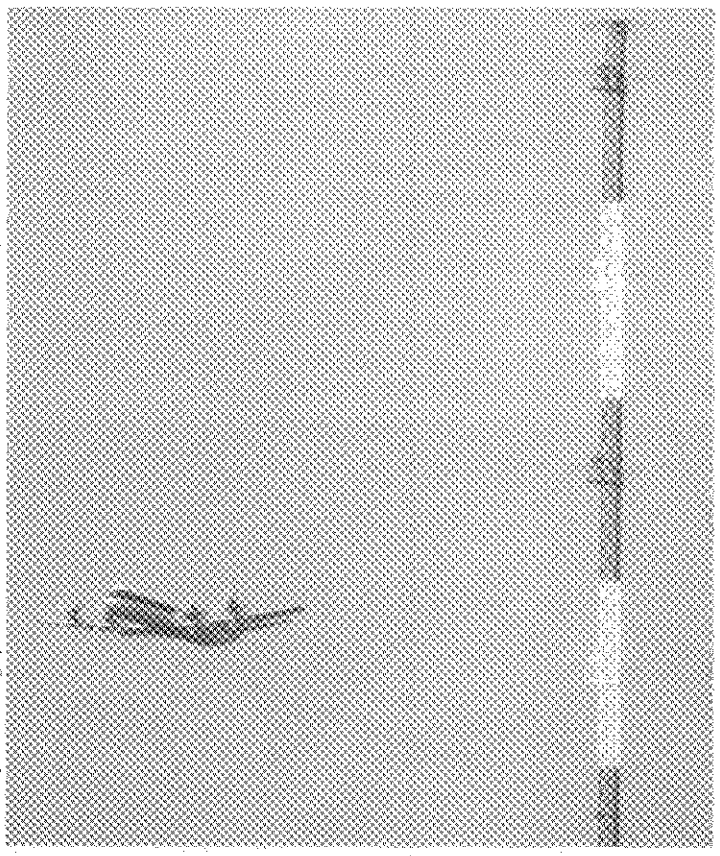


Photo by Paul Bagby

The Electra flies by the instrument tower at Wallops to calibrate an on-board turbulence experiment. The Electra, a 16-year-old research aircraft, was recently retired.

Technology Opportunities Showcase Draws Several Thousand Attendees

Langley's Technology Opportunities Showcase (TOPS) 1995 drew several thousand business attendees and area residents during its 3-day run, producing numerous business leads and generating strong public interest.

"I think it was a tremendous success," said Charles Blankenship, director of the Technology Applications Group (TAG), which sponsored TOPS. "We have indications from more than 40 companies that have a very strong interest and want to have follow-up discussions.

"We also spent quite a bit of time having discussions to explain to businesses how they can work with NASA through a Space Act cooperative agreement, and to tell them about patents they might be interested in licensing. We also described the process by which they can obtain a NASA license."

During TOPS' first two days, April 6 and 7, over 900 business attendees reviewed the 140 technology exhibits set up in the Hangar, the setting for this year's TOPS.

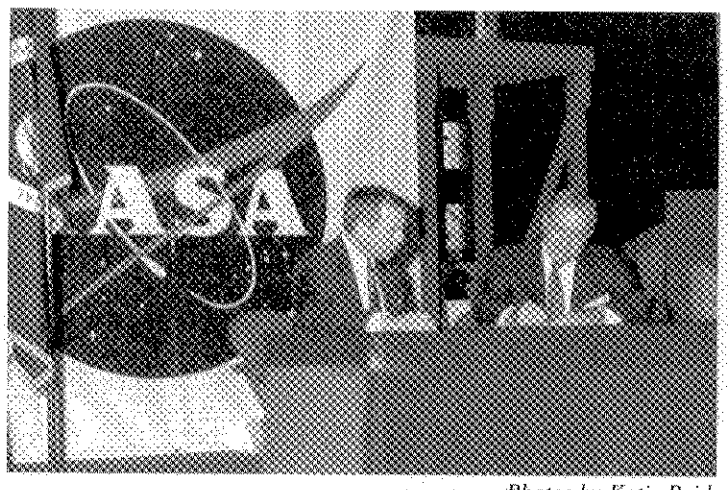
On a clear and warm Saturday, April 8, busloads of students and teachers, and cars filled with families pulled into the parking lots around the Hangar. By the end of the afternoon, more than 2,000 area residents had viewed the exhibits during Public Day.

A TOPS highlight was the teaming-up of Langley with a Virginia organization that will help the Center identify businesses that could benefit from NASA technology.

The agreement with the Center for Innovative Technology (CIT) in Herndon, Va., was signed during opening ceremonies April 6 and featured presentations by Center director Paul F. Holloway, CIT president Dr. Robert G. Templin, Jr., and Virginia Secretary of Commerce and Trade Robert T. Skunda.

"This is an example of the Center's outreach," Blankenship said, "where we're trying to make our technologies available to the local community and throughout the state and nationwide as well.

"Our signing this agreement will provide CIT access to technologies developed in the federal sector, and give them a broader market to help businesses in Virginia."

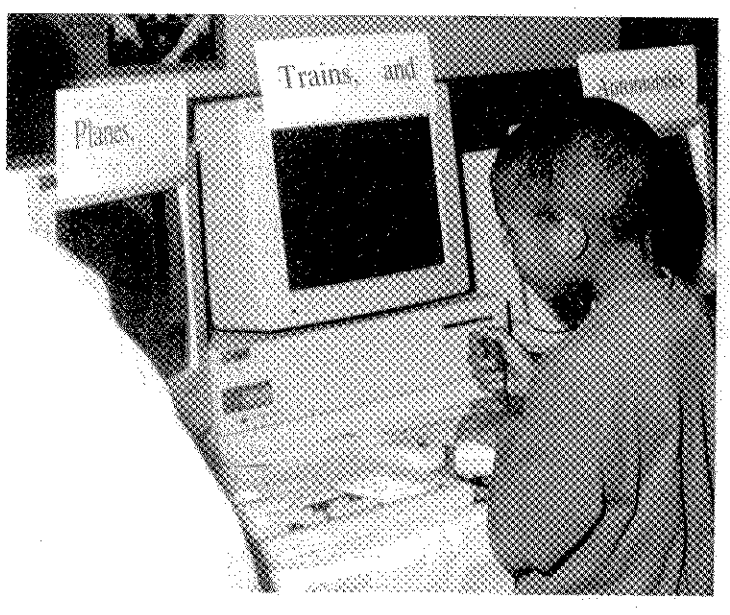


Photos by Katie Reid

Center Director Paul F. Holloway, right, and Center for Innovative Technology (CIT) President Dr. Robert Templin, Jr., sign an agreement between CIT and Langley during TOPS' opening ceremonies April 6. Under the agreement, the state-run CIT in Herndon, Va., will identify businesses that could benefit from Langley technology.

Larry Bement of the Analysis and Test Engineering Branch explains his exhibit to TOPS' attendees. He displayed his explosive seam-welding technique. He also developed a way to quickly determine the combustibility of certain products.

TOPS
TECHNOLOGY OPPORTUNITIES SHOWCASE
NASA LANGLEY RESEARCH CENTER



At left, Wayne Berry checks out desktop simulation during TOPS Public Day on April 8.

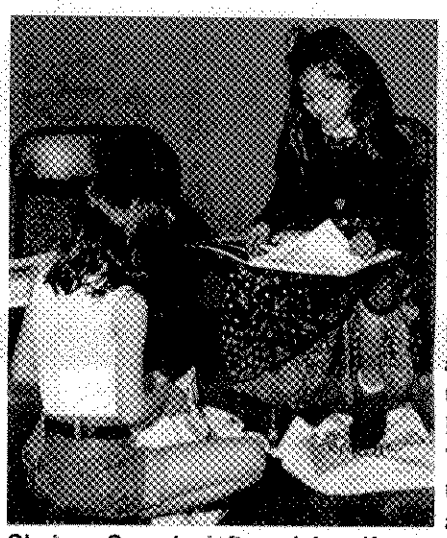
At right, Sophia Xu, left, and Chen Li get hands-on computer experience at TOPS Public Day. They were among over 2,300 people who viewed exhibits at the Hangar that day.

Special TOPS Thank You

Charles Blankenship

On behalf of the Technology Applications Group (TAG) and the organization of the Peninsula's EXPOTECH, I would like to personally thank the entire Center for helping plan and implement TOPS '95. From all indications, it was a big success. Nearly 1,000 individuals participated on April 6 and 7, representing more than 450 non-aerospace companies. And over 2,300 people visited during Public Day on Saturday.

We owe a special thanks to all the exhibitors! Planning and implementing the exhibits was done in addition to their normal work. I know it took special dedication and desire to participate in this important event. We have had many compliments about the exhibits and the technologies that were displayed. For example, Denise Freitag, business operations manager of a Chrysler/Ford/General Motors coalition that hopes to develop an 80-miles-per-gallon supercar by 2007, was quoted in the *Virginian Pilot* after her TOPS '95 visit as saying, "This is fantastic. We (the Clean Car Coalition) have been to eight federal labs. I've seen more technology in this room than all eight labs combined."



Chelsea Canada, left, and Jennifer Power take a break to look through their bags of goodies during TOPS Public Day.

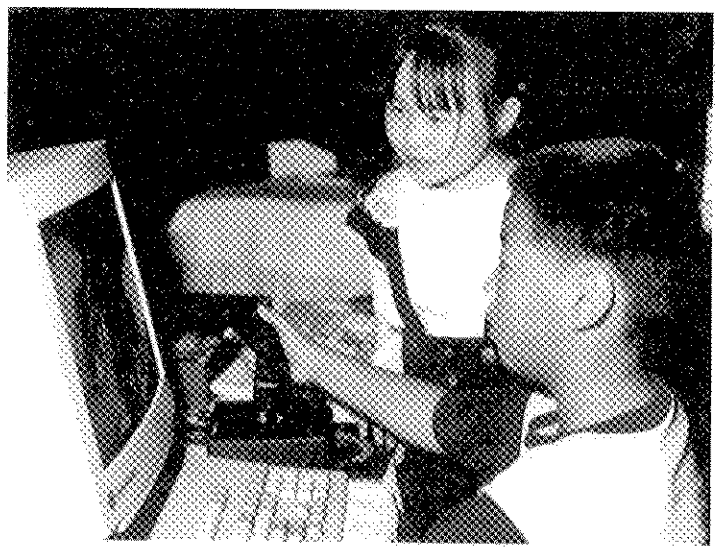
I would also like to thank all the volunteers across the Center and all the support staff who helped Jim Raper, the TOPS '95 implementation manager. In addition, a special thanks to our key implementation leaders: George Allison, Celeste Belcastro, Chris Belcastro, Gaudy Bezos-O'Connor, Buddy Cary, Don Phillips, Ron Staples and Barry Price. We could not have done TOPS without these enthusiastic and hard-working people.

It always amazes and pleases me to see the Langley team work together so well. You are a tremendous team and I am proud to be a part of it.

For the Technology Applications Group, and the technologists, the important TOPS '95 work now begins. TAG will be busy sorting and screening the several thousand follow-up inquiries and helping the technologists respond to industry's interest in their work.

TOPS '93 resulted in a significant increase in Langley's technology being transferred to industry through agreements, patents and licensing. I am confident that we will see far greater results from TOPS '95.

Charlie Blankenship
Director, TAG



Langley Wishes Buyout Retirees Well

Langley wishes to thank all of its civil servants who retired during the March 1995 Buyout for their service, hard work and effort over the years. We will miss you. We hope all goes well for you in your retirement.

Name	Activity
Frederick O. Allamby	Flight Experiments Development Office
Virginia K. Anderson	Office of Chief Counsel
Willard W. Anderson	Flight Dynamics and Control Division
Earl H. Andrews, Jr.	Hypersonic Airbreathing Propulsion Branch
Ernest S. Armstrong	Guidance and Control Branch
Johnny P. Arrington	Grants and Research Contracts Branch
Earl H. Arrowood	Services Contracts Branch
George C. Ashby, Jr.	Aerothermodynamics Branch
Douglas F. Auvil	Systems Development Branch
Betty L. Bailey	Employee Development Branch
Nancy Jane C. Bains	Thermal Structures Branch
Charles A. Baldwin	Space Systems Engineering Branch
Allison T. Ballew	Grants and Research Contracts Branch
J. Thomas Barclay	Metals Section
Bobby G. Batten	Nondestructive Evaluation Sciences Branch
Carmen E. Batten	Acoustic, Optical and Chemical Measurement Branch
Sylvia B. Blair	Travel Section
Hans Juergen C. Blume	Sensors Research Branch
Robert E. Boughner	Theoretical Studies Branch
D. Gene Bowen	Numerical Control Section
Roland L. Bowles	Crew Systems and Operations Branch
Dorothy O. Braswell	Systems Analysis Branch
Karen D. Brender	Spacecraft and Sensors Branch
John D. Bresnahan	Fluid Systems Section
Helen M. Bruce	Management Information Systems Branch
Robert A. Bruce	Facility Systems Engineering Division
Robert F. Bryant, Jr.	Fluid Mechanics Operations Section
John D. Buckley	Fabrication Division
Lewis G. Burney	Sensor Systems Branch
David H. Butler	Space Systems Engineering Branch
Harold K. Carney, Jr.	Electromagnetic Research Branch
Arlen F. Carter	Chemistry and Dynamics Branch
Marion S. Chaltry	Payroll Section
Conard L. Chapman	Fluid Systems Section
James L. Chiaramida	Flight Dynamics Operations Section
Leonard V. Clark	Information Systems Division
Ronald K. Clark	Metallic Materials Branch
William H. Clarke	Electrical Systems Controls Section
Sherman A. Clevenson	Structural Acoustics Branch
Jean W. Clough	Office of Public Services
Ida K. Collins	Aerothermodynamics Branch
Earl P. Conkling	Flight Dynamics Operations Section
William C. Conkling	Composites Section
L. Joseph Connors	Office of Chief Counsel
David S. Coombs	Research Models and Support Section
Ned W. Cooper	Simulation Systems Branch
William A. Corlett	Research Facilities Branch
John C. Covington	Communications and Networks Branch
Franklin E. Creech	Fluid Systems Section
Jean G. Cridlin	Nondestructive Evaluation Sciences Branch
Harvey D. Dameron	8-Foot High-Temperature Operations Section
Marcellus Damon	Electrical Systems Controls Section
Edward F. Daniels	Structural Acoustics Branch
Wayne L. Darnell	Radiation Sciences Branch
Randall C. Davis	Thermal Structures Branch
Shirley L. Davis	Travel Section
J. David Dearing	Utilization Analysis Branch
Jerry W. Deaton	Mechanics of Materials Branch
Thomas M. Desmett	Composites Section
Robert V. Doggett, Jr.	Structures Division
Sullivan R. Donadio	Fabrication Division
Sharon Ann Ellis	Computational Structures Branch
James C. Ellison	Technology Development Office
Wayne D. Erickson	Hypersonic Vehicles Office
Fred Ferrari, Jr.	Research Models and Support Section
James D. Ferrell	Communications and Networks Branch
George E. Ficklen	Simulation Systems Branch
Andrew L. Forbes, Jr.	Projects Controls Branch
Barbara A. Fryer	Office of Director
Dennis E. Fuller	Model Instrumentation and Systems Branch
H. Douglas Garner	Flight Instrumentation Branch
Bertie S. Garrett	Engineering Support and Facility Projects Branch
Jack F. Gayle	Space and Facility Support Section
Garl L. Gentry, Jr.	Research Facilities Branch
Hugh C. Gentry III	Subsonic Operations Section
Luther R. Gentry	Model Instrumentation and Systems Branch
William F. Giannini	Acquisition Support Branch
Vernon P. Gillespie	Technology Applications Group
Michael Glenn	Employee Development Branch
Carolyn Grantham	Systems Integration Branch
William L. Grantham	Guidance and Control Branch
Ray W. Gregory	Measurement Science and Technology Branch
Kenneth V. Haggard	Theoretical Studies Branch
James B. Hall	Communications and Networks Branch
Marie W. Hall	Commercial Accounting Section
Carl J. Hamilton	Space and Facility Support Section
Louise C. Hamilton	Employee Development Branch
Allan C. Hanrahan	Resources Control Section
Andrew J. Hansbrough	Planning and Resources Management Office
Robert J. Harbison	Fluid Mechanics Operations Section
Julius E. Harris	Flow Modeling and Control Branch
Timothy Harris III	Aero-Acoustics Operations Section
Edwin F. Harrison	Radiation Sciences Branch
Jack J. Hatfield	Crew/Vehicle Integration Branch
Paul J. Hayes	Systems Integration Branch
Philip L. Hazlett	Imaging and Photographic Technology Section
Walter L. Heard, Jr.	Structural Mechanics Branch
Chase P. Hearn	Sensors Research Branch
Roy A. Heath, Jr.	Institutional Support Branch
Kenneth D. Hedgepeth	Aerospace Mechanical Systems Division
Marilyn B. Heyson	Research Publishing and Printing Branch
Kathleen L. Hillard	Technology Applications Group
James A. Holland	Sensor Systems Branch
Jackie W. Holloway	Office of Safety and Facility Assurance
Harlan K. Holmes	Experimental Testing Technology Division
Nancy S. Holt	Atmospheric Sciences Division
Richard B. Holt	Metals Applications Technology Branch
Floyd G. Howard	Flow Modeling and Control Branch
William E Howell	Structural Dynamics Branch
Lona M. Howser	Scientific Applications Branch
James L. Hudgins	Engineering Support and Facility Projects Branch
John E. Hunt	Cast Metals and Facility Support Section
Joseph B. Jackson	Communications and Networks Branch
Eloise L. Johnson	Research Publishing and Printing Branch
Gus E. Johnson	Numerical Control and Integrated Structures Section
Frank L. Jones	Aerospace Electronic Systems Division
Frank L. Jordan, Jr.	Research Facilities Branch
Jacqueline T. Kallick	Planning and Resources Management Office
Philip C. Kassel, Jr.	Acoustic, Optical and Chemical Measurement Branch
Gerald M. Keating	Theoretical Studies Branch
Arthur D. Keene	Work Control Section
James D. Keller	Aerodynamic and Acoustic Methods Branch
Frederick A. Kern	Aerodynamic Measurement Branch
Frank S. Kirkham	Advanced Aircraft Branch
James J. Kiss	Structures/Materials Operations Section
Wayne L. Kitchen	Electronic Systems Branch
Kevin J. Kjerstad	Subsonic Aerodynamics Branch
Melissa Bingham Koch	Electromagnetic Research Branch
Carolyn T. Kurtz	Personnel Management Section
Charles C. Laney, Jr.	Facility Development Team
Peggy H. Langford	Fund Accounting and Control Section
Frank L. Lawrence, Jr.	Resources Control Section
Olaf M. Lawson, Jr.	Office of Safety, Environment and Mission Assurance
Shirley W. Lawson	Resources Support Office
Jack D. Leatherwood	Structural Acoustics Branch
John K. B. Ledeaux	Security Services Branch
Edwin E. Lee, Jr.	Research Facilities Branch

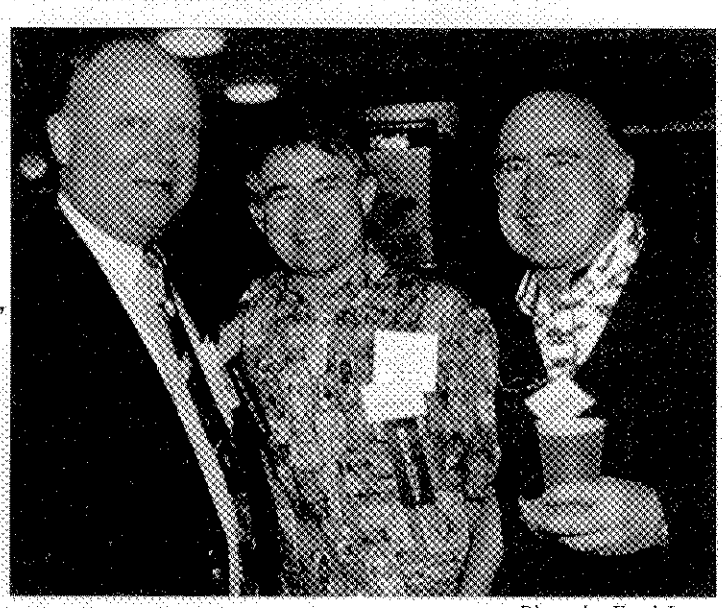
Agencywide Buyout Stats

Overall, 1,430 NASA employees took the buyout. Here at Langley, 271 opted for the early retirement plan. Listed here are the statistics Agencywide.

Installation	Number Separated
Ames	111
Dryden	24
Goddard	249
Headquarters	80
Johnson	34
Kennedy	165
Langley	271
Lewis	178
Marshall	198
Stennis	11
Space Station Program Office	5
Inspector General	4
Total	**1430**

Langley Wishes Buyout Retirees Well

Name	Activity
Harold C. Lester	Structural Acoustics Branch
E. Burton Lightner	Flight Experiments Development Office
Ronald R. Long	Aero-Acoustics Operations Section
Uriel M. Lovelace	Utilization Analysis Branch
Julius B Lovell	Systems Engineering Office
William E. Malone, Jr.	Aero-Acoustics Operations Section
Helen I. Mason	Institutional Support Branch
Marna H. Mayo	Aeronautics Program Group
L Wayne Mckinney	Office of Director
Charles W. Meissner, Jr.	Assessment Technology Branch
Frances T. Meissner	Management Information Systems Branch
James Frank Meyers	Office of Human Resources
Marjorie J. Mikula	Supply, Construction and ADP Contracts Branch
Betty F. Millard	Research Facilities Branch
Allen N. Milton	Electrical Systems Controls Section
Brenda L Minick	Facilities Program Development Office
L. Kerry Mitchell	Technology Applications Group
Randolph W. Mixon	Systems Integration Branch
William J. Monta	Hypersonic Airbreathing Propulsion Branch
Cadd T. Moore, Jr.	Office of Mission Assurance
Shelby J. Morris, Jr.	Systems Analysis Branch
Janet J. Nagele	Information Systems Division
John E. Nealy	Radiation Sciences Branch
Judy R. Neil	Office of Education
Richard R. Nelms	Remote Sensing Office
William C. Nettles	Experimental Aero Development Section
Marie S. Noland	Scientific Applications Branch
R. Keith Norwood	Computational Structures Branch
Harold A. Orr	Printing and Reproduction Section
Ronald A. Outlaw	Measurement Science and Technology Branch
Gordon Owsley	Aeronautical Systems Engineering Branch
William E. Parady	Quality Assurance Office
Barbara A. Pasternak	Scientific and Technical Information Division
Sidney F. Pauls	Office of Director
Jack E. Pennington	Information and Electromagnetic Technology Division
Lee H. Person, Jr.	Flight Operations and Support Division
Burnett W. Peters, Jr.	Office of Equal Opportunity Programs
Robert M. Peterson	Aircraft Support Branch
Merven N. Pfeiffer	Engineering Support and Facility Projects Branch
Floyd A. Phaup	Materials Research Operations Section
Donald B. Phillips	Institutional Support Branch
Michael R Phillips	Flight Operations and Support Division
James L. Puffenberger	Resources and Contracts Branch
Gloria F. Ragsdale	Facility Systems Engineering Division
Carson C. Rector	Electronics Contractual Services Section
William E. Rew	Projects and Focused Programs Contracts Branch
Robert P. Rhinehart	Research Support Office
Luther L. Richardson	Numerical Control Section
Betty R. Riggin	Crew Systems and Operations Branch
Donald R. Riley	Vehicle Dynamics Branch
David B. Robelen	Flight Dynamics Operations Section
Sarah M. Roberson	Cost Accounting Section
C. Norwood Robeson, Jr.	Acoustic, Optical and Chemical Measurement Branch
Vernelle V. Robinson	Security Services Branch
Humbert E. Rockey, Jr.	Engineering Support and Facility Projects Branch
Bill R. Rouse	Aerosol Research Branch
Carroll W. Rowland	Sensor Systems Branch
Courtney E. Russ, Jr.	Data Systems and Instrument Support Branch
Frederick J. Sansom	Information Systems Division
Lyle C. Schroeder	Sensors Research Branch
Robert F. Schwartz	Subsonic Operations Section
Patrick H. Seabolt	Engineering and Construction Services Section
John D. Shaughnessy	Dynamics and Control Branch
W. Albert Shearin, Jr.	Contractual Resources Section
John L. Shideler	Thermal Structures Branch
William T. Shinn	Office of Education
James M. Shipp	Fluid Systems Section
John N. Shoosmith	Information Systems Division
Charles P. Shore	Thermal Structures Branch
Natalie H. Shrader	Acoustic, Optical and Chemical Measurement Branch
Paul M. Siemers III	Gas Dynamics Division
Wayne S. Slemp	Environmental Interactions Branch
Rudeen Smith-Taylor	Technology Applications Group
Leigh A. Smith	Transonic/Supersonic Aerodynamics Branch
Carolyn V. Snead	Office of Public Services
Daniel B. Snow	Transonic/Supersonic Aerodynamics Branch
Richard E. Snyder	Internal Operations Group
Charles T. Solomon	Electronics Contractual Services Section
Brenda F. Spencer	Institutional Support Branch
Robert L. Spruill	Simulation Systems Branch
Leo D. Staton	Remote Sensing Technology Branch
Weldon L. Staton	Office of Safety and Facility Assurance
Robert M. Stewart	Structures/Materials Operations Section
John F. Stokes	Internal Operations Group
Marie C. Storms	Cost Accounting Section
Kimberly L Stroup	Hypersonic Propulsion Operations Section



98 YEARS. Sid Pauls, left, and pilots Lee Person and Dick Yenni, right, share a moment at the Buyout Party before flying off into retirement. Between the three of them, they contributed 98 years of service to NASA.

Photo by Fred Jones

Charles W. Stump	Sensor Systems Branch
Linda W. Sutherland	Fluid Mechanics and Acoustics Division
Robert J. Swaim	Electronics Packaging Development Section
Doyle P. Swofford	Analysis and Test Engineering Branch
Joseph B. Talbot	Space and Atmospheric Sciences Program Group
James Y. Taylor	Grants and Research Contracts Branch
John T. Taylor	Engineering Support and Facility Projects Branch
William L. Terrill	Office of Public Affairs
Dolores W. Thomas	Management Information Systems Branch
Mary D. Thomas	Operations Support Division
L. Frederick Tomlinson	Contractual Resources Section
Stephen S. Tompkins	Environmental Interactions Branch
George J. Trombley	Experimental Aero Development Section
Robert D. Turner	Research Facility Instrumentation Development Section
Leonard T. Twigg	Office of Comptroller
Charlotte W. Tyeryar	Office of Director
Jon L. Vancleave	Office of Safety, Environment and Mission Assurance
Gene A. Wagner	Hypersonic Propulsion Operations Section
John W. Wallace	Ceres Project Office
Kenneth L. Wallace	Landing/Impact Dynamics Operations Section
Harry G. Walthall	Electronics Contractual Services Section
George M. Ware	Vehicle Analysis Branch
Linda S. Warren	Research and Technology Group
Carolyn B. Watson	Research Facilities Branch
Charles W. Watson, Jr.	Graphics and Design Section
Joe David Watts	Hypersonic Vehicles Office
Granville L. Webb	Structural Dynamics Branch
Elizabeth H. Weidner	Hypersonic Airbreathing Propulsion Branch
Wayne H. Wells	Engineering Support and Facility Projects Branch
Douglas W. Whipple	Fabrication Division
Ronald L. White	Flight Dynamics Operations Section
Julia H. Whitehead	Vehicle Performance Branch
William R. Wiley, Jr.	Operations Support Division
James B. Williams	Electronic Systems Branch
M. Susan Williams	Research Facilities Branch
Pamela J. Z. Williams	Sensors Research Branch
William K. Williams	Engineering and Construction Services Section
George L. Willis	Structures/Materials Operations Section
Murray J. Wilson	Research Models and Support Section
Carolyn C. Wilt	Aeronautics Program Group
Robert T. Wingate	Internal Operations Group
Matthew M. Winston	High-Speed Research Project Office
George M. Wood, Jr.	Acoustic, Optical and Chemical Measurement Branch
Robert E. Wright, Jr.	Aerodynamic Measurement Branch
Roger L. Yard	Information Systems Division
Kenneth R. Yenni	Flight Operations and Support Division
Annie M. Young	Security Services Branch
Philip R. Young	Composites and Polymers Branch

Happenings

HOUSE TO SHARE: Two private rooms and private bath in spacious, stunningly located house. Available to quiet, thoughtful, health-conscious non-smoker. Call 898-1291.

FOR RENT: Furnished 1BR apartment in Poquoson. $450 per month including electricity and water. No pets. Non-smoker. Available May 1. Phone Sheri at 868-4608.

FOR RENT: Relax on Sanibel Island, Fla., in an elegant beach-front condo. Tennis, pool, full kitchen, 1BR, on-site management. May to October. $625/week. Brochure available. Call Dick at 565-1849.

VA SYMPHONY: The Virginia Symphony Classical Masterworks concerts will be held April 21 and 22 at Chrysler Hall. *Mozart and More* concerts will be held April 29 at the Hampton Roads Academy and April 30 at The College of William and Mary. Skitch Henderson will conduct performances with the Manhattan Rhythm Kings on May 5 at Ogden Hall and May 6 at Chrysler Hall. Tickets from $12 to $27 (20 percent off). Call the Exchange Shop at ext. 41585.

FOR SALE: '89 Mazda RX-7. Perfect condition. Loaded w/ options (sunroof, A/C, 4-spkr stereo w/eq.). Black clear-coat. 63,000 mi. $9,500 or best offer. Call Ruth at 480-1949.

GLASSES FOUND: Reading glasses found in Bldg. 1195B beside the mail bins. To claim, call Charlene at ext. 42558.

CARPOOL: Yes, the buyout got us too. We're looking for up to two alternate drivers from the James-York Playhouse, Williamsburg, to the Langley West Area on the 8 a.m. to 4:30 p.m. shift. Prefer safety oriented, non-smoking, prompt person with an air-conditioned, dependable vehicle sized to be comfortable for at least five persons. Call C.M. Hudson at ext. 47250, C. Church at ext. 48132 or R.R. Henk at ext. 47226.

RACQUET STRINGING: Experienced racquet stringing at reasonable rates. Various types of strings available w/1-day service guarantee. U.S. Racquet Stringers Association. Call Ray at 875-5678.

WORKSHOP: The 4th Annual Workshop for Advances in Smart Materials for Aerospace Applications will be held May 4 and 5, 8 a.m. to 5 p.m. at the H.J.E. Reid Conference Center. For registration information and agenda, call Robin C. Elder at ext. 47159, Joycelyn Simpson at ext. 44239 or Garnett Horner at ext. 46489.

WORKSHOP: The University of Virginia Workshop on Human-Computer Interaction and Virtual Environment will be held April 26 and 27 at the Peninsula Graduate Center, 303 Butler Farm Rd., Hampton. It is being organized by the Center for Computational Structures Technology of UVA. For information, call ext. 41978.

RETREAT: The Langley Alumni Association will host a weekend retreat for former Langley employees and their guests from May 19 to 21 at the Holiday Inn Hotel-Tanglewood, Roanoke, Va. Make reservations as soon as possible and pay by May 15. For more information, call Abe Leiss at (804) 877-2939.

Langley's Technical Library Hosts 3rd Annual Open House on May 10

Spring into the Information Age during Langley Library's "Maydays" celebrations and third annual open house on May 10. Leading up to the event, library staff have planned CD-ROM demonstrations, a series of Wednesday-afternoon brown-bag lunch seminars and Thursday-afternoon library tours. The library will also host presentations entitled, "Materials Databases" on April 26 and "Locating & Selecting Business Information Resources" on May 3. On April 27 and May 4, a library tour will be given from 1:30 to 2:15 p.m. For more information and a complete schedule, call the Reference Desk at ext. 23456.

Scott to Report on First 100 Days of 104th Congress

Robert C. Scott, Democratic representative of Virginia's 3rd District, will discuss the first 100 days of the 104th Congress on Monday, April 24, 1 to 2 p.m., at the H.J.E. Reid Conference Center. He will also talk about the importance of long-range aeronautical research to this country. An honorary member of the American Institute of Aeronautics and Astronautics, a co-sponsor of this presentation, Scott considers Langley a part of his constituency.

All Langley and contract employees are invited to attend. Langley employees may charge their time to JO A5266.

Correction

In the April 7, 1995, issue of the *Researcher News*, we reported that the 1995 Contractors Excellence Award for Quality and Productivity was awarded to Unisys Corp. and Dynamic Engineering, Inc. (DEI). In fact, Unisys received the award. DEI was recognized as an award finalist.

The Contractors Excellence Award recognizes model Langley contractors who practice continuous improvement, strive constantly to exceed customer expectations and share their methods of achievement willingly with other U.S. industries.

Please let us know how long you wish to run an announcement in "Happenings." If we do not have this information attached, we will run it for the current issue only.

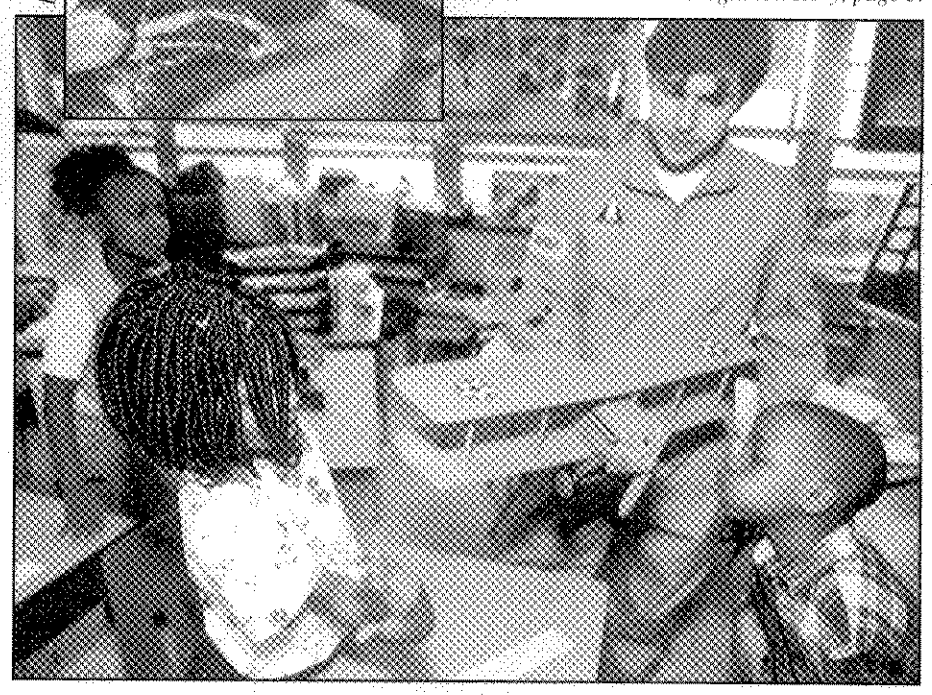
Langley Salutes Volunteers: America's Most Valuable Resource

PROVIDING PRODUCTS TO PEOPLE IN NEED. Alumni Association President and Galaxy of Gifts Ambassador George Brooks, left, works with Association for Retarded Citizens manager Paul Babcock to organize the Galaxy of Gifts warehouse.

SCIENCE IS FUN. Engineers Week volunteer Scott Bickford, below, uses a biplane model to explain to students at Douglass Park Elementary School in Portsmouth how planes fly.

Photos by Fred Jones

See volunteer recognition story, page 3.



National Volunteer Week, April 24 to 28

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business. Penalty for Private Use $300.

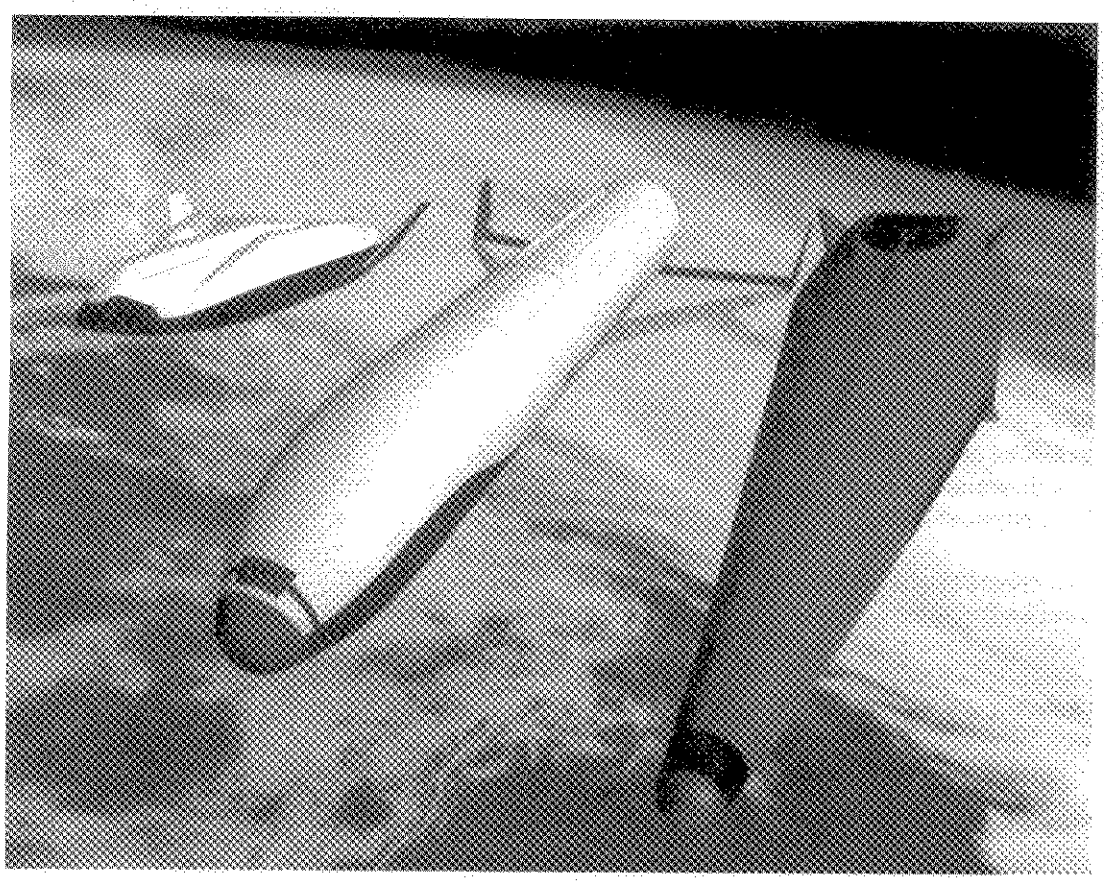
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 9 ❖ May 5, 1995

Langley Takes Lead with X-33, X-34



REUSABLE LAUNCH VEHICLES
Lifting-body, winged-body and vertical-landing configurations, left to right, are X-33 options being studied by industry for use as reusable launch vehicles in the 21st century.

Langley is playing a key role in the development of next-generation space-transportation systems.

NASA's Reusable Launch Vehicle (RLV) program calls for developing one or more launch vehicles that could deliver payloads and people to space, fly back to Earth and be used again. The forerunners of these systems will be the X-33, X-34 and DC-XA test vehicles.

Marshall Space Flight Center in Huntsville, Ala., is the host center for the industry-led effort, which, among new programs, NASA Administrator Daniel S. Goldin has declared the Agency's highest priority.

The RLV program's goals are to speed the commercialization of space and improve U.S. economic competitiveness, making access to space as routine and reliable as today's airline industry, while reducing costs and enhancing safety and reliability.

The development and demonstration of new technologies for the next generation of space transportation systems will involve traditional ground tests complemented by flight demonstrations. Experimental "X" vehicles will be used to verify that full-scale versions would perform as planned.

Langley's Contribution

In support of the program, Langley has been asked to draw on its 20 years of experience in reusable-launch-vehicle studies. The Center's role in the 1993 NASA Headquarters "Access to Space" study helped lead to the selection of reusable concepts as the basis for future space transportation systems.

"Stepping up to the next level of launch vehicle performance, at the same time that launch costs are greatly reduced and safety and reliability are enhanced, is a major challenge," said Darrell Branscome, head of Langley's Space and Atmospheric Sciences Program Group. "With shrinking budgets and pressures to get more for less, the RLV program will represent a crucial test of employee resourcefulness."

An early X-34 configuration wind-tunnel model at Langley

Langley's world-class wind tunnel and computational capabilities will be applied to study optimal RLV configurations. RLV aerodynamics, flyability and heating caused by reentry will be studied as well. The Center will also conduct research on structures and materials, and contribute to mission modeling and operations analysis.

The X-34

The X-34 is planned to be a small, reusable space booster that could also serve as a test bed to demonstrate RLV technologies. As an operational commercial booster, the X-34 would significantly reduce the cost of sending 1,000- to 2,000-pound payloads into low-Earth orbit.

The X-34 would be attached to an airplane, carried aloft and launched from the airplane while in flight. After using a rocket system to boost itself to high suborbital speeds, the X-34 would release an expendable upper-stage rocket to propel the payload the rest of the way to orbit. The X-34 would then glide to Earth for re-use. Flight tests are planned for late 1997, with a first launch expected by mid-1998.

Orbital Sciences Corp., teamed with Rockwell International Corp., will develop the X-34 under a $70-million contract with NASA that started last month and runs through fiscal year 1999. The teaming companies will also invest matching funds in the joint project.

See **X-33, X-34**, *page 6*

Parker Named New Division Chief

Jeffrey A. Parker has been selected by the Internal Operations Group to be chief of the Logistics Management Division (LMD). He is responsible for directing, planning and providing human-resources management for Center-wide logistics management and institutional support services. This includes property management; transportation; physical, personnel, and classified security; correspondence and records management; Center-wide directives and forms; and office furnishings and equipment.

Jeffrey A. Parker

Career

During the last year, Parker served as head of the Property and Transportation Branch in LMD, where he had oversight of supply and equipment management, property disposal, warehousing, transportation and vehicle fleet management. For two years prior to that, he served as assistant to the director for management operations with responsibility for resource planning and technical support to the Management Operations Directorate (MOD).

Parker came to Langley in 1974 as a cooperative education student from Hampton Institute. In 1975, he graduated with a

See **Parker**, *page 6*

Langley's SAGE III Instrument to Fly Aboard Russian Spacecraft

BY CATHERINE E. WATSON

Last month, U.S. and Russian engineers and scientists met at Langley to finalize details for placing the successor to Langley's highly successful stratospheric profilers aboard the Meteor-3M spacecraft of the Russian Space Agency (RSA). The Stratospheric Aerosol and Gas Experiment III (SAGE III) instrument will succeed Langley's SAGE II instrument, which has been returning valuable data about the Earth's atmosphere since October 1984.

Three SAGE III Instruments

In November 1994, NASA Headquarters approved the SAGE III investigation, calling for three copies of the SAGE III instrument to be built.

The first instrument will fly on RSA's Meteor-3M spacecraft in August 1998. The second instrument is planned for deployment aboard the International Space Station in 2001. The third instrument will serve as a backup, though it could fly as well if a launch opportunity arises.

"SAGE III was chosen by Mission to Planet Earth to make some very critical measurements ... primarily ozone, water vapor, and aerosols," said Dr. M. Patrick McCormick, head of the Aerosol Research Branch and the SAGE III science principal investigator, at an April 13 media briefing.

According to McCormick, the Russian spacecraft's orbit will allow SAGE III to cover the poles of the Earth. The second SAGE III instrument will collect data from Earth's tropical and mid-latitude regions. Together, the two very different orbits will provide SAGE III with global coverage. "We're extremely happy to have this opportunity to fly on this particular spacecraft (the Meteor-3M) with its unique orbit," McCormick added.

Mission to Planet Earth

During the week of April 10, the Mission to Planet Earth (MTPE) Joint Working Group met at Langley to discuss U.S./Russian cooperation in the MTPE, including SAGE III. At the April 13 media briefing, Raymond Roberts, deputy division director of NASA Headquarters' Office of MTPE, said the MTPE Joint Working Group "was established to seek broad

See **Sage III**, *page 4*

News Briefs

Around the Agency

FIFTH ANNIVERSARY OF HUBBLE LAUNCH OBSERVED - April 24 was the fifth anniversary of the launch of NASA's Hubble Space Telescope. Celebrated throughout the world as the finest astronomical instrument ever built, Hubble has provided remarkable new views of the universe which have revolutionized astronomers' thinking about a variety of astronomical mysteries, such as black holes, quasars and dark matter.

"The Hubble Space Telescope is truly a national scientific treasure," said Dr. Wesley Huntress, Jr., NASA's associate administrator for Space Science. "With a rate of discovery that is unprecedented for any modern observatory, Hubble not only has revolutionized astronomy, it has engaged the interest and imagination of the public more than any space science satellite has done before.

"And that may be its most far-reaching and important legacy - getting a new generation of young people excited about science," Huntress said.

Hubble's "Top Ten Images" are available using a World Wide Web browser, accessed by this address: http://www.stsci.edu/pubinfo/BestOfHST95.html

NASA STUDY HELPS ANSWER KEY CLIMATE QUESTION - Evidence that clouds absorb more solar radiation than previously believed should improve researchers' ability to predict climate change, according to NASA scientists. The work resulted from simultaneous flights of NASA's ER-2 and DC-8 aircraft above and below cloud decks. By using identical instruments on the aircraft, scientists were able to measure solar radiation as it reached the clouds and after the clouds had scattered it.

For almost 40 years, several studies have suggested that clouds absorb more radiation than prevailing models have indicated. "Now, for the first time, NASA's research aircraft have provided consistent evidence that clearly supports this contention," said atmospheric physicist Peter Pilewskie of NASA's Ames Research Center, Mountain View, Calif.

The cloud-absorption study embodies the ultimate goal of NASA's Mission to Planet Earth: to increase our knowledge of how large-scale phenomena such as cloud cover and solar energy influence the Earth's global environment.

Changes

Changes Made in Acquisition Division

The following organizational changes have been made within the Acquisition Division. The Grants and Research Contracts Branch has been abolished. Employees who were assigned to this branch have been reassigned to existing branches within the division.

The Services Contracts Branch, headed by Panice H. Clark, has been renamed the Grants and Services Contracts Branch.

The Project and Focused Programs Contracts Branch, headed by Mary J. Yeager, has been renamed the Research and Focused Programs Contracts Branch.

Acting EO Officer Named

Dr. H. Lee Beach, Jr., deputy director of the Center, will serve as the acting Equal Opportunity officer. Vivian B. Merritt will serve as the deputy Equal Opportunity officer.

Acting HVO Deputy Named

David E. Reubush has been named the acting Deputy Director for the Hypersonic Vehicles Office.

Letter

From Ed Harrison:

"I want to thank all of you for attending my retirement party. The tributes and gifts were very much appreciated, and it was great to see so many of my colleagues and friends. It was truly an evening to remember and savor over the years. I will greatly miss all of you and wish you the best!"

Retirement Parties

Clevenson, et al.

A retirement buffet luncheon to say a fond farewell to four Structural Acoustics Branch (SAB) employees, Sherm Clevenson, Ed Daniels, Jack Leatherwood and Harold Lester, will be held Wednesday, May 10, beginning at 11:30 a.m., at the Ming Gate Restaurant, 2800 W. Mercury Blvd., Hampton. Cost is $6.25 per person. No gift contributions are required as gifts will be handled by the SAB staff. Retirement-album signature sheets are available for signing in the SAB office, Bldg. 1208, Rm. 102. To sign up, call Lori Jones or Jennifer Tawney at ext. 43575 by May 5. Send cash or check payable to Lori Jones to Mail Stop 463.

Kallick

A retirement social for Jackie Kallick will be held Monday, May 8, 5:30 to 7:30 p.m., in the H.J.E. Reid Conference Center. Refreshments and hors d'oeuvres will be served. Cost is $9 per person including a gift. For reservations, contact Diane Wieting via phone at ext. 46052 or Mail Stop 114 by April 28.

Orr

A retirement buffet luncheon for Harold A. Orr will be held Thursday, May 18, 11:30 a.m., in the Williamsburg Room of the Chamberlin Hotel Restaurant. Cost is $10 per person including a gift. For gift-only contributions or to send checks or cash, contact Chris Ryan via phone at ext. 43278 or Mail Stop 180 by May 10.

Howell and Webb

Family, friends and colleagues are invited to celebrate the retirement of Bill Howell and Granville Webb at a dinner on Thursday, May 11, 6 to 8 p.m., at Ryan's Family Steakhouse, 11883 Jefferson Ave., Newport News. People should order individually from the menu. For reservations or gift-only contributions, contact V. Martinson via phone at ext. 47688 or Mail Stop 497.

Wiley

A retirement social for William R. Wiley will be held Wednesday, May 24, 5:30 to 8:30 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and refreshments will be served. Cost is $12 per person including a gift. For reservations or gift-only contributions, contact Gloria Evans or Linda McKnight via phone at ext. 44570 or Mail Stop 481 by May 22. Make checks payable to Gloria S. Evans.

Erickson

A retirement dinner for Dr. Wayne D. Erickson will be held Thursday, May 11, at the Dynasty Restaurant, 1621 Richmond Rd., Williamsburg. Cost is $12 per person/$24 per couple including a gift. For gift-only contributions or reservations or to send checks or cash, contact Beth Napier via phone at ext. 43736, or Sherri Yokum via phone at ext. 43739 or Mail Stop 353 by May 3.

Carter

A retirement dinner party for Arlen Carter of the Atmospheric Sciences Division will be held Tuesday, May 9, in the Williamsburg Room at the Langley Officers' Club. Social hour begins at 6 p.m. followed by dinner at 7. Cost is $16 per person, not including a gift. For gift-only contributions or reservations, contact Tammy Parker via phone at ext. 42698 or Mail Stop 401A.

Clough

Friends, family and coworkers are invited to celebrate Jean Clough's retirement on Wednesday, May 10, 4:30 to 7 p.m., in the Commanders Room at the Langley Air Force Base Officers' Club. Heavy hors d'oeuvres and a cash bar will be available. Cost is $7 per person including a gift. For reservations or gift-only contributions of $3, call Marny Skora at ext. 43315 or Jenny Branch at ext. 43309 by May 5.

Hansbrough

A retirement party for Andrew J. (Jerry) Hansbrough will be held Friday, May 12, 5 to 7 p.m., on the Langley Alumni Association picnic grounds next to the H.J.E. Reid Conference Center. Cost is $7.50 per person including a gift. For reservations, contact Sandra Chaney via phone at ext. 46013 or Mail Stop 400, or Faye Satterthwaite via phone at ext. 42493 or Mail Stop 187 by May 3.

Snyder

A retirement party for Richard E. Snyder will be held Saturday, May 20, 5 to 7 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres will be served. Cost is $12 per person including a gift. For reservations or gift-only contributions, contact B. Graham or W. Harris via phone at ext. 46016 or Mail Stop 112 by May 11. Make checks payable to Brenda Graham.

Taylor

A retirement social for James Y. Taylor of the Acquisition Division will be held Wednesday, May 17, 5:30 to 7:30 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres, punch and a cash bar will be available. Cost is $10 per person including a gift. For gift-only contributions or reservations, contact B. Lane via phone at ext. 42537 or Mail Stop 126.

Owsley

A retirement party for Gordon Owsley will be held Monday, May 15, 6 to 9 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and cake will be served. Cost is $10 per person including a gift. For gift-only contributions or reservations, contact Charlene Gleaton via phone at ext. 45620, Junilla Applin via phone at ext. 47082, or either via Mail Stop 432 by May 5.

Snead

The retirement social for Carolyn Snead, previously scheduled for May 10, has been postponed.

In Memoriam

Benjamin S. Caum

Benjamin S. Caum died March 31 at the age of 76. A native of Juniata, Pa., he had been a resident of Grafton.

Caum retired from NASA in 1972. He was a board member of the Unitarian Universalist Fellowship of the Peninsula. He was an active volunteer for the Virginia Living Museum and was a past Scout leader in Hampton. He was an Army veteran of World War II.

Caum is survived by his wife, Margaret Tignor Walsh Caum; one daughter; two sons; a daughter-in-law; two grandsons; and two sisters.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and advertisements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

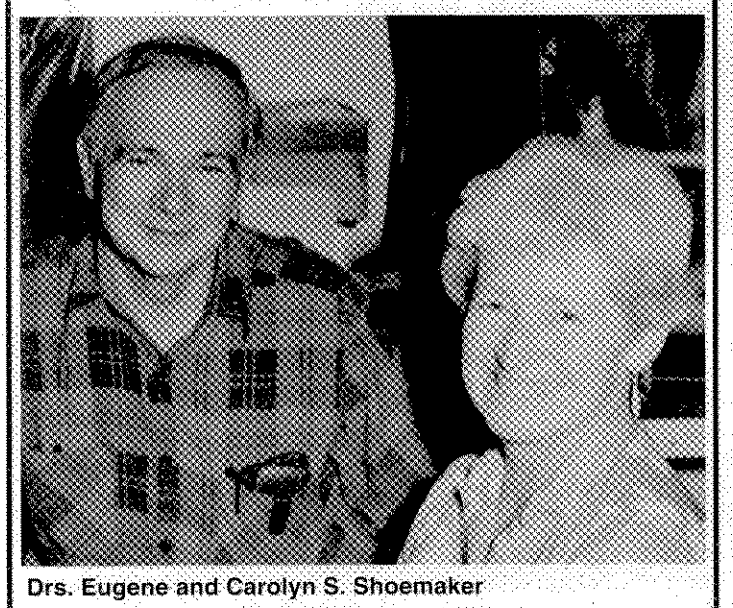
Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising 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.

Comet-Catchers at Colloquium

Drs. Eugene and Carolyn S. Shoemaker will discuss their search for minor planets and comets, including Periodic Comet Shoemaker-Levy 9, at the Colloquium and Sigma Lectures, Tuesday, May 16. At the colloquium, "Impact of a Fragmented Comet on Jupiter," they will describe and compare with theory the disruption and crash of Periodic Comet Shoemaker-Levy 9 during its last 2 perijove passes. At the sigma talk, "Hunting for Big Game - Asteroids and Comets," they will discuss their discovery of Shoemaker-Levy 9, its demise into the Jovian atmosphere, and the meaning of this event to all of us on Earth.



Drs. Eugene and Carolyn S. Shoemaker

Dr. Eugene Shoemaker

Dr. Eugene Shoemaker recently retired as a geologist with the U.S. Geological Survey. He had a long career in planetary science, beginning with his studies of terrestrial impact craters and the geology of the Moon in the late 1950s. He was co-investigator on the Ranger project, principal investigator on the Surveyor and Apollo projects and a member of the imaging team with the Voyager project.

Most recently, he has been the science team leader for the Clementine mission to the Moon. He served as a professor at the California Institute of Technology from 1969 to 1985, where he originated the Palomar Asteroid and Comet Survey. He is on the staff at Lowell Observatory and is a research professor of astronomy at Northern Arizona University. He has co-discovered 29 comets and many asteroids.

Dr. Carolyn S. Shoemaker

Dr. Carolyn S. Shoemaker has served since 1980 as a visiting scientist in the Astrogeology Branch of the U.S. Geological Survey. In 1989, she became a research professor of astronomy at Northern Arizona University, and in 1993 joined the staff of the Lowell Observatory.

She has discovered 32 comets, including 15 short-period comets of the Jupiter family and 17 long-period comets, two of which are giant comets that came no closer to the Sun than Jupiter's orbit. Working with her husband, Dr. Eugene Shoemaker, and David Levy, she discovered Periodic Comet Shoemaker-Levy 9 in orbit around Jupiter in March 1993.

She received her bachelor's and master's degrees from Chico State College in California. She received an honorary doctorate of science from Northern Arizona University in 1990. With her husband, she received the Rittenhouse Medal in 1988 and became a Cloos Scholar at Johns Hopkins University in 1990.

Colloquium & Sigma Lectures Schedule

Colloquium lectures, held on Tuesdays at Langley's H.J.E. Reid Conference Center, are open to all NASA employees and contractors. Employees should charge their time to JO A5266.

Sigma lectures are held on Tuesdays at the Virginia Air and Space Center (VASC) in downtown Hampton. Admission is free with no reservations required.

May 16 Lectures

Colloquium: "Impact of a Fragmented Comet on Jupiter" by Drs. Eugene and Carolyn S. Shoemaker at 2 p.m.

Sigma: "Hunting for Big Game - Asteroids and Comets" by Drs. Eugene and Carolyn S. Shoemaker at 7:30 p.m. After the lecture, VASC will have a special showing of the IMAX film, *"Grand Canyon,"* for $3.

WWW Team Responds to Tutorial Need

The World Wide Web (WWW) Team was overwhelmed recently when the first 60 slots for its tutorial were snagged in just 45 minutes. By the end of the day, 160 people had responded to the team's announcement made that morning. The waiting list has since grown to over 250 people.

While the team is doing its best to meet the required need, WWW users may access the tutorial at the following URL:

http://www.larc.nasa.gov/~ggott/tct/tcthold.html#training

Be sure to check the WWW Planning Team home-page regularly for tutorial updates at:

http://www.larc.nasa.gov/~ggott/org/wwwplan.html

For Beginners with Mosaic

If you are very much a beginner with the WWW and want to access the tutorial, start by double clicking on the icon for your Mosaic WWW browser. Wait about 10 seconds for the program to load. Then click and hold "file" from the main menu. Drag your mouse down to "Open URL" and let go. In the "Load URL" window, type the following command string:

http://www.larc.nasa.gov/~ggott/tct/tcthold.html#training

Press the return key. Mosaic will then go to the appropriate home-page. Click on the blue underlined question-and-answer sets to view the tutorial.

For Beginners with Netscape

If you are very much a beginner with the WWW and want to access the tutorial, start by double clicking on the icon for your Netscape WWW browser. Wait about 10 seconds for the program to load. Then click and hold "file" from the main menu. Drag your mouse down to "Open Location" and let go. In the "Load URL" window, type in the following command string:

http://www.larc.nasa.gov/~ggott/tct/tcthold.html#training

Press the return key. Netscape will then go to the appropriate home-page. Click on the blue underlined question-and-answer sets to view the tutorial.

For further assistance or information, contact Gretchen Gottlich via e-mail (g.l.gottlich@larc.nasa.gov), URL (http://www.larc.nasa.gov/~ggott/) or phone at ext. 42303.

OEO Offers Different Perspectives

Dona Gallup

The Multicultural Enrichment Seminar Series, sponsored by the Office of Equal Opportunity Programs, will present a training workshop, entitled "Different Perspectives," Thursday, May 18, 8:30 to 11:30 a.m., in the H.J.E. Reid Conference Center. The seminar leader is Dona Gallup, president of Dona Gallup, Inc., a business- and employment-development consulting firm.

"Different Perspectives" will allow participants to hear the experiences of an Asian-American woman who grew up in a bi-cultural household, attended American public schools, and struggled to be the "right" person in the "right" place at the "right" time. This workshop will be a presentation of experiential simulations and exercises meant to explore the meaning of the seminar's title.

The workshop is open to all NASA employees, including managers and supervisors. Because seating will be limited to 50 participants, registration is on a first-come, first-serve basis. To participate, call Vivian Merritt at ext. 43290 by Tuesday, May 15. Employees may charge their time to JO A5236.

Accessing Colloquium and Sigma Lectures

If you are unable to attend any colloquium or sigma lecture, you may still access them from several sources. All colloquium lectures are videotaped, and can be checked out from the Library by calling ext. 42389. Also, notices concerning upcoming and recent colloquium and sigma lectures are available on the World Wide Web using a browser such as Mosaic or Netscape (http://wmkpc.larc.nasa.gov/lectures.htm) or from the NASA Langley Home Page (http://mosaic.larc.nasa.gov/larc.html).

Nichols Selected as New OSD Chief

Jerry M. Nichols

Jerry M. Nichols has been selected by the Internal Operations Group as the assistant division chief for the Operations Support Division (OSD). He is charged with leading a group of employees responsible for operating and maintaining Langley's research test facilities, buildings, grounds and utilities. Other responsibilities include short- and long-range planning, employee development, teaming with research and engineering and overview of OSD's resources management.

Career

Before his new position, Nichols served as head of the Electrical Support Branch for two years. From 1989 to 1993, he was section head of the Electrical Drives and Systems Operations Section. From 1982 to 1989, he was section head of the Laboratory and Plant Electrical Section. From 1979 to 1982, he was the unit supervisor for the Electrical Support Unit.

Nichols has held a master electrical license from Virginia since 1974. He is also an EPA Certified Refrigeration Technician. His electrical career began in 1960 when he became an apprentice electrician with Virginia-Carolina Electrical Works in Norfolk. In 1963, he entered the NASA Apprentice School in the electrical field. Nichols has received four Suggestion Awards, two Cost Reduction Certificates, and has made many accomplishments in energy management and safety. He is an active member of the Langley's Multicultural Leadership Team.

In addition to his responsibilities at Langley, he has served on the York County Electrical Examiners Board since 1981 and is a member of the York County Board of Appeals for Codes and Compliance.

He and his wife, Lana, are accomplished country-western dancers and instructors.

SAGE III

Continued from page 1

areas of cooperation between the U.S. and Russian governments on programs associated with space flight."

The MTPE Joint Working Group was "exploring ways to broaden our overall scientific cooperation between the United States and Russia," Roberts added.

Also participating in the April 13 briefing were Dr. Yuri Milov, deputy director general of the Russian Space Agency, and Dr. Albert Chernikov, director of the Central Aerological Observatory. When asked about the importance of doing MTPE-type research during times of tight budgets, Dr. Milov noted, "Irrespective of the various economic difficulties which we are currently encountering, if we want to be a civilized, cultured country, it's up to us to incur certain expenses which are perhaps not immediately productive."

Roberts added to that, saying, "Mission to Planet Earth is all about global change. If we are to do a good job at truly measuring and monitoring global change, we need to do that in an international way and include the global community in that activity."

The SAGE III investigation is expected to continue for five years after the International Space Station launch date. A continuation beyond then will be subject to reconfirmation by NASA Headquarters every three years, based upon satisfactory instrument performance and continued contribution to the MTPE.

SAGE III Described

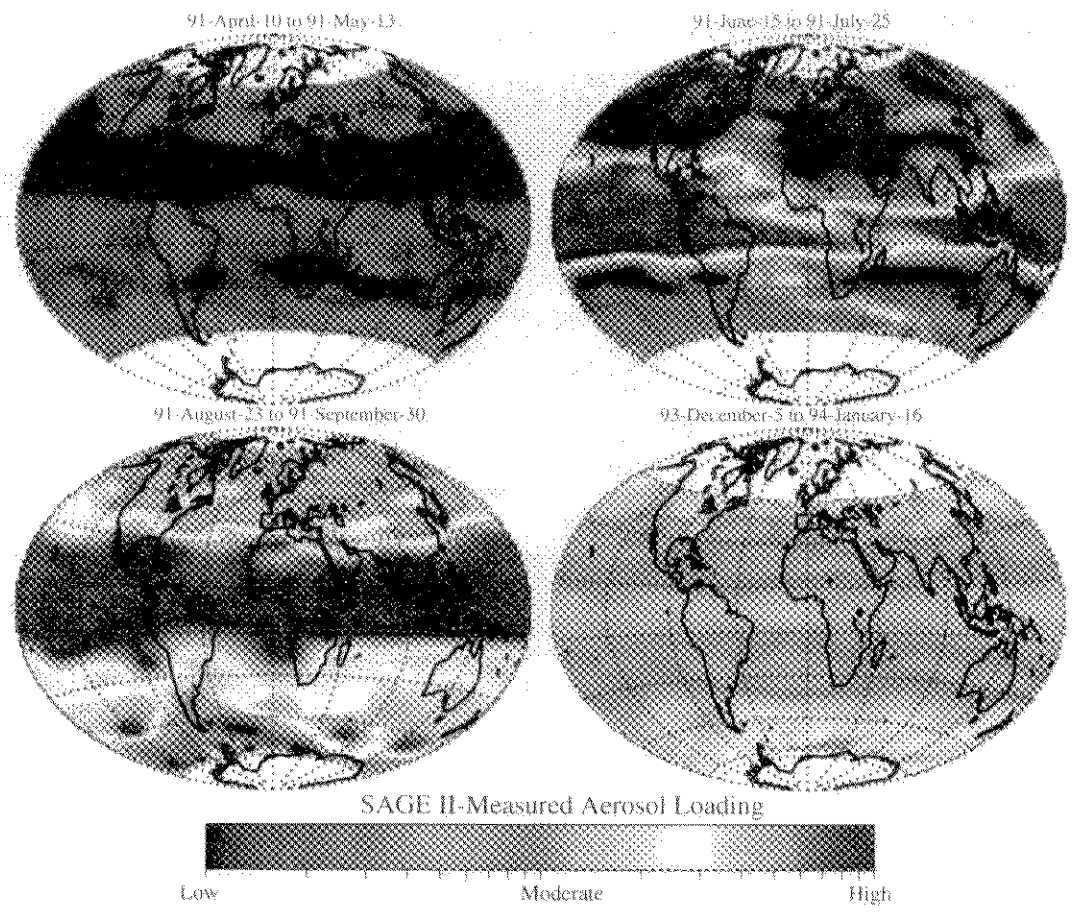
The SAGE III instrument is the fifth in a series of Langley-designed stratospheric profilers. SAGE II, SAGE III's predecessor, has been used to measure the decline in the amount of global stratospheric ozone and over the Antarctic since the ozone hole was first discovered in 1985. The high-resolution SAGE II measurements allow scientists to study the vertical structure of ozone with 1-kilometer vertical resolution and to study the correlations between various trace gases and aerosols.

The SAGE III instrument, like SAGE II, will use the solar occultation technique, measuring the amount of sunlight coming through the atmosphere during 15 orbital sunrises and sunsets each day.

The sunlight measured by SAGE III is both scattered and absorbed by gases and aerosols in the atmosphere. How much sunlight gets through at different wavelengths is dependent upon how much of a specific gas is present at a given altitude and how many aerosols are in the atmosphere.

In addition, SAGE III will be capable of performing lunar occultations as well. This will enlarge the instrument's coverage, allowing SAGE III to make measurements of gases that are important to ozone chemistry which occur only at night. The Russian Meteor-3M orbit is designed to enhance the coverage provided by lunar occultations.

Langley scientists will convert the measurements from SAGE III into vertical profiles of ozone, water vapor, nitrogen dioxide, nitrogen trioxide, chlorine dioxide and aerosol concentrations. The SAGE III instrument will vertically scan the limb of the atmosphere using several spectral wavelengths. SAGE III will expand on the wavelengths used by SAGE II, greatly enhancing its measurement capability.



MOUNT PINATUBO EXPLOSION AFFECTED ATMOSPHERE
Three months after Mount Pinatubo erupted in the Philippines in mid-June 1991, scientists found that the stratospheric region near Mount Pinatubo had warmed 2.5 to 3 degrees Celsius due to the increased concentrations of aerosols.
Over the next two and a half years, Langley's Stratospheric Aerosol and Gas Experiment II (SAGE II) instrument monitored these concentrations. As these graphics show, the concentration of aerosols in the Earth's upper atmosphere increased.
Almost three years later, the upper atmosphere over the entire Earth is still experiencing moderate aerosol concentrations, more than 10 times greater than concentrations recorded before the Mount Pinatubo eruptions.

Students Awarded for Research Papers at 1995 AIAA Student Conference

Photo by Fred Jones

STUDENTS WIN AWARDS FOR RESEARCH PAPERS
The George Washington University's Institute for Advancement of Flight Sciences and the American Institute for Aeronautics and Astronautics (AIAA) hosted the 1995 AIAA Mid-Atlantic Regional Student Conference in April at Langley. Twenty papers were presented in competition by undergraduate and graduate students from seven universities.
The winners were, from the left: Peter C. Holland, George Washington University, First Place, Graduate; W. Scott Carron, Old Dominion University, Second Place, Graduate; Timothy S. Davis, Old Dominion University, Third Place, Graduate; Jennifer L. Sedor, The Pennsylvania State University, First Place, Undergraduate; Daniel C. Lluch, Virginia Polytechnic Institute and State University, Second Place, Undergraduate; and Matthew G. Sexstone, Virginia Polytechnic Institute and State University, Third Place, Undergraduate.

AIAA Calls for Nominations

The American Institute of Aeronautics and Astronautics (AIAA) is calling for nominations for the Leadership in Quality Management Award and its 1996 national awards.

Leadership in Quality Management Award

The Leadership in Quality Management Award is presented to the person or team who, through a quality-focused management-system approach, achieves significant or continuous improvement within an aerospace or defense-related organization, its products, services or processes. The award is granted for a specific contribution as opposed to a term or service. Such contributions are characterized by improved quality, reliability and safety, customer satisfaction and productivity; decreased complexity and variability; and more efficient use of time, human resources and materials.

The due date for this nomination is June 1. The 1995 award will be presented at the AIAA Total Quality Symposium and Exhibit in November.

AIAA National Awards

The AIAA will bestow 15 national awards. They include the following: Aerospace Communications Award; Aerospace Contribution to Society Award; Aerospace Maintenance Award; History Manuscript Award; Jeffries Medical Research Award; Losey Atmospheric Sciences Award; National Faculty Advisor Award; Pendray Aerospace Literature Award; Space Processing Award; Space Science Award; Lawrence Sperry Award; System Effectiveness and Safety Award; Otto C. Winzen Lifetime Achievement Award; Dryden Lectureship for Research; and von Karrnan Astronautics Lectureship.

The due date for these nominations is July 3, with the exception of the National Faculty Advisor Award, which is June 15. Most of these 1996 awards will be presented during the 34th Aerospace Sciences Meeting and Exhibit in January 1996. The Systems Effectiveness and Safety Award and the Aerospace Maintenance Award will be presented in conjunction with the 1995 Reliability & Maintainability Symposium in January 1996. The Aerospace Communications Award will be presented at the 16th International Communications Satellite Systems Conference and Exhibit, Feb. 25 to 29, 1996.

Information

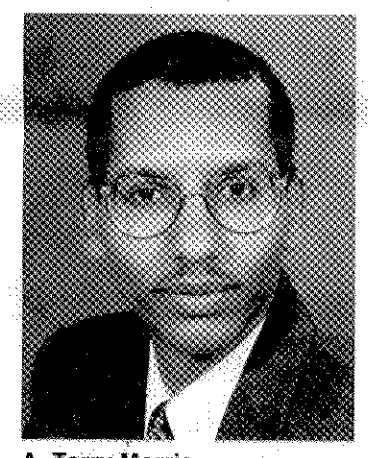
For nomination forms and more information, contact Merrie Scott, AIAA manager of honors and awards, via phone at 1 (202) 646-7534 or Internet (merries@aiaa.org).

Photo by Katie Reid

TEAM WINS WITH LESS NOISE
The Active-Flap-Rotor Noise-Reduction Team received the Team Excellence Award for their group efforts. Kneeling from the left are Bob Schwartz, Tim Pios, Dick Hartman, Leonard "Half-Pint" Stevens, Larry Becker, Karl Maddox and Charlie Smith. Standing from the left are Seth Dawson, John Treier, Cliff Howard, John Berry, Barry Askew, Paul Tucker, Mike Marcolini, Jim Gayton, Patricia Christian, Cliff Gentry, Earl Booth, Henry Kelley and Susan Gorton. Not pictured are Kevin Noonan, John Wilson, Jerry Lyle, Chris Barkley, Bruce Charles, Jeff Currier, Dave Domzalski, Ahmed Hassan, Phil Holzbaur, Ram Janakiram, Jim Kuchan, Mike Nothaft, Lou Silverthorn, Alan Stemple, Friedrich Straub, Jay Smith, Hormoz Tadghighi, Mike Ramsey and Kelly Tarkenton.

Low Fellowship Brings High Reward for Langley's Morris

The 1995 Dr. George M. Low Memorial Engineering Fellowship was awarded to Langley's A. Terry Morris by the National Space Club (NSC) in Washington, D.C., at a banquet on Friday, March 24. One nominee from each NASA center was selected from a wide field of candidates and intensely interviewed by a NASA Headquarters panel. Morris received the award in front of more than 2,500 black-tie attendees.



A. Terry Morris

Each year, the NASA participant who is presented this award then attends a year-long engineering graduate-study program at an educational institution of choice. NASA contributes up to a maximum of $10,000 and the NSC contributes $2,000 for tuition, travel and expenses.

Morris is planning to attend the Massachussetts Institute of Technology (MIT) in Cambridge, Mass. He will focus on the area of system identification of dynamic systems.

The award was established in 1989 by the NSC Board of Governors to honor Dr. George M. Low, who served as NASA deputy administrator from 1969 to 1976.

Unisys Space Systems Receives 1994 George M. Low Award

The Unisys Corp., Space Systems Unit, Houston, received the1994 George M. Low Award at the Tenth NASA Continual Improvement and Reinvention Conference in Alexandria, Va.

Unisys Space Systems was recognized "for its excellent total quality program and as a superior developer and provider of top-notch software, critical to the nation's aeronautics and space program."

Unisys Space Systems supplies software products, services and support for major programs at NASA's Johnson Space Center in Houston, including Space Shuttle and Space Station operations and mission-control-center upgrades. It also provides software and services for management information systems and flight simulations at Langley and performs quality engineering and assurance for Goddard Space Flight Center in Greenbelt, Md.

Dunham Receives Commendation from Air Force

The Air Force awarded a Certificate of Commendation to Dana Dunham, branch head of the Vehicle Dynamics Branch, as a member of the F-15 KEEP EAGLE Program Integrated Product Team. This team was appointed in response to several Class A mishaps that caused significant operational restrictions on the F-15E fleet. The team developed enhancements to improve pilot situational awareness, departure resistance and spin recovery, thus minimizing life-threatening mishaps and removing the need for operational restrictions.

Fuller Awarded Professorship

Dr. Chris Fuller of Virginia Polytechnic Institute and State University was awarded a chaired professorship sponsored by Roanoke Electric Steel. He has been associated with Langley for 10 years and is a major provider of research for the Naval Research Laboratory. His research team at the state university includes 30 people. Fuller is an internationally known expert in active control of noise and vibration. He is frequently in residence at the new Virginia Consortium of Engineering and Science Universities in Hampton.

Silver Snoopy Lands on Sutton

S. Eugene Sutton was presented the Silver Snoopy Award by an American astronaut and a Russian cosmonaut. He was cited for "the fine job you are doing in support of the Space Shuttle in your position as fabrication lead technician for the design, fabrication, integration and testing of all interconnecting cable and harness wiring for the nine subsystems which comprise the Lidar In-Space Technology Experiment (LITE). Your innovative contributions minimized the downtime of the instrument, saved the project thousands of dollars in repair costs, and preserved the test window for the instrument."

Given only to those whom the astronauts regard as the very best in their respective professions, the Silver Snoopy Award denotes the professionalism and dedication with which an employee carries out his responsibilities, serving as an example and gaining the utmost respect of co-workers and management.

Sutton's Silver Snoopy lapel pin and certificate were presented by American astronaut Kenneth S. Reightler, Jr., and Russian cosmonaut Sergei Konstantinovich Krikalev.

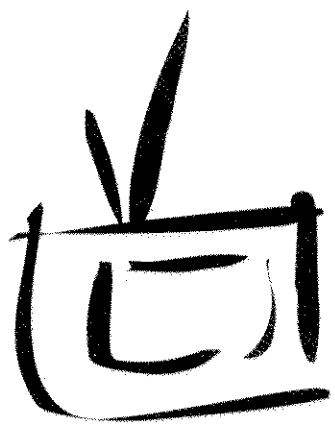
Photo by Fred Jones

S. Eugene Sutton, center, received the Silver Snoopy Award from American astronaut Kenneth S. Reightler, Jr., left, and Russian cosmonaut Sergei Konstantinovich Krikalev.

Victory at Video over Third Telly

Langley's Video Production Section (VPS) won its third international Telly Award in four years in recognition for outstanding video communication.

The program for which the award was given, "Composite Material for Low-Cost Primary Structures," was produced for researcher Gary Farley of the Aircraft Structures Branch. It depicts current and future applications of advanced composite structure technology.



The video was produced by Michael A. O'Hara and edited by Kim Tatum, both of the VPS. Opening animation was provided by John Knox of the Digital Visualization and Animation Lab. Program animation was created by Brian Harrel, formerly with the Graphics Section.

The Telly is another in a long string of awards the VPS has received since its inception in 1990. Its productions have been recognized by numerous technical, artistic and visual-communication organizations.

The Telly Awards was founded in 1980 to showcase and give recognition to outstanding non-network and cable TV commercials. The competition was expanded several years ago to include film and video productions as well as non-network TV programming. Langley's VPS joins an impressive band of heavyweights as winners of Telly Awards, including Boeing, Intel, A&E Network, ESPN, Eastman Kodak, Coca-Cola, NASDAQ, Microsoft and Aldus Corp.

Health Corner

Skin Cancer is on the Rise

Skin cancer will be the topic of discussion when Dr. Margery Scott makes her presentation on Thursday, May 18, 2 p.m., in the H.J.E. Reid Conference Center. Scott is chief of dermatology at Virginia Medical College in Hampton and associate professor of medicine at Eastern Virginia Medical School in Norfolk. She will discuss strategies to reduce the risk for developing skin cancer and describe the current methods for diagnosis and treatment.

Skin cancers in the U.S. are on the rise. The incidence of non-melanoma skin cancers for the year 1994 is estimated to be between 900,000 and 1.2 million. The incidence of melanoma is also on the rise. In 1995, melanoma is predicted to occur in more than 1 in 120 Americans.

Not all individuals are equally susceptible to developing skin cancer. Because the risk in most instances is related to duration and extent of exposure to ultraviolet light, it is imperative that primary prevention be emphasized.

Employees may charge this session to JO A5256.

Engineers Week Comments Available

Comments Langley received from volunteers and school teachers regarding National Engineers Week have been compiled and are available for review in the Public Mail Center, Bldg. 1153. Many positive comments were made such as "Excellent lesson. He had a great rapport with the children. The children learned a lot," and "...made NASA real to them." Some negative observations were also made such as "I was appalled at how old and obsolete the computers in the public schools are," and "Vocabulary was too difficult." The comments will help NASA volunteers do a better job next year. Thanks to all who responded.

New Magellan Views of Venus Released

New global views of Venus, showing its rich and varied landscape, have been released by scientists associated with NASA's Magellan mission. It ended last year after mapping over 98 percent of the planet with imaging radar. Electronic image files of the new images are available from NASA's Jet Propulsion Laboratory via Internet and the World Wide Web at http://www.jpl.nasa.gov, anonymous file transfer protocol (ftp) at ftp.jpl.nasa.gov, or dial-up modem at 1 (818) 354-1333.

Parker

Continued from page 1

bachelor's degree in business management from Hampton Institute, now Hampton University. He was then hired as an inventory management specialist in the Property Management Branch of the Management Support Division. In 1979, he was selected as section head in the branch, and, in 1984, was selected the branch head.

After a reorganization in 1986, Parker was appointed assistant head of the Logistics Management Branch, and was reassigned as head of the Support Operations Office in 1989. In 1990, he transferred to the Industry Relations Office of the MOD; later that year, he was selected as office head. The following year, he was assigned to NASA Headquarters under the Professional Development Program where he served as special assistant to the director for institutions.

Parker has received numerous awards during his career, including five for development or implementation of computer systems technology. In 1988, he received a Special Achievement Award from NASA Headquarters for development of an Agency-wide industrial property management system. During his assignment to Headquarters in 1992, he received a Superior Accomplishment Award for his performance during the reorganization of the Office of Aeronautics and Space Technology. He was also nominated for the Arthur S. Fleming Award. He received the NASA Exceptional Service Award in 1993 for significant management and technical contributions to the MOD during his career.

A resident of Gloucester, Parker has been married for 19 years to Matlea Budden Parker, a business teacher at Gloucester High School. He has two daughters, Kortney and Kristin. He is a trustee at the First United Baptist Church, treasurer of the Petsworth Elementary School Parents and Teachers Association, and a girls basketball coach for the Gloucester Parks and Recreation Department's youth sports program.

NASA Facts and Photos Ready to Public

Want to bone up on NASA facts? A set of 1995 fact sheets on NASA as well as awe-inspiring photos and posters are available in the Public Mail Center, Bldg. 1153, Rm. 115.

Materials cover a variety of topics and programs including a NASA overview, NASA's organization, Space Shuttle, International Space Station, Mission to Planet Earth, aeronautics, space science, life and microgravity sciences, space access and technology development, Equal Opportunity, small and disadvantaged business, procurement initiatives, education and budget.

The fact sheets are excellent for people who give talks, prepare summaries about the Center or want an update on programs. Each fact sheet is one page long.

The Public Mail Center is open Monday to Friday, 9 a.m. to 3 p.m. For more information, call ext. 43293.

Whoops!

We stand corrected. On the back page of our Feb. 24 issue, we identified the man in the flying simulator as "Dr. Paul Hill." Thanks to Warren Hypes of the Science and Technology Group and Jesse Kent, a Langley retiree, they have correctly identified the man as Dave Thomas.

Thomas worked in Hypes' section for many years and assisted Hill with many of his ideas.

We also mistakenly bestowed a doctorate on Hill. He was an admired assistant division chief.

X-33, X-34

Continued from page 1

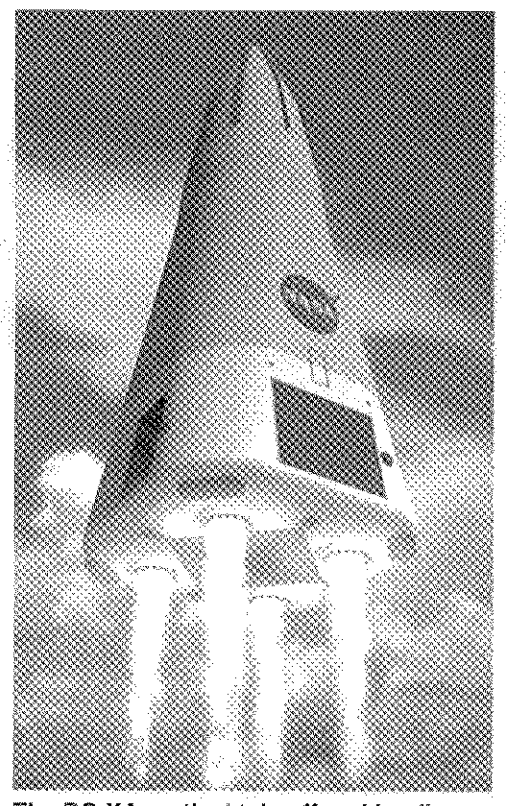
The X-33

Work on the X-34 will also contribute to the larger reusable test vehicle, the X-33.

The X-33 is intended to demonstrate the technologies required for a full-scale, 21st-century, commercial, reusable, space-launch system. Capable of supporting the planned International Space Station with people and cargo launches, it will also provide large-payload commercial launches.

Phase I of the program, concept definition and design, started in April and is planned to last 15 months. Federal laboratories will work with industry partners to apply new technologies toward the new launch system.

NASA has awarded three company-teams contracts of about $8 million each for Phase 1, with all participants investing a matching sum. Heading the three X-33 teams are Lockheed Advanced Development Co., Palmdale, Calif.; McDonnell-Douglas Aerospace, Huntington Beach, Calif.; and Rockwell International Corp., Space Systems Div., Downey, Calif.



The DC-XA vertical takeoff and landing test vehicle will incorporate new technologies via contracts between NASA and industry. Flight tests are planned for 1996.

If the federal government decides to proceed to the next phase, construction and flight demonstration of the X-33, NASA would competitively select one or more of the teams' concepts for tests.

The X-33 program could continue through the end of the decade and lead to a decision by government and industry to develop an operational reusable launch system.

DC-XA

The DC-X vertical-takeoff/vertical-landing vehicle was initially test-flown in 1993 and 1994 by the Ballistic Missile Defense Organization and will be transferred to NASA after final test flights this spring and summer. Under NASA contracts, advanced technology upgrades will be installed, and the upgraded vehicle will be renamed the DC-XA.

Key technology upgrades include a composite liquid-hydrogen tank, an aluminum-lithium liquid-oxygen tank, composite aerodynamic fairing cover structures, and hydrogen-oxygen auxiliary-propulsion-and-power systems. The upgrades are significant because similar improvements could be used on X-33 and operational RLVs. The DC-XA is scheduled to begin flight testing in 1996.

"The goal of low-cost access to space will not be met by advances in vehicle design and technologies alone," said Branscome."Changes in philosophy and culture, a new way of doing business, will also be demonstrated by these new industry-government partnerships. The business of operating space transportation systems will be turned over to industry."

Diversity Factoid

Anne Perkins, in her article, "Diversity," for the September/October1993 *Harvard Business Review*, commented: "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."

Offerred by the Multicultural Leadership Team

NASA Basketball Association

The champions of the NASA Basketball Association A League are HBBN. In the front row, from the left, are Steve Geissinger, Mark Frye, Rudy King and Kenneth Rock. In the back row, from the left, are Dean Eklund, Thurl Tynes, Mike Lewis and Leland Melvin. Not pictured is Keith Paschal.

The champions of the NASA Basketball Association B League are the Cooters. In the front row, from the left, are John Micol, Drew Hope and Dave Hahne. In the back row, from the left, are Ron Merski, Jim Hensley and Wayne Melson. Not pictured are Steve Harvin, Glenn Diskin, Peter Jacobs and Robert Gifford.

Photos by Paul Bagby

The champions of the NASA Basketball Association C League are the Eastside Bombers. In the front row, from the left, are Carlito Barnes and Dewan Studdard. In the back row, from the left, are Danny Ebb, Michael Vaccarelli, Chester Langston, Mike Higginbotham and Doug Dalager. Not pictured are Robin Rubrecht, Donald Day and Edgar Yarrington.

Almost 300 Donate Blood

The March 22 Bloodmobile visit drew 292 donors. Ten people gave for the first time. Langley coordinators Karen Ridlon and Peter Edgette worked with Red Cross coordinator Lourdes Gonzalez to attain such a high donorship.

The following people have donated the cited number of gallons over a period of time:

17 Gallons
Robert P. Davis

16 Gallons
William G. Chapin

11 Gallons
William F. Adkins

10 Gallons
Tyrone O. Ellis

9 Gallons
James M. Shipp

8 Gallons
Dennis R. Holloway
Henry E. Freeman Jr.
Jack W. Futrell Jr.

7 Gallons
Timothy D. Bryant
Mark W. Frye
Robert L. Myers

6 Gallons
Kevin B. Johnson
Glenn A. Woodell
Becky M. Sample

5 Gallons
Franklin O. Mayhew
Samuel A. Harvey
Michael S. Dashiell
Bobby A. Kessler
James L. Puffenberger

4 Gallons
James T. Berry
Gene S. Monroe
Daniel P. Giesy
Scott R. Runnells
Brian C. Cheshire

3 Gallons
William R. Capron

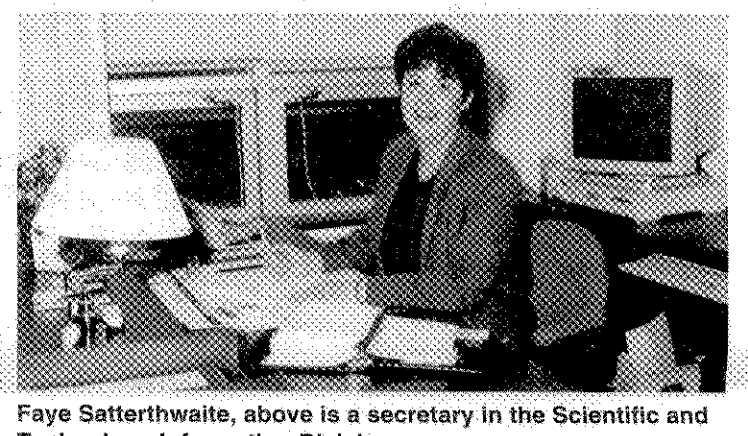
2 Gallons
Michael K. Chambers
H. Grady McCoy, Jr.
Stacie R. Trybe

1 Gallon
Stephen A. Mason
Hung-Sheng Chern
William A. Wood
Thomas A. Grepiotis
William G. Culliton
Didier F.G. Rault

First-Time Donors
Daniel Taylor
Heide M. Reimer
Hilda I. Aponte
Heath E. Suarez
Gene W. Stern
Ronda Y. Rapp
Roger W. Johnston
Melvin L. Jones
Shawn A. Philip
Christina E. Agee

Salute to Secretaries

Laura Eure, right, of the Technology Applications Group, accepts a prize from Amy Radford during the Salute to Secretaries celebration on April 24. Radford, of the Office of the Comptroller, is a representative of the Federal Women's Program Committee (FWPC) which sponsored the festivities. The FWPC is grateful to all organizations that donated gifts and to everyone who helped to make the event a success.



Faye Satterthwaite, above is a secretary in the Scientific and Technology Information Division.

Gloria Carney, right, of the Space Systems Engineering Branch, holds a copy of *Survival Guide*, a prize she won at the Salute to Secretaries celebration as part of National Secretaries Week.

Annie Wright, below, is a secretary in the Crew Systems Operations Branch.

Photos by Katie Reid

Happenings

RN DUE DATE: The due date to submit any articles, photos or announcements for the next issue is Tuesday, May 9. The next issue will be distributed beginning Friday, May 19. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

FOR SALE: Troy State, graduate-school textbooks: *Practicing Public Management, Personnel Practices for the '90s, Understanding Public Policy, Democracy and Capitalism, Personnel Management in Government, Public Budgeting in America, Public Administration in America, Social Research for Consumers, The Legal Foundations of Public Administration, Management 5th* and *Smoking and Politics*. Best reasonable offer. Call Cathy at 898-8463.

PUPPIES: Adorable, black, 9-week-old puppies. Mixed black lab/golden retriever. $50. Must have fenced yard. Call Karen at 867-7977.

VA SYMPHONY: Come to the final Classical Masterworks concert of the season, May 12 and 13 at Chrysler Hall, where you will enjoy Mahler's *Symphony No. 5*, Poulenc's *Concerto for Two Pianos and Orchestra*, and the premiere of a new Hailstork piece. Tickets are from $12 to $27 (20 percent off) at the Exchange Shop. Call ext. 41585.

LOST: If anyone knows the whereabouts of the blue plastic/fiberglass picnic table that was on the lawn next to building 1149, the Clinic, please call Leanne at ext. 43195. Better yet, just return it. No questions asked!

VA SYMPHONY CHORUS: Auditions are June 12, 13 and 19, 6:30 to 10 p.m., at the First Presbyterian Church, Norfolk, located at Colonial and Redgate Avenues. For audition packets, call the Virginia Symphony at 623-8590.

BLOOD DRIVE: All employees, retirees and contractors are invited to participate in the next blood drive on May 24, 9 a.m. to 3 p.m., in the H.J.E. Reid Conference Center.

FOR SALE: Immaculate 2BR, 2-1/2BA, luxury condo located in Denbigh North waterfront community w/boat ramp, pool and clubhouse. Great room w/ fire place and E/I kitchen. 1,450 sq. ft. $71,900 or $5,000 and assumable FHA mortgage. Call Tony at 898-8538 or 898-5027.

HOUSE TO SHARE: Two private rooms and private bath in spacious stunningly located house. Available to quiet, thoughtful, health-conscious non-smoker. Call 898-1291.

VA CHORAL SOCIETY: The society will present "Taking a Bite Out of Broadway" for its annual Just-For-Fun Concert. Come, sit back and enjoy as the chorus and soloists take you on a musical revue of your favorite Broadway hits. Two performances: Friday, May 12 at Hampton Roads Academy in Newport News, and Saturday, May 13 at Williamsburg Regional Library. Both concerts begin at 8 pm. Tickets, available at the door, are $7 for general admission, $18 for a family of four, and $5 for senior citizens, students and military. For further information, call 851-9114 or 1-800-400-4VCS.

NASA LANGLEY RESEARCH CENTER

TECHNICAL LIBRARY

Technical Library Hosts Open House

"Mastering Global Information for a Competitive Edge" is the theme for the Technical Library's 3rd Annual Open House on Wednesday, May 10, 10 a.m. to 3 p. m. All Langley employees and contractors are invited. The library will be demonstrating the new and improved Library Home Page, full text electronic delivery, STILAS with World Wide Web interface and electronic journal current awareness, and much more. Refreshments will be served. All attendees will be eligible for prizes including free passes to the Virginia Air and Space Center, AMC movie passes, T-shirts, and mugs.

Learn about Honey Bees

The NASA-Langley Apiculture Club will hold its annual colony inspection Friday, May 12, 5:30 p.m., at the club apiary in the wooded area adjacent to the gardens near Bldg. 1244. Anyone interested in honey bees are welcome to watch with the club during this inspection. Although some additional veils will be available, bring all protective clothing and gear you think you may need for working with honey bees in a tick-infested area.

A beekeepers clinic, sponsored by the NASA-Langley Apiculture Club, for beekeepers and others interested in honey bees, will be held Monday, May 15, 7 to 9 p.m. in the meeting room of the York County Human Services Bldg., at 301 Godwin Neck Rd. (Route 173 East), Yorktown, Va. The subject will be "Effective Management of Honey Bee Hives for the Prevention and Control of Parasitic Varroa and Tracheal Mites." The clinic is free and open to the public. For more information, call Harvey at ext. 46742, Walho at ext. 45366 or Henk at ext. 47226.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

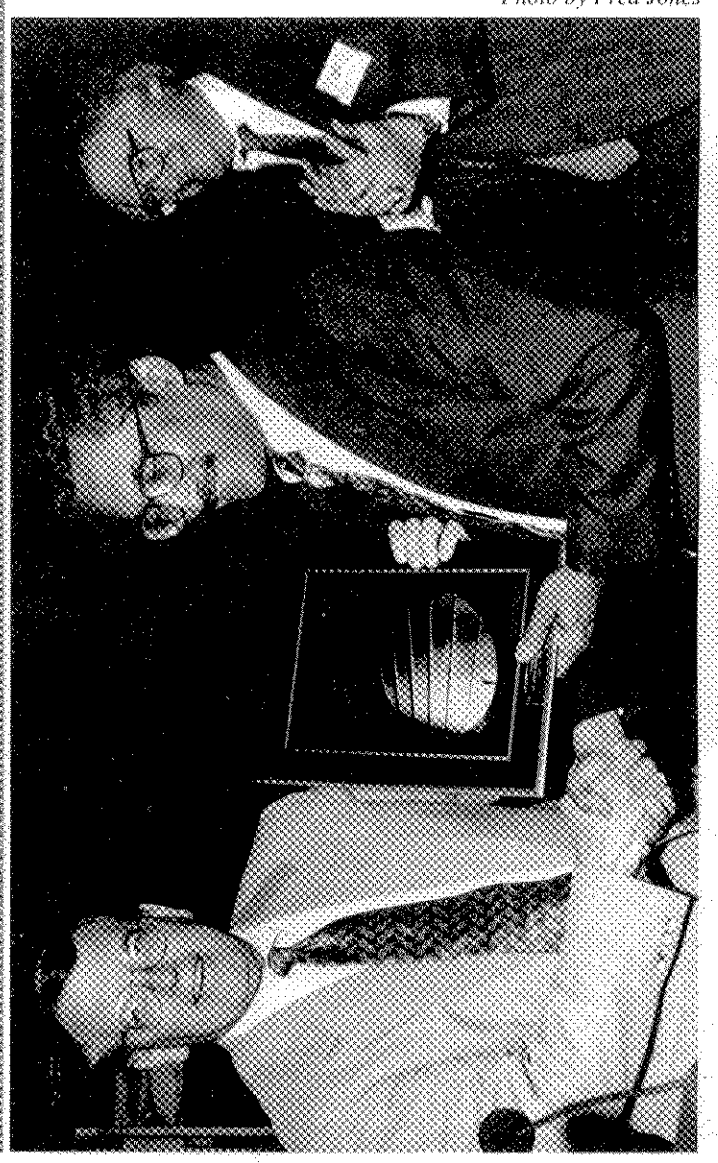
Researcher News

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

Official Business. Penalty for Private Use $300.

Photo by Fred Jones



AIAA HONORS SCOTT AFTER REPORT ON FIRST 100 DAYS
Robert C. Scott, Democratic representative of Virginia's 3rd District, center, receives a plaque from Langley's Deputy Director Lee Beach as Stanley Lamkin, president of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA), looks on. Scott was visiting Langley to discuss the first 100 days of the 104th Congress. He also talked about the importance of long-range aeronautical research to America. As an honorary member of the AIAA, Scott considers Langley a part of his constituency.

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 10 ❖ May 19, 1995

Pearl I. Young Theater to Open this Summer

After years of planning, the 251-seat Pearl I. Young Theater is scheduled to open Aug. 1 in the building that previously housed the Visitor Center.

The Theatre

Named in honor of the first female professional to work for the National Advisory Committee for Aeronautics (NACA), the theater in Bldg. 1202 will be used for conferences, lectures, meetings and training sessions.

"The new Young Theater will be a wonderful addition to our meeting capability. It will help reduce the expense of off-Center conferences," said Pam Verniel, Langley's conference manager. "The chairs with over-sized tablet desks will be comfortable and allow people to take notes during conferences. There is ample parking between Bldgs. 1202 and 1209. Also, the satellite cafeteria is close-by for refreshments during breaks."

Demand for on-Center meeting and conference space has grown significantly in recent years. In 1985, 28,444 people attended 306 events in Langley conference facilities. By 1994, that number had grown to 47,682 people attending 948 events.

Verniel added, "Since the H.J.E. Reid Conference Center and other conference areas are fully scheduled most of the time, I'm looking forward to accommodating more requests from the Langley staff."

The theater will feature a sloped floor, overhead projectors, a podium with a sound system, 35-millimeter projectors, fold-down desk tablets at each chair, teleconferencing, videotaping and downlink capability to receive NASA TV. It will also have the capability of projecting computer-generated images on its 24-foot screen.

The lobby of the carpeted facility will be available for social events. It will be equipped with a table that can accommodate a computer for use in registering attendees at conferences.

See **Theater** *on page 6*

Pearl I. Young

Photo by Fred Jones

The Pearl I. Young Theater was named for the first female professional to work for the National Advisory Committe for Aeronautics. It will open this summer in the former Visitor Center.

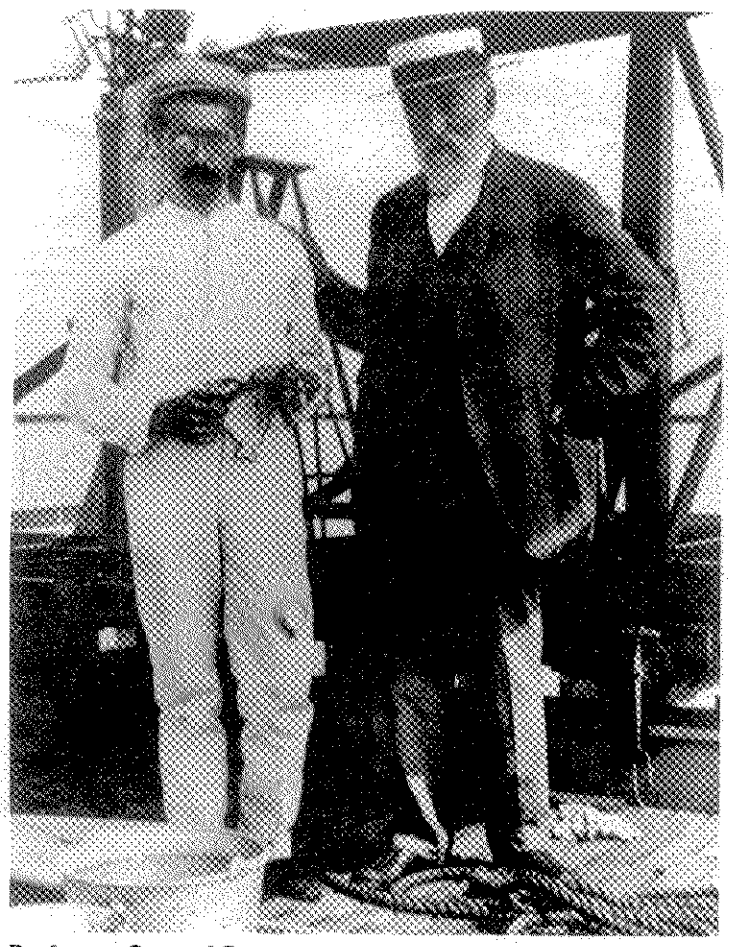
S.P. Langley's Accomplishments at the Colloquium

Donald L. Lansing, a retired Langley researcher and manager, will present "The Accomplishments of Samuel Pierpont Langley" at the Colloquium Lecture, Tuesday, June 6. Langley was a highly successful astrophysicist, scientific administrator and aviation pioneer during the late 1800s. Though the failure of his Great Aerodrome overshadowed many of his prior achievements, this colloquium will describe the numerous noteworthy accomplishments of Langley's early career for which he can be justifiably proud.

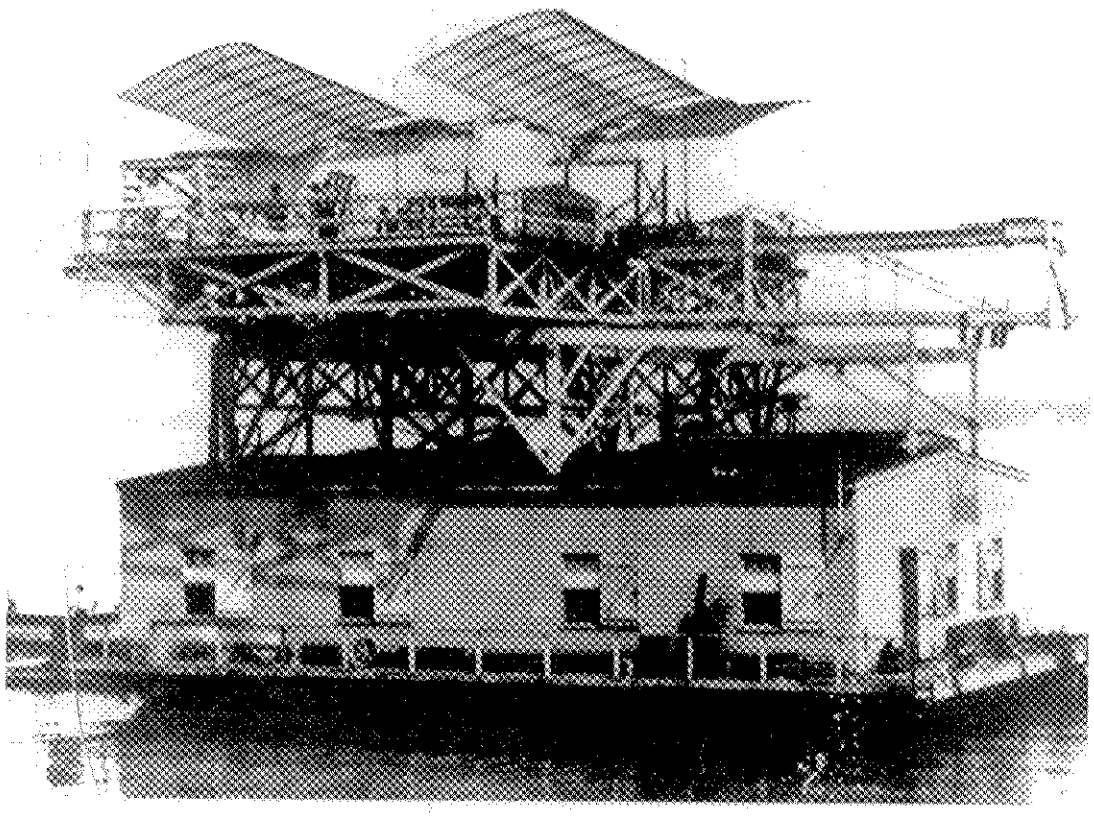
Samuel P.Langley

Langley's work was highly regarded by international and American scientific communities. His memory lives on in the names of this NASA research center, the adjacent Air Force base and several place names in the country. America's first aircraft carrier, the CV-1, built at the Norfolk Navy Yard in the early 1920s, was named in honor of Langley. A model of this ship, which saw active service in World War II, may be seen at the Virginia Air and

See **Colloquium** *on page 3*



Professor Samuel P. Langley, right, assisted by his chief mechanic and pilot, Charles M. Manly, accomplish the world's first successful unmanned flights of a heavier-than-air flying machine during the late 19th century. This research center was named in his honor.



Langley was the only professional scientist of his day who believed that humans were destined to fly. Using a rotating houseboat, he measured the power needed to propel objects through the air. Encouraged by his findings, he built several large models of steam-powered flying machines, such as the one shown to the right, that he called "aerodromes."

News Briefs

Around the Agency

HARRIS NAMED DEPUTY CHIEF ENGINEER (AERONAUTICS) - Dr. Wesley L. Harris has been named deputy chief engineer (Aeronautics). Harris, formerly associate administrator for the Office of Aeronautics, will provide an independent technical review of NASA aeronautics programs and projects to ensure they are being planned and conducted on a sound engineering basis with proper controls and management of technical risk. Harris will report to the chief engineer in the Office of the Administrator. Dr. Robert E. Whitehead is serving as acting associate administrator for the Office of Aeronautics.

NASA, CHICAGO FIRE DEPARTMENT SIGN AGREEMENT - Firefighting could be safer and more efficient in the future, thanks to an agreement signed between NASA and the City of Chicago. The agreement opens the door for NASA's Marshall Space Flight Center in Huntsville, Ala., and the Chicago Fire Department to work together to apply space program technologies to improving firefighting and other emergency services.

NASA DISCONTINUES WORK ON NOZZLE PRODUCTION AT YELLOW CREEK - NASA, in a move that will save the Agency $450 million to $500 million through the year 2012, directed Thiokol Corp. to discontinue work on construction of a solid rocket motor nozzle fabrication and refurbishment facility at Yellow Creek, Miss. "This was a budget decision, pure and simple," said Space Flight Associate Administrator Wayne Littles. Completing the Yellow Creek facility "would duplicate a capability we currently have in Utah," he said.

To reduce the impact to the Mississippi area, NASA is seeking to turn ownership of the facility over to the State of Mississippi and will provide a grant of about $10 million to complete the site infrastructure and facilitate the transition to new users, estimated to take about five years. Ninety people work at the Yellow Creek site.

LEWIS ON INTERNET - The NASA Lewis Research Center's World Wide Web home page has a new look and features a Public Affairs home page. A series of multimedia "pages" describe the center, its programs, people and history.

The home page is available at URL: http://www.lerc.nasa.gov/

The Public Affairs home page is accessible from the Lewis home page or directly at URL: http://www.lerc.nasa.gov/Other_Groups/PAO/

Retirement Parties

Wiley

A retirement social for William R. Wiley will be held Wednesday, May 24, 5:30 to 8:30 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and refreshments will be served. Cost is $12 per person including a gift. For reservations or gift-only contributions, contact Gloria Evans or Linda McKnight via phone at ext. 44570 or Mail Stop 481 by May 22. Make checks payable to Gloria S. Evans.

Shearin and Puffenberger

A retirement social for Al Shearin and Jim Puffenberger will be held Friday, June 16, 5:30 p.m., at the H.J.E. Reid Conference Center, with a short program starting at 6:30 p.m. Cost is $12 per person including a gift. For reservations or gift-only contributions, contact Stephanie Stockum via phone at ext. 44103 or Mail Stop 222B by June 2.

Winston

A retirement luncheon for Matthew W. Winston will be held Friday, June 9, 11:30 a.m., at the Upper Crust restaurant. Menu options are available in the High-Speed Research Project Office. For reservations or gift-only contributions, contact Goldie Smith via phone at ext. 42267 or Mail Stop 119 by June 2.

Person and Yenni

Due to Lee Person's sudden illness, the retirement party planned for Person and Dick Yenni on Saturday, May 6, was postponed. A rescheduled party will be announced. For pre-recorded updates on Person's condition, call ext. 48778.

John T. Taylor

A retirement party in honor of John T. Taylor will be held Tuesday, May 23, 6:30 p.m., at the Hampton Yacht Club, 4707 Victoria Blvd. Heavy hors d'oeuvres will be served. Cost is $20 per person or $36 per couple including a $3 gift. For reservations or gift-only contributions or to send cash or check, contact Judy Hoyle via phone at ext. 46914 or Mail Stop 436, or Ben Owens via phone at ext. 47241 or Mail Stop 441 by May 19.

Joseph B. Talbot

Friends and colleagues are invited to celebrate the retirement of Joseph B. Talbot on Wednesday, May 31, 5:30 to 8 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres will be served. Cost is $13 per person including a gift. For reservations or gift-only contributions, contact Dina Weiss or Sharon Fairheart via phone at ext. 46055 or Mail Stop 107 by May 22. Make checks payable to Sharon Fairheart.

Letters

From Robert M. Peterson, Sr.:

I wish to thank everyone who attended and/or contributed to my retirement party on April 26. I really appreciate all the gifts and memorabilia but especially the great sendoff I received from everyone.

From Brenda Spencer:

Thanks to everyone who participated in making my retirement party a memorable occasion. The cards, notes, gifts, photographs and flowers were also greatly appreciated. I will miss you very much.

From Rudeen Smith-Taylor:

I want to thank all who attended my retirement party and those who could not attend but contributed to the gifts, and sent cards, well wishes and limericks. The party was grand and the gifts thoughtful, fun and most appreciated. I will think of all of you as I enjoy them whether entertaining, on the tennis court, golf course or at the beach. Even though I am excited about entering this new phase of my life, I do miss the dear friends at Langley. Your friendship is the greatest gift of all.

In Memoriam

Glennan, NASA's First Administrator, Dies

T. Keith Glennan

T. Keith Glennan died April 11 at the age of 89, after complications from a stroke.

In 1958, the National Aeronautics and Space Act merged the laboratories of the National Advisory Committee for Aeronautics (NACA) with space-oriented military operations to form NASA. Glennan, then president of Case Institute of Technology in Cleveland, Ohio, was selected by President Dwight D. Eisenhower to lead the new agency.

During his three-year tenure, Glennan brought Wernher von Braun, a German rocket engineer then working on missiles for the Army, to the budding space program. Striving to keep NASA small, he identified with Eisenhower's farewell warning of "unwarranted influence . . . by the military-industrial complex."

After John F. Kennedy became president, Glennan left Washington and returned to Case. He retired from Case in 1966.

Glennan graduated from Yale University and held 16 honorary degrees. During World War II, he directed the U.S. Underwater Sound Laboratory. From 1950 to 1952, he was a member of the Atomic Energy Commission. From 1970 to 1973, he served as U.S. representative to the International Atomic Energy Agency.

Glennan is survived by his wife, Ruth; four children; nine grandchildren; and six great-grandchildren.

Air-Racer Wittman, 91

Sylvester Joseph "Steve" Wittman died in a plane crash on April 27 at the age of 91.

On Thursday, April 27, Wittman and his wife, Paula, departed Ocala, Fla., on a non-stop flight to Oshkosh, Wis. When they did not arrive as scheduled, an extensive search was initiated. Shortly after 1:30 p.m. on Sunday, the Wittman's were recovered and identified in northeastern Alabama.

Career

Though he had vision problems in one eye, Wittman learned to fly at Fond du Lac, Wis., in 1924. After barnstorming throughout Wisconsin for a few years, he moved to Oshkosh to become manager of the Winnebago County Airport in 1931. Here he built the *Bonzo* and *Chief Oshkosh* air racers, which would reserve him a place in air-racing history.

In 1947, he modified the *Chief Oshkosh* to become post-World War II's *Buster*, which raced among the world's fastest machines at 230 mph during the Golden Age of Air Racing. *Buster* was given to the Smithsonian Institute in 1954.

In 1950, Wittman patented the leading edge flap and rebuilt the *Pabjoy*. Three years later, he built the *Wittman Tailwind No. 1*, of which 130 are still flying and 100 are under construction.

After 38 years, Wittman retired in 1969 as manager of the Winnebago County Airport, which was then renamed Wittman Field.

Announcement

Completing a Degree

If you have completed the requirements for an advanced degree or expect to complete the requirements for a degree during FY 95, please call George Allison at ext. 43595.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and advertisements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

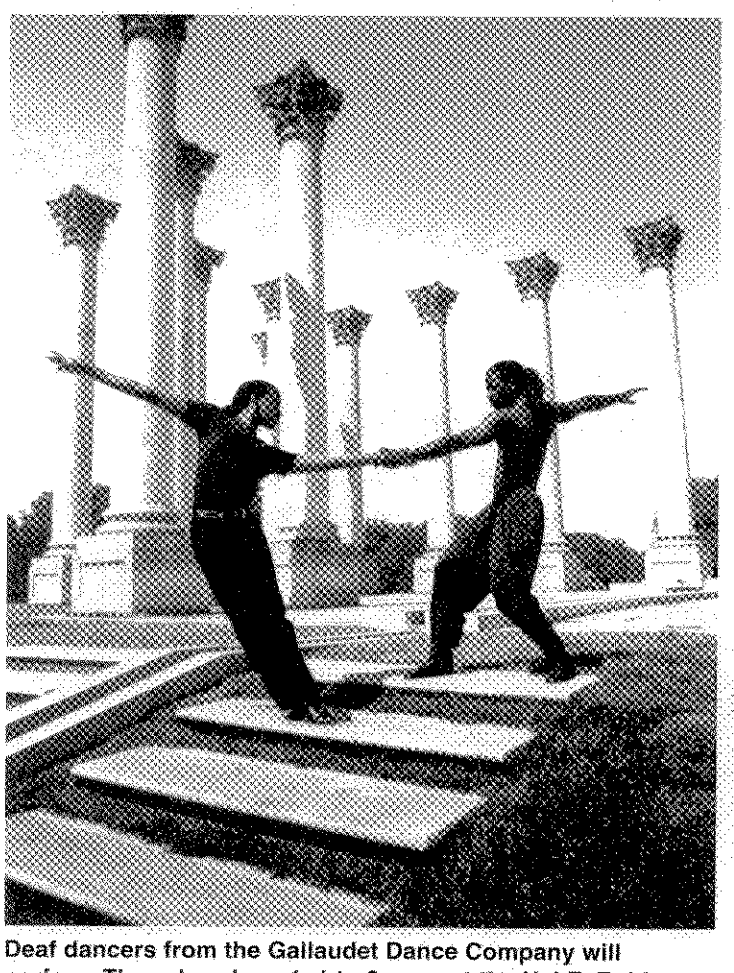
Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

The privilege of advertising 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.

Gallaudet Dancers to Perform at Langley



Deaf dancers from the Gallaudet Dance Company will perform Thursday, June 1, 1 to 2 p.m., at the H.J.E. Reid Conference Center.

The Gallaudet Dance Company (GDC) was established in 1955 by Dr. Peter Wisher, a physical education professor and basketball coach at Gallaudet University, a higher education institution for the deaf. While attending a ceremony at the university's Chapel Hall, he saw a student reciting The Lord's Prayer in American Sign Language (ASL). The graceful beauty of the signs impressed him; more importantly, though, they caused him to ask why deaf people were not dancing, using ASL signs as foundations for the dance movements. Thus the idea of a deaf dance group at Gallaudet was born.

Today the company performs modern jazz, tap and sign-language dance throughout America and in foreign countries such as France, the Bahamas, Egypt, Brazil and Israel. The troupe performs 30 to 34 times a year.

GDC's aim is threefold. First, it provides dance and performing opportunities for Gallaudet students. Second, it encourages students to acquire a liberal education in the arts and philosophy. And last, when GDC members perform before hearing audiences, they desire to destroy faulty assumptions about deaf individuals.

Summer Surge: Eat Accordingly

According to Catherine Waldal, assistant personnel officer in the Office of Human Resources, the Center can expect an increase of about 250 people during the summer. Most of these people will be students and faculty.

The most obvious squeeze on everyone's time and ability to receive efficient service will be during lunch. However, Donis Anders, cafeteria manager, says, "We are working on ways to combat the summer crunch at both cafeterias, including a call-in system and more pre-made items for our customers who need to 'grab it and go.'"

Anders says the peak operating hour is expected to be from 11:30 a.m. to 12:30 p.m. Therefore, everyone who uses the cafeteria is encouraged to modify their schedules occassionally to have lunch either before or after the heaviest time.

To maximize seating capacity, no reservations will be accepted before 12:30 p.m. To alleviate congestion, the snack bar door and counter will be open along with all five registers. Anders adds, "Consider a breakfast meeting instead of a lunch, as we would be more than happy to provide a great breakfast buffet for your group."

LAFB Gate Closure Impacts Langley Traffic

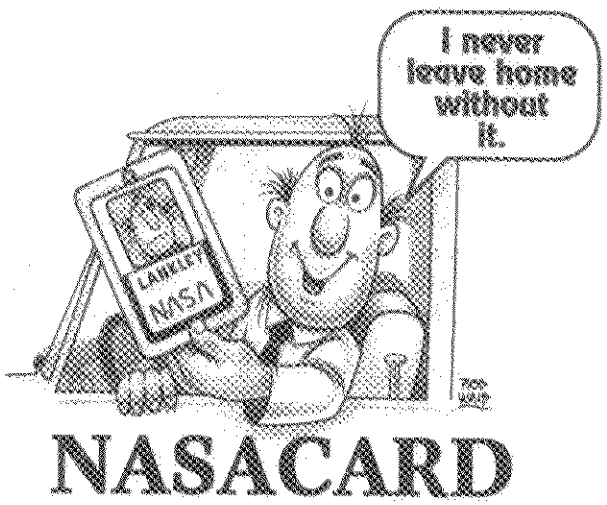
Langley Air Force Base (LAFB) announced the temporary closure of their West Gate at Armistead Avenue which began Monday, May 15, at 5:30 a.m., and will last up to 28 days. The closure is required due to road and culvert construction on Sweeney Blvd.

LAFB has requested users of the Armistead Avenue Gate to enter LAFB through the LaSalle Avenue Gate during this period of construction. Even so, Langley expects a significant traffic increase.

Traffic concerns will be further complicated by the directed and on-going Threatcon Alpha Center access requirements. LAFB personnel have been requested to be prepared to display an identification card to facilitate Center access. Langley employees are requested to continue to present their identification badge upon entering the Center and to wear their badge while on Center.

Langley security personnel will actively assess traffic conditions in conjunction with LAFB security police and local law-enforcement officials to minimize the impact on Center employees and visitors. Your assistance is requested in coordinating your travel time accordingly and in advising scheduled visitors of anticipated delays.

Lankley



This cartoon first appeared in the February 8, 1991, issue of the Researcher News. We have resurrected it to make a point about presenting your identification badge when entering the Center and wearing it while on the Center. With the expected increase of traffic through Langley's two gates from Langley Air Force Base's overflow, security will be tighter than usual.

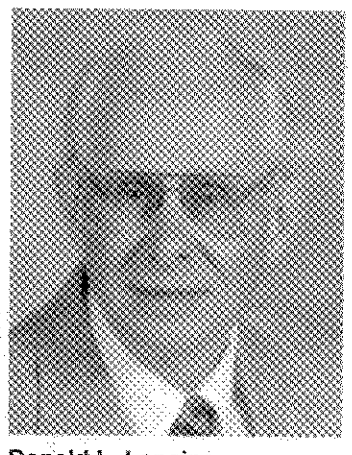
Colloquium

Continued from page 1

Space Center.

During his early years Langley developed a reputation as a distinguished astronomer and astrophycist by making detailed measurements of the Sun's spectrum with an instrument of his own design. This work was motivated by his recognition that all life and activity on Earth was made possible by the Sun's radiation. This highly original and innovative research earned him honorary doctorates, awards and medals from universities and scientific societies around the world.

Langley was the only professional scientist of his day who believed that humans were destined to fly. In 1886, he undertook a series of experiments on a rotating rig to measure the power needed to propel objects through the air. Encouraged by his findings, he set out to build several large working models of steam-powered flying machines he called "aerodromes." Five years of work culminated in three sustained free flights in 1896, securing Langley the honor of accomplishing the world's first successful unmanned flights of a heavier-than-air flying machine.



Donald L. Lansing

Donald L. Lansing

Donald L. Lansing retired from Langley in 1991 after 36 years of service. During his career, he held a variety of assignments in research and management primarily in the Dynamic Loads, Acoustics, and Analysis and Computation Divisions. His research was in the areas of sonic boom, duct acoustics and image compression. He is the author of 35 technical papers on these subjects. In late 1991, Lansing had an intergovernmental personnel assignment with the Virginia Air and Space Center and Hampton Roads History Center, the official NASA Langley Visitor Center.

Lansing's interest in Samuel P. Langley's life and career developed in the fall of 1992. Along with Robert Bower, a former Langley director of aeronautics, and others at Christopher Newport University, he organized and presented a two-week award-winning elderhostel, entitled "Hampton Roads - Cradle of Aerospace." Through lectures and field trips, the elderhostel highlighted Hampton Roads' unique contributions to the growth of the aerospace sciences. He has lectured on Langley's legacy both to the elderly audience and to the NASA Langley Alumni Association. He and Kim Hinson, media and community relations manager of the Virginia Air and Space Center, have also authored an article on the Great Aerodrome on display at the center, which will be published in the January 1996 issue of *Aviation History* magazine.

Awards

Student Achievers Honored at Symposium

The 10th Annual Technical Student Symposium in Mathematics and Computer Science was held April 21 and 22 at Norfolk State University (NSU). The symposium was jointly sponsored by the National Technical Association (NTA) Hampton Roads Chapter, Langley and NSU. The symposium provided a forum for students to present the results of their research activities.

The first place winner in computer science was Hillary Parham. Her paper was entitled "Virtual Reality: How Real Is It?" Second place was awarded to Oshun M. Jones for her paper, "Designing Graphical User Interfaces for Ease in Human-Computer Interaction." Gregory Patrick and Carolyn Gordon received honorable mention for their papers, "The Use of Multiple Threads in System Design and Implementation" and "Artificial Intelligence: Autonomous Agents," respectively.

Photo by Michael Chapman

The 10th Annual Technical Student Symposium in Mathematics and Computer Science was held in April for students to present the results of their research activities. Awarded for their work were, from the left, Christopher Holbrooks, Carolyn Gordon, Oshun Jones, Oscar Smith, Hillary Parham, Norma Wesner and Gregory Patrick.

The first place winner in mathematics was Norma J. Wesner. Her paper was entitled "Using Graphing Calculators in the Secondary Mathematics Classroom." Second place was awarded to Oscar Smith for his paper, "Neural Networks Applied to Handwriting Recognition." Christopher R. Holbrooks received honorable mention for his paper, "Are Portfolio Assessments a Viable Option?"

In addition to the symposium honors, many awards were given to mathematics and computer-science students and faculty for various academic achievements accomplished during the past year.

Several Langley personnel who are also NTA members served as judges, including Mike Chapman, Sharon Jones and Calvin Mackey.

Manned Flight Awareness Honoree

Brad Perry was honored with the Manned Flight Awareness certificate and pin for his work on the completion of the International Space Station Phase I Incremental Design Review. Along with seven others, Perry received the citation from Astronaut Kevin Chilton during an awards breakfast at Johnson Space Center in March.

Brad Perry

CFDP Calls for Nominations

Langley's Career Field Development Program (CFDP) is designed to provide opportunities for selected employees to work toward undergraduate degrees and improve their career potential.

A candidate for this competitive program must:

- Be a permanent civil-service employee with at least one year of current continuous service at Langley;
- Have demonstrated a commitment and potential for success in pursuing higher education;
- Have approval of immediate supervisor and division/group management; and
- Be able to complete the requirements for an undergraduate degree within approximately three years on a part-time basis.

For more information or an application, call Janet McKenzie at ext. 42598.

Quality Recognition Month in April

Usually, we think of October as the National Quality Month. However, in consecutive weeks in April, Langley teams were recognized for their quality contributions at separate conferences in Alexandria, Va.

Continual Improvement and Reinvention Conference

The first conference was the Agency-wide Continual Improvement and Reinvention conference led by NASA Administrator Daniel Goldin, Acting Deputy Administrator Jack Daily, associate administrators and center directors.

Chris Tremper, representing the Electronic Purchase Request Quality Action Team, presented his team's process for improving the paperless system at Langley. During the lunch-hour celebration banquet, Goldin presented Tremper with a plaque for the achievements of the team that he and Sandy Ray led.

Connie Stott, a member of the Agency-wide Small Purchase Request Reengineering Team, was also recognized for her team's results and presented with a plaque from Goldin. Debbie Carraway was the facilitator for this Agency-wide team.

SPQA

A week later, Belinda Adams, Langley's assistant director for planning, presented an overview of the Langley application for the U.S. Senate Productivity and Quality Award (SPQA) for Virginia. Langley had applied last November in the Public Sector State and Federal category. The SPQA board conducted a site-validation visit at Langley in February. The Center was one of five organizations being recognized as finalists in that category. All the applicants in this category were within 60 points of each other at the 800 level on a 1,400-point scale.

The Coast Guard Finance Center in Chesapeake was the medallion winner in the State and Federal category. It is the single provider of this function for its agency and a model for the Department of Transportation. The other agencies joining Langley as finalists in this category were: the First Fighter Wing, Langley Air Force Base; the Defense General Supply Center, Richmond, Va.; and the Naval Security Group Activity Northwest, Chesapeake, Va.

The Unisys contractor team from Hampton, which provides Langley business computer-system support, was also recognized as a 1995 finalist. Unisys participated in the Private Sector Service Category.

Conclusion

Recognition of Langley as a finalist shows that while the Center may have a long way to go on the quality journey, it has made a good start. Langley entered the application process to self-assess and to obtain feedback from examiners for continued systems and process improvement.

The feedback from these review teams will be used by the senior staff at their annual strategic/quality planning retreat in late July. A copy of the Langley application for the U.S. SPQA can be viewed on the Apple Share network—Scott Wagner in Bldg. 1219 in the "VPQA Application" folder. A copy of the ShowTime used in the display is also in this folder. To run it, drop the ShowTime on top of the Viewer.

Many thanks to all who helped to prepare the application and in carrying out the process for the site-visit-validation virtual tour. We learned a lot which will help us in achieving our vision of being "the world leader in pioneering science and innovative technology to ensure U.S. aeronautical and space preeminence."

Career Transition Assistance Program Arrives at Langley

On April 3, NASA Headquarters initiated a new Agency-wide employee program called the Career Transition Assistance Program Center (CTAPC). The center, which began operating May 3, will assist NASA employees who have taken the buyout or may consider leaving NASA.

Program Developer

To develop and implement the program, NASA selected Resource Consultants, Inc. (RCI). For the past five years, RCI has provided services to over 400,000 federal, civilian, soldier and sailor clients at 56 Department of Defense locations around the world.

RCI also designed and developed the Integrated Systems Approach to Career Transition which is tailored to NASA employee requirements. The approach enables NASA employees to take charge of their careers, to develop long- and short-range planning strategies and to acquire life-long knowledge and skills.

The CTAPC is headed by RCI's Mike Lazorchak, senior project manager. It is staffed by Jo Anne Farr, senior counselor/program manager, who has over 20 years of experience in human resources management, training and placement, and Jeanette B. Graebener, system administrator, who is a veteran RCI employee with over 11 years of outplacement experience.

At Langley

The Langley CTAPC is located in Bldg. 1232A, Rm. 215. Initial hours of operation will be 8:30 a.m. to 5 p.m., Monday to Friday. As employee needs are identified, hours of operation will be adjusted accordingly.

NASA employees will have access to a full range of transition-assistance services such as group seminars, one-on-one coaching sessions and a wide range of automated employment-search tools. All currently employed, NASA federal employees and the employees who accepted the buyout option after February 5, 1995, are eligible to use the CTAPC's services.

According to Gael Hawkins, Langley CTAPC coordinator, "If NASA employees paid a private company to provide all CTAPC's support and services, it would cost them $3,000 or more."

Information

Additional information on CTAPC enrollment procedures and event schedules will be widely publicized via CTAPC phone mail, e-mail and *LaRC This Week*. For more information or to express interest in CTAPC programs, call ext. 45000 or visit the

1994 Speakers Bureau Awards

Photos by Fred Jones

The Speakers Bureau held its annual awards ceremony in April. The bureau cited several people who gave numerous talks on NASA's work before community organizations or educational institutions during 1994. Among the recipients and attendees of the ceremony were, in front row from the left: Lenwood Clark, hall of famer; Paul Holloway, Center director; Dr. Christine Darden, speaker of the year who gave 15 talks; Richard Davis, who gave eight talks; Cathy Schauer, who gave three talks; and Doug Dwoyer, director, Research and Technology Group. In the back row from the left were: Irwin Schauer, who gave six talks; Charles Blankenship, director, Technology Applications Group; and Thayer Sheets, who gave three talks. Other award winners not pictured included: Dr. Joel Levine, hall of famer; and Ann Carlson and Lee Person, who each gave three talks.

Hall of Fame Speakers

A new award, the Speakers Bureau Hall of Fame, was bestowed on Lenwood Clark, right, and Dr. Joel Levine. To have qualified, honorees must have been Speaker of the Year at least three times. A plaque with their names will hang in the lobby of the H.J.E. Reid Conference Center.

1994 Speaker of the Year

Dr. Christine Darden, who gave 15 talks last year, was honored as the 1994 Speaker of the Year at the annual Speakers Bureau awards ceremony.

1995 Speakers from End of February through March

SPEAKER	ORGANIZATION	TOPIC February
Tony Arviola, I-Net Corp.	IEEE, Old Dominion University	Computer Networking at Langley
David Shannon	Science Museum of Va., Richmond Society of Mechanical Engineers	Solar System and Space Station
Tony Arviola, I-Net Corp.	York Ruritan Club	Information Superhighway
SPEAKER	**ORGANIZATION**	**TOPIC March**
Pat Troutman	Richmond Children's Museum	Space Station
Carey Spitzer	After School Enrichment Series: Abington Elementary School, Gloucester	Astronomy
Mary Ann Rudisill	Tidewater Human Factors Society	Space Human Factors
Ledora Akanni	St. Margaret's School, Tappahannock, Va.	Career Day
Richard Davis	Palmer Elementary School	Weather
Joe Struhar	Hampton Rotary Club	NASA Budget
Wallace Sawyer	Hampton Rotary Club	Hubble Space Telescope
Bruce Fisher	Menchville High School	Lightning and the Adverse Effects of Lightning on Aircraft
Vickie Connors	Aberdeen Elementary School	Earth Observations and Measurements from Space
Richard Davis	Williamsburg/James City County Talented & Gifted Program	Star Walk
Leroy Spearman	Hidenwood Presbyterian Church	Review of 50 Years of Aeronauics Research at NACA/NASA
Angela Mason	Atlantic Intelligence Command Dept. of Defense	You Can Succeed in Your Career
Cathy Schauer	Cub Scouts	Apollo Adventure
Vickie Connors	University of Maryland, Dept. of Meterology	Global Distribution of Carbon Monoxide
Joel Levine	Daughters of the American Revolution, Williamsburg	A Planet at Risk
Joel Levine	Williamsburg Lodge: Evening Public Lecture Series	Biomass Burning: A Driver for Global Change
William Vogler	St. Francis Nursing Home	Albert Einstein, A Man for All Time
Dave Yeager	Armed Forces Communications and Electronics Association	Computer Networking at Langley
David Shannon	The Collegiate Schools	Space Station and Material Coatings

How to Participate in the Speakers Bureau

Langley is proud of its Speakers Bureau and of the employees who advocate it. Let us know if you speak before a community organization or educational institution. Many speakers participate as a result of a direct inquiry or a request from the Speakers Bureau coordinator.

Any civil-service employee or contractor employee at Langley who gives a talk regarding NASA's work, should send their name, mail stop, phone number, title of talk, date, place given and number of attendees to Speakers Bureau, Mail Stop 154, during the month the talk is given. This information is used to identify the areas and levels of interest the community has in our work, the kinds of organizations requesting speakers, and the number of people we reach.

The success of the program cannot be measured without your support. Help us do our job better and recognize your efforts at the same time. For more information, call Cathy Schauer at ext. 43314.

More National Engineers Week Results

The 1995 National Engineers Week tabulations are final.

- Number of National Engineers Week volunteers: 217
- Number of classroom/school visits scheduled (total): 721
- Number of schools which participated: 177
- Number of students reached via classroom visits: 19,005

In recognition of National Volunteer Week, letters of thanks and certificates of appreciation, signed by Center Director Paul Holloway, have been distributed to 318 volunteers who participated in Langley's three Center-sponsored, community-service activities: Engineers Week, Day of Caring and Galaxy of Gifts.

Langley's Precollege Outreach Programs

Langley offers teacher and student opportunities as well as technology programs through its Precollege Outreach Program. Listed below are just some of the opportunities for teachers.

Teacher Opportunities

NASA Education Workshop for Elementary School Teachers (NEWEST) for teachers in grades K through 6 and NASA Education Workshop for Math, Science and Technology Teachers (NEWMAST) for teachers in grades 7 through 12 offer educators the opportunity to attend a 2-week summer workshop at a NASA field center and to interact directly with NASA scientists and engineers. Aerospace education specialists help participants translate this exciting experience into classroom activities that integrate across the curriculum. For more information and a brochure, contact the Langley's Teacher Resource Center at the Virginia Air and Space Center, 600 Settlers Landing Road, Hampton, Va. 23669, or call 1 (804) 727-0900, ext. 757.

Aerospace Education Services Program (AESP) specialists conduct workshops for educators and classroom assembly programs for students. A typical educator workshop includes how-to and hands-on activities to help teachers incorporate NASA-related topics into their classes as well as demonstrations of aeronautics and space-science equipment, principles of rocketry, Space Shuttle operations and life in space. Langley's AESP specialist serves the states of Virginia, West Virginia, North Carolina, South Carolina and Kentucky. For more information, contact Gerri Polhamus via phone at ext. 43302 or Mail Stop 400.

NASA Educational Horizons is an educators newsletter which is published and distributed by NASA Headquarters. The newsletter's primary scope is to supply American educators from grade school to graduate school with two types of information: (1) a synopsis of the latest scientific news from NASA Headquarters and its field centers; and (2) ways to interact with NASA and its field centers through participation in workshops and seminars, acquisition of educational products such as publications and videos, and cable television programming and teleconferencing. To be added to the mailing list, contact *Educational Horizons*, Editor, NASA Education Division, Code FEP, 300 E Street SW, Washington, D.C. 20546, or call 1 (202) 358-1533.

NASA Teacher Resource Centers (TRC) supply publications, videotapes, slides, computer programs, lithographs, wall sheets and instructional activities that can be used by educators in all disciplines and at all grade levels. Langley's TRC is located at the Virginia Air and Space Center in downtown Hampton. Materials are provided free of charge. However, educators must provide blank videotapes and computer disks and must copy the programs themselves. The TRC features Macintosh computers with Apple II compatibility. Two multipurpose classrooms offer teachers an excellent opportunity for aerospace workshops, programs and related activities. Educators are encouraged to contact the TRC coordinator and schedule an appointment. For more information or a brochure, contact TRC Coordinator, Virginia Air and Space Center, 600 Settlers Landing Rd., Hampton, Va. 23669, or call 1 (804) 727-0900, ext. 757.

NASA's Central Operation of Resources for Educators (CORE) is a centralized mail-order service for audiovisuals available to educators at a nominal fee. For a catalog of available materials, write CORE, Lorain County Joint Vocational School, 15181 Route 58 South, Oberlin, Ohio 44074.

Theater

Continued from page 1

In addition, the theater will be accessible to the disabled, with ramps and six spaces available for wheelchairs.

For scheduling information, call Pam Verniel at ext. 46362.

Young

Pearl I. Young, with a bachelor's degree in physics from the University of North Dakota, started work at Langley in April 1922. Her first assignment was in the Instrument Research Division, where she worked with H.J.E. Reid, who later became Langley's engineer-in-charge.

After several years, Young suggested that Langley needed a technical editor, and she was given the job. In 1943, she published the *Style Manual for Engineering Authors*, which served as a reference at Langley and other NACA centers. Pearl Young was not related to Ida Young, who worked at Langley from 1939 to 1968 and headed the technical editing staff.

Pearl Young left Langley in 1943 for the brand-new NACA Aircraft Engine Research Laboratory, now Lewis Research Center. Young trained the Cleveland lab's new technical editing staff. In 1947, she left for Pennsylvania State University in Pottsville to teach engineering physics as an assistant professor.

Young returned to Cleveland in 1958 to do bibliographical work on the spectroscopy of plasmas. She taught physics for two years at Fresno State College in California after retiring from NASA in 1961. She died in 1968.

For more information on Young, see the books *Engineer in Charge* and *Engines and Innovation*.

NASA Solicitations Found on Internet

Bid solicitations for mid-sized buys, up to $500,000, that are found in Commerce Business Daily (CBD), can be accessed on an Internet bulletin board system called "MidRange Procurement Initiative." Through this bulletin board, NASA seeks to simplify solicitations and contracts, cut procurement time, shrink costs and reduce the CBD proposal cycle from 45 to 60 days to 15 days.

Tom Deback, a procurement analyst in NASA's Office of Procurement, said, "The bulletin board is targeted at reducing the time between the publication of a CBD synopsis and the receipt of proposals. It is at the front end of the process so we can cut down on the internal procedure," he added. "It's an easy way to do business faster."

Marshall Space Center is the first center to have a functional system; Goddard, Johnson and Kennedy Space Centers are close behind. Jim Bradford, a procurement analyst at Marshall indicates that this system is "the same as a CBD notice, but you can download the solicitation to a PC." The system uses the Internet/World Wide Web (WWW) system.

For users with a WWW browser, Marshall Center's procurement home-page can be accessed via this address: http://procure.msfc.nasa.gov

For an information package, send requests via phone at (205) 544-0306 or the Internet (jim.bradford@msfc.nasa.gov).

ERA and CIT to Host Electronics Expo

The Chesapeake Electronics Representatives Association (ERA) is bringing its highly successful Maryland trade show to southeastern Virginia on June 5 and 6 at the Pavilion in Virginia Beach. This two-day event, sponsored by the Chesapeake ERA, and in cooperation with Virginia's Center for Innovative Technology (CIT), will feature an exhibit hall and technical programs.

Engineering, production, purchasing, research and development, testing and quality-assurance/quality-control professionals working in electronic and electro-mechanical disciplines will see new products and technology trends, and attend educational seminars in close proximity to their workplace. Typical comments from the Maryland show attendees have been that they can get more information from the show than from a week of phone calls.

Exhibitors

Exhibitors include manufacturer's representatives, distributors, contract manufacturers and manufacturers. Products on display will include:

- Components and Materials - active and passive components, connectors, OEM materials, enclosures and hardware, subsystems;
- Communications;
- Computer Products - peripherals, systems, data communications;
- Instrumentation - test and measurement, automatic test equipment, data acquisition and control;
- Production and Packaging Equipment - packaging, printed circuit fabrication, circuit assembly, testing, clean room;
- RF/Microwave - components, discrete devices, microwave ICs;
- Sound, Signal, Security and AV.

Seminars and Workshops

Free technical seminars and workshops, given by electronics industry specialists, will include these timely topics:

- Product Compliance;
- Surge Suppression for Telecommunication Systems;
- Accessing Technology Assistance;
- Surface Mount Rework;
- TI/T3 Testing;
- SMT and Advanced Miniaturization for Electronics Packaging - A Look at the Economics;
- Advantages and Myths of Fiber Optics;
- A PWB Designer's Guide to the Galaxy.

VIRGINIA ELECTRONICS EXPO '95

Other Information

The exhibit hall will be open Monday, June 5, 1 to 5 p.m., and Tuesday, June 6, 9 a.m. to 1 p.m. The technical seminars are scheduled for Monday, June 5, 10 a.m. to 5 p.m., and Tuesday, June 6, 9 a.m. to 4 p.m. Admission to the exhibit hall and seminars is free for all attendees.

The ERA is an international not-for-profit trade association of professional sales and marketing companies representing recognized manufacturers of electronic components and products.

Virginia's CIT enhances the competitiveness of Virginia businesses by providing them with access to the state's technology resources and assisting in the creation and retention of high-technology jobs and businesses.

For more information, call Bonnie Lasky of the Virginia Electronics Expo at 1 (215) 822-6319.

Visit *Greenhouse Earth*

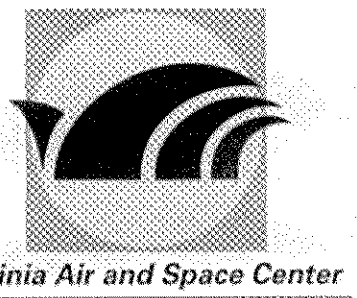
Learn about the greenhouse effect and global warming by experiencing the Virginia Air and Space Center's new interactive changing exhibit, *Greenhouse Earth*. The exhibit opens in the Changing Gallery, May 20, and continues to September 30, 1995.

The exhibition, including several hands-on modules, encourages visitors to learn first-hand about the potential global warming trend and the effects it may have on us. Upon entering the exhibition area, visitors encounter a thermal camera that detects infrared radiation, making cold fingers look blue and warm tongues look orange. Other sections of the exhibit contain computers enabling visitors to access huge databases and find weather reports for their birthdays, giving visitors a long-range view of the climatic change.

A major portion of the exhibition is devoted to energy policy, including changes that can be made at the household level. Visitors can audit their own household carbon-dioxide emissions and witness where the largest savings are possible. Other devices enable visitors to compare compact fluorescent and incandescent bulbs and the appliances which use the greatest energy.

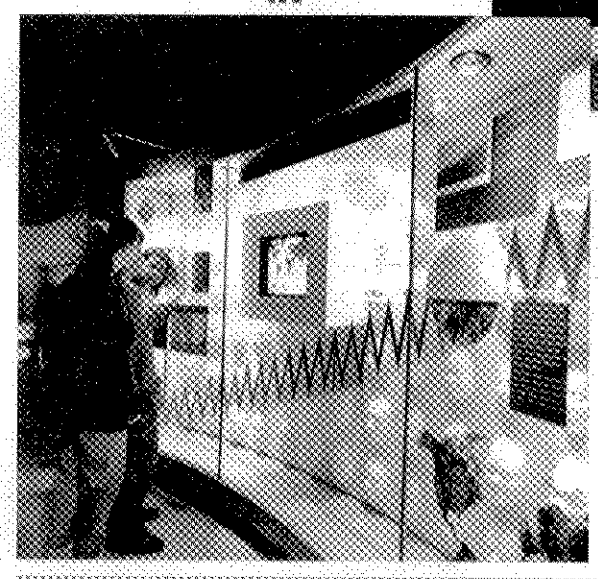
An exciting component of the exhibit is a 20-minute play, "The Long, Cold Summer," by Dick Goldberg, which explores the economic and social impacts of a possible climate change in New England.

Greenhouse Earth was produced by the Association of Science-Technology Centers in collaboration with the Franklin Institute, with support from the National Science Foundation, U.S. Department of Energy, Cray Research Foundation, and George Gund Foundation.



Virginia Air and Space Center

Hampton Roads History Center



Learn about the Earth's protective greenhouse through a visit to *Greenhouse Earth*. This new exhibit, opening May 20, is at the Virginia Air and Space Center, Langley's visitor center, in downtown Hampton.

To get to the Virginia Air and Space Center, take Exit 267 from I-64 onto Settlers Landing Road. Then head toward downtown Hampton. Center hours are 9 a.m. to 5 p.m. daily before Memorial Day. After Memorial Day, hours are 9 a.m. to 5 p.m., Monday through Thursday, and 9 a.m. to 7 p.m., Thursday through Sunday. Admission to tour exhibits only is $4 for adults and $2 for children ages three to 12. For more information, call 727-0900.

The Space Grant Program

Six years ago, NASA accepted the Congressional mandate to manage the National Space Grant College and Fellowship Program, also known as the Space Grant program. It consists of 52 independently governed Space Grant consortia administering programs in three areas of university and NASA concern: research, education and public service.

Members include some of the most prestigious colleges and universities in America; internationally competitive business and industrial partners; small businesses; state and local government agencies; private, community and medical colleges; and other nonprofit organizations. The number of affiliated Space Grant institutions has grown from 86 affiliates in 1990 to over 550 affiliates in 1994.

NASA funding for the program has remained stable at $15 million since 1991. However, since NASA announced competition for Space Grant awards in 1989, the 52 consortia have leveraged matching funds, including in-kind contributions, to approximately double the awards.

Though the program has been fully operational in all 52 consortia for less than five years, the benefits to the taxpayer have been significant.

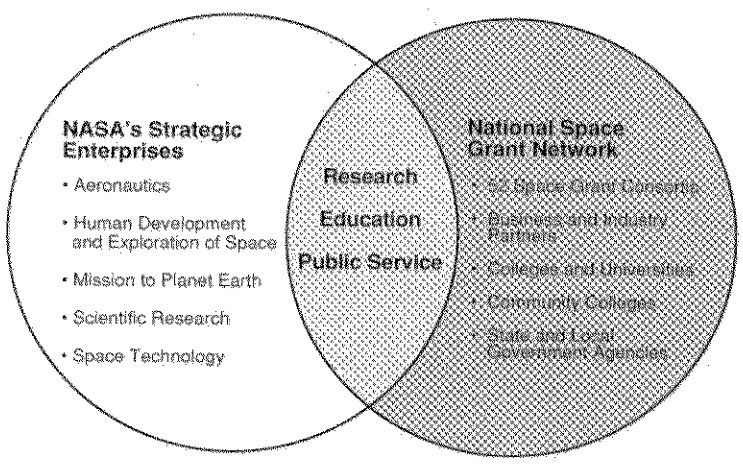
Higher Education

Since 1990, the Space Grant has served close to 6,500 citizens by providing tuition assistance. Among these citizens were significant numbers of students from underrepresented groups in science and engineering, including women, African-Americans, Native Americans, Hispanic-Americans, Pacific Islanders and persons with disabilities.

A no-matching-funds requirement is necessary for Space Grant program funds distributed for fellowships and scholarships. However, from 1992 to 1994, the consortia have supplemented these funds with nearly $10 million. During the same period, the average Space Grant student award was $5,321.

Each state consortium determines how it will distribute the fellowship and scholarship funds. Some states choose to make awards to graduate students exclusively while other states choose to award only undergraduates. The majority of states give awards to both types of students. Awards are competitive. Space Grant students typically major in fields bearing relevance to NASA's mission. Both graduate and undergraduate Space Grant students gain laboratory research experience.

NASA-Space Grant Interface



Precollege Education

From 1992 to 1994, consortia leveraged $16.5 million for precollege activities and administered over 1,300 precollege projects that promote NASA-related science education. Many of these projects targeted persons from underrepresented groups and contained mentoring or role-modeling components. Space Grant precollege programs, serving teachers and students, provide good examples of higher-education faculty working well with local school systems.

Public Service

The Space Grant consortia and NASA agree that providing public service is a top priority. From 1992 to 1994, the Space Grant consortia administered over 600 public-service programs and leveraged approximately $4.5 million. Space Grant funds provided science and technology lectures, demonstrations, science exhibits, space-related periodicals, and audio and video productions of NASA-related subjects. The funds also have helped to promote science literacy and NASA awareness in over one million people.

Research

Another highly successful area of Space Grant growth has been research infrastructure development. From 1991 to 1994, Space Grant faculty and students obtained funding for over 300 research proposals. The total dollars won with these proposals for 1993 and 1994 exceeded $50 million.

Future Collaboration

The Space Grant provides a logical interface for NASA with the colleges and universities of America. The natural intersection between the Space Grant and NASA occurs in elements common to both: research, education, and public service. The Space Grant is working to be an effective multi-institutional network for NASA-related ventures.

Information

For more information on state-specific contacts, contact Dr. Liz Ward, NASA Langley Space Grant Fellow, via phone at ext. 43299 or e-mail (e.b.ward@larc.nasa.gov). Additional information on the Space Grant can be obtained through the Education Programs link on NASA's World Wide Web site at: http//www.nasa.gov

Happenings

VA SYMPHONY POPS: The Virginia Symphony Pops is offering a special 50-percent-off ticket to all NASA employees, retirees, and contractors for its outdoor concert, Saturday, June 3, 7 p.m., at the Mariners' Museum. Buy tickets for only $5 at the Exchange Shop (regularly $10 in advance, $12 at the gate). For more information, call ext. 41585. Bring a picnic, watch the sunset and listen to music in the park!

FOR SALE: Hobie 16 sail boat w/trailer and McKibbon sails. Much faster than average. $1,500. Call Deane at 596-6949.

FOR SALE: 3 or 4BR, 1-1/2BA, brick home. LR, dining area, nice kitchen, large patio, new central heat and AC. Hidenwood area. $92,000. Call Donna at 930-8916.

NTA MEETING: The Hampton Roads Chapter of the National Technical Association will meet Monday, June 19, 7 to 9 p.m., at the Hampton City Central Public Library at the corner of Victoria Blvd. and Kecoughtan Rd. For more information, contact Bob Lee at ext. 45679.

WANTED TO RENT: The American Society of Engineering Education's Summer Faculty Fellow and his wife need a cottage or small house, June through August. Not fancy, but clean and w/appliances. Furnished/unfurnished. Will provide references. Contact Dr. Richard Tipping via the Internet (rtipping@ua1vm.ua.edu), or via U.S. mail at Physics Department, University of Alabama, Tuscaloosa, Ala. 35487.

BLOOD DRIVE: All NASA employees, retirees and contractors are invited to participate in the next blood drive, Wednesday, May 24, 9 a.m. to 3 p.m., in the H.J.E. Reid Conference Center.

FOR RENT: Luxurious 2BR condo in Kissimmee, Fla., 1 mile from Disney entrance. Accommodates 6 comfortably. Available Sep. 23 to 30 for $500. Call Collis at 868-9709.

VA SYMPHONY CHORUS: Auditions for the chorus will be held June 12, June 13 and June 19, 6:30 to 10 p.m., at the First Presbyterian Church in Norfolk. Call the Virginia Symphony at 623-8590 for audition packets.

ISD PICNIC: ISD invites all employees, retirees and their families to a family get-together picnic party, Friday, June 2, 5 to 9 p.m., at the Langley Alumni Association picnic grounds. Cost is $5 per person; children under 10 are admitted free. Hot dogs, hamburgers, baked beans, potato salad, chips, soft drinks and beer will be served. Come play tennis, horseshoes, volleyball, basketball or softball. A playground will also be available. To send a check or let ISD know the number attending, contact Lee Lillard via phone at ext. 47301 or Mail Stop 157, or Geoff Tennille via phone at ext. 45786 or Mail Stop 125 no later than May 26. Everyone come and let's have fun!

FOR SALE: 1976 C20 Suburban 3/4-ton truck. V8, 305-cubic-inch engine. Step-and-tow bumper. AM/FM/tape, PS, PB, AC. Three seats for eight passengers. Great tow vehicle. Needs body work. $1,500. Call Deane at 596-6949.

FOR SALE: 1976 VW Transporter type II. 2,000cc fuel injection. Runs very well. Plenty of body rust and stickers. Best offer. Call Keith at 850-3597.

RACQUET STRINGING: Experienced racquet stringing at reasonable rates. Various types of strings available w/ 1-day service guarantee. U.S. Racquet Stringers Association. Call Ray at 875-5678.

RIDE NEEDED: Carpool ride needed, June to mid August, from Buckroe Beach/Ft. Monroe area. Will pay all expenses. Call Buddy at 43467.

COMMUNITY SERVICE: Volunteers are needed to construct Kids Island, a Poquoson playground. Work is scheduled for Saturday and Sunday, May 20 and 21, 8 a.m. to 5:30 p.m., at Phillips Park on S. Lawson Rd. Volunteers of all skill levels are welcome. Child care will be provided. For more information, call Brenda Fisher at 868-8825, or just show up.

LAA Aerobics Club Celebrates National Fitness Month

May is a month for celebrating more than just beautiful weather. Six national health concerns are recognized this month: arthritis, high blood pressure, aging, osteoporosis, mental health and correct posture. To increase awareness of these concerns, the LAA Aerobics Club will provide hand-outs during its May classes.

May is also National Employee Health and Fitness month. All employees, contractors, and their families who have never attended the club's low-impact or power-walking classes are invited to two free classes. Classes include body sculpting, circuit training, and cardio-interval, all in a low-impact or bench-aerobics format, as well as weight or resistance training for upper and lower body. Before class, chart your fitness progress with a body-composition analysis, cardio assessment and nutrition analysis.

Classes are in the LAA gym, Tuesdays and Thursdays, 5 to 6 p.m., and Saturdays, 9:30 to 10:30 a.m. Power-walk classes are Tuesdays and Thursdays, 4:15 p.m., and Saturdays, 9:15 a.m. For more information, call Michele at ext. 42295.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

News
Researcher

402 ON-SITE NON-LARC
COPPEDGE, AUDRY S
MAIL STOP 145

Deaf Dancers Return to Langley

The dazzling deaf dancers of the Gallaudet Dance Company return to Langley Thursday, June 1, 1 to 2 p.m., at the H.J.E. Reid Conference Center. See story on page 3.

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 11 ❖ June 2, 1995

Sweeping Changes

Editor's Note: *At a news conference on May 19, NASA Administrator Daniel Goldin presented the Zero-Base Review Team's proposal of sweeping changes for NASA's management and organization. The news release from that conference is presented here.*

An internal NASA review team has produced proposals to enable the agency to meet the tough funding targets set by the Administration in the 1996 budget, Administrator Daniel S. Goldin said today. The proposals include sweeping management and organizational changes to cut spending an additional $5 billion by the end of the decade.

Daniel S. Goldin

"I'm pleased with what I've seen so far," Goldin said. "We've found ways to streamline operations, reduce overlap and significantly cut costs without cutting our world-class space and aeronautics programs. We have much hard work before us, but I believe a stronger and more efficient NASA will emerge."

The internal review does not propose closing any of the Agency's 10 major field centers, or shutting down any major programs. Goldin said he is determined to cut infrastructure at the Agency by reducing jobs, facilities and administrative overhead, rather than terminating core science, aeronautics and exploration programs. However, Goldin warned that further deep budget cuts now under consideration in Congress would threaten the survival of some NASA centers and major Agency programs.

"Reaching the levels in the Administration budget was an incredibly difficult task," Goldin said. "The deeper cuts Congress is contemplating simply go too far, and I am committed to fighting them."

"NASA was already in the process of taking a $35 billion (31 percent) cut over five years when the President asked us to cut an additional $5 billion. This is an agency designed to operate with a $22 billion budget annually, and we'll be at $13 billion by the end of the decade under the Administration budget," Goldin said.

"The American public wants a leaner, more efficient NASA, and we're prepared to meet that challenge. But they also want and deserve a NASA that maintains our nation's leadership in space exploration, aeronautics, science and technology," he said.

The internal review, known as the Zero-Base Review, proposes streamlining functions at NASA centers, so each installation becomes a "center of excellence," concentrating on specific aspects of NASA's mission. At the same time, the proposed changes would reduce overlap and consolidate administrative and program functions across the Agency.

Under the review team's findings, NASA's total civil service employment levels would be cut to approximately 17,500 by the year 2000. This is the lowest level of civil servants at NASA since 1961. In addition, the budget reductions would cut an estimated 25,000 contractor personnel. The actual number and distribution of contractor job losses Agencywide would be determined by future business decisions made by the contractors.

The review team proposals will be assessed through the summer months and then become part of the Agency's Fiscal Year 1997 budget, due to be submitted to the Office of Management and Budget later this year. Goldin began the review last September following guidelines issued by the National Performance Review, a governmentwide effort headed by Vice President Al Gore to streamline executive agencies. The NASA study intensified in January to meet the President's budget reduction targets.

Zero-Base Review Operating Guidelines

In performing the study, the Zero-Base Review Team adopted the following operating guidelines:

- Each field center will have a primary mission to reflect its role in a strategic enterprise. NASA's strategic plan has established a framework for managing the Agency by concentrating key activities into "strategic enterprises." The five strategic enterprises are Mission to Planet Earth, Aeronautics, Human Exploration and Development of Space, Space Science and Space Technology.

See **Changes**, *pages 6 and 7*

The Langley Diversity Management Plan

Soon every employee at Langley will receive a copy of the Langley Diversity Management Plan, along with a copy of the Agency plan. A collaborative effort of the Langley Multicultural Leadership Team and the senior staff, I am very pleased that it is now ready for distribution. Yet, I've been told many people are viewing the pending release of the plan with both anticipation and anxiety: anticipation about what it might do for some and anxiety about what it might do to others, all at a time when major change is taking place within the Agency.

In these uncertain times, we can all understand why people are concerned and why sensitivities are high. However, even in the midst of so much turmoil within the Agency, I strongly believe that Langley is going to come through as a strong and vital national resource, ready to provide leadership for the next century. For this to happen, we need to focus on the accomplishment of our programmatic commitments, as well as focus on our employees and associated human resource processes. The new Langley Diversity Management Plan is an important component of the focus on our people and human resource processes.

This plan is intended to benefit all employees by helping to build a system and culture that unite our diverse workforce in a common pursuit without undermining the individuality of the employee. It establishes processes such as the Individual Development Plan, which should give everyone the opportunity to be proactive in planning their careers. The Plan addresses education, outreach, training, communications, rewards, recognition and recruiting, as well as establishing diversity-related goals that will continue to move Langley forward as a national leader. These goals, similar to the affirmative action goals we have been working toward for many years, seem to be the source of anxiety for some employees. In this regard, it is our intent to focus on the integrity of our processes - for example, to recruit a diverse pool of qualified candidates for a job opening - and to use the goals as metrics in determining the success of those processes. If the processes are right, we expect to meet our commitment to the goals.

I ask each of you to read the plan in the context and spirit that it was developed, as a tool for maximizing the potential of all employees to make Langley a better and more productive workplace for the future. It is my intent to meet Langley employees to discuss the plan and its implications. This will be done in small, informal group meetings so that you can ask questions and make comments. Because the plan is a living document to be updated annually, we will need your help to change it and improve it throughout the year. Please give me your constructive comments as we pull together through these dynamic and exciting times.

H. Lee Beach, Jr.
Deputy Director

Tang Named Associate Director

Ming H. Tang has been named associate director of Langley. In his new position, he will participate with the director and deputy director in all aspects of Center management and will provide Director's Office oversight of Langley projects. Because of his extensive experience in industry, at other centers and in Washington, Tang will be a principal external interface to Langley's customers and stakeholders.

Ming H.Tang

Career

Before joining Langley, Tang was the assistant director of High-Speed Research at the Office of Aeronautics at NASA Headquarters. Appointed in January 1995, he was responsible for the High-Speed Research program development, advocacy and oversight.

Tang began his NASA career in June 1966 as a flight-research engineer in flight structures and loads at Dryden Flight Research Center. His assignments at Dryden progressed from research engineer for projects, such as the X-15 rocket-powered airplane, the M2-F2, HL-10 and X-24 lifting-body programs, to project manager for the YF-12 and B-1 flight-test programs.

He served two 1-year assignments at NASA Headquarters. During the first, which began in June 1974, he served as the acting program manager for Supersonic Cruise Aircraft Research (SCAR), Hypersonic Research and the YF-12 programs. During his second tour at Headquarters, which began in August 1981, he was the acting program manager for High Performance Aircraft.

From October 1982 to September 1987, Tang worked in industry at the Lockheed Advanced Development

See **Tang**, *page 6*

News Briefs

Around the Agency

AMERICA'S 100TH HUMAN SPACE FLIGHT - NASA's 100th human space flight is targeted for launch June 8 from the Kennedy Space Center, Fla. Designated STS-70, the Space Shuttle Discovery will carry a communications satellite and several scientific experiments to orbit. The satellite will enhance the capabilities of NASA's Tracking and Data Relay Satellite System which provides communications, tracking, telemetry, data acquisition and command services essential for the Space Shuttle, the Hubble Space Telescope and many other low-Earth orbiting spacecraft. STS-70 will also be the first flight of an upgraded main engine for the space shuttle orbiter.

FIRST STUDENT PAYLOAD LAUNCHED BY NASA - A suborbital space payload, the first built and managed by junior- and senior-high-school students, was successfully launched on a NASA sounding rocket May 12, from NASA's Wallops Flight Facility, Wallops Island, Va. Its mission is to prove the value of small, inexpensive meteorological rockets as tools in remote optical sensing. The rocket, a 10-foot-tall Super Loki-Dart, went past the stratosphere to 45 miles (73 kilometers) altitude to transmit data back to Earth.

The launch culminated a year-long aerospace course that took 79 Florida students in the 1993-94 school year through an academic program that taught them "hands-on" rocketry, including payload development, data analysis and transmission, flight electronics and dynamics and optics. The students are from Cocoa, Melbourne and Palm Bay High Schools and Southwest Junior High in Palm Bay, Fla.

NEW MISSION CONTROL CENTER TO BE USED DURING STS-70 - For the first time since NASA's Mission Control Center (MCC) was established in 1965, flight controllers will be working out of a new facility for portions of the STS-70 Space Shuttle mission. The new MCC eliminates the NASA-unique equipment and massive hardware orientation of the current MCC. The new MCC has a modular, software-oriented design that uses standard, commercially available equipment and up-to-date technology and offers unprecedented flexibility in flight control operations. The design allows for changing the facility from controlling a space shuttle to controlling any other spacecraft with almost the simplicity of using a computer menu.

NASA IMPROVES SAFETY IN HUMAN RESEARCH - NASA announced immediate actions to improve the safety of human subjects in Agency research efforts. The actions were taken in response to the formal review of a mishap that occurred in October 1994 during a life sciences experiment at the Johnson Space Center, Houston, Texas. An investigative board reviewed policies and procedures regarding the approval and conduct of life sciences research, and made recommendations for optimizing the safety of human subjects in scientific research.

The board identified the primary cause of the mishap as an individually specific, yet unpredictable, hypersensitivity reaction ("idiosyncratic anaphylactoid reaction") to the administration of Inutest and/or Indocyanine Green. The board determined that no standard protocol is available to pre-screen subjects for this reaction, and consequently the reaction was unpredictable. The board concluded the response of the attending medical personnel during the mishap was timely and appropriate. The board made many recommendations which coincide with the proposed changes in Agencywide policy for protection of human research subjects.

Look! It's a Bird! It's a Plane! No, It's ... the Russian Space Station *Mir*!

BY JAMES E. BYRD

From June 11 to June 15, the Russian Space Station *Mir* will be observable with the naked eye. It will appear as a bright star-like object moving across the sky. Observers will have several opportunities to see *Mir* in orbit as sunlight reflects off it. The periods of observation will last less than three minutes.

Among the crew of three aboard the *Mir* is U.S. astronaut Norman Thagard, who will be brought home on the upcoming mission of Space Shuttle Atlantis on mission STS-71. Atlantis is scheduled to be launched on or about June 22. This mission represents the first docking of a U.S. and Russian space vehicle since the Apollo-Soyuz Test Project conducted in 1975.

Predicted Observations

Sunday, June 11. A south-to-east transit from 9:44 to 9:46 p.m. Peak elevation will occur in the southeastern sky at 9:45 p.m., about 31 degrees above the horizon. Orbital altitude will be 394 kilometers or 200 statute miles.

Tuesday, June 13. A northwest-to-southeast transit from 4:54 to 4:57 a.m. Peak elevation will occur in the northeastern sky at 4:56 a.m., about 78 degrees above the horizon. Orbital altitude will be 396 kilometers or 201 statute miles.

Tuesday, June 13. A southwest-to-northeast transit from 9:30 to 9:34 p.m. Peak elevation will occur in the southwestern sky at 9:32 p.m., about 86 degrees above the horizon. Orbital altitude will be 394 kilometers or 200 statute miles. This transit will occur almost directly overhead.

Thursday, June 15. A west-to-northeast transit from 9:18 to 9:20 p.m. Peak elevation will occur in the northwestern sky at 9:19 p.m., about 35 degrees above the horizon. Orbital altitude will be 394 kilometers or 200 statute miles.

Information

For more information regarding visual observations of earth-orbiting satellites, contact James E. Byrd via phone at ext. 45961 or the Internet on the Amateur Satellite Observers of Southeast Virginia home page at this URL: http://jebyrd.larc.nasa.gov/

Over 4,500 Personnel at Langley

As of Friday, May 19, 2,611 civil servants, both permanent and temporary, were employed at Langley. This number does not include Army civil servants. The number of support service contractors, per the Zero-Base Review, stands at 1,975 people. In total, 4,586 people work at Langley.

Letters

From Jean Clough:

What a wonderful retirement party! You really gave me a great send-off, and I sincerely appreciate the many kindnesses.

It is impossible for me to thank you individually for your support during my NASA career. Many, many times you helped me tell NASA's story, and I'll always be grateful to you for making my job much easier - and more fun.

The friendships, nice gifts, kind words and well-wishes will always be cherished.

Thank you again for a wonderful career and an awesome evening.

From Ned Cooper:

Shirley and I sincerely thank everyone who planned and participated in my retirement reception. The reception will always be a cherished memory for us. I feel very blessed that life gave me the opportunity to work with such competent and high quality co-workers. I will miss my friends very much.

From Doug Heard:

Beth and I want to thank you for the wonderful retirement party. Your generous gifts are greatly appreciated and should help me in my two new endeavors - to shoot in the low 80s and become a kindly old gentleman. Well, maybe shoot in the low 80s anyway. It is great to have worked with you! I loved every minute of it - almost.

From Gordon Owsley:

Darlene and I would like to thank all who participated in my retirement party. It was truly wonderful to see so many retired co-workers. The evening recalled many pleasant memories of the past 39 years. Thank you for the gift, the kind words and the memories.

Announcement

Causeway Passes Available for Shuttle Launches

Causeway passes are available for shuttle launches from the Office of Public Services. Contact Olin Jarrett via phone at ext. 46320, Mail Stop 154 or e-mail (o.jarrett@larc.nasa.gov).

These passes allow access for one car and all its occupants to the causeway at the Kennedy Space Center. The launch pad is clearly visible across four miles of water.

Requests should be made no earlier than three weeks before the launch. Upcoming launches are:

STS-70	June 8	11:13 a.m.
STS-71	June 22	5:14 a.m.
STS-69	July 20	estimated
STS-73	Sep. 21	estimated
STS-74	Oct. 26	estimated

Retirement Parties

Hazlett

A retirement party for Phil Hazlett will be held Friday, June 9, 5:30 p.m., at Sammy and Nick's Family Restaurant, 2718 W. Mercury Blvd., Hampton. For reservations or gift-only contributions, contact William Salyer or Louise Sykes via phone at ext. 43524 or Mail Stop 425 by June 5.

Shearin and Puffenberger

A retirement social for Al Shearin and Jim Puffenberger will be held Friday, June 16, 5:30 p.m., at the H.J.E. Reid Conference Center, with a short program starting at 6:30 p.m. Cost is $12 per person including a gift. For reservations or gift-only contributions, contact Stephanie Stockum via phone at ext. 44103 or Mail Stop 222B by June 2.

Watson

A retirement luncheon for Charles "Skip" W. Watson, Jr., will be held Wednesday, June 14, 11:30 a.m., at Sammy & Nick's Family Restaurant, 2718 W. Mercury Blvd., Hampton. Attendees should order from the menu. For gift-only contributions or reservations, contact Bill Kluge via phone at ext. 43386 or Mail Stop 426 by June 9.

Winston

A retirement luncheon for Matthew W. Winston will be held Friday, June 9, 11:30 a.m., at the Upper Crust restaurant. Menu options are available in the High-Speed Research Project Office. For reservations or gift-only contributions, contact Goldie Smith via phone at ext. 42267 or Mail Stop 119 by June 2.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

The Origin and Evolution of Langley Town Meetings

BY SCOTT WAGNER

In 1993, Hank Hayes, president and chief executive officer of Texas Instruments Defense Systems and Electronics Group (TI-DSEG), met and spoke with Langley managers and supervisors about TI-DSEG's quality journey. His company received the 1992 Baldrige Award, a national quality award authorized by the U.S. Congress and administered by the U.S. Department of Commerce.

For Baldrige Award-winning organizations, sharing lessons learned and success stories is an obligation that goes with the award. Hayes told of the evolution of the quality-management processes and systems at TI-DSEG. Among the topics he covered were his Five Imperatives:

1. Own the Vision
2. Teamwork
3. Communicate, Communicate, Communicate
4. Learning: the importance and the four stages of life-long learning
5. Participatory Leadership Style

Speaking on the third imperative, communication, he noted the success he had with informal monthly town meetings. He announced a casual place and a time for each monthly meeting. Since they were held before the start of the workday, participating employees committed a portion of their own time to dialogue with him and others from his staff. He modeled these town meetings, which had no set agenda, after those held by the Cadillac Motor Car Co., a Baldrige Award winner in 1990.

When Center Director Paul Holloway met with the Langley workforce in November of 1993 to announce the reorganization of Langley, he also announced that he would like to continue dialoguing with the employees in informal monthly town meetings. These started in the H.J.E. Reid Conference Center and were later moved to the cafeteria during the remodeling of the conference center. So many positive responses were received after the first meeting in the cafeteria that the meetings have continued there, offering people a chance to enjoy a cup of coffee or breakfast.

The plan was that the highest ranking senior-staff member, who would be in town on the third Friday of the month, would host the meeting. The bulk of the hosting responsibilities have been shared by Holloway and Deputy Director Lee Beach.

Following a request at one meeting, an e-mail post office box was established so that anyone could anonymously submit questions to be answered by the Center director or other senior-staff members in attendance. Each month, about six to 12 questions are collected from e-mail and given to the host to use in opening the town meeting. Most questions now come from attendees.

In late 1994, the Area of Improvement Team for Communications made several recommendations to improve the town meetings. As a result, the meetings are videotaped for delayed cable rebroadcast for people on travel or leave. The start time was changed from 7:30 to 9 a.m., during core work hours, to accommodate the schedules of those with school-aged children. One meeting a year will be held in Langley's east area.

The topics and attendance have varied greatly, dependent on external forces and their impact on Langley. Topics have ranged from individuals with a personal concern to people wanting to better understand the impact of congressional changes and reduced budgets on NASA. Many employees have used this platform to air frustrations with "the system" that often imposes bureaucratic road blocks in the way of completing research objectives.

The informality of the meetings affords Holloway and Beach the chance to call on other senior-staff members to respond to questions from the floor. Most of these questions are resolved on the spot with only a few carried over to the next month.

TI-DSEG's Town Meetings

Texas Instruments Defense Systems and Electronics Group (TI-DSEG) received the 1992 Baldrige Award in the manufacturing category. The maker of precision-guided weapons and other advanced defense technology believes that its full-scale conversion to total quality management is making it a stronger competitor, one capable of building a market share in a contracting defense industry. TI-DSEG is America's eighth largest defense electronics contractor, employing 15,000 people in 11 manufacturing, test, research, and distribution facilities in Texas. From a pilot group of four worker teams formed in 1983, a network of more than 1,900 teams has spread to link all units and levels, from top management to individual work teams. They have trimmed organizational layers from eight to five and increased the number of employees per supervisor.

Cadillac's Town Meetings

Cadillac Motor Car Co. received the 1990 Baldrige Award in the manufacturing category. The Cadillac turnaround began in 1985 with the implementation of simultaneous engineering (SE). The effectiveness of SE hinges critically on carefully orchestrated teamwork of 10,000 people at four manufacturing plants and headquarters. Having pledged to involve its employees in running the business, Cadillac solicits the views of all employee teams during the preparation of its annual business plans. Town meetings are one channel of communications used by the leaders to obtain feedback from employees.

The Next Town Meeting: June 16

Center Director Paul Holloway and the senior staff invite all employees to another informal town meeting in the cafeteria annex, Friday, June 16, 9 a.m. Come, have a cup of coffee and enjoy breakfast in the cafeteria while listening to or participating in the meeting.

As is our custom, the ranking senior-staff member who is in town will host the meeting and answer employees' questions of general interest. The meeting should last about one hour.

Everyone is encouraged to bring their questions or submit them in advance by e-mail (townmeeting@larc.nasa.gov). Electronic submittals should be received before the close of business on Wednesday to ensure inclusion in this month's opening questions. Late questions will be held for the July town meeting. You may include your name or submit your questions anonymously.

Langley's Education Programs Kick Off the Summer

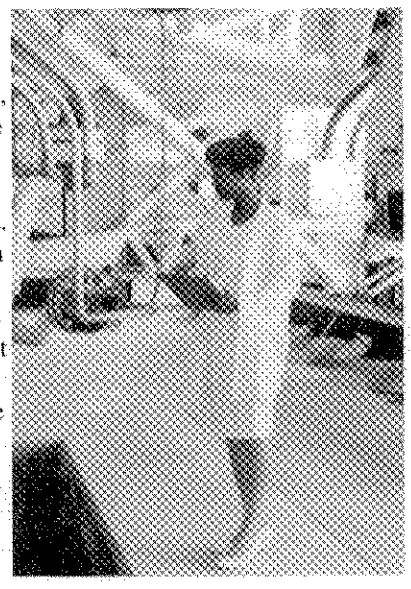
BY TERRI WILSON

Summer is arriving and bringing hot weather, sunburns, and bugs; but that's not all that will be arriving at Langley. Enthusiastic, talented participants in the Langley Aerospace Research Summer Scholars (LARSS) and the American Society for Engineering Education (ASEE) program will be appearing in every division at the Center.

Among the hundreds of applicants, some come from as far away as Puerto Rico. Most programs will start June 5.

The LARSS Program

Established in 1986, the LARSS program brings college students to Langley each summer. Rising juniors, seniors or first-year graduate students engage in intensive study under a designated mentor for a 10-week period. Each student will complete a research project in their chosen field. The program is designed to stimulate interest in aerospace research and to encourage students to pursue advanced degrees in their particular fields. From over 300 applicants, 115 students from 50 universities were chosen to participate.



Monique Johnson, a mechanical engineering student from North Carolina Agricultural and Technical University, interned in the Structures Division of the Research and Technology Group. She participated in the Langley Aerospace Research Summer Scholars (LARSS) program during the summer of 1994.

The ASEE Program

The ASEE program was established in 1964 and is a joint effort between Old Dominion University and Langley. The 10-week program endeavors to further the professional knowledge of qualified engineering and science faculty members in aerospace research and enhance their teaching activities. This year, 55 faculty members representing 33 universities will participate in innovative research and be exposed to technical lectures from distinguished scientists and engineers at Langley.

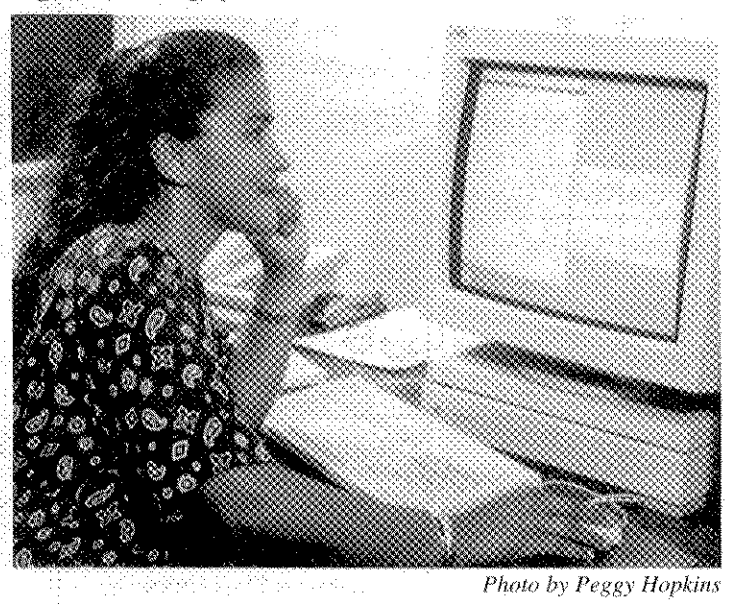


Photo by Peggy Hopkins

Dr. Freda Porter-Locklear from Pembroke State University worked on her American Society for Engineering Education (ASEE) project within the Research and Technology Group during the summer of 1994. ASEE is one of several summer programs offered through the Office of Education.

Information

For more information, contact Rafaela Schwan, summer scholars coordinator, via phone at ext. 45298 or Mail Stop 400, or Debbie Young, ASEE summer faculty fellowship program, via phone at ext. 45215. Both are in the University Affairs Office.

Terri Wilson is a 1995 LARSS participant.

Smart Materials Discussed at Workshop

The 4th Annual Advances in Smart Materials for Aerospace Applications Workshop was held May 4 and 5 at Langley. The workshop was sponsored by Langley's Active Structures Technical Committee (ASTC) and chaired by Robin Elder of the Space Systems Engineering Branch and Dr. Joycelyn Simpson of the Composites and Polymers Branch.

Under the leadership of Dr. Garnett Horner of the Structural Dynamics Branch, the ASTC provides a forum for researchers across directorates to share and enhance technical expertise in the development and application of smart materials. Smart materials are a class of materials with inherent intelligence that respond to an external stimuli in a controlled and reproducible manner.

The workshop hosted approximately 90 researchers from industry and the academic community, along with approximately 80 attendees from Langley. This year's 2-day workshop featured 37 research presentations and 17 poster presentations. Technical presentations were given in the areas of vibration and acoustic noise control, smart materials, fiber optics and several other applications of smart materials.

During one session, Horner discussed Langley's smart materials infrastructure and ongoing research programs, including a recently developed Langley invention, a high-displacement composite actuator called THUNDER, an acronym based on the item's actual name: Thin Layer Composite Unimorph Piezoelectric Driver and Sensor.

Another session, titled "Applications and Modeling of Smart Materials," featured speakers from NASA Lewis Research Center, Sandia National Labs, several universities and a small business.

Videotapes of the workshop are available at Langley's Learning Center upon request. A technical memorandum of the workshop proceedings will be published. For more information, call Robin Elder at ext. 47159 or Dr. Joycelyn Simpson at ext. 44239.

Flight Safety Improved with New Recommendation

The chance of an aircraft crew flying unknowingly into land has been reduced. The International Civil Aviation Organization (ICAO) adopted a recommendation from the Flight Safety Foundation (FSF) to use ground-proximity warning systems (GPWS). The use of the GPWS when a crew is unaware of an impending collision with terrain should reduce controlled-flight-into-terrain (CFIT) accidents.

Stuart Matthews, FSF chairman, president and chief executive officer, said, "We are extremely pleased that ICAO has adopted the GPWS recommendation. The CFIT accident record shows that GPWS is an important tool in reducing accidents."

Standards for the new systems, which will take effect Dec. 31, 1998, require GPWS in all aircraft used in "international commercial and general aviation operations" meeting certain takeoff mass criteria.

The GPWS recommendation was among nine flight-safety proposals forwarded to the ICAO by an international CFIT task force led by the FSF. ICAO officials have indicated support for all the proposals.

The Flight Safety Foundation is an international, nonprofit, independent organization dedicated to improving flight safety. For more information, call Roger Rozelle or Girard Steichen at 1 (703) 522-8300.

Flag Day/Army Birthday Pageant

A pageant commemorating the Army's 220th birthday and the 218th birthday of the U.S. Flag will be held Wednesday, June 14, 11 a.m., at Continental Park at Fort Monroe, Va.

The pageant is free and open to the public. Featured will be the U.S. Continental Army Band, the Fort Monroe Color Guard, flags representing eras from America's past and soldiers dressed in historical uniforms.

Col. Michael D. Rochelle, post commander and host for the event, will give remarks.

For more information, call Wayne Kanoy at 727-3205.

New Distance-Learning Training Facility Helps with Buyout Losses

BY JOHN HARRIS

The new Distance-Learning Training Facility is being developed as a strategy to help Langley regain some of the technical skills lost due to recent employee buyouts. Janet McKenzie, employee development specialist, is acting director of the facility.

The new training facility, which operates jointly with the Office of Education, is located at the Employee Development Branch in Bldg. 1216. The center will feature:

- A new classroom with a state-of-the-art computer-training facility and multimedia lab.
- A distance-learning studio that will allow code centers to share training at reduced cost and serve as the primary focal point for wind tunnel operations.
- New capabilities that will increase just-in-time learning opportunities.

For more information, contact George Allison via phone at ext. 42594 or Janet McKenzie via phone at ext. 42598 or Mail Stop 309.

John Harris is a student intern from Old Dominion University working toward his master's degree in English.

Do the Right Thing

Safety Procedures

We all worry about whether our behavior is acceptable to others. Most of us try to say the right things, wear the right clothes and read the right books to earn the respect and admiration of our peers. But when it comes to safety on the job, there is only one right thing to do: follow correct safety procedures regardless of what others think or say.

Wear the Right Protective Equipment

Sure, you can feel pretty silly in a respirator and goggles if co-workers go unprotected. But you'll be able to resist peer pressure and ridicule if you keep this in mind: Your family, your department and your job all depend on your good health. Protect your good health by protecting yourself from workplace hazards. Study the hazards and their short- and long-term effects on your health. Let other workers know the long-term toxic effects against which you're protecting yourself. They may not change their practices, but they'll respect your concern for your own health. Some of your co-workers may even join you in wearing the right personal protective equipment when they see you're doing it.

Follow Proper Procedures

At times, following proper procedures can seem unnecessarily thorough and time-consuming, especially when you have a productivity goal to meet. Resist the temptation to speed up your work by cutting procedural corners, even if others are doing it. In the long run, it doesn't pay off, because it leads to increased accident rates, lost work time and higher insurance premiums, all of which reflect adversely on the your department's productiviy. Always handle hazardous materials and equipment in the recommended manner, and follow proper cleanup procedures.

Do Something about Unsafe Conditions

Doing the right thing means seeing that an oil spill in the corridor gets cleaned up, or that the faulty wiring on your neighbor's equipment is taken care of, even if it's not really your responsibility. When you report unsafe conditions or procedures that could lead to an accident, it shows that you care about your co-workers.

Resist Pressure to Be Unsafe

It's hard to resist peer pressure, especially when others want you to overlook safety procedures to speed up production or to engage in horseplay or other inappropriate behavior. We all want to be liked and accepted by our co-workers, but when you have to compromise your own health and safety to gain acceptance, you haven't gained much. In the long run, doing the right thing will earn their respect. You will encourage others who really want to practice good safety procedures to join you in doing the right thing.

Reprinted from the NASA-Larc Safety Newsletter

1995 Speakers from Mid March through April

SPEAKER	ORGANIZATION	TOPIC March
Michael Uenking	Bettie F. Williams Elementary School, CHROME Club	Space Shuttle
Pamela Davis and Phil Robinson	Play Time Learning School	Living in Space
Pamela Davis and Veloria Martinson	Old Dominion Center for the Gifted and Talented	Aerospace Careers
SPEAKER	**ORGANIZATION**	**TOPIC April**
Catharine Fay	Tucker-Capps Elementary School	Chemistry Magic
Mary Ann Smith	Women in Science & Engineering, Pennsylvania State University	Careers and Achievements
Joel Levine	American Society for Materials-International, Peninsular Chapter	The State of the Planet: An Update for Earth Day 25
David Shannon	Science Museum of Virginia, Richmond Society of Mechanical Engineers	Space Station
Leroy Spearman	Southeastern Virginia Ultralight Fliers	A Review of 50 Years of Aerodynamic Research at NACA/NASA
Nancy Kruse	Gloucester High School	Langley's Co-op Program and Apprentice School
Thayer Sheets	Lakeland Air Show, Fla.	Small Business Innovation Research Program
Nancy Kruse	Central United Methodist Church	Technology Opportunity Showcase

C-17 Wins Collier Trophy

The National Aeronautic Association (NAA) awarded the prestigious Collier Trophy to the U.S. Air Force/ McDonnell Douglas C-17 Globemaster III transport, symbolizing the top aeronautical achievement of 1994.

The trophy, established in 1911, is awarded each year by the NAA for "the greatest achievement in aeronautics or astronautics in America, the value of which has been demonstrated by actual use in the preceding year." The trophy was presented at the annual Robert J. Collier Presentation Banquet, held May 12 in Arlington, Va.

The award was given "for designing, developing, testing, producing and placing into service the C-17 Globemaster III, whose performance and efficiency make it the most versatile airlift aircraft in aviation history." Named as recipients of the 1994 Collier Trophy were the U.S. Air Force, the McDonnell Douglas Corporation, the U.S. Army, and the C-17 Industrial Team of subcontractors and suppliers. The C-17 was nominated for the award by the Air Force Association (AFA).

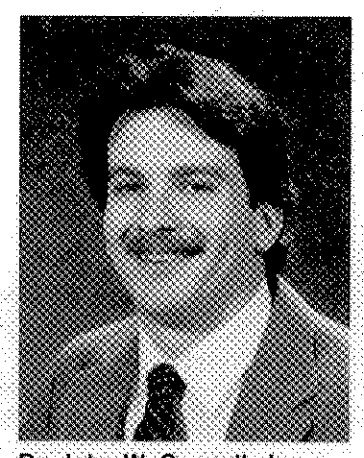
In the nomination, an AFA official cited the McDonnell Douglas C-17 as "the linchpin of airlift modernization" and said that the C-17 "demonstrated in 1994 that it had the versatility to create a new era in military airlift." The C-17 landed four times the payload of the C-130 into less than 3,000 feet of runway and carried large Army equipment only a large C-5 could carry. While approximately the same external size as the C-141 B, the C-17 carries twice the payload.

The McDonnell Douglas C-17 is the only transport aircraft in the world that can provide direct, long-distance delivery of large combat equipment and troops or humanitarian aid across intercontinental distances and land at small, unimproved airstrips. It offers strategic and theater lift and is the only aircraft that can airdrop large armored vehicles and engineering equipment.

The NAA's primary mission is the advancement of the art, sport and science of aviation and space flight by fostering opportunities to participate fully in aviation activities and by promoting public understanding of the importance of aviation and space flight to the United States.

Connell Selected for 1994 Arthur S. Flemming Award

Dr. John W. Connell, Jr., of the Composites and Polymers Branch, was presented with the 1994 Arthur S. Flemming Award by the Washington, D.C., Jaycees on May 5. Connell was recognized for his exceptional professional leadership and technical competence as senior polymer scientist at Langley.



Dr. John W. Connell, Jr.

Connell has been nationally recognized for his research on high-performance polymeric materials. He initiated and directed research and development activities of high-performance/high-temperature polymers for aerospace applications. Recently, he distinguished himself with contributions in the development of atomic oxygen (AO) resistance organic polymeric materials on two interrelated activities. Due to their inherent resistance to AO, these materials have potential applications as solar array substrates; multilayer, thermal-insulation blankets; second surface mirrors; and composite structural components for spacecraft in low earth orbit.

Other significant work by Connell includes the development and processing of low-void, thick, carbon fiber-reinforced laminates for autoclave-curved resigns; innovative research approaches on heterocyclic-containing polyarylene ethers; and, as part of the Precision Segmented Reflector (PSR) program, development of a novel polymidazole used in the fabrication of several small PSR prototypes.

Langley's Weinstein a Finalist for the 1995 DISCOVER Award

Leonard M. Weinstein of the Experimental Methods Branch of the Fluid Mechanics and Acoustics Division was selected as one of five finalists in the technological innovation category for the 1995 DISCOVER Award. The award is presented in seven categories by Discover Magazine to honor the men and women whose creative genius improves the quality of everyday life. Approximately 4,000 entries were received.

Weinstein was selected as a finalist for his In-Flight Schlieren Photographic Technique. This process allows shock waves and turbulence from flying aircraft to be photographed and studied, enabling aircraft designers to better understand how their designs work at high, supersonic speeds.

The five finalists in each category attended an awards ceremony in late April where the winners were selected. The Clementine Space Probe won in the technological innovation category. The ceremony was held at Walt Disney World Epcot Center's new attraction, *Innoventions*.

York County School Wins Odyssey of the Mind Championship

BY RALPH WILL AND PATRICIA LINK

Queen's Lake Middle School in York County won the Virginia Odyssey of the Mind (OM) Championship in the Division II "Scientific Safari" problem category. Entrants in this category had to design and construct a small vehicle capable of carrying one person around a specified course. The vehicle was required to have forward and reverse motion and two separate power sources such as mechanical, electrical or pneumatic power.

The Queen's Lake team, made up of seven 6th- to 8th-graders and their two coaches, will travel to the OM World Championships, May 25 to 27, in Knoxville, Tenn. The World Championships include students from every state as well as Russia, Japan, Ukraine and China. Students will trade pins from their states, countries and localities. The Queen's Lake team will be trading NASA pins contributed by Langley's Office of Education.

Langley Wins Hampton Roads Sanitation District Silver Award

BY JOHN HARRIS

Langley received the 1994 Hampton Roads Sanitation District (HRSD) Silver Award at a ceremony held May 3 in Norfolk. The award recognizes environmental excellence among HRSD permittees under a program that allows HRSD to control the discharge of potentially harmful substances to its nine wastewater treatment plants, and ultimately the Chesapeake Bay.

Langley is classified as a Significant Industrial User (SIU), discharging more than 25,000 gallons per day of processed wastewater. Silver Award winners are SIUs with five or less violations per calendar year. The Industrial Wastewater Pretreatment Program is approved by the federal Environmental Protection Agency (EPA), allowing HRSD to regulate the wastewater discharges from local industries and commercial facilities.

John Harris is a student intern from Old Dominion University working toward his master's degree in English.

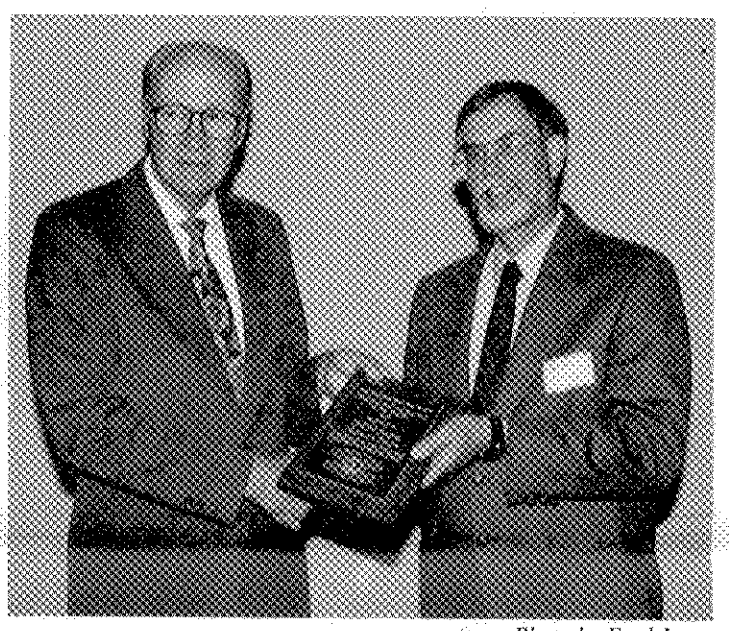


Photo by Fred Jones

Robert D. Brown, right, senior industrial hygienist in the Office of Environmental Engineering, receives a plaque from James R. Borberg, general manager of the Hampton Roads Sanitation District (HRSD), at a breakfast ceremony funded by fines collected under the HRSD program. Langley was cited for having fewer than five violations per calendar year.

National Archives Honors Langley with "Final Frontier" Exhibit

Langley's contributions to the field of aeronautical/ aerospace research are being honored in an exhibition, *The Final Frontier: NASA's Langley Research Center*, at the National Archives in Philadelphia, Pa. The documents and photographs on display reveal the extent and importance of Langley's facilities, Langley's role in the supersonic and hypersonic flight test programs at Edwards Air Force Base, Calif., and the vital role Langley has played and continues to play in the systems development of the American Space Program.

The exhibition consists of federal documents and photographs culled from the records holdings of the National Archives-Mid-Atlantic Region, photographs given to the National Archives by Langley, and photographs from aerospace firms such as Rockwell International and Bell Aerospace Textron. Autographed photographs by two former Air Force X-15 pilots, Robert White and William J. "Pete" Knight, are also included.

A model of the Bell X-1 flown by Chuck Yeager when he broke the sound barrier in 1947 is on display. Various space-related artifacts, such as rocket engine parts from the Mercury and Apollo Lunar Module spacecraft, round out the exhibit.

The exhibition, which went on display April 24, is inside the lobby of the William Penn Annex at Ninth and Market streets in Center City, Philadelphia. For more information, call Matthew DiBiase, National Archives-Mid-Atlantic Region, at 1 (215) 597-3000.

Changes

Continued from page 1

- Full program costs, including overhead as well as direct costs, will be identified and managed more effectively.

- Only civil servants, Jet Propulsion Laboratory employees, and employees of the new institutes will perform in-house science, research and engineering.

- Aerospace operations, including the Space Shuttle, will be performed by NASA contractors.

- Outsourcing and commercial services will be maximized.

- Agency activities and operations will be standardized to the maximum extent possible and commercially available products will be used as appropriate.

Actions Taken/Decisions Made

As part of its reinvention process, NASA has already made a number of decisions to reduce costs and achieve maximum efficiency. Among them:

- NASA has discontinued construction of a Space Shuttle solid rocket motor nozzle fabrication and refurbishment facility at Yellow Creek, Miss. The move will save $450 million to $500 million through the year 2012.

- NASA will consolidate the Earth Observing System (EOS) Data and Operations System function for the first EOS spacecraft at White Sands, N.M. This move will save up to $30 million through the year 2000.

- NASA will consolidate software independent verification and validation functions at Fairmont, W.V.

- Through a series of management actions, including two employee buyouts, NASA has substantially reduced total personnel. The two buyouts resulted in a reduction of civil service staffing by more than 2,600. Other factors, including attrition, have brought total civil-service full-time staffing levels at NASA from 24,030 in January 1993 to 21,060 in April 1995.

- In line with the Administration's goals of reducing Washington headquarters staffing, the NASA Headquarters workforce has been reduced by 400 employees from January 1993 to April 1995, a 20 percent reduction. Headquarters is on track for an overall 50 percent reduction in personnel.

- Support-service contract costs at NASA Headquarters have been reduced significantly. Staffing has been reduced by approximately 25 percent and total costs for support contracts are down approximately 33 percent for an annual savings in excess of $50 million. Similar reviews of support-service contracts are underway at each of the NASA centers.

- NASA has canceled approximately $60 million in spending on custom software for a financial management system in favor of using less expensive, off-the-shelf technology.

- Each field center will be assigned a clearly defined mission, structured along a series of strategic enterprises and functional responsibilities. See "Center Roles and Responsibilities" below for additional details.

- Each NASA center, in self-assessments done for the Zero-Base Review, has identified a series of cuts and cost-saving measures. Those cuts will be included in the formulation of NASA's Fiscal Year (FY) 1997 budget submittal.

Further Actions Under Consideration

A number of additional measures proposed by the Zero-Base Review Team are being provided as guidelines for the 1997 budget. These include:

- Reassigning and consolidating functional management responsibilities, such as personnel management, payroll and other administrative functions, to designated lead centers, a move that would reduce overlap. This approach would allow the Agency to take advantage of advanced technologies to deliver the same services for less money.

- Consolidating wide area networks at a single location and contracting for information and communications services. Currently, each NASA center has significant resources devoted to information systems infrastructure.

- Eliminating some administrative aircraft, and consolidating research aircraft operations at a single location.

- Transitioning the management of some science programs to institutes located on or near NASA sites. These institutes would be operated by a university, private industry or a teaming arrangement.

- Restructuring the Space Shuttle program and preparing it for contractor consolidation and privatization.

Center Roles and Responsibilities

One of the most important management changes being made by NASA is the identification and implementation of carefully defined roles for each field installation. NASA's senior management has already agreed to a specific mission and area of excellence for each center. One lead center will manage everything within its area of excellence. Also shown below are proposed realignments that will be reflected in the Agency's FY 1997 budget guidance. Detailed analysis will occur throughout the summer as part of that process.

Under the review team's findings, NASA's total civil service workforce would be cut to approximately 17,500 by FY 2000. The actual number and distribution of contractor job losses Agencywide would be determined by future business decisions made by the contractors. The job estimates below are accurate within 15 percent.

Ames Research Center, Mountain View, Calif.

Mission: Airspace Operations Systems and Astrobiology

Center of Excellence: Information Technology

Proposed Realignments: Establish a science institute for astrobiology; retain core in-house aeronautics-research capability; consolidate management of aeronautical facilities with Langley Research Center facilities; transfer Moffett airfield; transfer aircraft to Dryden Flight Research Center.

Job Changes by FY 2000:

Estimated Civil Service Losses:	-300
Estimated Contractor Losses:	-1,140
Percentage of FY 1996 Baseline:	-35%

Dryden Flight Research Center, Edwards, Calif.

Mission: Flight Research

Center of Excellence: Atmospheric Flight Operations

Proposed Realignments: Assume flight operations management of all aircraft except those in support of the Space Shuttle.

Job Changes by FY 2000:

Estimated Civil Service Gains:	+200
Estimated Contractor Gains:	+100
Percentage of FY 1996 Baseline:	+32%

Goddard Space Flight Center, Greenbelt, Md.

Mission: Earth Science/Physics and Astronomy

Center of Excellence: Scientific Research

Proposed Realignments: Transfer Goddard Institute for Space Studies to a university/consortium; consolidate management of the Suborbital program at Goddard; reduce cost of Wallops Flight

Tang

Continued from page 1

Projects, the "Skunk Works." He was the manager for business development for Aerial Reconnaissance Programs, which included the SR-71, U-2, TR-1 and ER-2 programs. In that capacity, he led all planning and marketing activities for the aerial reconnaissance line of business for the Skunk Works.

In October 1987, Tang rejoined NASA Headquarters as the assistant director for the National Aero-Space Plane (NASP) program. In October 1988, he was detailed to the Pentagon, where he served on the staff of the Secretary of the Air Force as the NASA deputy director to the NASP Inter-Agency Office (NIO). The Air Force selected him in May 1991 to be director of the NIO, a position he held until the end of the joint hypersonic program in January 1995.

Tang received his bachelor's degree in aeronautical engineering from the University of California-Davis, and two master's degrees from the University of Southern California, one in aerospace engineering and the other in system management. He has authored numerous technical reports and is recognized as an expert on structures and loads for lifting re-entry vehicles. He is a recipient of the prestigious National Space Club's Hugh L. Dryden Memorial Fellowship and is an active member of the board of advisors for the Department of Mechanical and Aeronautical Engineering at the University of California-Davis.

Tang is married to the former Linda T. Zajac and has three children, Malena, Marc and Athena.

Barnes Named Black Engineer of the Year by Morgan State University

James C. Barnes, assistant branch head of the Remote Sensing Technical Branch, was named Black Engineer of the Year by Morgan State University at a ceremony May 8 at Langley Headquarters. Barnes received the award based on contributions to engineering, community service and veterans service. A laser physicist, he is involved with the Laser Atmospheric Sensing Experiment (LASE) and has worked on the Lidar In-Space Technology Experiment (LITE) program.

Changes

Continued from page 6

Facility operations and investigate additional cost-sharing opportunities; increase partnerships with NOAA; consolidate management of communications infrastructure at Johnson Space Center; privatize space-science data archiving and distribution; reduce in-house spacecraft development; transfer aircraft to Dryden Flight Research Center.

Job Changes by FY 2000:
Estimated Civil Service Losses: -550
Estimated Contractor Losses: -2,650
Percentage of FY 1996 Baseline: -28%

Jet Propulsion Laboratory, Pasadena, Calif.

Mission: Planetary Science and Exploration

Center of Excellence: Deep Space Systems

Proposed Realignments: Further study of proposal to commercialize ground tracking of low-Earth orbit spacecraft; reduce in-house spacecraft development.

Job Changes by FY 2000:
Estimated Civil Service Losses: N/A
Estimated Contractor Losses: -1,250
Percentage of FY 1996 Baseline: -22%

Johnson Space Center, Houston, Texas

Mission: Human Exploration and Astro Materials

Center of Excellence: Human Operations in Space

Proposed Realignments: Transfer management of White Sands Test Facility to Stennis Space Center; assume management of communications infrastructure; establish institutes for biomedical and planetary science; streamline engineering and facilities (no personnel transfers).

Job Changes by FY 2000:
Estimated Civil Service Losses: -500
Estimated Contractor Losses: -2,750
Percentage of FY 1996 Baseline: -21%

Kennedy Space Center, Kennedy Space Center, Fla.

Mission/Center of Excellence: Space Launch

Proposed Realignments: Shuttle contractor consolidations; assume management of Atlas-class expendable launch vehicles from Lewis Research Center.

Job Changes by FY 2000:
Estimated Civil Service Losses: -1,150
Estimated Contractor Losses: -2,000
Percentage of FY 1996 Baseline: -24%

Langley Research Center, Hampton, Va.

Mission: Airframe Systems, Aerodynamics and Atmospheric Science

Center of Excellence: Structures and Materials

Proposed Realignments: Provide program analysis and evaluation function for Agency; transition atmospheric science to an institute; transfer aircraft to Dryden Flight Research Center.

Job Changes by FY 2000:
Estimated Civil Service Losses: -200
Estimated Contractor Losses: -800
Percentage of FY 1996 Baseline: -21%

Lewis Research Center, Cleveland, Ohio

Mission: Aeropropulsion

Center of Excellence: Turbomachinery

Proposed Realignments: Transfer Atlas-Class expendable launch vehicle management to Kennedy Space Center; retain Plumbrook on a fully-reimbursable basis; establish an institute for microgravity and space power; close the rocket engine test facility; transfer aircraft to Dryden Flight Research Center.

Job Changes by FY 2000:
Estimated Civil Service Losses: -400
Estimated Contractor Losses: -1,100
Percentage of FY 1996 Baseline: -33%

Marshall Space Flight Center, Huntsville, Ala.

Mission: Transportation Systems Development and Microgravity

Center of Excellence: Space Propulsion

Proposed Realignments: Further study of proposed transfer of payload operations to Johnson Space Center; further study of establishing an institute for science, including hydrology; mothball the Technology Test Bed; provide technical excellence in large optical systems/mirrors.

Job Changes by FY 2000:
Estimated Civil Service Losses: -650
Estimated Contractor Losses: -1,350
Percentage of FY 1996 Baseline: -30%

Stennis Space Center, Stennis Space Center, Miss.

Mission/Center of Excellence: Propulsion Test

Proposed Realignments: Assume management of White Sands Test Facility from Johnson Space Center; manage all future rocket propulsion testing; pursue National Propulsion Test Alliance.

Job Changes by FY 2000:
Estimated Civil Service Losses: 0
Estimated Contractor Losses: -100
Percentage of FY 1996 Baseline: -9%

NASA Headquarters, Washington, D.C.

Mission/Center of Excellence: Corporate office

Proposed Realignments: Reduce FY 1993 staffing level by 50 percent in accordance with National Performance Review guidelines; align selected program and functional responsibilities to field centers.

Job Changes by FY 2000:
Estimated Civil Service Losses: -450
Estimated Contractor Losses: -500
Percentage of FY 1996 Baseline: -30%

Additionally, two areas not represented in the center listings above will also provide significant workforce reductions. The Zero-Base Review anticipates that by consolidating information and communications systems across NASA, 1,800 contractor jobs will be eliminated Agencywide by FY 2000. Further, it is anticipated that by moving to a single prime contractor on the Space Shuttle program, another 5,000 to 10,000 contractor jobs will be eliminated Agencywide by FY 2000.

Accessing the Press Release via Internet

The press release from the Administrator's press conference is available over the Internet. Access the NASA Public Affairs HomePage using this URL:

http://www.nasa.gov/hqpao/hqpao_home.html

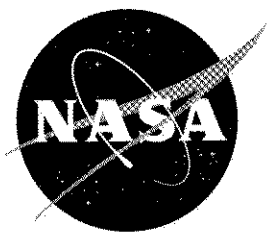
At this homepage, click on "newsroom" and then "Today at NASA". The press release, entitled "Zero-Base Review," will be the first item. Click on it to open it.

Internet users can also "FTP" the press release. The FTP address is: ftp.pao.hq.nasa.gov/pub/pao/pressrel/1995

with the filename: 95-73.txt

Aerobics Club Charges Ahead with Powerwalking

The LAA Aerobics Club will sponsor a powerwalk workshop in June. When proper techniques are employed, a walking workout uses most of the 650 muscles of the body. This results in an effective cardiovascular workout and significant increases in muscular strength and endurance. The techniques taught in power-walking are divided into three levels that vary in intensity. Beginner walkers, or walkers warming up for more intense walking, use Level I. Walkers attempting to reach and maintain a moderately intense cardiovascular workout will add Level II. Level III is, in effect, race walking. You can achieve equivalent benefits with all three levels. The lower the intensity of your walk, the longer you need to walk to achieve the benifits of more intense walking. The powerwalk workshop will take place Wednesday, June 28, 5 to 6 p.m. All walkers plan to meet at the Langley Activities picnic grounds. For more information, call Michelle Macaraeg at ext. 42295.



Top Technology Managers to Confer

Technology 2005, a conference featuring the nation's top technology managers, will be held October 24 to 26, 1995, at the McCormick Place Convention Center in Chicago, Ill. The conferees will explore ideas that may solve engineering problems, create new products and help businesses grow. The conference offers a chance for attendees to meet with premier technology developers and technology-transfer experts in federal laboratories and industry. The conference is sponsored by NASA, the Technology Utilization Foundation and NASA Tech Briefs magazine, in cooperation with the Federal Laboratory Consortium for Technology Transfer. For more information, call 1 (800) 944-NASA.

Happenings

FOR SALE: 4BR, 2 BA home in the Wythe section of Hampton. Detached double garage, totally renovated kitchen. $79,500. Call Jay at 868-7610 or Paul at 988-3760.

FOR RENT: Relax on Sanibel Island, Fla., in an elegant beach-front condo. Full kitchen, 1BR, tennis, pool, on-site management. July to October. $625/week. Brochure available. Call Dick at 565-1849.

NTA MEETING: The Hampton Roads Chapter of the National Technical Association will meet Monday, June 19, 7 to 9 p.m., at the Hampton City Central Public Library at the corner of Victoria Blvd. and Kecoughtan Rd. For more information, contact Bob Lee at ext. 45679.

ROOMMATE WANTED: Female seeks same to share 3BR home in Poquoson. Full house privileges. No smokers please. $250/mo. + 1/3 utilities. $100 deposit. References. Call Margarette at 868-8101.

AIAA PICNIC: The American Institute of Aeronautics and Astronautics (AIAA) invites everyone to bring their family and friends to the 16th Annual Spring Picnic, Thursday, June 29, 4:30 to 7 p.m., at the picnic grounds of the H.J.E. Reid Conference Center. Enjoy the food, play horseshoes and volleyball, or just visit. The menu will include hamburgers, hot dogs, potato salad, barbecue, baked beans, chips and beverages. Cost is $5 for members, guests and golf-outing players; $7 for non-members; $3 for student members; and $2 for children ages 6 to 12. To make the required reservations, contact Beth Lee-Rausch via phone at ext. 42269 or e-mail (e.m.lee@larc.nasa.gov), or Dan Vicroy via e-mail (d.d.vicroy@larc.nasa.gov) or phone at ext. 42022 by noon, Monday, June 26. Become an AIAA member at the Spring Picnic and get a free dinner!

KARATE CLUB: The Langley Karate Club is sponsoring lessons for juniors, ages 7 and up. Classes are held Saturdays, 10 a.m. to noon, at the Poquoson Primary School gym on Odd Rd. New students will be accepted through June, space permitting. For more information, call James A. Brown at 898-3516.

VOLLEYBALL: Register for Summer Outdoor Volleyball from May 29 to June 9. Season starts June 13. Three levels will be offered: beginner on Wednesdays, intermediate on Tuesdays and advanced on Thursdays. Night games only. Two to four coed members will comprise a team. Fee is $40/team. Roster forms will be available in the gym starting May 29. For more information, contact a league represenative: Beginner, Gordy Degear via phone at ext. 46075 or e-mail (g.g.degear@larc.nasa.gov); Intermediate, Steve Williams via e-mail (s.p.williams@larc.nasa.gov) or phone at ext. 46650; or Advanced, Susan Gorton via phone at ext. 45059 or e-mail (s.a.gorton@larc.nasa.gov).

Federal Fund Helps Families of Oklahoma City Bombing Victims

The Federal Executive Board has established the Federal Family Assistance Fund to aid families of the Oklahoma City bombing victims. A memorial to honor those who lost their lives in the bombing will be erected by the World Charities Fund in downtown Oklahoma City. An eternal flame will be included in the memorial to honor the children.

To assist the families or contribute to the memorial, make checks payable to either the "OK Fund" or "World Charities Fund" and send them to Federal Managers Association, 1641 Prince St., Alexandria, Va., 22314-2818.

VA SYMPHONY: The Virginia Symphony is offering special 50-percent-off tickets to all NASA employees, retirees and contractors for its outdoor concerts: Saturday, June 3, 7 p.m., Mariners' Museum, theme: "Vive la France!"; Thursday, June 8, Norfolk Botanical Garden, theme: "Pops from Broadway to Hollywood"; Saturday, June 10, Town Point Park, theme: "Rhapsody on the River." Tickets are only $5 at the Exchange Shop (regularly $10 in advance, $12 at the gate). For more information, call ext. 41585. Bring a picnic, watch the sunset and enjoy music in the park!

BROWN-BAG SEMINAR: Dr. Paul Aravich from the Veterans' Administration Hospital will focus on the medical research surrounding antioxidant vitamins in the next Brown-Bag Seminar, Tuesday, June 13, noon, in the cafeteria dining room. Antioxidants are a specific group of vitamins, namely vitamins E, C and beta carotene, that have been linked to reducing and protecting against heart disease and cancer. Unfortunately, the ambiguity of the research has led to questions and confusion of whether or not to take supplemental antioxidants. Aravich will help decipher the pros and cons, as well as the effects of antioxi-dants on disease.

Researcher News

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

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

Official Business. Penalty for Private Use $300.

Photo by Fred Jones

SMART! VERY SMART!

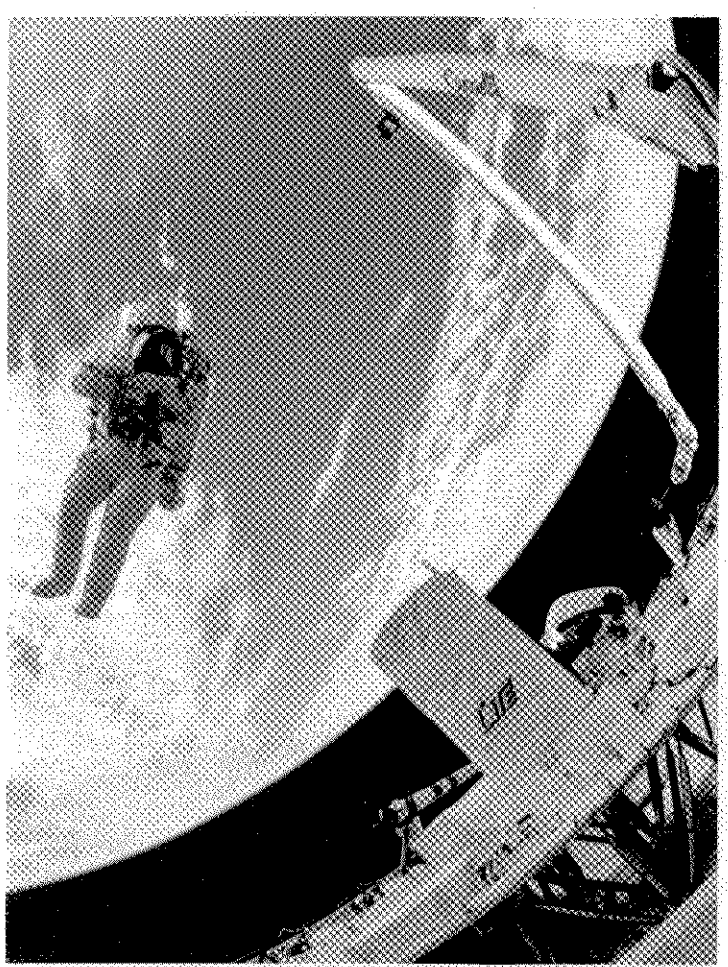
Dr. Garnett Horner, right, from Langley's Structural Dynamics Branch, demonstrates the variable geometry truss for Dr. Andrew Bicos, from McDonnell Douglas Aerospace, at the Smart Materials for Aerospace Applications Workshop held at the H.J.E. Reid Conference Center in May. Smart materials, such as this truss, have an inherent intelligence that respond to external stimuli in a controlled and reproducible manner. See story on page 4.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 12 ❖ June 16, 1995



The Lidar In-space Technology Experiment (LITE) was flown aboard the space shuttle in September 1994. The mission's highlight was the collection of spectacular data on Super Typhoon Melissa.

LITE Shines at International Conference

BY CATHERINE E. WATSON

Early results from the September 1994 Lidar In-space Technology Experiment (LITE) were presented at a special session of the American Geophysical Union spring meeting. According to Dr. M. Patrick McCormick, LITE project scientist and branch head of Langley's Aerosol Research Branch, the LITE mission was 100 percent successful. One mission highlight was the collection of spectacular data on Super Typhoon Melissa. From the cargo bay of Space Shuttle Discovery, LITE passed directly over the eye of the typhoon and profiled the eye-wall clouds from the top to the sea surface below. According to McCormick, this was the first time the eye of a super typhoon was measured with a lidar system, space-based or otherwise.

Data Presented

During the special session, held in Baltimore, Md., May 31 and June 1, LITE science team members from around the world presented data showing Saharan sand blown westward over the Atlantic, smoke plumes from biomass burning over southern Africa and South America, and the outflow of pollution from dozens of urban areas into adjacent relatively clean areas. LITE also measured complex, multi-layered cloud structures in the tropics, penetrating four to five layers of clouds.

Unlike passive instruments which measure the amount of heat emitted or light reflected by only the highest layer of multi-layered clouds, LITE is able to penetrate the highest clouds and provide scientists with data about clouds at many levels below.

The LITE data also revealed high cirrus clouds which were not seen in the standard meteorological satellite data and are often not expressed in atmospheric models. Dr. James Coakley, a professor at Oregon State University, said, "LITE provides us with an unprecedented set of observations ... to teach us where we're going wrong (in dealing with clouds in mathematical models of the atmosphere)."

A Pollution Plume

Dr. Ray Hoff, a scientist with Environment Canada, identified 40 urban areas around the globe, 17 in North America, by analyzing the aerosol measurements made by LITE. During three orbits off the East coast of the Atlantic Ocean, LITE measured a pollution plume of urban aerosols that stretched southward for almost 1,000 miles, from the Mid-Atlantic region into the Atlantic Ocean east of Florida.

By analyzing the airflow over the region, Hoff believed this pollution plume eventually made its way to Europe. Hoff said, "[Urban aerosols] are acidic, part of the acid rain problem ... they're also toxic. These pollutants contain ...

See **LITE**, *page 7*

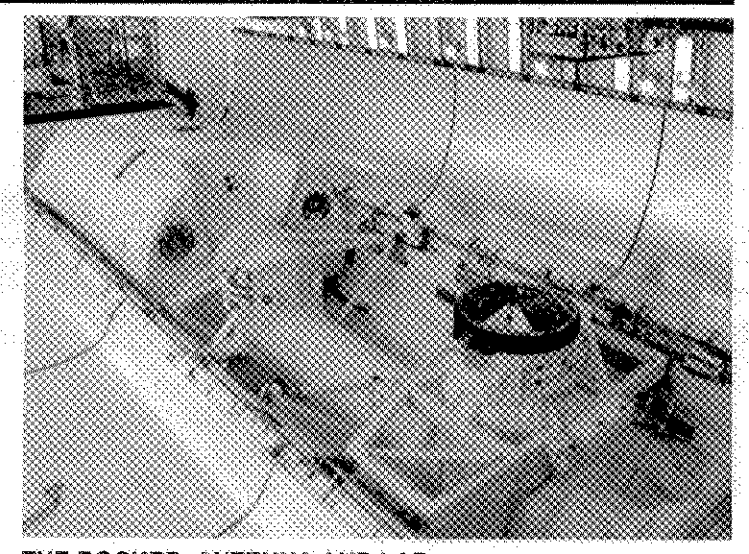
Atlantis and Mir to Dock

Twenty years after the world's two greatest space-faring nations and Cold War adversaries staged a dramatic link-up between piloted spacecraft, the space programs of the United States and Russia will again meet in Earth orbit when Space Shuttle Atlantis docks to the Mir Space Station this month.

The STS-71 mission is the first of seven planned space shuttle-Mir link-ups between 1995 and 1997, including rendezvous, docking and crew transfers, which will pave the way toward assembly of the international Space Station beginning in November 1997.

The STS-71 crew will be commanded by Robert L. "Hoot" Gibson. The pilot will be Charles J. Precourt. Three STS-71 mission specialists aboard Atlantis will include Ellen S. Baker, Gregory J. Harbaugh and Bonnie Dunbar.

Also aboard Atlantis will be Cosmonauts Anatoly Y. Solovyev and Nikolai M. Budarin. Solovyev and Budarin are designated as the Mir 19 crew and will remain aboard Mir when Atlantis undocks from the 9-year-old space station and returns to Earth with the Mir 18 crew.



THE DOCKER, ANTENNA AND LAB
the Space Shuttle Orbiter Atlantis will carry three important items in its payload bay during STS-71: the Orbiter Docking System, foreground, a striped VHF-band antenna and the Spacelab-Mir module, at the far end of the bay. The docking system will be used to dock with the Russian Space Station Mir for four days during the 11-day mission. The striped canister mounted on a support structure is the antenna that the STS-71 crew will use for communication with the Mir. The module will serve as an orbital medical laboratory for joint American-Russian investigations on the physiological effects of long-duration spaceflight during the mission.

Launch of Atlantis on the STS-71 mission is currently targeted for June 23, 1995, at approximately 5:06 p.m. EDT from Kennedy Space Center. The actual launch time may vary by a few minutes based on calculations of Mir's precise location in space at the time of liftoff due to shuttle rendezvous phasing requirements. The available launch period, or "window" to launch Atlantis, is approximatley five minutes each day.

The STS-71 mission is scheduled to last 10 days, 19 hours, 31 minutes. A 5:06 p.m. launch on June 23 would be followed by a landing at Kennedy Space Center's Shuttle Landing Facility on

See **Atlantis and *Mir***, *page 7*

Mir Hosting Three Langley Experiments

BY CATHERINE WATSON

Three Langley experiments will be hosted by the Mir space station in the near future. Two experiments will actually fly aboard Mir: the Mir Environmental Effects Payload (MEEP) and the Experimental Dynamic Loads Sensor (EDLS).

MEEP will be attached to the outside of Mir to study the effects of micrometeroid strikes on the space station. This data will help in the design of the International Space Station. The MEEP experiment will be taken to Mir aboard STS-76 in early 1996. For more information on MEEP, call Greg Stover at ext. 47097.

EDLS will be placed inside the Mir station and will measure the effects of crew movements. EDLS, an outgrowth of an experiment which flew aboard the space shuttle, will help researchers quantify the effects of crew motion. The EDLS experiment will be taken to Mir aboard STS-74 in October. For more information on EDLS, call Sherwin Beck at ext. 41966.

The third experiment, PASDE (Photogrammetric Appendage Structural Dynamics Experiment), will photograph the solar arrays on Mir. PASDE will be carried in the payload bay of the shuttle orbiter and will photograph the movements in the Mir solar arrays as the orbiter docks with Mir and during subsequent crew transfers. PASDE will help researchers on the ground better understand how solar arrays are affected by induced motions in space. For more information on PASDE, call John Fedors at ext. 43771.

News Briefs

Around the Agency

SPRITES CONFIRMED OVER STORMS OUTSIDE U.S. FOR FIRST TIME - NASA researchers have captured on videotape the first conclusive evidence that the mysterious flashes of red light called sprites are not limited to the United States. A research team from the Geophysical Institute of the University of Alaska, Fairbanks, recorded the unusual flashes above thunderstorms near the equator in South America last February and March. Previously, they had seen the recently discovered sprites above storms only in the United States, leading some scientists to question whether or not they occur in other parts of the world.

Geophysical Institute researchers Davis Sentman, Gene Wescott and Daniel Osborne used special low-light-level cameras aboard a Westwind-2 jet aircraft to record the brief flashes. Under the right conditions, sprites, which may extend up to 55 miles above electrical thunderstorms, can be seen from the ground after dark with the unaided eye.

To encourage pilots and others to report sprite sightings around the world, Sentman is establishing a Sprite Watcher's Homepage on the World Wide Web at this URL: http://elf.gi.alaska.edu/ The homepage will give brief information about sprites, the conditions needed to view sprites from the ground or air, and simple directions to follow when recording a sighting.

NASA ROLLS OUT NEWEST AIRBORNE RESEARCH FACILITY - NASA presented a DC-9 aircraft that will serve as an airborne research facility for microgravity science. The DC-9 aircraft, operated by NASA's Lewis Research Center, Cleveland, Ohio, makes a state of near weightlessness or microgravity available to scientists and engineers for brief periods.

The aircraft will be dedicated to performing NASA's microgravity research in the areas of biotechnology, combustion science, fluid physics and materials science. The aircraft will provide investigators with a series of 18-22 second periods of microgravity by flying parabolic maneuvers. This provides a significant period of microgravity allowing investigators to conduct experiments and develop equipment for use on the international Space Station and other orbital platforms.

NASA MANAGERS SET LAUNCH DATES FOR DISCOVERY AND ENDEAVOUR - NASA mangers have set new target launch dates for two shuttle missions scheduled to fly this summer. Space Shuttle Discovery on Mission STS-70 is now targeted for launch July 13 and Space Shuttle Endeavour is set to be launched on Mission STS-69 July 30. The new target launch dates for Discovery and Endeavour were established after the launch team finished assessing the impact of rolling Discovery off Launch Pad 39-B to repair the foam insulation on the external tank.

AGENCIES ESTABLISH NEW CIVIL-MILITARY SATELLITE PROGRAM - The Clinton Administration has taken a major step toward combining the country's military and civilian weather satellite programs into a single system. This move is expected to save American taxpayers up to $300 million through 1999 with additional savings through the life of the program.

Secretary of Commerce Ronald H. Brown, Secretary of Defense William J. Perry, and NASA Administrator Daniel S. Goldin signed a formal agreement May 26 establishing the agencies' roles and responsibilities in support of the new system and implementing a Presidential Decision Directive that was signed last year.

Currently four U.S. polar-orbiting satellites are used to collect operational, meteorological, oceanographic, climatic and space environment data. Two satellites are provided and operated by the Department of Commerce's National Oceanic and Atmospheric Administration, and two by the Department of Defense's Defense Meteorological Satellite Program. The combined program will consist of three satellites. The first satellite under the new system, called the National Polar-orbiting Operational Environmental Satellite System, is expected to be launched in 2006.

Nominations Sought for Seminars, Conferences and Fellowships

Langley is seeking nominees for Office of Personnel Management (OPM) Management Development seminars, Brookings Institution management programs and NASA-sponsored fellowships. All group and division offices have received, or will soon receive, memoranda which list these programs, eligibility guidelines, and recent Langley participants who can share personal experiences with a particular program.

Seminars

Management education programs at the OPM Management Development Seminar centers are 2-week seminars covering a variety of topics. These seminars, in Lancaster, Pa., and Denver, Colo., are open to GS/GM-13s and above who have not attended an OPM seminar in the previous five years.

Conferences

Brookings Institution conferences are for senior-level managers, GS/GM-15, and Senior Executive Service (SES). Many of these 1-week conferences are offered in Williamsburg and cover broad policy issues.

Fellowships

NASA-sponsored management fellowships are available for both managers and non-managers from GS-12 to SES. The fellowships offer an opportunity to study at Harvard University, Stanford University, the Massachusetts Institute of Technology, Carnegie-Mellon University, Pennsylvania State University, Syracuse University or Simmons College for periods of two weeks to one year.

NASA also offers, in conjunction with the National Space Club, three fellowships open to nonmanagement employees. These fellowships allow recipients to pursue research or coursework at any institution in the United States or abroad, where a faculty sponsor is found.

Competition for NASA fellowships begins at Langley. Center nominees then enter the Agency-level competition, which ends in December.

Information

Applications for 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 servants. Group nomination deadline is mid-July. For more information about seminars, conferences or fellowships, call George Allison at ext. 42594.

Letters

From Andrew J. (Jerrry) Hansbrough:

"Thank all of you who attended my retirement picnic. It was a wonderful way to end my sojourn here, getting to say good-bye to so many friends, old and new. God bless all and thanks for the memories!"

From Bill Howell:

"I would like thank all my good friends and cohorts at Langley for the great retirement party. The fellowship and roasting were moments that I will always cherish. As you can guess, I haven't started using my gift yet but I do plan on doing so, soon. (Sue will believe it when she sees it). It has been great working with you all these years. Give me a call from time to time. Thanks again!"

From Jackie Kallick:

"Heartfelt thanks for the wonderful expressions of love and friendship as I retired from Langley, and for the great party on May 8. I know that the large number of parties has meant that we all have had to make choices, and that makes your participation in mine that much more special. Special thanks to Diane Wieting for her hard work - in her spare time. A large piece of my heart will always be at NASA Langley. God bless each of you."

From James Y. Taylor:

"Sincere thanks to each of you who attended or contributed to my retirement party on May 17. I won't forget any of you, and hope to see you frequently in the days to come."

In Memoriam

Bruce d'E. Flagge

Bruce d'E. Flagge, a resident of Marlbank Farms in Yorktown, died May 12 at the age of 69. Born in Norfolk, Flagge moved to the Peninsula in 1952. He was the son of Howard Avery and Kathryn Baldwin Flagge of Norfolk. A graduate of Maury High School, Virginia Military Institute and the University of Virginia, Flagge was also a veteran of World War II and the Korean War. He retired in 1986 from NACA/NASA after 39 years of federal service. He was a member of Yorktown Baptist Church, where he served as a deacon, choir member and teacher.

Retirement Parties

Carter

A retirement dinner party for Arlen Carter of Atmospheric Sciences Division has been rescheduled for Tuesday, June 27, in the Williamsburg Room of the Langley Officers' Club. Social hour begins at 6 p.m. followed by dinner at 7. Cost is $16 per person, not including a gift. For gift-only contributions or reservations, contact Tammy Parker via phone at ext. 42698 or Mail Stop 401A by June 22.

Snead

The retirement party for Carolyn Snead has been rescheduled for Thursday, June 22, 6:30 p.m., at the Steak and Ale Restaurant in Hampton. You will be able to order from a choice of four dinner items and pay your own check. For gift-only contributions or reservations, contact Ralph Watson via phone at ext. 45723 or Mail Stop 170.

Peters

A retirement social for Burnett W. Peters, Jr., former Equal Employment Opportunity Officer, will be held Wednesday, June 28, 5 to 8 p.m., in the Chesapeake and Columbus rooms of the Langley Officers' Club. Heavy hors d'oeuvres and a cash bar will be available. Cost is $10 per person, including a gift. Retirement signature sheets are available in the Equal Opportunity Programs Office, Bldg. 1153, Rm. 100. For gift-only contributions or reservations, contact Geraldine Rankin via phone at ext. 43289 or Vivian Merritt via phone at ext. 43290 or Mail Stop 178 by June 23. Make checks payable to Vivian Merritt.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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 Formally Dedicated 75 Years Ago

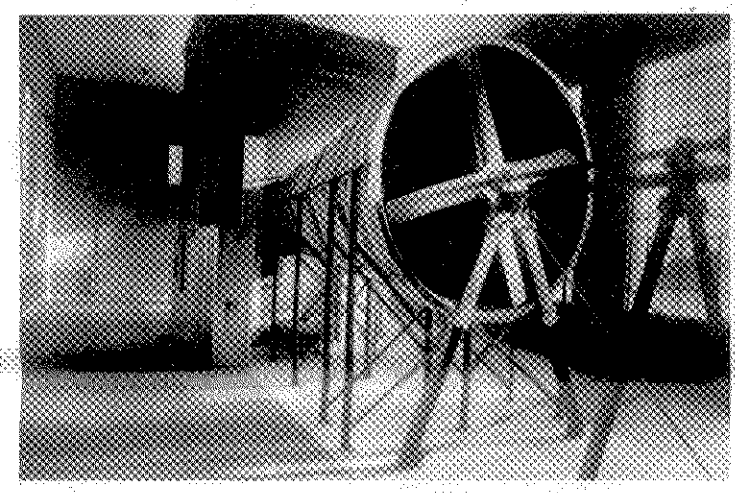
BY DEBORAH DOUGLAS

This month marks the 75th anniversary of the formal dedication of the Langley Memorial Aeronautical Laboratory. The exercises on June 11, 1920, marked the end of a 3-year effort to build America's first federal lab for aeronautical research. It was an important day complete with speeches, tours, demonstrations and an air show boosting the morale of the hearty band of National Advisory Committee for Aeronautics (NACA) employees who labored to construct the facilities on the isolated, mosquito-ridden swampland. The celebration also signified that the NACA was here to stay in Hampton.

Little Enthusiasm

No strong sentiment ever existed among NACA members to build at the Hampton site. To obtain land for a laboratory, the committee agreed to cooperate with the Army Air Service's project to build an experimental station and airfield. The Army selected Hampton and construction began just as the United States was entering the war in Europe. In spite of the war-induced confusion and construction delays, the NACA broke ground on July 17, 1917, for its first laboratory building.

By war's end, Army officials had decided to use McCook Field in Dayton, Ohio, for their experimental work. The NACA felt abandoned by the Army, stuck with a miserable site far from any research community. In its 1919 Annual Report, the NACA pleaded for permission to start over at Bolling Field in Washington, D.C. Congress refused to consider the request and, in fact, cut the NACA budget.



75 YEARS OF WIND-TUNNEL RESEARCH!
The NACA's (and Langley's) first wind tunnel became officially operational June 11, 1920. The 5-Foot Atmospheric Wind Tunnel was modeled after one at the British National Physical Laboratory. Happy Anniversary!

Renewed Efforts

Chastened by the Congressional rebuff, the NACA redoubled its efforts to complete the Hampton site. Work on the wind tunnel had been languishing due to inadequate electric power. Finally, in April 1920, the wind tunnel was finished and planning for an official dedication ceremony began. The President and the Attorney General gave their approval to name the research lab in honor of the late Dr. Samuel Pierpont Langley.

At the June 11 ceremony, one of the speakers described the new facility as "the shrine to which all visiting aeronautical engineers and scientists will be drawn." It was an extravagant claim, but it captured the tremendous optimism the budding aviation-research community felt. Seven decades of dedicated researchers have since embraced the challenge to help fulfill that prophecy.

Georgia Tech Inducts Harris

The Georgia Institute of Technology's College of Engineering inducted Roy V. Harris, Jr., assistant director for research and engineering in Langley's Office of the Director, into the Academy of Distinguished Engineering Alumni May 19.

The academy recognizes alumni who have made significant contributions to the profession, the institute or society at large. Individuals receiving this award are widely respected, recognized for their professional and personal success, actively involved in engineering or management and bring distinction to Georgia Tech.

Roy V. Harris

Career

Harris received his bachelor's degree in aeronautical engineering from Georgia Tech in 1958. He immediately joined Langley as a research engineer. For 15 years, he conducted individual research in supersonic aerodynamics and published over 30 technical reports. He became a branch head in 1973 and was promoted to chief of the High-Speed Aerodynamics Division in 1974. He served as the Center's director for aeronautics from 1985 to 1994 and was promoted to his current position in February 1994.

Harris is a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and has served as the AIAA vice president for technical activities, technical director, director at large and chairman of the aircraft design technical committee. He is a member of the AIAA honors and awards committee, the AIAA representative to the International Council of the Aeronautical Sciences (ICAS), and a member of the ICAS executive committee.

Harris received the AIAA Lawrence Sperry Award in 1968, the NASA Medal for Outstanding Leadership in 1982, the Virginia Peninsula Engineer of the Year Award in 1983, the Presidential Rank of Meritorious Executive in 1985, the AIAA Wright Brothers Lectureship in Aeronautics in 1989, and the Presidential Rank Award of Distinguished Executive in 1991.

Minority-Owned Business Consortium Signs Agreement with Langley

Langley signed a 5-year memorandum of understanding that will transfer technology to minority-owned businesses through a consortium with member companies in Virginia and across the nation. The agreement was signed May 17 in Alexandria, Va., with the Minority-Owned Business Technology Transfer Consortium, a not-for-profit organization whose member firms are at least 50-percent minority owned.

According to Rosa Webster of Langley's Technology Applications Group (TAG), the agreement ensures minority-owned business participation in the Center's technology-transfer program, while also stimulating commercialization of the Agency's technologies.

"Technology transfer and commercialization can be a complex process. Companies often have trouble evolving technology into viable products," Webster said. "Minority-owned companies face unique challenges when participating in competitive high-tech markets. This agreement will address those challenges while also stimulating the transfer of Langley's technologies."

Under the new agreement, NASA and the minority-owned business consortium will identify established and start-up minority firms that are candidates for technology commercialization and partnership opportunities.

Langley and the consortium will also match member firms' needs with technologies the Center offers. Langley will help determine the best "partnering vehicle," such as memorandums of agreement and patent licensing, for teaming the Center and individual businesses.

NASA will also assist with new product market analysis, help foster joint ventures and identify venture capital where appropriate, and provide follow-up assistance to encourage success. According to the agreement, Langley and the consortium will be responsible for their own work and expenses, with no exchange of funds.

TAG and TOPS

Technology commercialization is a priority effort at Langley. TAG provides a leadership role for Langley and also serves as a focal point for other NASA center technologies. The goal is to increase the flow of NASA technology to U.S. businesses to stimulate economic development and boost America's competitiveness.

As part of that effort, Langley hosted two Technology Opportunities Showcases (TOPS), in 1993 and again this year. Business people from around the country viewed some 200 Langley technologies at these events.

Held in April, TOPS '95 generated 2,600 requests for follow-up information, including 64 businesses that had immediate interest in licensing patents, and 233 that requested near-term follow-up discussions.

In the past year, TAG has initiated more than 30 patent license negotiations for technology commercialization. The Center has signed more than 70 agreements partnering Langley with businesses across the United States.

Langley signed a similar agreement in April 1995 with Virginia's Center for Innovative Technology (CIT). Under that agreement, the Herndon-based CIT and Langley are cooperating to provide NASA-derived technologies to the private sector in Virginia.

Information

For information from the Minority-Owned Business Technology Transfer Consortium, contact Lillian B. Handy, consortium chairperson, at 1 (703) 845-9400. Handy is president and chief executive officer of TRESP Associates, Inc., in Alexandria, Va.

Daughters Come to Work

BY PATSY CAMPBELL AND GAUDY BEZOS-O'CONNOR

Daughters of employees and contractors as well as other young girls enjoyed a day at work with their parents and sponsors April 27 as part of Langley's Second Annual "Take Our Daughters to Work Day." The day offerred parents and sponsors an opportunity to glow in their own achievements while sharing some valued "family-time" with their daughters and young girls.

The Federal Women's Program Committee (FWPC), the Hampton Roads Section of Women in Aerospace (HRS WIA) and the Langley Federal Credit Union co-sponsored the day's events.

This year, five volunteers, Peggy Harmon, Nancy Kruse, Veloria Martinson, Cheryl Tyler and Sandra Zumbrun, sponsored five students from Newsome Park Middle School. This broadened the program to reach students who may not have the same opportunities employees' daughters have. These students complemented the group of 50 parents and 50 daughters who enjoyed the day's activities. In addition, the outreach gave FWPC and HRS WIA the chance to "adopt a school."

Events of the Day

The Langley program began with a welcome from Deputy Director Dr. H. Lee Beach, Jr. The students then participated in hands-on activities. Gaudy Bezos-O'Connor presented "It's An Airplane;" Lisa Jones, "Crash Dynamics;" and Cheri Tanner, "Space Communication." A package of information, compiled by Langley's Public Mail Center, was distributed to each young girl.

Virginia Beach Public School teacher Linda Koutoufas spoke to parents and sponsors about gender bias in education and offered tips for helping children overcome difficulties in math and science. Dr. Sandra Proctor of the Center's Office of Education also presented information on educational opportunities at Langley.

After lunch, the group took a 3-point tour of the Flight Simulator, 14' x 22' Subsonic Tunnel and Low Frequency Electromagnetic Anechoic Chamber. In the afternoon, parents and sponsors shared their work environments with the young girls.

Thanks

Thanks to everyone who helped make this day a wonderful success, enjoyed by both parents and children. It made us all proud to be Langley employees, parents and sponsors.

FOCUS

Broaden young girls' minds to the possibilities available to them while addressing the issue of gender bias in education where girls are not actively encouraged to develop math and science skills.

Students from Newsome Park Middle School sent letters:

"...I do hope that this program continues on through the years to come.... I hope to be able to come back in the years to visit. And possibly get a job there once I turn 16. And many people there asked me did I become interested in math and science. And I told them all yes! I hope to work for NASA one day."

Your friend,
Michelle Jones

"...the most exciting part about the trip was when we learned about the parts of a plane. I never knew the parts of a plane but the wings. Thank you for the photographs of NASA ... and thank you for a wonderful time at NASA...."

Yours truly,
Ebony Day

"...I would love to see Take Our Daughters to Work Day so a lot more girls can see what I have seen. Most girls would enjoy it because it is a new way of learning. It is better than sitting in class."

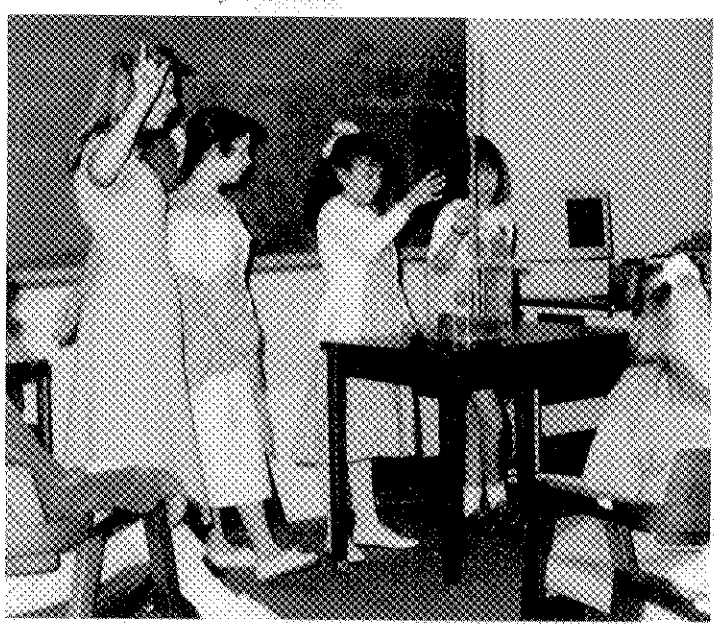
Thanks,
Tiara Bowden

Gaudy Bezos-O'Connor, above, leads a hands-on activity involving airplane design.

Photos by Katie Reid

Deputy Director Dr. H. Lee Beach, Jr., welcomes parents and and sponsors and their daughters and visitors at the opening ceremony for Take Our Daughters to Work Day.

Lisa Jones, right, leads a hands-on activity involving crash dynamics.



Langley Research Center
FWP
Federal Women's Program

Parent/Sponsor, Division * Daughter/Guest, School

Vickie Allen, FMD * Jessica King, Machen Elementary; Billy Allen, Jr., FD * Pearl King, Eaton Fundamental; Marcia Ambrose, AESD * Alicia Ambrose, Poquoson Elementary; Tahani Amer, ETTD * Layla Amer, Trinity Lutheran; Dale Babcock, FSED * Laura Babcock, Mt. Vernon Elementary; Cynthia Belsches (Joann), AMSD * Brittany Belsches, Captain John Smith Elementary; Ted Biess, ETTD * Laura Biess, Crofton Meadows Elementary; R. Barry Bryant, AFLO * Kendall Bryant, Western Branch Intermediate; Arnold Burcham, FOSD * Jessica Burcham, Norge Elementary; A. W. Burner, ETTD * Katie Burner, Abington Elementary/Gloucester;Vincent Cowling, FD * Tiffani Cowling, Eaton Fundamental; Vicki Crisp, SASPG * Linda Crisp, Seaford Elementary; Jeffrey Deaver, FD * Megan Deaver, Francis Asbury Elementary; Mike Durham, SD * Kristy Durham, Poquoson Elementary; Ralph Eanes, Jr., OSD * Krystle Eanes, Langley Middle; Gary Erickson, AD * Kristen Erickson, Yorktown Elementary; Charlene Farquharson, OHR * Clarice Farquharson, Eaton Fundamental; Karen Fenner, DFO * Tiffanie Fenner, Aberdeen Elementary; Bruce Fisher, FDCD * Ginny Fisher, Dare Elementary; Grace Gleason, OSD * Aubrey Gleason, Tabb Elementary; Diane Griffin, OSD * Stacey Wynder, Tabb Middle; Robert Hall, AD * Susan Hall, Mary Adkins Elementary; George Hickman, Jr., AMSD * Whitney Michael, Yates Elementary; Peggy Harmon, FD * Sara Westmoreland, Newsome Park Middle; Bruce Jackson, FDCD * Elizabeth Jackson, Dare Elementary; Charles E. Jenkins, Jr., AMSD * Amanda Jenkins, St. Mary's; Connie Jones, AMSD * Shani Jones, Dozier Middle; Mary Kennedy (Betsy), OSD * Rachel Kennedy, Carver Elementary; Linda Koutoufas, Guest Presenter * Anne Koutoufas, Chittum Elementary; Bess Koutoufas, Western Branch Middle; Nancy Kruse, FD * Tiara Bowden, Newsome Park Middle; Steve Lee, OSD * Paneka Parker, Hardy Elementary; R. Davis Lewis, FD * Jennifer Lewis, Page Middle; Mary Liggins, FD * Danielle Liggins, Dutrow Elementary; Velma Martin, ETTD * Jamila Martin, Robert E. Lee Elementary; Veloria Martinson, SD * Ebony Day, Newsome Park Middle; Lisa Massie, OSD * Morgan Massie, Coventry Elementary; Gail McQuigg, STID * Jessica Sowash, Eaton Fundamental; Mark Moore, FSED * Andrea Moore, Poquoson Elementary; Robert Neece, IETD * Lara Neece, Seaford Elementary; Rhonda Richards-Parham, Newsome Park Middle; F. Raymond Parker, MD * Allyson Parker, Trinity Lutheran; James Roberts, AD * Cassie Roberts, James River Elementary; Henk Roelant, OSEMA * Rebecca Roelant, Home schooled; Eddie Rhyne, OSD * Sarah Tidwell, Bethel Elementary; Glen Sachse, AESD * Sarah Sachse, Our Lady of Mt. Carmel; Melissa Sharmon (Parent's Session Only); Behrooz Shirinzadeh, FMAD * Chernell Shirinzadeh, Petsworth Elementary; Mark Shuart, SD * Emily Shuart, Asbury Elementary; Shirley Stephenson, ASD * Naysa Stephenson, Charles Elementary; Edwin Jay Taylor, FMD * Melissa Taylor, Poquoson Middle; Christopher Tremper, ISD * Kristin Tremper, Tabb Elementary; Cheryl Tyler, AMSD * Ijanaya Muhammad, Newsome Park Middle; Robert Wallis, FED * Erin Wallis, Poquoson Elementary; Stephen Wilkinson, FMAD * Debra Wilkinson, Poquoson Elementary; Joni Williams, OE * Jessica Williams, Carrollton Elementary; Carol C. Winbush, OSD * Carol Nicole Winbush, Dutrow Elementary; Cheri Wood, OSD * Jessica Wood, Forrest Elementary, Sandra Zumbrun, FD * Michelle Jones, Newsome Park Middle

A View from On High: Lee Person's Perspective on Flight Research at Langley

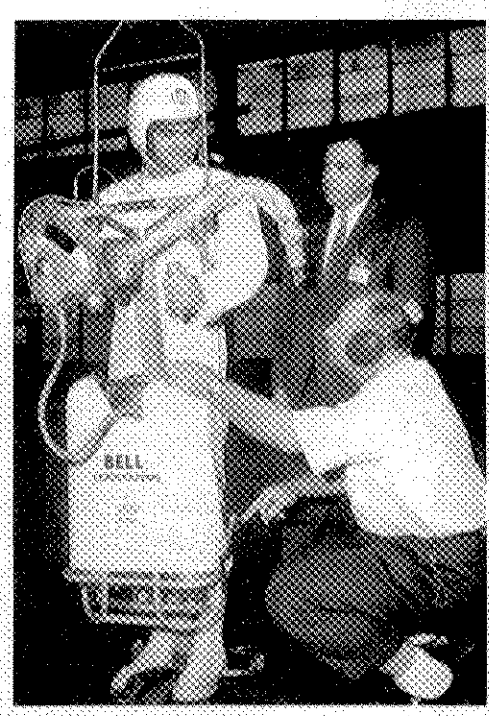
BY MARK CHAMBERS

He has witnessed and played a role in the transformation of the National Advisory Committee for Aeronautics (NACA) into the National Aeronautics and Space Administration (NASA). He helped bring about major revolutions in aeronautics and space flight. Recently retired Langley research pilot Lee Person saw and accomplished much during his 33-year tenure as a NASA research pilot. Through it all, it has been the great accomplishments, dedicated teamwork and laughter that he remembers most.

Influences

During his formative years at Langley, of all the individuals who had a direct impact on Person's life, none was more significant than Jack Reeder. "Jack stood in a class by himself. He had the keen engineering background and the ability to analytically fly an airplane and extract important data, something that others were frequently unable to do. Moreover, he would fly airplanes that others were afraid to fly."

Another important individual in Person's early career was Langley research pilot Robert Champine, who served as his mentor. "Bob sort of took the new pilots under his wing and would bring them along and give them almost enough rope to hang themselves, but would slowly untie the rope before they did it. He was a very thorough and professional pilot and a world-class modeler."



Langley flight research pilot Lee Person, left, checks out the Rocketbelt/Pogo at Bell Aerosystems as Bell engineers Bob Courter, standing, and Ernie Krutenger observe. The vehicle was developed before the lunar rover concept was devised and was intended for use by astronauts as a means of traveling along the surface of the moon.

Langley flight research pilots Lee Person, left, Dick Yenni center, and Jack Reeder, right, chat in the modified Advanced Transport Operating Systems (ATOPS) Program research cockpit within the main cabin of NASA's B-737. Yenni encountered a surprise visitor in the aircraft during one research flight in late April 1981. He discovered an unassuming passenger which had managed to stowaway in the corner of the main flight cockpit, "where the first officer would normally keep his lunch." Yenni thought he saw "a little diamond pattern" on the 18-inch snake and relayed this message to Wallops ground control: "You're not going to believe this. We gotta get down right now." The craft, with 32 researchers aboard, landed immediately at Wallops, where officials determined the critter was nothing more than a harmless garter snake. The story hit the press the next day.

Space

With the space program getting into high gear in the early 1960s, Person had the opportunity to participate in flight simulation programs in preparation for the Apollo lunar-landing missions. He, as well as other Langley flight-research pilots, participated in prototype lunar-landing research vehicle flight tests conducted at the Langley Lunar Landing Research Facility to evaluate the last 150-foot descent to the surface of the moon. He also participated in docking-simulation studies in the rendezvous and docking simulator in Langley's Flight Hangar.

Person also flew "Icarus." Envisioned by Langley engineer Don Hewes, this vehicle was a backpack with peroxide thrusters, intended to be a locomotive method for lunar-surface travel. Later, he was sent to Bell Aerosystems, where he learned to fly the Rocketbelt/Pogo, a vehicle also designed for lunar travel.

Aeronautics

While important progress was being made in space-research programs, unprecedented achievements were being made in aeronautics. One of the most significant was Langley's involvement in Vertical Take-Off and Landing (VTOL) research and the Hawker Siddeley Kestrel (AV-6A) test program beginning in 1966. The Kestrel, a prototype of the Harrier series, was a single-seat VTOL high-performance jet aircraft, designed primarily for strike missions. The first of its kind, the aircraft could take off and land on normal runways horizontally or take off and land vertically from makeshift runways. Person had the distinction of serving as the main pilot for the test program. The Harrier and its derivatives, the AV-8A and AV-8B, would later achieve fame with Britain's Royal Air Force and Royal Navy in the Falklands conflict and with the U.S. Marine Corps in Desert Storm.

Person tested cockpit and control systems for commercial passenger aircraft in Langley's B-737 Transport Systems Research Vehicle. He served as one of the main test pilots in pioneering studies of wind shear detection and avoidance during the early 1990s.

He was amazed by the level of interaction between flight-research pilots, technicians and engineers required to complete projects. "Interaction was on a day-to-day and man-to-man basis. The nice thing about it was that you actually did your work with a guy or a team of guys.... The engineers, technicians, and pilots seem to be able to all pull on the same end of the rope to make things work."

According to Person, distinct differences exist between military and NASA test pilots. "The NASA pilot is more of a researcher, like the engineering test pilots from a company. If you look at the military pilots, their primary job is to make sure that the vehicle being delivered to the service meets the specifications that the aircraft is supposed to meet. He is interested in knowing whether or not the airplane can perform as an intended weapons system, as where we are concerned more with how well the airplane handles and works relative to the pilot's inputs and desires. The military guy is not necessarily interested in making the airplane better. He just wants to make sure it will do the job."

To be a research pilot, Person believes, "You have to have a strong desire to fly airplanes; you have to love to fly. You have to have enough of an inquisitive nature to want to explore things that have not been looked at before. You have to have the ability to work with and communicate with people who are, generally speaking, pretty smart."

Best and Worst

Person flew over 135 fixed-wing, rotary-wing and V/STOL (Vertical/Short Take-Off and Landing) aircraft, generating a flight time of nearly 9,000 hours. His favorite aircraft were the Kestrel/Harrier-type aircraft "because they did so many things. They took off and landed vertically. They took off and landed like conventional airplanes. They hovered and transitioned from a hovering vehicle into strike-type aircraft gracefully and easily."

The worst aircraft Person flew were the "great" gyrocopters during the early 1960s. "Unlike a conventional helicopter, wind in a gyrocopter goes up through the rotor instead of down through the rotor. So to attain flight, you had to get the rotor spinning by making the airplane go fast and the wind would go through the rotor."

Final Thoughts

Looking back on his experiences in flight research, Person expressed some disappointment that he was not allowed to fly more sophisticated aircraft when he first arrived. But he was given the opportunity to participate in space-flight programs that contributed heavily to the success of America's efforts in space.

Person has no regrets working as a research pilot at Langley. "I guess everyone would like to complete their career hoping that they had contributed something to mankind that would make life a little better. In the space program, maybe it was to achieve a manned landing on the moon. With the Kestrel/Harrier-type airplanes, it was to make a better fighting/ground-attack vehicle for the Marine Corps. With the 737, it was to hopefully make life better for the airline pilot and, ultimately, for the aircraft company to make money.... As a pilot, you would like to make it a little bit easier to fly and a little bit safer, so that the man/machine interfaces would allow the airplane to be handled more efficiently and without moments of stark terror that might be encountered in an emergency."

Lee Person, left, and his boss and role model, Jack Reeder, pose in front of Langley's two Hawker Siddeley XV-6A Kestrels in 1966.

Precollege Outreach Programs

Langley offers teacher and student opportunities as well as technology programs through its Precollege Outreach Program. Listed below are just some of the opportunities for students.

Student Opportunities

Adventures In Technology = Options in Math & Science (ATOMS) introduces students in grades 7 and 8 to high-tech workers and work settings. ATOMS is a joint effort between five Peninsula school divisions, Thomas Nelson Community College (TNCC), and five Peninsula high-technology employers. Seventh-graders are visited by teams of workers who describe their careers and academic backgrounds. Students conduct hands-on activities involving practical applications of math or science. Eighth-grade students visit work settings. The program's goal is to interest students in studying technical subjects and to encourage underrepresented groups and females to consider high-tech careers. For further information, write to ATOMS Project Coordinator, TNCC, P.O. Box 9407, Hampton, Va. 23670.

Explorers Program is sponsored by Langley in conjunction with the Peninsula Boy Scouts of America. The purpose of the program is to stimulate the interest of secondary school students in science, engineering, mathematics and technology by providing opportunities for them to explore careers in aeronautics or astronomy. No previous scouting affiliation is required. However, students should have completed at least Algebra I. Three post programs are offered: aeronautics, computer science and astronomy. Post meetings are held after school from October through May. Depending on the post, meetings may be held weekly, bi-monthly or monthly. Post registration is in October. For more information, contact Pat Link, Mail Stop 400, NASA Langley, Hampton, Va. 23681, or call 1 (804) 864-8102.

Regional Summer Math and Science Institute (RSI) is an intensive, four-week program that targets average students or high-ability, unmotivated (at-risk) students who otherwise may not be interested in pursuing higher levels of math or science. RSI is held at Thomas Nelson Community College (TNCC) and is designed for rising ninth-grade students from the five Peninsula school districts. The program includes sessions on developing a positive self-concept and attitude toward education; learning to set academic and personal goals; learning to reason logically; and experiencing hands-on activities in math, science, computers and art. Outside speakers and field trips illustrate real-life applications of science and math principles. Students are nominated and selected at pre-identified middle schools, with female and minority students as priority populations. The program is designed to integrate activities between participants, teachers and parents. For information, write to Director, RSI, TNCC, P. O. Box 9470, Hampton, Va. 23670.

Cooperating Hampton Roads Organizations for Minorities in Engineering (CHROME) is an independent, non-profit corporation whose mission is to increase the number of minorities and females entering engineering, science, math and related career fields. Businesses, governmental agencies (including Langley), public school systems, colleges, professional associations and individuals comprise CHROME. Programs sponsored by CHROME include clubs in elementary, middle and high schools, Saturday academies and computer workshops, role models and speakers, field trip opportunities, teacher training, internships and scholarships. For more information, write to CHROME, P.O. Box 1394, Norfolk, Va. 23501.

Space Science Student Involvement Program (SSIP) is an annual nationwide program that allows students in grades 3 through 12 to compete in diverse areas such as art, journalism and the sciences. SSIP has been designed for use within the context of an existing curriculum and culminates in regional and national competitions. Participation in the competition portion of the program is encouraged but optional. Langley sponsors the Wind-Tunnel Research Facility contest of the SSIP. For information and a brochure, contact Langley's Teacher Resource Center at the Virginia Air and Space Center, 600 Settlers Landing Rd., Hampton, Va. 23669, or call 1 (804) 727-0900, ext. 757.

Student High Apprenticeship Research Program (SHARP) is an 8-week summer mentorship program for high-school students in Tidewater. Selected students work with a mentor and support the mentor in his/her field research on a full-time basis. Students must be 16 years of age and have completed Algebra I to apply. SHARP encourages students from underrepresented minority groups to submit applications. First priority will be given to underrepresented minorities and second priority to females. Program and application material is distributed to high-school guidance counselors. Completed application packets are due by February 20. For more information, contact Shelley Canright, Mail Stop 400, NASA Langley, Hampton, Va. 23681, or call 1 (804) 864-3313.

Governor's School for the Gifted is held each summer for four weeks. Rising juniors and seniors from around the Commonwealth are selected to participate in the summer mentorship program. The program is directed by the Virginia State Department of Education, Programs for the Gifted. Students reside at The College of William and Mary along with other Governor's School students who are participating in other programs. Applications and program information is sent to schools from the Virginia State Department of Education. For more information, write to Dr. Janie Craig, Programs for the Gifted, P.O. Box 6-Q, Richmond, Va. 23216.

Space Technology Found to Improve Breast-Cancer Detection

Langley's researchers have found a better way to detect breast cancer by applying technology originally developed to study the atmosphere from space. The technique uses a charged-coupled device (CCD) camera, similar to ones in home-video cameras, which will allow physicians to see cancer tissues four times smaller than those visible with X-ray film. It also uses lower levels of harmful X-rays, so that patients exposure to radiation is reduced.

Testing is currently being done by James McAdoo of Electro Optic and Conrols Branch and Dr. Hong Lui at University Of Virginia Hospital, and should be completed by early fall 1995. Doctors at U.V.A. compare pictures taken at Langley with pictures taken during actual mammographies. The CCD is similar to one used during SAGE III.

1995 Speakers Bureau: Second Half of April

SPEAKER	ORGANIZATION	TOPIC
Larry Cooper	Young Author's Festival, Hampton Public Schools	NASA and Space Shuttle
David Shannon	Virginia Tecnical Students Association, State Conference	Space Station and Your Contributions
Janet Dail and Greg Draughon	Lancaster Middle School, Kilmarnock, Va.	Technical Careers, Grade 7
Nancy Kruse	Lancaster Middle School, Kilmarnock, Va.	Technical Careers, Grades 5 and 8 with demonstrations
Richard Davis	Palmer Elementary School	Solar System & Space
Gary Wainwright and Sam James	Lancaster Middle School, Kilmarnock, Va.	Careers, Grades 4 through 6
George Helfrich	University of Virginia, School of Engineering & Applied Science	Protecting Intellectual Property
Pamela Davis	Newport News Kiwanis Club	NASA Langley: Past, Present and Future
Pamela Davis and Ray Scholz	Page Middle School	Careers in Aerospace

Langley Runners Club Posts Results

The NASA Intercenter Running Competition is held twice a year among the filed centers. For the Spring 1995 races, 24 Langley employees and contractors took part in the 10-kilometer race and 60 in the 2-mile race.

The top Langley runners in the 10-kilometer race were:
men - Steven Robbins, 38:43; John Hoppe, 39:37; and Erik Kielin, 39:47;
women - Jan Spangler, 48:46.

The top Langley runners in the 2-mile race were:
men - Erik Kielin, 11:19; Scott Bartram, 11:20; and John Hoppe, 12:00;
women - Dana Holcomb, 19:52; Anne Edwards, 20:00; and Bernice Becher, 20:57.

Paintings to Be Launched to Mir

The European Space Agency (ESA) has agreed to launch 13 paintings to the Russian Space Station Mir. The cosmonauts will select one to keep on board during the mission. The other paintings will be returned to Earth for a future international tour.

The OURS Foundation of Embrach, Switzerland, is managing the Ars ad Astra, or Art to the Stars, competition and will select paintings to be launched to Mir this summer as part of ESA's Euro-Mir '95 mission.

An ESA astronaut is scheduled to spend four-and-a-half months on Mir beginning in August, and will return the paintings to Earth aboard the U.S. space shuttle. ESA and NASA have agreed that ESA may return a total of 31 kilograms from Mir aboard shuttle missions.

The winning artist will receive a wristwatch that previously flew on Mir. ESA is paying for the Ars ad Astra exhibition through its public relations budget.

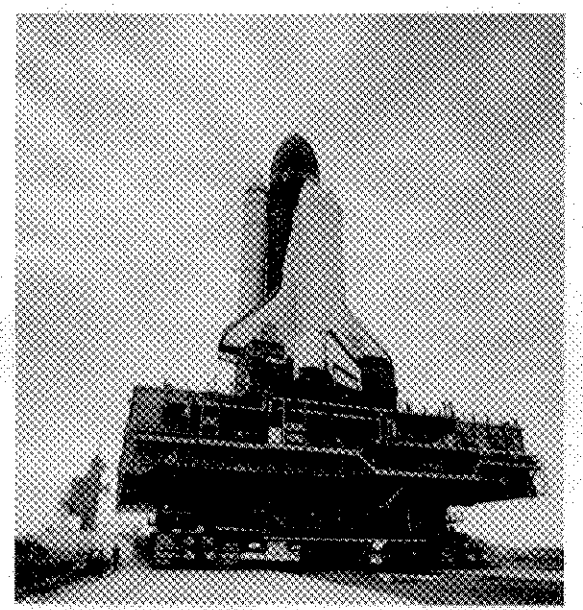
Atlantis and Mir

Continued from page 1

July 4 at 12:37 p.m. EDT.

Joint scientific investigations will be carried out inside the Spacelab module tucked in Atlantis' large cargo bay. These investigations will provide more knowledge about the human body and the microgravity environment. Research in seven different medical and scientific disciplines, begun during Mir 18, will conclude on STS-71. Researchers hope to advance understanding of such Earth-based conditions as anemia, osteoporosis, high blood pressure, kidney stones, balance disorders and immune deficiencies.

At the end of joint docked activities, Solovyev and Budarin will assume responsibility for operations of the Mir station. The Mir-18 crew, who have been aboard the station since March 16, are Commander Vladimir Dezhurov, Flight Engineer Gennady Strekalov and Cosmonaut Researcher and American astronaut Norm Thagard. They will join the STS-71 crew for the return trip to Earth. Thagard will return home with the American record for a single space flight with more than 100 days in space. The previous record was held by the Skylab-4 crew with 84 days in 1973-1974. Thagard broke the record June 6.



The Space Shuttle Atlantis rolls out to Launch Pad 39A April 26 aboard the crawler-transporter in preparation for the STS-71 mission. Atlantis will dock with the Russian Space Station Mir for four days during the 11-day mission with the Orbiter Docking System in Atlantis' payload bay. Also on board is the Spacelab-Mir module which will be used as a flying laboratory for joint American-Russian medical investigations.

The STS-71 CREW
Standing, from left, are pilot Charles J. Precourt, mission specialists Bonnie J. Dunbar and Gregory J. Harbaugh and mission commander Robert L. "Hoot" Gibson. Kneeling, from left, are cosmonauts Nikolai M. Budarin and Anatoly Y. Solovyev and mission specialist Ellen S. Baker.

LITE

Continued from page 1

traces of lead and arsenic. They cause smog and visibility reduction problems." Hoff joked, "You may move to the suburbs, but you don't get away from urban pollution."

Biomass Burning

Dr. Edward Browell, a senior scientist in Langley's Chemistry and Dynamics Branch, used an aircraft-based laser system to measure aerosols created by biomass burning during the LITE mission. Browell said that two to five percent of the Earth's surface land area is burned each year, which can have a dramatic effect on the global atmosphere.

Flying under Discovery/LITE, Browell made measurements with an airborne lidar system aboard the NASA Electra aircraft. Because LITE flew during the Southern Hemisphere dry season, large quantities of biomass burning aerosols were measured over both South America and southern Africa. Browell said, "With the LITE data, we've been able to study the South Atlantic basin region, which, in this particular time, accounts for over 75 percent of the burning that goes on."

Using the three different wavelengths aboard LITE also allowed Browell and his team to identify the types of aerosols they were measuring. Browell said, "Remotely, we can detect whether the aerosols we're seeing are biomass burning or whether they're desert aerosols (sand)." Biomass burning generates green-house gases such as carbon dioxide, methane and ozone. Aerosols also affect the Earth's energy budget by scattering sunlight back into space, thereby cooling the Earth. Aerosols can also increase the amount of clouds present by acting as surfaces upon which water vapor can condense.

International Validation

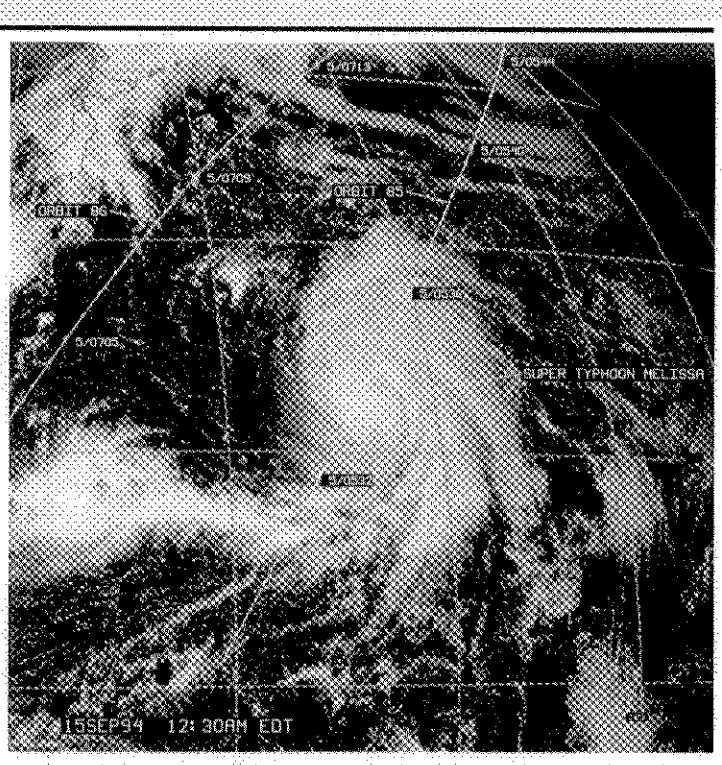
At a media briefing May 31, McCormick said, "Our goal was to demonstrate the utility, demonstrate the usefulness [of a space-based laser system] ... this is a new remote sensing technique." To validate this new technique, ground measurements were made at over 90 ground sites in 20 countries. Because of the high inclination orbit (57 degrees), McCormick said, "We could involve people in Japan, Europe, Russia and the United States to make measurements for us while [the LITE instrument] flew over." In addition to the many ground-based laser measurements, six international aircraft equipped with airborne lidar systems flew along multiple LITE ground tracks.

The validation measurements and post-flight analysis involved over 60 scientists world-wide. Coordination of the many validation sites with the shuttle operations during the mission was achieved via the Internet and the LITE homepage on the World Wide Web. Dr. Harvey Melfi, a professor at the University of Maryland-Baltimore, said there was an "extremely good correlation between the aircraft-derived data and the shuttle-derived [LITE] data ... indicating that the instrument on the shuttle was working extremely well."

LITE's Future

The results of the 2-day meeting showed that the LITE system obtained a spectacular data set, demonstrating the ability of lidar remote sensing techniques to study the Earth's atmosphere. A future space-based lidar system is being studied. This future system would fly on a satellite in low-earth orbit and provide daily coverage of global cloud characteristics and aerosols created by dust storms, biomass burning and urban pollution.

Hoff, speaking on the importance of aerosols in the Earth's radiation budget, said a permanent LITE instrument in space would let scientists know how many aerosols, both natural and man-made, are in the global atmosphere on a daily basis. According to McCormick, the next generation of LITE could be developed and flown in three years if funding can be found.



DISCOVERY DOTS THE EYE OF SUPER TYPHOON MELISSA
This September 1994 photo of Super Typhoon Melissa shows the storm in the western Pacific as the Space Shuttle *Discovery* passes overhead. Langley's Lidar In-space Technology Experiment (LITE) instrument in *Discovery's* payload bay measures clouds in the eyewall area of the storm as the orbiter passes directly over the typhoon's eye at more than 17,000 miles per hour. LITE cloud measurements show that the diameter of the eye varies from about 45 kilometers wide near 17 kilometers altitude to about 30 kilometers wide at the ocean surface. Super Typhoon Melissa formed in the Pacific Ocean and, at the time of the LITE measurements, had maximum sustained winds of 140 knots with gusts peaking at 170 knots.

Happenings

WANTED TO RENT: Visiting professor from the Max Plank Institute for Chemistry in Germany seeks a 3-4BR house, preferably in Poquoson, for a long-term, 2-year lease beginning late summer. Buying is also a possible option. For more information, call Jack Fishman at ext. 42720.

FOR SALE: Tickets to see Chicago live at Chrysler Hall, Wednesday, July 19, 8 p.m. Excellent seats! Call Charles at 877-3091.

FOR SALE: 3-4BR, 2BA, 2-story home built in 1992. LR w/fpl, optional den, large kitchen w/DR, large laundry room. Williamsburg, five minutes from William & Mary. $105,000. Call Deneace at 229-3078.

KARATE CLUB: The Langley Karate Club is sponsoring lessons for juniors, ages 7 and up, on Saturdays, 10 a.m. to noon, at the Poquoson Primary School gym on Odd Rd. New students will be accepted through June, space permitting. For more information, call James A. Brown at 898-3516.

HONEY FOR YOUR HONEY: The NASA-Langley Apiculture Club will hold its regular monthly meeting on Monday, June 19, 7 to 9 p.m. It will be held in the meeting room of the York County Human Services Building at 301 Goodwin Neck Road (State Route 173 East), Yorktown, Va. The program will be on "Honey Production and Extraction," including an open forum on any beekeeping concerns. Free and open to the public. For more information call Harvey at ext. 46742, Wallio at ext. 45366 or Henk at ext. 47226.

LIBRARY TOURS: Starting June 8, the Technical Library will resume its weekly schedule of library tours, showing the library's layout and highlighting some of its resources. STILAS, the library's online catalog, will also be demonstrated. Reservations are not necessary. Tours meet every Thursday, 1:30 p.m., in the third floor lobby. If you have any questions about the tour, call ext. 42356.

NASA SKI WEEK V: The fifth annual Agency-wide ski trip has been scheduled for the week of Jan. 13 to 20, 1996, at Crested Butte, Colo. The trip is open to all NASA personnel, contractors, retirees and their friends and relatives. For information, call Michael Schooley at ext. 48524, or 874-2736 nights and weekends.

Researcher News Info

RN DUE DATE: The due date to submit any articles, photos or announcements for the next issue is Tuesday, June 20. The next issue will be distributed beginning Friday, June 30. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

Announcements submitted for "Happenings" will run for one issue only unless otherwise requested. Repeats will be accommodated on a space-available basis.

Donate Annual Leave to Others in Need

Have you ever become so ill that you know you would use all of your sick and annual leave? Has a family medical emergency ever put you in the same situation? How can you balance the priority of family with the necessity of your job?

Have you ever been so healthy that you wonder why you have so much sick leave? Have you accumulated enough annual leave over the past few years that you could give some of it away and never miss it? Would you like to do that?

Langely's Volunteer Leave Transfer Program allows people with annual leave to spare to donate it voluntarily to other employees who have used all their annual and sick leave due to a personal or family medical emergency and need some additional assistance. The program is a great way for employees to support one another in a time of need. If you think you have a need or would graciously like to donate some of your annual leave to another in need, call Lisa Allen at ext. 42610.

The following employees have been approved to receive donations of annual leave from other generous employees:

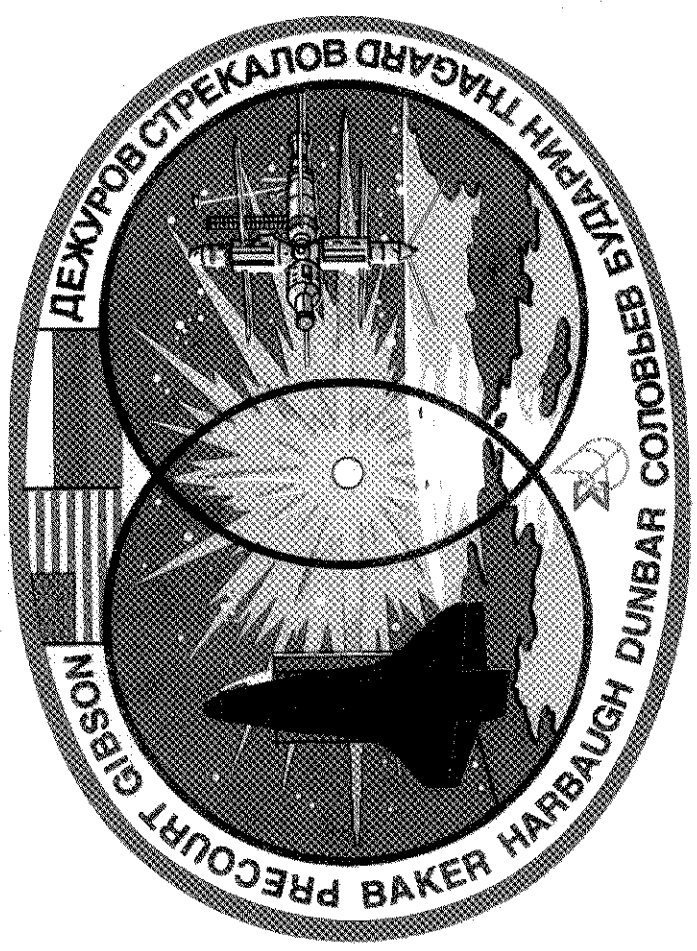
Marilyn Aldrich, Karen Freidt, Debra P. Shimek, Cassandra Stevens, Scott Wallace, Darrell Wood, Leslie Ferguson Kennedy

Your annual leave donations are greatly appreciated and are received anonymously.

Hampton Roads Procurement Expo '95

The Hampton Roads Federal Government Directors of the Office of Small and Disadvantaged Business Utilization announces the first Annual Procurement Expo '95. Over 40 exhibitors will demonstrate the latest in information management and technologies, WorldView electronic document, laptops and notebooks, engineering services, FedForms, facilities maintenance services and more.

The expo will be held Monday, June 26, 9 a.m. to 2 p.m., at the Holiday Inn Hampton - Coliseum. Admission is free with government identification. Fort Eustis, Fort Monroe, Langley Air Force Base, NASA Wallops Flight Facility, Naval Facilities Engineering Command - Atlantic Division, the Virginia Peninsula Chamber of Commerce and Langley are co-hosting the event.



Patch design by aviation and space artist, Bob McCall

STS-71 CREW PATCH
The STS-71 crew patch design depicts the Orbiter Atlantis in the process of the first international docking mission of the space shuttle with the Russion Space Station Mir. The names of the 10 astronauts and cosmonauts who will fly aboard the orbiter are shown along the outer border of the patch. The rising sun symbolizes the dawn of a new era of cooperation between the two countries. The vehicles Atlantis and Mir are shown in separate circles converging at the center of the emblem symbolizing the merger of the space programs of the two spacefaring nations. The flags of America and Russia emphasize the equal partnership of the mission. The joint program symbol at the lower center of the patch acknowledges the extensive contributions made by the Mission Control centers of both countries.

Researcher News

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

Official Business. Penalty for Private Use $300.

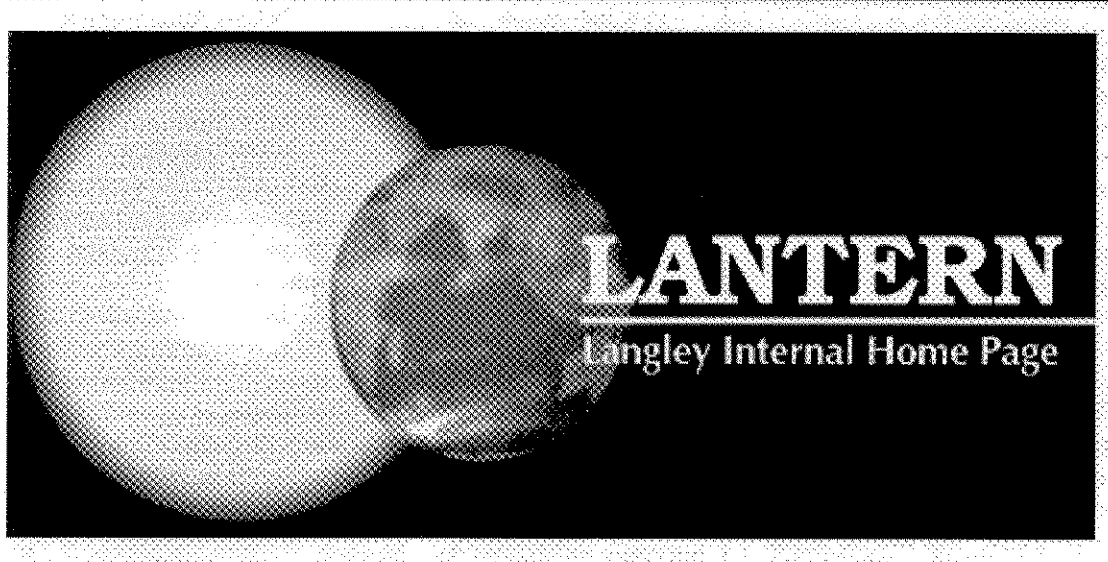
BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 13 ❖ June 30, 1995



Jump to the Future Now Using the WWW

BY DAN SYDOW

Have you ever relocated your entire office, such as furniture, phone line, ethernet connection or telephone directory listing, at the touch of button?

Have you ever scheduled a conference room centrally located to all attendees with just the right presentation requirements, such as telecon, videocon, large screen monitor and network access, and notified the attendees automatically with just a few clicks of a mouse?

Have you ever maintained a Just-In-Time inventory for your basic stock needs without paperwork, paperwork and more paperwork?

You will!

And who will bring it to you? Langley's World Wide Web (WWW) Project Team.

And you can be a part of it. We are interested in your ideas on what the Langley Internal Home Page, LANTERN, should be and what it can help you do. Do not worry about whether you think something can be done; just tell us what you would like to see and how you would like to see it.

Send us your ideas. Got a great idea on streamlining an internal practice? Got a service you have been itching to make available to your coworkers? It's time!

Send your suggestions, ideas, comments, or needs to: webmasters@www.larc.nasa.gov

Together we can create a product that will change the way we work.

For more information, access Langley's WWW Project Team at this URL: http://www.larc.nasa.gov/~ggott/org/wwwplan.html

LANTERN Lights New Path

BY JIM ROWBOTTOM

LANTERN, the Langley Internal Home Page, is the newest Internet service developed for Langley by the World Wide Web (WWW) Project Team. The first version became available June 2.

The WWW team is excited about this opportunity to partner with Langley employees, contractors and their organizations to provide the information and services that we need to further Langley's mission.

LANTERN = LANgley + InTERNal Home Page

Purpose

The purpose of LANTERN is threefold:

(1) to provide timely and up-to-date information to Langley personnel;
(2) explain how to do various tasks at the Center; and
(3) initiate and execute business processes where deemed cost effective.

Available Information

Some of the many categories of information included on LANTERN are:

Personnel Directory. LANTERN makes it possible to look up someone by first name, last name, building, division, etc., and give information such as location, phone number, e-mail address, personal information and sometimes a photograph.

Inventory Database. Users can find which equipment was issued to specific personnel or to whom a piece of equipment belongs. LANTERN also contains an Idle Property Screening List.

Building and Room Locator. After inputting a building and room number, LANTERN will display a detailed map indicating the building's and room's location at Langley.

Health Services. LANTERN gives information on an array of health and education benefits available to Langley employees via the Office of Occupational Health Services.

Langley Childhood Development Center. LANTERN provides easy access to

See **LANTERN**, *page 4*

Director Praises Efforts of Langley Buyout Team

BY MARNY SKORA

Center Director Paul F. Holloway honored 40 employees who put in long hours, answered lots of questions, calculated loads of numbers and even gave up weekends—the team who handled this year's buyout.

In an effort to streamline NASA further, Administrator Dan Goldin announced a buyout January 31. Civil servants Agency-wide with 25 years of service or those age 50 with 20 years of federal service were eligible for early out or retirement, respectively.

"As soon as the announcement was made, the phones started ringing," said Linda Park of the Employee Relations Office. "And they didn't stop until close of business March 31."

The Buyout Team, made up of employees from the Office of Human Resources and the Financial Management Division, "got the job done—and did it right," said Holloway. "They processed estimates for over 600 employees who inquired about their options." Ultimately, 272 Langley employees accepted the buyout.

"What I find totally amazing, but right in line with Langley efficiency, is that this group was able to get those retirement folders to the Office of Personnel Management (OPM) 15 days after our people retired," said Holloway, praising the team's efforts. "What this means is that those who took the buyout got their retirement checks the first week in May, just as if they were still on the Langley payroll."

Some team members met with employees to discuss annuities, insurance options, and many other concerns. Others worked behind the scenes crunching the numbers and processing the paperwork. "Our goal was to get ahead of the paperwork rush that would hit OPM," said Jay Taylor of the Financial Management Division. "Everyone did what had to be done, when they needed to do it."

"As a result," said Holloway, "every one of the Langley retirees received the up-to-$25,000 buyout incentive in their April 11 paycheck." Again, Langley was an Agency leader in tackling and conquering a hefty assignment.

Employee reactions to the buyout offer varied. "Some came into the office singing. Some cried. Some returned day after day with new questions," said Angie Claud of the Office of Human Resources. "I heard some great stories, and I came to understand just how much NASA meant to those who were considering retirement."

"It was a very stressful time for both potential retirees and staff, but the Buyout Team made the process not only bearable but enjoyable," remarked Holloway. "In fact, the Buyout Party on March 31 was one of the most well attended and happiest events I've witnessed in quite some time."

Holloway congratulated this team of 40 on a difficult job well done. See the team photo on page 8.

Langley Gears Up for Supersonic Laminar Flow Control Experiment

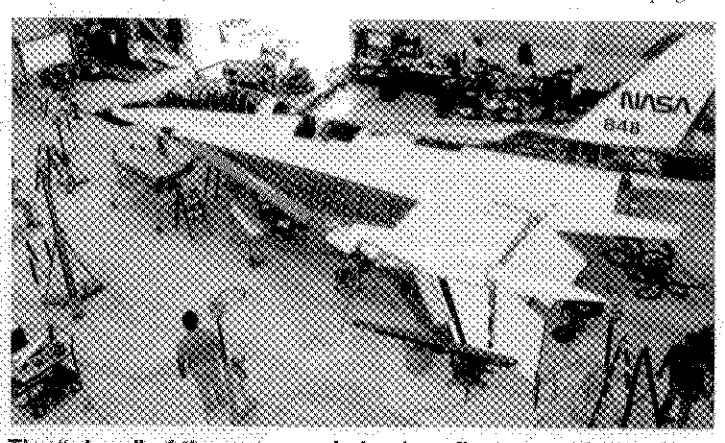
BY MARY SPRACHER

After years of planning, Langley researchers are preparing to flight-test a concept designed to improve the aerodynamics of aircraft traveling at supersonic speeds.

The experiment will use a "glove" installed on the wing of an F-16XL, a modified F-16 fighter plane. This glove consists of a specially designed suction panel and system that will draw some air from the glove wing, making the flow over the wing smoother. The smoother air flow that results is called laminar flow, which decreases drag on the aircraft by reducing friction on the wing's surface.

Such laminar flow control would enable planes to fly on less fuel and with smaller engines. Successful control at

See **Laminar Flow**, *page 6*



The "glove" of the supersonic laminar-flow control wing is installed on an F-16XL at Dryden Flight Research Center, Edwards, Calif. The suction panel, the dark section on the left side of the wing, is covered with reference markings and protective tape.

News Briefs

Around the Agency

NASA TECHNOLOGY INCREASES EFFICIENCY AT NEW AIRPORT - Air-traffic controllers at the new Denver International Airport are managing traffic more efficiently, thanks to an automation system developed at NASA's Ames Research Center. Beginning in the late 1980s, an Ames team designed the Center-TRACON (Terminal RAdar CONtrol) Automation System (CTAS), which helps air-traffic controllers optimize the flow of traffic into large airports.

The CTAS software contains a database with the flight characteristics of most aircraft. The data base has information on winds, temperatures, arrival routes, runway configurations and landing capacity. CTAS starts its work when traffic is about 45 minutes of flying time from the airport. As an aircraft approaches, CTAS scans its data base to select a preferred descent route based on the type of aircraft, weather conditions and various other factors. It finds the most favorable runway for the aircraft and the earliest available time for it to land.

"CTAS ... does not replace controllers, but rather 'thinks' along with them in solving traffic problems," said Heinz Erzberger, senior scientist for air-traffic management at Ames. "At the new Denver Airport, CTAS became the primary traffic-management tool from the day the airport opened on February 28," he said.

TESTS SHOW GALILEO PROBE SET FOR FLIGHT TO JUPITER - Important tests of the atmospheric probe on NASA's Jupiter-bound Galileo spacecraft have been completed successfully. The tests demonstrated that the probe is operating very well and ready for the first-ever descent into an outer planet's atmosphere this December. The testing, completed in March, followed NASA's first interrogation of the atmospheric probe in 27 months, and "it went perfectly," said Marcie Smith, Galileo probe project manager at NASA's Ames Research Center, Mountain View, Calif. The probe stands ready to separate from the Galileo orbiter spacecraft in July and fly the remaining 50 million miles to Jupiter.

Upon its arrival at Jupiter on December 7, 1995, the probe will make the first entry into the atmosphere of one of the solar system's giant gas planets. This will be the most difficult planetary entry ever attempted. The probe is expected to reach a speed of 106,000 mph before it encounters deceleration forces of up to 350 G's (350 times Earth gravity) through friction with Jupiter's atmosphere. After entry, the probe will descend about 400 miles into the planet's complex atmosphere, making the first direct measurements of its clouds, lightning, winds and other features.

NASA SELECTS RESEARCH GROUP TO BOOST U.S. COMPETITIVENESS - A Cooperative Agreement has been signed by NASA and a research consortium headed by United Technologies, Pratt & Whitney Group, to develop aircraft propulsion applications that will give a network of small computers the capabilities of a super computer.

Distributed computing is the thrust of NASA's Affordable High Performance Computing Project (AHPCP), an effort which focuses on specific requirements of the U.S. aerospace community and enhances America's competitiveness. This effort will concentrate on research and development in novel aircraft-jet-engine computer simulations, supporting high-risk and high-payoff opportunities that demonstrate strong potential for commercial benefits of NASA technology.

As NASA's Center of Excellence in Aeropropulsion, Lewis Research Center in Cleveland, Ohio, will work jointly with the Pratt & Whitney team to apply high-performance computing technologies to reduce design-cycle time for aircraft-jet-engine compressors. This research will lead to substantial increases in performance and reductions in development cost. NASA's Ames Research Center, Moffett Field, Calif., and Langley will assist in this research, focusing on system software development.

Strengthening Interview Skills at CTAPC

Few individuals feel immune to the anxiety, uncertainty and disabling phobia often associated with "the interview." Intuitively and intellectually, we realize the critical role interviews play in the candidate selection process. Although résumés and cover letters are important, it is not these documents which are hired. You are!

To strengthen this skill, the Career Transition Assistance Program Center (CTAPC) offers one-on-one, customized meetings and videotaped interview simulations designed to help you achieve the following objectives:

- Identify areas for improvement.
- Enable you to present yourself more dynamically, confidently and convincingly.
- Prepare you to conquer "interview-phobia" and related symptoms.
- Deliver effective answers to difficult interview questions.
- Improve your probability of winning the interview, and, most importantly, the job.

To schedule a meeting, call Jeanette Graebener, systems administrator at the CTAPC, at ext. 44500. CTAPC's services are limited to NASA federal civil service personnel.

Goldin to Speak at NTA National Conference

NASA Administrator Daniel Goldin will be a keynote speaker at the 67th National Conference of the National Technical Association (NTA). The conference theme is Global Information: Emphasizing Space and Education.

Goldin will speak at the NTA corporate dinner, an event which highlights NTA corporate member companies and Technical Career Opportunity Fair exhibitors for their support of the NTA conference and local and national programs. Through his address, "America's Future in Space Exploration," he will discuss NASA's use of information technology. He will also discuss NASA reinvention, its role in education and diversity. A question and answer period will follow.

The conference will be held July 19 to 22 at the Westin Galleria Hotel in Houston, Texas. For more information about the conference, call Mike Chapman at ext. 44687.

The NTA is a nationally known professional technical association of minority math/science educators, scientists and engineers. Incorporated in 1926, the NTA works to ensure that minorities, women and youth are sufficiently skilled in the sciences to be architects of technology for Workforce 2000 and beyond. The NTA Hampton Roads Chapter includes many NASA and contractor employees and provides enrichment programs to the local community.

Colloquium & Sigma Lectures Schedule

Colloquium lectures are usually held the second Tuesday of the month, 2 p.m., at Langley's H.J.E. Reid Conference Center. They are open to all NASA employees and contractors. Civil-service personnel should charge their time to JO A5266.

Sigma lectures are usually held the second Tuesday of the month, 7:30 p.m., at the Virginia Air and Space Center, Langley's Visitor Center, in downtown Hampton. Admission is free with no reservations required.

July 11 Lectures

Colloquium: "LaRC Spaceflight: Sputnik to Apollo" by Dr. James R. Hansen.

Sigma: "LaRC Spaceflight: Sputnik to Apollo" by Dr. James R. Hansen. After the lecture, the Virginia Air and Space Center will have a special showing of the IMAX film, *"Destiny in Space,"* for $3.

August 1 Lectures

Colloquium: "Virginia Marine Aquaculture: Research and Product Development" by Michael J. Oesterling.

Accessing Past Colloquium & Sigma Lectures

If you are unable to attend any colloquium or sigma lecture, you may still access them from several sources. All colloquium lectures are videotaped, and can be checked out from the library by calling ext. 42389. Also, notices concerning upcoming and recent colloquium and sigma lectures are available on the World Wide Web using a browser such as Mosaic or Netscape at URL http://oldtown.larc.nasa.gov/Lectures/lectures.htm or from the NASA Langley Home Page at URL http://www.larc.nasa.gov/larc.html under General Information about NASA Langley Research Center.

Retirement Party

Davis

A retirement social in honor of Randall C. Davis will be held July 12, 5:30 to 8 p.m., at the H.J.E. Reid Conference Center. Heavy hors d'oeuvres and a cash bar will be available. Cost is $15 per person and $20 per couple, including a gift. Retirement signature sheets are available in the Structures Division Office, Bldg. 1229, Rm. 202. For reservations or gift-only contributions, contact Tricia Johnson via phone at ext. 42934 or Mail Stop 242 by July 10. Make checks payable to Tricia Johnson.

Letter

From Linda Sutherland:

"My family and I wish to thank those who extended their sympathy to us at the time of my father's recent death. The flowers, cards, and phone calls really helped and were most appreciated."

Fourth Festivities at Fort Monroe

Fort Monroe's July 4 gala, "Fourth at the Fort," will kick off at 4 p.m. in the Walker Field area with entertainment to include live bands, fireworks, amusement rides, games and exhibits.

Activities for all ages will include the Marching Elites Drill Team, military exhibits, a custom car show, volleyball and horseshoes. Also included will be pony, train, airplane, helicopter and car rides for children, a petting zoo, moon walk, swings, speed pitch and basketball throws.

The U.S. Continental Army Band will perform 8:15 to 9:15 p.m., concluding their performance with Tchaikowsky's *1812 Overture*. A fireworks show will follow.

Food and beverages will be sold. The public is invited and admission is free.

For more information, call 727-2312 or 727-3302.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

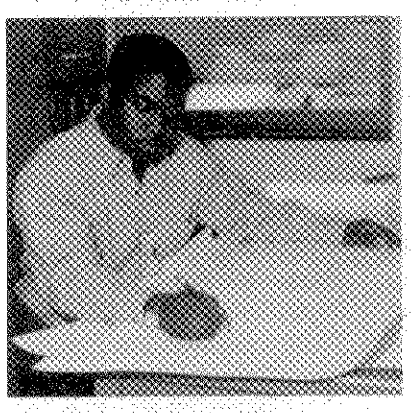
Photographer . . . . . Fred Jones

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.

Students from Historically Black Schools Mentored

BY GERRI RANKIN

Along with the Langley Aerospace Research Summer Scholars program that had its kickoff June 5, NASA is playing host to a number of talented students from three historically black colleges and universities. Florida Agricultural & Mechanical (A&M) University's Project IMAGE (Increasing Minority Access to Graduate Engineering), Morehouse College's Program SPACE (Strategic Preparedness Advancing Careers in Engineering) and Spelman College's WISE Program (Women In Science and Engineering) provide scholarship opportunities for minority engineering majors and are designed to garner more African-American doctorates in engineering. By working in a "mentoring" atmosphere with selected NASA scientists, engineers and technologists, students receive a highly motivating and supporting challenge to enhance their studies in the science and engineering career fields.



Timothy Minus, a mechanical engineering major and senior at Florida A&M University, updates a computer-generated plot of a high-speed wing assembly, after drawing the details of each part.

Photo by Katie Reid

Florida A&M Student

Timothy Minus, a mechanical engineering major and senior at Florida A&M University, is working in the Aeronautical Mechanical Systems Division. His mentor, Stuart Cooke, explains, "My goal for Tim's assignment and work load is to expose him to the vast and diverse duties of a mechanical and aeronautical designs engineer. Rather than have him work on one major project for his 10-week internship, I will allow Tim to get his hands wet on a number of smaller projects with the eventual goal of seeing one of his designs fabricated at Langley."

Minus, a native of Miami, Fla., graduated with honors from American High School. Coming from a family of high academic achievers, he has a gifted younger sister who will be entering an honors program this fall.

Photo by Paul Bagby

Monique McCloud, left, an honors graduate of Hampton Roads Academy and a sophomore at Spelman College, prepares a specimen for End Notched Flexure testing in the Materials Research Lab as her mentor, Gretchen Murri, observes.

Spelman College Student

One of seven Spelman College students, Monique McCloud is being challenged by Mode II testing of composite laminates in the Materials Division, Mechanics of Materials Branch. Her duties include preparing specimens for testing, running the tests in the branch lab, inspecting the tested specimens and assisting in data reduction. She is a sophomore enrolled in Spelman's dual-degree program for mathematics and mechanical engineering. She is also an honors graduate of Hampton Roads Academy.

McCloud has high regard for the work she is doing and the people with whom she works. She says of her research experience, "I'm very excited about the work that I've been doing. Not only has my mentor (Gretchen Murri) given me a variety of tasks to complete, but she has also assisted in making sure that I understand what I'm doing."

McCloud's older brother is an honors scholar at Morehouse College and has just completed study at Oxford University in England.

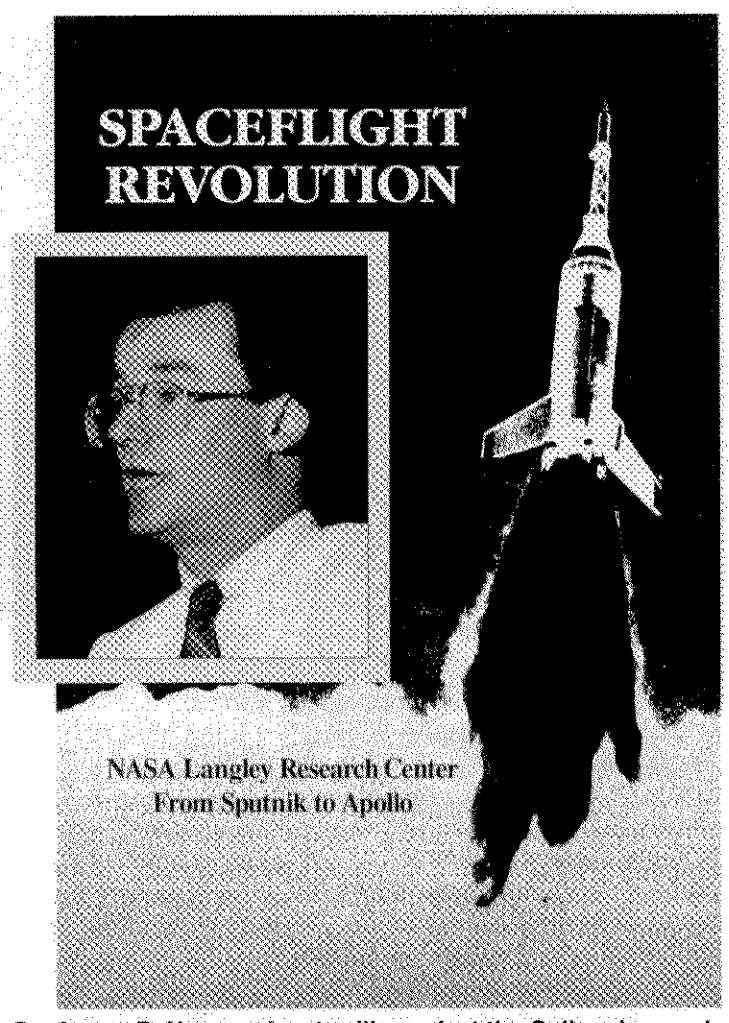
Colloquium: From Sputnik to Apollo

The launch of the Soviet satellite Sputnik 1 radically altered the course of American aeronautical research. The 1958 Space Act transformed Langley Aeronautical Laboratory into a NASA research center that was to concern itself with flight beyond the atmosphere. Langley quickly rose to the challenge of launching America into space.

Dr. James R. Hansen will present his new book, *Spaceflight Revolution: NASA Langley Research Center from Sputnik to Apollo*, at the Colloquium & Sigma lectures Tuesday, July 11. His book traces Langley's many contributions to America's space effort, including Project Mercury and the Space Task Group, the genesis of lunar-orbit rendezvous, and the development of the world's most reliable launch vehicle. However, the book catalog's more than just Langley's accomplishments. It provides a clear analysis of the repercussions of the country's rapid shift from air to space at America's premier aeronautics laboratory.

Hansen examines the effects of these changes: the increasing emphasis placed on project work at the expense of general research, the sudden exposure of the Center to worldwide scrutiny as opposed to its former obscurity, NASA's explosive growth and the resulting competition among the Agency's centers for work, and the new reliance on contractors to complete work instead of doing everything in-house.

Hansen will be available to sign copies of his book after each talk.



Dr. James R. Hansen, inset, will speak at the Colloquium and Sigma lectures July 11 on the topic of his new book, *Spaceflight Revolution: NASA Langley Research Center from Sputnik to Apollo*. Hansen served as Langley's official historian from 1981 to 1993.

Dr. James R. Hansen

Hansen is a historian specializing in the history of technology and its impact on society. He is alumni associate professor and chairman of the history department at Auburn University in Auburn, Ala., where he has taught since 1986. From 1981 to 1993, he served as the official historian for Langley. He has published three books on aerospace history and over four dozen articles, book chapters, and review essays on a variety of technological topics. His books include *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917-1958*.

Hansen has served on a number of panels and advisory boards, including the Research Advisory Board of the National Air and Space Museum, the Editorial Advisory Board of the Smithsonian Institution Press, and the Advisory Board for the Archives of Aerospace Exploration at Virginia Polytechnic Institute. He is also a past vice-president of the board of directors of the Virginia Air and Space Center, Langley's Visitor Center, in Hampton. He earned a bachelor's degree with high honors from Indiana University, and a master's degree and a doctorate from Ohio State University.

Summer research scholars from three historically black colleges, Spelman College, Morehouse College and Florida Agricultural and Mechanical University, gather at the picnic grounds next to the H.J.E. Reid Conference Center. In the first row are Samuel Weeks, Nicole Calloway, Charlene Demiel, Luqman Wade and Monique McCloud. In the second row are Robert Lewis, Timothy Minus, Craig Black and Dane Elliott-Lewis. Not pictured are Kevin Adderley, Adrienne Boisson, Lisa Lawson, Rufus Partlow, Lisa Ricks, Sequilla Sebron and John Williams.

Photo by Daniel Axelrad

World Wide Web

"Internet," "WWW" and Other New Computer Terms Explained

BY GRETCHEN L. GOTTLICH AND JOHN M. MEYER

If just the thought of computers gives you chills, get ready: A whole new vocabulary of computer-related words has been brewing for several years and is ready to jump into mainstream conversation. If you have heard these terms only a few times, perhaps you should pull up an easy chair and a glass of iced tea and spend a few minutes digesting some of the latest from cyberspace. (Oh, cyberspace is another word for the computer world.)

Network

A network for computer users is a system of computers, terminals and data bases connected by communication lines.

The Internet

The Internet is a network of networks. You can use electronic mail to contact other people on the Internet. From your computer, you can log on to another computer, called a remote computer. The remote computer may be thousands of miles away, and you can run programs on it as if it were in the same room. You can search libraries of information around the world and transfer that information back to your own computer.

The Internet was originally funded by the Department of Defense/Defense Advanced Research Projects Agency and evolved, in part, from the connection of supercomputer sites across the United States. The National Science Foundation (NSF) wanted to get the most out of their supercomputers; by connecting the sites to each other, the supercomputers were made more efficient. Scientists, researchers, and engineers can access the supercomputers from their own labs and offices.

The high-speed networks that connect the NSF supercomputers formed the backbone of the Internet. High-capacity telephone links, lasers, fiber optics, microwave, satellites, connecting networks and computer sites comprise the entire Internet, enabling people to communicate with each other all over the world.

World Wide Web

The World Wide Web (WWW) is a menu system. It gathers Internet resources from all over the world into a series of menu pages, or screens, that appear on your computer. The WWW is also a distributed system. A distributed system stores data on many computers. WWW servers maintain points, or links, to data that are spread out over the entire Internet, and can retrieve that data when you ask for it.

Hypermedia and Hypertext

Hypermedia is the foundation of the WWW and is an extension of the concept of hypertext.

Hypertext is a method of organizing text so that links to other ideas are included in the document. The first use of this was in printed encyclopedias, where links started with "(see also...)". In electronic hypertext, links are "hot," i.e., pointers to other information, and are colored differently from the "cold" text. Clicking the mouse on a "hot" link takes you to the other document.

Hypermedia is similar, except that the links can point to media other than text, such as video or audio clips, still graphics in formats such as GIF, Jpeg or PostScript, and any other electronic file format. Using hypermedia allows you to navigate through all the information on the WWW using only a mouse, shielding the user from needing to learn commands from different operating systems.

WWW Browser

A WWW browser like Mosaic, Netscape or MacWeb allows you to "see and hear" the information on the Internet. A WWW browser uses information about links to accomplish this. The data is stored on a WWW server. WWW browsers all function in much the same manner. A WWW browser can link you to other Internet resources, not just text documents, graphics or sound files. Gophers, white pages and newsgroup servers can all be items on a hypermedia menu. As you choose an item or resource, or move from one document to another, you may be jumping between computers on the Internet without knowing it. The WWW browser handles all the connections seamlessly.

Home Page

A home page is the starting point to view related documentation that you view using a WWW browser. It is a top-level "page" of information of a related hypertext document tree.

URL

URL stands for Uniform Resource Locator. A URL is the unique location and/or file name for a particular home page, e.g., http://www.larc.nasa.gov/~ggott/org/wwwplan.html. The three basic parts to a URL are:

(1) "http" which defines the format of the information and how the information will move across the Internet;
(2) "www.larc.nasa.gov" is the name of the computer where the file is located; and
(3) "/~ggott/org/www/wwwplan.html" shows the directories and the file name of a home page.

Popular Acronyms

HTML = HyperText Markup Language. This is the format in which hypermedia documents are created. HTML format is similar to Word Perfect, Word, ASCII or other formats in which documents are created.

HTTP = HyperText Transfer Protocol. This is the protocol which governs packets of hypermedia information across the Internet. A protocol is a set of rules that describes what software and hardware would do and how they should work together.

URL = Uniform Resource Locator. This is the addressing system for WWW documents. It is a single unbroken line of characters that uniquely identifies a resource on the Internet. When you open a particular URL, you gain access to the Internet resource defined by that URL.

WWW = World Wide Web. This is a menu system consisting of three subsystems:

(1) the Internet, a global system of computer networks;
(2) multimedia, the combination of different presentation technologies that appeal to the senses; and
(3) hypertext, text within a document which provides a direct link to another document.

The WWW was conceived in March 1989 by Tim Berners-Lee of the European Particle Physics Laboratory CERN, Geneva, Switzerland.

More Information

For more information, use a browser, type in the URL http://boardwalk.larc.nasa.gov/isd-www/training.html and learn more about "surfing the 'net."

Feedback on WWW Essential

BY GRETCHEN GOTTLICH

To build a page of information and services that are meaningful and useful to all of us, the World Wide Web (WWW) Project Team has set up several mechanisms to gather your input:

(1) Fill out the Langley feedback form at the bottom of the Langley Home Page which can be accessed at URL: http://www.larc.nasa.gov/cgi-bin/larc-feedback
(2) Send e-mail to: webmasters@www.larc.nasa.gov
(3) Post a message on the WWW team's newsgroup at: larc.infosystems.www.strategy

The WWW Project Team wishes to thank all of you in advance for your time in offering ideas and suggestions. Together we can make a positive difference.

LANTERN

Continued from page 1

the center's newsgroup and e-mail address.

This is just a small portion of the wealth of information available on LANTERN. Guidance on obtaining equipment and services, and designing your own home page is also available.

LANTERN will be featured at Internet Fair II in October, demonstrating one way that Langley is using information technology to streamline business processes. The way we solve our information challenges is valuable to industry.

Accessing LANTERN

LANTERN can be accessed via URL http://www.larc.nasa.gov./lantern/lantern.html or directly from the Langley Home Page. To gain information or provide feedback on LANTERN, contact Gretchen Gottlich via phone at ext. 42303 or e-mail (g.l.gottlich@larc.nasa.gov).

Jim Rowbottom is a 1995 LARSS participant.

Langley's Wind Shear Research Recognized with DISCOVER Magazine Award

Langley's efforts to develop a sensor to detect wind shear ahead of passenger jets helped AlliedSignal Commercial Avionics Systems in Fort Lauderdale, Fla., win an Innovation Award from DISCOVER magazine for its work. AlliedSignal, the first company to take such a system to the commercial market, was recognized in the magazine's June 1995 issue.

Using technologies developed at Langley in a joint program with industry and the Federal Aviation Administration (FAA), the system gives pilots up to 90-seconds warning of the hazardous weather phenomenon, characterized by intense downdrafts of air. These wind shear "microbursts" have been involved in about 30 aircraft accidents and incidents involving more than 500 fatalities and 200 injuries since 1964. Wind shear is suspected in a recent DC-9 crash near Charlotte, N.C.

The first flight of a predictive wind shear system took place on Nov. 30, 1994, when Continental Airlines Flight 1637 flew from Washington, D.C., to Cleveland, Ohio. The flight capped years of research and field testing by Langley and AlliedSignal and marked the beginning of the transfer of that technology to the airline industry.

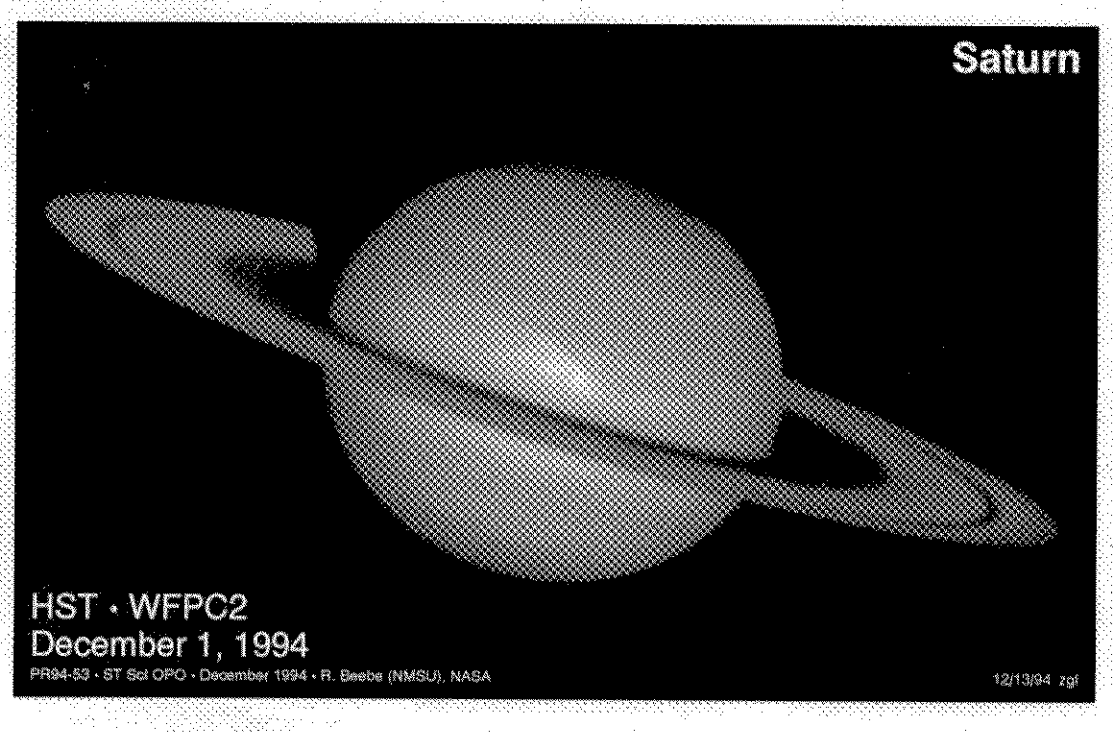
Fred Abbott, Continental's vice president of flight operations, characterized the new airborne detection system as "a breakthrough for the airline industry in reducing the hazard caused by wind shear. Pilots will now have sufficient warning to avoid an area where wind shear is detected."

Work on wind shear systems began at Langley in 1986 and was completed in 1992. The successful transfer of this technology from NASA to industry was driven by a more than $20-million NASA and FAA agreement signed in 1986 at the urging of Congress, the National Transportation Safety Board and the National Research Council.

Under a 1988 FAA directive, wind shear detection devices were to be installed on airplanes by the end of 1993. However, airlines electing an advance-warning system have until the end of 1995 to install them.

Hubble Dazzles with Stellar Observations

BY MEGHAN WOODCOCK



NASA's Hubble Space Telescope, now in its fifth year in low-Earth orbit, continues to provide revolutionary discoveries and spectacular stellar photos to scientists and space enthusiasts around the world. The Hubble relays new information about a variety of astronomical objects at a rate of discovery unprecedented for any modern observatory. It collects data from visible light, infrared and ultraviolet radiation, forcing scientists to refine theories on planets, stars, galaxies and the very nature of the universe.

Our Solar System

Images from the Hubble reveal new information about the nature of the planets in our solar system. The telescope continues to observe the atmospheres on Venus and Mars in an attempt to predict the weather on those planets. Venus undergoes sulfur "acid rain" similar to acid rain on Earth, but on a planetary scale. The Hubble also detected an ozone abundance on Mars, shown above, indicating that the planet is cooler, clearer and drier than a couple of decades ago. Being able to predict the weather on Mars will be critical prior to human exploration of that planet.

Scientists also used the Hubble to document the way Saturn, shown at the upper right, wobbles on its axis in order to determine if it has any satellites affecting its rotation. The pattern of Saturn's rotation when its ring plane crosses the plane of the Earth and Sun causes the rings to appear edge-on as viewed from Earth. The Hubble has become the unique instrument of choice for studying the event, which occurs every 15 years.

The Hubble also discovered a new dark spot, a mirror image of the previous dark spot, which mysteriously disappeared on Neptune. Scientists believe the spot to be a hole in Neptune's methane cloud tops. Using the Hubble to study Neptune's atmosphere over an extended period of time may lead to a better understanding of Earth's atmosphere.

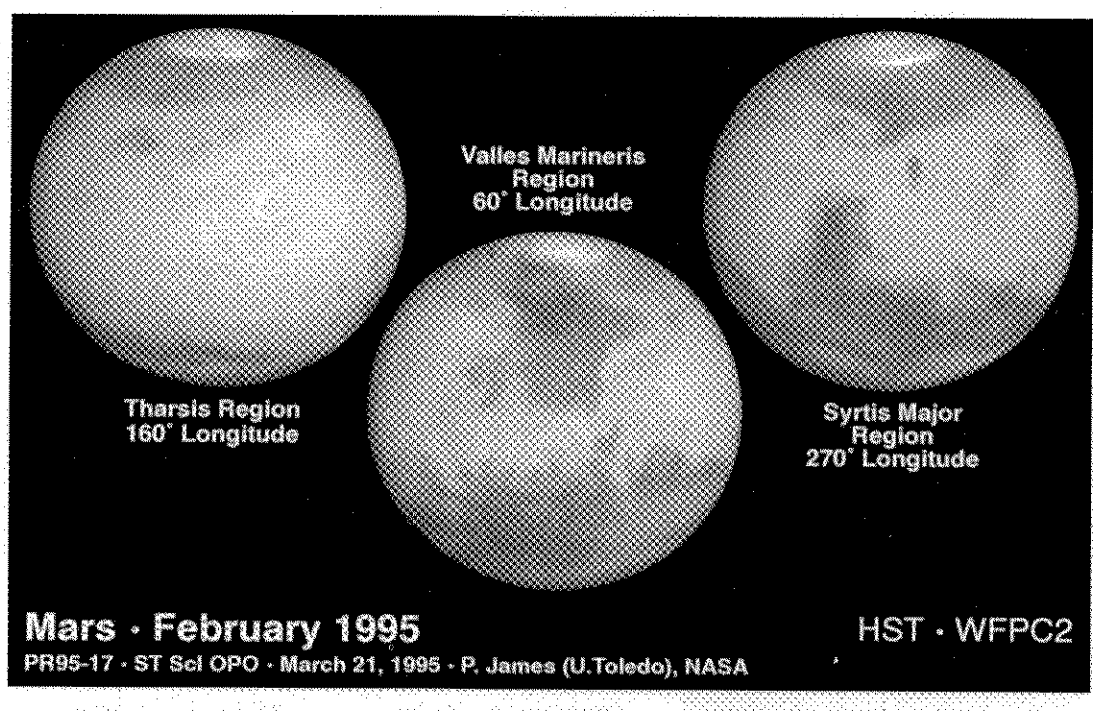
Recent pictures have pinpointed a vast comet belt, containing at least 200 million comets, just beyond Neptune. It is also believed to be the source of the comet, Shoemaker-Levy 9, that struck Jupiter in July 1994.

Stars

On a more galactic scale, Hubble has provided astronomers with more images from which to study the creation and nature of stars. Recently, the Hubble surprised researchers by finding that white dwarf stars are cooler and spin more slowly than previously expected. Astronomers were puzzled over how dwarf stars distribute energy.

Dwarf stars are known to absorb the energy that larger stars disperse while orbiting around the dwarf. The Hubble images helped scientists create a theory about how this excess energy is dissipated across the dwarf's entire surface. Scientists now believe that the heavier elements are pulled below the surface layers by the dwarf's enormous gravitational field, thus reducing the amount of energy on the dwarf's surface.

The Hubble also captured the eruptive, dynamic processes accompanying the final stages of a star's construction providing a dramatically clear look at the collapsing circumstellar disk that builds the star and provides the ingredients for a planetary system. Astronomers commonly believe that Earth and the other eight planets condensed out of a circumstellar disk because they lie in the same plane and orbit the Sun in the same direction. This discovery has provided astronomers everywhere a glimpse of creation, offering clues to events that occurred in our solar system when the Sun was born 4.5 billion years ago.



Galaxies

The Hubble's ability to detect radiation and light from sources out of its range has been increased through a natural process known as gravitational lensing. The process takes place when the Hubble focuses on galaxy clusters so massive and compact that light rays from other galaxies passing through the cluster are magnified by the cluster's gravitational field. This creates an illusory "zoom lens" effect, enabling the Hubble to detect galaxies it could not otherwise.

More images show that mysterious clouds of hydrogen in space may actually be vast halos of gas surrounding galaxies. The existence of such vast halos, which extend 20 times farther than the diameter of a galaxy, might provide new insights into the evolution of galaxies and the nature of dark matter, an invisible form of matter that surrounds galaxies.

Another image of a star that exploded more then 3,000 years ago may reveal the building blocks of stars and planets. As the interior of the exploded star slams into nearby cool, dense interstellar clouds, the material is crushed and heated to create luminescent shock fronts. Hubble spectroscopic observations will determine the material's exact chemical composition, testing current theories of stellar evolution.

Importance of Hubble

All of the spectacular images retrieved by the Hubble Space Telescope help scientists to refine and confirm their theories on planets, stars, galaxies and evolution itself. The telescope allows scientists to search beyond our atmosphere to achieve a clearer image of the heavens above. The information gleaned from the universe serves in instructing humans about Earth. The myriad of discoveries made by the Hubble have only served to prove its vital importance in space exploration.

Hubble's Top 10 Discoveries

- First evidence for the existence of immense black holes.
- The universe might be much younger than had been thought.
- First direct visual evidence that the universe is evolving as predicted in Big Bang cosmology.
- Quasars are even more mysterious than commonly thought because many do not dwell in the cores of galaxies, but are isolated in space.
- Dark matter in the universe is more exotic than previously thought because nature doesn't make enough of the extremely small Red Dwarf stars that were once a leading candidate for the universe's "missing mass."
- Refined estimates of the amount of deuterium in space, an element created in the initial cosmic fireball that gave birth to the universe.
- Intergalactic clouds of hydrogen are really gigantic halos of galaxies.
- Planets, and presumably life, might be abundant in the universe.
- Provided important details and surprising findings of the spectacular collisions of comet Shoemaker-Levy 9 with Jupiter last year.
- Dynamic weather changes occur on nearly all the planets. Scientists found that most planets' atmospheres are much more active than previously believed.

Virginia Consortium of Engineering and Science Universities

BY INDIA J. PINKNEY

A year and a half ago, a co-op program began between four state universities. The College of William & Mary, Old Dominion University, The University of Virginia and Virginia Polytechnic Institute and State University joined with Langley to form a cooperative effort with high potential in providing intensive research educational opportunities to qualified students.

This collaboration became known as the Virginia Consortium of Engineering and Science Universities (VCES). This consortium allows students living on the Peninsula the opportunity to study with a university in their desired area while continuing to gain job experience mainly with Langley.

VCES primarily functions as a doctoral program. Presently, about 30 doctoral students are working through VCES. The program does not exclude exceptional graduate students working on their master's degree. To become admitted, students fill out an application for admission into one of the science or engineering departments at a participating school.

The areas of study in engineering are aerospace engineering, civil engineering, material science and engineering, electrical engineering, engineering mechanics, and mechanical engineering. The applied sciences include applied mathematics, computer science, atmospheric science, nondestructive evaluation, physics and polymeric materials.

If a student is accepted, then he or she is considered an on-grounds student of the particular university. Accepted students then follow the guidelines within their departments to structure their specific programs. Students choose professors either on-grounds at the university or on the Peninsula in the VCES office as advisors for their research.

Agreement with Langley

Langley gives VCES four graduate co-op positions. Three of these positions have been filled. These four co-op spaces were the first graduate engineering co-ops at Langley. The students in these positions already have a master's degree and have been accepted by a university for its doctoral program.

Once a student enters a division at Langley, he or she remains in that division for the duration of the program and works on a dissertation related to a Langley problem or area of study. VCES students generally use Langley facilities in performing their dissertation research. Langley benefits from the research that the student performs while the student benefits from exposure to leaders in their area of choice and to the cutting edge of technology.

Teaching Methods

The Commonwealth of Virginia supports the consortium's eight participating faculty members, two faculty positions per university. Some professors come to the Peninsula to teach VCES students in person during the summer since classes at the respective universities are not in regular session. Others like Dick Barnwell, a former Langley chief scientist, is a tenured faculty member at Virginia Tech but is located on the Peninsula. Presently, most VCES students are in the classroom phase, the period preceding intensive individual research. The largest group of students is in the aerospace department at Virginia Tech.

V-Tel

In addition to some on-site professors, VCES relies heavily on V-Tel, a two-way television connection between the four universities and the VCES office in Hampton. The state invested over $250,000 in this state-of-the-art digital system. It is the main link between the students and their universities.

V-Tel provides a way to teach class when the professors and students are at different sites. Once a doctoral candidate begins researching with the support of a faculty advisor, V-Tel serves as a practical means of communication. The advisor and student not only see each other face to face but also make corrections and suggestions on charts, diagrams and the like while both watch each step.

Future Ventures

David Chestnutt, director of VCES, is encouraged by the great success that the consortium is experiencing during its first year in existence. In the future, he looks to making workable bonds between VCES and the business sector. This effort remains, however, in the very early stages. Meanwhile, members of VCES, Langley and the four state universities continually strive to increase the availability of graduate research opportunities at high technological levels on the Peninsula.

Additional Information

VCES is the only program in the commonwealth where resident credit is given for engineering and science doctoral students. The support that Langley provides the VCES students becomes a fundamental part of their educational experience. For more information, contact David Chestnutt, director of VCES, via phone at 865-4830 or e-mail (david_chestnutt @qm.gate.larc.nasa.gov). Interested parties may also write to Virginia Consortium of Engineering and Science Universities, 303 Butler Farm Rd., Suite 101, Hampton, Va. 23666.

India J. Pinkney is a 1995 LARSS participant.

Laminar Flow: Lots of Potential to Make the High-Speed Civil Transport a Reality

Continued from page 1

supersonic speeds would be a major breakthrough in the field of flight.

"Historically laminar flow control has been called the Holy Grail of aerodynamics," said Mike Fischer, principal investigator for the project, a collaborative effort of NASA and industry led by Langley.

HSCT Closer to Reality

Successful supersonic laminar flow control could bring the High-Speed Civil Transport (HSCT) one step closer to reality. The HSCT is the conceptual supersonic airliner of the future. Such a plane would fly twice as fast as today's typical airliner and carry three times as many passengers. The cost of a seat on the HSCT has been estimated at only 15 to 20 percent more than a normal coach fare.

The successful application of supersonic laminar flow control to the HSCT could reduce drag enough to decrease its gross weight at takeoff by at least 10 percent. The weight saved is approximately equal to an entire load of passengers.

SLFC Glove and Panel

The SLFC glove is designed to fit over the left wing of the F-16XL. The resulting wing extends the basic aircraft's highly swept wing shape to the fuselage, thus more closely matching the form of the HSCT. The outer surface of the suction panel is made of titanium and perforated with over 10 million laser-cut holes, each three-thousandths of an inch in diameter.

The panel is divided into 20 suction regions, each individually controlled by valves. An on-board turbo compressor will provide the suction. A passive fairing, made of foam and fiberglass, completes the aerodynamic shape of the glove. The passive fairing does not include suction, but simply blends the uniquely shaped wing into the fuselage and surrounding wing surface.

The suction panel has been installed on the wing of an F-16XL at Dryden Flight Research Center, Edwards, Calif. The suction system is now being installed and integrated. System tests are scheduled to begin in July and the modified F-16XL is expected to begin six months of flight testing in late September. The flight test's objective is to obtain key data which will enable HSCT designers to proceed with confidence.

"A Big Team Effort"

Development of the suction panel and its subsystems has been a "big team effort," according to project manager Jeff Lavell at Langley. Dryden collaborated from the start with Langley's SLFC research team on the experiment planning. A development contract for the suction panel and system was awarded in October 1992 and, based on Langley's overall concept and plans, an industry team of Boeing, Rockwell and McDonnell Douglas formulated the design of the panel and suction system.

The suction panel was assembled at Boeing and delivered to Dryden in December 1994. Delivery of the suction system, fabricated by McDonnell Douglas, was completed in April 1995. So far the development of the project has been relatively on schedule and within cost projections, according to Lavell.

High Risk, High Payoff

A smaller suction panel has been flown at supersonic speeds on an F-16XL, but the concept has never been demonstrated to this scale. "This is relatively high-risk technology," said Lavell. "But if successful, it will have a high payoff."

Imperative to the HSCT concept are lighter-weight materials and a fuel efficient design. NASA's High-Speed Research program, with Langley as its lead center, is researching these and other needed technologies. Because of its high risk, supersonic laminar flow control is not currently on the baseline HSCT technology list.

That could change. A preliminary concept meeting will be held in December to down-select possible technologies for the HSCT. By that time, Lavell and Fischer hope there will be enough data from the SLFC experiment to get some attention.

"We'd like nothing more than to walk in and turn that meeting upside down," said Lavell.

Mary Spracher is a 1995 LARSS participant.

Goldin Responds to Further Proposed Reduction by House

The following statement from NASA Administrator Daniel S. Goldin on the proposed cuts to the Agency's Mission to Planet Earth program was released through the President's Office of Science and Technology Policy.

Statement of NASA Administrator Daniel Goldin Regarding Effects of Proposed Five-Year, $2.7 Billion Reduction

The House of Representatives has approved a fiscal 1996 budget resolution which assumes a massive reduction over the next five years to NASA's efforts to study the Earth — Mission to Planet Earth. Such a cut would dismantle the national approach to U.S. global change research priorities established over the last three Administrations and undercut U.S. leadership in this important area of research. It would destroy this program's basic feature — comprehensiveness — and turn an integrated, global program into a series of disconnected and fundamentally less effective measurements. Worse still, it would condemn American scientists to pursuing an approach to environmental research that is more than a decade out of date.

The cuts would cripple the core of the program — the Earth Observing System (EOS) — the first integrated satellite and research system designed to observe the linkages among all the components of the Earth system — the land, oceans, atmosphere, ice sheets and ecosystems. Understanding these linkages is the critical next step to unlocking the secrets of how the environment works and how it affects us all.

NASA's approach to EOS converges both scientific and practical interests. First, the same instruments will collect data of significant value to both communities, as demonstrated by more than two successful decades of Landsat information. Second, scientists recognize that they must be able to translate their research down to the regional level to truly understand global climate effects. Practical users need regional information, as well as its global context. Most importantly, the EOS data will be used to forecast the climate — a year in advance at first, then progressively longer. The ability to make reliable regional and global climate forecasts will have a profound impact on society. Such forecasts are key to major improvements in agricultural and urban planning, water and forest management, investment and capital decisions, and fishing, all of which fundamentally affect U.S. competitiveness. They would also enable improvements in our ability to predict and react to natural disasters, like floods and hurricanes, thereby preventing greater loss of life and property. All of these gains would be lost if the proposed cuts to EOS are sustained.

The U.S. government — in partnership with scientists, private companies and other nations — must ensure that this cutting-edge research that is the foundation of Mission to Planet Earth is continued. Government leadership in this science and technology innovation is the key to enabling the broad commercial contributions, foreseen by many, in the environmental field and realizing numerous benefits for science, commerce and policy. NASA has always been at the forefront of such advances in knowledge and we stand committed to this effort.

By walking away from the systematic and comprehensive approach for Mission to Planet Earth, the United States would also give up its undisputed world leadership in Earth observations, jeopardize technologies which will be critical to the growing commercial remote sensing market and reduce our ability to influence the global environmental agenda. Significant U.S. investment in environmental science is the key to preserving this impartiality among nations and sustaining U.S. economic competitiveness in the global marketplace.

We at NASA are all committed to prudent and permanent deficit reduction. Recognizing our fiscal responsibility, NASA has already made enormous reductions in our future budgets. However, further cuts to Mission to Planet Earth — and environmental research in general — seriously jeopardize an investment in the future that will return economic and quality of life benefits far in excess of what we spend today.

COMMENT ON CONGRESS

The Budget Process: Part I

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER

"It ain't over 'til it's over." This thought should guide us over the next few months as the federal budget for fiscal year 1996 inches toward the targeted September 30 completion date. The budget process, now grinding away, is a complex annual attempt by Congress to arrive at a plan to allocate funds to run the government, a plan that the President will sign into law.

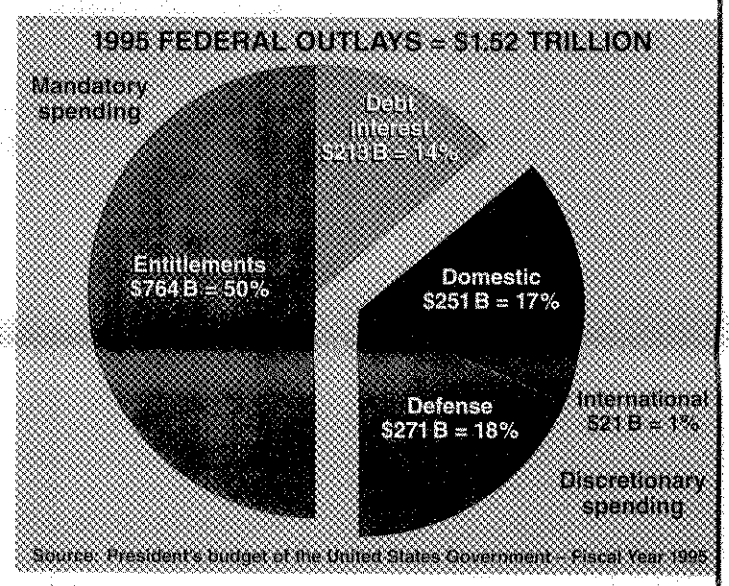
The process, outlined in Figure 1, begins with the submission of the President's budget in February. The Congress can act on that budget or one of its own choosing. Because the Republicans won a majority in both House and Senate in 1994, the budget now being considered reflects a Republican goal of balancing the annual federal budget within seven years. Unless surpluses were generated in the future to lower it, the $3.7 trillion national debt would remain unchanged; the annual deficit is being targeted.

Mandatory spending (see Figure 2), which includes interest on the debt, medicare, social security, etc., accounted for 64 percent of the budget in fiscal year 1995. This amount must be spent as designated.

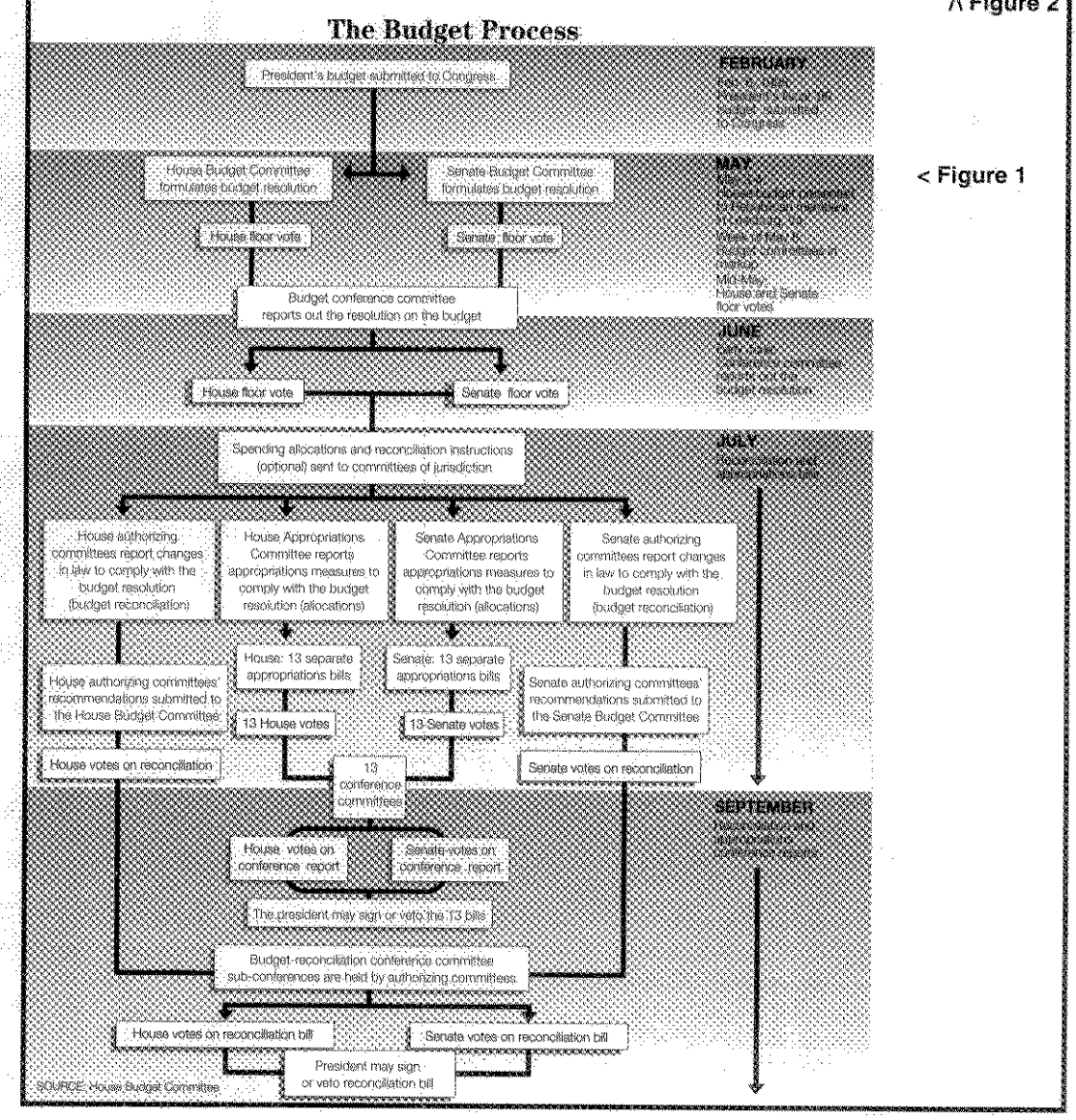
With only a small part of the budget discretionary — less than 20 percent, if defense is excluded — the squeeze on what might be termed "optional" spending is brutal. The process includes reaching an agreement on a budget resolution that sets the broad guidelines which may or may not — it is nonbinding — determine the actual funds to be divided among the 13 appropriations subcommittees in each body, House and Senate.

NASA's funding comes through initial action of the Veterans Affairs (VA), Housing and Urban Development (HUD) and Independent Agencies Subcommittees — House and Senate — and is included in a bill that goes to the President for signature. The fiscal year 1996 allocation by the chair of the House Committee on Appropriations to the House Subcommittee on VA, HUD and Independent Agencies, which includes the National Science Foundation, NASA and other agencies, is about $9 billion less than the allocation for fiscal year 1995. Hearings, markups and conferences to settle differences between House and Senate bills are in progress. An update on what is happening with regard to NASA's appropriations will appear in the next issue of the *Researcher News*.

Hang on.



Λ Figure 2



< Figure 1

Happenings

KARATE CLUB: The Langley Karate Club is sponsoring lessons for juniors, ages 7 and up, on Saturdays, 10 a.m. to noon, at the Poquoson Primary School gym on Odd Rd. New students will be accepted through June, space permitting. For more information, call James A. Brown at 898-3516.

CAT MATE WANTED: Himalayan Persian mate wanted for breeding my one-year old female. I will pay fee or offer pick of litter. Call Patsy at 827-6447.

FOR SALE: 275-gallon above-the-ground heating oil tank with stand. Approximately 180-200 gallons of #2 heating oil in tank. Price of tank and stand $250. Oil is $0.85 per gallon. Call Al at 838-7259.

FOR SALE: Tempstar Model #NUOD112DG03 oil furnace, used for three winters. 140,000 BTUs input rating, burner capacity 115,000 BTUs/hr and 103,500 BTUs at register. Asking $1,500. Call Al at 838-7259.

FOR SALE: 3BR, 2BA condo in Pine Cone Harbour. Living room w/fireplace, dining room, eat-in kitchen, walk-in closets, full-size washer/dryer hook-ups, deck. Exclusive waterfront community with pool, security and club house. 1,454 sq. ft. Priced below assessed value, asking $89,000. Call Nanette at 851-7936.

FOR SALE/RENT: 2 BR, 2-1/2 BA townhouse in Kiln Creek. Living room, dining room, den w/fireplace, patio, garage. Many extras. $99,000. Call Garnett at 877-2471.

FOR RENT: 2BR time-share in Orlando, Fla. Sleeps eight. Fully equipped with washer/dryer. $625 for the week of July 23-29. Recreation facilities. Call Staton at 826-8610 or pager 875-3811.

FOR RENT: 1BR furnished apartment in Poquoson. Non-smoker, no pets. $450/month including utilities. Call Sheri at 868-4608.

FOR RENT: 3BR, 2BA brick rancher in Hampton North. Fenced yard, all appliances, 1,400 sq. ft. $575/month. Call Anne at 868-6427.

ROOMMATE WANTED: To share 2BR private home in the Beaconsdale area of Newport News. Available immediately. $250 per month plus 1/2 of utilities. Call Linda at 596-9206.

RN Due Date and Info

The due date to submit any articles, photos or announcements for the next issue is Monday, July 3. The next issue will be distributed beginning Friday, July 14. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

Announcements submitted for "Happenings" will run for one issue only unless otherwise requested. Repeats will be accommodated on a space-available basis.

Access to Health Care in Russia

BY PETER J. EDGETTE

NASA employees and employees of NASA contractors have access to routine and emergency health care while on temporary duty in Russia. The 24-hour medical care and local ambulance service is a joint venture between Mediclub Montréal and the Glavmosstroy Hospital of Moscow.

Those employees planning to travel to Moscow should obtain an identification card from the Langley Health Clinic. Presentation of the Mediclub card, along with official NASA travel orders and a passport or visa, will entitle the bearer to 24-hour access to hospital and ambulance service. Only this card allows access to services, and the individual must pay when services are rendered.

For reimbursement, the bill may then be submitted to the individual's insurance provider. Employees may file with the compensation claims officer, Karen Ridlon, in the case of compensatory injuries or illness.

In addition, the existing mechanism for health care continues to function through the U.S. Embassy in Moscow. The embassy has agreed to provide routine and emergency health care to all NASA employees. The embassy health unit is staffed by American personnel, and is located in the same complex as the NASA Moscow offices. The telephone number for the embassy health unit is 252-2451. After hours, call 255-1898 or 255-5123.

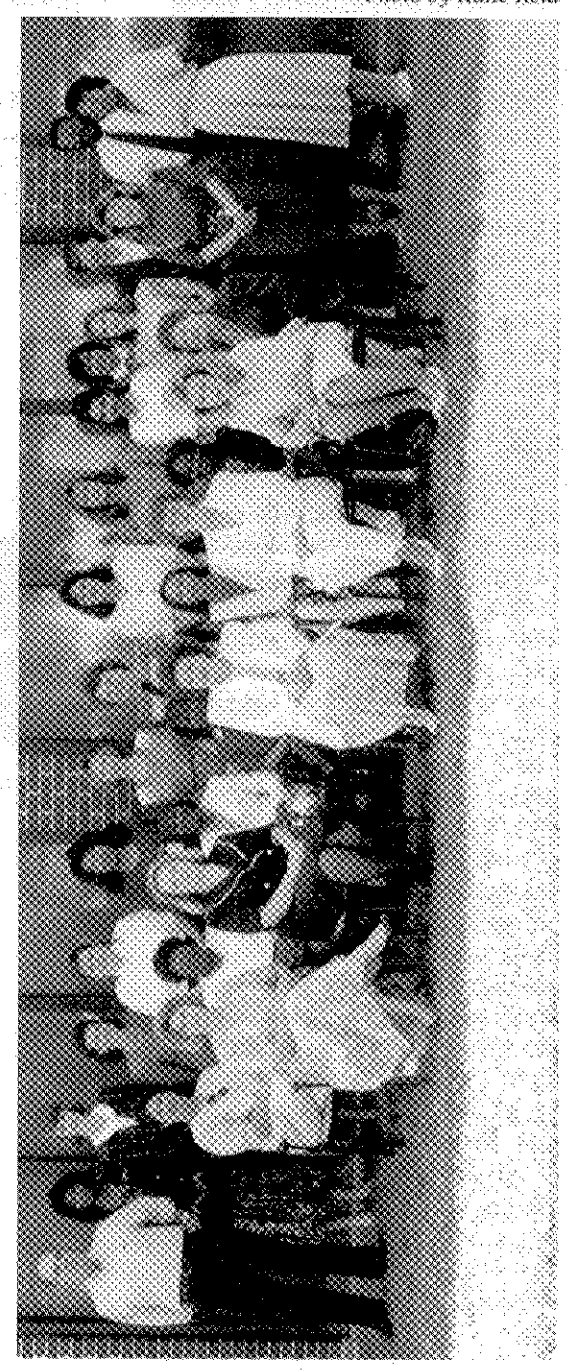
For major emergencies, NASA has a contract through the Kennedy Space Center with SOS, a commercial med-evac outfit, to provide medically staffed air evacuation to an American or American military hospital. Charges will be billed directly to NASA. To contact SOS, call 120-5251.

To request the 24-hour medical care and local ambulance service in Moscow, call 931-5018, 9 a.m. to 6 p.m. After hours, call 956-3232. After hours, you may also call 932-9603; when the operator answers, give this pager number, 210377. The service's address is Mediclub, Moscow, Michurinsky Prospect 56, Moscow, Russia.

If you have further questions about these services, call Langley's Office of Occupational Health Services at 1 (804) 864-3189. All other telephone numbers listed in this article are local to Moscow.

"And in this Corner ... the Buyout Team!"

Photo by Katie Reid



Langley's Buyout Team was recently honored by Center Director Paul F. Holloway for their outstanding efforts in processing retirement packages for the Center's 272 employees who accepted the Agency-wide incentive. Team members are, standing left to right, John Cox, Marilyn Outlaw, Angela Claud, Elaine Gause, Alicia Allen, Venita Robinson, Anna Jackson, Heide Ellis, Karen Smith, Sheri Bias, Kim Ransome, Karen Koch, Roxanne Puskas, Alice Massey, Lisa Klaugh, Bill Kimbrough and Connie Lowe. Seated are Marilyn Aldrich, Lois Taylor, Paula Green, Nancy Davis, Ethel Wescott, Jo Legette, Linda Park, Gerri Edmonds, Carolyn Kurtz, Prina Russell, Simone Foretich and Sandra Duncan. Not pictured are Katherine McKinney, Rose Mustain, Kate Spruill, Anna Willet, Don Petrine, Harriett Berkley, Mary Ann Steuck, Jim Ogiba, Jay Taylor, Tom Frasher, Dennis Williams, Keshla Bumpers and Marion Chaltry. Please see the Buyout Team story on page 1.

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

Researcher News

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

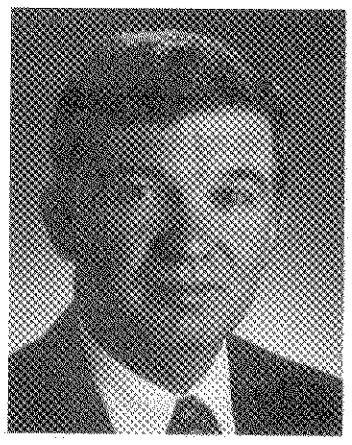
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 14 ❖ July 14, 1995

Whitehead Appointed Associate Administrator



Dr. Robert E. Whitehead

NASA Administrator Daniel Goldin has appointed Dr. Robert E. Whitehead as associate administrator for the Office of Aeronautics at NASA Headquarters. The Office of Aeronautics is responsible for directing NASA's aeronautics research and development programs.

Goldin, pointing to Whitehead's extensive experience, said, "Our aeronautics program and our work in developing partnerships with other nations are central elements of NASA's vision for the future, so we are indeed fortunate to have Bob heading up [this key area]."

Center Director Paul Holloway noted that Whitehead, an international leader in aeronautics, "is deeply respected by all who know him." Holloway added that Whitehead's years with the Department of the Navy have given him a thorough appreciation for research policy, the crucial importance of research centers and the relative roles of field centers and NASA Headquarters.

Holloway concluded, "Of

See **Whitehead**, *page 4*

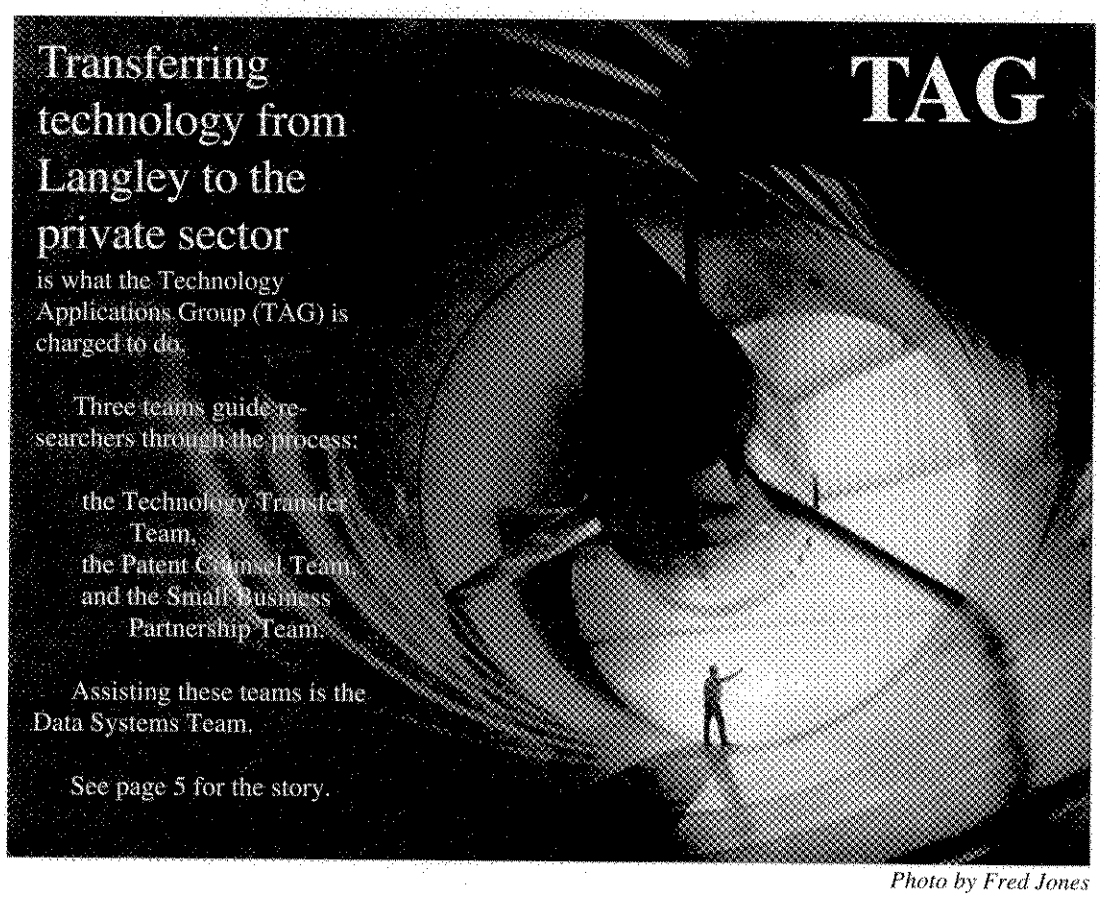


Photo by Fred Jones

Originators of Hang Glider and Ultralight Concepts Honored

BY MARK A. CHAMBERS AND RODERICK D. HARVEY

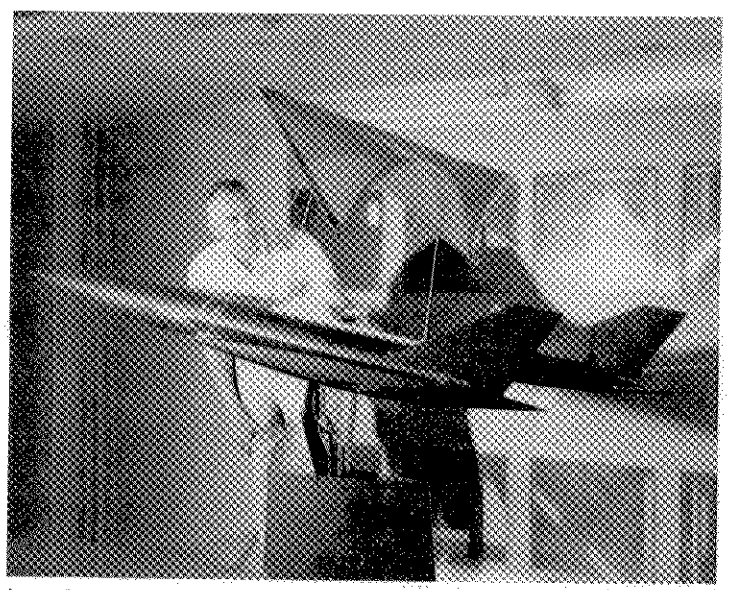
Langley was recognized for its contribution to parawing research at the 11th National Space Symposium held in May at Colorado Springs, Colo. The parawing technology was formally inducted into the Space Technology Hall of Fame by NASA Administrator Daniel S. Goldin and Foundation Chairman James E. Hill. The hall of fame is sponsored by NASA and the U.S. Space Foundation.

Research conducted at Langley was instrumental in the development of this technology. Conceived at Langley in early 1948 by Francis Rogallo and his wife, Gertrude, the parawing was a device with the aerodynamics of a rigid wing and the flexibility of a parachute. The research was an attempt to make airplanes cheaper and easier to store. Although the National Advisory Committee for Aeronautics, NASA's predecessor, showed no interest, the Rogallos received permission to obtain a flexwing patent in 1951.

Following an unsuccessful stint in the commercial toy market, the concept captured the renewed interest of space program officials in 1958. Langley began extensive studies testing parawings on space-vehicle configurations. Several patents were derived from this research including inflatable and small, rigid wing edges and rigid keels.

Comprehensive research was conducted at Langley wind tunnels, such as the 14 x 22-Foot Subsonic and 30 x 60-Foot wind tunnels, as well as the West Point airfield and Wallops Island facilities.

See **Parawing**, *page 4*



Langley researcher Francis Rogallo examines a "parawing" configuration on a gliding reentry aerospace craft in Langley's 7 x 10-Foot Tunnel, June 26, 1959.

Oshkosh: The World's Largest Fly-In Convention and Air Show

BY MARK A. CHAMBERS

NASA returns to the world's largest fly-in convention and air show July 27 to August 2. "National Leadership/National Partnership" is the theme of NASA's updated exhibit hall and technical aerospace forums at the Experimental Aircraft Association (EAA) Fly-In Convention and Sport Aviation Exhibition at Oshkosh, Wis.

Visitors will be able to observe displays highlighting the latest innovations in aerospace research.

Craftspersons from NASA's research centers are traditionally a popular feature of the exhibit. This year, NASA's technicians will discuss and demonstrate how they make wind-tunnel models, test instruments and other devices that make advancements in aeronautical research possible.

Computer experts and novices alike will enjoy an exhibit area devoted to a hookup of the on-line World Wide Web computer-network.

High-tech displays will feature many facets of aerospace research. A modular exhibit will explain how NASA is addressing the challenges of aircraft in every speed regime and size from tiny homebuilts to giant airliners. It will also stress how NASA's "customers" in government, industry, universities and, ultimately, the American taxpayer benefit from the Agency's advances in aeronautics.

"Flying Friendlier Skies," inside the exhibit hall, will present the "helping hand" being extended by NASA to the general-aviation industry in areas ranging from modernizing the cockpit to reducing weight and cost. A concept demonstrator-flight simulator will introduce advanced general-aviation technology. Activities of selected companies developing general-aviation technology through the Agency's Small Business Innovation Research program will be featured. The program supports small companies as they prepare federally developed technology for commercial applications.

Several other exhibits will be included. "High Speed for World Travelers" will show what NASA is doing to make a next-generation supersonic

See **Oshkosh**, *page 4*

General Aviation Firsts to Be Announced

A signing ceremony and media briefing for a NASA general-aviation consortium will occur Saturday, July 29, 10 a.m., at the Experimental Aircraft Association press site. The formal establishment of an industry-government-university consortium for the revitalization of general aviation will highlight the briefing. In addition, winners of the first general-aviation/university design competition sponsored by NASA and the Federal Aviation Administration will be announced and presented. Brief announcements will be made about a new general-aviation CD-ROM and the establishment of a general-aviation site on the World Wide Web computer network.

News Briefs

Around the Agency

THIRTY RESEARCH PROPOSALS SELECTED FOR 1995 STTR PHASE I - NASA has selected 30 research proposals for immediate negotiation of Phase I contracts as part of the 1995 Small Business Technology Transfer Pilot Program (STTR). "This program is one of the ways that NASA takes the knowledge gained in air and space exploration and transfers it to the public," said Jack Mansfield, associate administrator of the Office of Space Access and Technology, which is sponsoring the program.

The 1995 Phase I solicitation closed on March 23, 1995. Seventy-nine separate proposals were submitted by 67 small, high-technology businesses from all sections of the United States. Research topics included: general aviation, advanced materials and structures for aerospace systems, energy conversion technology, access to space and Mission to Planet Earth enhancements.

All proposals were peer-reviewed for both technical merit and commercial potential. Four NASA field centers participated in these evaluations. Each of the 30 selected proposals will be awarded a fixed-price contract valued up to $100,000, with 12 months to complete their Phase I projects.

Companies that successfully complete Phase I activities are eligible to compete for Phase II awards the following year. The Phase II award process allows for two-year, fixed-price contracts of up to $500,000.

In Memoriam

Sumner A. "Si" Leadbetter

Sumner A. "Si" Leadbetter died June 12 at the age of 73.

Upon graduation from the University of Maine, Leadbetter came to the NACA and retired in 1981 after 32 years of government service. He devoted his career to solutions of problems in the dynamics of aerospace vehicles and managed the research in the Structural Dynamics Laboratory for many years. His leadership in the design and testing of dynamic models of the Saturn, Titan and shuttle launch vehicles was instrumental in the successful verification of the structural design of these vehicles.

Leadbetter served in the U.S. Army during World War II and was a prisoner of war in Germany at the end of hostilities. His many friends will remember his devotion to his family and the game of golf.

Harry Kenneth Evans Jr.

Harry Kenneth "Ken" Evans Jr. died April 26 at the age of 50.

A native of Dallas, Texas, Evans lived on the Peninsula since 1968. He was an Army veteran of the Vietnam War and a 1973 graduate of The College of William and Mary.

Evans was a systems analyst for Computer Sciences Corporation's Scientific, Computing Operations, Maintenance and Communications (SCOMAC) support contract at Langley and its predecessor, Unisys' Scientific Computer Operations, Programming and Analysis support contract, where he was an instrumental member of the Distributed Mass Storage Subsystem team.

Prior to these contracts, he was employed for 18 years by Control Data Corp. While with Control Data, he was a key member of the installation and support team for Langley's first series of supercomputers, the STAR 100/CYBER 203 and 205/VPS-32 computers. He was a member of the team awarded the NASA Group Achievement Award for the VPS-32 Supercomputer Implementation in 1985.

Evans was an active member of the Peninsula Track Club, the Peninsula Ski Club and a charter member of Sentara Hampton Health and Fitness Center.His good humor and zest for life will be missed by all who knew him.

Harry Kenneth Evans Jr.

Evans is survived by his wife of 22 years, Agnes B. Evans, who works on the SCOMAC contract, and two sisters and a brother.

Walter Parker Landrum

Walter Parker Landrum, a lifelong resident of Hampton, died June 7 at the age of 72.

A graduate of Hampton High School and the NACA Apprentice School, he worked in the Model Shop and the Planning Control Office and retired in 1973 after 27 years of federal service. He was also a veteran of World War II and the recipient of the Purple Heart. He was a former member of Liberty Baptist Church.

NASA Trivia

Want NASA trivia at your fingertips? The 1995 edition of NASA Pocket Statistics is now available. Stop by Bldg. 1153, Rm. 115, or call Jeane at ext. 43293 to obtain your copy.

Retirement Party

Wilson

A retirement dinner for John C. Wilson will be held Monday, August 7, at Carmine's Restuarant in Newport News. A social will begin at 6 p.m., followed by dinner at 6:30. We will be ordering off the menu with separate checks. For gift-only contributions, reservations, a preview of the menu or directions, contact Susan Gorton via phone at ext. 45059, Mail Stop 461, or e-mail (s.a.gorton@larc.nasa.gov) by July 31.

Letters

From Earl Andrews:

"Ruby, my family and I sincerely thank everyone who participated in such a wonderful retirement luncheon. Memories of sharing this joyous time will always be cherished by us. Retirement is a very rewarding time in one's life which we anticipate to experience to the fullest. Also, a special thanks to all the persons at NACA/NASA for the enjoyable relationships I have experienced for the past 41 years."

From Al Shearin:

"I wish to thank all who attended my retirement party, and those who could not attend but contributed to the gifts and sent cards. A special thanks to Steff and John. The party was great and the gifts thoughtful, fun and most appreciated. As I enter this new phase of life, I will always remember the dear friends at Langley. I will surely miss each and every one of you. Your friendship is the greatest gift of all. I really appreciate the great send-off I received from everyone. Again, heartfelt thanks for the party and years of friendship."

From Janice Wunder:

"I would like to thank each of you for attending or contributing to my retirement party. I won't forget my days at Langley and hope to see all of you in the future. Best wishes to you."

From Louise Hamilton:

"My warmest thanks to all of you who pulled for me during my recent illness. Your cards, letters, calls and especially your prayers made a difference. I'm on my way to recovery — as a retiree! I'll miss you all, every one."

From Tom Moore:

"Sincere thanks to each of you who attended or contributed to my retirement party on March 31. My family and I will remember it and all the other good memories from here at Langley. I will wear my cap with pride. Thanks. again!"

Finding Scientific and Business Information on STILAS and Internet

The Technical Library will offer a series of workshops in July and August on how to find scientific, business and other information on STILAS and the Internet. All the workshops will be held from 10 to 11 a.m., followed by an optional hands-on session that will last 30 minutes. Workshops will be held in the Library Training Room, Rm. 301. For reservations, contact JoAnne Rocker via e-mail (j.rocker@larc.nasa.gov) or phone at ext. 49475. If you are unable to make a workshop but are interested in attending one in the future, contact JoAnne Rocker.

Introductory STILAS Searching: July 12

Learn how to access STILAS remotely and use your STILAS Request Card. Learn what kinds of materials you will find in STILAS and basic searching of the database.

Advanced STILAS Searching: July 19

Learn searching techniques and strategies to improve search results.

Finding Aerospace Information: July 26

Learn about the Library's printed sources, electronic databases and Internet resources for information on aerospace topics.

Finding Structures and Materials Information: August 9

Learn about electronic databases for information on structures and materials.

Advanced STILAS Searching: August 16

Learn searching techniques and strategies to improve search results.

Finding Business Information: August 23

Learn about business directories, electronic databases and Internet resources on business topics.

Using the Internet to find Scientific and Business Information: August 30

General overview of Gopher and World Wide Web sources for aerospace, structures and materials, and business information.

Retirement Party

Hamilton

Friends and colleagues of Louise C. Hamilton are invited to attend her retirement dinner Thursday, July 27, at the Briar Patch Tea Room in Poquoson. Friends may drop by to visit at 5:30 p.m. Dinner will start at 6. Cost is $16.50 per person including a gift. For gift-only contributions or reservations, contact Rose Mustain via Mail Stop 309 by July 24. Make checks payable to Rose Mustain.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Colloquium: Virginia Marine Aquaculture

Michael J. Oesterling will present "Virginia Marine Aquaculture: Research and Product Development" at the Colloquium and Sigma lectures Tuesday, August 1.

Aquaculture, broadly defined as the controlled cultivation and harvest of aquatic plants and animals, has experienced a resurgence of activity throughout the United States. "Marine aquaculture" has been used to distinguish the culture of marine or estuarine organisms from freshwater aquaculture. As the supplies of traditionally utilized fisheries (i.e., wild stocks) approach maximum exploitation, cultured products can help meet increasing consumer demand for high-quality seafood.

Although aquaculture has had a long history in Virginia, major industry expansions began in the mid-1980s. Virginia marine aquaculture activities focus on three species: hard clams (Mercenaria mercenaria), oysters (Crassostrea virginica) and soft-shell blue crabs (Callinectes sapidus). Future culture activities are expected to concentrate on several other species of mollusks; the bay scallop (Argopecten irradians) figures predominantly. An ongoing, experimental program has made it possible to identify several options for final grow-out, and has enabled methods to be fine tuned for commercial applications. A new program directed towards the commercial culture of the soft-shell clam (Mya arenaria) promises to further expand Virginia's marine aquaculture industry.

Information will be presented chronicling the development of Virginia's marine aquaculture industry and illustrating the basic methods utilized to produce cultured items. The $11-million-a-year hard clam culture industry will be highlighted, including hatchery technology for the production of "seed" clams and progressing through all culture steps to the finished product. Current and past activities attempting to revitalize the oyster industry will also be addressed. Finally, "non-traditional" culture species in Virginia's future, such as bay scallops and soft clams, will be discussed.

Michael J. Oesterling

Oesterling, a resident of Gloucester Point, Va., earned a bachelor's degree in biology from the University of Miami (Fla.) in 1970. After serving as a marine biologist at the Univerisity of Florida, he graduated with a master's degree in zoology from the University of Florida-Gainsville in 1976. From 1977 to 1978, he was an assistant in marine research at the C.V. Whitney Laboratory for Experimental Marine Biology and Medicine of the University of Florida. From 1978 to 1981 he served as an area marine advisory program agent for the University of Florida Sea Grant. Since then, he has been a commercial fisheries/aquaculture specialist with the Virginia Institute of Marine Science at The College of William and Mary.

Oesterling has participated in crab fishery development projects in Australia, Brazil, Venezuela, Ecuador and México. He has worked on the design and operation of soft-shell crab production facilities around the United States. He has also spent time on bivalve aquaculture development of non-traditional species.

Colloquium & Sigma Lectures Schedule

Colloquium lectures are usually held the second Tuesday of the month, 2 p.m., at Langley's H.J.E. Reid Conference Center. They are open to all NASA employees and contractors. Civil-service personnel should charge their time to JO A5266.

Sigma lectures are usually held the second Tuesday of the month, 7:30 p.m., at the Virginia Air and Space Center, Langley's Visitor Center, in downtown Hampton. Admission is free with no reservations required.

August 1 Lectures

Colloquium and Sigma: "Virginia Marine Aquaculture: Research and Product Development," by Michael J. Oesterling.

August 15 Lectures

Colloquium and Sigma: "The Future of Aeronautics," by James "Mickey" Blackwell.

Accessing Past Colloquium & Sigma Lectures

If you are unable to attend any colloquium or sigma lecture, you may still access them from several sources. All colloquium lectures are videotaped, and can be checked out from the library by calling ext. 42389. Notices concerning upcoming and recent colloquium and sigma lectures are available on the World Wide Web using a browser such as Mosaic or Netscape at URL http://oldtown.larc.nasa.gov/Lectures/lectures.htm or from the NASA Langley Home Page at URL http://www.larc.nasa.gov/larc.html under General Information about NASA Langley Research Center.

CIT President to Discuss the Future of CIT

Dr. Robert G. Templin, president of Virginia's Center for Innovative Technology (CIT) and past president of Thomas Nelson Community College in Hampton, will discuss the future of CIT Monday, July 17, 1 to 2 p.m., at the H.J.E. Reid Conference Center. He will also discuss the importance of technology transfer to Virginia and America.

On April 6, Langley and CIT signed an agreement, which involved no exchange of funds, to "actively cooperate together in providing NASA-derived technologies to the private sector in Virginia." (See *Researcher News*, April 21, 1995.) Recently, Templin addressed a joint congressional subcommittee hearing regarding methods needed "for improving incentives for technology transfer at federal laboratories." As president of CIT, he is helping to lead the way in transferring innovative technologies between federal and state agencies, colleges and universities, and private businesses.

His discussion is co-sponsored by the Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA), and the Virginia Aerospace Business Roundtable. Everyone is invited to attend.

Virginia Tech and Montgomery County Conduct Internet Experiment

BY JOHN HARRIS

The Blacksburg Electronic Village (BEV) offers citizens of Virginia Polytechnic Institute and State University (Virginia Tech) and Montgomery County the opportunity to link via computer with World Wide Web (WWW) users in the area. The BEV is an experiment to find out what it means to connect an entire community with various on-line services, and relies on user feedback to determine what services will be provided.

The BEV is a cooperative project of Virginia Tech, Bell Atlantic of Virginia and the Town of Blacksburg. Citizens gain access to the Internet from their home or office through a high-speed modem pool or by using Ethernet, which is available in some offices and hundreds of apartment units in town.

Members may take advantage of a full spectrum of services including WWW, Gopher, e-mail, electronic mailing lists and thousands of Usenet news groups. In addition to full Internet access, citizens enjoy the benefits of extensive on-line local resources.

BEV membership is free. Fees for network access via modem are $8.60/month and go to the Virginia Tech Communications Network Services (CNS). The BEV uses volunteers and donated help from Bell Atlantic and Virginia Tech. For more information, contact Cortney Vargo via e-mail (http://www.bev.net) or phone at 1 (703) 231-9500.

John Harris is a student intern from Old Dominion University working toward his master's degree in English.

Langley Amateur Radio Operators Test Emergency Preparedness

BY RICHARD ECKMAN

If a hurricane were to affect the Hampton Roads area, electricity and communications may be disrupted. Amateur radio operators, using portable communications and power equipment, are often among the first to re-establish a link with the outside world. Their participation in hurricane and earthquake disaster relief operations in recent years has provided timely communications with relief agencies.

During the weekend of June 24, approximately 21,000 amateur radio operators across North America participated in a "Field Day" exercise to test their readiness to deal with an emergency situation. Locally, the Langley Amateur Radio Club, in collaboration with the Southern Peninsula Amateur Radio Club of Hampton, hosted about 30 area amateurs who set up several stations in the field behind the H.J.E. Reid Conference Center. Members raised antenna towers, readied portable generators, assembled solar panels and erected tents.

The exercise was a success; in just a few hours, five complete stations were fully operational, spanning all major amateur radio frequency allocations. In addition to standard high frequency and very high frequency communications, a satellite station was placed in operation to communicate with low-earth-orbiting amateur radio satellites and the Mir Space Station.

A heavy downpour on Saturday afternoon did not prevent the group from making hundreds of contacts with other Field Day groups, providing proof of their ability to communicate under adverse conditions.

For more information on Langley Amateur Radio Club activities, call Jim Byrd at ext. 45961.

Regulations Affecting Federal Employees

Jeanne Evans, administrative assistant for Congressman Owen Pickett (D-VA, 2), will speak Monday, July 24, 1 to 2 p.m., at the H.J.E. Reid Conference Center, on proposed legislative changes that will affect federal employees. This event will provide the opportunity to hear what changes Congress is proposing with regard to retirement, health plans, etc., and to ask questions about how these changes will affect you.

If his schedule permits, Rep. Pickett will introduce Evans. Her talk is co-sponsored by the American Institute of Aeronautics and Astronauts and Federally Employed Women Inc. Everyone is invited to attend.

Whitehead

Continued from page 1

major importance to Langley, [Whitehead] is proud of the complex role aeronautics plays in a predominantly space-oriented agency like NASA and of the primary contributions his centers are making to all of NASA's programs. Following his leadership, I expect the four research centers to prosper through the difficult years ahead."

Dr. Jeremiah F. Creedon, director of Langley's Aeronautics Program Group, said, "I have worked with Bob Whitehead for many years — he is an extremely capable leader and has unimpeachable integrity. We are very fortunate he has agreed to be the associate administrator, especially in what are very turbulent times."

Career

Whitehead has been deputy associate administrator for aeronautics at NASA Headquarters since February 1994. He played a key role in advising and working closely with the associate administrator in developing strategic plans and direction for NASA's aeronautics research programs and in institutional management of Ames, Dryden, Langley and Lewis research centers.

Whitehead began his career in 1970 as a postdoctoral research associate at Ames Research Center in Mountain View, Calif. From 1971 to 1976, he was a research engineer at the Department of the Navy's David Taylor Research Center in Potomac, Md.

In 1976, he joined the Office of Naval Research as scientific officer for aerodynamics. Later he became program manager for fluid dynamics from 1981 to 1985 and director of the Mechanics Division from 1985 to 1989. He joined NASA in 1989.

Whitehead received bachelor's, master's and doctorate degrees in engineering mechanics from the Virginia Polytechnic Institute and State University in 1967, 1969 and 1971, respectively. He is a member of the American Institute of Aeronautics and Astronautics and the American Helicopter Society.

OSHKOSH

Continued from page 1

airliner possible. "Toward Safer Skies" will showcase NASA's role in making air travel safer for thousands of pilots and millions of passengers. In "New And Better Aircraft," guests will learn about NASA's new efforts to revitalize subsonic airplanes and America's airspace system. "New Worlds of Flight" will look at how NASA aeronautics is paving the way for the aircraft and aviation systems of tomorrow. Visitors will find out how the products of NASA research venture from the lab to the runway in "Putting Technology to Work," a recap of the payoffs of NASA's aviation research.

Although NASA's Oshkosh exhibit is geared toward aviation, displays of the Agency's space programs, including the latest on the Hubble Space Telescope and the Space Station, will be included.

NASA's contribution to the forum program will feature a panel of researchers, government officials and industry representatives who will provide a discussion of aviation's past and future. Presentations will cover a variety of subjects including icing-protection systems in general-aviation aircraft; the general-aviation cockpit of tomorrow; and computer-aided design; the challenge of flying subsonic aircraft at very high altitude; and an aerodynamic comparison of World War II fighters.

Parawing

Continued from page 1

Delwin R. Croom and William C. Sleeman Jr. recalled those early days of research at Langley. The early tests included extensive studies of parawing and spacecraft configurations. These parawings had flexible-wing configurations with both rigid and inflatable leading edges and keels. Croom said that to "demonstrate a flexible and packagable aerodynamic wing (similar to a parachute)" was the most significant advancement of this research effort. Commenting on the most memorable aspect of his research, Sleeman said, "We demonstrated that the work of a small group of dedicated engineers and technicians could have a major impact."

Researchers individually recognized for their efforts in the early development of parawing research included Langley's Croom, Sleeman, Rodger L. Naeseth and Robert T. Taylor.

Hang gliders, a spinoff of this technology, can now be seen gracing the skies throughout the world. The sport of hang gliding generates $50 million annually. Many companies produce parawings, hang gliders and powered gliders (ultra lights).

TAG: Legal, Small Business and Data Systems Teams

Continued from page 5

The Letter of the Law

The Patent Counsel Team is responsible for assisting researchers through the process of securing patents and negotiating licenses. Kimberly Chasteen, a patent attorney on the Patent Counsel Team, explains, "The team works on the determination, protection and transfer of intellectual property generated by Langley researchers."

The team performs a variety of functions which include preparing and prosecuting patent applications; negotiating patents, copyright and trademark licenses — which often provide exclusivity to those who would commercialize the inventions; finalizing agreements under the National Aeronautics and Space Act for the joint development of technology generated at Langley; and investigating and acting upon possible infringements of Langley's intellectual property rights.

The team includes George Helfrich, Kimberly Chasteen, Robin Edwards, Elaine McMahon, Theresa Walker and Laura Eure.

Partners in ... Business

The Small Business Partnership (SBP) Team serves as the focal point for Langley participation in NASA programs involving small, high-technology firms. Two significant NASA programs managed by this team are the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) pilot programs. Bob Yang, a member of the SBP team, says, "The SBIR and STTR programs are Agency-wide efforts contributing to NASA's mission in planning, directing and conducting civil research and development in space and aeronautics."

The SBP team organizes and develops the Center's part of the annual solicitations for these programs. One of the team's major goals is to increase private sector commercialization of innovations resulting from federal research and development. Thayer Sheets, another SBP team member, adds, "The intent of the SBIR and STTR programs is to provide seed funding to small, high-technology companies for development of innovative technologies." The team includes Fred Morrell, Thayer Sheets, Bob Yang and Janice Via.

Invisible Support

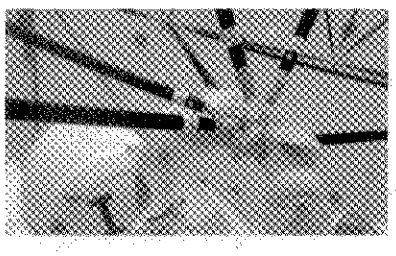
The Data Systems Team supports TAG in all automated-data-processing areas. This may be in the form of analysis, development and maintenance of database systems used by TAG and TAG's external customers, configuration of hardware and software, or investigation of external systems which may benefit TAG. The team includes Stuart Pendleton and Dianne Cheek.

The Technology Council

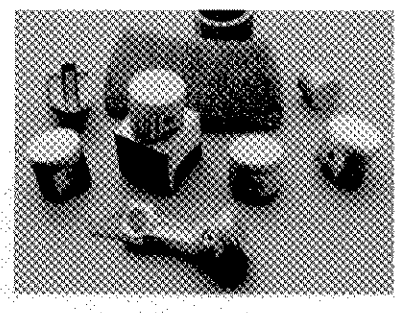
The Technology Council represents division technical expertise and serves as a key advisory resource for TAG. Each member also provides information on commercialization practices to the group. Council members act as the two-way communication link for patents, SBIR, partnerships and other commercialization issues.

Technology Applications Group Phone and E-Mail List

Ext.	Team	E-Mail Address
46005	**Main Office**	
46005	Blankenship, Charles P.	c.p.blankenship@larc.nasa.gov
46006	Heyman, Joseph S.	j.s.heyman@larc.nasa.gov
46003	Gardner , James E.	j.e.gardner@larc.nasa.gov
46004	Crockett, Shirley B.	s.b.crockett@larc.nasa.gov
42935	Jackson, Carol P.	c.p.jackson@larc.nasa.gov
49284	**Technology Transfer Team**	
44438	Allen, Cheryl L.	c.l.allen@larc.nasa.gov
47717	Baize, Rosemary R.	r.r.baize@larc.nasa.gov
46490	Bartlett, Joyce A. C.	j.a.bartlett@larc.nasa.gov
45083	Bezos-O'Connor, Gaudy	g.m.bezos-o'connor@larc.nasa.gov
44514	Bush, Lance B.	l.b.bush@larc.nasa.gov
44483	Crisp, Vicki K.	v.k.crisp@larc.nasa.gov
42490	Farmer, Franklin H.	f.h.farmer@larc.nasa.gov
47141	Gibbens, Barry V.	b.v.gibbens@larc.nasa.gov
43864	Manuel, Gregory S.	g.s.manuel@larc.nasa.gov
48880	Raper, James L.	j.l.raper@larc.nasa.gov
45355	Romero, Marisol E.	m.e.romero@larc.nasa.gov
46618	Scott, Michael A.	michael.allen.scott@larc.nasa.gov
42556	Sullivan, Sherry L.	s.l.sullivan@larc.nasa.gov
43180	Sydow, P. Dan	p.d.sydow@larc.nasa.gov
43493	Webster, Rosa C.	r.c.webster@larc.nasa.gov
42482	Samos, John (RTI)	j.samos@larc.nasa.gov
45867	Samos, Harry J. (NTTC)	h.j.samos@larc.nasa.gov
49696	Freeman, Ginger L.	g.l.freeman@larc.nasa.gov
49669	Lucas, Tracie M. (summer intern student)	
49260	**Patent Counsel Team**	
43521	Helfrich, George F	g.f.helfrich@larc.nasa.gov
43227	Chasteen, Kimberly A.	k.a.chasteen@larc.nasa.gov
43230	Edwards, Robin W.	r.w.edwards@larc.nasa.gov
43226	McMahon, Elaine	e.c.mcmahon@larc.nasa.gov
43522	Walker, Theresa C.	t.c.walker@larc.nasa.gov
45261	Eure, Laura L.	l.l.eure@larc.nasa.gov
49053	Xinos, Emily A. (summer intern student)	
49569	**Small Business Partnership Team**	
44002	Morrell, Frederick R.	f.r.morrell@larc.nasa.gov
42487	Sheets, R. Thayer	r.t.sheets@larc.nasa.gov
48020	Yang, Robert L.	r.l.yang@larc.nasa.gov
49568	Via, Janice K.	j.k.via@larc.nasa.gov
	Data Systems Team	
42761	Cheek, Dianne L.	d.l.cheek@la.rc.nasa.gov
42943	Pendleton, Stuart E.	s.e.pendleton@larc.nasa.gov



TAG



Going Public with Langley Research

If a metric used to determine success leapt by 250 percent in one year, most people would flock to the coattails of that company or organization. If another metric showed an increase of 1,000 percent, most people would want to invest heavily in that organization.

The metrics? Memoranda of Agreement (MOA) and licenses. The organization? NASA's Langley Research Center and its Technology Application Group (TAG).

Since its inception in February 1994, TAG has assisted Langley researchers in propelling their innovations into commercial successes at a breathtaking rate.

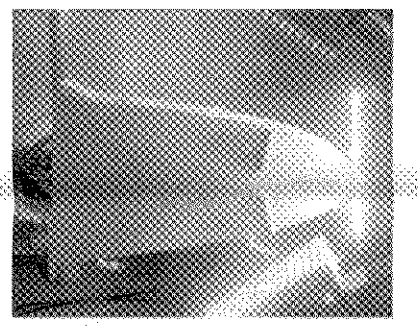
In 1993, Langley signed 32 MOAs. An MOA is a formal arrangement which defines a set of legally enforceable promises between NASA and another party to the agreement, requiring a commitment of NASA resources to accomplish the objective of the agreement. In its first year, TAG facilitated the signing of 52 MOAs. In just the first half of 1995, the Center has already completed 70 MOAs.

From 1983 to 1993, Langley licensed 21 of its patented inventions. Since its genesis, TAG has assisted in the completion of nine licenses and is negotiating 27 more.

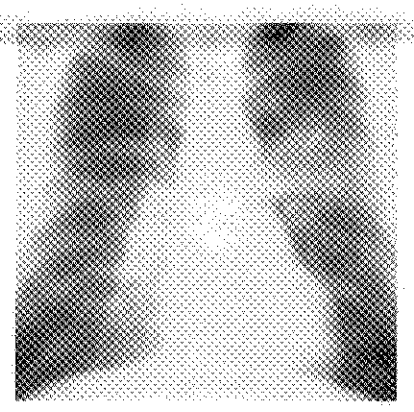
Significance for Researchers

As a research-based entity, Langley's reputation for producing cutting-edge technology is formidable. Until 1994, however, transferring that research and technology to the commercial sector did not move as swiftly as it could have. The framework has existed; now an impetus from the Clinton Administration is catapaulting government research into public and private domains.

Researchers now have the opportunity to see their work be used not only in government-sponsored aeronautic and aerospace activities but also in commercially viable, profit-driven ventures. The comparatively break-neck speed in which TAG assists in transferring this technology should excite researchers: They can now envision the fruits of their efforts being used sooner than later. Barry Gibbens, a TAG member with expertise in materials and manufacturing sectors, explains, "To have NASA officials negotiate and sign the appropriate technology-transfer documents usually takes two to four weeks."



By participating in the technology-transfer program, researchers may receive many benefits including monetary awards, royalties, peer recognition, patents, licenses, distribution of the technology for publication and the satisfaction of contributing to America's economic advancement.

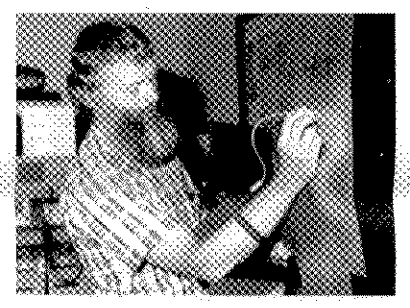


The Process

When a researcher thinks an invention has been made, a disclosure of the invention must be submitted to TAG's Patent Counsel Team. Then one of TAG's Technology Transfer Team (T3) members will contact the inventor to assist him through the process which can transfer the technology to the applicable industry.

Vicki Crisp, a TAG member with expertise in information systems and communications, says, "This process may include exposing the qualified new technology to potential users in numerous ways." Publishing a short description of the innovation is one of the most common exposure methods. Jim Raper, a TAG member with expertise in the medical, instrumentation, sensor, environmental and energy areas, adds, "We also look for opportunities to showcase selected technologies at various seminars, conferences and symposia."

The process may include pursuing patents and licenses for inventions in a particular technological area, facilitating the patent process for commercially viable inventions, marketing innovations to private-industry representatives, coordinating industry visits to demonstrate Langley technology, or establishing cooperative product-development efforts between Langley researchers and industry partners.

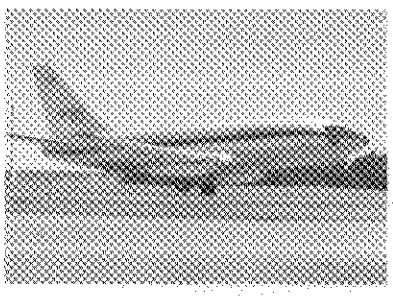


Teams with a Focus

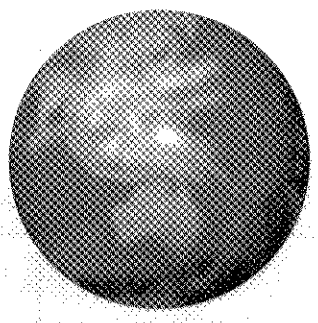
While each market, or sector, team within the Technology Transfer Team (T3) has a primary focus, any sector team may actually assist a Langley researcher with cross-team applications through the process, depending on the situation. Ginger Freeman serves as a point-of-contact for all four sector teams.

The Materials/ Manufacturing Sector Team is primarily responsible for technology-transfer activities associated with the Materials, Fabrication and Structures divisions. They have expertise in high performance polymeric materials, composites, metallic materials, innovative methods of manufacturing and new mechanical devices. This team includes Barry Gibbens, Greg Manuel and Rosa Webster.

The Transportation Sector Team is primarily responsible for technology-transfer activities associated with most divisions within the Research and Technology Group and several divisions within the Internal Operations Group. They have expertise in aerodynamic testing and flow visualization, computational fluid dynamics, simulation, composite materials and manufacturing processes, non-destructive evaluation techniques, antenna design techniques, environmental instrumentation and structures. This team works most closely with the automotive, shipbuilding and locomotive industries. This team includes Gaudy Bezos-O'Connor, Lance Bush and Michael Scott.



The Information Systems and Communications (I/C) Sector Team is primarily responsible for technology-transfer activities associated with the Information Systems and Information and Electromagnetic Technology divisions. They have expertise in software, computers, information tools and communication and networking technologies. This team might assist a researcher by releasing software from the Center, requesting software from and helping submit software to the COmputer Software Management and Information Center (COSMIC). They might use World Wide Web (WWW) pages as a forum for dissemination of information, facilitating commercialization of I/C technologies, marketing I/C innovations and establishing cooperative product development efforts between Langley researchers and industry partners. This team includes Dan Sydow and Vicki Crisp.



The Medical, Instrumentation and Sensors, Environment and Energy (MISEE) Sector Team is primarily responsible for technology-transfer activities associated with the Experimental Testing Technology and Aerospace Electronic Systems divisions, as well as the Nondestructive Evaluation Sciences Branch of the Materials Division. The team promotes several technologies with high commercial potential: the Low Temperature Oxidation Catalysts (ETTD technology); and the Optically Switched Gas Filter Correlation Radiometer and the CCD-based Digital Mammography (both AESD technologies). The team includes Frank Farmer, Jim Raper, Rosemary Baize, Cheryl Allen and Marisol Romero.

See **TAG** *on page 4*

TAG

COMMENT ON CONGRESS

The Budget Process: Part II

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER

Will Rogers once said: "The country is safe! Congress has gone home!" Well, Congress returned from Independence Day recess this week, so stay alert. Before leaving on June 30, the House Science Committee voted to authorize funding for Space Station Alpha (separate from the overall NASA bill) for seven years, a total of $13.1 billion, capping spending each year at $2.1 billion. The Senate has not yet acted.

Rescissions Bill

A revised $16.4 billion Rescissions Bill for fiscal year 1995, which had been negotiated with the White House and which contains a cut of $204 million in current appropriations from NASA's budget, was not voted on when two senators objected to cuts in programs for the poor and elderly. The matter may be revisited this week.

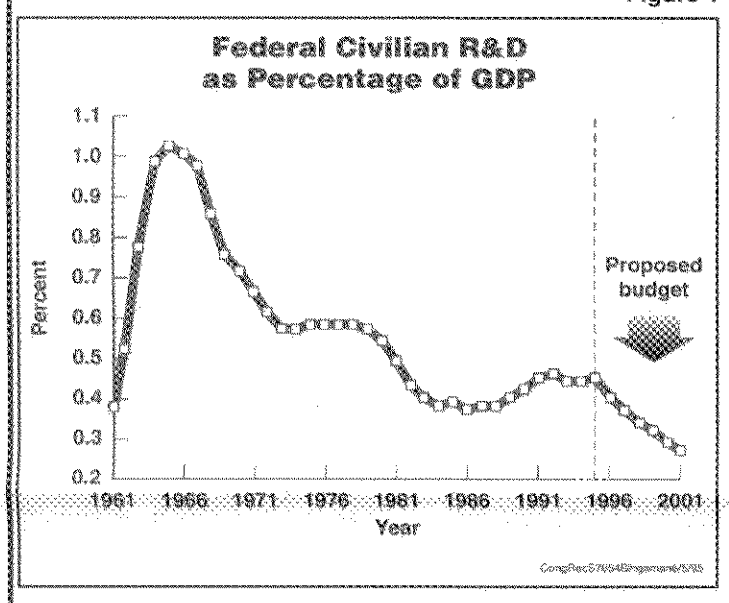
Budget Resolution

Final approval was given, along party lines, to the Republican Party's budget resolution that sets forth a plan to balance the annual federal budget by the year 2002. The plan would trim projected Medicare spending by $270 billion and Medicaid spending by $182 billion over the next seven years. Cuts in domestic discretionary spending over this period may result in an estimated 30- to 40-percent reduction in federal support for research and technology. (See Figure 1). Overall federal spending would continue to rise — from $1.5 trillion in 1996 to nearly $1.9 trillion in 2002 — but at a slower growth rate than currently projected.

The budget resolution is non-binding and does not require the President's signature. The binding decisions on spending are being made by the 13 Appropriations subcommittees in each body. House and Senate Appropriations subcommittees, except for Defense, will have smaller "pots" of money to parcel out in fiscal year 1996 than they had in fiscal year 1995. Although the appropriators will decide how their allocations are divided, a good deal of effort will be made to accomodate the targets and assumptions of the budget resolution "blueprint."

Domestic discretionary spending is about 20 percent of the federal budget. (See *Researcher News*, June 30, 1995). For fiscal year 1995, the total funds available for domestic discretionary spending amounted to $257 billion. For fiscal year 2002, that total is projected to be around $230 billion with seven prior years of no inflationary adjustment.

Figure 1



U.S. Senate, Committee on Appropriations

Republicans	Democrats
Mark O. Hatfield (OR), Chairman	Robert C. Byrd (WV), Ranking

Subcommittee on VA-HUD-Independent Agencies

Republicans (6)	Democrats (5)
Christopher S. Bond (MO), Chairman	Barbara A. Mikulski (MD), Ranking
Phil Gramm (TX)	Patrick J. Leahy (VT)
Conrad Burns (MT)	J. Bennett Johnston (LA)
Ted Stevens (AK)	Frank R. Lautenberg (NJ)
Richard C. Shelby (AL)	Bob Kerrey (NE)
Robert F. Bennett (UT)	

U.S. House of Representatives, Committee on Appropriations

Republicans	Democrats
Robert L. Livingston (LA), Chairman	David R. Obey (WI), Ranking

Subcommittee on VA-HUD-Independent Agencies

Republicans (8)	Democrats (4)
Jerry Lewis (CA), Chairman	Louis Stokes (OH), Ranking
Tom DeLay (TX)	Alan B. Mollohan (WV)
James T. Walsh (NY)	Jim Chapman (TX)
David L. Hobson (OH)	Marcy Kaptur (OH)
Barbara F. Vucanovich (NV)	
Joe Knollenberg (MI)	
Rodney Frelinghuysen (NJ)	
Mark W. Neumann (WI)	

Powerwalk Workshop Includes Olympic Medalist

The LAA Aerobics Club annual Powerwalk Workshop on June 28 brought out both new students and veteran athletes. Participants included a senior athlete who has received bronze and silver medals in racewalking in the Golden Olympics. Age does not slow her down; she easily stayed at the front of the Powerwalk group which included participants half her age.

The powerwalkers included a number of senior citizens at impressive levels of fitness. Studies have shown that a number of health problems often blamed on age are due to an increasingly inactive lifestyle as we get older. The senior powerwalkers at this workshop definitely proved that study to be very true.

The LAA Aerobics Club has been teaching low-impact and bench classes at Langley since 1990. Powerwalking has recently been added. All classes meet in the LAA Gym Tuesdays and Thursdays, 5 to 6 p.m., and Saturdays, 9:30 to 10:30 a.m. First-timers to aerobics or powerwalking should come 15 minutes early for instructions. For more information, call Michele at ext. 52295.

1993, 1994 Top Apprentices Awarded

Photo by Sandie Gibbs

The 1993 and 1994 top apprentice graduates were recognized by the Langley Exchange Council (LEC) on May 10. Each graduate was presented with an apprentice jacket by Dr. Kristin Hessenius, chairperson of the Engineering Technician Advisory Committee. The graduates are, front row, left to right, Stella Harrison, 1993; John Swartzbaugh, 1994; Grace Gleason, 1993; and back row, left to right, Stephen Nevins, 1994; Jesse Midgett, 1994; and Earl Harris, 1994. Also shown are LEC representative Lisa Ryan, front row, far right; Dr. Hessenius, back row, second from right; and Apprentice Program administrator Donna Martin, back row, far right. Congratulations for a job well done.

Virginia Air and Space Center to Host Spacefest '95

The Virginia Air and Space Center, Langley's Visitor Center, is hosting Spacefest '95 July 10 to 23. Guests may enjoy a variety of exciting programs, lectures, displays and IMAX® films as part of the celebration of National Space Week. For more information, call 727-0900.

Virginia Air and Space Center
Hampton Roads History Center

Langley Mentors Guide Governor's School Students to Several Awards

Three students who worked with Langley mentors in the Governor's School for Science and Technology program have earned awards for their work.

Shishir Mehrotra of Tabb High School earned one of three Best Mentorship Project awards and the Bausch and Lomb Award for the most outstanding junior at the Governor's School. His mentor was Dr. David Banks of the Institute for Computer Applications in Science and Engineering (ICASE). Mehrotra's project was "Study of Graphics and Visualization and Their Utility to Research."

Christopher Batten of Phoebus High School earned one of two awards for most outstanding science student. His mentor was Geoffrey M. Tennille of the Scientific Applications Branch, who is the testbed manager for the High Performance Computing and Communications Program. Batten's project was "Investigating Parallel Processing Through Portable Benchmarks and Parallel Image Analysis."

Jireh Yue of Poquoson High School earned first place in chemistry at the Tidewater Regional Science Fair, an Air Force second place in the International Science Fair, a fourth place American Chemical Society Award and a second place Patent and Trademark Award. His mentor was Dr. Jeffrey Hinkley of the Composites and Polymers Branch. Yue's project was "Lifetime and Durability Analysis of Thermoplastic and Thermoset Polyimides and Composites."

Ten Employes Earn Advanced Degrees through Center Program

Ten Langley staff members have earned advanced degrees through the Center's Graduate Study Program.

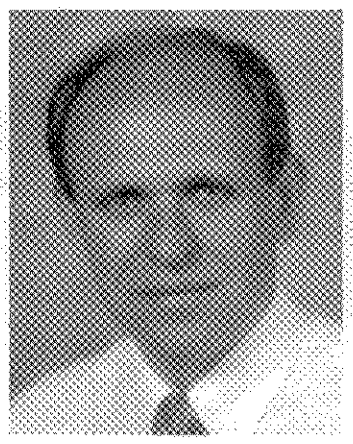
The program, established in the 1940s, provides Langley engineers, scientists and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while at Langley. Approximatley 1,527 employees have been awarded master's or doctorate degrees through the program.

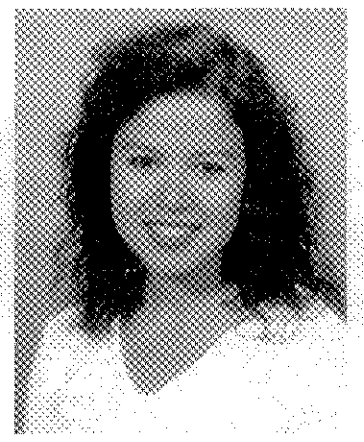
Doctorate degrees have been awarded to six employees: Michael G. Gilbert, Structures Division, earned a Ph.D. in aerospace engineering from Purdue University; Terri L. Lazarus, Aerospace Electronic Systems Division, earned a Ph.D. in physics from The College of William and Mary; Kristine R. Meadows, Fluid Mechanics and Acoustics Division, earned a Ph.D. in aerospace engineering from Cornell University; Jennifer R. Olson, Atmospheric Sciences Division, earned a Ph.D. in atmospheric science from Georgia Institute of Technology; Michael A. Scott, Technology Applications Group, earned a Ph.D. in aerospace engineering from the University of Colorado; and Stephen J. Scotti, Structures Division, earned a doctorate degree in mechanical engineering from George Washington University.

Master's degrees were awarded to the following employees: Sharon K. Crockett, Aerospace Mechanical Systems Division, earned a master's degree in engineering management from Old Dominion University; Yvonne M. Dellapenta, Aerospace Mechanical Systems Division, earned a M.B.A. from Old Dominion University; Russell W. Smith, Structures Division, earned a master's degree in mechanical engineering from Purdue University; and James E. Wells, Aerospace Mechanical Systems Division, earned a master's degree in mechanical engineering from Virginia Polytechnic Institute and State University.

The Employee Development Branch congratulates these individuals for the long hours and hard work necessary for this accomplishment. Such work not only brings additional expertise to Langley, but also enhances the individual's professional growth and career development.

For information on the Center's Graduate Study Program, call George Allison at ext. 42594.


Michael G. Gilbert

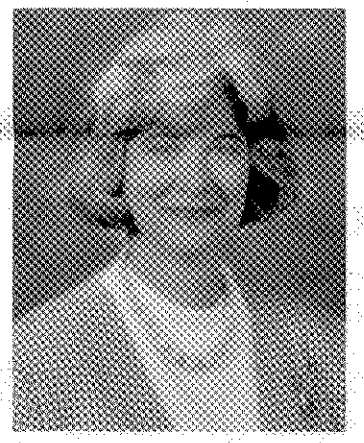

Terri L. Lazarus

Kristine R. Meadows

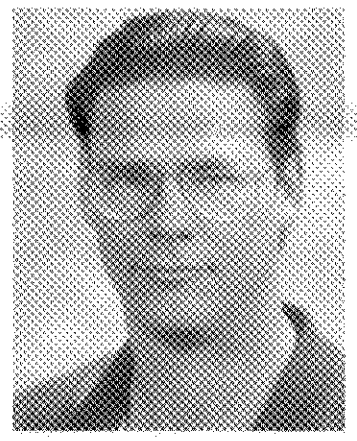
Jennifer R. Olson

Michael A. Scott

Stephen J. Scotti


Sharon K. Crockett

Yvonne M. Dellapenta


Russell W. Smith

James E. Wells

1995 Speakers Bureau: First Three Weeks of May

SPEAKER	ORGANIZATION	TOPIC
Davis, Richard	New Kent County Schools	Solar System and Space
Uenking, Michael	Indian River Middle School	Space Exploration, NASA and Space Shuttle
Davis, Pamela and Robinson, Phil	Campostella Elementary School	Working at NASA
Smith, Mary Ann	Toano Middle School	Aerospace Careers
Schauer, Cathy	Cub Scouts	Apollo Adventure
Fishman, Jack	Poquoson Elementary School	What a NASA Scientist Does
Levine, Joel	Science Museum of Virginia at the Virginia Institute of Marine Sciences	Biomass Burning and Global Change
Hickman, George E.	Magruder Primary School	NASA Langley's History, Mission and Career Oportunities
Hickman, George	Magruder Primary School	Overview of Langley
Harmon, Peggy and Wynkoop, Mark	Bruton High School	Overview of the Electronics Technology Branch and of Technical Careers and Student Programs at Langley
Harmon, Peggy	National Black Child Development Institute, North Hampton Community Center	Technical Careers and Student Programs at Langley

Training for Speakers Bureau Members

"You are NASA," a special two-hour training session sponsored jointly by the NASA Langley Toastmasters Club and the Office of Public Services, is planned for Thursday, July 20, 1 to 3 p.m., in the Langley Room of the H.J.E. Reid Conference Center. The focus of the training will be "How to Make a Good Speech Great."

The training is a primer on the fundamentals of public speaking and will be conducted by members of the Toastmasters Club. Topics will include organizing your talk, using visual aids, analyzing your audience, using body language, speaking with the media and controlling anxiety. Time is planned for audience questions and interaction.

Employees who are not members of the Speakers Bureau may attend the class on a space-available basis. Participants who complete this course will have it added to their training record.

If planning to attend, call Cathy Schauer via phone at ext. 43314 by July 18. If the response exceeds available seating, an additional class will be scheduled for August.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program is designed to permit employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. For more information, call Lisa Allen at ext. 42610. Your annual leave donations are greatly appreciated.

The following employees are approved leave recipients:

Marilyn Aldrich
Karen Freidt
Charlene L. Gleaton
Debra P. Shimek
Cassandra Stevens

Happenings

WANTED: Computer scientist or someone to serve as a mentor (in his/her spare time) to assist with computer communication prosthesis implementation and training of a nine-year-old cerebral palsy girl. Medical diagnosis: no mental impairment. Eye movement is only current means of communication. Help her say, "Mommy, I love you." For further information, call Pat Link at ext. 48102.

FOR SALE: 2BR, 2-1/2 BA, luxury lakefront custom town-home in Hampton. Garage, fireplace, two decks, central air and vacuuming, three floors. One gigantic bedroom on each of top two floors. Ceiling fans, miniblinds, crown molding and chair railing. Close to NASA. Five years old. Beautiful view. $125,000. Call Sharon at 825-1236.

FOR RENT: Relax on Sanibel Island, Fla., on the Gulf of Mexico in an elegant beach-front condo. Full kitchen, 1BR, tennis, pool, on-site management. Walk out the front door to the beach. July to October. $625/week. Brochure available. Call Dick at 565-1849.

FOR RENT: Summer fun in the sun! Cottage at Kill Devil Hills, N.C., near 9.5 milepost. Sleeps nine. Cable TV, A/C, microwave, fully furnished. Weekly rates. Three-day minimum. Call Anne at 868-6427.

FOR RENT: 3BR, 2BA brick rancher in Hampton North. Fenced yard, all appliances. 1,400 sq. ft. $575/month. Call Anne at 868-6427.

A HONEYBUNCH MEETING: The NASA-Langley Apicultural Club will hold its regular monthly meeting on Monday, July 17, 7 to 9 p.m., It will be held in the meeting room of the York County Human Services Building at 301 Godwin Neck Road (State Route 173 East), Yorktown, Va. A video, "Harvesting Honey," will be viewed. An open forum discussion on any beekeeping concerns attendees may have will also be conducted. Free and open to the public. All interested persons are welcome. For more information call Henk at ext. 47226, Harvey at ext. 46742 or Wallio at ext. 45366.

FOR RENT: 2BR time-share in Orlando, Fla. Sleeps 8. $625 for the week of July 23-29. Fully equipped with washer/dryer. Recreation facilities. Call Staton at 826-8610 or pager 875-3811.

LANGUAGE TUTOR WANTED: Doctoral student needs help reviewing for French and/or German language reading exams. Time and fees negotiable. Call Debbie at 838-3560.

Researcher News Info

RN DUE DATE: The due date to submit any articles, photos or announcements for the next issue is Tuesday, July 18. The next issue will be distributed beginning Friday, July 28. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

Announcements submitted for "Happenings" will run for one issue only unless otherwise requested. Repeats will be accommodated on a space available basis.

Special Promotion

The Virginia Air and Space Center, Langley's Visitor Center, is offering a special promotion for NASA active civil service employees and on-site contractors with photo identification badges.

Throughout the summer months of July to September, FREE ADMISSION TO EXHIBITS WILL BE GIVEN to civil service employees and contractors who present NASA photo identification badges.

Accompanying family members will be admitted to exhibits at the discounted rate.

In addition, the Virginia Air and Space Center is offering a special promotion on annual family memberships. From July 1995 to June 1996, civil service employees and on-site contractors are entitled to receive a **20-percent discount on family memberships** which includes:

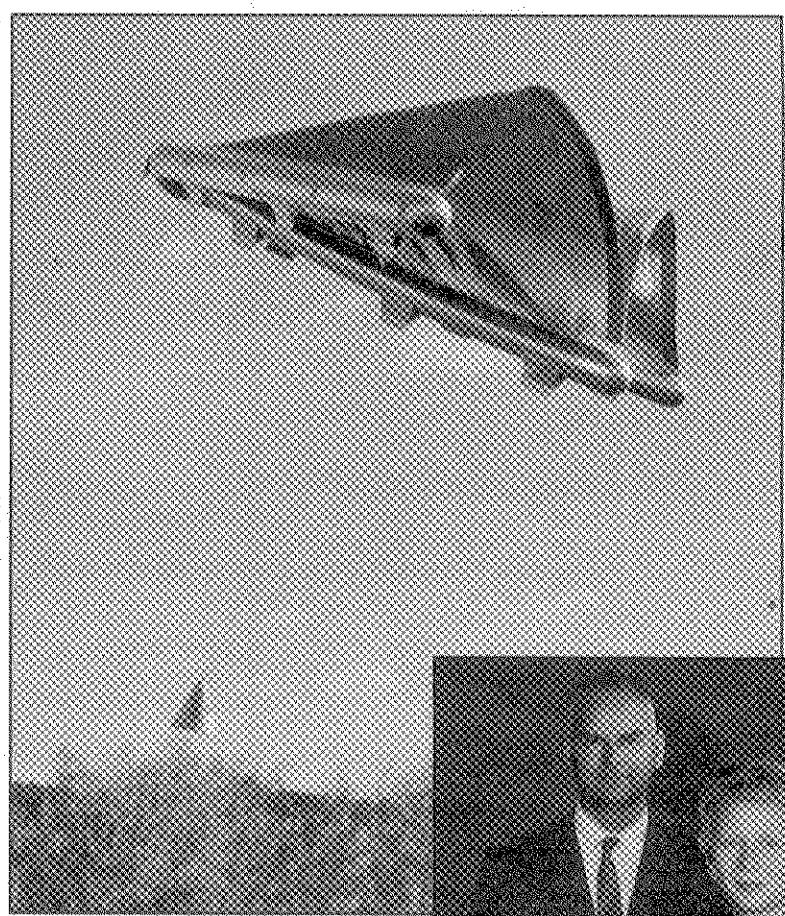
Virginia Air and Space Center
Hampton Roads History Center

* Free exhibit admission *
* IMAX discounts *
* 10-percent gift-store discount *
* Quarterly newsletter *
* Invitations to exhibit and film openings *
* Various discounts and coupons provided by local merchants and attractions*
* Discounts on camps and other activities *

*****SPECIAL BONUS FOR NEW MEMBERS*****
As of July 1, free Apollo 13 gifts such as tee shirts, caps and books will be available while supplies last.

For information and membership fees, call 727-0900.

Hanglider's Ancestor Hailed



Francis and Gertrude Rogallo, right, inventors of the V-shaped flexible "parawing." In December 1961, Langley flight-tested a 50-foot parawing's ability to bring down safely a model of a manned space capsule from a few thousand feet above Plum Tree Island, an old Army bombing range near Langley Field. See story on page 1.

NASA Researcher

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

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

Official Business. Penalty for Private Use $300.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 15 ❖ July 28, 1995

A MESSAGE FROM THE CENTER DIRECTOR

Langley Endures, Thanks to You

As you all know by now, the move to close NASA Langley has been averted. On Tuesday, July 18, the full House Appropriations Committee removed the language that would shut down the Center along with Marshall and Goddard by October 1998.

We can be grateful for that, but it's not over yet. The committee has directed a study of NASA aimed at achieving cost savings through consolidation or restructuring. And, funding for the Earth Observing System remains in jeopardy.

In the coming months, we will work hard to ensure that President Clinton's budget is passed, because it is NASA's position that we have taken all the cuts we can take and continue a balanced program for the five enterprises that our customers and the public expect from us. Meanwhile, we owe a special debt of gratitude to our congressional delegation, which includes congressmen Herb Bateman and Bobby Scott

and senators John Warner and Chuck Robb.

I would like to thank all Langley employees for the patience, help and moral support you have given. You may not realize it, but you are the real heroes of this battle.

As you know, the markup of the Veterans Affairs, Housing and Urban Development and Independent Agencies Appropriations Subcommittee late on July 10 came as a complete and total surprise to us. We immediately received offers of assistance from members of the Virginia congressional delegation. The delegation recognized the value of Langley not only to the region, but to the nation. They realized the complete lack of merit in the proposal to shut down not only Langley but Marshall and Goddard as well. It is reassuring to know that our Virginia delegation sees the difference between pure politics and merit in the case of NASA Langley Research Center.

You have yourselves to thank for that. It is your outstanding work that gives the Center the sterling reputation that enables our congressmen and senators to stand behind us with confidence and pride.

If you were anything less than world-class, we probably would not have, nor would we deserve, their support at critical times such as these. Thank you.

Paul F. Holloway
Center Director

Scott and Bateman Assure Langley

Photo by Fred Jones

Virginia representatives Robert Scott, 3rd District, left, and Herbert Bateman, 1st District, hold a news conference to discuss a House bill calling for the closing of Langley immediately before addressing a packed room of employees and contractors at the H.J.E. Reid Conference Center July 14. "This is a fluke, an aberration," Bateman said, referring to a House subcommittee's move to close Langley. Four days later, the full House Appropriations Committee voted in favor of amended language which keeps Langley open. See an explanation of the original and amended bills on page 3.

Colloquium: Future of Aeronautics

James A. "Micky" Blackwell will present "The Future of Aeronautics" at the Colloquium and Sigma lectures Tuesday, August 15.

Blackwell is the president and chief operating officer of Lockheed Martin Corporation's Aeronautic Sector and a vice-president of Lockheed Martin Corp.

While America's focus and priority is on reducing federal budgets, concerns have been raised that the United States will surrender its technological advantages and capabilities, leading to severe and lasting results. Blackwell will discuss the evolutionary challenges confronting U.S. aeronautics into the next century.

Blackwell will examine these challenges as the two faces of aeronautics. One face represents the fall of American aeronautic capabilities and the results.

James A. "Micky" Blackwell

He will show how the United States may have lost its aeronautic advantage.

The second face represents a strong and productive partnership between U.S. government and industry. This partnership would provide the foundation for lasting global leadership. According to Blackwell, advances in propulsion,

See **Colloquium** *on page 4*

Bateman Speaks on Closure Bill

Like you, I breathed a great sigh of relief on Tuesday, July 18, when the House Appropriations Committee voted to keep Langley Research Center open.

Although the proposal to close Langley was a legislative ploy, I took it very seriously. The work you do here is too important to let slip away because of political posturing.

I want you to know that Langley had the support of the entire Virginia congressional delegation and the governor. Countless hours were spent coordinating the effort to make sure this wrongheaded proposal was killed as quickly as possible. I fully recognize how important Langley Research Center is to our nation's aerospace program and Hampton Roads. I was not about to sit idly while others tried to dismantle the facility and transfer its functions to other parts of the country.

I regret that your livelihood was used as a political football for the past week. I know it created a great deal of anxiety and uneasiness. In my conversations with the

See **Bateman** *on page 4*

Scott Addresses Potential Closing

I want to express my sincere appreciation for the teamwork that helped save the three National Aeronautics and Space Administration centers, including Langley Research Center. It is clear that this effort could not have been a success without the determination of NASA Langley employees and the persistence of the Virginia Congressional Delegation to prevent political posturing from endangering these national aerospace research facilities.

I was appalled by the Veterans Affairs, Housing and Urban Development, and Independent Agencies Subcommittee's action to close NASA Langley and the other two centers. This action was both irresponsible and inappropriate; there was no consideration to other scenarios which would reduce spending without adversely affecting NASA, an agency which has already born severe reductions. To indiscriminately scrap programs without regard to the impact it will have on future technology — as well as the scientists and their families, money invested in equipment and existing facilities, universities and aerospace contracting — is

See **Scott** *on page 4*

News Briefs

Around the Agency

MISSION TO PLANET EARTH RESOURCE HELPS FIGHT FIRES - A NASA research aircraft played a critical role in fighting a major fire that threatened life and property in the Scottsdale and Fountain Hills areas of Arizona recently. The plane, a C-130B based at Ames Research Center, Mountain View, Calif., was in the area collecting geological data as part of NASA's Mission to Planet Earth. The plane was equipped with a host of data gathering devices and photographic equipment, including thermal scanners able to penetrate thick smoke and clouds.

Observers on the plane saw the fire while approaching Phoenix on July 8. Mission manager Chris Jennison obtained clearance from Ames to document the fire and assist local emergency management personnel. Three high-altitude flights with the ability to cover a wide area were immediately flown, and data was recorded on videotape. These tapes were then delivered to Scottsdale officials for battling the fire.

Wilson W. Orr, of the Scottsdale City Manager's Office, said in a letter to NASA Administrator Daniel Goldin, "This use of 'Mission to Planet Earth' resources to help us manage local emergencies for the preservation of life and property is a significant return on taxpayer investment. We appreciate the practical value of this program."

FIRST COMMERCIAL ORBITAL LAUNCH SET FOR EARLY AUGUST - The first flight of the METEOR spacecraft is targeted for launch from the Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va., in early August. METEOR, which stands for Multiple Experiment Transporter to Earth Orbit and Return, will give scientists an unmanned platform on which to conduct experiments in space and return them to Earth.

NASA RECEIVES "DC-XA" ROCKET FOR DEVELOPMENT OF RLV TECHNOLOGY - The U.S. Air Force transferred to NASA's Office of Space Access and Technology the unpiloted, single-stage rocket known as the Delta Clipper-Experimental (DC-X) for use in NASA's Reusable Launch Vehicle (RLV) technology program.

The transfer was made after the successful completion of a series of test flights conducted for the Air Force by McDonnell Douglas at the U.S. Army's White Sands Missile Range in New Mexico. The rocket, renamed the Delta Clipper-Experimental Advanced (DC-XA) by NASA, will be modified with technology intended for use in the X-33 or X-34 RLVs now under development by NASA and its aerospace industry partners.

Marshall Space Flight Center in Huntsville, Ala., is the host center for NASA's RLV technology program. McDonnell Douglas will make the enhancements to the DC-XA in Huntington Beach, Calif. NASA field centers supporting the DC-XA include Marshall, Langley and Dryden Flight Research Center in Edwards, Calif.

Retirement Parties

Person and Yenni

We're back on track to roast and toast two of our retired NASA pilots! The double-header retirement party for Lee Person and Dick Yenni has been rescheduled for Saturday, August 26, 6 to 11 p.m., at the H.J.E. Reid Conference Center. Same game plan as before: good food, good music, good friends! If you had previously signed up, please call to re-confirm or cancel your reservation. New reservations are also welcome. Contact either Mary Beth Wusk via phone at ext. 43830 or e-mail (m.e.wusk@larc.nasa.gov), or Luci Crittenden via phone at ext. 41776 or e-mail (l.h.crittenden@larc.nasa.gov).

Wilson

A retirement dinner for John C. Wilson will be held Monday, August 7, at Carmine's Restaurant in Newport News. A social will begin at 6 p.m., followed by dinner at 6:30. We will be ordering off the menu with separate checks. For gift-only contributions, reservations, a preview of the menu or directions, contact Susan Gorton via phone at ext. 45059, e-mail (s.a.gorton@larc.nasa.gov) or Mail Stop 461 by July 31.

Letter

From Sullivan R. Donadio:

"Tess and I thank all of our friends at Langley for the wonderful retirement social. What a fitting end to a great career which spanned what I consider to be NASA's greatest era. I count it a high honor to have worked within the greatest group of civil servants ever assembled and will miss the daily contact with each of you. So far I have found retired life to be like the last summer before beginning the first grade, full of creative pleasures and void of responsibility. Thanks again for the warm friendships, best wishes, and wonderful gifts."

In Memoriam

Axel Ture Mattson

Axel Ture Mattson, former Langley aeronautical research scientist and chairman of the Commonwealth Air Pollution Control Board, died of cancer May 14 at the age of 78.

Mattson used "broad contacts from his position at Langley" to "keep things on an even keel" between environmental regulators and the scientific community, said friend and longtime Langley associate, Mike Ellis.

In the early part of his 35 years with Langley, Mattson headed research at the 8-Foot High-Speed Wind Tunnel, Branch A. The group studied problems airplanes have when flying close to and through the speed of sound. Through their aeronautics work, the team earned two Collier Trophies for reducing the drag of high-speed airplanes and for design and research of the slotted-throat wind tunnel.

In the 1960s and early 1970s, Mattson worked as a liaison between Langley and Johnson Space Center in Houston during development of the Apollo moon-landing vehicle. He identified research areas and noted problems, which "proved vital to the success of Apollo," said Ellis.

In 1974, the Peninsula Chapter of the Virginia Society of Professional Engineers named Mattson "Engineer of the Year."

Mattson held an earlier position as associate chief of the Space Vehicles Division and retired in 1975 as assistant director for external affairs. For 11 years after retirement, he worked in Hampton as a consultant for the Research Triangle Institute of Raleigh, N.C., connecting it to Langley.

Matson received a bachelor's degree in mechanical and aeronautical engineering from North Carolina State University in 1941. He was a member of the American Institute of Aeronautics and Astronautics since 1943.

He is survived by his wife of 46 years, Ann Merfeld Mattson, two daughters, one son and one grandson.

Marie M. Seals

Marie Mendel Seals died June 8 at the age of 81.

Seals was a resident of Hampton until 1962 when she moved with the NASA Space Program from Langley Air Force Base, where she was employed since 1945, to the Manned Space Center in Houston, Texas. A year later, she was transferred to the John F. Kennedy Space Center at Cape Canaveral and made her home in Titusville, Fla.

While a Titusville resident, Seals was an active member of St. Teresa's Catholic Church and the Salvation Army. She retired from NASA in 1970 after 25 years of service with the National Space Agency. In 1985, she returned to the Peninsula to be near family.

Survivors include her only son and his wife, four grandchildren, six great-grandchildren and two brothers.

Floyd G. Howard

Floyd G. Howard died July 5 at the age of 63. Born in Augusta, Ga., he had resided in Hampton since 1959.

Howard recently retired from NASA in March after 38 years of government service. When he joined Langley in 1959, he worked in the field of thermal analysis technology and its practical application in experimental heat transfer for flight vehicles. In later years, he investigated techniques to eliminate bluff body separation. Before retiring, he worked in the Fluid Mechanics and Acoustics Division and, prior to the reorganization, in the Fluid Mechanics Division.

Letter

From John Davis:

"My family and I thank those who extended their sympathy to us at the time of my wife's death. The prayers, visits, phone calls, flowers and cards really helped and were most appreciated."

Langley Sets Up Downsizing Hotline

As part of an Agency-wide effort to keep you informed about the latest developments, Langley has established a hotline. We hope this tool, in addition to information available from your management chain and the Office of Human Resources, will prove to be a valuable means of responding promptly to your questions.

If you have a specific question, either call ext. 49000, direct your inquiries via QuickMail to Downsizing-Hotline at Mail Center A or send your inquiry via e-mail (Downsizing-Hotline@larc.nasa.gov). Leave your name, phone number and question or concern, and a member of the Human Resources staff will contact you in a timely manner. Questions not related to Human Resources will be forwarded to the appropriate Langley office for a response.

Those who wish to remain anonymous may send their written inquiry or concern to John Cox at Mail Stop 120. Responses to anonymous entries will be placed in *LaRC This Week*.

GW Master of Engineering Management Degree Offered

The George Washington (GW) University School of Engineering and Applied Science at Langley plans to offer a new set of courses leading to the master of engineering management degree beginning in the Fall Semester 1995. Interviews at Langley will be conducted on Monday, August 21. If you are interested in entering this program or desire further information on the GW programs, call the GW-NASA office at ext. 41982.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

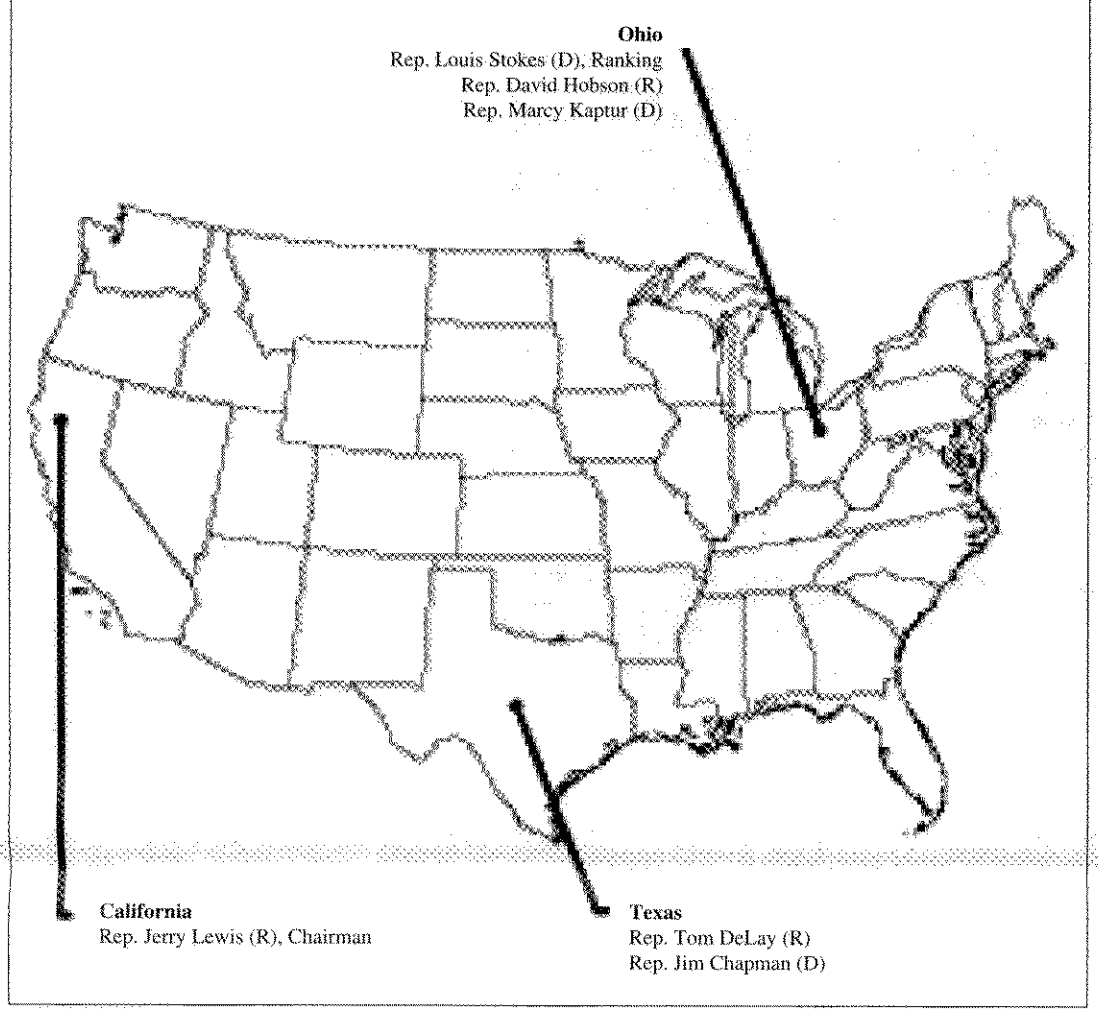
The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

COMMENT ON CONGRESS

The Potential Langley-Closing Bill Explained

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER

Figure 1: Dominant members of the House Appropriations Subcommittee on Veterans Affairs, Housing and Urban Development, and Independent Agencies



On July 10, the unthinkable happened. The House Appropriations Subcommittee on Veterans Affairs, Housing and Urban Development and Independent Agencies (VA-HUD), in the report accompanying its fiscal year 1996 bill, directed closing the Langley Research Center and Goddard and Marshall space flight centers.

The subcommittee, dominated by members from Ohio, California and Texas — and with no members from Virginia (see Figure 1) — allocated $13.54 billion for NASA for fiscal year 1996, a six percent reduction from fiscal year 1995 funds.

The subcommittee also included program and center instructions in the report language. Such specific directions are considered "legislation" and, therefore, forbidden in any appropriations measure. However, that did not stop the subcommittee.

Refer to Figure 2 for the language on NASA centers from the VA-HUD Appropriations Subcommittee report which the subcommittee passed July 10.

On July 14, U.S. House members from Virginia's 1st and 3rd Districts, Rep. Herbert Bateman (R) and Rep. Robert Scott (D), respectively, explained the unexplainable to a packed house of Langley employees: a "dumb game" being played to "get the attention of the White House."

They pledged an all-out effort, in concert with Maryland and Alabama members, to ensure that the bill's report language would be modified by the full House Appropriations Committee at its July 18 meeting to act on the VA-HUD bill. (The full committee has 56 members but only one from Virginia.).

On July 18, the report language cited above (Figure 2) was amended. Refer to Figure 3 for the language of the full House Appropriations Committee report, which the committee passed July 18.

For now, specific directions with regard to center closings have been removed. Whew! Can we relax? No. Instructions for "restructuring NASA" are included in the NASA-authorizing bill, HR 2043, of the House Science Committee, which directs an "asset-based" review by July 1996 before any center-closing decisions are made.

To the House

The action on NASA authorization and appropriations bills now moves to the House floor for consideration by all 435 members, likely to occur before the August 4 recess.

The same scenario will soon be repeated in the Senate regarding NASA authorization and appropriations. Virginia has no member on either Senate committee.

Langley is more vulnerable than any other NASA center to congressional actions, despite its acknowledged contributions to our country.

Figure 2: Language on NASA centers from the VA-HUD Appropriations Subcommittee report the subcommittee passed July 10. The language was deleted eight days later.

"The Committee believes that cost reductions of the magnitude required can only be achieved through the restructuring, by October 1, 1998, of the Goddard Space Flight Center (GSFC), the Langley Research Center (LaRC), and the Marshall Space Flight Center (MSFC). These three Centers have approximately 10,173 full time equivalent end-strength and consume $851,833,000 of the mission support budget in fiscal year 1996. It is anticipated that essentially closing these three centers and transferring continuing programs to other Centers which have adequate facilities, will result in net savings in mission support costs of about $130,000,000 per year.

"Specifically, the Committee directs NASA to transfer the majority of missions currently being done at LaRC to the Lewis Research Center (LeRC) and the Ames Research Center (ARC). NASA should consider retaining a small core necessary for on-site operation of the wind tunnel complex and transfer management of the complex to ARC. The Committee believes most other functions associated with aeronautics would fit well into the LeRC infrastructure.

"The majority of missions at the GSFC are to be transferred to the Jet Propulsion Lab (JPL). As part of the transition of the Mission to Planet Earth (MTPE) program from GSFC to JPL, NASA is directed to reassess the future direction of the program and report back to the Committee on the schedule changes which are required in order to incorporate late breaking cost reduction technologies being derived from other space programs. For example, would the work being done in the Discovery and New Millennium programs result in significant cost savings if certain aspects of MTPE were delayed two or three years? Likewise, is MTPE management sufficiently flexible to incorporate new advances in sensor technology being developed in the commercial sector? The Committee would like the report on MTPE by October 1, 1995.

"Finally, the Committee believes MSFC responsibilities can be allocated to the Stennis Space Center, Johnson Space Center, Kennedy Space Center, and LeRC and still achieve significant efficiencies.

"The Committee recommendation is reinforced by allocating a $55,000,000 reduction in fiscal year 1996 and inclusion of bill language mandating the restructuring of these facilities by October 1, 1998 and requiring that an implementation plan be submitted to Congress by March 31, 1996."

The full House Appropriations Committee struck, or deleted, all the words in Figure 2 — the language in the VA-HUD Subcommittee report which could have closed Langley, Goddard and Marshall — and replaced them with the following:

Figure 3: Language in the full House Appropriations Committee report which the committee passed July 18.

"The Committee has therefore included language in the Bill which directs NASA to complete a study by March 31, 1996 on the cost of performing functions at current Space Flight Centers and Research Centers and logical alternative locations, with a goal of achieving significant cost savings through consolidation or restructuring."

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program is designed to permit employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. For more information, call Lisa Allen at ext. 42610. Your annual leave donations are greatly appreciated.

The following Langley employees are approved leave recipients:

Marilyn Aldrich
Debra Shimek
Charles Washington
Charlene Gleaton
Cassandra Stevens

Bateman

Continued from page 1

Speaker of the House and other House leaders, I stressed how unfair it would be to let the proposal to close Langley drag on through the summer.

While we were successful on July 18, we must remain vigilant. Federal spending must be reduced. The NASA budget, in my opinion, has already been cut enough, but as we move toward a balanced budget by 2002, it would not surprise me to see other attempts to cut spending on aerospace programs. I am confident that the outstanding research performed by the Langley team will hold you in good stead in the future, just as it did last week.

Herb Bateman
Republican Representative
1st District

Astronaut

Continued from page 5

mission specialists includes flying T-38 high-performance jets, while others familiarize themselves with other high-performance jets. All candidates learn to adapt to the weightlessness of space by training in a "neutral buoyancy" water tank, which allows for a longer training session. The sensation of weightlessness can also be accomplished by a modified KC-135 set on a parabolic course, during which the aircraft is able to create up to 30 seconds of weightlessness. Flight simulators also allow for a type of hands-on training in the area of shuttle systems.

Following the full year of training, the astronauts complete advanced training, both system-related and phase-related. System-related training is designed to teach the astronaut about what it is like to live and work in space, yet it is not mission-related. Phase-related training provides the astronauts with the necessary skill for a specific mission.

Information

Consult the Johnson Space Center Home Page on the Internet to investigate your questions about the astronaut program. For an application, call the Astronaut Selection Office at 1 (713) 483-5907.

Danielle Beck is a 1995 LARSS participant.

Scott

Continued from page 1

simple-minded.

As you well know, the subcommittee's action would have had a devastating effect on the aeronautics industry. As experts in the field, you know that the innovations you help create contribute significantly to the private sector and the national economy as a whole. U.S. civilian military aerospace industry sales are approximately $100 billion and create a $30 billion positive trade balance, which is best for any domestic manufacturing industry.

Though we may face future obstacles in funding for aeronautical research, it is clear to me that NASA Langley will play a key role in the future missions of aerospace technology. The House Appropriations Committee on Tuesday, July 18, demonstrated that it is inappropriate and ill-advised to indiscriminately cut programs because they are politically expedient.

These are challenging times for federal agencies and we have a responsibility to ensure that the taxpayers get the most efficient use of their money. NASA Langley Research Center is an investment we cannot afford to lose.

Again, I congratulate you on a hard-won fight. I look forward to working with you in the years to come.

Bobby Scott
Democratic Representative
3rd District

Correction

In the July 14 issue of the *Researcher News*, we wrote that James A. "Micky" Blackwell would present Colloquium and Sigma lectures on August 15. He will speak at the Colloquium lecture only.

Multicultural Training at Langley

Not that long ago, we celebrated 75 years of world-class leadership in science and engineering. We were justifiably proud of achievements and contributions too numerous to list. But now, we, like our public and private sector counterparts, are vigorously searching for those ideas and strategies which will enable us to continue our legacy of leadership in the technical research community. Of course, this involves both what we do and how we do it. We have begun to reinvent government and re-engineer our business practices. As we look to the future, we must also create a new organizational culture that capitalizes on all of our resources and capabilities in conducting the research and solving the problems that enable us to meet the needs of our customers.

With this in mind, Langley is actively taking steps to facilitate the development of all our human resources to the fullest extent possible. One way to achieve this goal is to have our employees experience a comprehensive Multicultural Education Program developed by MACRO International, Inc. The fundamental objective of the two-day curriculum is to offer participants an opportunity to examine their personal philosophies and practices as they relate to working effectively in a multicultural organization; help participants develop an increased awareness of their personal "cultural lenses" and how they influence their working relationships; and increase participants' skills in creating and maintaining a multicultural organization including cross-cultural communications, conflict resolution and inclusive decision making.

The vast majority of employees who have attended thus far report that the program was personally beneficial and "not what I thought it was going to be." Lee and I have participated in this program and feel that it is one of the best we have experienced. We challenge employees, individually and collectively, not only to attend the course, but also to go back to your respective organizations inspired and committed to be as effective in your human relations as you are in your professional endeavors.

Paul F. Holloway
Center Director

Dr. H. Lee Beach Jr.
Deputy Director

Blackwell

Continued from page 1

structures, aerodynamics and guidance and control technologies together with space-based navigation systems could literally reinvent commercial and military aviation.

James A. Blackwell

Blackwell's Lockheed experience began in 1969 when he joined the former Lockheed-Georgia Co. as a research engineer. In 1984, after holding several management positions, he became director for engineering research and technology of Lockheed Advanced Aeronautics Co. In 1986, he returned to Georgia operations as vice-president of engineering. Lockheed-Georgia and Lockheed-California consolidated into Lockheed Aeronautical Systems Co. (LASC) in December 1987. Following the consolidation, he became vice-president and assistant general manager for research, technology and engineering.

Since December 1990, Blackwell has served as LASC's vice president and general manager of the F-22 Team Program Office. In this position, he headed the LASC/Boeing/Lockheed Fort Worth Company (formerly General Dynamics) partnership. The partnership's goal was to build America's next air-superiority aircraft. He also led Lockheed's portion of the advanced tactical fighter demonstration/validation program, resulting in the team's F-22 contract. In 1993, he was named president of LASC.

Blackwell earned a bachelor's degree in aeronautical engineering from the University of Alabama in 1962. He earned a master's degree in the same discipline from the University of Virginia in 1966. In 1986, he completed the Advanced Management Program at Harvard University. In 1994, he received an honorary doctorate from Mercer University.

Blackwell is a fellow of the American Institute of Aeronautics and Astronautics. He has written numerous technical papers covering all phases of subsonic and transonic aerodynamics. He is a trustee of Mercer University and on the board of directors of the Michael J. Coles School of Business at Kennesaw State College. He is also a member of the Alabama Engineering Hall of Fame.

Colloquium & Sigma Lectures Schedule

Colloquium lectures are usually held the second Tuesday of the month, 2 p.m., at Langley's H.J.E. Reid Conference Center. They are open to all NASA employees and contractors. Civil-service personnel should charge their time to JO A5266.

Sigma lectures are usually held the second Tuesday of the month, 7:30 p.m., at the Virginia Air and Space Center, Langley's Visitor Center, in downtown Hampton. Admission is free with no reservations required.

August 1 Lectures

Colloquium: "Seafood Farming for the Future" by Michael J. Oesterling. (See the July 14 issue of the *Researcher News* for an overview of the lecture.)

Sigma: "Seafood Farming for the Future" by Michael J. Oesterling. After the lecture, the Virginia Air and Space Center will show the IMAX film, "*Search for the Great Sharks*," at regular prices: adults, $5.50; seniors, military, and NASA (and family) with identification, $4.50; and children 3 to 11, $4.50.

August 15 Lecture

Colloquium: "The Future of Aeronautics" by James A. "Micky" Blackwell.

"Flying Escargot" Tour Langley

BY MEGHAN WOODCOCK

The newest group of astronaut candidates, collectively nicknamed the "Flying Escargot," visited Langley Tuesday, July 11. The astronaut candidates spent the day learning about Langley's role in NASA's mission, focusing mainly on aeronautics, space and technology transfer. Twenty-three men and women from Japan, France, Canada and the United States make up the 15th class of astronaut candidates (ASCANS).

Steve Robinson, a former research scientist with the Fluid Dynamics and Acoustics Division at Langley, was a part of the touring group of astronaut candidates. Robinson was excited about his new career but said he missed friends from Langley. The tour covered a wide variety of research and Robinson, who had worked at Langley for four years, felt as if he was "seeing the Center for the first time."

International candidates include Dafydd R. Williams from Canada, Takao Doi from Japan and M. Michel Tognini and Jean-Loup Chretien from France. Chretien explained he was required to undergo astronaut training to become a mission specialist in the U. S. Space Program despite the fact that he had already flown in two space missions for the French. The United States is hoping Chretien's experience on the Mir Space Station will benefit work with the international Space Station. Chretien believes enough research exists to warrent an increase in the number of astronauts allowed into the U.S. space program.

Photo by Fred Jones

The Flying Escargot, the nickname of the newest astronaut candidate class, took a fast-paced tour of Langley July 11. The candidates are, front row, left to right, staff member Paige Maultsby, Pam Melroy, Kathryn Hire, Susan Still, Janet Kavandi, Joe Edwards, Carlos Noriega, Steven Lindsey, Kalpana Chawla and Edward Lu. In the back row, left to right, are French astronaut M. Michel Tognini, Frederick Sturckow, Takao Doi of Japan, James Reilly, Michael Anderson, Dominic Gorie, Rick Husband, Scott Altman, Michael Bloomfield, French astronaut Jean-Loup Chretien, Stephen Robinson, Robert Curbeam, Dafydd Williams of Canada and Jeffrey Ashby.

The Tour

Tour stops included the Aircraft Landing Dynamics Facility, the Hangar, the National Transonic Facility, flight simulators and an atmospheric sciences briefing.

An overview of research at the Aircraft Landing Dynamics Facility was presented to the candidates. The work at this unique facility has lead to improved runway designs and increased takeoff and landing capabilities. A video demonstrated the water propulsion system used to propel structures at more than 200 knots on the facility's test runway.

The astronaut candidates also visited the National Transonic Facility. This tunnel can test a wide range of airplane models in air or gaseous nitrogen at up to nine atmospheres and even tested models for the space shuttle. These models were on display for the astronaut candidates.

Flight simulators featured in Bldg. 1268A were a hit with the candidates. When asked if they would like to fly in the cockpit, Steve Robinson enthusiastically replied, "Of course, we want to fly!" The candidates somersaulted their way through a simulation of the Grand Canyon projected onto the large, enclosed sphere. Langley's flight simulators are used for research instead of training, but the astronauts enjoyed themselves just the same.

The candidate class continued its look at Langley in the atmospheric sciences facility. Projects using lidar (laser radar) were discussed. Langley's Lidar In-Space Technology Experiment (LITE) takes readings from space to help predict weather patterns on Earth. Other Lidar experiments are flown on airplanes and use a laser to measure humidity and other variables in a "slice" of air. The astronaut candidates were interested in this type of technology because of its relation to their basic training curriculum in Earth science.

Other technologies related to aerospace research were demonstrated to the candidates, including the crack-finder and the thermal bond tester. The class especially seemed to enjoy hearing about the practical applications of the two systems.

One of the final stops for the visitors was at the lunar-landing simulation site where Langley innovations helped put a man on the moon. This gave the astronaut candidates a feel for Langley's history and a look at past events that have shaped the U.S. space program.

"So, You Want to Be an Astronaut"

BY DANIELLE BECK

For many, the dream of becoming an astronaut is a far-fetched idea, a career for someone else. For others, the fantasy of having their heads in the stars can become a reality. The astronaut candidate program, operated by Johnson Space Center in Houston, Texas, is ongoing and accepts applications from qualified individuals, with both civilian and military backgrounds. Qualifications for this program are numerous, yet they are achievable. All applicants must be citizens of the United States; other requirements vary with the different positions.

Pilot

Pilot astronauts serve as commanders or pilots on space shuttle missions. Basic qualifications for pilot astronauts include a bachelor's degree in biological or physical science, engineering, or mathematics. A graduate degree is desired, but not necessary. The applicant must have accrued 1,000 hours of flight time in a jet aircraft; experience as a test pilot is also desirable. Academic requirements aside, the applicant must pass a strict physical examination, including visual acuity, blood-pressure readings and a height restriction of 64 inches to 76 inches tall.

Mission Specialist

Mission-specialist astronauts are an integral part of the crew. These individuals work closely with all portions of crew life aboard the shuttle including payload activities, experiments and monitoring the use of consumable items, such as food and fuel.

A mission specialist is not required to meet physical requirements as stringent as the pilot candidates; yet they too must meet visual standards and height restrictions of between 60 inches and 76 inches. Academic standards also must be met. A bachelor's degree in mathematics, biological or physical science, or engineering is required with an additional three years of related and progressively responsible professional experience. An advanced degree may be substituted for part or all of the experience requirement.

Payload Specialist

A payload specialist is a professional in the physical or life sciences or a technician skilled in operating shuttle-unique equipment. Payload specialists are not required to be U.S. citizens but they must meet the standards for health and physical fitness. These individuals are also required to complete a comprehensive flight-training course to familiarize themselves with shuttle systems.

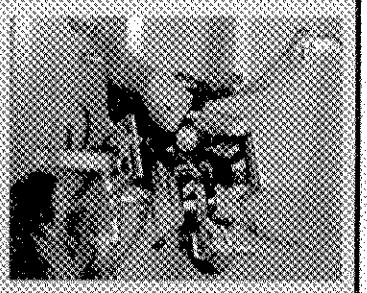
Training

After meeting the qualifications for the astronaut program, applications are reviewed and selections are made for the next group of astronauts. Upon selection, the astronaut candidates must complete a year-long training process.

Johnson Space Center is the host for astronaut-training facilities. The training process is both academic and hands-on to ensure complete knowledge of shuttle systems. The hands-on training for the pilots and

See **Astronaut** *on Page 4*

SPACE CAMP



For those of you who still have the burning desire to try your hand at the astronaut career, but do not meet the qualifications, SPACE CAMP may be the answer for you. Facilities in Alabama and Florida host numerous programs for astronaut hopefuls of all ages. In addition to youth camps, sessions are offered for educators, adults of all ages and special parent and child camps are available. For more information, write the U.S. Space and Rocket Center, One Tranquility Base, Huntsville, Ala. 35807, or call 1-(800)-63-SPACE.

Bement's Explosive Joining Wins Award

Laurence J. Bement, an aerospace engineer in Langley's Analytical and Test Engineering Branch, won the Award of Merit from the Federal Laboratory Consortium for Technology Transfer on April 11. The award was for his research in small-scale explosive joining of metals and specifically for the development of explosive-joining technology and its transfer to American industry. His research has reduced the cost of plugging heat exchanger tubes by 50 percent over existing technology.

Bement holds four patents related to explosive joining and has more than 30 publications to his credit. He has presented papers at three conferences and published a NASA Technical Memorandum, entitled "Small-Scale Explosive Seam Welding."

Langley Toastmasters Install New Officers

On June 28, officers of the NASA Langley Toastmasters Club for 1995-96 were installed by Beverly Nicholson, Peninsula district governor. The new officers are:

President: Kelly Binkley
Vice President of Education: Regina Spellman
Vice President of Membership: Archie Fripp
Vice President of Public Relations: Robin Cravey
Sergeant at Arms: Bill Debnam
Treasurer: Tracey Beck
Secretary: Carol Yanarella

Marco Egoavil was recognized as the 1994-95 Toastmaster of the Year.

The Toastmasters Club promotes training in leadership and public speaking skills and is open to all NASA and Langley Air Force civil-service and contractor employees. Meetings are held the second and fourth Wednesdays of each month in the H.J.E. Reid Conference Center. For more information, call Robin Cravey at ext. 41819.

Noor Receives Engineering Award

Dr. Ahmed K. Noor, Ferman W. Perry Professor of Aerospace Structures and Applied Mechanics at the University of Virginia (UVA), and director of Langley's Center for Computational Structures Technology, has been awarded a technical achievement award from the National Academy of Engineering. Noor was cited for outstanding contributions to engineering research and education. The award was presented at the Third U.S. National Congress on Computational Mechanics in June in Dallas, Texas.

Noor came to Langley in April 1971 as a National Research Council senior research associate. Before joining UVA, he was head of the Structures and Dynamics Program for George Washington University's Joint Institute for Advancement of Flight Sciences from 1972 to 1990. Prior to that, he taught at Stanford University, Calif.; Cairo University, Egypt; University of Baghdad, Iraq; and the University of New South Wales, Australia.

Daughter Receives NASA Scholarship

Emily Carter Paulson, daughter of Langley employee John W. Paulson Jr., has been awarded a four-year scholarship of $8,000 by the NASA College Scholarship Fund. Paulson was one of five recipients selected from a field of 88 entries. The award was presented in honor of former NASA Administrator James E. Webb and funded by the Johnson Space Center Chapter of the NASA Alumni League. The award is restricted to dependents of NASA employees planning to major in science or engineering.

Paulson was a straight A student, ranking second in Ferguson High School's 1995 graduating class of 288 and has been accepted at Yale University with plans to pursue a degree in chemistry. She was very active during her high school career. She was president of the Senior Class, a varsity golf team member, a debate team member, a Model United Nations delegate, a cross-country participant, a member of the orchestra for musicals, a volunteer interpretive guide at a local museum, and an intern with a local cardiologist.

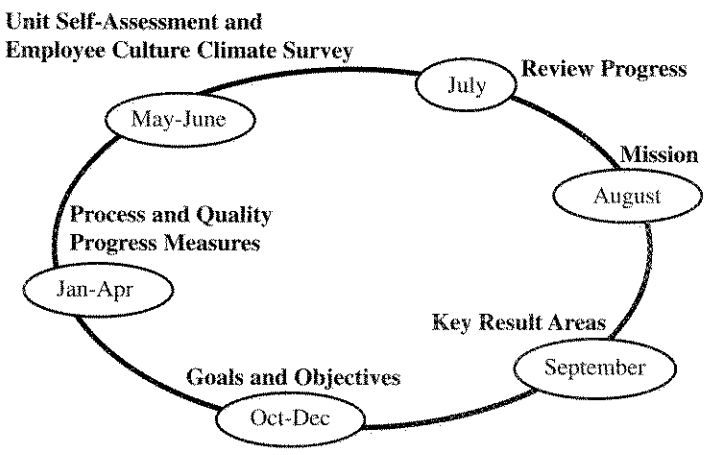
Commander Shares Quality Views

On May 17, Brig. Gen. Gregory S. Martin, commander of the 1st Fighter Wing at Langley Air Force Base (LAFB), gave a presentation to members of the senior staff and facilitator network. He covered quality initiatives and the strategic planning process at the Air Combat Command (ACC) and the 1st Fighter Wing at LAFB. The ACC had won the Presidential Award for Quality and the 1st Fighter Wing recently became a finalist for the U.S. Senate Award for Productivity and Quality for Virginia.

Martin emphasized the importance of leadership's commitment to quality. He said that the ACC's quality management process was begun in 1978 by Gen. Wilbur L. Creech, former commander of the Tactical Air Command, who believed the process must start at the top. Creech had great confidence in people's ability to do their work. In 1991, Gen. John M. Loh, former commander of the ACC, expanded the involvement of people in the processes to build trust, teamwork and continual improvement in all Air Force processes. Loh attributed process errors to lack of training, unclear directions and improper tools and resources — not people. The Air Force quality approach is woven into training for all personnel.

The 1st Fighter Wing used a quality improvement council (QIC) to provide leadership to their quality management implementation. The QIC originally included 34 people from three layers of management who met one day each month off site. Now, three years into the process, the QIC has been divided into two groups: Executive QIC (steering) and QIC (implementation). The long-term QIC focus is on communications, process analysis and fact-based decisions. The objective is to establish an enduring quality leadership philosophy.

Martin's presentation focused on the importance of leadership in changing the culture and in the planning process. He concentrated on their annual planning cycle which includes six steps beginning each July with a review of the prior year's activities.



Martin described the difficulties they had in his wing at each step of the way, but said the results of this effort were worth the energy expended. His planning process tied together approach and deployment and measured results by focusing on specific process improvements related to the overall plan. The payoff to planning came from grass roots implementation and process improvement. People were doing the "right things right" and were aligned in the effort. Feedback was collected regularly through a variety of sources such as their monthly planning meeting and annual employee surveys.

1995 Speakers Bureau: Through June

SPEAKER	ORGANIZATION	TOPIC — Before May
Darden, Christine	Ivy Academy	Atmospheric Pressure
Darden, Christine	Briarfield Elementary School, Kindergarten	NASA Aeronautics and Space Activities
Darden, Christine	Briarfield Elementary School, Grades 2 and 3	NASA Aeronautics and Space Activities
Darden, Christine	Delta Sigma Theta Role Model Program	4P Career Path—Perceive, Plan, Prepare, Persist
Darden, Christine	Southside Boys and Girls Club	On Being an Engineer
SPEAKER	**ORGANIZATION**	**TOPIC — End of May**
Levine, Joel	United Nations Association	Earth Day 25: An Update on the Health of Our Planet
Meadows, Byron	Macon Elementary School	Measuring the Earth's Atmosphere
Uenking, Michael and Watson, Cathy	Churchland Middle School	Careers in Aerospace
Hunter, Craig	David A. Dutrow Elementary School	Sound, Light and Water Waves
Harmon, Peggy	National Black Child Development Institute, North Hampton Community Center	Technical Careers and Student Programs at Langley
Johnston, Norman	Menchville High School	Polymer Chemistry
Allen, Danette	Danby Elementary School	NASA Engineering
Levine, Joel	Virginia Institute for Marine Sciences	NASA's Mission to Planet Earth
SPEAKER	**ORGANIZATION**	**TOPIC — June**
Heyman, Joe	Virginia Air & Space Center docents and volunteers	Technology transfer
Kinard, Bill	Winthrop University Junior Scholars Program, Rock Hill, S.C.	Space Station and Shuttle
Hueber, Lawrence D.	Tabb Elementary School	Living and Working in Space
Darden, Christine	FAA Technical Women's Organization Annual Conference	NASA 2000
Levine, Joel	College of William & Mary, Public Policy Seminar	Global Environmental Issues
Schauer, Cathy	Brownies	Apollo Adventure

Day of Caring Set for September 7

Langley will join Virginia Power, Newport News Shipbuilding, Riverside Hospital and other community-minded organizations to sponsor the fourth annual community Day of Caring on September 7.

Last year, the Day of Caring mobilized over 600 volunteers from area businesses and federal facilities to help the community. Volunteers either did general clean-up and fix-up chores, worked at day camps for children, audited financial records, served as teacher's aides, worked at a food bank, programmed computers or used their plumbing, electrical, air-conditioning, landscaping or carpentry skills.

Day of Caring tasks are many and varied — but all are singularly focused on community need. The secret ingredient which ensures the success of this day is the volunteer.

Civil-service employees interested in participating in the 1995 Day of Caring should call Marny Skora, Langley's community services officer, at ext. 43315 for a volunteer form. The first 100 Langley employees to register will be granted administrative leave for this community-service activity. Contractors who wish to participate should contact their corporate office.

Photo by Peggy Hopkins

Dr. John Lamar looks up from his construction project long enough for the camera to snap this photo, which was presented to Center Director Paul Holloway "in recognition of your generous support of the third annual Day of Caring" in 1994. Lamar was assigned to the Girl Scout Council of the Colonial Coast and worked with other community volunteers to assemble picnic tables for future campers.

Sparky the Firedog Helps Children Learn Fire Safety

BY JOHN HARRIS

Sparky the Firedog visited children at the Langley Child Development Center to promote fire safety at the daycare center and in the community. The event was part of Triceratops (nickname for three-year-old children at the daycare center) Community Helpers Month, which allows children to interact with members of various community-service agencies to learn how they help citizens in the community.

Sparky (firefighter Victor Howard) and several of his friends from the Langley fire station visited the children at the daycare center May 16. They enjoyed shaking hands with Sparky and listening to him talk about fire safety.

The children participated in a variety of activities. They looked closely at firefighting vehicles and equipment, sat in a fire engine and learned how it is used at a fire and tested a bed inside an ambulance which was also on the scene. Finally, they were given a turn at using the fire hose. Each child received a badge certifying them as official firefighters.

Photos by Katie Reid

Children at the Langley Child Development Center were treated to a visit from Sparky the Firedog (firefighter Victor Howard). Sparky helped the children learn about the importance of fire safety.

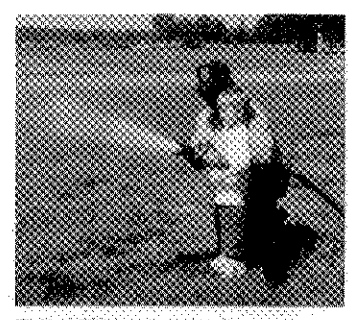
Annette Johnson, a teacher at the daycare center, said, "We're doing some exciting things here to give the children a chance to learn about the community. There's much more than just baby-sitting."

Community Helpers Month is an annual event featuring a variety of workers involved in services to the community. The Portsmouth police crime-busters offered tips on fighting crime. Children visited a local Farm Fresh supermarket to learn about food items and how to make purchases. A local dentist gave the children tips on tooth care and a free toothbrush to encourage regular brushing.

For more information about Langley's fire house or Sparky the Firedog, call Doug Smith at ext. 45756 or Capt. Carl Helman at ext. 45600.

For more information about the Child Development Center or Community Helpers Month, call Kathy Skinner at ext. 44827 or Barb Merrill at ext. 47670.

John Harris is a student intern from Old Dominion University working toward his master's degree in English.



Erik Mills, above, flexes the muscles necessary to operate a firehose that squirts 100 gallons of water per minute. Firefighter Alan Stanfield has nothing to worry about with Erik at the controls.

From left, firefighters Alan Stanfield and Steve Laxton, along with teachers Annette Johnson and Rogenia David, give children from the Langley Child Development Center a tour of a fire engine.

Fourth Annual AIAA Golf Tournament Results

On June 29, the Langley Chapter of the American Institute of Aeronautics and Astronautics (AIAA) held its Fourth Annual Golf Tournament at the Eaglewood Golf Course at Langley Air Force Base. Thirteen foursomes competed in the "Captain's Choice" event. After the round, the contestants joined other members of the AIAA at the annual picnic for food, drink and the awards presentations. The following awards were presented:

Winner of the First Flight with a score of 65
David Dress, Mike DiFulvio, Richard Wheless and John Paulson

Runner-up of the First Flight with a score of 66
Scott Asbury, Larry Leavitt, Fran Capone and Charles Poupard

Winner of the Second Flight with a score of 63
Pete Petersen, Barry Creighton, Jake Jaques and Bruce Holmes

Runner-up of the Second Flight with a score of 69
Travis Turner, Doug Nark, Charlie Smith and Ferd Grosveld

Low Score for Mixed Team (at least one woman member) with a score of 67
Carter Paulson, Robert Grove, Andy Beal and Dave Wallingford

Last Place with a score of 81
Bill Compton, George Hanson, John Edwards and Pel Phillips

Other awards included:

Closest to the hole on both number 4 and 9: John Whitesides

Closest to the hole on number 12: Carter Paulson

Closest to the hole on number 15: Pete Petersen

Longest drive on number 13: Scott Asbury

"Larry Green Memorial Shot": Steve Krist

Congratulations to the winners. Many thanks to those who came out to play a little golf, be publicly humiliated and support the AIAA.

Happenings

FOR SALE: 2BR, 2-1/2BA, luxury, lakefront, custom town-home in Hampton. Fireplace, garage, central air and vacuuming, two decks, three floors w/one gigantic bedroom per floor. Miniblinds, ceiling fans, crown molding and chair railing. Close to NASA. Five years old. $125,000. Call Sharon at 825-1236.

FOR RENT: 3BR, 2BA brick rancher in Hampton North. Fenced yard, all appliances. 1,400 sq. ft. $575/month. Call Anne at 868-6427.

FOR SALE: Van for handicapped. 1993 Customized Dodge Ram 250, Mark III. Brand new hydraulic wheelchair lift, wheelchair floor locks and automatic fold-out bed. Cruise control, V8, AT, 20,000 original miles. Original manufacturers warranty of 7 years/70,000 miles. $22,500. Call Ann at 851-7736.

FOR SALE: 1987 Honda Hurricane (CBR600F) motorcycle. Helmets, leathers, tankbag, saddlebags, radar detector and other accessories included. Low miles, very clean. $2,900 negotiable. Call Dan at 596-3534.

FOR RENT: Two time-share weeks available at beautiful Gold Crown resorts, Orbit One in Orlando, Fla., or Powhatan Plantation in Williamsburg, Va. Sleeps six and eight, respectively. Each unit includes a washer/dryer and fully equipped kitchen. Superb recreation facilities. A steal at $500/week in August. Call Ken at 868-9819.

NASA SKI WEEK V: The fifth annual Agency-wide ski trip has been scheduled for the week of Jan. 13 to 20, 1996, at Crested Butte, Colo. The trip is open to all NASA personnel, contractors, retirees and their friends and relatives. For information, call Michael Schooley at ext. 48524 or 874-2736.

Tour Both Langleys

Would you like to experience NASA Langley Research Center and Langley Air Force Base from a unique viewpoint? Take a van tour of both Langleys departing daily from the Virginia Air and Space Center, Langley's Visitor Center, in downtown Hampton. The van tours depart Monday to Friday at 10:30 a.m. and 1:30 p.m. and last approximately two hours. The Sunday tour departs at 1:30 p.m. No reservations are necessary. First come, first served. The tours will run through August.

For more information, call the Virginia Air and Space Center at 1 (804) 727-0900.

NASA and Langley Photos and Information Available at PMC

Langley's Public Mail Center (PMC) makes available many educational resources to people interested in the work done by NASA and, more specifically, at Langley. Photos, fact sheets, posters, booklets and other items can be freely obtained at the PMC.

To select the items you want, stop by the PMC, Bldg. 1153, Rm. 115, Monday through Friday, 9 a.m. to 3 p.m.

Free Admission

The Virginia Air and Space Center, Langley's Visitor Center, is offering a special promotion for NASA active civil service employees and on-site contractors with photo identification badges.

Throughout the summer months of July to September, free admission to exhibits will be given to civil service employees and contractors who present NASA photo identification badges.

Accompanying family members will be admitted to exhibits at the discounted rate.

In addition, the Virginia Air and Space Center is offering a special promotion on annual family memberships. From July 1995 to June 1996, civil service employees and on-site contractors are entitled to receive a 20-percent discount on family memberships which includes:

* Free exhibit admission *
* IMAX discounts *
* 10-percent gift-store discount *
* Quarterly newsletter *
* Invitations to exhibit and film openings *
* Various discounts and coupons provided by local merchants and attractions*
* Discounts on camps and other activities *

*****SPECIAL BONUS FOR NEW MEMBERS*****

As of July 1, free Apollo 13 gifts such as tee shirts, caps and books will be available while supplies last.

For information and membership fees, call 727-0900.

Langley Firefighters Host Daycare Children

Photo by Katie Reid

Madeline Burley demonstrates the proper grip necessary to operate a 15-ton fire engine as firefighter Steve Laxton looks on. Her smile suggests, "This is a piece of cake!" Children at Langley's Child Development Center were treated to a visit from Langley's firefighters and Sparky the Firedog. See story on page 7.

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

Researcher News

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 16 ❖ August 11, 1995

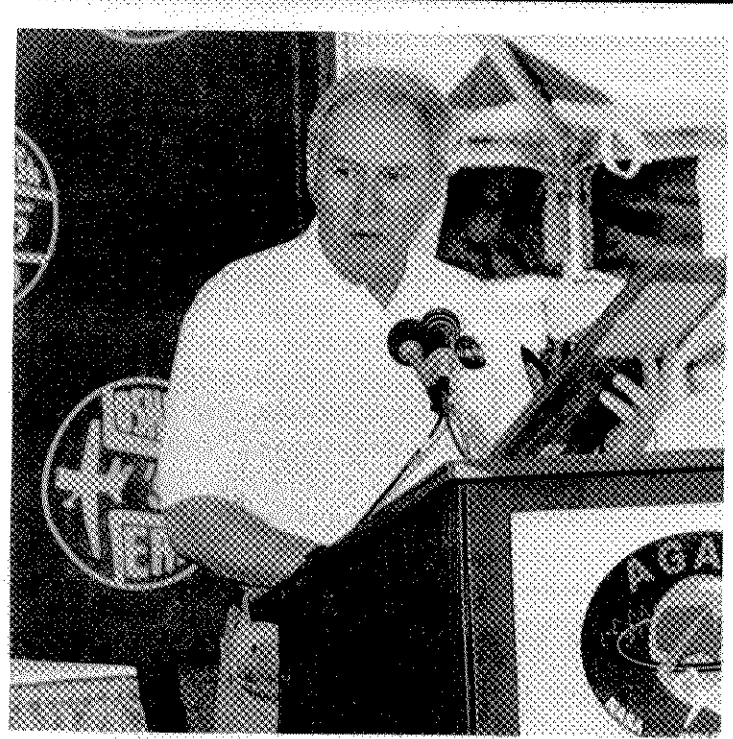


Photo by Fred Jones

NASA Administrator Daniel S. Goldin receives a plaque honoring him for his vision and leadership in developing the Advanced General Aviation Transport Experiments (AGATE) consortium. The AGATE consortium, led by Langley, is intended to rejuvenate the general aviation industry.

General Aviation Revitalized

AGATE Consortium Agreement Signed

BY MEGHAN WOODCOCK AND MARK CHAMBERS

NASA Administrator Daniel S. Goldin signed a formal agreement with other industry representatives at the Experimental Aircraft Association (EAA) Fly-In Convention and Sport Aviation Exhibition in Oshkosh, Wis., Saturday, July 29, to support the Advanced General Aviation Transport Experiments (AGATE) consortium. Tom Poberezney, EAA president and convention chairman, presented Goldin with a plaque honoring him for his vision and leadership in spearheading the development of the AGATE consortium.

Although NASA's participation in the consortium is led by Langley, Goldin emphasized that cooperative management between government and industry would exist, with each promising $63 million in support money. He said he believed the AGATE consortium was an essential step to update the 25-year-old technology in general aviation airplanes, especially for the country that pioneered aviation. He also recognized the importance of the Small Business Innovation Research (SBIR) program, which has awarded over $10 million in contracts to small general aviation companies over the past two years.

The AGATE consortium is directed by Dr. Bruce Holmes, head of the general aviation program at Langley which serves as the lead NASA center for general aviation research.

The consortium's creation is resulting in a tide of enthusiasm and interest in general aviation. Holmes states, "The consortium is serving as a 'blueprint' for mapping out general aviation revitalization. It provides industry with more flexibility and gives it the opportunity to take greater risks with higher payoff, control of proprietary and shared technologies, faster speed of technology transfer, reduced cost and more efficient use of scarce research-and-development resources."

100th U.S. Human Space Flight Sets Many Records

BY CATHERINE E. WATSON

At 3:32 p.m. EDT on June 27, the Space Shuttle Atlantis (STS-71) embarked on America's 100th human space flight. Two days later on June 29, after three years of planning and training, the Atlantis docked with the Russian Space Station Mir. The docking of Mir and Atlantis marked the first meeting of the two countries in orbit since Apollo-Soyuz on July 17, 1975. In addition, the docked spacecraft constituted the largest spacecraft ever in orbit, with a total mass of 462,000 pounds.

Daily Routine

During a July 18 media briefing at the Johnson Space Center, the Atlantis and Mir 18 crews had a chance to share their experiences. Showing slides and video of his Mir stay, American astronaut Norman Thagard explained the day-to-day routine of life aboard Mir. According to Thagard, he and his Mir 18 counterparts stayed physically fit during their 105-day stay by using two treadmills and two bicycles. Mir 18 com-

See **Atlantis** *on page 3*

American astronaut Dr. Norman Thagard, left, and fellow Mir 18 crew members, commander Vladimir Dezhurov, center, and flight engineer Gennady Strekalov, enjoy an all-American ice cream treat of hot fudge sundaes as they relax in the crew quarters of the Operations and Checkout Building. Thagard expressed a desire for ice cream during an on-orbit interview and was rewarded with the real thing upon his return from a U.S.-record-breaking stay in space.

NASA Oshkosh Exhibits Promote Partnership With General Aviation Industry

BY MEGHAN WOODCOCK

Over one million aviation enthusiasts traveled to Oshkosh, Wis., July 29 to August 2, for the annual Experimental Aircraft Association (EAA) Fly-In Convention and Sport Aviation Exhibition. A highlight of the show was NASA's exhibit titled "National Leadership/ National Partnership."

The latest innovations in aerospace research were featured in the updated exhibit hall. In addition, craftspersons from NASA's research centers demonstrated wind-tunnel models, instruments and other devices that make NASA's aeronautical research possible.

Photo by Fred Jones

NASA Administrator Daniel Goldin, left, listens to Sang Tran of Langley's Microelectronics and Sensor Development Section explain his craft as Alton Barnes of Langley's 16-Foot Transonic Operations Section looks on. Tran and Barnes were Langley exhibitors at the annual Experimental Aircraft Association Fly-In Convention and Sport Aviation Exhibition in Oshkosh, Wis.

NASA Exhibits

NASA Administrator Daniel Goldin and Senator Larry Pressler of South Dakota, chairman of the Committee on Commerce, Science and Transportation, toured the NASA display to see interactive exhibits maintained by NASA and businesses in the Small Business Innovation Research program.

The Advanced General Aviation Transport Experiments (AGATE) consortium displayed its concept demonstrator during Goldin's tour. The demonstrator is a cockpit simulator which uses liquid-crystal-display (LCD) panels to replace normal control instruments to simplify cockpit controls. The LCD displays show computer-generated images of terrain and other aircraft as well as digital fuel and flight indicators to produce a "highway in the sky" image designed to make flying more intuitive. This makes it easier for pilots to learn control systems and decreases the rate of human error. Visitors over 18 years of age were given demonstrations and later asked to participate in a survey to gather their suggestions on cockpit designs.

Maintaining the partnership theme, the NASA building housed exhibits from eight different general aviation companies. One of these companies, Seagull Technology, developed a computer program related to the AGATE concept demonstrator known as the General Aviation Information Management System (GAIMS). Different software packages enable

See **NASA Exhibits** *on page 5*

News Briefs

Around the Agency

SPACE STATION SAVED TWICE IN ONE DAY - Two amendments to the Veterans Affairs, Housing and Urban Development, and Independent Agencies budget bill to kill the International Space Station were defeated on the floor of the U.S. House of Representatives by stunning margins. On Thursday, July 27, the Obey Amendment was defeated by a margin of 173 votes, 299-126, the largest margin of victory ever for the Space Station in the House. The next day, the Roemer Amendment was defeated by a margin of 155 votes, 287-132.

Both votes showed deep bipartisan support for the Space Station. In effect, the increasing margins of victory demonstrated that NASA has made a compelling case to the Congress that the Space Station is a sound, well-managed program of great value to America. These votes were an important step in putting not only the Space Station, but also NASA's science, aeronautics and research programs on the right track for the future. NASA Headquarters is hopeful that Congress recognizes NASA has stepped up to the budget challenge and that its programs are a critical part of the country's investment in research and development.

The vote on the Obey Amendment was the 19th vote on the fate of the orbital laboratory since 1987. It was the first roll-call vote of this budget bill. The vote on the Roemer Amendment was the 20th vote. The overwhelming margins of victory in both votes represented significant gains over last summer's 123-vote margin.

JOSEPH H. ROTHENBERG NAMED DIRECTOR OF GODDARD - Joseph H. Rothenberg has been named director of Goddard Space Flight Center in Greenbelt, Md. Rothenberg had been the center's deputy director since rejoining NASA from industry in April of this year.

Rothenberg rejoined NASA from Computer Technology Associates, Inc., Space Systems Division, McLean, Va., where he was executive vice president. From 1990 to 1994, he was associate director of flight projects for the Hubble Space Telescope (HST) at Goddard. In this position, he directed the development and execution of the successful first servicing mission of the HST.

DIAZ NAMED TO LEAD PLANNING EFFORT FOR SCIENCE INSTITUTES - Alphonso Diaz, deputy associate administrator for Space Science, has been named to lead the development of plans for the science institutes proposed by the U.S. Space Agency. Diaz will define the scope and organizational framework of the institutes, including their staffing and financial requirements, and will report directly to the administrator.

NASA officials have previously announced plans in conjunction with the Zero-Base Review to create science institutes to help streamline the Agency's management structure and improve the quality of its scientific research. As envisioned by NASA, the institutes would be privatized arrangements in which government-owned assets are managed by an external entity, such as a university, an industrial organization or a consortium.

Supported by representatives from the relevant offices at NASA Headquarters and the field centers, the initial planning effort is expected to take approximately 90 days. Once NASA has consulted with the Administration and Congress, and secured appropriate authority, the Agency will inform interested parties about how to become formally involved as the plan is implemented.

NASA-FUNDED RESEARCH SEES FALL OF OZONE-DEPLETING CHEMICAL - NASA-sponsored university research has indicated that levels of an ozone-depleting chemical are falling, the first decrease ever measured of a substance restricted by the Montreal Protocol, an international treaty limiting the production of ozone-depleting chemicals.

The research showed that concentrations of methyl chloroform have decreased at approximately two percent a year since mid-1990. Until that point, levels had increased approximately four percent a year since 1978. Concentrations of methyl chloroform are measured from four ground stations around the globe. NASA funded this research through its Upper Atmosphere Research Program, part of its Mission to Planet Earth (MTPE).

"This is a very important measurement," said Dr. Robert Harriss, head of the Science Division of NASA's Office of MTPE. "We've already seen slowing increases in chlorofluorocarbons and other ozone-depleting chemicals. Now, for the first time, we've actually measured a decrease in one of these chemicals."

World Wide Web Offers Space Flight Manifest

by Danielle Beck

Information available on the World Wide Web (WWW) increases dramatically with each passing moment as many individuals catch the wave. NASA will not be left behind on the information super-highway. NASA home pages are a valuable resource for answers to NASA-related questions. All aspects of NASA are quickly going online, providing increasing amounts of information at your fingertips.

Now available on the WWW is the Space Flight Manifest. Within this page, you can discover the schedule for current space shuttle launches. Information about specific shuttle missions, including crew members, mission milestones, payload information and launch details, is also accessible from the manifest. You can access this wealth of information at the Space Flight Manifest's URL: http://calvin.ksc.nasa.gov:1080/sts.html

Danielle Beck is a 1995 LARSS participant .

George Washington Offers Fall Courses for Advanced Degrees

The George Washington University (GWU) School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences at Langley offers the following degrees: master's, professional and doctorate of science in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, structural engineering and structural dynamics, and a master's in engineering management. Registration dates for the fall semester are Aug. 22 to 26. For a complete listing of courses and telephone registration procedures, contact the GWU-NASA office via phone at ext. 41982 or e-mail (gwu+jiafs@larc.nasa.gov).

Symposium on Visualizing Time-Varying Data Set for September

A symposium on Visualizing Time-Varying Data will be held Sep. 18 and 19 in Williamsburg, Va. It is sponsored by Langley and the Institute for Computer Applications in Science and Engineering in cooperation with the Association for Computing Machinery Special Interest Group on Graphics.

An electronic version of this call, as well as information on registration, accommodations and guidelines for submissions, are available from the symposium secretary, Emily Todd, via phone at ext. 42175, Mail Stop 132C, e-mail (emily@icase.edu) or the World Wide Web at URL: http://www.icase.edu/workshops/vtvd

Letters

From Randall C. Davis:

"Mary and I thank my fellow workers for the super retirement party. The people of Langley are truly remarkable to work and live with and have become like an extended family to us. You have made the past 25 years of my life most memorable. Thank you for the gift, the friendships and the memories. I look forward to keeping in touch for many years to come and to many more memories with the people of Langley."

From Ed Lee:

"I sincerely thank all my friends and colleagues who attended my retirement luncheon on June 15. Your warm best wishes and wonderful gifts made it a truly memorable occasion for my family and me. I'm particularly grateful to the third-meter tunnel staff for their thoughtful preparations that made for such an enjoyable time together. The friendship and support of all of you over many years is deeply appreciated. My family and I wish the very best for each of you and yours for the future. Again, many thanks for being such great people!"

From Linda Tenney:

"My family and I wish to thank all of you who extended sympathy to us at the time of my father's death. The flowers, phone calls, cards and prayers were very much appreciated. Thank you."

Retirement Party

Hamilton

Friends and colleagues of Louise C. Hamilton are invited to attend her retirement dinner Friday, Aug. 25, in the Chesapeake Room of the Langley Officers' Club. Friends may drop by to visit at 5:30 p.m. Dinner will start at 6 p.m. Cost is $16.50 per person including a gift. For gift-only contributions, reservations or a preview of the menu, contact Rose Mustain via QuickMail (Rose Mustain), e-mail (e.r.mustain@larc.nasa.gov) or Mail Stop 309 by August 21. Please make checks payable to Rose Mustain.

Addition to Paulson Story

In the July 28 issue of the *Researcher News*, we noted that NASA College Scholarship Fund winner, Emily Carter Paulson, was the daughter of Langley employee John W. Paulson Jr. We failed to include that she is also the daughter of Sharon S. Paulson, an employee with Computer Sciences Corp. at Langley for over 12 years.

Also, while accepted at Yale and several other Ivy League schools, Paulson will attend the University of Virginia in the fall.

The *Researcher News* regrets the oversight.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

COMMENT ON CONGRESS

The Budget Process: Part III

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER

During House floor debate July 28 on the $79.4-billion Veterans Affairs, Housing and Urban Development, and Independent Agencies (VA-HUD) bill, HR 2099, under which NASA is funded, Rep. George E. Brown Jr. (D-CA), ranking Democrat on the Science Committee, threw in the Space Station towel. Citing the additional cuts to NASA in this bill as the final straw— after NASA had already accommodated a $5 billion, five-year Administration cut — the longtime general, who so often in the past led the charge to protect NASA programs and funds, declared in debate on an amendment to cancel the Space Station:

"I have agonized over how best to call attention to this fantasy that NASA funding is a bottomless pit — that we can cut indefinitely and still expect to keep major NASA centers open, still keep major programs afloat and still keep the public confidence in our stewardship of NASA. Today, I have reluctantly reached the conclusion that this fantasy is no longer plausible.

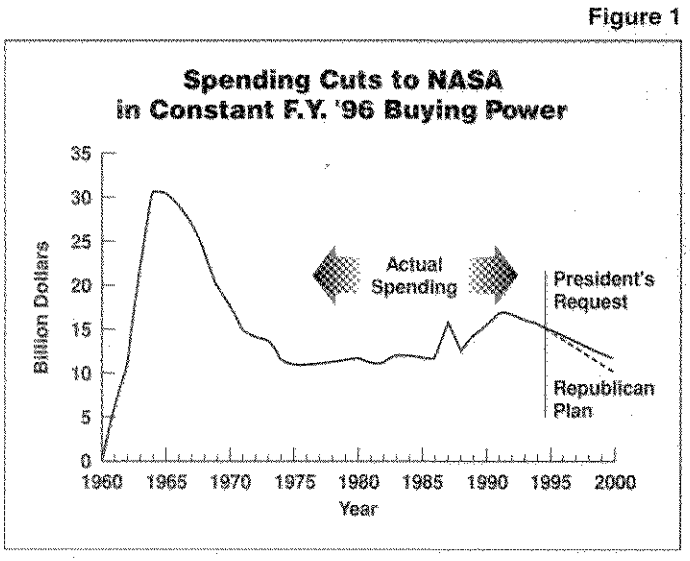
". . . Thus I plan today to vote to terminate the Space Station. This is a very painful decision for me ... I have been and will remain a strong supporter of the Space Station. But the Republican budget plan and the lack of leadership in the White House on space issues leaves me no choice but to point out that NASA cannot remain a viable agency and cannot sustain a viable Space Station program within the budgetary envelope that has been put forward by the Republicans ... The amendment that should be considered today is one that will restore the cuts that have been made to NASA and to bring it back to at least the level in the President's request in fiscal year 1996 and to maintain stability thereafter by keeping pace with inflation."

Rep. Brown, referencing Figure 1, ridiculed plans to rely on the private sector to stretch NASA funds. His remarks were obviously meant to sound an alarm. The amendment to terminate the Space Station was defeated, 126-299. The VA-HUD bill later passed, 228-193. In the House, action has now been completed on NASA's authorization and appropriation measures, with a NASA mark of $13.67 billion (aeronautics funded at $900 million; Mission To Planet Earth cut $332 million from $1.34 billion requested).

The Senate has marked up the NASA reauthorization bill for one year, S 1048, at $13.68 billion, which includes $2.1 billion for the Space Station. (The House authorized the Space Station in a separate bill for 7 years at $2.1 billion per year). The Senate fiscal year 1996 authorization restored funding for Mission To Planet Earth at $1.34 billion.

The Senate Appropriations Subcommittee on VA-HUD is scheduled to mark up its bill after the Congressional August recess — Aug. 5 to Sept. 11. Assuming passage by the full Senate, a House-Senate conference will arbitrate differences in the two bills. All 13 appropriations bills are supposed to be completed — and signed — by Oct. 1 to "avoid a train wreck" — i.e., government shutdown, usually handled temporarily by a continuing resolution which keeps the government running.

Figure 1



Atlantis

Continued from page 1

mander Vladimir Dezhurov said, "Twice a day, we were exercising on the treadmill and once on the ergometer, we were using the expanders for maintaining our muscular strength." Dezhurov said he and flight engineer Gennady Strekalov worked on their upper bodies as well. "Especially prior to an EVA [extra vehicular activity]," Dezhurov explained, "we had to work with our hands a lot so we would maintain our durability."

Resupply Module

When the resupply module Progress arrived, bringing food, fuel and water supplies to the Mir station, each crew member received a five-kilogram package from home. Thagard said their packages included "to our joy, candies, food and photographs, letters ... things from home ... everyone looks forward to their arrival." During the automated docking of the Progress module, which occurred in darkness, Thagard said, "There was no vibration, nothing sensed or heard during the docking ... it was very gentle."

Docking the Modules

In the middle of May, Thagard helped Strekalov and Dezhurov during five EVAs to retract the solar arrays on one module and move them to another to make room for the new Spektr science module which was to dock in late May. In addition, the cosmonauts had to reposition the Kristall docking module to allow its use in the Atlantis docking.

Thagard said Mir was ready for its docking with Atlantis because of "a lot of hard work by Volodya [Dezhurov] and Gennady. It's amazing. I could not believe that you could sustain that much of a work load for that long a period of time but they did and they did beautifully." After the tremendous work load in preparing for the docking, Thagard said with a smile, "We were all glad to see the shuttle come up there. Not the least of the reason was just the shear beauty of seeing the shuttle."

Thagard compared the docking of the Atlantis with the Spektr docking two months earlier by saying, "When the Spektr module came up, we heard nothing, but we could feel just a very slight vibration. However, when [Atlantis] docked with the station there was definite motion in the station." As the 100-ton Atlantis moved toward the station, however, he said that the movements of Atlantis were "so precise and so controlled that it looked as though there was no motion." He watched through a window on Mir as Atlantis approached for docking. Thagard said, "That was a thrill I'll never forget."

NASA Administrator Daniel Goldin, right center, welcomes home STS-71 Mission Commander Robert "Hoot" Gibson, left center, and the rest of the STS-71 flight crew. Following Gibson is STS-71 Pilot Charles Precourt, left. Behind them is the orbiter Atlantis, resting at the Shuttle Landing Facility following a historic flight that included the first docking between the U.S. Space Shuttle and the Russian Space Station Mir.

Additional History

In addition to the historic docking with Mir, other prime objectives of the mission were the joint, on-orbit U.S.-Russian life sciences investigations aboard SPACELAB/MIR. These included cardiovascular and pulmonary functions in weightlessness, human metabolism, neuroscience, hygiene, sanitation, radiation, behavioral performance and biology.

Atlantis also resupplied Mir with equipment, food, 53 pounds of oxygen, 80 pounds of nitrogen and more than one-half ton of excess water from Atlantis' power generators. The Atlantis crew also took time from their medical experiments and Mir supply transfers to document the historic mission with an IMAX camera and contact school children on Earth with the Shuttle Amateur Radio Experiment-II (SAREX-II).

After more than five days docked together, the Atlantis and Mir separated on July 4 at 7:10 a.m. EDT. Marking another first was the three-vehicle ballet performed as Atlantis undocked from Mir as Mir 19 cosmonauts, commander Analoly Solovyev and flight engineer Nikolai Budarin, photographed the show from the freeflying Soyuz capsule. As Soyuz moved to redock with Mir, Atlantis performed a circular maneuver around the station to conduct a photo survey for engineers on the ground.

When Atlantis landed at the Kennedy Space Center on July 7 at 10:54 a.m. EDT, after traveling more than four million miles in its history-making journey, it also returned a new record holder, Norman Thagard, who spent more time in space than any other U.S. astronaut.

IMAX Images of Shuttle-Mir Docking Available on Internet

Several new images highlighting the historic docking of the Space Shuttle Atlantis and the Russian Space Station Mir are available on the Internet. The high-resolution images show crew activities and views of Atlantis taken from Mir. The images were recorded using a 70-millimeter IMAX camera system.

The IMAX images are part of a larger photo gallery that includes images from the STS-71 docking mission as well as STS-63. Flown earlier this year, STS-63 was a mission in which the Shuttle Discovery performed a rendezvous with the Mir that served as a dress rehearsal for the docking mission. Links to the collection can be found on the "Today at NASA Home Page" at URL:

http://www.hq.nasa.gov/office/pao/NewsRoom/today.html

A View from On High: Dick Yenni 's Perspective on Flight Research at Langley

BY MARY M. SPRACHER AND MARK CHAMBERS

During his 33-year career at Langley, recently retired flight research pilot Dick Yenni was a key player in both aeronautics and space flight research. From the Vertical/Short Take-Off and Landing (V/STOL) program and lunar landing simulations to contemporary programs aboard Langley's B-737 research airplane, Yenni played a major role in flight research. Looking back, he recalled his projects, his experiences and "kinder, gentler times."

Background

Born in Rochester, Pa., and raised in Beaver, Pa., Yenni graduated from Beaver High School in 1952. He then attended Villanova University on a Navy ROTC scholarship. When an instructor there was recruiting for aviation training, Yenni signed up just to get another credential. Upon graduation from Villanova in 1957, he was commissioned to

Dick Yenni prepares to do some flight research in an F-5 jet plane.

the U.S. Navy and then went through flight training for helicopters in Pensacola, Fla. Next, he served five years with a helicopter anti-submarine squadron out of Norfolk.

While in Norfolk, Yenni served several short tours aboard carriers doing recovery work for the pre-manned Mercury capsule. During this time, he came to know men on NASA's recovery crews. When he got out of the service, NASA was looking for an "ex-Navy guy." In August 1961, he went to work as an engineer at NASA's recovery branch in Houston, Texas.

In April 1962, Yenni transferred to a research-pilot position at Langley. Yenni said, "They (Langley) really needed a pilot with a helicopter background and I happened to be in the right place at the right time." It had never occurred to him previously that NASA even did aeronautical research or that he would have a flying career.

Aeronautics: Early Years

Yenni's early years at Langley were somewhat of a training period. From 1962 to 1965, he learned to fly all over again. He and Lee Person, another flight research pilot, were flying transports for NASA Headquarters and Langley. Yenni said this experience "really trained us. We got a lot of flight time as pilots. We were exposed to all the problems and hazards that airline pilots are exposed to which equipped us to be very well qualified to do the research work in the B-737 program."

Beginning in the fall of 1965, Yenni attended the Navy Test Pilot School in Pax River, Md., for a year. When he returned to Langley, he resumed his flight research work, primarily focusing on helicopters — including programs with the 204-B Bell Helicopter, Vertical/Short Take-Off and Landing (V/STOL) approach programs with the H-395 HelioCourier, tests of the handling qualities and stability of the XH-51N Lockheed rigid rotor helicopter, and heavy lift programs with a CH-54 and a Sikorsky flying crane.

Langley was the lead center for V/STOL research (which later became the Vertical Aircraft Landing Technology [VALT] program), a study focusing on tilt wings and helicopters with which Yenni was very involved. He was the safety pilot for the CH-46 prototype V/STOL helicopter and was also involved in a program with the XC-142, a V/STOL airplane. "That was a really interesting airplane, very complex. It had ejection seats, and that was good, because I wouldn't have flown it if it didn't ... It was a wonderful plane, very powerful."

Yenni added, "We had a great interest in any V/STOL craft. In those days V/STOL was the rage. There were going to be V/STOL airports and airplanes all over the world, but they went out of favor."

The Vertical Aircraft Landing Technology (VALT) research team poses in front of a CH-47 helicopter in the early 1970s. The team included Yenni, standing, fourth from the right; Yenni's former boss, Jack Reeder, kneeling, fourth from the right; and prominent VALT engineer Bob Tapscott, standing, third from the left.

Aeronautics: Later Years

In later years, Yenni was a safety and research pilot aboard Langley's B-737 Transport Systems Research Vehicle. During that time, he was involved with at least a dozen major projects, including work with wind shear and runway friction.

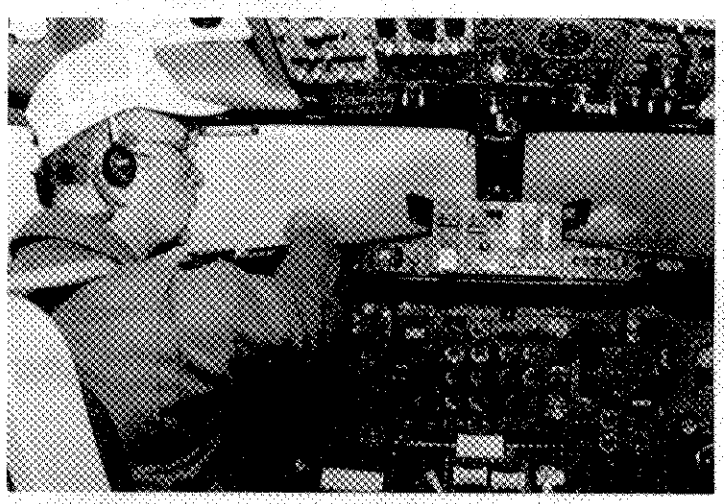
"It's interesting. In my career, I've done a lot of flight test work but I've done more support-type work, work in support of flight tests. Like in the latter years on the B-737, I was the safety captain — I just seem to fall into those roles ... That kind of bothered me at the beginning because I was not doing as much actual research work. But then I rationalized the fact that I was contributing and they couldn't do the job without me ... And I did switch pilot sides and do a bit of research, too."

When asked about the most significant program with which he had been involved, Yenni replied, "There's no one real significant piece of research ... programs tend to be ongoing here and I was in two of those, the VALT program and the B-737 ... Probably one of the most satisfying programs I've ever done is the wind shear program (with the B-737). The results of that program save a lot of lives and prevent a lot of accidents."

"I never did anything too daring," Yenni recalled. "I did a lot of stuff that was hazardous, but it was well thought-out. The risks were calculated. Our kind of research was not very glamorous, but it was very important."

Space

As for space research, Yenni remembers doing "a lot of way out stuff." Joining NASA in the early 1960s, Yenni arrived as the space program was experiencing a great upswing. He had the opportunity to participate in space-simulation programs, including preparations for the Apollo lunar landings.



Dick Yenni guides Langley's B-737 Transport Systems Research Vehicle toward a wind shear over Orlando, Fla., in 1992. Yenni served as a safety and research pilot on the B-737 during the latter years of his career.

Yenni was one of three pilots who flew prototype lunar-landing simulations at Langley's Lunar Landing Research Facility. He described the program as "super fun"; it took a lot of time, but it was very beneficial. After astronauts actually landed on the moon and encountered problems with dust, he continued flying simulations to combat the new problems. "I may still have more lunar landings than anybody in the world other than the astronauts," said Yenni.

In 1969, Yenni was the primary research subject in experiments with weightlessness. It was previously believed that astronauts could not move much when weightless. But weighted and submerged in a large water tank, he proved you "could practically move a battleship if you had enough patience."

Yenni also participated in experiments with a fixed-capsule Mercury simulator and in docking simulation studies in the rendezvous and docking simulator in Langley's Flight Research Hangar.

Now and Then

"When I came to Langley," Yenni reflected, "it wasn't a whole lot different than it is now (in terms of people), except it was much, much smaller ... It was a campus-like atmosphere. People were very friendly and helpful, and there was a great amount of camaraderie. You knew almost everybody." As a pilot, he estimated that he worked with approximately 75 percent of the Langley community.

Regarding Langley's attitude and focus, Yenni did note some definite changes — the pace has quickened, the budget has thinned and more bureaucracy exists today. "Everything is speeded up now. You have to do it faster, cheaper," he said.

Of his early days at Langley, Yenni said, "Our direction came from within. No one told us what to do except the people we worked with. We decided the programs — I say 'we,' the people in our division here at Langley. We were given the money and the checkbook and we did it." He also said that, where discussion around the Center now tends to focus on the "nuts and bolts stuff," research used to be the main topic.

Mary M. Spracher is a 1995 LARSS participant.

Photo by Fred Jones

NASA Administrator Daniel Goldin, second from left, views one of Langley's exhibits on the World Wide Web (WWW). Standing with him are WWW team members Michael Nelson, left, Daniel Sydow, center, and Gretchen Gottlich, right.

NASA Exhibits

Continued from page 1

pilots to plot flight paths in advance and see overlapping information on the same screen, such as weather systems, multiple aircraft flight paths and dangerous terrain. GAIMS even warns pilots of dangerous conditions along the flight path.

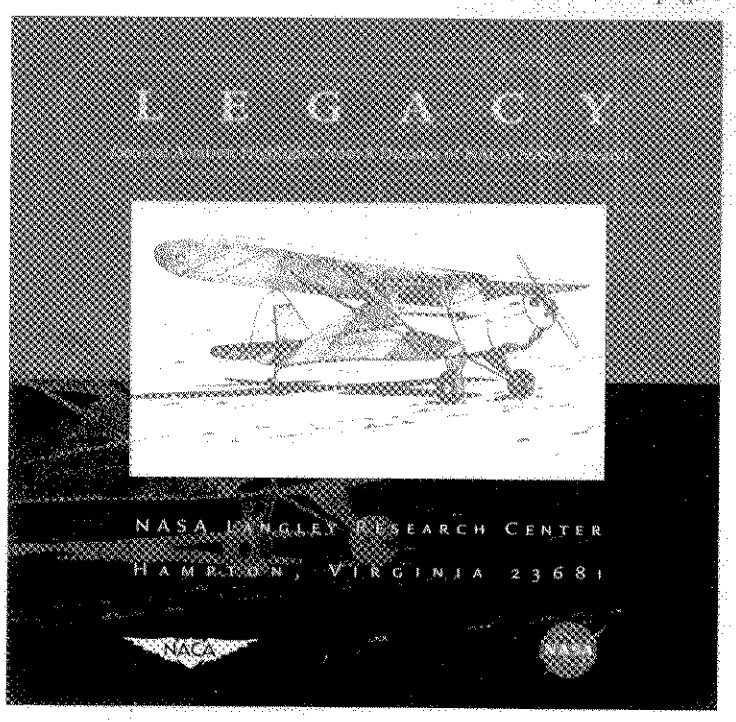
Goldin especially enjoyed Langley's World Wide Web (WWW) exhibit. Exhibitors gave demonstrations to general aviation companies about how to get their companies on the Internet. Small-business representatives were also shown how and where to access technical information already available on Internet, including information on NASA technologies.

Other exhibits included displays on the NACA and World War II, the High-Speed Research program and exhibits dealing with aircraft safety and design. In an aerospace theater in the building, speakers discussed topics ranging from vortex research to NASA's Spacemobile project. The Malibu Piper plane was on exhibit in front of the NASA building to demonstrate de-icing research. In addition, a trailer containing a mock-up of the Space Station was available for visitors to tour.

New General Aviation CD-ROM

The NASA General Aviation Program Office at Langley and the Langley Technical Library have jointly produced a general-aviation CD-ROM for computer systems. The CD-ROM, entitled "Legacy: General Aviation Highlights from Eight Decades of NACA/NASA Research," holds the full-text image of 179 NACA/NASA general aviation reports, or 10,000 pages of documentation. The reports, chosen from a survey conducted for the Advanced General Aviation Transport Experiments (AGATE) Consortium, contain invaluable information on the transfer of NACA/NASA technology to the general aviation industry.

See **GA CD-ROM** *on page 6*



GA Design Competition Winners Announced

BY MARK CHAMBERS

NASA Administrator Daniel S. Goldin presented awards to the winners of NASA's and the Federal Aviation Administration's first joint General Aviation Design Competition. The contest challenged university students to create new technologies and designs for general aviation aircraft. The winners received their awards at the Experimental Aircraft Association Fly-In Convention and Sport Aviation Exhibition in Oshkosh, Wis.

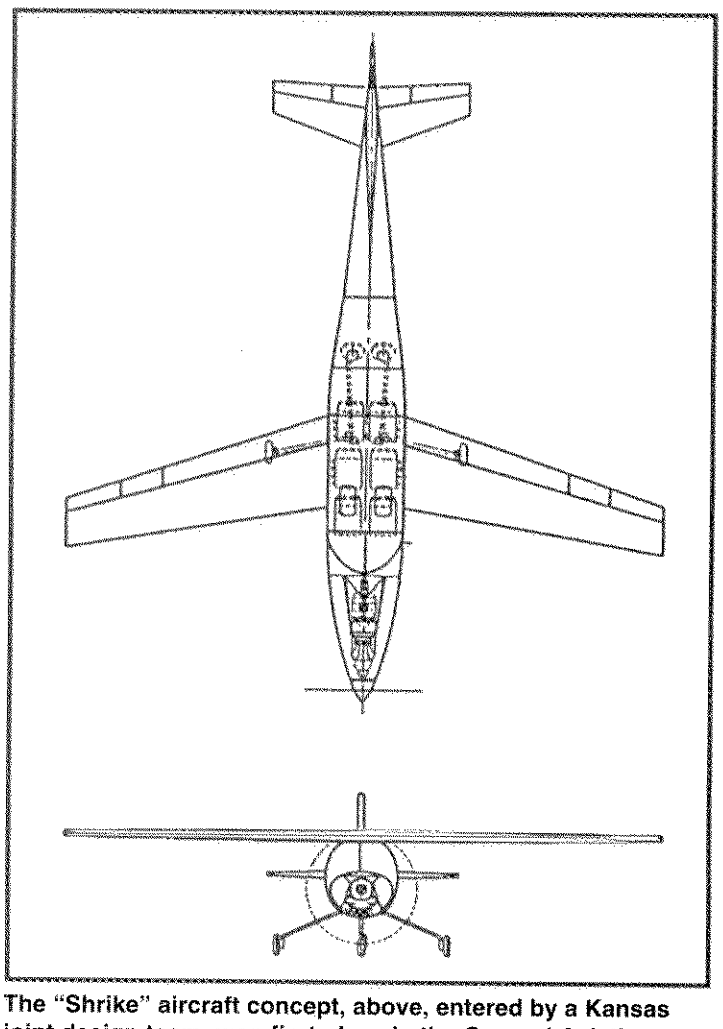
The Winners

The first-place winner was a team of students and faculty from the University of Kansas, Lawrence, Kan.; Kansas State University, Manhattan, Kan.; and Wichita State University, Wichita, Kan. For their efforts, each participating academic department shared a $5,000 award with the student design-team members sharing a $3,000 award. The joint Kansas team's "Shrike" aircraft concept would rely primarily on operator-friendly technologies which could make flying easier than driving a car.

The second-place $2,000 award went to a design team from Embry-Riddle Aeronautical University, Daytona Beach, Fla., for their Aquilas aircraft design concept. This concept would incorporate innovative features intended to enhance safety and efficiency in general aviation aircraft.

The third-place $1,000 award went to Mississippi State University, Mississippi State, Miss., for their successful study and demonstration of advanced integrated-cockpit and propulsion-system concepts designed to improve pilot awareness and decrease pilot workload. Their concepts employed the latest in cockpit-display and early warning emergency systems.

Honorable mention went to the UPM design team, made up of members from the University of Virginia at Charlottesville, Va., the Pratt Institute at Brooklyn, N.Y., and the Mallen Research Corporation of Charlottesville, Va. The team's futuristic Pruva Turbovane aircraft concept dazzled competition judges with its spacious state-of-the-art cockpit and cabin interior.



The "Shrike" aircraft concept, above, entered by a Kansas joint design team, won first place in the General Aviation Design Competition sponsored by NASA and the Federal Aviation Administration. These conceptual top and front views incorporate several revolutionary features such as forward-swept wings.

NASA-Sponsored Research Efforts and SBIR

Some of the companies involved in Small Business Innovation Research (SBIR) include: ARNAV Inc. of Graham, Wash., specializing in the development of low-cost atmospheric-data general aviation cockpits; Cirrus Design Inc. of Baraboo, Wis., working to perfect a manufacturing process that permits affordable icing protection while maintaining laminar flow; and Innovative Aerodynamic Technologies of Grafton, Va., specializing in the transferal of supercomputer-generated wing/airfoil designs to desktop computers, thereby simplifying design analysis of advanced general aviation aircraft designs.

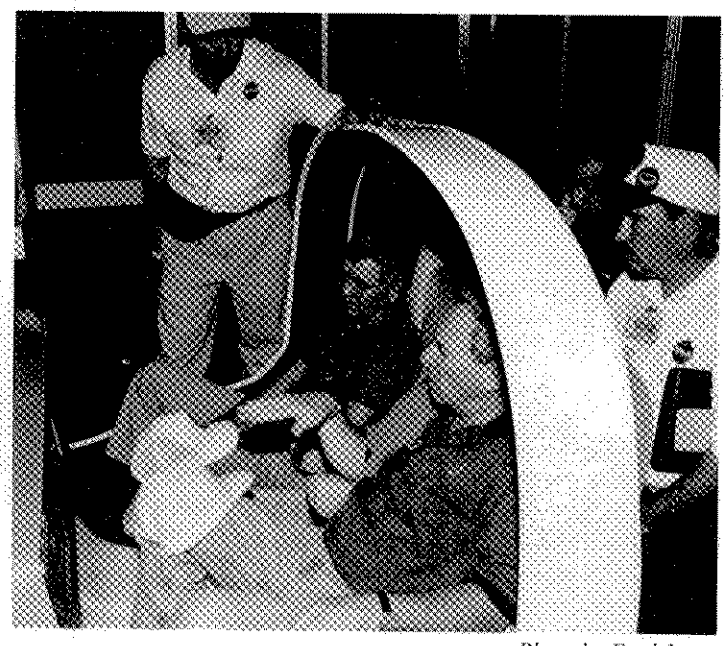


Photo by Fred Jones

NASA Administrator Daniel Goldin, foreground, expresses interest in a cockpit demonstrator to Dr. Robert Whitehead, associate administrator for the Office of Aeronautics at NASA Headquarters. The concept demonstrator was developed by the Advanced General Aviation Transport Experiments (AGATE) consortium. Dr. Bruce Holmes, standing to the left, directs the AGATE consortium and heads Langley's general aviation program. Seated behind the cockpit wearing a hat is Michael Durham, deputy of the Subsonic Transportation Office.

Make It Yours! Patenting Inventions

BY CHRISTY E. GALL AND KIMBERLY A. CHASTEEN

Imagine waking up one Saturday morning, walking to your mailbox and finding a letter informing you that you have been issued a patent for a technology you developed. The prestige and pride that come with patenting an invention are immeasurable. While the patenting process is long and tedious, it is not a journey an inventor must take alone. The Patent Counsel Team (PCT) office in Langley's Technology Applications Group (TAG) is open to assist all Langley employees who wish to apply for and obtain a patent.

Reasons for Patents

The value of patents on government employee inventions to the U.S. government is twofold. First, they protect the government from possible infringement claims and suits for money damages. To carry out NASA's missions, products developed in many fields of technological development must be bought and used. Therefore, NASA, as well as its contractors, are involved in enormous research and development efforts to provide the items necessary to improve the effectiveness of NASA. Patents serve to protect NASA against payment of royalties for using technology which was first developed by a NASA inventor as well as multimillion-dollar infringement claims and suits.

Second, NASA has always been a leader among government agencies in the transfer of its technology to the private sector. Obtaining patents is a key component of NASA's technology transfer activities. The patenting process allows full public disclosure while providing exclusivity which lays a foundation for business investment and development. Patents facilitate rapid commercialization of an invention through licensing agreements with commercial firms.

Starting the Process

As soon as possible after the conception of an invention, a Langley inventor must disclose his or her invention to Langley's PCT office. He or she does this by completing the invention disclosure form, NASA Form 425, which asks for details about how, when and where the invention first came to be as well as a concise technical description of the technology. The description may include drawings, functions, advantages over existing technologies, and features believed to be new. When filling out this form, too much information is better than too little because an incomplete description can lead to lengthy delays and even a rejection.

After the form is completed, both a patent attorney and a member of TAG's Technology Transfer Team (T^3) are assigned to the case. A request for a technical evaluation is then sent to the inventor's supervisor or other technically appropriate individual.

Next the patent attorney quickly researches the patentability of the invention. Then the T^3, with the aid of Research Triangle Institute (RTI), a Langley contractor, reviews the technology for commercial usefulness. Langley's Technology Council (TC), consisting of senior engineers from each division, also ensure that the Center's most promising technologies are advanced to the forefront.

Patentability

An invention must be three things before it can be patented: it must be new, useful and nonobvious. Small incremental changes in existing technologies may also be patentable if unexpected results are achieved.

Seven statutory bars limiting an invention's patentability exist. The most common one is the "Public Disclosure Bar." For a patent to be validly issued in the United States, a patent application must be filed within one year from the date of the first publication disclosing the invention.

After members of the T^3, TC and RTI assess the commercial potential of an invention, it is prioritized. If it is found that it may be significantly beneficial to industry, it is considered a category A technology; the patent application process is immediately started. A category B invention is thought to possess some potential; the PCT member will file an application when time permits. A category C invention is deemed to have little or no economic potential. Title to these inventions is given to the inventors, and they may pursue patent protection on their own behalf.

Whether in categories A, B or C, the inventor(s), TC representative and T^3 members all must agree with the categorization. Any individual case may be presented to the TC for resolution at its monthly meeting. Cornerstone inventions applicable to either aerospace or non-aerospace applications may be patented depending upon the individual circumstances.

Once an invention is prioritized, if the government has sufficient interest and no statutory bars are found, a formal patent application will be prepared by a PCT member. This application consists of three parts: the specification, the drawings and the claims. The patent application is much more detailed than the previous invention disclosure and conforms to specific guidelines as set forth by the Patent and Trademark Office (PTO).

The Patent Grant

After all claims have been allowed and the issue fee has been paid, a patent grant will be issued by the PTO. Maintenance fees on all issued patents are assessed at intervals of 3.5, 7.5 and 11.5 years after the issue date. The grant expires 4, 8 or 12 years from the same date, depending upon payment of these fees, or 20 years from the filing date of the application if all maintenance fees are paid.

Incentives

The rewards that come with patenting an invention make the patenting process worth the time. These include peer recognition, publication in journals, satisfaction of contributing to America's economy and perhaps job advancement. Monetary awards may also be an enticement to work through the process. Upon filing the application, an award of $250 or $500 is given. If an article on the invention is published in *NASA Tech Briefs*, another award of $150 is given. NASA inventors also share in the royalties of their licensed technologies which may be as much as $100,000 per year. The invention and/or inventors may also be nominated and receive the "inventor/invention of the year" award sponsored by the Office of General Counsel at NASA Headquarters.

Additional Information

Langley's PCT consists of one patent counsel, two patent attorneys, a legal information specialist, a legal technician and a secretary. For more information on filing a patent application, contact Laura Eure via e-mail (l.l.eure@larc.nasa.gov) or phone at ext. 45261.

Christy E. Gall is a 1995 LARSS participant.

TAG

GA CD-ROM

Continued from page 5

For more information on general aviation revitalization efforts, visit Langley's Public Mail Center, Bldg. 1153, Rm. 115. For more information on the general aviation CD-ROM "Legacy," including ordering information, contact Susan Adkins at the Langley Technical Library via phone at ext. 42390 or Mail Stop 185.

Nominations Sought for Publication Award

The Flight Safety Foundation (FSF) is seeking nominations from the global aviation community for its prestigious Cecil A. Brownlow Publication Award. Submission deadline is Aug. 31.

The FSF Publication Award, first presented in 1968, recognizes outstanding achievement in furthering aviation safety through written and electronic media. The award was renamed in 1988 in memory of Cecil A. Brownlow, aviation journalist and former FSF editor.

Nominations may include publications and individual editors or writers. Nominees should demonstrate consistent excellence and commitment in reporting and writing about aviation safety issues. Nominees are also judged on the quality of writing and research, presentation and contribution to safety awareness. Individual lifetime-service nominees are also eligible, as are the long-term achievements of publications.

Nominations must include a detailed description of the nominee's achievement, not to exceed 400 words, along with any supporting materials. Nominations must also include the nominee's full name, address, telephone and fax numbers and affiliation. Telephone and fax numbers for those submitting nominations are also required.

Past award recipients have included major newspapers, airline safety publications, aviation safety newsletters, corporate aviation safety publications, government agencies and reports, aviation trade magazines and professional journalists.

FSF is an international membership organization dedicated to the continuous improvement of flight safety. Nonprofit and independent, FSF was launched in 1945 in response to the aviation industry's need to disseminate objective safety information, identify threats to safety, analyze safety problems and recommend practical solutions. Today, FSF consists of more than 660 member organizations in 77 countries.

For more information, contact FSF via phone at 1 (703) 522-8300.

Young Rocketeers Celebrate National Space Week at Langley

BY CATHERINE E. WATSON

To celebrate the 1995 National Space Week, members of the Langley chapter of the National Space Society (NSS) sponsored their fifth annual picnic and model rocket launch. Over 200 children and their parents attended the event, making model rockets and launching them in the field behind the H.J.E. Reid Conference Center.

Many of the participants were Boy Scouts attempting to earn their Space Exploration badges. Langley retiree Abe Leiss quizzed the Boy Scouts on their knowledge of space exploration after each scout successfully launched their model rocket and payload. A penny was the payload of choice for most scouts.

Dave Maness, director of the Department of Astronomy at the Virginia Living Museum, brought several lunar soil samples for viewing. He said most people "did a double take when I told them they were looking at moon rocks." Maness also provided sun dial kits to the children.

A team of volunteers toiled in the 90-degree temperatures for more than five hours to ensure every child had several chances to launch his or her rocket. The volunteer launch team was led by Dave Shuster of the Systems Development Branch, assisted by Richard Winning, also of the Systems Development Branch, Larry Gilbert of the Office of Education and Rusty Capelotti, a nurse's aide at Sentara Hampton General Hospital. Dave Shuster's team has helped every year since the NSS picnic and model rocket launch began. His team also provides launch services for children's programs at the Virginia Air and Space Center, Langley's Visitor Center in Hampton.

Throughout the afternoon, the children had opportunities to win a Virginia Air and Space Center T-shirt, a space station poster, two Apollo posters, and three sets of Boeing space station collector milk caps. Dianne DeTurris, vice president of the Langley NSS, said, "The kids were very excited and the parents seemed to be having as much fun as the kids. Many said they were looking forward to next year's event."

Langley Wishes Retirees Well

Langley wishes to thank its civil servants who retired in June and July for their service, hard work and effort over the years. We will miss you. We hope all goes well for you in your retirement: Vernie W. Boyd, engineering technician, Structures/Materials Operations Section; and Richard W. Barnwell, senior scientist for space systems and technology, Aerodynamic and Acoustic Methods Branch.

Langley's Precollege Outreach Programs

Langley offers teacher and student opportunities as well as technology programs through its Precollege Outreach Program. Listed below are just some of the technology opportunities.

Technology Opportunities

NASA Spacelink is a computer information service for educators and students. The Spacelink database features current news about NASA missions and programs including resources for NASA programs in aeronautics and space technology, space science, space exploration and spaceflight. Information about NASA education services, classroom materials and software is also included. Spacelink is available via modem at 1 (205) 895-0028 or the Internet (spacelink.msfc.nasa.gov).

NASA TV (NTV) is the Agency satellite television service. NTV includes education, history and news programming in addition to live coverage of space shuttle missions. Programs carried on NTV may be taped by educators and used in the classroom. NTV is available directly through participating cable television systems or from Spacenet 2, transponder 5, channel 9, C-band, located at 69 degrees west longitude with horizontal polarization, frequency 388.0 megahertz with audio on 6.8 megahertz.

And Now, The Rest of the Person

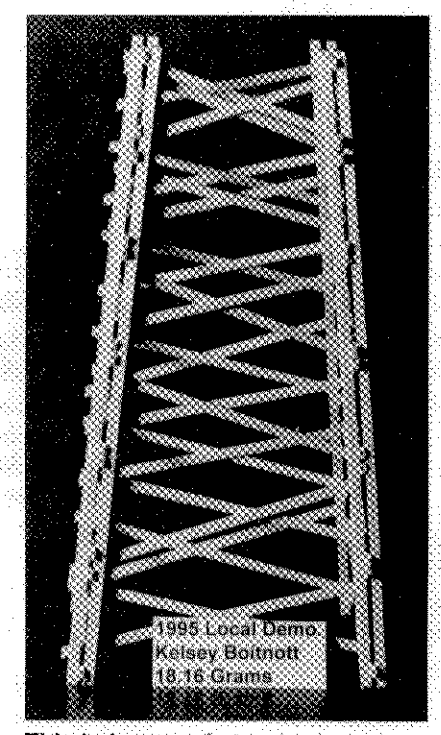
Richard Boitnott

Odyssey Adventure Preps Future Engineers

BY DANIELLE BECK

At quitting time, Langley employee Richard Boitnott of the Structural Mechanics Branch is not yet finished with his day: he serves as a coach for the Odyssey of the Mind (OM) team at Poquoson Elementary School. For nine years, he has coached the team. For most of those years, he has had the privilege of coaching his children Kelsey and Josh who anxiously await each year's new problems.

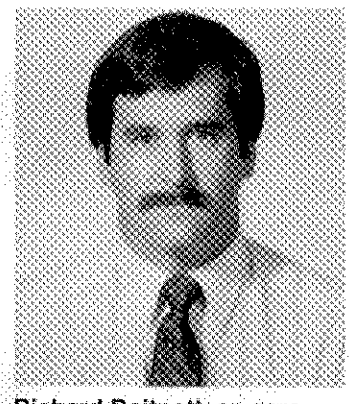
In addition to Boitnott, many other Langley employees and contractors have served as OM coaches or judges over the past 16 years of the program's existence. Currently, James Dezern of the Composites and Polymers Branch and Paresh Parikh with contractor Vigyan, Inc., assist the team.



This balsa wood structure, a proposed design by Kelsey Boitnott, may look fragile, weighing in at 18.16 grams, yet it supported 544 pounds and a series of twists before snapping at a practice session for Odyssey of the Mind.

The Odyssey of the Mind Adventure

What if you, as an elementary school student, were asked to create a balsa wood structure that would weigh less than 18 grams, yet support hundreds of pounds and withstand a twisting action? This is exactly the challenge accepted by this year's Poquoson Elementary School OM team. After spending a school year hard at work on skits, props, building and testing various balsa wood structures, and developing other skills necessary to compete, this team won the OM world finals competition in the "A New Twist" category. The world finals host over 14,000 guests from around the globe. The Poquoson team, who prevailed as their structure supported 703 pounds, was one of 53 state and country champions competing for the world title in their age and problem category.



Richard Boitnott, an aerospace engineer in Langley's Structural Mechanics Branch by day, and a coach for the Odyssey of the Mind team at Poquoson Elementary School by night.

OM is a worldwide program initially introduced to encourage students to practice creative problem solving while searching for solutions to the five different "problems" presented as competition topics each year. These problems vary in specific focus from year to year, but generally stay within the same concepts such as structures, devices that use the six simple machines to accomplish a task, vehicles and dramatic competitions for those who are less scientifically inclined.

The scoring is a combination of three parts: structures, style and spontaneous response. For the structures problem, long-term scores are based on the amount of weight the " A New Twist" structure can carry. The style portion is incorporated into the eight-minute skit during the structure-testing period, as the students have their moment in the spotlight. During this period, the structure is tested simultaneously with the skit portion of the competition.

The spontaneous response element is based upon the number of responses the team can give on a certain subject or is based on their solution to a hands-on manipulative problem — the more creative the answer, the greater the points given. This year, the Poquoson team gave 80 responses in three minutes when presented with a picture of a spotted, smiling dog. The individual team members were asked to provide details about the dog, both obvious and creative, upon demand. Placement is determined from the sum of scores on all three parts of the competition.

This multifaceted competition demands tremendous dedication and devotion to the project. Preparation required a minimum commitment of five hours a week from every team member, with some dedicating a greater number of hours depending upon their individual project within the team.

Danielle Beck is a 1995 LARSS participant.

"And Now, The Rest of the Person" is an occasional column devoted to sharing the "other side" of Langley's employees and contractors.

A Winning Team! The Poquoson Elementary School Odyssey of the Mind team presents their "A New Twist" structure and awards. From left to right, front row, they are Alana Smeltzer, Elizabeth McClendon and Kelsey Boitnott; and, in the back row, Joel Sanderson, Bryan Dezern, Andrea Murphy and Ronnie Parikh.

Happenings

Free Admission

The Virginia Air and Space Center, Langley's Visitor Center, is offering a special promotion for NASA active civil service employees and on-site contractors.

From July to September, free admission to exhibits will be given to civil service employees and contractors who present NASA photo identification badges.

Accompanying family members will be admitted to exhibits at a discounted rate.

In addition, the Virginia Air and Space Center is offering a special promotion on annual family memberships. From July 1995 to June 1996, civil service employees and on-site contractors are entitled to receive a 20-percent discount on family memberships which includes:

Virginia Air and Space Center
Hampton Roads History Center

* Free exhibit admission *
* IMAX discounts *
* 10-percent gift-store discount *
* Quarterly newsletter *
* Invitations to exhibit and film openings *
* Various discounts and coupons provided by local merchants and attractions*
* Discounts on camps and other activities *

*****SPECIAL BONUS FOR NEW MEMBERS*****
As of July 1, free Apollo 13 gifts such as T-shirts, caps and books will be available while supplies last.

For information and membership fees, call 727-0900.

FOR RENT: 3BR, 2-1/2BA townhouse in Poquoson. LR, DR, fireplace, E/I kitchen, storage, fenced yard. Some furnishings available if necessary. Available Sept. 1 or earlier. Call 877-0703.

FOR RENT: 2BR, 1-1/2BA beach-front condo. Enjoy beautiful panoramic views of the bay from master BR and LR. The deck is perfect for enjoying sunrise breakfasts and evening solitude. LR has red-oak hardwood floor and fireplace. E/I kitchen. All amenities including full-size washer and dryer, dishwasher, central air and heat, and refrigerator. Willoughby Spit, 20 min. to Langley. $650/mo. plus utilities. Call Lance at 595-3923.

FOUND: Cellular telephone. Call Suzanne at ext. 43420 to identify and claim.

FOR SALE: 1987 Ford Bronco truck. Full-size luxury-class Eddie Bauer. 351W 35" Mickey Thompsons off-road tires. Black and tan, hard and soft tops, Alpine stereo, 4WD, 9" lift, many extras. 93,000 miles. $8,500 or best offer. Call Jon at 865-0083.

NTA PICNIC: The National Technical Association will have a meeting/picnic Saturday, Aug. 19, starting at 2 p.m., at 260 Derosa Dr., in the Michaels Woods area of Hampton. For more information, call Bob Lee at 851-5773 or Wayne Boston at 727-0322.

DAYCARE WANTED: After school starting Sept. 6 from 3:15 to 5:30 p.m. in my York Co. home. Must be 17 or older, dependable, non-smoking. Own transportation required. Call Sally at 898-5188.

FOR SALE: Two tickets to the Seattle Mariners-Baltimore Orioles baseball game at Camden Yards in Baltimore, Saturday, Sept. 2, 7:15 p.m. $45. Call Homer at 851-1529.

FOR SALE: Dinette set, hutch with glass, table w/leaf and four chairs for $300. Call Debbie at 875-0066.

HONEYBUNCH: The NASA-Langley Apicultural Club will hold its regular monthly meeting Monday, Aug. 21, 7 to 9 p.m., in the meeting room of the York County Human Services Bldg., 301 Godwin Neck Rd. (Route 173 East), Yorktown. Entrance is at the rear of the building. This month's meeting will be a beekeeper's clinic on "Summer Management." Attendees may share any beekeeping concerns during an open forum. The meeting is free and open to the public. All interested persons are welcome. For more information, call Henk at ext. 47226, Harvey at 46742 or Wallio at 45366.

FOR SALE: 1988 Ford LTD Crown Victoria car. Power everything, premium stereo sound system, auto headlights, computerized clock/gas gauge. One owner w/all records. Non-smoking. Always garaged. $4,995. Call Mac at 877-7912.

Presentation Information at PMC

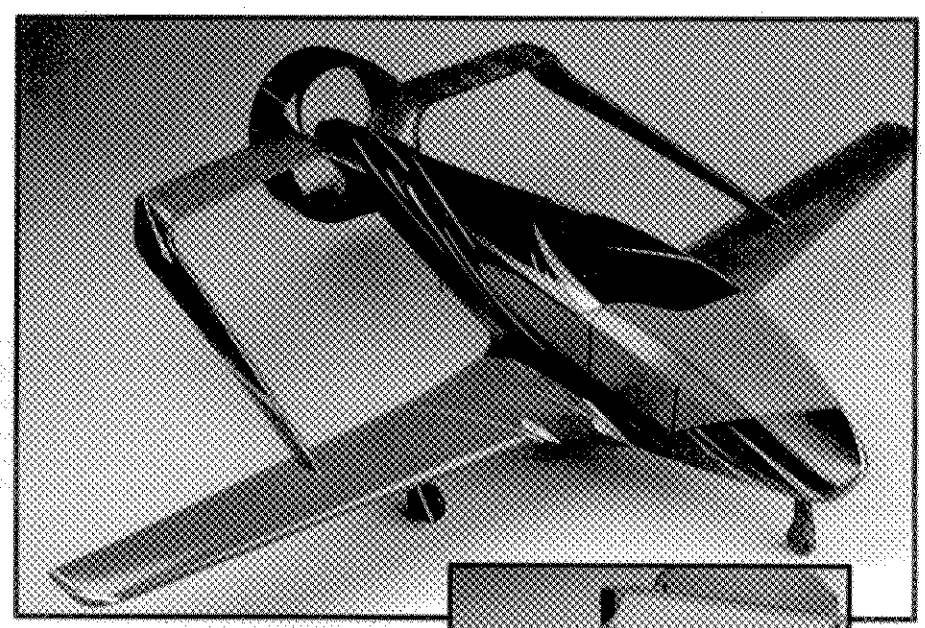
Are you giving a presentation on Langley, aeronautics or space to school children or to a community organization? Langley's Public Mail Center (PMC) in Bldg. 1153, Rm. 114, can provide useful information to support your presentation. Posters of the solar system, photos of the shuttle lifting off and landing, and fact sheets on aeronautics are just a few of the items available. Visit the PMC Monday through Friday, 9 a.m. to 3 p.m.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

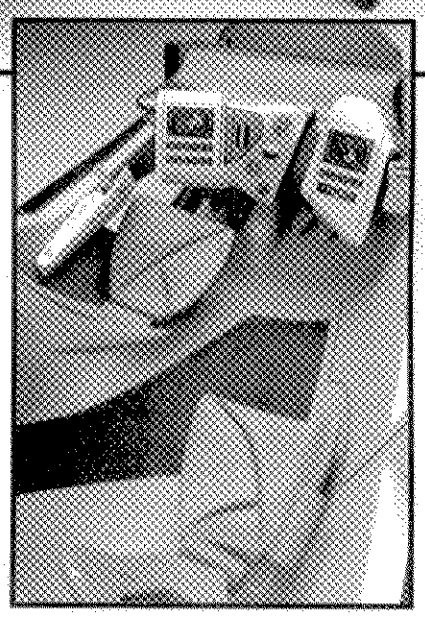
NASA Researcher News

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

General Aviation Design Competition Gives Glimpse of Future Air Travel



Above, a general view of the UPM Pruva Turbovane model.



The futuristic cockpit and cabin turbovane concepts, right, have caused some NASA managers to draw "George Jetson-like" analogies. The concept, developed by the University of Virginia, Pratt Institute and the Mallen Research Corp. (UPM), received honorable mention at the first annual General Aviation Design Competition sponsored by NASA and the Federal Aviation Administration. See story on page 5.

National Aeronautics and Space Administration
Langley Research Center

Langley Researcher News

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 17❖ August 25, 1995

Harris Selected as Fabrication Division Chief

S. Stewart Harris Jr. has been named chief of Langley's Fabrication Division.

Harris is responsible for directing technical services to build research test models, flight support hardware and laboratory test apparatus for Langley engineering and research organizations. He also supervises the development of fabrication processes for unique materials and applications. He manages a workforce of approximately 250 employees in a manufacturing organization of diverse technologies and technical skills.

The Center's capability to obtain experimental research data is directly related to effective management of the division. Effectiveness of new research-technique development is frequently dependent upon the innovativeness of the Fabrication Division staff.

Stewart S. Harris Jr.

Manufacturing technology developed within the division is then transferred to and enters into national commercial industry.

The models created in the Fabrication Division play a vital role in the research conducted in the 30 wind tunnels at Langley. Scale

See **Harris** *on page 4*

National Research Council Director Visits Langley

BY MARY M. SPRACHER

Dr. Arnold E. Schwartz, Director of Associateship Programs for the National Research Council (NRC), conducted his annual site visit to Langley Aug. 10 and 11. The NRC is a private, nonprofit organization that serves as an independent adviser to the federal government on scientific and technical questions. During his visit, Schwartz received 20 technical presentations from Langley's research associates. He also met with Langley research advisers to discuss the state of the NRC Resident Research Associateship Program (RRAP) and to address program concerns and future research opportunities.

Schwartz's Visit

Schwartz began his visit by addressing Langley's resident research associates with an overview of the NRC RRAP. He then spent all day Aug. 10 listening as the associates gave their own brief technical presentations. The length and requirements of these presentations varied, depending on the length of each associate's tenure.

On Aug. 11, Schwartz spent most of his day visiting various associates at their respective research facilities. He ended the day by meeting with Langley senior scientist Dennis Bushnell and then with Center Director Paul Holloway. While meeting with these senior staff members, Schwartz relayed the information he had learned during his Langley visit. He then met with Office of Education deputy director Edwin Prior and university affairs officer Roger Hathaway for a final out-briefing before his departure.

Langley Research Associateships

Twenty postdoctoral research associates are in residence at Langley, with six more scheduled to begin tenure in fiscal year 1996. To enter the RRAP, associates must apply by submitting a research proposal relating to a specific research opportunity at Langley. They must have doctoral degrees and demonstrated superior ability for creative research. Evaluations of applicants are conducted in February, June and October, though applications are accepted throughout the year.

Associateships are analogous to fellowships. Research Associates are guest researchers and receive stipends funded by NASA through the NRC. Associates must devote their full-time effort to the research program proposed in their applications and must be in residence at Langley during the entire period of their associateship.

Photo by Peggy Hopkins

Dr. Samuel Massenberg, director of Langley's Office of Education, left, greets Dr. Arnold E. Schwartz, director of Associateship Programs for the National Research Council (NRC). Schwartz came to discuss some of the NRC's programs.

Successfully Doing More with Less

BY PATRICIA REDWOOD

With changing times, we are often told to do more with less and to work faster, better and cheaper. Kevin Vipavetz, a systems engineer in the Aerospace Electronic Systems Division (AESD), and a small team of employees from Langley and Wyle Laboratories have learned how to do just that: They are getting the most from a limited budget by reusing excess personal property from other agencies and NASA centers.

Federal Property Management Regulations and the Federal Property Act require any executive department or independent establishment in the executive branch of the government to use excess property as the first source of supply to the fullest extent practical. Vipavetz has improved Langley's Aircraft Ground Station by reusing excess property from other NASA centers and the Department of Defense (DoD).

In one case, Vipavetz along with Tom Sparling and Kevin Pobiak of Wyle Labs met the challenge of continuing to support flight projects while saving a few hundred thousand dollars. For example, he needed some special tape recorders that would have cost as much as $100,000 each on the open market. However, he bought three, usable, excess tape recorders from NASA Goddard Space Flight Center for under $700 in shipping charges. These tape recorders were tested by Sparling and found to be in very good condition. The recorders are being used in the Research Aircraft Ground Station and the Aircraft Flight Control Facility to record and play back flight data from Langley flight-research tests as well as other fight-test facilities.

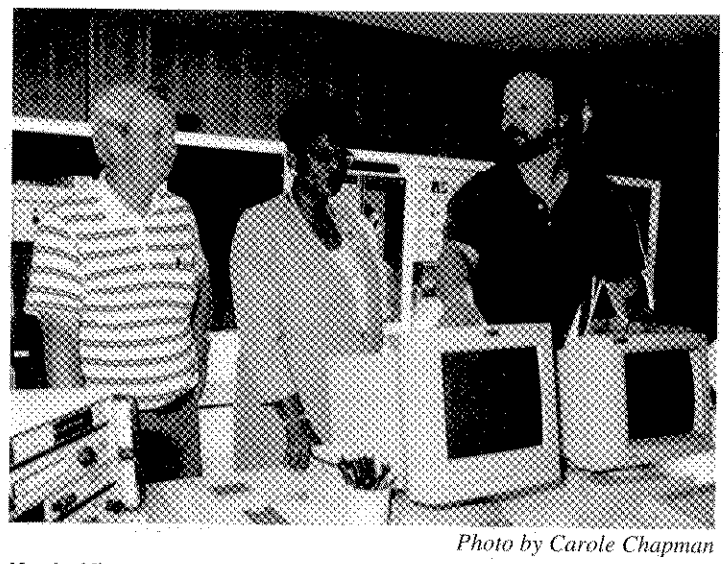


Photo by Carole Chapman

Kevin Vipavetz of Aerospace Electronic Systems Division (AESD), right, shows off two "prizes" he obtained for nothing as Patricia Redwood of Property Management, center, and Vernie Knight, branch head of AESD, look on. In a year when budget cuts are numbering in the hundreds of millions of dollars, Vipavetz saved AESD approximately $700,000 dollars through some ingenious and industrious searches for equipment already owned yet unused in government agencies.

In another case, Vipavetz and Otis Riggins of AESD acquired a surplus commercial realtime multi-processor system from the Navy Department at China Lake as a result of DoD organizational changes. It cost AESD nothing, not even a shipping charge. It was done by a simple transfer of accountability of property.

The system will serve as backup equipment to an identical $400,000 data-processing system already in service at the Research Aircraft Ground Station. John Koenig and Alton Roberts of Wyle Labs helped Vipavetz set up the excess equipment in the ground station. The flight data handling and response time has been significantly improved at low cost to Langley.

To help absorb future cuts in organizational budgets, other Langley organizations may find it practical to screen and obtain excess personal property as well. If you would like to know more about acquiring excess property, call the Property and Transportation Branch at ext. 43559, or view the Idle Property Screening List from the Logistics Management Division Home Page on the World Wide Web at URL: http://agate.larc.gov/p295/lmdidle.htm/

The Logistics Management Division applauds both Vipavetz at Langley and his team from Wyle Labs for their foresight in supporting AESD customers. The division looks forward to assisting other organizations during this time of challenges and opportunities.

News Briefs

Around the Agency

Space Technology-Related Vision Enhancement System Opens 'Whole New World' for Blind Mississippian — NASA's John C. Stennis Space Center recently welcomed the first person from Mississippi to use the Low Vision Enhancement System (LVES), a product of NASA's Technology Transfer Program. Jacob Webb of Wiggins, Miss., visited Stennis Aug. 7 to share his experiences after receiving the head-mounted enhancement imaging system. Scientists from Stennis and The Johns Hopkins Wilmer Eye Institute in Baltimore, Md., used NASA technology developed for computer processing of satellite images in the development of the system.

The 21-year-old was born so severely nearsighted as to be considered legally blind, and the condition had greatly degenerated over the years. Since he received the LVES in June, Webb has discovered a whole new world. He can see expressions on his friends' faces, read street signs 1/4-mile away and, for the first time, open his dorm room window to watch birds flying in the sky.

"I knew people would ask me how I feel about this, and it's hard to come up with an answer for that. I can show you, I can turn cartwheels, but I really can't find the words to tell you," he said. "You go practically your whole life, 21 years, without something and suddenly someone just hands it to you and says, 'Here you go'."

The LVES is a portable image processing system that could make it possible to improve visual capability by appropriately enhancing and altering images to compensate for a patient's impaired eyesight. The system is designed to provide a personally adapted view of the world to someone suffering from a particular vision problem. It consists of two orientation cameras, a zoom camera and a video projection system that provides a wide field of view for its users. The headset and the hand-held control weigh about two-pounds each. So far, about 100 units are in use.

Space-Age Sensor Helps Save Lives of Newborn Children — NASA and the University of California at San Francisco are collaborating to apply medical sensor technology to save the lives of newborn children and reduce medical costs.

Pediatric surgeons at the university's Fetal Treatment Center (FTC) are using biosensor and telemetry technology from NASA's Ames Research Center in Mountain View, Calif., to monitor the condition of fetuses with life-threatening congenital conditions. A biosensor is a device that measures medical, biological, physiological or biochemical parameters. Telemetry is the transmission of various measurements to a distant recording device.

FTC director Michael Harrison, M.D., said, "The whole concept of using telemetry is a revolution that we desperately need for treating fetal defects." Harrison explained that existing monitoring devices, while useful, cannot provide the continuous fetal monitoring physicians need. He said an urgent need exists for a continuous monitor of fetal heart rate and intra-uterine pressure that is practical for use in both hospital and out-patient settings. He believes this type of continuous monitoring of physiologic parameters by a portable, hand-held device would be "an incredible advance" for fetal surgery.

"Many of NASA's requirements for biosensor and telemetry technology have direct application to medical and surgical needs on Earth," said John W. Hines, manager of Ames' Sensors 2000 program. The program develops biosensor and telemetry technology to monitor the health of astronauts.

Boeing Selected to Negotiate for Aeronautics Contract

Langley has selected Boeing Commercial Airplane Group, Seattle, Wash., for negotiation of a $24 million contract in support of the Advanced Composites Technology program. Under the contract, Boeing will design, analyze, fabricate and verify large composite fuselage structures for a commercial transport aircraft. The work is to be conducted at Boeing's Seattle plant from 1995 to 2000.

The major goals of the contract are to verify innovative new fuselage technology through design, fabrication and testing of structural elements, sub-components and full-scale side panel components.

NASA has been developing composite primary fuselage structures under the Advanced Composites Technology program which began in 1989. The Boeing contract results are expected to provide the initial technical data for the potential application of composite fuselage structures in 21st-century commercial transport aircraft.

X-31 ITO Awarded National Air and Space Museum Trophy

The Smithsonian's National Air and Space Museum announced the X-31 International Test Organization (ITO) as the winner of the 1995 National Air and Space Museum Trophy for Current Achievement. The X-31 ITO was awarded the trophy "for an unprecedented record of engineering and flight exploration accomplishments in the past year. The experimental program achieved several 'firsts' in aviation history including demonstrating the significant value of post-stall agility in close-in air combat, developing and demonstrating revolutionary helmet-mounted visual and aural pilot aids for situational awareness under WVR combat conditions, and conducting an epoch-making series of flights in which the X-31 employed its thrust vectoring to demonstrate the feasibility of tailless flight at supersonic speeds."

The 1995 Trophy for Current Achievement will be presented to X-31 ITO senior executives at a ceremony in the Smithsonian Museum, Friday, November 3, 1995. The X-31 ITO was one of more than 25 nominations received from museum staff members as well as organizational representatives from the air and space community. The nominations were voted upon by a national selection committee of nine eminent persons in the field of air-and-space science and technology.

Nearly 600 Donors Support May and July Bloodmobiles

The May 24 Bloodmobile visit drew 297 donors. Five people gave for the first time. Langley coordinators Karen Ridlon and Peter Edgette worked with Red Cross coordinator Leigh Glenn to have such a high turnout.

Special honors go to the following donors:

22 Gallons
James J. Fay

11 Gallons
Earl S. Knight

8 Gallons
Thomas R. Levin

7 Gallons
Richard N. Zacharias
Martin E. Leatherman
Douglas S. Johnson

6 Gallons
Barry K. Lawhorne
Russell B. Tatum
Jan A. Benson

5 Gallons
Sidney G. Allison
John D. Fay
Paul V. Hyer
David R. Wilson

4 Gallons
Jerry R. Harris
William K. Abeyounis
Henry H. Chambers III
Milton Lamb
Russell A. Winkler
Peter A. Hoge

3 Gallons
Catherine S. Jones
William R. Rosch

2 Gallons
Gregory Draughon
John E. Blair
Lanier Westbrook
David W. Alderfer
James R. Reeder
Carl J. Martin, Jr.

1 Gallon
Zia-Ur Rahman
Gerald D. Alexander
Timothy J. Miante
Wallace R. Jones
Susan L. Cambell
Noel A. Talcott, Jr.

First-Time Donors
Richard Chase
Kyong Lim
Laura J. Smith
Frank E. Strehle
Dennis Strickland

The July 26 Bloodmobile visit drew 296 donors. Eight people gave for the first time. Again, Ridlon and Edgette worked with Red Cross coordinator Amy Allison to have such a high turnout.

Special honors go to the following donors:

15 Gallons
Harvey N. Kelly

12 Gallons
William W. Fernald

8 Gallons
Charles V Dunton

7 Gallons
Edward N Kerlin

6 Gallons
Michael L. Walker

5 Gallons
Sam Pollard
Paul A. Garn
Linda Jones

4 Gallons
Robin L. Freeman
Janice Y. Smith
Michael J. Hemsch

2 Gallons
Paresh O. Parikh

1 Gallon
Joseph F. Roth
Brenton W. Weathered

First-Time Donors
Lakela Lofton
David Coleman
Christopher Tarkenton
John Simpson
Patrina Joseph
Tina L. Dempsey
Sandra Brown
Nina Paynter

RN Due Date

The due date to submit any articles, photos or announcements for the next issue is Tuesday, Aug. 29, at noon. The next issue will be distributed beginning Friday, Sept. 8. Send photos with captions to Mail Stop 146. Include your name and phone. For best results, send articles to the editor via QuickMail (Joe Guarino) or e-mail (a.j.guarino@larc.nasa.gov).

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.j.guarino@larc.nasa.gov), QuickMail (Joe Guarino), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Joe Guarino
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

COMMENT ON CONGRESS

The Budget Process: Part IV

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER

Federal Employees

Denunciation of all things federal is in high fashion throughout the country and especially in Washington, D.C. The federal government is widely labeled and routinely described as incompetent and wasteful. In this depiction, federal employees are viewed as part of the problem. A stream of legislative proposals has been put forth which target the federal worker. Some of these proposals are listed in Figure 1, reprinted from the August summary of the *Federal Employees News Digest*.

Federal employees have little political clout and, therefore, almost no political protection. Of a population of 270 million, only 2.8 million federal employees are spread over 50 states. Except in six or seven pockets — Hampton Roads and Northern Virginia are two of them — they do not form a political constituency that has any bearing on election outcomes. It is, at present, far more politically advantageous for most members of Congress to claim that they are helping to tame the government.

The potential dollar cost to federal employees over the next seven years is given in Figure 2, excerpted from a recent report by the Congressional Research Service.

In addition to these legislative initiatives, a very real possibility exists that, on October 1, the beginning of the new fiscal year, there will be a "train-wreck": the 13 appropriations bills will be unsigned and the Congress will refuse to pass a Continuing Resolution to keep the Government running at the current level. The result will be that the federal government will shut down for a period of time — and federal employees will not be paid for that period. A number of concerned Republican members — including Virginia's Reps. Herb Bateman, 1st District, Frank Wolf, 10th District, and Tom Davis, 11th District — sent a letter to the Speaker of the House Newt Gingrich June 30 requesting action to prevent pay loss in such a situation. This letter is reprinted below.

Another Virginia member, Rep. James Moran (D-8th District), the ranking Democratic member on the Subcommittee on Civil Service, issued the following statement August 14:

> *"I will oppose any attempt on Capitol Hill to unfairly cut retirement, health or pay benefits of federal employees. I have written legislation to further protect federal employees from proposed furloughs should Congress fail to pass the appropriation legislation needed to keep the government from shutting down."*

Congress of the United States
Washington, DC 20515

June 30, 1995

The Honorable Newt Gingrich
Speaker, U.S. House of Representatives
Washington, DC 20515

Dear Mr. Speaker:

We write to ask for your help in protecting federal employees from the possibility that federal pay might be delayed this fall if the fiscal year ends and a continuing resolution is not enacted. We are concerned that the approximately 2.8 million employees of the federal government will face the prospect of indefinitely delayed paychecks as a result of a budget impasse.

We are committed to working with you to identify and enact a solution to this potential problem. As you know, millions of delayed paychecks could trigger severe economic hardship across the country. We believe that every effort should be made to avoid unnecessary delays in federal pay, and we stand ready to work with your office and the Committees on Appropriations and Government Reform and Oversight to address this issue. At this stage in the budget process, it appears that the FY 1996 Treasury, Postal Service, and General Government appropriations bill would be the most appropriate vehicle to address our concerns.

We look forward to working with you to craft a solution that protects federal workers while preserving the strength and flexibility required for Congress to effectively meet its budget responsibilities. Thank you for your consideration in this matter.

Sincerely,

George W. Gekas, Member of Congress
Frank R. Wolf, Member of Congress
Tom Davis, Member of Congress
Constance Morella, Member of Congress
Stephen Horn, Member of Congress
Benjamin A. Gilman, Member of Congress
Herbert H. Bateman, Member of Congress

Figure 1

The following is excerpted from the August summary of the *Federal Employees News Digest*.

Latest Agreement
Sponsors: House/Senate Republicans
Status: Passed Congress; dollar figures are binding, specific recommendations are not
Provisions: Would change the way federal and postal annuities of new retirees are calculated, basing them on the highest five years of pay instead of the current three, starting in January 1997 with an increase to four years and then to five years in January 1998. Increases executive branch (but not postal) employees' contribution toward retirement by 0.5 percent over three years, beginning with a 0.25 percent of salary increase in January 1996. Restrains federal pay raises over next seven years. Most federal employees would get a 2.4 percent raise next January (instead of the indicated 5.6 percent called for under current pay law), the same "diet" raise supported by President Clinton. Under the Federal Employees Health Benefits Program the government would continue to pay part of the enrollee's premiums, but on a dollar basis instead of a percentage (currently 75 percent). The dollar amount would be raised each year but only by general inflation — not the much faster and more virulent inflation in the medical sector of the economy.

Tax Bill (HR-1327)
Sponsors: House Republican leadership
Status: Passed House; pending in Senate at committee level. Modified version accepted as part of budget package.
Provisions: Requires federal (but not postal) employees to contribute 1.5 percentage points more of salary toward retirement starting in calendar year 1996, plus additional 0.5 percentage point increases in each of the two following years. Bases federal and postal annuities of those retiring in calendar year 1996 on highest four consecutive salary years rather than the current three, then bases annuities on highest five years for those retiring in 1997 and beyond.

House Budget Resolution (H. Con. Res. 67)
Sponsor: Rep. John Kasich, R-Ohio, Budget Committee chairman
Status: Passed House
Provisions: Assumes enactment of retirement provisions of tax bill. Changes Consumer Price Index measure, upon which retiree COLAs are based, to produce adjustments 0.6 percent below current indications, effective in 1999. Makes future years of service by congressional and Capitol Hill staff members count toward retirement under same formula used for federal employees generally. Recommends abolishing Energy, Education and Commerce departments and numerous programs and small agencies.

Senate Budget Resolution (S. Con. Res. 13)
Sponsor: Sen. Pete Domenici, R-N.M., Budget Committee chairman
Status: Passed Senate
Provisions: Changes new annuities to average high-five years of salary basis; effective date unspecified but could be phased in as in tax bill plan. Caps government contribution toward health insurance for employees and retirees at dollar amount rather than currently used percentage, with amounts adjusted for future inflation; effective date unspecified, but possibly as early as 1996 plan year. Changes Consumer Price Index measure on which retiree COLAs are based to produce adjustments 0.2 percent below current indications, effective in 1998. Freezes senior executive service pay until budget is balanced (projected year 2002). Charges employees commercial rates for parking. Makes future years of service by congressional and Capitol Hill staff members count toward retirement under same formula used for federal employees generally. Recommends abolishing Commerce department and numerous programs and small agencies.

House Balanced Budget Task Force
Sponsor: Rep. Gerald Solomon, R-N.Y., Rules Committee chairman
Status: Not introduced as legislation. Could be added to budget or other bill, or passed separately, in whole or in part
Provisions: Requires government to fully prefund its share of health premiums for retirees, squeezing accounts that pay employee salaries. Raises minimum retirement age for those hired after January 1, 1996, to 62. Ends 50 cents-on-the-dollar match for FERS investors in the federal/postal employee retirement Thrift Saving Plan hired after the same date. Charges employees commercial rates for parking. Limits leave accumulation by senior executives.

Senate Balanced Budget Task Force
Sponsor: Sen. Judd Gregg, R-N.H.
Status: Not introduced as legislation. Could be added to budget or other bill, or passed separately, in whole or in part
Provisions: Increases employee contribution toward retirement by one percent of salary in 1996 and by additional percentage point in 1997; does not specify fiscal year versus calendar year. Allows inflation adjustments on federal annuities only on benefit up to maximum provided under Social Security — currently $14,388 for an individual — and anticipates changes in Consumer Price Index to produce adjustments a half-percentage point lower than current measure indicates; both potentially effective as early as 1996. Effective January 1, 2005, would raise basic retirement age from 55 to 60, provide no COLAs to retirees under age 62 and base annuities on high-five salary years. Anticipates future limits on matching contributions for FERS investors in the retirement Thrift Savings Plan, although scope, effective date and potential coverage of current employees not yet specified.

... If you wish to reach any members of Congress mentioned in this hot list, you can call or write to them ... You can reach any of them by dialing the main Capitol switchboard at 1-202-224-3121. You can also reach members via regular paper mail, the (Washington, D.C.) zip codes are 20515 for the House and 20510 for the Senate.

Figure 2

In summary:

* Increase federal (but not postal) employee payments for both FERS and CSRS employees by 0.25 percent of pay in 1996 and an additional 0.25 percent of pay in 1998 and thereafter: $1.105 billion.
* Increase the annuity calculation base for federal and postal employees (excluding law enforcement officers, firefighters and air traffic controllers) in both systems to high-four for those who retire in 1997 and to high-five for those retiring in 1998 and thereafter: $1.145 billion.
* Increase agency payments to the retirements system by 1 percent of salary for CSRS employees starting in 1996 and an additional 0.25 percent in 1998 and afterward for FERS employees (on the theory that FERS is fully funded and would become overfunded with the increased employee contribution): $2.649 billion.
* Limit retiree cost-of-living adjustments to 0.2 percentage points below current indications, beginning in 1999, and cap the government's share of Federal Employees Health Benefits insurance at the current average amount for retirees and active federal employees (the FEHB amounts would be adjusted for general inflation in the health care sector): $4.9 billion, part of which represents projected savings to the government from enrollees switching to lower-cost plans in order to avoid higher out-of-pocket costs for premiums.
* Conform congressional retirement accrual rates for future years of service to the same rates applicable to regular employees: $10 million.

(NOTE: The CRS figures do not include the projected loss of salary for federal employees through a planned series of caps on their pay raises below the amounts indicated by pay law. According to the National Treasury Employees Union, these salary caps would cost employees $69 billion over the seven years.)

Taken from a recent Congressional Research Service report.

Harris

Continued from page 1

versions of advanced aircraft and spacecraft and their full-size component parts must be precisely crafted to demanding specifications to ensure accurate wind-tunnel test results. Other models must meet similarly stringent standards for use in free-flying research applications.

Harris also oversees fabrication and testing of aeronautical and aerospace automated-flight-control and data-acquisition instrumentation for Langley test facilities and for operating research aircraft. Additionally, he is responsible for microelectronic design and fabrication of devices for research on advanced airfoils, materials growth, energy conversion and high-performance polymers.

Career

Harris began his NASA career in 1972, entering as a student in the NASA-Thomas Nelson Community College Cooperative Education Program. He transferred to the Langley Apprentice Program in 1973 and received training with emphasis on electronic design and fabrication techniques.

Since graduating from the Apprentice School in 1978, he served as an electronics technician, a lead electronics technician in the audio/video area, a supervisory electronics technician in the Fabricaton Support Unit, head of the Microelectronics Development Section and head of the Electronics Technology Branch. He has most recently served as acting assistant chief of the Fabrication Division.

Harris has contributed to a variety of projects. They include the electronically-scanned pressure measurement system, the Gallium Arsenide Solar Cell Program, the Halogen Occultation Experiment, the Long Duration Exposure Facility and the Lidar In-Space Technology Experiment.

Harris' awards include 31 letters of commendation, two Outstanding Performance Certificates, three Special Achievement Awards, and four Group Achievement Awards. He was honored as Langley Research Center Federal Women's Program Committee 1995 Supervisor of the Year.

New Technical Committees Established by the Office of the Senior Scientist

BY JOHN HARRIS

Three new technical committees have been established by Dennis Bushnell, senior scientist, and the Langley Science Council. The three new committees and their chairpersons are: Systems Engineering and Analysis, Milam Walters; Computational Sciences, Kyle Anderson; and Measurement Sciences, Jag Singh. These committees provide summaries of particular technical areas, then suggest and document long-term research opportunities. They also serve as a valuable training ground for younger researchers and help foster longer term and more global thinking.

"The committees provide an opportunity for people in disparate areas/organizations across the field to work together and communicate ideas. The experience has a tremendous 'afterglow' in terms of subsequent interactions and organizational effectiveness," says Bushnell. "The existing committees have produced valuable information that is used at various levels in the scientific field, and in several aspects of Center and even Agency long-range planning."

The committees serve as a forum to identify longer range research issues and opportunities. In an area of their choosing, they examine the current research status, develop and suggest areas for future research, and determine how to communicate this information to the scientific community.

The new committees join four existing committees established by former senior scientist Mike Card, including Aerodynamics, Bill Small; Computer Systems, Geoff Tennille; Active Structures, Garnett Horner; and Guidance and Control, Dan Moerder.

The committees meet monthly or as necessary, depending on the agenda. Persons interested in attending a session should contact the committee chairperson for information.

John Harris is a student intern from Old Dominion University working toward a master's degree in English.

Workshop to Discuss Transportation Beyond 2000

How will you travel in 2015? How will your vehicle be powered? Will you be driving, flying or just sending electrons? This is just a taste of the questions to be addressed at the Transportation Beyond 2000 Workshop. The Langley Aerodynamics Technical Committee will conduct the workshop at the H.J.E. Reid Conference Center September 26 to 28. The committee is sponsored by Langley's Office of the Senior Scientist.

The goal of the workshop is to acquaint Langley's staff with the broad spectrum of transportation challenges and concepts foreseen within the next 20 years. Discussion topics are expected to stimulate innovative high-payoff research directed toward more efficient future transportation systems.

Speakers from around the country representing industry, academia, and government will travel to Langley to present their thoughts and concepts. Presenters have been encouraged to explore their subjects in enough technical depth to address the viability of the proposed system, the engineering challenges currently foreseen, and the potential impact on our social structure.

Over 25 presentations have been arranged in four sessions designed to stress the changing environmental, social, and technological factors that will lead to a revolution in the way people travel in the 21st century. The coming revolution in travel will encompass all forms of transportation including land, air, and space vehicles, as well as electronic virtual travel.

For more information, contact Bob McKinley via phone at ext. 47572 or e-mail (r.e.mckinley@larc.nasa.gov).

Findings of 1933 NACA Airfoil Report Still Significant Today

BY DANIELLE BECK

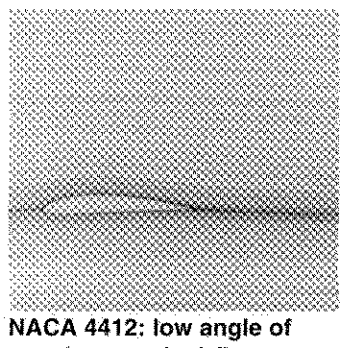
In the 1920s, a new era of aerodynamic research began. The National Advisory Committee for Aeronautics (NACA), the predecessor to NASA, noted problems in lack of uniformity and standard for airfoils and commissioned an exhaustive series of tests "aimed at rationalizing the airfoil data ... and coming up with advanced airfoils for much improved aerodynamic design." The results were published in the 1933 NACA Report No. 460, "The Characteristics of 78 Related Airfoil Sections from Tests in the Variable-Density Wind Tunnel."

The Variable-Density Wind Tunnel (VDT) was a highly advanced facility for its time. Jim Hansen in *Engineer in Charge* notes, "Tests in the compressed air of the VDT raised the dynamic scale significantly ... making it possible to estimate full-scale performance more correctly by observing small model wings." The tunnel test section rests near the H.J.E. Reid Conference Center.

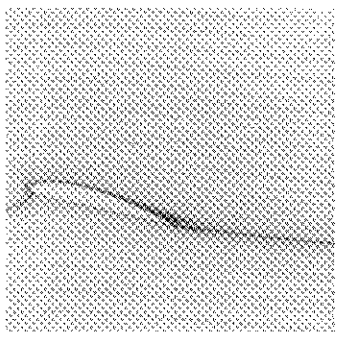
Eastman Jacobs, one of the NACA's foremost aerodynamicists, recorded the test results in Report No. 460. After publication, his report was known as the father of "mail-order catalogs" for airfoils, establishing a standard based on scientific results. The results of the report are still taken into account in aerodynamic designs today.

The discoveries made by this research, found in the NACA Report No. 460, are available at the Public Mail Center, Bldg. 1153. Quantities are limited and will be offered free of charge on a first-come, first-served basis.

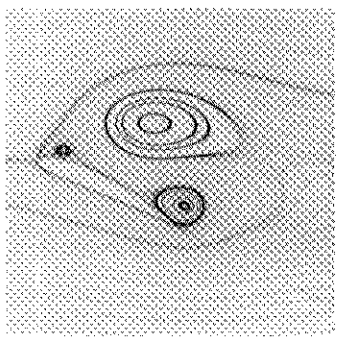
Danielle Beck is a 1995 LARSS participant.



NACA 4412: low angle of attack, smooth airflow



NACA 4412: medium angle of attack, separated airflow



NACA 4412: high angle of attack, stalled airflow

The three images to the right show how airflow over and under an airfoil changes when the angle of attack changes. An airfoil is a wing design shown in cross section. The angle of attack is the relationship of the airfoil to the direction of the air stream. As the angle of attack increases, the airflow around the airfoil goes from smooth, to separated, to stalled. The airfoil used in the illustrations is NACA 4412, one of many standard airfoils used in flight research. Mark Sanetrik of Analytical Services and Materials created these computer images of the NACA 4412. He wanted to validate the numerical computer model against wind-tunnel tests with models. Because much wind-tunnel data exists using models of NACA 4412, the wind-tunnel data can validate the accuracy of the computer information. This information can then be reliably used for design.

Virginia Symphony Opens Outdoor Concert Season

The Virginia Symphony will open its outdoor concert season with a celebration on Labor Day weekend. Concerts are Aug. 31, 7 p.m., at Norfolk Botanical Garden, and Sept. 1, 7 p.m., at the Mariner's Museum. Tickets are at the gate or in advance through TicketMaster or Virginia Symphony Ticket Store, 623-2310. Also, get tickets at the Langley Exchange Shop (20% off) for the Masterworks season opener, Sept. 8 and 9, at Chrysler Hall, featuring Beethoven's *Piano Concerto No. 2* and Sibelius' *Symphony No. 2*.

Retirees Continue Significant Research

BY JOHN HARRIS

The Langley Distinguished Research Associate (DRA) program allows top researchers and scientists to continue conducting important research in their field after they retire from Langley. The program helps the best researchers continue making contributions in their particular area of expertise, benefitting both Langley and the scientific community.

The program is voluntary and is limited to former Langley employees who are widely recognized in their field and have made significant contributions to scientific or technical programs. DRAs chosen for the program have usually received numerous national and international awards for research in their field. DRAs conduct work that is of interest to Langley, but not the same work they were doing before retirement.

In return, Langley furnishes DRAs with the necessary support for their continued research on a non-exclusive, non-interference basis. This includes use of office space and equipment, computer resources and experimental facilities.

Program participants execute Space Act Agreements with the Center, where DRAs agree to work on a specific task and Langley agrees to provide necessary support. DRAs are appointed for a period of one year; extensions may be authorized by the senior scientist after concurrence of the appropriate program director.

Current Langley DRAs

Dr. David Adamson
Ivan Beckwith
John D. Buckley
Charles E. Drummond
H. Douglas Garner
Robert V. Hess
Harvey H. Hubbard
Robert J. Huston
Ja H. Lee
Harold N. Murrow
R. A. Outlaw
Jim A. Penland
Dr. William H. Phillips
Herbert S. Ribner
D. R. Rummler
John D. Shaughnessy
William C. Sleeman Jr.
Bernard Spencer Jr.
P. Calvin Stainback
Gilbert H. Walker
George M. Ware
Robert T. Wingate
Philip R. Young

Langley has 23 DRAs (see grey box) involved in a wide variety of research, including evaluation of their inventions, preparation of executive reviews and analysis of issues in their field. Following is a sampling of DRAs and their work: Ivan Beckwith is working on designs of very advanced, high-speed quiet tunnels. Harvey Hubbard just finished editing two volumes of top research papers on aero-acoustics of flight vehicles, one on theory and the other on practice. Herbert Ribner is conducting original work on the physics of thunder and lightning and how noise is produced.

For more information about DRAs, contact the Office of the Senior Scientist at ext. 48990.

John Harris is a student intern from Old Dominion University working toward a master's degree in English.

NEWEST Shares Researchers' Pride in Aerospace Work

BY PETER D. THOMAS

Twenty-two elementary teachers representing 10 states and Washington, D.C., recently completed the NASA Educational Workshop for Elementary School Teachers (NEWEST), a 10-day honors workshop at Langley. NEWEST is sponsored by NASA and the National Science Teachers Association, in cooperation with the National Council of Teachers of Mathematics and the International Technology Educational Association.

Photo by Charmaine Sowers

A group of teachers recently launched a nine-foot-tall hot air balloon in the H.J.E. Reid Conference Center as part of the NASA Educational Workshop for Elementary School Teachers (NEWEST) program at Langley.

These teachers successfully competed with hundreds of other educators for one of the 22 spots in the NEWEST program at Langley. Nearly 100 other elementary teachers attended similar workshops at one of four other NASA centers across the country.

During their time on the Center, the teachers were engaged in hands-on activities which would assist them in incorporating aeronautics, space-related sciences and technology into their curricula. These hands-on activities included making and flying kites, hot air balloons and rockets. The teachers were also given a Spacelink account, NASA's electronic service for educators, to use during the program and back in the classroom.

The NEWEST program helps raise teachers' awareness of how aeronautics, space and technology can motivate young learners. Marilyn Marszalek, a fourth grade teacher at Edinboro Elementary School in Edin-boro, Pa., commented, "Once our students have left fourth grade, our goal should be to keep their interest in science through space. Our school has begun to empower teachers in our in-service programs. Next year, I hope to share what I have learned from this course with all interested teachers through these in-services."

The NEWEST program uniquely combines scientific and technological information with hands-on experiences. For two weeks, the teachers learned about current NASA projects, visited several facilities and interacted with researchers. Terry DuPont, a third grade teacher at Granite Street School in Millinocket, Maine, acknowledged the patience and hospitality of Langley's personnel, "The enthusiasm and pride of the people at NASA Langley is outstanding. This facility took on our NEWEST group, and the presenters which represented Langley embraced and accommodated our every visit. How could I not gain a measure of that attitude!"

Huston Awarded AHS Honorary Fellowship

BY JOHN HARRIS

Robert J. Huston, Distinguished Research Associate, was selected by the American Helicopter Society (AHS) awards committee as an AHS Honorary Fellow. This award, which is limited to two recipients per year, honors AHS members whose work toward the interests of AHS constitutes an outstanding achievement. Huston was formally recognized for this award at FORUM 51 in Fort Worth, Texas, May 10, 1995.

In the 51-year history of the AHS, only 104 people have been given this honor. Huston is the third Langley scientist to be recognized as an Honorary Fellow. Previous Langley recipients were John P. Reeder in 1966 and Robert J. Tapscott in 1973.

Huston, who retired from Langley in January 1992, worked to promote the vertical flight industry and the interests of the AHS since he joined the organization in 1961. He served as president, vice president, program director and technical director of the Hampton Roads chapter. He has also served on a variety of technical committees, is a past and current member of the technical council, and was editor of the Journal of the American Helicopter Society from 1992 to 1995.

Recently, Huston coordinated all arrangements relating to the AHS rotorcraft exhibit at the Virginia Air and Space Center, including the "AHS 50-Year Wall of History."

Reflections of a Summer Intern

BY JOHN HARRIS

As a college student, previous summers were spent trying to answer that all-important question — where's the beach? However, after too many days of no surf, traffic jams on I-64 and jellyfish, I decided it would be a nice change of pace to participate in a summer activity that would actually help further my education.

And what better way to accomplish this goal than to work as an intern in my chosen field of study. Using the techniques I learned in business management writing, I diligently sent out résumés, complete with cover letters and correct addresses. My reward soon came. Shortly thereafter, I was informed that a place had been found for my talents at Langley.

Working out of the public affairs office, I was able to apply skills used at college to a variety of Langley projects. The time spent reading and attempting to write and edit various work at Langley provided valuable "real-world" experience that can be applied to almost any organization. (I just hope my supervisors did not run out of ink making "suggestions" on my papers!)

At first, the thought of working in an organization that focuses on science was somewhat intimidating, particularly since I have a non-technical background. To my amazement, I actually began to develop a general knowledge of the aerospace industry and the Agency's mission. I now understand that the Mission to Planet Earth is much more than a Martian-related plan to study Earth rocks. So the summer internship was a success.

Top 10 Reasons Why Being an Intern at Langley Is So Much Fun:

10. The chairs at Langley are much softer than those old wooden desks they have in college classrooms (and some of Langley's chairs actually rock).
9. You have an excuse to amaze your friends and parents if you wear something other than jeans and a T-shirt.
8. The food in the cafeteria at Langley is much better than the stuff you get in the college cafeteria — and cheaper!
7. You don't have to stay up all night studying for an exam or writing a research paper.
6. If you do research or write a paper at Langley, your super-visor/mentor will actually read it.
5. You can network with other interns in case you want to take a "road trip" or get tickets to a football game.
4. Langley does not fine for over-due books at the technical library.
3. You don't have to pay a fee to park your car at Langley, and you don't have to show up two hours early just to find a parking space!
2. Langley scientists are similar to college professors in that the busier they are, the more papers and books they have spread out on their desks.
1. You can save a bundle of cash by not having to buy any text-books while working at Langley.

And the number one reason (I never said I could count), at Langley, you never have to worry about reading Shakesphere!

Happenings

WORKSHOP: Transportation Beyond 2000: Engineering Design for the Future will be held Tuesday to Thursday, September 26 to 28, 8 a.m. to 4:30 p.m. in the H.J.E. Reid Conference Center. See story on page 3 for details.

AWARDS LUNCHEON: The Technology Applications Group is sponsoring the 1995 NASA Langley Inventors Awards Luncheon Thursday, Aug. 31, 11 a.m. to 1 p.m., at the H.J.E. Reid Conference Center. The event will feature speaker Richard J. Ash, managing director of the JANUS Group Ltd. The luncheon awards ceremony will consist of presentations of awards for patents, licensing and technology transfer. For more information, call Laura Eure at ext. 45261.

DAYCARE: Licensed home offers pre-school children educational and enrichment programs in the Wythe Elementary School area. A fenced yard and playroom is available from 8 a.m. to 5:30 p.m. Call Debby at 726-2717.

FOUND: Softball glove on field 1 on July 27. To claim, call Lon at ext. 46428.

WANTED TO BUY: Used, good Macintosh computer such as LC II. Call Karen at 868-7347.

FOR SALE: 1987 Citation 29-foot travel trailer. Front kitchen, gas-electric hot water, AC, microwave, stereo-tape, 21' awning, vent covers, stabilizers, electric tongue jack. Sleeps six, good condition, one owner. $7,500. Call 826-6941.

FOR SALE: 1984 Oldsmobile. Very good condition w/AC and cruise control. Inspected. $2,000. Call Francoise at 865-1379.

FOR SALE: 3BR, 1BA home in Hampton. DR, FR, HW floors, over 3/4-acre lot, quiet area, convenient to Langley and I-64, 1,200 sq. ft. By owner. Westminister Dr. $75,900. Call Steve at 827-7553.

FOR RENT: 3BR, 2-1/2BA townhouse in Poquoson. LR, DR, E/I kitchen, storage, fenced yard. Some furnishings available if necessary. Available Sept. 1 or earlier. Call 877-0703.

FOR SALE: 2BR, 2-1/2BA, luxury, lakefront, custom townhome in Hampton. Garage, fireplace, central air and vacuuming, two decks, three floors, two gigantic bedrooms. Close to NASA. Five years old. Call Sharon at 825-1236.

FOR SALE: Washer/dryer. Matching GE heavy duty large capacity washer and gas dryer. Four-years old, like new. $350. Call Mike at 596-7936.

VOLLEYBALL: Registration for the fall volleyball season will take place beginning in September. Season starts mid-September. There are four coed leagues: D-beginner, Thursday nights; C-low/intermediate, Tuesday nights; B-high/intermediate, Thursday nights; and BB-advanced, Tuesday nights. Open league is Wednesday nights. Fee is $90/team. Contact league representative for more info and for new eligibility rules. D: Dianne Snyder, 827-4876; C: Gordy Degear, ext. 46075; B and Open: Steve Williams, ext. 46650; BB: Susan Gorton, s.a.gorton@larc, ext. 45059.

Volunteers with a Story to Tell

CFC
Virginia Peninsula

The time for this year's Combined Federal Campaign (CFC) is approaching, and we'd like Langley's campaign to have a personal touch.

Have you ever made a difference? Have you ever had someone return to you years later to thank you for the efforts you thought were not received or recognized? Have you ever seen the fruit of your time pay off? Have you or someone you know benefitted from a charity directly?

The CFC includes a wide variety of charities with many volunteers who have stories to tell as well as people who have benefitted from the charities themselves.

Langley's Office of Public Services is looking for "a few good stories," ones with depth and compassion, showing love and a helping hand, that can be tied into the CFC.

Do you have a story to share? If you do, contact Cathy Schauer via phone at ext. 43314, Mail Stop 154, QuickMail or e-mail (c.g.schauer@larc.nasa.gov) by Sept. 1.

KARATE CLUB: The Langley Karate Club invites you to discover Cuong-Nhu Oriental Martial Arts. Classes are held at the Langley Gymnasium on Mondays and Wednesdays from 5 to 7 p.m. NASA employees, co-ops, contractors and their immediate family are welcome. A new beginner class will start August 30. New students will be accepted until September 27. For more information, stop by the gym during class time or call Roy Albang at ext. 46160 or at 596-7736.

Volunteers Are Needed to Staff the NASA Information Booth at the Virginia State Fair, Sept. 21 to Oct. 1. For more information, call Donna Roper at ext. 42505.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Navs Researcher

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

Official Business. Penalty for Private Use $300.

Free Admission

The Virginia Air and Space Center, Langley's Visitor Center, is offering a special promotion for NASA active civil service employees and on-site contractors.

From July to September, free admission to exhibits will be given to civil service employees and contractors who present NASA photo identification badges.

Accompanying family members will be admitted to exhibits at a discounted rate.

In addition, the Virginia Air and Space Center is offering a special promotion on annual family memberships. From July 1995 to June 1996, civil service employees and on-site contractors are entitled to receive a 20-percent discount on family memberships which includes:

Virginia Air and Space Center
Hampton Roads History Center

* Free exhibit admission *
* IMAX discounts *
* 10-percent gift-store discount *
* Quarterly newsletter *
* Invitations to exhibit and film openings *
* Various discounts and coupons provided by local merchants and attractions*
* Discounts on camps and other activities *

*****SPECIAL BONUS FOR NEW MEMBERS*****
As of July 1, free Apollo 13 gifts such as T-shirts, caps and books will be available while supplies last.

For information and membership fees, call 727-0900.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 18❖ September 8, 1995

September Colloquium to Feature "High Performance Racing Boats" Speaker

Reggie Fountain

The September Colloquium will feature Reggie Fountain, designer of high-performance racing boats. The Colloquium will be Tuesday, September 19 at 2 p.m. in the H.J.E. Reid Conference Center.

Fountain will discuss the research and development that goes into the design of his high-performance power boats, including the original designs of the past, how the modifications have transformed the boats to what they are in the present, and what is in store for the future.

Fountain entered his first boat race in 1954 at the age of 14. He moved quickly into professional competition in 1970, setting many world records and winning many championships. In 1978 he retired from active competition to begin an extensive research and development testing program commissioned by Mercury Marine. Starting with a 31-foot V-bottom Excalibur boat, he modified it extensively to improve both the handling and acceleration. This was the start of what is now Fountain Powerboats.

In addition to world-renowned sport boats, Reggie Fountain has developed a successful line of outboard and stern-drive fishing boats.

Fountain personally masterminds all engineering and product research and development within the company. He was among the first to use bi- and tri-directional glass along with lightweight coring material, and was also one of the first to successfully utilize a notch transom, pad keel running surface for improved handling and performance.

Once a hull mold is created, Fountain performs all initial on-the-water testing and then collaborates with his staff on interior design and graphic styling. He still logs about 1,000 hours a year on the water. In 1990, Fountain returned to racing to set the V-bottom world speed record twice. He is a graduate of the University of North Carolina with degrees in business and law.

Sigma Series Lecture

Fountain will provide a history of his company including early racing and records. Current operations of Fountain Powerboats will be described with emphasis on design innovations. Attendees will get a glimpse of the future of the design changes to high performance boats. The Sigma lecture is Tuesday, Sept. 19 at 7:30 p.m. at the Virginia Air and Space Center and admission is free.

Following the lecture, the IMAX film " Grand Canyon: "The Hidden Secrets" will be shown at regular prices: adults $5.50; seniors, military, NASA (& family) with identification $4.50; and children 3-11 $4.50.

Colloquium and Sigma Series information are available on the World Wide Web using a browser such as Mosaic or Netscape at http://oldtown.larc.nasa.gov/Lectures/lectures.htm or from the NASA Langley Home Page http://www.larc.nasa.gov/larc.html under General Information about Langley Research Center.

The colloquium is open to all NASA employees and contractors. Civil service personnel should charge their time to A5266.

CFC Goal Set at $280,000

Photo by Peggy Hopkins

The 1995-96 Combined Federal Campaign Committee members are, left to right, top, Tricia Johnson, Jim High, Woodrow Whitlow, Irving Abel; front, Cathy Schauer and Susie Henriksen. Not pictured are Charles Dunton, Rockey Edge and Bill Fogle.

Langley CFC Committee 1995-96

Irving Abel, chief, Structures Division, chairperson, Mail Stop 242, ext. 42934
Woodrow Whitlow, deputy director, Aeronautics Program Group, vice chairperson, Mail Stop 113, ext. 46033
Tricia Johnson, Structures Division, recorder, Mail Stop 242, ext. 42934
Cathy Schauer, Office of Public Services, publicity, Mail Stop 154, ext. 43314
Susie Henriksen, Financial Management Division, financial chairperson, Mail Stop 135, ext. 42133
Rockey Edge, Office of Human Resources, labor relations officer, Mail Stop 129, ext. 42612
Bill Fogle, International Association of Machinists (Fabrication Division - CMDS), IAM representative, Mail Stop 385, ext. 45480
Jim High, American Federation of Government Employees, (Fabrication Division - EFDS), AFGE representative, Mail Stop 390, ext. 45416
Charles Dunton - CFC loaned executive, Mail Stop 447, ext. 47222

CFC
Virginia Peninsula

Langley Logo Selected for Peninsula's CFC Drive

BY DANIELLE BECK

NASA Langley is doing its part to support this year's Combined Federal Campaign (CFC) before the kickoff even takes place.

It has taken the Peninsula's theme of "The Power of One" and created a logo representing that theme for use throughout the campaign.

The graphic logo shown here will be used for this year's Peninsula campaign brochure, pledge card, posters and related publicity. And, in its own way, it represents the power of one artist and one agency to communicate the importance of each person's role in society.

"We are so pleased that Langley created this artwork for the CFC," said Jack Clough, who directs the Peninsula's Combined Federal Campaign. "It is just terrific, and it conveys just how important each of us is to the other." See **related article on page 3.**

Langley contributed the official art for the 1995 Combined Federal Campaign brochures, pledge cards and other materials.

"The Power of One" was designed on Center by graphic artist Wade Mickley of Mason and Hanger. According to the artist, the uplifting hands represent "giving of one's self to help others in need."

Mickley has been working for NASA for about six months on projects that include animation, comics, graphics and logos.

He has been interested in art as long as he can remember. From a childhood of scribbling and drawing to formal art training at Virginia Commonwealth University, Mickley has been able to pursue a career he loves.

Langley's official kick-off for the Combined Federal Campaign will be Sept. 28, 1995, at 1:30 p.m. at the Pearl I. Young Theater

Beck was a 1995 LARSS student.

"The Power of One"

Future issues of the *Researcher News* will highlight "the power of one" person — Langley volunteers who have made a difference because of their service in the local community as well as individuals who have been helped by the agencies supported by your CFC dollars. Their time and effort show that each of us has a contribution to make to this society.

News Briefs

Around the Agency

STUDY SHOWS FEASIBILITY OF PLANT-BASED LIFE SUPPORT SYSTEMS – The science fiction concept of plants providing a complete life support system for the crews of lunar and deep-space missions came a step closer to reality with the successful completion of a NASA life sciences experiment that studied potato production in a self-contained environment. "We have demonstrated that a bioregenerative life support system really can support humans in an enclosed environment over a long period of time," said Kennedy Space Center (KSC) plant physiologist Dr. Gary Stutte. "Our long-range goal is to prove that a plant-based life support system is as reliable as the mechanical systems found in today's spacecraft."

KSC scientists conducted a successful 418-day experiment in the Biomass Production Chamber of the Controlled Environment Life Support System. The experiment investigated how well a biogenerative life support system can perform on a continuous basis over an extended period of time. This experiment was the longest test of a major component of a bioregenerative life support system ever completed.

During the experiment, the potato plants produced enough oxygen to support one crew member on a continuous basis, while also removing excess carbon dioxide from the atmosphere, Stutte said. In addition, the potato crops produced enough food to supply 55 percent of the caloric needs of an astronaut, along with enough purified water for a total of four crew members. A larger chamber could be used to provide all the consumables for the crew for as long as a mission might last, Stutte said. "The major advantage of the bioregenerative life support system is that it does not need to be resupplied with food, water and air, nor does it require expendable water or air filtration systems as do present-day mechanical spacecraft life support systems," said Dr. Bill Knott, chief scientist of Biological Programs for the NASA/KSC Biomedical Operations Office. Instead, the current system recycles plant waste and nutrients. This recycled material sustains the plant crops, which in turn produce the oxygen, water and food that the crew would need for an indefinite period of time.

Health Corner

Look at How Much You Help!

Fall and the upcoming holidays are a very busy and exciting time of year for all of us. The Office of Occupational Health Services hopes all Langley employees, retirees and contractors will participate in the blood drive Sept. 20.

Thanks to its blood donors, Langley provided a total of 1,190 pints of blood from the last four 1995 drives. Since each pint helps about four people with life-giving blood products, Langley donors may have aided as many as 4,760 individuals. Blood donors *do* make a difference.

Newcomers are welcome to participate in Langley's blood program. Please come to one of the blood drives and talk with the regulardonors about the process or any concerns about giving blood. The American Red Cross staff is also available to answer any questions. Here is some general information about the process:

- It is very easy and safe to give blood. An individual may give blood if he or she is in good health, weighs at least 110 pounds, and is 17 years of age or older. It takes only about 10 minutes to donate a pint of blood. The entire process from registration to refreshments takes about one hour.
- After refreshments, donors can resume normal activities.
- Blood may be donated every 56 days. The Center blood drives are scheduled to accommodate the time needed between donations.

Please mark your calendars with the following scheduled Langley blood drives: Sept. 20 and Nov. 22, 1995, and Jan. 17, March 20 and May 22, 1996.

All drives are held in the H.J.E. Reid Conference Center from 9 a.m. to 3 p.m. (Civil service employees may charge time to Job Order A5269.)

CTAPC Training Available

The Career Transition Assistance Program Center will present several training topics during September. All training is authorized by NASA and Langley, and should be coordinated with supervisors.

- Tuesday, Sept. 12. A brown bag lunch time seminar will be presented on two important aspects of the job search — *Cover Letters and Thank You Notes.*
- Thursday, Sept. 14. An entire morning, 9 to 11:30 a.m., will be spent exploring the critical issue of *Networking for Contact Development.*
- Tuesday and Wednesday, Sept. 19 and 20, will be a two-day CTAPC seminar that covers in detail all aspects of the job search endeavor. This comprehensive training will be from 8:30 a.m. until 4 p.m.
- Tuesday, Sept. 26. The telephone is one of the most important tools in any job search quest. *Conquering Telephonbia* will help attendees sharpen this skill during a noontime brown bag seminar.
- Thursday, Sept. 28. Our final seminar will be *Open Line Thursday*. During this noon seminar, all employees' questions will be fielded by the CTAPC experts. All questions about job transitions will be welcome.

Please call Jeanette Graebener at ext. 45000 for registration and more information.

Letters

From Jim Puffenberger: "Sallie and I would like to express our sincere appreciation for the wonderful retirement party. The food, well wishes, gift and program all served as a perfect ending to a memorable 33$^{1/2}$ year career at the nation's premier research center. Most of all however, I would like to thank each and every one of you for your friendship and guidance as we worked side-by-side on many of Langley's projects during the Center's brightest period."

From John C. Wilson: "Connie and I and our children thank my fellow workers for the retirement dinner on Aug. 7. We especially want to thank Susan Gorton for arranging it. It was overwhelming. Also, it was the last and greatest highlight of my 24 years of rewarding and enjoyable years of service at Langley."

Kumar Selected as Gas Dynamics Division Chief

Dr. Ajay Kumar

Dr. Ajay Kumar has been selected as the chief of the Gas Dynamics Division. In this capacity, he provides leadership and direction to the division in advancing hypersonic vehicle aerodynamics, aerothermodynamic, aerothermal and airbreathing propulsion for future aircraft and space launch vehicles. The scope of the division's activities ranges from fundamental theoretical, computational and experimental research in high-speed, high-temperature gas dynamics to application of advanced technology to complete vehicle designs.

Kumar began his NASA career in 1981 as an aerospace engineer in the Hypersonic Propulsion Branch. He advanced to the position of head of the Computational Methods Branch. Prior to assuming his current position, Kumar served as the leader for the Laminar Flow Control Project Team.

Kumar is a Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and has authored or co-authored 125 technical publications. He has coedited four Langley/ICASE workshop proceedings and, in 1992, he was awarded a NASA Exceptional Scientific Achievement Medal for "Outstanding Research Contributions in Computational Fluid Dynamics."

He has received the Johns Hopkins University Applied Physics Laboratory Award for Best Technical Paper for 1989, the 1990 Gene Zara Award for Significant Contributions to the National Aero Space Plane Program, a Dual Career Ladder Award for Technical Excellence, the Langley Aeronautics Best Technical Paper Awards in 1990 and 1993 and numerous other award citations.

Technology 2005 Is this Fall

The opportunity to explore a gold mine of innovative ideas that could help solve engineering problems is available at the Technology 2005 conference, October 24-26. NASA, the Technology Utilization Foundation, *NASA Tech Briefs* and Federal Laboratory Consortium for Technology Transfer are sponsoring the conference at the McCormick Place Convention Center in Chicago, Ill.

For more information call 1 (800) 944-NASA or the AutoInfo Request line at 1 (800) 633-0062. An on-line program and registration form is accessible at the following Internet address: http://www.keds.com/tech2005.

GWU Satellite Design Chosen

A small communications satellite designed by four graduate research scholar assistants was selected as one of four final designs to be displayed at the Third Annual Satellite Design Contest in Tokyo. Dr. Jer-Nan Juang, Structural Dynamics Branch, worked with the students, Hung-Sheng Chern, Geoffrey M. Cook, Mark A. Johnson and Katherine L. Karr, in completing a class requirement for The George Washington University's Joint Institute for Advancement of Flight Sciences.

The satellite incorporates many innovative technologies and is designed to function as a space-based warning system and automatic lifeline shutdown system in the event of natural disasters.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (j.c.shanks@larc.nasa.gov), QuickMail (Jeane Shanks), fax 1 (804) 864-8810, telephone 1 (804) 864-3293 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor . . . . . Michael Finneran

Editor . . . . . Vacant
Science and Technology Corp.

Assistant Editor . . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

The Information Link: Langley's Public Mail Center

Where can I go to find information about wind shear, the global biosphere, the International Space Station or becoming an astronaut?

The Public Mail Center (PMC) is an integral part of Langley's information outreach. This office does much more than provide responses to mail. While the postal system remains a major avenue of contact with the PMC, many requests arrive by telephone, e-mail, fax or walk-in visits. One full-time staff member, Jeane Shanks, and three part-time docents, Ken Curtis, Gladys Hardrath and Mary Levin, handle requests for information on topics ranging from aeronautics to microgravity and from rockets to the solar system.

From Far and Wide

Requests come from the general public, educational institutions, industry representatives and the media. Adults, educators and high school students tend to request in-depth technical information while younger students prefer more general information about space.

Requests arrive not only from different parts of the United States but also from around the world sometimes written in a language other than English. Many times the letters and envelopes are decorated with colorful artwork and almost always adorned with stamps that are beautiful and interesting. Translations and customized responses are provided by Shanks, who uses various multimedia methods to disseminate information worldwide on NASA. Even beyond the United States, Langley educates adults and students who make inquiries of the Center's PMC.

The Education Connection

A direct relationship between the education community and the PMC is fostered through support of the Teacher Resource Center (TRC) at the Virginia Air and Space Center and regional TRCs in the five state area of Virginia, West Virginia, Kentucky, North Carolina and South Carolina.

Educational outreach is a goal of the PMC staff. A few of the programs supported by the PMC include the Speakers Bureau, the annual Experimental Aircraft Association Fly-In at Oshkosh, Wisconsin, the Virginia State Fair and National Engineers Week.

February is one of the busiest times of the year for the PMC because it supports National Engineers Week, one of Langley's largest educational outreach programs. Langley employees visit community schools and share NASA's vision with others.

Materials are available through the PMC that support Langley's programs and include model kits, lithographs, fact sheets, workbooks, slides and tapes. Model airplanes, a shuttle model, space toys and the blue flight suits used by astronauts while working in space are available on a first-come, first-served basis.

The summer months find the PMC staff members busy supporting the many educators and students participating in NASA sponsored programs. The participants visit the PMC on a regular basis to obtain reference materials.

Future Projects

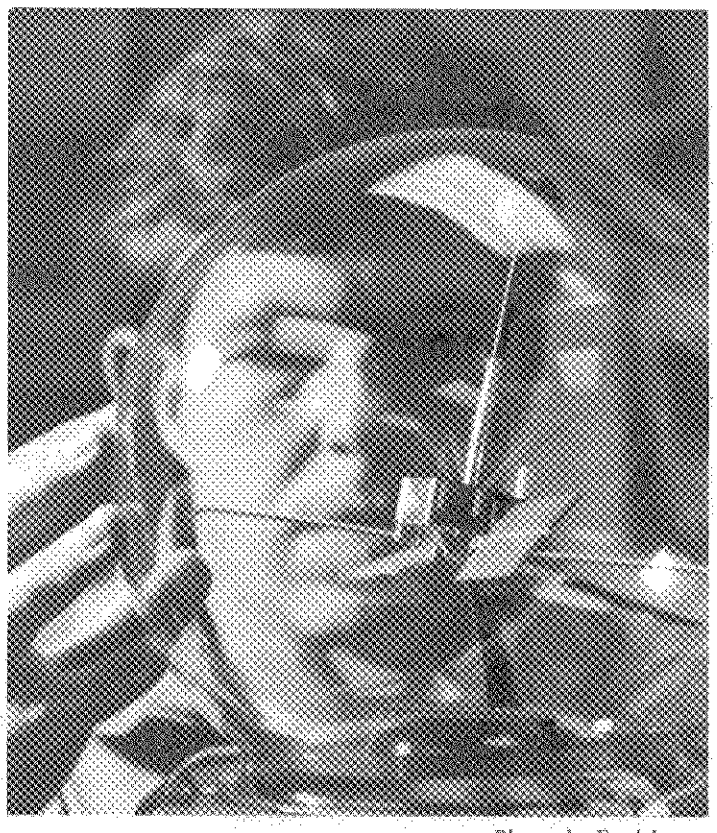
Two projects being developed will bring the PMC into today's technological world. An informational database is being produced that will enable walk-in requestors to browse the availability of support material. PMC information will soon be attainable on the Internet via the World Wide Web. The availability of this information on the Internet will help the PMC reach a wider audience and reduce the number of manually-processed requests.

The Public Mail Center

Upon entering the PMC, the eye immediately falls upon the vast number of pamphlets as well as the colorful posters and lithographs. Pamphlet subjects range from the first Americans in space to flow separation over an airfoil with resulting shock waves. Bright greens, pinks and blues emanate from the lithographs to tell a visual story while posters combine artistry with technical presentation.

A wealth of information about NASA is available to the public. Fact sheets and Information Summaries abound on such topics as general aviation, the ozone, clouds, hypersonic technology and satellites. Fact sheets are available concerning Langley's history, contributions and wind tunnels.

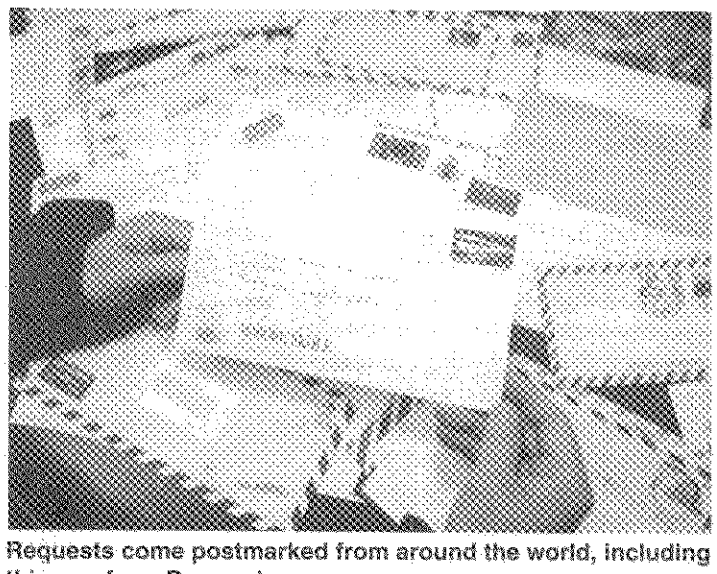
The Public Mail Center is in Building 1153, Room 115. All Langley employees (civil service, contract and others) are welcome to visit the PMC Monday through Friday, 9 a.m. to 3 p.m.



Photos by Fred Jones

Scott Bickford, wearing a working flight suit, examines a model of the Explorer XVIII satellite. Model Shuttles and airplane models are available on a loan basis from the PMC.

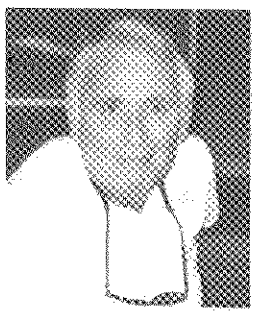
LARRS students Danielle Beck (seated, left), India Pickney, and student intern John Harris choose material for their presentations assisted by Jeane Shanks.



Requests come postmarked from around the world, including this one from Denmark.

Langley: A History of Excellence in the CFC Campaign

BY JACK CLOUGH



For 33 years, the people of NASA Langley have been the charitable leaders of one of the largest sector of employees on the Virginia Peninsula. Consider this — for three decades, Langley employees have been a backbone of our successful Peninsula Combined Federal Campaigns (CFC).

Every year since the inception of our CFC, federal employees on the Peninsula have organized themselves to help others. Each year there have been new groups, new leaders, new achievements in charitable giving. Employees in the federal workplace are good at helping themselves and those they care about.

Based on data from the last CFC, I can report the following superlatives about the giving and sharing of the men and women of Langley Research Center:

- The highest participation rate of any major federal group - 49 percent.
- The highest average gift of any major federal group - $150.71.
- The highest per capita gift of any major federal group - $104.75.
- The largest number of $500-plus and $1,000-plus givers of any major federal group - 110 and 23 respectively.

Add to this NASA Langley's leadership in continuously providing a CFC loaned executive and the immeasurable impact of Langley in our Peninsula Community Day of Caring.

My period of observation has been for 14 campaigns. If pride is an attitude for regarding oneself with favor, then you have every reason for self esteem. Thank you.

Jack Clough is the United Way program manager for the CFC, Combined Virginia Campaign and the Newport News Shipbuilding United Way Campaign.

Flight Safety Call for Papers

Sept. 15 is the deadline for submitting a 200- to 400-word abstract of a proposed paper on "Solutions Today for a Safe Tomorrow." Presentation of accepted papers will be at the Flight Safety Foundation's 41st annual Corporate Aviation Safety Seminar in Orlando, Fla., April 24-26, 1996. Call the Foundation at (703) 522-8300 or fax (703) 525-6047 to obtain an application form.

TAG – Patenting Inventions

BY CHRISTY E. GALL

A significant part of the Technology Applications Group (TAG) is the Patent Counsel Team (PCT). The PCT determines intellectual property rights and provides patent protection for inventions developed by Langley researchers. Patents allow full public disclosure and provide exclusivity for those companies seeking to license NASA technology.

GENERAL DUTIES

Composed of six members, including two patent attorneys and one patent agent, PCT performs actions ranging from preparing patent applications, amendments and other documentation, to recommending actions concerning patent infringements. The individual members have specific obligations that fall under their jurisdiction.

PATENT COUNSEL

George Helfrich is a patent attorney who serves as the Center's chief patent counsel and leads the PCT. He provides leadership to the PCT as they interface with both TAG and the entire Center. Helfrich, by working closely with the associate general counsel (intellectual property), NASA Headquarters, ensures the implementation of actions related to the Center's inventions, patents, and other intellectual property matters.

The two patent attorneys and the one patent agent on the PCT perform many of the same services, yet they all have a specific technical area of concentration. Helfrich serves as senior patent attorney with an emphasis on the chemical and related arts, especially polymeric materials, catalysts, and chemical processes. Kim Chasteen focuses on the aeronautical technologies. Robin Edwards, Langley's patent agent, serves the mechanical sector.

Patent attorneys are scientists or engineers who are also lawyers. They have passed the examination for admission to the highest court in one of the states of the U.S., and have passed the examination for registration to practice in the U.S. Patent and Trademark Office (USPTO). Accordingly, they are able to represent clients in the USPTO as well as in the courts. Patent agents are scientists or engineers who have passed the examination for registration to practice in the USPTO. They are able to represent clients in the USPTO, but not in the courts. General attorneys are not qualified to represent clients in the USPTO in patent matters.

As patent prosecution specialists in their respective areas, the patent attorneys and patent agent evaluate invention disclosures and determine patentability on a timely basis. Priorities for processing disclosures consistent with TAG commercialization plans are established by working with the technology transfer specialists. By conducting technical evaluations and thorough searches for existing patents, strong coverage of the technology is ensured. This also ensures that the technology will be patented in minimum time. The patent attorneys and patent agent also prepare and prosecute patent applications in the USPTO on a timely basis, including appeals and interference trials, avoiding delays that can result in lost rights.

In serving as legal counsel in technology commercialization, the patent attorneys work closely with the inventors and technology specialists in assessing and promoting commercialization of NASA technologies, and they provide counseling to potential licensees on NASA procedures. They also oversee the negotiation of licenses of NASA technologies.

Finally, the patent attorneys furnish legal counsel in all intellectual property matters for the Center. This involves protecting inventions, trademarks, copyrights, trade secrets and government rights in data. In addition, they act as liaisons with the Department of Justice in handling of lawsuits against the U.S. government that involve NASA.

LEGAL INFORMATION SPECIALIST

The legal information specialist for Langley's PCT is Elaine McMahon. She is the primary point of contact for reviewing the status of invention disclosures, rights determinations, licenses, procurement expenditures, computer network support and contractor intellectual property determinations. She also conducts legal research both in hard copy and electronically.

LEGAL TECHNICIAN

There are three major job elements that Theresa Walker performs in her role as legal technician. First and foremost is her role as a specialist in the handling of formal matters in the USPTO. This involves working with Elaine McMahon to ensure all date sensitive matters are entered into the database for a timely response by the attorneys and agent, by typing draft and final form patent specification and claims, amendments, assignments of title, licenses, oaths, powers of attorney, affidavits, legal and appeal briefs, legal petitions and responses to notices of abandonment. In implementing an action calendar for the PCT, she ensures a timely response to all statutory bar dates and office action of the USPTO. This informs the attorneys of all sensitive date actions well in advance of the due date. Failure to respond to the actions could result in the loss of property rights.

Second, the legal technician instructs individuals in the proper submission of disclosures and other documentation required throughout the process. Walker keeps abreast of fee and rule changes made by the USPTO.

Finally, in serving as a legal technician, Walker prepares waiver petitions and petition evaluation forms for submission to NASA Headquarters.

LEGAL SECRETARY

Laura Eure is the secretary for the patent counsel office. She provides administrative and clerical support to the legal staff. Eure is the first person researchers and contractors speak to when they submit their invention disclosures. She can answer general questions pertaining to the status of a patent application or other legal matters, and can point the customer in the right direction when concerns are more complex. She provides communications to the inventors concerning the processing of their invention disclosures. She directly supports the attorneys by organizing and typing licensing requests that are sent to NASA Headquarters. Eure is the primary point of contact for all correspondence relating to license requests, and she maintains the licensing files. She has created and maintains a listing of the status of each license request and supplies this status to the appropriate Technology Transfer Team member as well as the senior patent attorney at NASA Headquarters.

STAY-IN-SCHOOL EMPLOYEE

Emily Xinos supports the entire Patent Counsel Office by answering telephones, filing documents, and entering data into the database, freeing others to do specialized functions.

For more information regarding the Patent Counsel Office, call ext. 49260, or e-mail to L.L.Eure@LaRC.NASA.GOV

Phillips Honors Pearl I. Young

Hewitt Phillips, Langley Distinguished Research Associate, honored Pearl I. Young in a speech during the Federal Women's Committee program held August 22. This is the text of that speech.

"Pearl Young was indeed a remarkable woman. She was not only the first female professional employee of NACA, she was also a teacher, journalist, lecturer, author and world traveler.

Pearl was born in Minnesota but grew up in North Dakota where she attended school. She left home at the tender age of 11 and worked as a domestic in order to attend high school. She also worked her way through college, attending the University of North Dakota where she was an outstanding student. After her graduation in 1919, she taught physics at the university for two years before accepting an appointment in 1922, at the Langley Memorial Aeronautical Laboratory of NACA.

She was first assigned to the Instrumentation Division, working side by side with H. J. E. Reid, who later served as Engineer in Charge from 1926 to 1960. Fred Weick, a well-known early Langley researcher, decided a technical editor was needed. She was given the job. Her lasting contribution to the NACA was setting up an editorial office and staff, and writing a manual entitled *Style Manual for Engineering Authors*, generally known as the style manual, that set the format for reports on research conducted at the Laboratory. It was subsequently used at all NACA centers. Reports soon became known for their form and accuracy as well as their technical content.

Pearl also worked as a part time reporter and feature editor for the *Norfolk Ledger Dispatch*. One of her assignments was to interview Eleanor Roosevelt, and that story earned her a front-page byline.

Pearl also delivered a number of lectures on many subjects during her lifetime. In January, 1960, she spoke to the Wingfoot Lighter-Than-Air Society in Cleveland about the Zeppelin Hindenburg.

Pearl always retained a strong interest in people and somehow felt she had a duty to teach. At the end of World War II, she resigned her position as chief technical editor. She accepted a position with Penn State College, and was assistant professor of physics, teaching engineering physics from 1947 to 1957.

After teaching, Pearl returned to the Lewis Laboratory, where she did bibliographical work for several years. She retired from NASA in 1961. In 1964 she returned to Hampton, where she lived until her death in 1968.

In retirement, Pearl, still a vigorous woman with many interests, turned her energies toward fulltime research for a book begun in 1947. The work was to be a biography of Octave Chanute, a civil engineer whose career was building railroads and railroad bridges but who, in his later years, devoted his efforts to the problems of manned flight. He was known as the mentor of the Wright Brothers.

Pearl's task of collecting Chanute source material carried her to many places in the United States and Europe. She received grants from the American Philosophical Society in Philadelphia, the University of Wyoming as well as from the Chanute family in pursuing her work.

After being stricken with cancer in the mid-sixties, Pearl realized she was not going to be able to finish the biography. She then enlisted the help of Betty Toll, a former editor in the Langley Editorial Office, to sort and index the mass of material she had collected. Chanute's great granddaughter, Elaine Chanute Hodges, who had become Pearl's close friend and who lives in Denver, was to see it to completion. In the final disposition of her work, original material on aeronautics and the biographical material went to the Denver Public Library. Transportation material went to the University of Wyoming where the Pearl I. Young Collection became a part of the Transportation History Foundation.

Pearl died in Hampton at age 72 on June 17, 1968, leaving her body to science and monies from her estate to the City of Hampton for the construction of shelters at bus stops.

Pearl's biography would not be complete without a reference to one of her adventures. In 1936, she paid $800 for round-trip ticket "number one" on the first flight of the airship *Hindenburg*. She was one of 50 passengers on the airship just about a year before it crashed in flames in New Jersey. Pearl often said that, for $800, she purchased a million dollars worth of memories."

Developing the World's First Jump-Jet: Langley Saves Harrier Program

BY MARK CHAMBERS

"The Kestrel/Harrier type aircraft were my favorite because they did so many things. They took off and landed vertically; they took off and landed like conventional airplanes; they hovered and transitioned from a hovering vehicle into strike type aircraft gracefully and easily. They had handling qualities that were superb . . . this airplane was kind of an extension of your thoughts and did just what you wanted it to do. A very light, very precise, and very nimble airplane."— Langley test pilot Lee Person

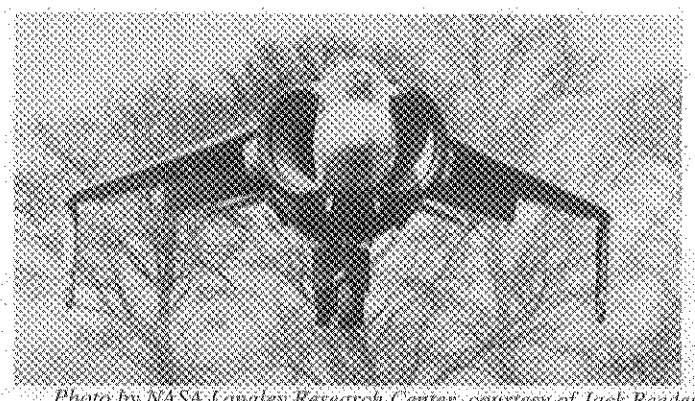


Photo by NASA Langley Research Center, courtesy of Jack Reeder

Hawker test pilot Hugh Merewether makes a vertical take off in the Kestrel at Hawker's proving grounds in England.

In 1957, the Hawker Aviation Co. of Kingston, England, sought to develop a radical, new, lightweight and highly maneuverable fighter/strike jet. It had to be capable of taking off and landing both conventionally and vertically from makeshift runways or airfields. Leading the project in England was chief designer and aviation pioneer Sir Sydney Camm.

Development of the new Vertical/Short Takeoff and Landing (V/STOL) jet aircraft, designated the P-1127, proceeded in earnest. However, thrust deficiencies of prospective engine power plants and budgetary problems hindered the program. Consequently, Camm, distinguished for his design of the Hawker Hurricane fighter that defended England against German raiders during the Battle of Britain, moved on. He crossed the ocean and attempted to solicit interested parties from the United States, but could find no willing financiers.

John Stack, Langley visionary and key proponent of the P-1127.

Langley to the Rescue

Deeply interested in Camm's brainchild and hating to see the British give up on it was deputy director of the NACA/NASA Langley John Stack, another pioneer and visionary in aeronautical research. He requested that Langley researchers construct models of the aircraft to prove the concept in wind tunnels. The Langley model shop workers immediately produced two models of the envisioned vectored-thrust jump-jet: a 1/6-scale free-flight model to be tested in Langley's huge 30- x 60-Foot Full-Scale Tunnel, and a 1/10-scale peroxide-powered model to be tested in the Center's transonic wind tunnels.

Driven by Stack's enthusiasm and belief in the practicality of the Hawker P-1127, Langley personnel worked hard to prove that the aircraft would be a success. Engineer Marion O. McKinney and his research staff spent many hours in the Full-Scale Tunnel perfecting the vectored-thrust concept using the free-flight model technique. In 1960, the free-flight model made a successful transition from vertical to horizontal flight in the tunnel.

"It was tricky research, but the model transitioned well from the hover mode to a cruising mode without requiring artificial stabilization," recalls John P. Campbell, head of the Dynamic Stability Branch and supervisor of Full-Scale Tunnel research at the time. Encouraged by Langley's vivid demonstrations of the flying model, Camm and Hawker managed to secure enough funding to proceed with manufacturing the actual aircraft, despite the lingering skepticism of some British aeronautical officials.

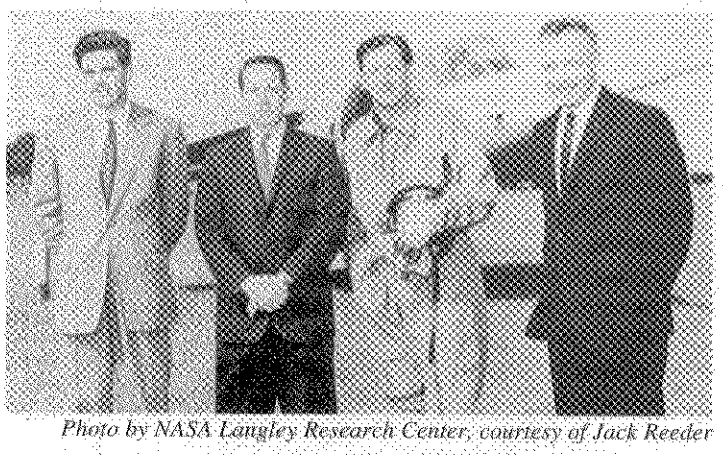


Photo by NASA Langley Research Center, courtesy of Jack Reeder

During the P-1127 flight development program, two NASA pilots were dispatched for flight duties in England. Posing in front of the aircraft are, left to right, Hawker test pilot Hugh Merewether, NASA Ames chief research pilot Fred Drinkwater, Hawker chief test pilot Bill Bedford and NASA Langley chief research pilot Jack Reeder.

Flight Testing

While funding was being secured, Hawker chief test pilot Bill Bedford and his assistant Hugh Merewether visited Langley to observe the Center's research facilities and gain valuable experience flying its V/STOL flight simulators. By then, the P-1127 project was placed under the International Mutual Weapons Development Program.

Representing NASA in the P-1127 flight test trials held in England, Langley chief test pilot Jack Reeder and Ames chief test pilot Fred Drinkwater were detached for duty. They participated in extensive studies conducted jointly with the British throughout the early 1960s. Reeder became the first non-British pilot to fly the aircraft and, along with Drinkwater and other notable test pilots, he reported favorably on the flight characteristics of the airplane. These tests included preliminary evaluations of the aircraft's vectored-thrust system in forward flight which proved that such an aircraft could function effectively in flight, much to the disdain of its English critics.

In 1965, the United States became a member of a tripartite team consisting of Great Britain, the United States and West Germany to evaluate the next prototype in the P-1127 development program, the Hawker XV-6A Kestrel. Once again, Reeder was selected to serve as a leading American international representative in the evaluation of the aircraft. Reeder persuaded officials of the tripartite team to provide Langley with a Kestrel aircraft for flight tests. They responded by providing the Center with not one, but two aircraft. Several other aircraft were also provided to various U.S. military services, including the U.S. Air Force (USAF), Navy, Army and Marine Corps (USMC).

NASA test pilot Lee Person served as chief pilot for the Kestrels at Langley, under the leadership of Reeder. During the Kestrel phase of the program, extensive studies of the Kestrel's instrument approach procedures and thrust vectoring capabilities in forward flight (VIFF) were conducted. The ability to utilize the VIFF capability greatly enhanced the in-flight maneuverability of the airplane. When matched against conventional fighters of the day, the Kestrel consistently won in simulated air combat.

Having already served as a lead pilot in the testing of lunar-lander prototypes, Person found similar handling characteristics between the landers and the hover mode of the Kestrel. Both, according to Person, were controlled by acceleration command systems rather than rate command systems. As stated by Person, "The vertical height control in the Kestrel was what I was accustomed to using and it made the airplane very easy to fly."

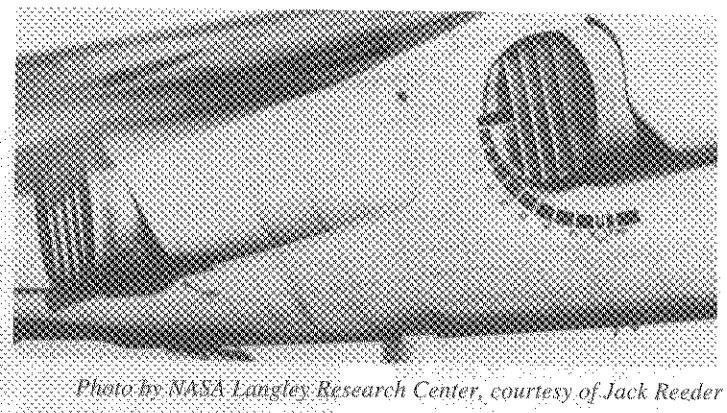


Photo by NASA Langley Research Center, courtesy of Jack Reeder

Unique to the P-1127 was its use of a turbofan engine that vectored thrust generated from two front engine fans through four rotating nozzles that could be directed at various angles. Below, the nozzles are configured for the conventional horizontal or "cruising" flight mode.

Success Achieved

With the success of the Kestrel flight test program at Langley, the Kestrel VIFF program shifted back to England where NASA and the Royal Aircraft Establishment (RAE) modified "development batch" aircraft for flight maneuvering investigations. Results from the studies greatly interested the Royal Air Force (RAF) and the USMC. The aircraft that eventually emerged in 1966 was the now-famous British Harrier or American AV-8A.

Following more flight demonstrations by the USMC in England in 1968, the Marine Corps decided to purchase 110 AV-8As and TAV-8As between 1971 and 1976. The aircraft, in the form of the Sea Harrier for the Royal Navy, Harrier Gr. 3 for the RAF, and AV-8B for the USMC, ultimately gained fame in both the Falklands conflict and Operation *Desert Storm*.

The Final Analysis

Today the Harrier serves as a versatile fighter/strike platform that can operate virtually anywhere for the military. Vectored thrust may also be applied to civil intercity transports in the future. The Harrier concept and its intended purpose could never have been fully realized had it not been for the drive and enthusiasm shown by aeronautical researchers at Langley.

Being the consummate visionary, Stack displayed the fortitude to stick with the project and see it to fruition at a time when everyone else was ready to abandon it. Knowing he had unique facilities and a highly dedicated research team at his disposal, nothing seemed impossible, even making a conventional jet take off and land vertically. The Harrier support work proved to be perhaps the most significant V/STOL research ever performed at Langley. In the end, the Harrier ushered in a new era of manned powered flight, the era of vectored-thrust V/STOL flight.

Langley Participates in 1995 SYETP Program

BY KENNY SMITH

This summer, Langley participated in the 1995 Summer Youth Employment and Training Program (SYETP) with the City of Hampton and Hampton City Schools. The program was divided into three components: work experience, academic enrichment, and classroom vocational skills training. Langley was involved in the classroom vocational skills training career cluster. Career clusters selected were representative of the labor market on the Virginia Peninsula. Six teams rotated weekly to receive instruction from the areas of hospitality, retail/marketing, health and human services, horticulture, communication/media arts and NASA (civil service). The students also received a comprehensive vocational assessment provided by Hampton City Schools Vocational Assessment Center.

Each week a group of 10 students, along with Joe Sanzo, the SYETP Hampton City School site instructor, spent four days on Center. The students received instruction in the following areas: utilizing effective communication skills, effective teamwork skills, exploring educational opportunities, identifying the basic level of education needed for selected career fields, and accessing information related to careers and job training.

Langley provided activities each week for the visiting team through Shelley Canright, Center education programs officer, and Kathy Powell, education specialist, Office of Education. Activities consisted of the Office of Education's deputy director Edwin Prior, and Roger Hathaway, university affairs officer, providing a brief overview of Langley to the students; two members of the Approach to Training and Competency 2000 (ATTAC 2000) program presenting a hands-on activity; Office of Education staff member Chuck Kramer giving a "dreams presentation"— a career outreach activity provided by the Peninsula Contractors' Council — and a slide presentation of Kramer's trip to Antarctica where he was part of "Live From Antarctica" team. Students also toured a wind tunnel facility and the Basic Aerodynamics Research Tunnel, attended several of the 1995 Office of Education Summer Lecture Series, and made brief visits to work sites of Summer High School Apprenticeship Research Program (SHARP) program participants.

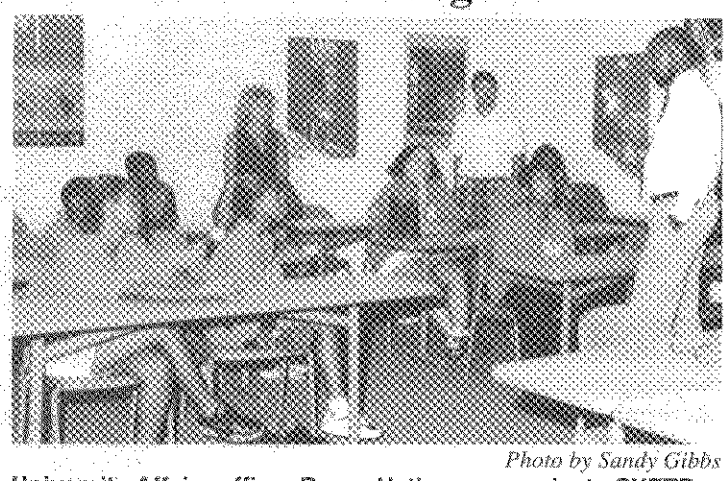


Photo by Sandy Gibbs

University Affairs officer Roger Hathaway speaks to SYETP students as Kathy Powell, education specialist, and Joe Sanzo, SYETP instructor, look on.

Cory Saylor, 15, a Kecoughtan High School student, was a recent national mathematics award winner. He was excited about being at NASA to learn about planes and the aerospace program. Sanzo felt that the students experience at Langley had been very beneficial. He said, "The overall attitude, show of cooperation and friendliness of Langley employees was super, and everyone from the teams was most appreciative." Mariana Morant, 14, Phoebus High School student, who has ambitions of going to law school, appreciated the show of confidence given to her during the program.

Kenny Smith was a LARSS student at Langley this summer.

Students Open Their Minds to Careers in Science and Technology

BY SARA YANCY

The Explorer Program is sponsored by NASA Langley in conjunction with the Colonial Virginia Council of the Boy Scouts of America. The program encourages the interest of secondary students ages 16 to 20 in science, mathematics and technology by providing them with the opportunity to explore a career in aeronautics, astronomy or computers in a high-tech environment.

Taking place from October through May annually, the Explorer Program is open to those students who have completed at least Algebra I and live within a 50-mile radius of the Center. Not only does the program expose students to a scientific and technical environment, it provides an excellent opportunity for them to interact with engineers, scientists and technicians. A "hands-on" experience such as the Explorer Program is beneficial in assisting students in developing their interest in careers in science, math, and technology.

A student enrolled in any one of three different posts may return the following year to participate in the same or in another post program. Robert Weston is the advisor of the Aeronautics Post, which concentrates on the basic principles of flight, the study of wind tunnels, high-speed flight and aircraft design. Robert Mack advises the Astronomy Post, which studies the solar system, the stars, galaxies and the Big Bang Theory. Finally, Garry Qualls advises the Computer Science Post, which exposes students to computer concepts and workstations. This post also allows them to work with graphic packages, "surf" the Internet, and become familiar with FORTRAN and Pascal. Each program consists of tours, briefings, open discussions, guest speakers and hands-on activities. The program has had overwhelming success with past participants.

Registration for those interested in participating in the Explorer Post Program will be held Oct. 10 at 7 p.m. in the Center's H.J.E. Reid Conference Center, 14 Langley Blvd. (Building 1222). **Application deadline is Sept. 30.** For more information contact Pat Link at ext. 48102.

Yancy was a LARSS student.

Students in the Explorer Program design aircraft and "fly" them on the computer as part of the Aeronautics Post.

NASA Academy Students Visit Langley

BY DR. LIZ WARD

On the morning of July 17, a group of NASA Academy students came to the Langley cafeteria for a breakfast hosted by the director of the Office of Education, Dr. Samuel E. Massenberg. Students were given a Center overview by Ed Prior and an overview of Langley's aeronautics program by Dr. Woodrow Whitlow. Olin Jarrett directed them on a tour of Langley, which concluded by meeting Center Director Paul Holloway. After leaving Hampton, the group traveled to Wallop's Flight Facility before heading back to Greenbelt, Md.

NASA Academy visited Langley this summer as part of their program at Goddard Space Flight Center in Greenbelt, Md.

What Is the Space Academy?

Goddard Space Flight Center's Office of University Affairs brought 23 academy students to Langley as part of their 10-week summer experience. Each fall, students interested in space science, Earth science, or space engineering are selected through a highly competitive process to attend the academy. Students are initially nominated by their state space grant consortium. Each space grant program supplies the students with a stipend for the 10-week period and travel funds to and from the academy location. Goddard supplies local transportation mileage reimbursement, food, and housing. Half of the students' time is spent work- ing with a research mentor; the other half is spent as a group traveling to Washington, D.C. to visit NASA Headquarters and other NASA centers, legislators, business and industry leaders and persons involved with the space program.

Goddard's Academy was designed by Dr. Gerald Soffen, the project scientist for the Viking Mars mission. He directs Goddard's Office of University Programs and created the academy as a strategic investment in the next generation of aerospace leadership. Students chosen for the NASA academy have emerged from a highly competitive process that selects only the best, brightest and most innovative.

This summer the University Affairs office at Marshall Space Flight Center in Huntsville, Alabama also conducted a selection process and accepted students for the first NASA Academy at the center. Eligibility requirements for the academy include: interest in the space program; full time enrollment as a junior or senior undergraduate or as a graduate student majoring in science math, engineering, computer science, or other space-related subject; and U.S. citizenship or permanent residency. To apply for either academy, students should first contact their state space grant consortium office. Information can be obtained by calling (804) 864-3299 or by hyperlink to the National Space Grant College and Fellowship Program on NASA's Home Page at http://www.nasa.gov

Child Development Center Celebrates 10th Anniversary: Growing Up in a Land of Technology

BY DANIELLE BECK

Twelve years ago, a determined group of individuals set out to make the dream of a Langley Child Development Center (LCDC) a reality. Their hard work and persistence formulated a strong and dependable business, still very much in demand today. In 1983, when planning first began for the LCDC, Langley was ahead of its time: no other non-military establishment on the Peninsula offered child care facilities at its place of employment.

The demand for enrollment at the LCDC has only increased as years have passed. The center is at capacity with more than 120 students and an equal amount who remain on the waiting list. The center has expanded its size four times since its opening September 3, 1985, to meet the growing needs of Langley employees.

All civil service employees and contractors qualify to receive this benefit providing quality care for their children. "For 10 years the LCDC has allowed parents to devote their attention to their work without concern for the safety and well-being of their children," said Marta Fenn, secretary of the LCDC Parent-Teacher Association. The LCDC has contributed to NASA goals by retaining quality professionals with infant and preschool-age children, reducing employee turnover due to pregnancy and maternity leave, as well as reducing absenteeism because of child-care problems.

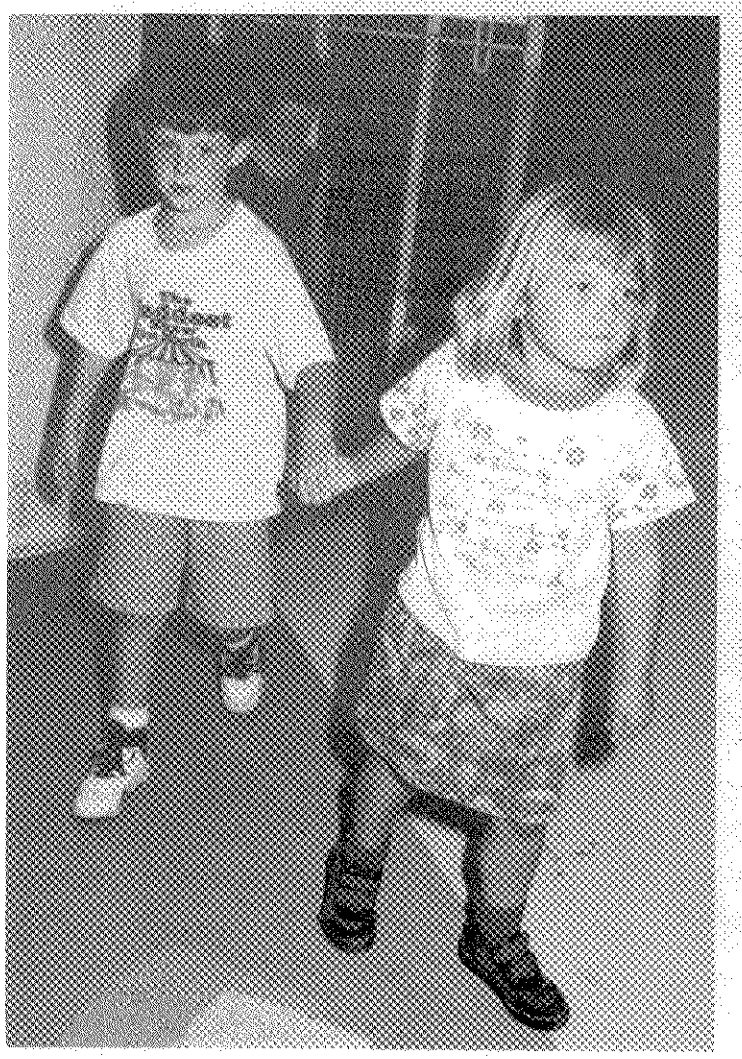
The LCDC is housed at the site of a former helicopter testing facility. Today the facility hosts older children and infants in Bldg. 1231 and Bldg. 1231B, respectively. Although once a research testing facility, one could never tell now. Strolling through creamy yellow corridors and past numerous classrooms, the evidence of children is abundant — artwork on the walls or the "kid-sized" furniture. The LCDC provides a wonderful environment for learning and growing. The tuition paid by parents supports most of the LCDC's operating costs while NASA provides the facility.

A staff of 29 permanent employees were kept busy this summer with their regular responsibilities. Four additional employees were brought on to help cover extra duties, including summer camps for school-age students. In some cases, the students attending summer camp sessions were among the first enrolled at the LCDC, making the 10th anniversary very special to them.

Photos by Carole Chapman

LOOK, BUT PLEASE DON'T TOUCH. Charles Poupard, of the 16-Foot Transonic Operations Section, shows a tunnel-drive control panel to students from the Langley Child Development Center as they tour the 16-Foot Transonic Tunnel facility. Students were curious as to which buttons served what purpose and how they related to what they had seen. Being at Langley, the students' lives are frequently influenced by the world of science. Perhaps they too will work in a wind tunnel when they "grow up."

THE BUDDY SYSTEM. Kathryn Howell leads her partner, Travis Franklin, who is eager to see what is next on their special outing to the 16-Foot Transonic Tunnel facility. Behind them, Josh Melson makes certain to stay on the walkway and follow close behind the group.

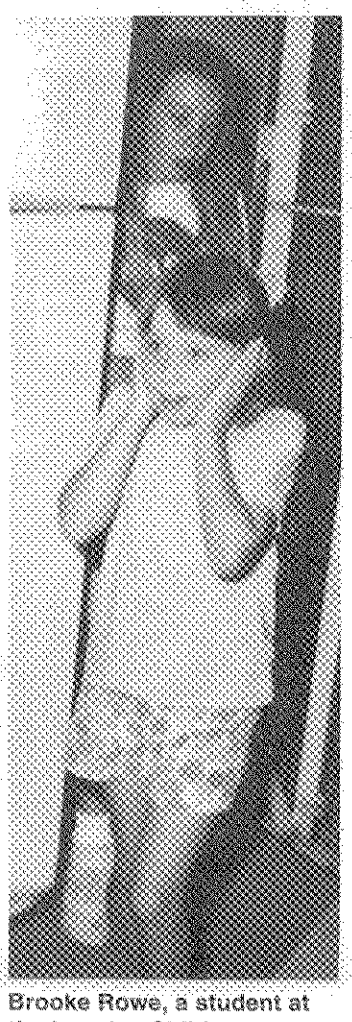


The Langley Influence

Students at the LCDC are surrounded with technology and science, and are provided with many opportunities to experience their environment. When the center was first established, it was ahead of its time: a computer introduced for bookkeeping was eventually incorporated into the classroom. Today the idea of technology in the classroom has kept up with the times, as the students become more computer literate than many college students. On occasion, Langley employees visit the LCDC to provide special presentations and activities for the students, making the Center unique in its ability to offer educational and developmental programs.

During the summer session, the school-aged students take field trips to various parts of Langley to tour facilities and learn about all the "big noises" they hear. By educating and introducing the young students to the world of science, the next generation of scientists and engineers are given the opportunity to start early. This is an important concept to many people at Langley, who deem it significant to share their time and knowledge with groups of interested students.

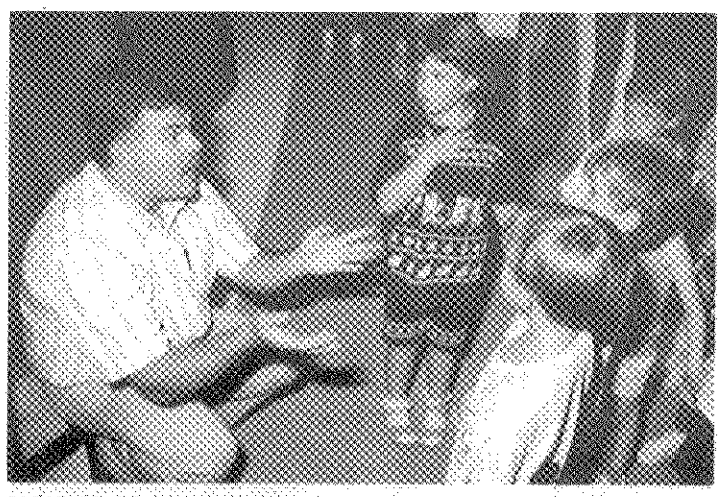
"It is important that young people are exposed to science and technology because they are our future researchers and technicians," said Charles Poupard of the 16-Foot Transonic Operations Section. "When it comes time for me to retire, it will be up to this generation to take us into the future." Poupard served as a guide to the LCDC students who recently toured the 16-Foot Transonic Wind Tunnel. He hopes his ability to make the state-of-the-art concepts understandable and simple will encourage some students and inspire this next generation to work in a wind tunnel when they "grow up."



Brooke Rowe, a student at the Langley Child Development Center, is surprised by one of the "big noises" of the 16-Foot Tunnel.

The LCDC is now taking advantage of current technologies and may be reached through their link to the World Wide Web. The LCDC's URL on the Langley home page is: http://cscsun1.larc.nasa.gov/~marlowe/lcdc/lcdc.html

Danielle Beck was a 1995 LARSS participant.



MAKING SCIENCE EXCITING. Langley Child Development Center (LCDC) students Jessica Tussing, Aaron Davis, Katie Chiappa (hidden), Brandon Webb, and Brian Dress, listen attentively as their guide, Charles Poupard, explains the fans of the wind tunnel. Bringing the state-of-the-art to the level of the LCDC students was done with finesse and ease.

Happenings

FOR SALE: Small microwave, like new, $65. Oak-trimmed 30-gallon aquarium with cabinet, all accessories including excellent filter, asking $110. Best offer on both items considered. Call 874-0966.

FOR SALE: 1985 Chevy S-10, 2.8 liter, 5-speed with camper shell and pigtail. Engine overhauled, 61,000 miles, carburetor, fuel pump, front shocks, muffler/tailpipe replaced. A/C, cruise control, AM/FM/tape, excellent tires, $3,650 or best reasonable offer. Call 865-7862.

FOR SALE: 1989 S-10 Blazer, Tahoe pkg., 4-wheel drive, 52,000 miles, great shape; $9,500. Call Dale at 826-4210 after 5:00 p.m.

BADGE CORDS: Colorful satin cords for your ID badges and card keys. Replace the dogtag chain with an alternative that doesn't slip, twist or irritate your skin. Try them as a substitute for easy-to-misplace keyrings. Available at the Exchange Shop in black, white, red, blue, green, purple, and gold. Lucy Lee, l.l.lee@larc.nasa.gov or ext. 47458.

STATE FAIR TICKETS: Come "Party with the Animals," and visit the NASA Langley Exhibits in the Technology Bldg. at the Virginia State Fair from Sept. 21 to Oct. 1. Supertickets are available at the Exchange Shop in advance through Sept. 20 for $10, a $3 savings. Tickets include parking, admission, midway rides, exhibits, daily parade, fireworks and some amphitheater concerts. The shop, located in the cafeteria, is open Monday through Friday, 7:30 a.m. to 2 p.m. For tinformation, call ext. 41585.

POLO SALE: We are crazy enough to do it again! Our Outer Banks polos with the NASA meatball logo will be on sale Wed., Sept. 13. Sale prices are too low to mention and will not be available until the day of the sale. Stop by the Exchange Shop early for the best selection of colors and sizes. For information, call ext. 41585.

FOR RENT: 3BR, 2-1/2 bath townhouse in Poquoson, living and dining rooms, eat-in kitchen, storage, fenced yard. Some furnishings available if necessary. Available Sept. 1 or earlier. Call 877-0703.

FOR SALE: 1987 Citation 29-foot travel trailer, front kitchen, gas-electric hot water, A/C, microwave, stereo-tape, 21' awning, vent covers, stabilizers, electric tongue jack. Sleeps six, good condition, one owner, $7,500. Call 826-6941.

VIRGINIA SYMPHONY tickets 20% off for NASA and contractor employees. Call ticket office at 623-2310 for tickets to Classical Masterworks season opener Sept. 8 & 9 at Chrysler Hall, Mozart and More series Sept. 10 at William andMary, and Pops series Sept. 15 and 16 with "Cabaret" sensation Joel Grey.

SUBLEASER NEEDED:

To share 3BR, 2BA fully furnished apt. with two other NASA employees; 1.5 miles from NASA on Magruder; $230/mo.+1/3 utilities (free water). Call Eric at 766-1050.

TUTOR NEEDED: For son's first year engineering courses: Calculas right now. Call Patsy at ext. 43291 (home, 827-6447).

NATIONAL CHOLESTEROL MONTH: LAA Aerobics Club will feature articles on heart healthy nutrition and active life styles. Throw away the scales and find out your body fat percentage with body composition analysis before class. Then join us for low-impact and bench aerobics set to a variety of music themes. Classes include upper and lower body toning. Langley employees, contractors and families are welcome. All equipment is provided. Classes are from 5-6 p.m. on Tues. and Thurs., and 9:30-10:30 a.m. on Saturday, in the LAA gym. Powerwalk classes are also given during these times. Call Ext. 42295 for more info.

ALUMNI NOTES: The NASA Langley Alumni Association will hold its monthly meeting on Tuesday, Sept. 12 in the cafeteria executive dining room. Center Director Paul Holloway will talk about "NASA/Langley Management – Center Posture and Health." Retirees can come early and eat lunch with their friends. For more information, call George Brooks at 868-6013 or Libby Bierie at 595-1306.

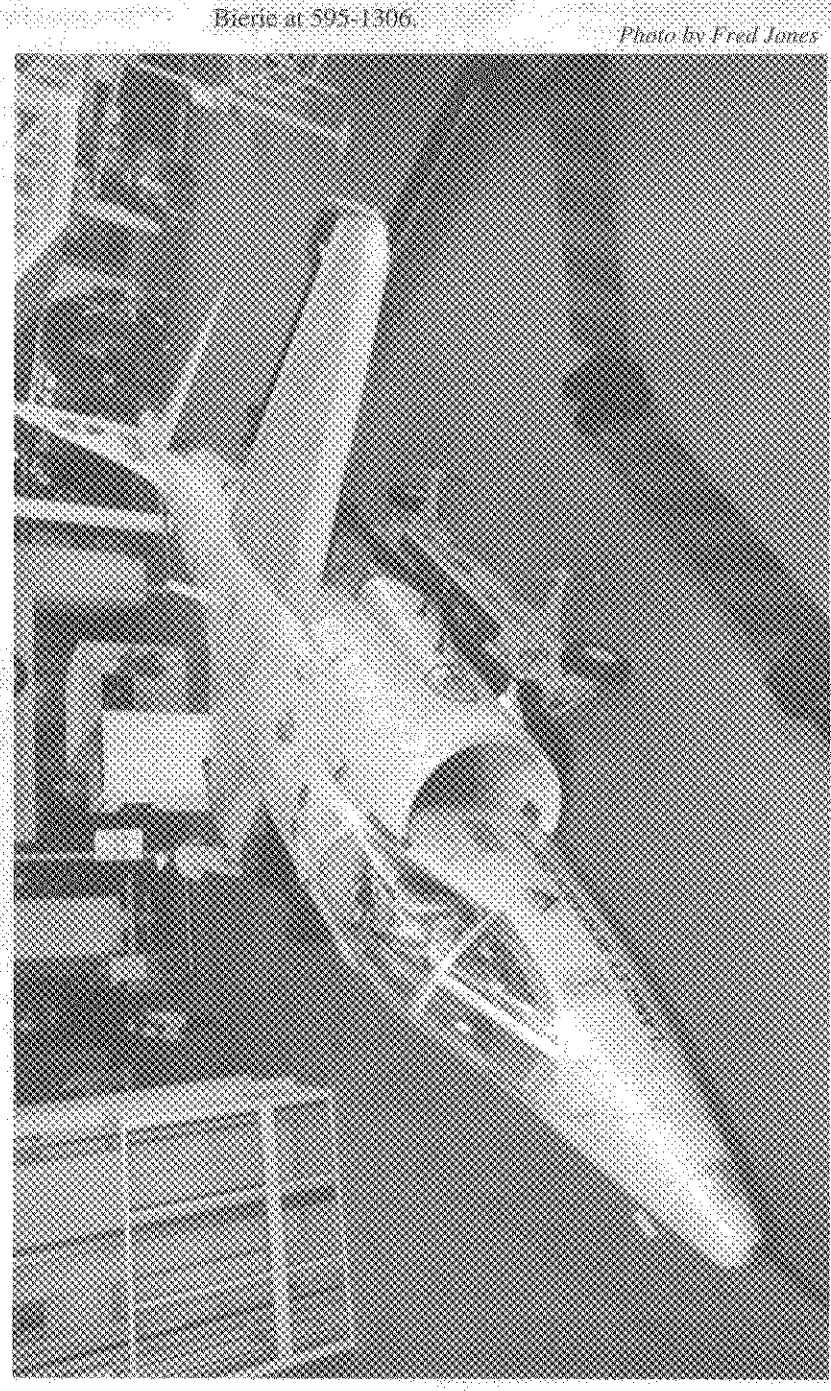
VOLUNTEERS NEEDED: Hampton Bay Days, Inc. is recruiting volunteers for the 13th Annual Bay Days Festival, Sept. 8, 9 and 10. Volunteers are needed all three days to work in merchandise sales, beverage control, sporting events, stage area and children's area. Volunteers will receive a free T-shirt, food coupons and invitations to the kickoff and thank-you parties. For more information or to volunteer your help, call Robert Jernigan at 723-0673.

FREE: A six-year-old black, female cat, spayed and declawed. Call Anette at 827-1786, ext. 300.

DAYCARE: Licensed home offers preschool children educational programs in the Wythe Elementary School area, fenced yard and playroom, available from 8 a.m. to 5:30 p.m. Call Debby at 726-2717.

WANTED TO BUY: Used, good Macintosh computer such as LC II. Call 868-7347.

Photo by Fred Jones



One of Langley's two Kestrel research aircraft, NASA #521, rests permanently at the Virginia Air and Space Center, Langley's official Visitor Center in Hampton. The aircraft performed 210 research flights at Langley. The XV-6A Kestrel was refurbished by the Smithsonian's National Air and Space Museum. See story on page 5.

Researcher News

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

Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

402 ON-SITE NON-LARC
COPPEDGE, AUDRY S
MAIL STOP 146

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 19 ❖ September 22,1995

Multi-Purpose Thermoplastic Receives R&D 100 Award

A Langley researcher's multi-purpose thermoplastic material received an R&D 100 award for one of the 100 most significant new technical products of 1994.

Dr. Robert G. Bryant, a chemical engineer in the Composites and Polymers Branch, developed the self-bonding thermoplastic called LaRC™-SI. Three electronic technicians, who helped to develop various applications of the thermoplastic, share in the award. They are Robert L. Fox, Nancy Kruse and Sang Tran, all of the Center's Microelectric and Sensor Development Section.

LaRC™-SI (soluble imide) is an amorphous thermoplastic, meaning it can be re-formed at elevated temperatures and pressure. It is also recyclable. The material has an exceptional combination of properties resulting in a wealth of applications. It can be applied in the form of spray, spin or dip coating.

Potential applications for the thermoplastic include a resin for mechanical parts such as gears, bearings and valves; advanced composites like carbon fiber, and high strength adhesives. It can also be used to make film and self-bonding multilayer flex circuits. LaRC™-SI's properties make it a leader among similar materials on the commercial market. Companies, universities and government labs are studying it to determine further applications.

Photo by Fred Jones

Left to right, Sang Tran, Robert L. Fox, Dr. Robert G. Bryant, and Nancy Kruse prepare a demonstration of their award-winning thermoplastic called LaRC™-SI.

The R&D 100 award (formerly IR-100) is presented annually by *Research and Development* magazine to the innovators of the 100 most technologically significant new products of the year. Selections are made by a panel of scientists and engineers after studying new technology around the world.

During the 26 years of NASA's participation in the R&D 100 competition, 101 NASA developments have been selected, contributing significantly to the recognition of NASA as a source of technical excellence. Langley has earned 29 of those awards.

This year's R&D 100 winners were honored at an awards banquet at the Museum of Science and Industry in Chicago on Sept. 21. An exhibit of the award-winning products will be on display at the museum through Oct. 15.

Langley 30- by 60-Foot Tunnel to Close

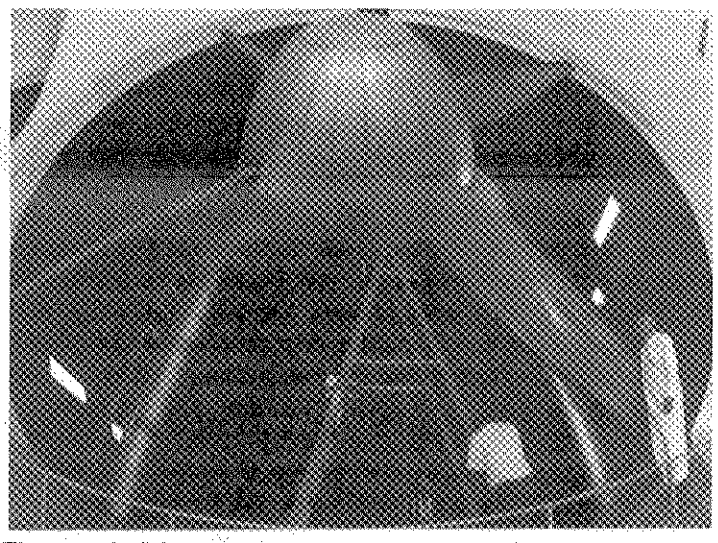
BY MARY M. SPRACHER

NASA's oldest operating wind tunnel, the 30- by 60-Foot Tunnel, will be officially closed Sept. 29. The historic facility, located at Langley, was originally known as the Full-Scale Tunnel (FST). The closing of the 30- by 60-Foot Tunnel allows for an orderly consolidation of aeronautical testing facilities at a time of shrinking federal budgets and enables essential center capabilities to be preserved.

The Tunnel

The 30- by 60-Foot Tunnel is a subsonic wind tunnel originally designed for the testing of full-scale models and actual airplanes at operational flight speeds. Such ground-based testing eliminated scale effect and provided basic information prior to and during flight testing. Contemporary studies in the tunnel often focused on stability and control characteristics for military aircraft and high-lift capability for both civil and military aircraft.

Throughout its history, the 30- by 60-Foot Tunnel has been used for the testing of innumerable vehicle configurations. It was the largest wind tunnel in the world until 1945, and in 1985 it was named a National Historic Landmark.



Three technicians work inside the 30- by 60-Foot Tunnel with its massive wooden blades.

Design Contributions

The tunnel has contributed to military, commercial and general aviation aircraft designs. Its many contributions include fundamental aerodynamic testing of full-scale aircraft during the 1930s; drag reduction or "clean up" studies of full-scale military aircraft during World War II; free-flight testing of models of vertical takeoff and landing aircraft; testing of the *Albacore*, the fastest submarine in the world in 1950; testing of the nation's first spacecraft, the Mercury space capsule; testing of full-scale general aviation aircraft; and testing of lifting body, supersonic transport and present-day military aircraft configurations.

Designs for the tunnel were begun in 1929, with $900,000 of funding appropriated before the Depression. Because the tunnel was designed and built during the Depression, the design team, led by Smith J. DeFrance, was able to take advantage of cheap materials and a large pool of unemployed engineers. Construction began in the spring of 1930 and the completed 30- by 60-Foot Tunnel was dedicated on May 27, 1931.

Continued on Page 7

A Letter from Langley's CFC Chairperson

Roles and Missions . . . National Performance Review . . . Zero-Base review . . . facility closures . . . down-sizing . . . These are activities that many of us participated in during the year and are a concern to each of us. A short time ago, we were all worried about the very survival of the Center. Today, we also face the threat of furloughs and the proposed increase in the cost of insurance and retirement. Many civil service employees feel that the federal government wants to balance the budget on the shoulders of the federal employee.

Langley's Combined Federal Campaign Committee (CFC) has already heard from some employees who have stated, "Faced with the pressures we find ourselves in this year, our contribution will be smaller than in previous years" and "I don't want some bureaucrat to take credit for my contribution."

The CFC should not be the object of our anger and our frustrations. The federal budget cutting required to balance the budget is already beginning to erode the "safety net" for those needing help. I know the pressures we face as civil service employees, but step back for one moment and look at just a few of the problems faced every day by many people: hunger, illness, poverty, drug addiction, homelessness, abused children and spouses, families in crisis. Many people need our help, and there are now fewer of us to give that help.

The Langley team quickly steps in when a technical issue arises. Now is the time to rekindle our enthusiasm to help with people issues. The employees leading the Langley campaign are not bureaucrats. They are employees, just like you, who have taken on the extra challenge of running the campaign and making it successful.

Continued on Page 3

Langley CFC Committee Chairperson Irving Abel

CFC Kick Off Set for Sept. 28

The official kickoff for the Combined Federal Campaign is Sept. 28 at 1:30 p.m. in the Pearl I. Young Theater, Bldg. 1202, 5A North Dryden St. The speaker is Robert I. Bonar Jr., CEO and president of the Children's Hospital of the King's Daughters in Norfolk. Refreshments will follow. All civil service employees are invited and may charge their time to Job Order A5266.

Colloquium News

The October Colloquium is "The Human Genome Project: The Science Behind Jurassic Park and Its Implications," Tuesday, October 10 at 2 p.m. in the H.J.E. Reid Conference Center. The speaker is Dr. Paula Gregory, chief of the Genetics Education Office for the National Center for Human Genome Research. Look for the full story in the Oct. 6 Researcher News.

News Briefs

Around the Agency

NASA RESEARCH PLANES PROBED HURRICANE LUIS – Three NASA research planes, including a former spy jet, probed Hurricane Luis with lasers and other instruments on Saturday, Sept. 8, as the storm system churned the Atlantic off the East Coast. The aircraft examined the inflow of water vapor to Luis in an effort to learn more about the dynamics of hurricanes, said Dr. Edward Browell of Langley's Atmospheric Sciences Division, the project's principal investigator. "It's a first for making any laser water vapor measurements around a hurricane," Browell said. "This will help us understand one of the sources of energy that help feed a hurricane. We have never previously been able to see the distribution of water vapor flowing into a hurricane, and that is an important source of energy for sustaining and intensifying a hurricane." One of the planes, an ER-2 from Ames Research Center in Mountain View, Calif., used a laser system called the Langley Lidar Atmospheric Sensing Experiment (LASE). LASE will transmit laser light down into the atmosphere and measure the amount of light reflected back to detect and measure the amount of water vapor present. LASE is the key experiment among the three flights, Browell said, and a precursor for space-based studies of the Earth's climate.

SCIENTISTS DISCOVER FIRST NATURAL LASER IN SPACE – The first "natural" laser in space was detected by scientists on board NASA's Kuiper Airborne Observatory (KAO) as they trained the aircraft's infrared telescope on a young, very hot, luminous star in the constellation Cygnus. Discovery of this naturally occurring laser provides scientists with a powerful tool for probing the conditions in disks of gas and dust surrounding young stars, according to principal investigator Vladimir Strelnitski of the Astrophysics Laboratory, National Air and Space Museum, Washington, D.C., who made the discovery. Scientists believe that many of these circumstellar disks are regions where planets are forming. The laser is created as intense ultraviolet light from the star "pumps" or excites the densely packed hydrogen atoms in the gaseous, dusty disk surrounding the star. Then, when the infrared light shines on the excited hydrogen atoms, it causes the atoms to emit an intense beam of light at exactly the same wavelength, creating the circumstellar laser. Strelnitski used a sensitive liquid helium-cooled spectrometer attached to the KAO telescope to search for selected "lasing lines" in the infrared region of the spectrum between 50 and 500 microns (100 to 1,000 times the wavelength of visible light). The natural laser was detected at 169 microns as the scientists viewed the nearly edge-on gas and dust disk surrounding the peculiar star known as MWC 349. The lasing line has an intensity six times brighter than non-amplified spontaneous emissions at the same wavelength, Strelnitski said. The KAO is scheduled for retirement this fall. NASA plans to begin development of the follow-on airborne observatory SOFIA in 1996, with first flight scheduled for the year 2000.

GALILEO FLYING THROUGH INTENSE DUST STORM – NASA's Galileo spacecraft is plowing through the most intense interplanetary dust storm ever measured as it closes in on Jupiter after a six-year journey to reach the giant planet, scientists report. This is the latest and greatest of several large dust storms encountered by Galileo since December 1994, when the spacecraft was still almost 110 million miles from Jupiter. The current storm has lasted more than three weeks. The spacecraft, launched in October 1989, is now about 39 million miles from the planet. Galileo will enter orbit around Jupiter Dec. 7, 1995. During the current dust storm, Galileo has counted up to 20,000 dust particles per day, compared to the normal interplanetary rate of about one particle every three days, said Dr. Eberhard Grun, principal investigator on the spacecraft's dust detector experiment.

Internal Operations Group Announces Changes

The Internal Operations Group (IOG) recently announced the following changes. The Scientific and Technical Information Division (STID) and Information Systems Division (ISD) have merged to form one division — the Information Systems and Services Division (ISSD), headed by Dr. Frank Allario.

As resources continue to shrink, it is imperative to optimally use division resources to continue to provide a high level of services to customers.

This merger is one opportunity to better leverage skills, tools and methods due to synergisms in the services and core competencies of both divisions. The STID branches remain intact with the following exceptions: The Imaging and Photographic Technology Section of the Visual Imaging Branch and the Printing and Reproduction Section of the Research Publishing and Printing Branch have been abolished.

In other changes, the Earth Data and Information System (EOSDIS) LaRC Distributed Active Archive Center (DAAC) Project Office has been established, headed by Roy C. Dunkum Jr., project manager. He will report to the chief of the Information Systems and Services Division. Announcements of Opportunity will be made for positions of deputy manager, systems engineer and program analyst.

The Security Services Branch headed by O. J. Cole Jr. has been functionally reassigned to the Office of Safety, Environment and Mission Assurance, headed by Humberto T. Garrido.

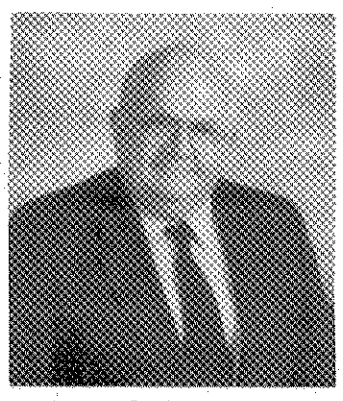
Supervisory selections have also been confirmed: Frederick L. Moore was selected head, Management Information Systems Branch; Brickey J. Hughes was chosen as head, Electrical Support Branch; Dr. Jerome Kegelman was named head, Model, Instrumentation and Systems Branch; Janice L. McCollum was selected head, Fluid Mechanics Operations Section of the Gas, Fluid, and Acoustics Research Support Branch; Nicholas A. Kepics was named head, Structures/Materials Operations Section of the Structures and Materials Research Support Branch; and Michael E. Tall was chosen as head, Numerical Controls Section of the Metals Applications Technology Branch.

Letters

From **Michael A. Chapman**: "I sincerely thank all my friends and colleagues who extended sympathy to me and my family in the recent losses of my mother and grandfather. Your phone calls, cards, flowers, prayers and other acts of kindness are very much appreciated. Thank you for caring."

Correction: The *Researcher News* Sept. 8 issue erroneously reported that Langley employees "highest participation rate of giving to the CFC of any major federal group" as 49 percent but the Center rate of giving is actually 70.8 percent.

Smith Named SASPG Deputy Director



William L. Smith

William L. Smith has been named deputy director of the Space and Atmospheric Sciences Program Group. The group oversees the Atmospheric Sciences and Space Systems and Concepts Divisions, the Space Projects Office and Thrust Offices for transportation, spacecraft and remote sensing applications. He will be maintaining contacts with the NASA-wide space technology efforts to ensure applicability of Langley contributions in terms of technical quality and timeliness. He will promote Langley's technical capabilities and commitment to the space program to both other NASA centers and the industrial community.

Smith comes to Langley from the Office of Space Science at NASA Headquarters where he served as chief of Mission and Development and Operations. He oversaw engineering, development, launch and flight operations for NASA's Discovery Program, Galileo, Flight Support Operations, and integration of NASA's New Millennium Program flight technology into new planetary missions such as Pluto Express and Rosetta/Champollion, an international mission. Prior to that, Smith served as chief of the Small Missions Development Branch and the Technology Utilization Branch as well as director for Advanced Development and manager for Space Exploration Research and Technology.

During his early career, Smith worked at NASA Headquarters in various capacities: Satellite Services and Crew Systems, Advanced Development, the Technology Applications Division and Astronaut Protective Systems. He then found a career in private industry for several years before rejoining NASA in 1991. He was employed as director of Utilization for the Grumman Space Program Support Division and advanced systems manager for the TRW Space and Technology Group in their Federal Systems Division.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program permits employees to donate annual leave to other employees experiencing personal or family medical emergencies. Your annual leave donations are greatly appreciated. Contact Lisa Allen at ext. 42610 for more information.

The following Langley Research Center employees are approved leave recipients: Marilyn Aldrich, Charlene Gleaton, Lisa Peckham, Cassandra Stevens and Charles Washington.

In Memoriam

Frank H. Watkins

Frank Howard Watkins, 74, died Saturday, Sept. 2. Watkins retired as supervisor from Langley's Structure and Material Laboratory in 1979, after 34 years of civil service.

Bruce L. Earnhardt

Bruce L. Earnhardt, 73, died Friday, Sept. 8. Earnhardt retired from NACA/NASA Langley in 1974 as head of communications.

Richard Bardusch

Richard Evans Bardusch, 64, died Monday, Sept. 11. Bardusch retired from Langley in 1990 as an engineer after 31 years of service.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor. . . . . Michael Finneran

Editor. . . . . Ann C. Gaudreaux
Science and Technology Corp.

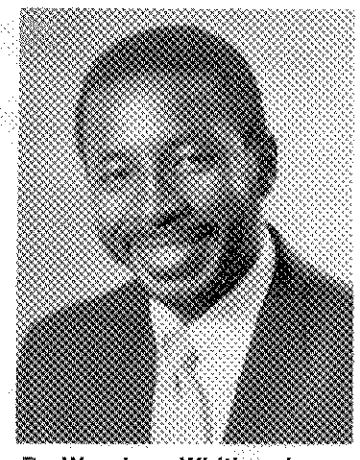
Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Exercise "The Power of One!"


Dr. Woodrow Whitlow Jr.

"Let's make that the motto of every Langley employee as we start the 1995/1996 Combined Federal Campaign (CFC).

Often, we encounter situations that we would like to make better but feel helpless to do anything to change them. The CFC provides us the opportunity to exert influence and help those who are less fortunate. With the opportunity to contribute to the CFC, we can exercise our Power of One and help to solve many serious problems. Areas where we can help are everywhere:

- children who are at risk to lead less productive lives;
- friends and family members who are suffering from disease;
- fellow citizens victimized by natural disasters;
- children who need immunization from tuberculosis;
- elderly citizens who can't afford to heat their homes in a harsh winter; and many more.

All of these are situations that occur every day and, in some way, touch our lives.

The CFC provides the opportunity to support our favorite charities and to contribute to solving those problems. The Langley family has a tradition of caring for and supporting others and, to continue the tradition, I would like to encourage each of you to give generously to this year's CFC. Langley has a rich history of making contributions to the quality of life with its many wondrous achievements in science and engineering. The Langley team is known for its dedication to excellence and commitment to success, no matter the sacrifice. That spirit made us successful in technology development. We have contributed through times of stability and through times of change.

Likewise, our employees have shown dedication to their fellow citizens with our tradition of generous giving to charitable causes. In these times of change and uncertainty, there are those who need our help now more than ever. Indeed, many of us may have been helped by a CFC-funded agency. We may have children who are benefiting from a funded agency or perhaps our contributions help to improve the quality of life in our community.

We take this time during the fall to solicit your year-round support. Your gift is welcome in any form, and it is easy to give. You can contribute either through a one-time donation or through regular payroll deductions. If you have a favorite cause, you can designate the agencies that you want to receive your contribution. These include local, national and international agencies, allowing your "Power of One" to be felt as far and as wide as you wish. I welcome this opportunity to support those agencies that are helping friends, neighbors and loved ones. I am fortunate to be able to give and am confident that our Langley family will also share some of its good fortune.

After the kickoff meeting on Sept. 28, your key persons will be around to solicit your gift and to answer any questions that you may have about this year's campaign. We have set an ambitious goal, but I am confident that the Langley family will meet the challenge. If individually we exercise "The Power of One," we can collectively continue the tradition of providing for those less fortunate. It's a tradition of which we can be proud.

— Dr. Woodrow Whitlow Jr., 1995 CFC Vice-Chairperson

You can help demonstrate "The Power of One" on the Virginia Peninsula

Virginia Peninsula

Letter

Continued from Page 1

They do this not for credit, but because there is a great need. Participation in the campaign is a Langley tradition that has always been taken very seriously. Once again its time to look at local, national and international needs to see how we can help.

I believe Langley will continue to perform a vital mission to this country — with its exciting and challenging technical work — for many years to come. We will continue to be the very fortunate. Now is the time to help the less fortunate!

The campaign will begin on Sept. 28, at 1:30 p.m., with the kickoff meeting at the Pearl I. Young Theater, and ends on Oct. 20. Beginning Oct. 2, "key people" will be contacting each of you to spread the message of the campaign. They will be using a CFC video and a short slide presentation to bring the message of the campaign to every employee.

The Center has set an ambitious campaign goal of $280,000 this year. Due to the loss of fellow employees to retirement, we are asking each of you to increase your contribution so that Langley can continue to do its part as a member of the local community. Last year, Langley's average pledge was $144 per person and the participation rate was 70.8 percent. To meet this year's goal, we are trying to increase both employee participation and individual contributions by at least 10 percent each.

To cut back on campaign expenses, and to help more of your dollars serve those in need, the Agency Listing Brochure will be available electronically. Your key person will help you access the brochure. Langley is the first federal agency in the area to offer the brochure electronically, saving printing costs to the CFC. As a Center, we have helped your dollars go further towards helping those in need. Now it is up to you!

Many service and voluntary agencies need our support. Please be as generous as possible when a key person comes to you with your pledge card. The slogan for this year's Peninsula CFC is "The Power of One." Your pledge is an expression of that slogan.

– Irv Abel, 1995 CFC Chairperson

Q &A about the CFC

In an effort to better acquaint Langley employees with the Peninsula Combined Federal Campaign (CFC), the ***Researcher News*** *presents frequently asked questions with their answers.*

How do I know that the agency I designate receives my money?

To ensure acknowledgment and recognition of your gift to a particular agency, indicate on the pledge card that you would like your name released to the agencies you designate. Write in your mailing address. The CFC manager will forward the information, minus the dollar amount, to the recipient agency. Agencies typically send "thank you" messages in early February.

How much of my contribution goes directly to the agency?

Typical Peninsula CFC agencies have overhead costs of 8.2 percent, better than the guidelines set by the Office of Personnel Management (OPM), CFC's regulator, of 10 percent. This is an "at-cost" contract and reflects fund-raising and fund distribution expenditures. This covers printed materials, audits and training requirements. About 2 percent of the money isn't received by agencies because of employee retirement, rescinding of pledges or death.

How does an agency become eligible for CFC donations?

This year 1,259 are listed, and 1,058 have been verified by OPM. The 200 local agencies have been reviewed and qualified by the members of the Local Federal Coordinating Committee (LFCC), composed of senior representatives from the Peninsula's largest federal facilities.

In each case, applicants have met 15 tests, have a voluntary board of directors, have a CPA audit, etc. The agency must also demonstrate that it is accessible to serve those who would give to it — you.

What if I prefer to give directly to my selected charity?

Please do. Most agencies prefer donations through the workplace and payroll deduction because it is more cost effective for them in terms of advertising, purchasing, etc. Donors are also more likely to give more through incremental giving.

How accountable are the CFC-funded agencies for their funds?

The two governing bodies that qualify recipient agencies, the OPM and LFCC, look closely at applicant agency IRS 990 tax returns, audits and annual reports, all good indicators for assessing vitality and integrity. Agencies must apply every year to the CFC and furnish current documents to be eligible for funding. Finally, the giver can request an annual report and a review of the audit of any agency. Note, too, the certified percentage figure at the end of each agency's listing and description. This represents the ratio of fund raising and administrative costs to agency total revenue.

What are the benefits of contributing through payroll deduction?

Payroll deduction is painless and doesn't begin until January 1996. Most Peninsula CFC contributors, 85 percent, fulfill their campaign pledges this way.

Why should employees give to the Peninsula CFC?

People give money to others mostly out of certain personal feelings and their own generosity. Perhaps you give as an investment in the Peninsula community or because you or a child or spouse is benefiting from a funded agency.

Alexis de Tocqueville, a Frenchmen in America in the early 1800s, said, "Ah, these Americans. They see some need and the first thing you know they're organizing themselves and solving the problem." The American practice of charitable giving and sharing is unique in all the world. de Tocqueville concluded, "America is great because America is good. When America ceases being good, it will cease being great."

Internet Fair II Coming in October

Plan to attend Langley's Internet Fair II at the H.J.E. Reid Conference Center from 9 a.m. to 4:30 p.m., Oct. 23 and 24. The mission of the fair is to exchange NASA and Hampton Roads information technology while emphasizing challenges and solutions for the future. The fair will include exhibits from Langley, local businesses and universities that will demonstrate tools and products applicable to social and business needs. It will also highlight the cost benefits of information technology for NASA and the public. Contact Gretchen Gottlich at ext. 42303 for more information.

A Day of Caring

LaRC, Day of Caring Sponsor

More than 125 Langley employees, contractors and retirees joined forces with their counterparts in local business and military organizations September 7 to help those in need. Designated a Day of Caring, this fourth annual event matched 600 community volunteers with 35 non-profit agencies to accomplish more than 50 tasks. Projects ranged from building homes to boxing food, from painting to plumbing, and from landscaping to laughing with day care children and senior citizens. Volunteer skills were innumerable, the tasks were varied but all had the same goal — helping our neighbors.

Langley joined Newport News Shipbuilding, the *Daily Press*, Virginia Power, Sentara Hampton General Hospital, Riverside Regional Medical Center and Papa Johns to sponsor the day-long event. The massive volunteer effort was coordinated by the United Way's Volunteer Center.

Special thanks go to these hard-working volunteers:

Cheryl Allen
Tahani R. Amer
Ruth M. Amundsen
Nannette Atkins
Scott Bartram
Willard Bauserman
Bob Berry
Yvonne Beyer
Gaudy M. Bezos-O'Connor
Cheryl A. Bradby
Angela D. Brown
TaShawn Bryant
Mark Cagle
Michelle Cahoon
Patsy Campbell
Carolyn Carey
Angelo Cavone, Vigyan
Lin H. Chambers
Richard L. Chase
Brian Cheshire
Velma Clark
Jeff Cleveland
William B. Compton III
Judy Cottle
Robin Cravey
Elaine Crawford
Cynthia W. Dea
Russell DeYoung
Jim Dillon
Harriett R. Dismond
Cathy A. Dunn
David Duxbury
Carolyn C. Eby
Pete Edgette
Charlene Farquharson
Deborah L. Ford
Carol Fowler
Earl Freeman
Ginger Freeman
Henri D. Fuhrmann
Carl Gerhold
Lorelei Gibson
Wes Goodman
Paula Green
Joann Harris
Kelly Hayhurst
Mary S. (Susie) Henriksen
Robert Holt
Kam W. Hom
Carl E. Horne
June R. Howell
Lawrence D. Huebner
Mark Hutchinson
Mac Jackson
Jesse T. James
Gloria Jenkins Moody
Brian Jensen
Tricia Johnson
Connie D. Jones
Octavia C. Judge
Sandra K. Keyes
Cynthia L. Lach
John E. Lamar
B. Allen Langford
Peggy Langford, retiree
Gail Lanning
Jo H. Legette
Artistine Lethcoe-Reid
Carlos Liceaga
Kathleen Long Bulluck
Karen Lyle, Army
Jerry Lyle, Lockheed
Betty Maddrea
George L. Maddrea
Velma R. Martin
Scott Martinson
Veloria Martinson
Marcus O. McElroy
Colon R. McMath Jr.
Vivian B. Merritt
James B. Miller
Gene Monroe
Shirwin S. Moore
Bobbie J. Moss
Tom Moul
Penny Murphy
Bessie Nicholson
Clifford J. Obara
Raymond Parker
George A. Parker
Wendy Pennington
E. Gale Poulson
Dan Pritchard
Susan E. Quisumbing
Rise Williams Ramsey
Geraldine Rankin
Joyce C. Reed
Alberta W. Reid
Marisol Romero
Anita Marie Runkel
Prina Russell
Irene Sanders
Jo Sawyer
Pamela J. Schmidt
Michael A. Scott
Connie A. Smith
Laura Smith
Weldon Staton, retiree
Mary Ann Steuck
Brenda Sullivan, Lockheed
Louise H. Sykes
Elizabeth A. (Beth) Tanner
Gail L. Temple
John Teter
Geraldine M. Tucker
Erik Vedeler
Woody Wagner
Lucy B. Watkins
Dina S. Weiss
Patricia E. J. Williams
Kelli Willshire
Belle Lynn Wood
Jo Ann H. Woodcock
Shannon York
Sandra Zumbrun

Photo by Sandy Gibbs

SMILE FOR THE CAMERA. Cheryl Bradby explains the rules of the game to preschoolers at the Downtown Hampton Child Development Center.

Photo by Peggy Hopkins

FILL IT TO THE BRIM. Penny Murphy, left, and Laura Smith box groceries at the Peninsula Aids Foundation.

Photo by Sandy Gibbs

JUST ABOUT READY FOR A TEST RUN. Langley volunteers and parents Kam Hom, left, and Brian Jensen install a new slide at the Langley Child Development Center.

Volunteers Confirm Prediction: Hard Work but Satisfying

BY MARNY SKORA

When recruiting volunteers for the fourth annual Community Day of Caring, no one claimed it would be a day off. Workers were assured their efforts would be rewarding. Feedback has proven both predictions to be true.

"Looking at my workload, I should have remained in the office," said Judy Cottle, who helped with a construction project at Girl Scout Camp Skimino in Williamsburg. "I had made a commitment and I'm glad I kept my word. I thoroughly enjoyed the day."

"It's always been a rewarding — but exhausting — day," echoed Lin Chambers who helped out at the Downtown Hampton Child Development Center.

Comments from about half the volunteers are in and have been tallied. The response is unanimous — all would volunteer for the Day of Caring again.

The directors of the 35 non-profit agencies who asked for help couldn't be more glad to welcome the volunteers back.

Dick Collins, executive director of the Colonial Coast Boy Scouts, is frank about the Day's benefits. "The volunteers saved me $1,000 in just one of the five projects in the works that day." Collins had worked a deal with the contractor remodeling the scout headquarters on Jefferson Avenue. The contractor prepared the area and volunteers painted . . . and painted . . . and painted.

At the Boys and Girls Club in Denbigh, Tom Olaisen explained that the grounds get much needed attention just once a year. There is no money in the budget for landscaping and labor laws prohibit the kids from taking on this task. To say the club looks 110 percent better after the Day of Caring would be no exaggeration, Olaisen reported.

Pat McCants at Child Development Resources in Lightfoot had no idea what talent was coming her way September 7. The project was to build a covering for the sandbox — an 11-foot by 17-foot sandbox! Rather than install the tarp that was provided, volunteers Gene Monroe and Richard Chase designed a more substantial wooden structure on the spot. A local lumber company donated the materials and, by 4 p.m., the project was complete. This permanent structure gave CDR the shaded playground area needed for state accreditation. Did the volunteers meet McCants expectations? "No way," she explained. "They far exceeded any expectation I *could* have had."

Interacting with people was a vital part of the Day of Caring. Volunteers helped the USO with activities at the Veterans Hospital. In addition to other activities, Gerri Rankin worked much of the day helping a veteran balance his checkbook. Being there to help with what is needed most is the mark of a true volunteer.

Photo by Hubert Lloyd

VOLUNTEERS RAISE THE ROOF. The crew assigned to Child Development Resources in Lightfoot construct a covering over the sandbox to protect children from the sun. Volunteers are, left to right, Gene Monroe, Kathy Bulluck, Mark Hutchinson and Richard Chase.

Robin Cravey worked tirelessly cutting away the overgrown weeds along the fence at the Peninsula Home for the Aged. Cravey marks her conversations with the senior citizens and their resounding thanks as a high point of her day. Even a slight case of poison ivy hasn't dimmed her enthusiasm for volunteering again next year!

As Brenda Sullivan reported, there was a great turn out of NASA folks. Those red T-shirts made NASA Langley visible all over the Peninsula and as far away as Williamsburg and Smithfield.

Photo by Paul Bagby

THE INs AND OUTs OF HARD WORK. Removing countless panes of glass and installing new windows keeps Colon McMath, inside, and Woody Wagner, outside, busy at the Smithfield Y.M.C.A.

Caring Not Confined to Just One Day

BY MARNY SKORA

It is an exceptional day on the James River Fishing Pier. Not so much for the amount of fish caught. What makes this day so special is that those fishing look forward to it all year long. The fishermen — about 60 of them — are blind.

Not seeing doesn't dampen this group's enthusiasm or their luck, reports Carol Satterwhite, a member of Langley's Satellite Committee for People with Disabilities. Satterwhite and volunteers from the York LIONS assisted about 60 people September 13 for the club's annual Take the Blind Fishing outing.

Some LIONS make the day a family affair. John Ertel brought his daughter, Toni, twin sons, Ryan and Jeremy, and nephew, Drew Motto. The children baited hooks, removed fish from lines and helped serve lunch. Joining Satterwhite and Cathy Jones were husbands William and Jeff. There was something for everyone to do.

This wouldn't be a good fishing line if there weren't some results. Statistics include 39 fish caught; Stu Bowden caught the most — 6; "Hurricane" got the biggest fish — a 12-inch croaker; while Earl Everett brought in the smallest catch — a two-and-a-half-inch toad!

Bill Parker and his seeing-eye-dog Percy, along with Robert Southard and his dog Freddie, have participated in the fishing outing since 1968. They missed only one, which was cancelled due to a hurricane.

It was Parker who put everything in perspective when asked if he had caught anything. His reply, "a lot of sun."

Many thanks to Langley volunteers:

Mike Blythe
Henry Elksin, retiree
John Ertel, CALSPAN
Cathy Jones
Pat Link
Bill Nettles, retiree
Carol Satterwhite
George Trombley, retiree

Photo by Fred Jones

ALL THE WAY FROM HOUSTON. Carol Satterwhite, far right, speaks with Clark Henry, who traveled from Houston, Texas, to attend the LIONS fishing event.

Portsmouth Students Experience Life Of Scientist

BY JOHN HARRIS

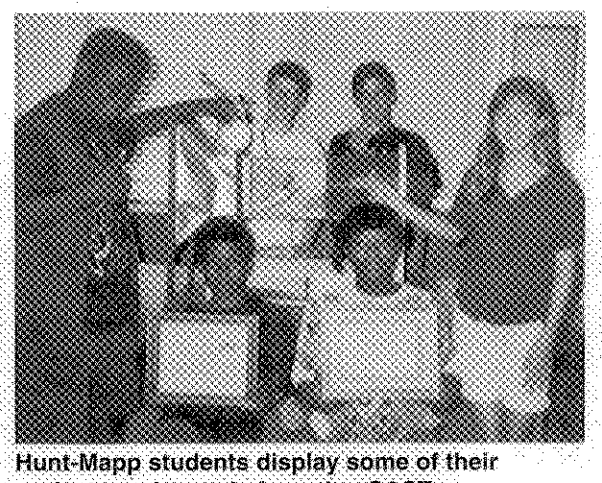
Six students from Portsmouth's Hunt-Mapp Middle School Science and Math Magnet Project experienced the life of a scientist for five months as part of a 4-H project. The project was part of the Cooperative Application of Science and Technology (CAST) program and the goal of the Hunt-Mapp project was to help the students better understand meteorology and how airplanes fly. Students presented the results of their project at the CAST conference in Washington, D.C. during the week of April 30 to May 5.

Hunt-Mapp students were taught the basics of meteorology and recorded weather conditions for a month at the beginning of the project. This helped them understand the best weather conditions for flying aircraft. Students then built a wind tunnel and tested various shapes (cones, squares, spheres, etc.) using smoke to study the air flow. They also tested several types of balsa wood airplanes to determine which one flew the best.

Each student was assigned a specific task and had to prepare a weekly report as part of the project. Reports were collected and summarized in a computer journal before being edited into a final report. The students hope to continue their project during the 1995-96 school year by building a model of an ultra-light airplane and testing it in a wind tunnel, and to eventually build a full-size ultra-light airplane.

Pete Thomas, aerospace education specialist and Catherine Watson, public affairs specialist, assisted the students as they constructed the wind tunnel and learned about meteorology. Students used a small-scale wind tunnel designed by Langley employees Robert Baals, Acoustics Research Lab facility coordinator and Tom Vranas, engineering technician, Composite Models and Materials Branch. The wind tunnel took about six weeks to complete.

English teacher Becky Hinton, an assistant to the project, said, "During the CAST conference, we came into contact with several scientists from different backgrounds. They all had something to offer our students. I saw understanding in our kid's eyes anytime an astronaut or scientist spoke; this had to be linked to our magnet program's constant emphasis on aerospace and technological training. I know this must have built their self-esteem."



Hunt-Mapp students display some of their projects and awards from the CAST program. They are, left to right, J.R. Williams, Shawn Rochefort, Matt Neil, Erin Nowak, and kneeling, Craig Nixon, left, and Shavonda Jones.

The students met former astronaut, and current associate director of Safety and Quality Assurance, Fred Gregory, who quizzed them about their project. The students also met Dr. Curtis Graves, director of Educational Services for NASA Headquarters. Graves expressed interest in the project and hopes to visit Portsmouth to observe the students' work.

To start off the new school year, Navy commander Wendy Lawrence, an STS-67 astronaut, visited Hunt-Mapp Sept. 15. Lawrence discussed science careers with the students and talked about her spaceflight.

The CAST program was established by the National 4-H Council in conjunction with the National Science Teachers Association (NSTA) to help students understand the impact of cutting edge technology and to explore career options in science and technology. The program hopes to be the "launching pad" for a new generation of American scientists. Thanks to the CAST program, these students are not just dreaming about jobs in science and technology — they are now exploring the possibilities.

For more information contact Catherine Watson at ext. 46122 or Pete Thomas at ext. 43117.

Virginia Air and Space Center News

Fly Through the Andes on *Wings of Courage*

Photo courtesy of Sony Pictures Classics

Actor Craig Scheffer, as aviator Henri Guillaumet, climbs a mountain in the Andes following the crash of his biplane in *Wings of Courage*.

Witness the courage and celebrate the achievement of an early pioneer braving the treacherous Andes Mountains in an open-cockpit biplane in the true story of *Wings of Courage*. This new film directed by Academy Award-winning filmmaker Jean-Jacques Annaud is the first dramatic story filmed in IMAX® and stars Val Kilmer, Craig Sheffer, Tom Hulce and Elizabeth McGovern.

In this story, viewers follow pioneer airman Henri Guillaumet as he attempts to make an airmail flight across the mountains alone. Viewers will share Guillaumet's isolation and determination as his plane crashes and he struggles on foot to safety after seven days in the frozen wilderness.

Wings of Courage opens Sept. 29 and will be shown daily and as part of the evening double feature, *Wings of Courage* and *Speed*. Daytime IMAX® tickets are $5.50 for adults, $4.50 for seniors, military, NASA and children. Double feature tickets are $8 for adults and $7.50 for seniors, military, NASA and children. For more information, call 727-0900.

Amateur Radio License Exams

All levels of Amateur Radio Exams will be given Sunday, Sept. 24, from 8:30 a.m. to noon at the Radisson Hotel, 1900 Pavilion Drive, Virginia Beach. All exams are given under the supervision of the American Radio Relay League.

Exams will cover International Morse Code, rules, regulations, operating practice and radio theory. Licensed candidates must show their original license and original CSCEs as well as photo identification. Novice exams are free; all others must pay an administrative charge of $5.90. For more information, call 898-8031.

Budget Process IV: The Critical Thirteen

BY LEE RICH

"Let the Games begin for real!" might describe the final push to complete 13 appropriations bills by Oct. 1 — the start of the new fiscal year. The status of each bill is incomplete, as of mid-September, and Congress is now unlikely to meet the Oct. 1 appropriations deadline. The deadline for the authorizing committees to report out deficit-reduction "reconciliation" legislation has been delayed to Sept. 29.

On Sept. 11, the Senate Appropriations Subcommittee on the Veterans Administration (VA), Housing and Urban Development (HUD) and Independent Agencies, which includes NASA, marked up HR 2099, which includes NASA funding for Fiscal Year (FY) '96. The subcommittee's broad allocations for NASA show discrepancies between the House-passed version of the budget and the Administration's requested amounts (Figure 1). The total FY'96 funding for NASA recommended by the Senate subcommittee is $13.798 billion vs. the House mark of $13.671 billion. Although the VA-HUD bill must go before the full Senate Appropriations Committee and then be voted on by 100 senators, the NASA allocation is not expected to change. Following Senate passage, the bill will go to House/Senate conference where differences in the two versions will be worked out, resulting in one set of numbers to be included in a final bill.

Will the President sign HR 2099 by Oct. 1? The VA-HUD bill is one of six that the President has said he will veto unless it is significantly changed. Although such changes in the VA-HUD bill mainly concern Housing and Urban Development, NASA will also be unfunded should the bill be delayed or vetoed. In similar past circumstances, Congress has passed a continuing resolution to keep the government running for a short period of time. This year the overall political climate has created great anxiety about what will happen and when it will happen. In addition to the Appropriations measures, there likely will be confrontations over the Reconciliation Bill, which will give specifics on deficit-reduction steps and legislation required to raise the debt limit, both expected to crest in mid-November -- a fun Fall.

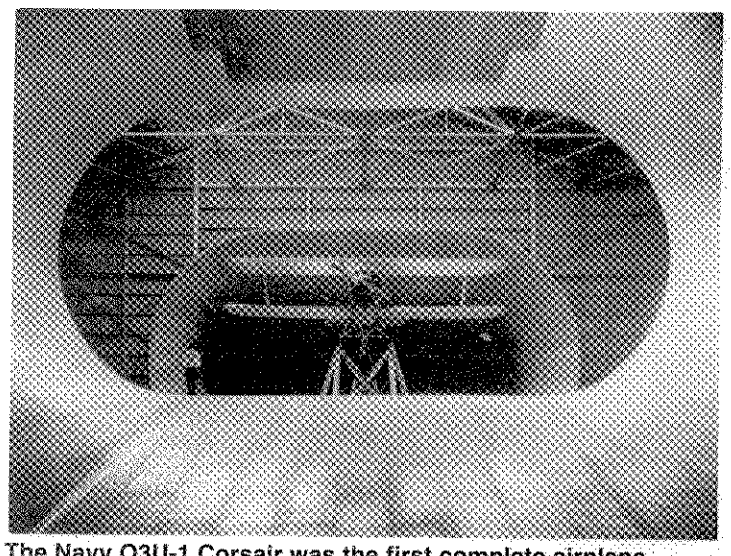
Figure 1

Senate Subcommittee Report — September 1995

Account	1995 Appropriation	Clinton Request	House Allowance	Senate Recommendation
NASA	$14,300,000,000	$14,260,000,000	$13,671,800,000	$13,798,500,000
Human Space Flight	$5,514,897,000	$5,509,600,000	$5,449,600,000	$5,337,600,000
Science, Aeronautics & Technology*	$5,838,500,000	$6,006,900,000	$5,588,000,000	$5,960,700,000
	* Provides full funding for Aeronautics research.			
Mission Support	$2,515,287,000	$2,726,200,000	$2,618,200,000	$2,484,200,000

30- by 60-Foot Tunnel . . .

continued from Page 1



The Navy O3U-1 Corsair was the first complete airplane tested in the tunnel. This photo is from 1931.

The Specifications

The overall tunnel is 434 feet long and 222 feet wide with a maximum height of 97 feet. The actual test section is an open-jet 30 feet high, 60 feet wide and 56 feet long. Two four-bladed wooden propellers, each 35.5 feet in diameter and powered by a 4,000-horsepower motor, generate the air stream. The tunnel is a closed-loop design, with two return passages that allow for continuous air flow at speeds up to 120 mph.

Over the years the test section of the tunnel has been modified several times to adapt to changing needs. During renovations in the 1960s and 1970s, the tunnel was equipped for free-flight dynamic model testing. In recent years, the tunnel has been used extensively for such free-flight tests. This test technique, unique to this facility, involves flying 10- to 20-percent scaled models controlled by remotely-positioned pilots.

The future of the 30- by 60-Foot Tunnel is uncertain, but there are no plans to tear it down or to change its external appearance. Possible adaptive uses are under study and certain components may be made available to the National Air and Space Museum (Smithsonian) or other museums. The Center is a federal custodian of historic properties, in conformance with the provisions of the National Historic Preservation Act.

A technician checks the Mercury capsule prior to testing in the tunnel in 1959. Much of the research and development of the Mercury program was conducted at Langley.

Closing Ceremony for the Tunnel

A ceremony will be held Friday, Oct. 27 at Langley to mark the closing of the tunnel and to commemorate the contributions of this remarkable 64-year-old research facility.

The ceremony will formally mark the closing of the facility. Joseph Chambers, chief of the Aeronautics Research Analysis Division and former head of the 30- by 60-Foot Tunnel, will speak on the history and accomplishments of the tunnel. Dr. Harry Butowsky, historian for the National Park Service, will address the contributions of the facility to the aerospace community. Other program details are to be announced. The ceremony will conclude with a "wine and cheese" social.

All employees are invited to attend the ceremony to be held at 3 p.m. in the return air duct of the 30- by 60-Foot Tunnel. The tunnel is located at Langley Air Force Base in Building 643 at 244 Hunting Ave.

Spracher was a 1995 LARSS student.

Big Sisters Know Building Bridges Now Pays Off Tomorrow

BY VELORIA MARTINSON

Veloria Martinson, who works in the Structural Dynamics Branch, is a strong supporter of the Combined Federal Campaign through its Big Sisters/Big Brothers Program. Here, she shares some of her experiences as a Big Sister and why the program — and the support it receives through the Combined Federal Campaign — is vital to the young people it serves.

There is something rewarding about being able to give back to the community. Growing up is not an easy task for today's youth. I am not sure that it has ever been easy. Regardless of how difficult the peer pressure was that we faced growing up in the 1970s and 1980s, the children today have it a lot worse. The rapid pace at which such pressures are communicated through the media seems to be taking our youth nowhere, and fast.

I sometimes find myself discussing and solving the world's problems with others over lunch. And the answers seem so easy, if only we could implement our solutions. Then I realize that the world's problems are just too big for one little person to solve. Getting involved, as many of you have already figured out, is one way of chipping away at those problems. We have heard it many times — if we are not a part of the solution, we are part of the problem. Getting involved demonstrates that our straightforward solutions are not as easy and clear-cut as we had thought while sitting around the lunch table.

Big Brothers & Sisters

Through the Big Brothers/Big Sisters program, a Combined Federal Campaign agency, I was able to work with the youth in our community. My little sister Monique and I have been together for three years. At first it took a lot of work, on both our parts, to develop a friendship. We both lead busy lives. Monique is involved in groups at school and church, and travels to visit her family. I am also involved in church activities, graduate school and, along with my husband, taking care of our children — Scotty, age 2, and Trey, who is 16 months. Since starting a family, it has indeed been a challenge to find the time to get involved. However, realizing that this was an opportunity to influence someone else's life in a positive way, as others had done for me, led me to seize this opportunity. In doing so, I have made a friend for life.

Monique and I have spent time together at the skating rink, at the movie theater, playing on the beach and attending events sponsored by Big Brothers/Big Sisters. We spend time doing homework, working on science projects, going to church and just talking in each other's homes.

A Sister's Relationship

My "sister" and I have covered a lot of ground in the three years that we have known each other. In addition to the fun and lighthearted activities mentioned above, we have dealt with some of the more serious issues that girls tend to face during adolescence. I was able to play a vital role in Monique's life by directing her attention back to her school work and towards experiences leading to more favorable payoffs. In turn, Monique has been very helpful to me. She has helped me by babysitting and playing with the children, allowing me to take care of some of the household needs. It is a two-way relationship.

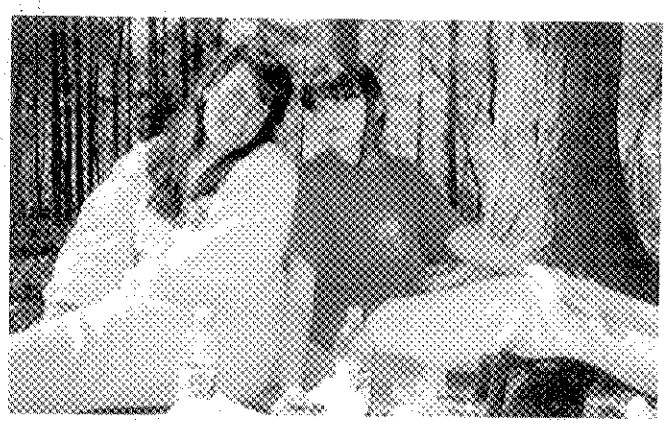
Photo by Fred Jones

Veloria Martinson, left, and her "Little Sister" Monique.

Rolling up our sleeves and pitching in is a lot more rewarding than just talking about the world's problems. One of the things that I learned through this experience is that life does not stop after making such a commitment. Monique is able to join me in many of my activities, and she makes the experiences more enriching for me. While each of us gets an opportunity to share in the others' lives, we also have an opportunity to learn and grow in our efforts to build a bridge in our relationship. She is learning what is important to me, and I am learning what is important to her. My experience through Big Brothers/Big Sisters gives me a wonderful opportunity to help someone.

Children are smart and they learn by examples. As adults, it seems we have learned that the cliché "Do as I say, not as do" is obsolete and flawed. Children have known it all along. The adage that says "You get back according to what you put in" does ring true. We, as adults, need to set better examples for our children.

In the past, there was always a reason why I could not get involved: school, work, church, social activities, sports, etc. We need to let go of the excuses and become better role models for all of our children. Whether we do or whether we don't, we are sending them a message.



Big Sister Kelly Murphy, left, and her Little Sister Kathleen Kapustka pose for a picture during a picnic in Newport News Park. Murphy is an aerospace research engineer in the Aerothermodynamics Branch and has been a Big Sister to Kathleen, age 15, since 1992. Murphy's love of math and science helps her coach her Little Sister on her math skills, and provides a "bigger picture" for Kathleen's future. "Being a role model," Murphy said, "is setting an example for someone, and showing them that they, too, can achieve their goals."

Happenings

ENGINEERS' CLUB OF THE VIRGINIA PENINSULA (ECVP) invites all Langley employees to the Annual Kickoff Membership Meeting on Tuesday, Sept. 26, from 5 to 8 p.m. Speaker Matt Mulherin, director of Facilities for Newport News Shipbuilding, will talk about the World Class Shipbuilder Facilities Program at the shipyard. Cocktails and hors d'oeuvres will be served. Reservations are required. Call Ron Harvey at ext. 46121 or 249-2322 or Abe Leiss at 877-2939 for details.

NASA SKI WEEK V: The Agency-wide ski trip is scheduled for the week of Jan. 13-20, 1996, at Crested Butte, Colo. The trip is open to all NASA personnel, contractors, retirees, friends and relatives. Cost is $889, double occupancy. All interested parties should contact Michael Schooley at ext. 48524 or 874-2736 nights and weekends.

FOR SALE: Three United Airlines (UAL) travel certificates worth $200 each toward purchase of any UAL ticket. Will sell for $150 each. Call Bill at 722-7582

CFC TRAINING: Training for key people and coordinators working on the 1995 Combined Federal Campaign is scheduled for Sept. 26 and Sept. 28, from 9 to 11 a.m. in the private dining room in the cafeteria. The Sept. 26 training is for people with last names beginning with the letters A-M. Employees with last names N-Z are asked to attend Sept. 28. An employee who has a conflict on the assigned date should come on the other date. All key workers and coordinators are requested to attend one of the sessions.

LAA SOCIAL HOUR: Sept. 29, 4 to 8 p.m., H.J.E. Reid Conference Center. "Danny & the Del Notes" will provide entertainment. **LAA Country Western Dance** - Sept. 30, $3 per person. Doors open at 6:15 p.m., lessons at 7 p.m., dance from 8:00 to 11:30 p.m. For more information, call Andrea Whitesides, LAA Manager, at ext. 46369.

FOR SALE: 1989 S-10 Blazer, Tahoe pkg, 4-wheel drive, 52,000 miles, great shape; $9,500. Call Dale at 826-4210 after 5 p.m.

NATIONAL TECHNICAL ASSOCIATION: On Oct. 16 at 7 p.m., the Hampton Roads Chapter of the association will meet at the Hampton Public Central Library. For more information, call Robert B. Lee III, ext. 45679.

FOR SALE: Wilson Hammer 4.0, wide-body, dual-taper beam, $100, unstrung. Call 595-7601.

TRAVEL OPPS: Book Hawaii before 9/30 for travel by 12/30 and get free upgrade; air/land packages for all price ranges. Rates on Royal Carib cruises still good. Specials on Cancun, Dallas, etc. For details, call Shannon at ext. 47696.

FALL RACES: NASA Intercenter Competitions are: 10K races on Oct. 4,12, 16 and 26; two-mile races on Oct. 10, 19 and 23; all races begin at 5 p.m. on Doolittle Rd. Turkey Trot two-mile run/walk will be Nov. 1 at 4:45 p.m. All Langley employees may participate -- walkers are welcome. For more information about the competition or Langley Runners Club, call Richard Shearer at ext. 47036.

Langley Showcases Work at Virginia State Fair

Langley will participate in the Virginia State Fair in Richmond from Sept. 21 through Oct. 1 with a series of interactive exhibits for visitors of all ages. The goal of the NASA exhibit is to inform the public about programs at NASA Langley.

A high performance computing and communications group will present exhibits from its kindergarten through 12th grade educational program. Other exhibits will focus on electronics, a spin wind tunnel, model fabrication, adapting aerospace technologies for commercial applications, noise reduction technology and crack detection in aircraft. Highlights will include how to access information about Langley's research through the World Wide Web computer network.

The exhibit will be located in the Commonwealth Technology Building, where the theme will be the "Information Superhighway." Each organization featured in the technology building has a unique relationship to information and technology. The building is located near the main entrance of the Richmond Fair Grounds.

FOR SALE: 1978 Oldsmobile 88, one owner, asking $650. Call 229-0188.

WORKSHOP: "Transportation Beyond 2000: Engineering Design for the Future," will be held at 8 a.m. Tuesday, Sept. 26 through noon Thursday, Sept. 28, in the H.J.E. Reid Conference Center. Registration is at the door and time should be charged to Job Order A5236. For information, contact Robert E. McKinley, Jr. at ext. 47572, r.e.mckinley@larc.nasa.gov

ROOMMATE WANTED: Professional, non-smoker wanted to share new 1,600 sq.ft. townhouse in Kiln Creek starting in spring 1996. Two master suites, 2 baths, all amenities, about $400 rent + 1/2 utilities. Call Matt at 766-1050.

LANGLEY BICYCLE and Advocacy Club will meet Friday, Sept. 29 at 11:30 a.m. in the Executive Dining Room at the cafeteria. Interested persons should call Gale Harvey, ext. 46742, Lawrence Taylor, ext. 43768, or Olaf Storaasli, ext. 42927.

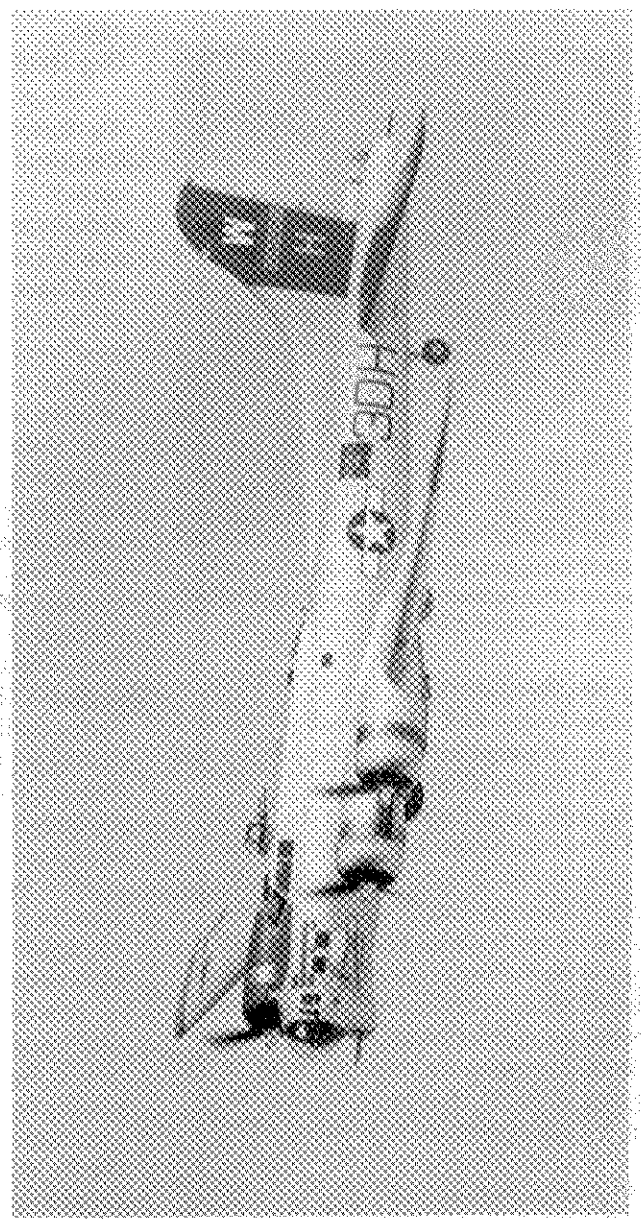


Photo courtesy of the Experimental Aircraft Association

"FLYING FORTRESS" VISITS THE PENINSULA. A Boeing B-17, named "Aluminum Overcast," landed at the Newport News/Williamsburg Airport in mid-September as part of the World War II 50th Anniversary "Victory Tour" designed to permit both World War II veterans and the public to experience one of the most important aircraft used in that war. The event was sponsored by the Experimental Aircraft Association (EAA) and its local affiliate, EAA Chapter 156, Hampton Roads. The B-17 was wind tunnel tested at Langley in the early 1940s and flight tested here in the late 1940s. For more information about the chapter, call H.O. Malone at 851-4179.

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 20 ❖ October 6, 1995

The Human Genome Project — Subject of October Colloquium

A Colloquium lecture: "The Human Genome Project — The Science Behind Jurassic Park and Its Implications," will be presented by Dr. Paula Gregory, Tuesday, Oct. 10 at 2 p.m. in the H.J.E. Reid Conference Center.

The Project

The Human Genome Project is an international effort to understand the human blueprint. Its goal is to locate the approximately 100,000 human genes and read the entire genetic script, three billion bits of information, by the year 2005.

Even before it is complete, the project promises to transform both biology and medicine. Genes influence how we look and what diseases we may contract. Errors in our genes are responsible for about 3,000 hereditary diseases including Huntington's Disease, cystic fibrosis and Duchenne muscular dystrophy. Understanding the complete set of genes promises to usher in a new era of molecular medicine with precise approaches to the diagnosis, treatment and prevention of disease.

As the scientific community advances the understanding of human genetics, this knowledge will impact large numbers of people. Many Americans know little about genes, how they work, or even what happens when they don't work. The education and outreach programs of the Human Genome Project aim to give the public some knowledge of genetics, and to help them make informed, responsible decisions about genetic technologies.

Gregory to Speak

Dr. Paula Gregory, chief of the Genetics Education Office for the National Center for Human Genome Research (NCHGR), established the Project's education effort in Bethesda, Md. in 1993. As a research scientist previously performing cytogenetic studies, Gregory founded the first education program within a human genome center while at the University of Michigan. Over the past two years she has traveled to several states and spoken to more than 14,000 students, educators and others interested in genome research and its implications.

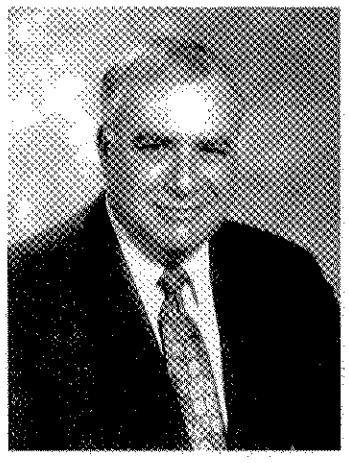
Gregory received her doctorate from Tulane University, and has taught at the University of Alabama at Birmingham (UAB), the University of Michigan and several other colleges. She remains an active scientist, currently conducting research on acute leukemia and human artificial chromosomes.

The Colloquium is open to all Langley employees. Civil service personnel should charge their time to Job Order A5266.

Sigma Lecture

At the Virginia Air and Space Center, Gregory will repeat the lecture at 7:30 p.m. Admission is free. Following the lecture, the center will show the IMAX® film, *The Blue Planet* at regular prices: Adults $5.50; seniors, military and NASA (and family) w/ID card, $4.50; and children 3-11, $4.50.

A Message from the Director:



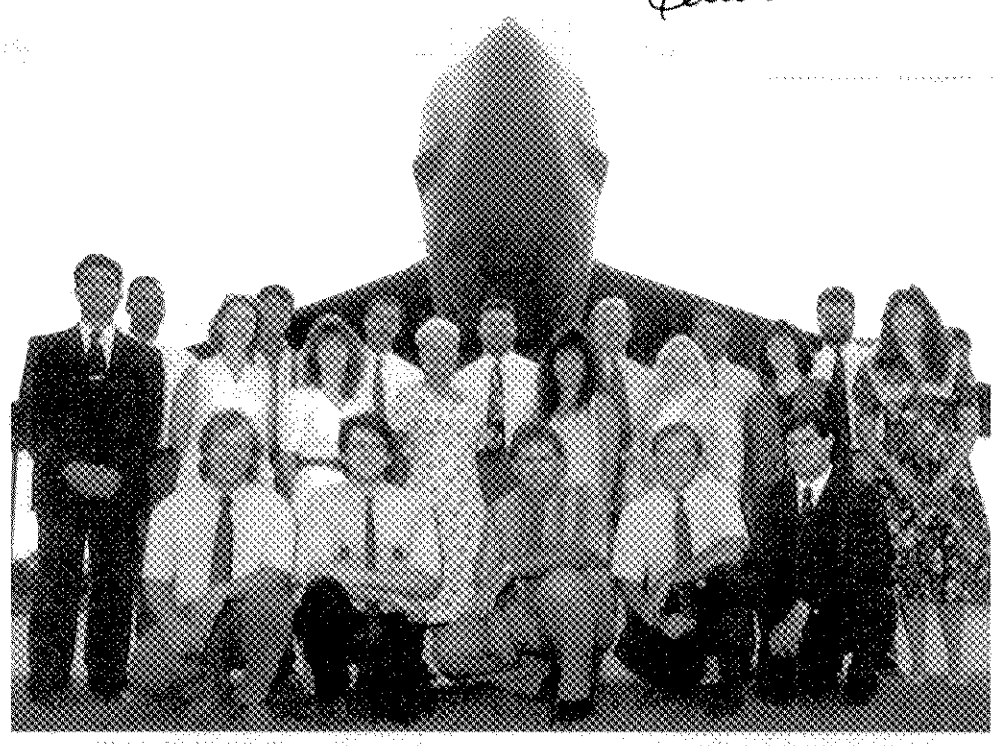
I would like to take this opportunity to congratulate the men and women of the Apprentice Class of 1995. The record shows that you have distinguished yourselves through your outstanding performances in assignments throughout the Center.

Two of the things that make Langley different and such an important contributor to our nation's aerospace research program are the Apprentice Program and the technician work force. These elements are a vital part of this Center. The creativity, energy and high motivation of our technicians have been among the primary reasons for Langley's success over the past 78 years. We are extremely proud of you and all your colleagues who have gone before you.

As part of this 51st graduating class, you have met with the challenges of a very demanding program. A large number of you — 65 percent — are graduating with honors. Your cumulative grade point average is 3.44 out of a possible 4.0, an impressive number. I want to extend a special congratulations to Spencer Johnston, elected class speaker by his peers, and to David Coleman, George Cowley, Lisa Hawks, William Healy, Spencer Johnston, Eddie Rhyne, Chad Rice, David Sheldon and Kelly Tarkenton who graduated summa cum laude, with the highest honors.

This class, the Class of 1995, continues a tradition of excellence set by your predecessors. You are the heritage and future of Langley Research Center. I want to wish each of you continued success in all your endeavors.

— Paul F. Holloway
Center Director



Members of the Engineering Technician Apprentice Program, Class of 1995, the 51st graduating class, pose for a class picture in front of a B-52 at Langley Air Force Base.

Kurke Named Langley's New Chief Counsel

The Office of the Director announced that Kathy A. Kurke has been selected as Langley's Chief Counsel.

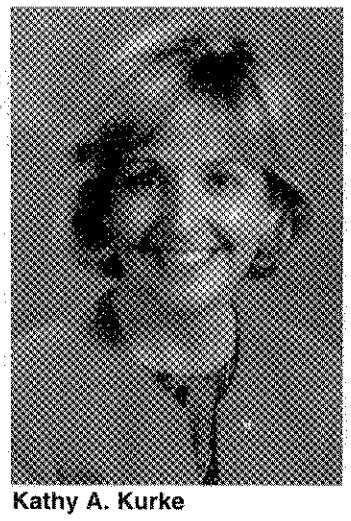
Kurke has served as assistant chief counsel for Research and Development (R&D), Office of Chief Counsel of the U.S. Army Corps of Engineers, since 1987, where she was considered the Agency's technical expert in the area of R&D contracting law. She has received national recognition for her work in the Congressionally-mandated area of technology transfer.

While there, she provided the primary legal support for the Corps R&D Directorate, functional oversight for the commanders and directors of all the Corps' laboratories and research centers, as well as serving as a technical expert in R&D and "high-tech" contracting issues and legal policy oversight for the Corps' intellectual property program.

Prior to that appointment, Kurke served as the Chief Counsel to the Humphreys Engineer Center for eight years. She received her doctor of jurisprudence degree from the National Law Center, George Washington University.

Kurke has received numerous awards for her expertise in the field of technology transfer law. Among them are the 1988 E. Manning Seltzer Award in recognition of her significant contributions to the Corps' legal services mission; the Department of the Army Meritorious Civilian Service Medal in 1990; and the Federal Laboratory Consortium for Technology Transfer's 1990 Outstanding Service Award for her efforts in developing the law in the area of technology transfer.

She served as the first chairperson of the Legal Networking Committee of the Federal Laboratory Consortium, and has lectured extensively on the Federal Technology Transfer Act. Kurke has served on many government committees including the Department of Defense Technology Transfer Working Group and the Army's Technology Transfer Legal Advisory Committee.



Kathy A. Kurke

News Briefs

Around the Agency

TOPEX/POSEIDON COMPLETES PRIME MISSION – TOPEX/Poseidon, the U.S./French ocean-observing satellite, has successfully completed its three-year primary mission to help scientists understand how the Earth's oceans affect our climate. Having passed the third anniversary of its launch on Aug. 10, TOPEX/Poseidon has begun its extended mission. Given the health of the spacecraft, the project management team believes TOPEX/Poseidon will continue to operate at least four more years. TOPEX/Poseidon's primary science goal is to improve our understanding of how oceans circulate. The satellite information is enabling oceanographers to study the way the oceans transport heat and nutrients and how the oceans interact with weather patterns. Dr. Lee-Lueng Fu, TOPEX/Poseidon project scientist at the Jet Propulsion Laboratory (JPL), Pasadena, Calif. said, "We are interested in answering questions about long-term variations in the ocean and understanding what role the oceans play in long-term global change." TOPEX/Poseidon, a joint mission between NASA and the Centre Nationale d'Etudes Spatiales (CNES), the French space agency, uses a radar altimeter to precisely measure sea-surface height. Scientists use the TOPEX/Poseidon data to produce global maps of ocean circulation. The satellite has provided oceanographers with unprecedented global sea level measurements that are accurate to less than two inches.

Arbuckle Made Assistant Chief, Flight Dynamics and Control Division

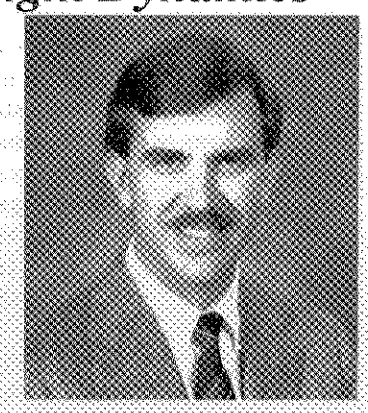
P. Douglas Arbuckle was named assistant chief, Flight Dynamics and Control Division. He will help lead an area responsible for analysis, simulation, wind tunnel testing and flight experiments in the areas of flight mechanics, guidance, navigation, control, crew systems and operating procedures for aerospace vehicles. The division oversees the utilization of the 20-Foot Vertical Spin Tunnel and the 12-Foot Low-Speed Tunnel.

Arbuckle began his Langley career in 1982. He holds a bachelor of science degree cum laude in aerospace engineering from Virginia Polytechnic Institute and State University and a master of science degree in aerospace engineering from the George Washington University.

Arbuckle led the Superagility Team from June 1987 to August 1989 and August 1990 to March 1991. He planned and coordinated the research activities of the team in the areas of control design metrics, control law design, and tactical guidance, and served as a Langley member of NASA Task Group 1A, a team that supports Agency planning activities.

He participated in the NASA Professional Development Program, and was acting manager for the Aeronautical Controls and Guidance Program at Headquarters.

Most recently, Arbuckle was special assistant for Simulation and Flight Testing in the Flight Dynamics and Control Division. He coordinated and integrated research requirements for simulation flight testing in support of Langley programs, and led a Center team charged with re-engineering the research process from concept-to-simulation-to-flight.



P. Douglas Arbuckle

Arbuckle has received several NASA awards, is a senior member of the American Institute of Aeronautics and Astronautics (AIAA), and was a member of the AIAA Guidance, Navigation and Control Technical Committee for three years. He served as General Chairman of AIAA's 1992 Guidance, Navigation and Control Conference. He has authored numerous publications and delivered many conference presentations.

Security Measures Make Good Sense

Since the bombing of federal property in Oklahoma City last April, resulting in the deaths of more than 160 people, NASA Administrator Daniel Golden has directed that all NASA facilities ensure compliance with certain minimum security standards.

These standards are identified in ThreatCon Alpha Procedures (NHB 1620.3) and require that all incoming traffic at Langley stop and provide positive identification of all passengers. The procedures have been implemented on Center to ensure a safer and more secure work place for all employees and visitors. Delays to both employees and visitors have been minimized through streamlined security procedures and staff adjustments.

Risks to federal facilities and their employees are still present. Langley employees are not permitted to direct visitors to enter the Center through Langley Air Force Base since all visitors must obtain and display a visitor identification badge. Enhanced levels of security will remain in place, again, at the direction of the NASA Administrator, until further notice. Any questions or requests for further information should be directed to the Office of Security Services at ext. 43420.

Exercise "The Power of One" and Support the CFC

Freeman Named Chief of Space Systems and Concepts Division

Delma C. Freeman Jr.

Delma C. Freeman Jr. has been named chief of the Space Systems and Concepts Division. In this position, he manages the space systems analysis capability at Langley, providing systems assessments for activities in several of the NASA enterprises supporting the International Space Station Program, the X-33 and X-34 Reusable Launch Vehicle Program and the Mission to Planet Earth.

Freeman began his NASA career at Langley in 1960 in the Instrument Research Division. He worked on low speed aerodynamic stability and control and dynamic stability on supersonic transports, powered lift systems and military fighter aircraft in the Full Scale Tunnel beginning in 1964.

Freeman transferred into the Space Systems Division in 1970 and spent the next 10 years conducting static and dynamic stability testing of the space shuttle system components (orbiter, ascent vehicle, and the 747/orbiter Approach and Landing Test Configuration.

He was assigned to NASA Headquarters from 1982 to 1983 where he served as the head of the Space Transportation Technology Office. He returned to Langley and became the assistant head of the Aerothermodynamics Branch.

Freeman was made head of the Vehicle Analysis Branch in 1986. There he worked on future space transportation systems, studying single- and two-stage Advanced Manned Launch System. He personally proposed the Langley HL-20 concept for the Space Station Assured Crew Return Vehicle and the Personnel Launch System.

In 1991, he became the assistant chief of the Space Systems Division. He helped manage a division program conducting systems analyses of future space transportation concepts and conducting aerothermodynamic analyses of these concepts.

With the reorganization in 1994, he became leader of the Space Transportation Thrust Office in the Space and Atmospheric Sciences Program Group.

In recognition of his efforts working in the area of advanced space transportation concept analysis, Freeman was made an American Institute of Aeronautics and Astronautics (AIAA) Fellow in 1994. He has represented the Center on the AIAA Atmospheric Flight Mechanics and Space Transportation Technical committees, and currently represents Langley on the International Astronautics Federation Space Transportation Technical Committee. In 1989 Freeman received the NASA Exceptional Services Award for directing the Langley efforts supporting the National Space Transportation Program that have significantly affected the direction of this activity. In 1992/1993 he was chairman of the local AIAA Hampton Roads Section.

In Memoriam

John D. Rollins

John Douglas Rollins, 56, died Sept. 12. He had been at Langley since 1961, and recently served as group leader of Simulator Engineering and Operations of the Simulations Systems Branch.

During his career, he gained an outstanding reputation as a simulation systems engineer and was recognized as Langley's expert in motion systems for piloted simulation. Throughout his career, he made many contributions to the development and improvement of simulation facilities on Center. His work covered many projects of great importance to NASA and the nation. The early projects included efforts to develop a capability to train astronauts to land on the moon. In his most recent work, Rollins was leading the development of a unique facility to provide motion cues for simulators in order to conduct research directed toward improving the performance and safety of the nation's commercial aircraft.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (j.c.shanks@larc.nasa.gov), QuickMail (Jeane Shanks), fax 1 (804) 864-8810, telephone 1 (804) 864-3293 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor . . . . . Michael Finneran

Editor . . . . . Vacant
Science and Technology Corp.

Assistant Editor . . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Apprentice Class of 1995

Swain Addresses Graduates

Robert L. Swain addressed the members of the Engineering Technician Apprentice Program graduating class. His topic was "Technicians Who Make a Difference."

Swain began his NASA career as an aerospace technologist in 1955, specializing in chemical propulsion research and development, launch vehicle propulsion, arc-powered wind tunnel and materials research. He directed the development of third- and fourth-stage solid rocket motors for the Scout launch vehicle.

Swain held a number of posts at Langley including manager of the National Transonic Facility (NTF) and director of Systems Engineering and Operations. He chaired the committee having oversight of Langley's engineering technician apprentice program.

Swain holds a master's degree in management from the Massachusetts Institute of Technology where he received the Brooks Prize for the Outstanding Thesis of the Sloan School of Management. The author of many technical papers, he holds a patent on a spherical rocket motor, widely applied in the space program.

Robert L. Swain

He is an Associate Fellow of the American Institute of Aeronautics and Astronautics, and has been honored with numerous awards throughout his career including NASA Engineer of the Year (1984) and the Presidential Ranks of Meritorious and Distinguished Executive. Swain retired from Langley in 1994.

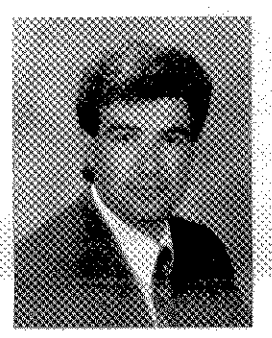
Johnston Chosen as Class Speaker

Spencer L. Johnston was chosen as class speaker by his fellow graduates. His remarks focused on the importance of teamwork and the pride of "ownership" each apprentice had toward their work projects.

He is an engineering design technician in the Aeronautical Systems Engineering Branch. He entered the Apprentice Program as a co-op student with Thomas Nelson Community College (TNCC) where he graduated summa cum laude with an associate of applied science degree in mechanical technology. He graduates summa cum laude from the Apprentice Program as well. Johnston is currently designing components for the Wallops T-39 Aerosol Collectors and Trace Gas Inlets Project. He worked in support of numerous installations on the OV-10A aircraft, designed a tool for the engine starter motor inspection of NASA 515, designed Global Positioning Satellite antenna and camera mounts for the F-16XL, designed aerosol collectors and trace gas inlets for the T-39 based at Wallops, and given two critical design reviews on the T-39 systems. He received a letter for Excellence in Design Support of the OV-10A Wake Vortex Flight Project, and plans to pursue a bachelor of science degree in mechanical engineering at Old Dominion University.

Langley Apprentice Class of 1995

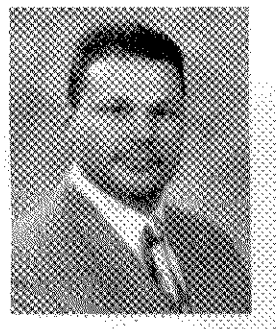
COMPILED BY LANA P. HICKS, BETSY KENNEDY AND KATHRYN KUYKENDOLL



Robert C. Andrews is an engineering technician in the Metals Applications Technology Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned an associate of applied science degree in mechanical engineering technology. Andrews is currently working in the Advanced Machining Development Laboratory. He received a Superior Accomplishment Award for exceptional performance during fabrication of the Free-Flight Rotor Rescue Vehicle Project, and is graduating from the Apprentice Program magna cum laude.

James W. Baldwin is an electronics technician in the Aerodynamic Measurement Branch. He entered the program as a student with TNCC where he earned an associate of applied science degree in electronics technology and an associate degree in engineering. He works on Pressure Sensitive Paint, Electronically Scanned Pressure Sensors (ESP), the National Transonic Facility's MACH number system, cryogenic ESP sensors and the space shuttle main engine pressure sensor. Baldwin received a Superior Accomplishment Award for development of an Automated Calibration System and Controlling Software. He is a senior at Old Dominion University (ODU) where he will earn a bachelor of science degree in electrical engineering.

Scott P. Belbin is an engineering design technician with the Process Systems Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned an associate of applied science degree in mechanical engineering technology. He is currently working with high-pressure piping design and contract management. He participated in the installation of the Chemical Vapor Deposit reactor at the Carbon-Carbon lab, and has applied for a patent for a Thermally Conductive/Kinetically Isolated Mount for Thermal-Electrically Cooled Solid State Laser. He plans to complete a bachelor of science degree in mechanical engineering at ODU, and is graduating from the Apprentice Program cum laude.



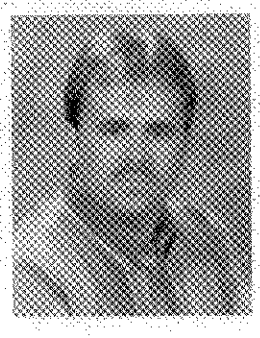
Salvatore Buccellato is an engineering technician in the Metals Applications Technology Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned an associate of applied science degree in mechanical engineering technology and an associate degree in engineering. He is currently working on the six-percent High Speed Civil Transport (HSCT), MIR Environmental Effects Payload, the Active Pyroelectric Infrared Detector Instrumentation and the Advanced Concept Inlet Study Model (ACIS). He plans to continue his education at ODU, and is graduating from the Apprentice Program magna cum laude.

David M. Coleman is an engineering technician in the Aero and Flight Dynamics Research Support Branch. He entered the Apprentice Program as a co-op student at TNCC where he received his associate of applied science degree in mechanical engineering technology. Coleman is currently working at the National Transonic Facility (NTF) on such projects as the C-17, Pathfinder, Boeing 767, Pegasus, and National Aero-Space Plane (NASP). He received a Group Achievement Award for work on the NASP project and an On-the-Spot Award for support to the NTF Fan Bearing Air Seal Inspection. He is graduating summa cum Laude from the Apprentice Program.

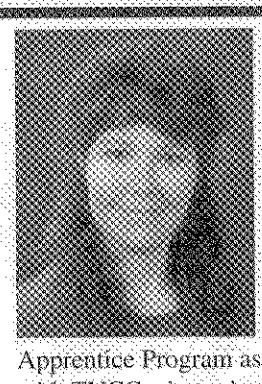
George D. Cowley is an engineering technician in the Structures and Materials Research Support Branch. He entered the program as a co-op student with TNCC where he earned an associate of applied science degree in mechanical engineering technology. He is currently working on the Combined Loads Test System (COLTS) project. He received an On-the-Spot Award for innovative design and fabrication of an acoustic wall in the basic aerodynamic research tunnel, and an Outstanding Support Award for his work on the COLTS project. Cowley is graduating from the Apprentice Program summa cum laude.

Michael A. Flood is an electronics technician in the Electronic Systems Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned an associate of applied science degree in electronics technology. He has an associate degree in information management from the Community College of the Air Force. Flood works on the Photogrammetric Appendage Structural Dynamics Experiment (PASDE) project and the Recorded Interface Module project. He was on the Measurement of Air Pollution from Satellites (MAPS) technical support team supporting operations at Kennedy Space Center, and the mission operations team at Johnson supporting two MAPS missions. He is working toward a bachelor of science degree in electrical engineering at ODU.

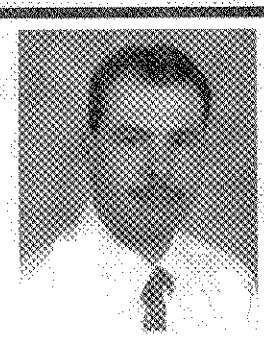
Donna A. Gallaher is an electronics technician in the Flight Instrumentation Branch. She entered the Apprentice Program as a co-op with TNCC where she earned an associate of applied science degree in electronics technology. She received Advanced Airborne Test and Instrumentation System training from Edwards Air Force Base personnel. Gallaher works with flight research in instrumentation, including sensors, digital data encoding systems, magnetic tape recording and radio frequency telemetry for the OV-10A Wake Vortex program. She worked with the B-737 High Lift pressure measurements and data acquisition. She received a Superior Accomplishment Award for flight instrumentation contributions to the Transport High-Lift Research Project.



Thomas W. Hall is an engineering technician in the Center Operations Support Branch. He entered the Apprentice Program as a co-op student with TNCC where he received an associate of applied science degree in Mechanical Engineering Technology. He has also received a certificate in machine tools operations from TNCC. He is currently working in high pressure air piping. Hall is graduating from the Apprentice Program cum laude.

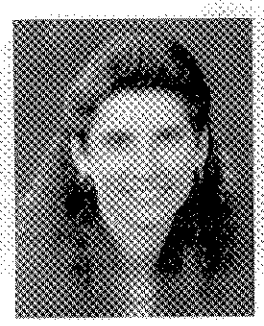


Lisa R. Hawks is an engineering technician in the Structures and Materials Research Support Branch. She entered the Apprentice Program as a co-op student with TNCC where she received an associate of applied science degree in mechanical engineering technology. She works at the Long Term Durability Test Facility where she evaluates the long-term durability of candidate composite materials. Hawks received a Group Achievement Award for the GTE Atmospheric Boundary Layer Experiment Team, and Performance Awards for outstanding technical support in making operational the LDEF project at the Materials Research Laboratory and for work to maintain LDEF operations there. She graduates summa cum laude with a 4.0 grade point average.

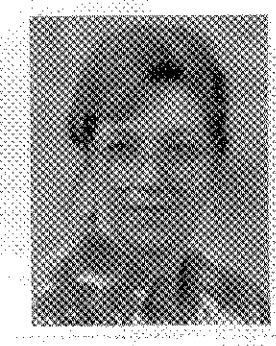


William Jason Healy is an engineering technician in the Gas, Fluid, and Acoustics Research Support Branch. He entered the Apprentice Program as a co-op student with TNCC where he received an associate of applied science degree in mechanical engineering technology. He will be graduating from the program summa cum laude. Healy is currently working at the 8-Foot High Temperature Tunnel (HTT) testing the Concept Demonstration Engine for NASP. He worked at the Full Scale Tunnel, 8-Foot HTT and the Low Turbulence Pressure Tunnel (LTPT). He received a Superior Accomplishment Award for work done at LTPT and two group achievement awards for work done at the 8-Foot HTT.

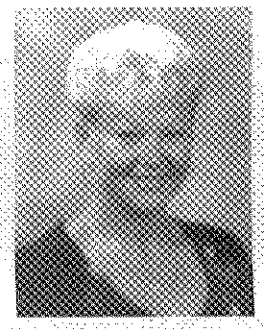
Lana P. Hicks is an engineering technician in the Models and Materials Technology Branch and works in the model shop. She entered the Apprentice Program as a co-op student at TNCC, receiving an associate of applied science degree in mechanical technology. She worked with the manufacture of ceramic parts for superconductivity, and slip casting of high-temperature ceramic superconductors. Hicks received a Performance Award for work in construction of the High Gale Antenna simulator mock-up for spacecraft systems. She also manufactured parts used in the technical brief "Slip-Cast Super Conductive Parts," included in a slip casting patent. She is graduates from the program magna cum laude.



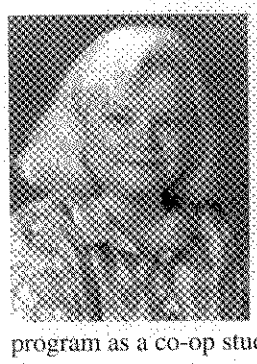
Stacy L. Hunt is an engineering technician in the Aero and Flight Dynamics Research Support Branch. She entered the Apprentice Program as a co-op student at TNCC where she received her associate of applied science degree in mechanical engineering technology. She is currently working at the Low Turbulence Pressure Tunnel (LTPT) where she is involved in the testing of the HL-20B model. She received a Letter of Outstanding Performance of LTPT Personnel as well as a Superior Accomplishment Award for the Gulf stream 2-D Test. Hunt plans to pursue a bachelor of science degree in mechanical engineering.



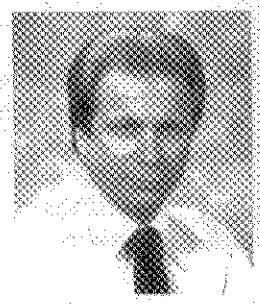
Mary G. (Betsy) Kennedy is an engineering technician in the Aero and Flight Dynamics Research Support Branch. She entered the Apprentice Program as a student with TNCC and graduated summa cum laude with an associate of applied science degree in mechanical engineering technology. She works at the 16-Foot Transonic Tunnel in support of the High Speed Research (HSR) Program. She worked in the High Pressure Air Dispatch/Hypersonic Complex control room, the 14 x 22-Foot Subsonic Tunnel, the 0.3M Transonic Cryogenic Tunnel, NTF and Unitary Wind Tunnel. She was selected as the Peninsula Chamber of Commerce Vocational Student of the Year in 1991, and has received both Suggestion and Group Achievement Awards.



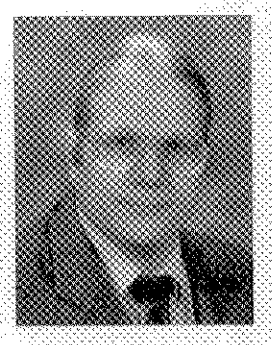
Kathryn A. Kuykendoll is an engineering technician in the Metals Applications Technology Branch. She entered the Apprentice Program as a co-op student at Tidewater Community College where she earned an associate of applied science degree in drafting and design. Kuykendoll will be graduating the Apprentice Program cum laude. She is currently working with the 737-100 Free Flight Model.



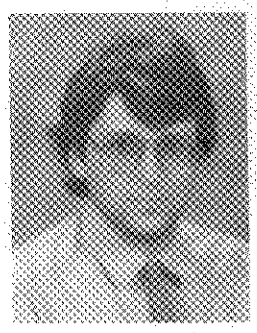
Marie F. Lane is an engineering technician in the Structures and Materials Research Support Branch. She entered the program as a co-op student with TNCC where she earned an associate of applied science degree in mechanical engineering technology. She works on a joint international effort with European Group on Fractures and the Japanese Industrial Standards Group to establish standard delamination toughness testing methodologies for composite materials. She received acknowledgment from Leonard Weinstein in his published paper on flow visualization techniques using the focusing Schlieren system. Lane plans to attend classes in labor law, pursuant to a degree in human resource management.



William E. Lipford is an engineering technician in Measurement Science and Technology Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned his associate of applied science degree in electronics technology. Lipford is involved in the development of non-intrusive measurement techniques for combustion diagnostics and fluid dynamics. Experiments include high resolution OH absorption spectroscopy and hypersonic flow field visualization employing microwave excitation. He also assisted with Raman Doppler velocimetry measurements in the Unitary Wind Tunnel.



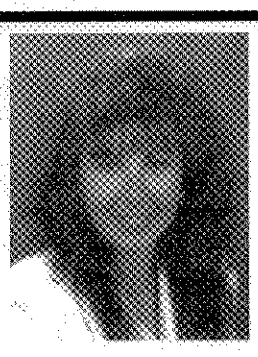
John B. McDonough is an electronics technician in the Nondestructive Evaluation Sciences Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned his associate of applied science in electronics technology as well as an associate degree in engineering. He plans to pursue a degree in electrical engineering. McDonough is currently working in the Nonlinear Acoustics Lab. He will graduate from the Apprentice Program cum laude.



Patrick M. McGuire is an engineering design technician in the Facilities Engineering Branch. He entered the Apprentice Program as a co-op student with Tidewater Community College where he earned his associate of applied science in drafting and design. He was involved with the Combined Loads Test System (COLTS) test rig, 20-Inch Supersonic Wind Tunnel (SWT) Model Support System, Mach 8 Quiet tunnel modifications, and installation and administration of Novell file server system for an engineering work group. McGuire received a Group Achievement Award for 737 LIDAR (light detection and ranging) wind shear program fabrication support.

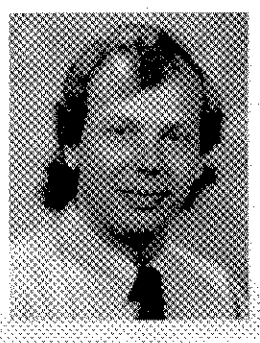
1995 Graduating Class

Robert G. Parker is an engineering design technician in the Aeronautical Systems Engineering Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned associate of applied science in mechanical engineering technology and associate of science in engineering degrees. He is pursuing a bachelor of science in mechanical engineering. Parker is currently working on the Boeing 737. He received a Superior Accomplishment Award for design work on the ethylene piping system for the Hypersonic Propulsion Combustion and Mixing Research Apparatus. Before entering the Apprentice Program, Parker served four years in the U.S. Coast Guard. He is graduating from the Apprentice Program cum laude.



Barbara L. Pritchard is an engineering technician in the Models and Materials Technology Branch. She entered the Apprentice Program as a co-op student with TNCC where she earned her associate of applied science degree in mechanical engineering technology. She currently supports the NTF, 8-Foot High-Temperature Tunnel (HTT), 20-Foot Vertical Spin Tunnel Blades, Boeing 737, F-16 Super Suction Model, working to find an alternative verification process for liquid oxygen systems using a total organic carbon analyzer, and to find a replacement solvent for Chlorofluorocarbon (CFC) 113. She received a Performance Award for support for oxygen cleaning of hardware for the 8-Foot HTT.

Eddie D. Rhyne is an electrical engineering technician in the Electrical Support Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned his associate of applied science degree in electronic technology, and will be graduating the Apprentice Program summa cum laude. He is currently working at the 8-Foot HTT with concept demonstration engine (CDE) testing. Rhyne received two Group Achievement Awards for the 8-Foot (HTT) Shakedown Operations Team and for the NASP-CDE Test Team. He also received a Superior Accomplishment Award for repairing the Schlieren Drive System at the 8-Foot HTT. He served in the U.S. Army for more than six years before coming to Langley.



Chad E. Rice is an engineering technician in the Aero and Flight Dynamics Research Support Branch. He entered the Apprentice Program as a co-op student with TNCC where he earned his associate of applied science degree in mechanical engineering technology, and will be graduating summa cum laude from the Apprentice Program. He is currently working on the Boeing Military Aircraft Co. Advanced Short Takeoff Vertical Landing model, as well as supporting model buildup and tunnel operations. He received an award for rehab work at the 31" Mach 10 Tunnel, an On-The Spot Award for Blade Removal and Installation at the 16-Foot Tunnel and several letters of commendation from engineers at the facilities where he worked.

David P. Sheldon is an engineering technician in the Electrical Support Branch. He entered the program as a co-op student with TNCC where he earned his associate of applied science in electronic technology. He is graduating the apprentice program summa cum laude with a grade point average of 4.0. Sheldon works at the NTF. He has worked at the 8-Foot HTT during their facility rehab project, Building 1267 for the NASP project titanium testing of thermal structures analysis, and the roll drive upgrade at the NTF. Sheldon received a superior accomplishment award for contributions to the NASP Program and a team excellence award for the NTF data system power upgrade. Prior to entering the program, he served eight years in the U.S. Navy.

Kelly S. Tarkenton is an engineering technician in the Aero and Flight Dynamics Research Branch. She entered the Apprentice Program as a co-op student with Tidewater Community College where she earned her associate of applied science degree in drafting and design. Tarkenton will be graduating summa cum laude from the Apprentice Program. She is assigned to the 16-Foot Transonic Tunnel. Tarkenton received four On-the-Spot Awards, a Group Achievement Award for her work with the NASP project and a Time-Off Award for her efforts on active flap rotor noise reduction.

Marcum to Speak at VABR/WIA Meeting

Frances F. Marcum, CEO of Micro Craft, Inc., will discuss the economic strategies that helped establish Micro Craft as a leader in the research and development industry at the Oct. 17 dinner meeting of the Virginia Aerospace Business Roundtable (VABR) and the Hampton Roads Section of Women in Aerospace (HRS-WIA).

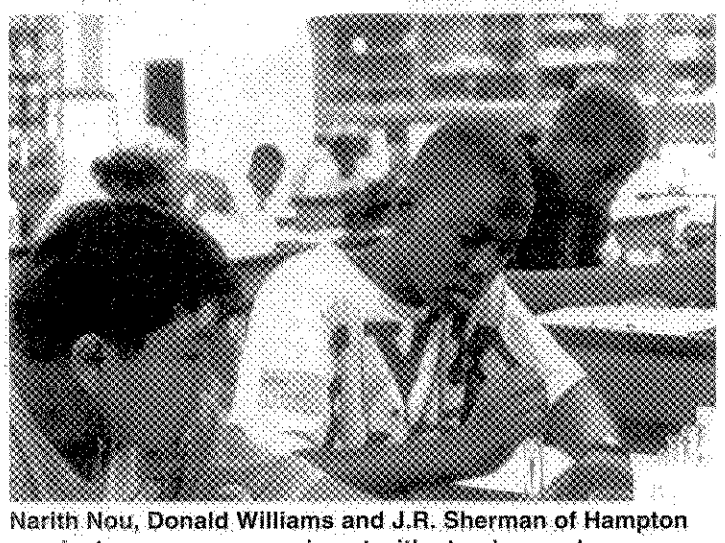
Since 1972, Marcum has guided Micro Craft in its growth from a 25-employee operation at one location to its current status of almost 400 employees located throughout the United States and Canada. During her presentation, Marcum will also explain how her company continues to expand, despite military spending cuts, by turning business that is too small for large contractors into revenue-producing business for Micro Craft. Under her direction, Micro Craft was selected as the "National Prime Contractor of the Year" by the Small Business Administration in 1976.

The purpose of the VABR is to provide a forum for government labs, aerospace industry, general business and academia to explore opportunities in aerospace enterprise. The mission of HRS-WIA is to provide a forum for networking and expand women's opportunities for career advancement in the aerospace industry.

Social will start at 6 p.m. and dinner will begin at 6:30 p.m. Reservations are required by Oct. 15 by calling Shirley Turner at 865-0900. Cost for dinner meeting is $13 for VABR and HRS-WIA members and $18 for nonmembers. For more information, call Donna Roper at ext. 42505.

How "They" Spent Their Summer Vacations

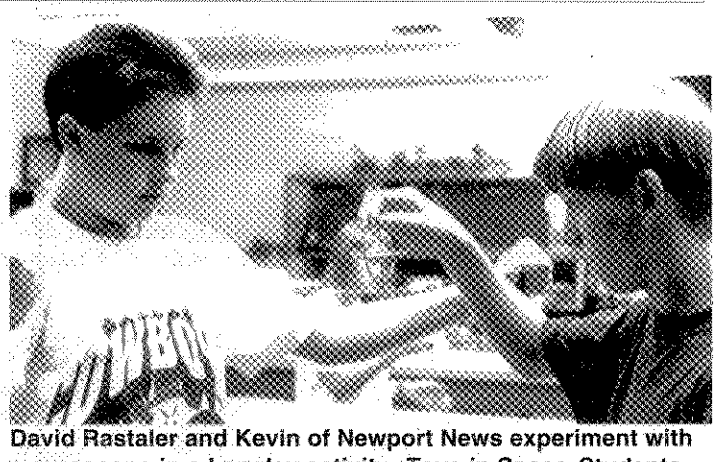
This summer 100 middle school students from the five school divisions on the Peninsula attended the four-week Regional Summer Math and Science Institute (RSI) at Thomas Nelson Community College in Hampton. The program is part of the ATOMS, Adventures in Technology= Options in Math and Science program, and is co-sponsored by a grant from Langley Research Center, NASA Headquarters, CEBAF, Newport News Shipbuilding and other local companies.



Narith Nou, Donald Williams and J.R. Sherman of Hampton conduct an enzyme experiment with starches and sugars.

ATOMS/RSI grant administrator Judy Remsberg said, "We want students to understand how math and science relate to the real world, and not just read answers from a textbook. Students learn how teamwork and cooperation allow for science knowledge to occur. RSI gives them these kinds of experiences."

RSI students had a unique experience with some innovative NASA technology. They participated in a Langley-arranged videoconference with another middle school group from Prince Georges County Community College in Maryland, and talked about their respective NASA programs at Langley and Goddard Space Flight Center in Greenbelt, Md., asking each other about their favorite activities in each program.



David Rastaler and Kevin of Newport News experiment with a gyroscope in a Langley activity, *Toys in Space*. Students determine the range of function for several toys, then predict how the toys will act in space.

During the school year, teams of technicians from Langley's Fabrication Division make presentations to the ATOMS program participants as well as inviting students to tour the division's facilities. S. Stewart Harris Jr. chief of the Fabrication Division is Langley's representative on the ATOMS/RSI advisory board.

The Power of One

Message from the Director: The Power of One is Within Each of Us

In a world where violence, drug abuse, illness, war, starvation, and homelessness often are the focus of the news, we can forget that these stories are about real people. We can all too easily see them as mundane news items that no longer arouse our interest or emotions. We can easily forget the impact that each of us can make towards helping others in need.

It has been a difficult year. The Hampton Roads area has faced early retirements, layoffs, and other cutbacks. For some, life is not as good as it used to be, and for others there is the fear of what may come.

Langley has not been immune to difficult times either. As we justifiably concern ourselves with the possibility of furloughs, doing more with less, reduced programs, and budget reductions on a national and personal level, we must not lose sight of others. As things get tough, there is a natural tendency to turn inward. Tight times cause increasing problems for those in need as well.

There are people without food, medical treatment, and other basic necessities. Those people may live next door or in a far corner of the world. When we think of them as individuals, rather than a large number of strangers, their needs become real.

Each of us, as individuals, can make a difference in someone's life. Knowing that makes giving through the Combined Federal Campaign meaningful. Your past generosity has helped many needy people. As a longtime supporter of and contributor to the Combined Federal Campaign, I urge your renewed commitment to this year's campaign. For those who have not given in the past, I hope you will this year.

Our 1995 goal is $280,000. The goal is lower than last year since we have a smaller workforce. We understand your concerns and the uncertain times ahead, but Langley has a history on the Peninsula of generosity. We are proud to have the highest participation rate and average gift of any major federal group in the area. Let's exceed our 70 percent participation rate and set a new standard. We are blessed and able to help those who are less fortunate. We need your support this year more than ever. I am certain you will help us exceed our goal.

Many individuals need our support; let's demonstrate the power of one. Please be as generous as you can — let's try for 100 percent participation this year. The power of one multiplied by the support of many is what makes our Langley team great.

— Paul F. Holloway
Center Director

A Letter from NASA Associate Administrator

Fall signals the time for the annual Combined Federal Campaign (CFC). The Office of Aeronautics (OA) and NASA's four research centers have demonstrated a long tradition of caring. Last year, employees in OA and at the Ames, Dryden, Langley and Lewis Centers contributed more than $1 million to designated charities and agencies.

As local, state and federal budgets and assistance programs shrink, the need for all of us to support the CFC and its agencies becomes even greater. I hope you will support your installation's campaign this year with the same generosity and good spirit that you have displayed in past years. Your gift can make a real difference in the lives of deserving children and adults.

Throughout the year, you contribute to the quality of life in this country and around the world by developing new knowledge and technology. This year, I ask you again to contribute to your fellow citizens in one more way — by giving generously to the 1995/1996 Combined Federal Campaign.

— Robert E. Whitehead
Associate Administrator for Aeronautics

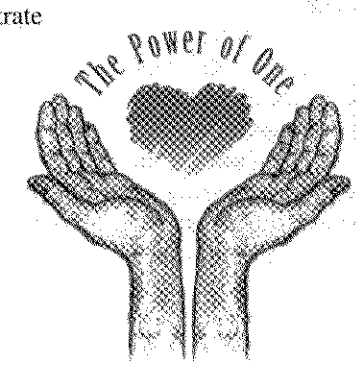
The American Federation of Government Employees
and
International Association of Machinists
encourage their Langley members to support this year's CFC.

Benjamin J. Schlichenmayer
President, American Federation of Government Employees Local 2755

Tom L. Vranas
President, International Association of Machinists Local PM 2829

Let's Show the 1995 CFC "Power of One"

In 1995, the employees of Langley Research Center really have an opportunity to demonstrate "The Power of One." Along with thousands of Federal employees from all over the United States, you are invited to show just how much you care, as you have so generously in the past, by contributing to the 1995 Combined Federal Campaign.



on the Virginia Peninsula

This annual solicitation enables the agencies who serve others to make a big difference in peoples' lives. Your contributions help provide housing for the many homeless, feed hungry children, counsel families, find cures for diseases, dig wells for clean water, comfort the dying, save the environment and improve the lives of millions of people.

This year more than 1,300 local, regional, national and international agencies will benefit from your generosity.

Langley's solicitation began Sept. 28, when employees could give their "Power of One" gift — a donation or payroll deduction pledge to the worthy cause of their choice. If you choose, your contributions will be distributed among the federations listed in the Index of Agencies and Codes. Each of these organizations gives funds directly to their subsidiary agencies. You may also contribute to local and national agencies not affiliated with one of these federations. For complete information, the brochure listing the recipients of your gifts and describing their programs is available.

(See "How to Make a Contribution," page 7.)

The power of one – two – three children, all of whom have benefited from services funded by CFC contributions. After-school care programs, well-baby clinics, safe and affordable child care, and other programs help these and other children reach adulthood well-nourished, educated and free from disabling childhood illnesses.

Photos courtesy of the United Way

Help in time of need is what the agencies funded by the CFC provide — food for the hungry, hospice and home health care, shelter for the homeless, clothing and disaster relief.

CFC Support Brings Independence

BY CATHARINE G. SCHAUER

She's smart, carefree and headed to college thanks to Combined Federal Campaign contributions from people like Langley's Larry Cooper.

Only this female is different—and very special. She's an assistance dog provided for individuals with disabilities by Canine Companions for Independence, known as CCI.

CCI's primary missions are to provide hearing, seeing and social dogs to people with disabilities. To meet this end, they breed, raise and train dogs and also accept donations of dogs for the program; take special care to make good placements; and then provide training and refresher courses for each "team,"— the dog and its companion.

"It's time to start thinking of others in need—and not yours," Cooper, of the Internal Operations Group, says, "We have a lot, and we should think of those who do not. There are many agencies out there who need our help — our time, our contributions, our overall support. I especially support CCI. They help people with hearing and seeing needs to lead more productive and independent lives. They have a history of more than 20 years of success."

Cooper is a member of Langley's Disability Program Advisory Committee and Satellite Committee for People with Disabilities. He arranged to have a special program of CCI dogs at Langley several years ago. Attendees saw firsthand how well-trained and attentive the dogs are to their companions and how much the program improves life in general, physically and emotionally, for the owners.

"I know that people who really need a dog and can't afford one can have one as a result of support from people like me," Cooper explains. "We can and do make a difference!"

CFC – A Friend Indeed

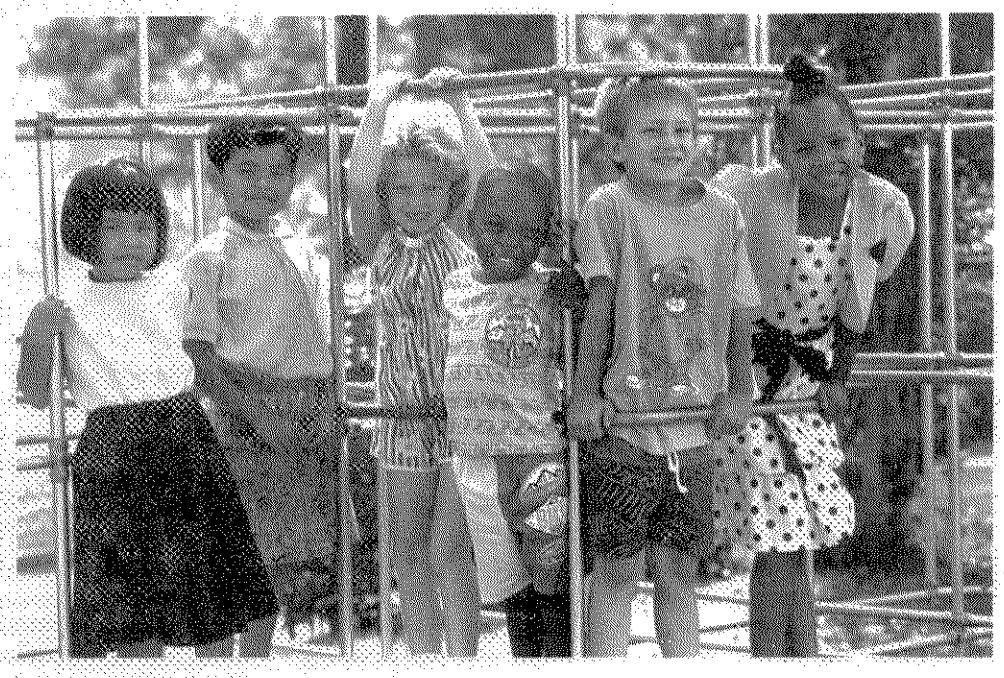
"The Combined Federal Campaign supports a vast number of agencies. I have and continue to be involved in supporting the CFC financially and as a member of the Langley's CFC committee. A few years ago, my family chose to solicit the help of one of these agencies.

"For several years both my husband and son had mounting medical bills. After the insurance company paid their portion, we were still left with several thousand dollars of medical debts. With the assistance of the Consumer Credit Counseling Service, we were able to pay all the medical debts and other nonrecurring debts in full.

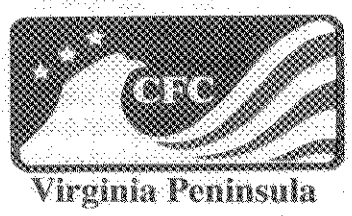
"The local office went out of its way to ensure we were helped promptly and in a warm and friendly manner. They made a difficult time very pleasant.

"The CFC agencies and their employees, both paid and volunteers, deserve our support because they are an extension of ourselves."

— Cassandra Favor, Financial Management Division



Children are our future, and they are in need of our help. Reach out to help feed, protect, and care for children in America and around the world. Your CFC contributions provides funds to Big Brothers/Big Sisters, the American Red Cross, human and civil rights organizations, medical research foundations, animal and environmental protection groups, senior citizens organizations and a host of local organizations that benefit the citizens of the South Hampton Roads, the Virginia Peninsula and greater Williamsburg areas. Your pledge of a donation ensures continuation of services that have far-reaching beneficial results. You hold "The Power of One" in your hands.



The Virginia Peninsula Combined Federal Campaign Is

- A program of the people in 50 Federal workplaces on the Virginia Peninsula
- Helping to make real differences in the lives of real people
- Quality volunteer leadership
- A once-a-year opportunity
- 35,000 men and women being invited to share
- Raising between $1million and $2 million
- Raising funds mostly through payroll deduction
- Caring character made visible
- For ourselves and those we care about
- A cost-effective campaign for nearly 1,300 accountable human service agencies and federations
- Unique in all the world.

Contributed by the Virginia Peninsula CFC office

How to Make a Contribution

There are several ways for employees to contribute to the 1995 Combined Federal Campaign: (Payroll deductions begin January 1996)

- Employees may contribute to a specific agency
- Employees may contribute to specific federations that represent a broad range of agencies
- Employees may contribute to one of four pools of federations/agencies:
  - — The AAAA pool, for distribution to all local and national federations/agencies
  - — The IIII pool, for distribution solely to all international federations/agencies
  - — The LLLL pool, for distribution solely to all local federations/agencies
  - — The NNNN pool, for distribution solely to all national federations/agencies
- For those who do not designate their contributions, gifts will go, by regulation, to the AAAA pool.
- The Langley CFC Home Page contains the Index of Agencies and Codes on the Internet that can be accessed using the following address: http://AGATE.larc.nasa.gov./cfc/cfc.html
  Langley is the first federal agency in the Hampton Roads area to offer this information on the Internet.

A smile like this one makes you know your contribution makes a difference in one life.

Internet Fair 2 – Focus on the Future

The second annual Internet Fair is being held at the H.J.E. Reid Conference Center, Oct. 23 and October 24 from 9 a.m. - 4:30 p.m. Wolfgang Tölle, managing director for Virginia Center for Innovative Technology, will give a keynote address at 11:30 a.m., Oct. 23. The mission of the fair is to exchange NASA and Hampton Roads information technology while emphasizing challenges and solutions for the future. The general public may attend the fair but must preregister.

Focus Areas

The fair will include exhibits from Langley, local businesses and universities. These exhibits, which highlight the cost benefits of information technology for NASA and the public, are divided into focus areas.

Projects that show how Langley is integrating World Wide Web (WWW) and other technologies into its business processes will be demonstrated. Detailed information can be found for reengineering, training, wide-area information distribution, institutional management systems and decision analysis tools.

Visitors will see the many technological businesses in the region ready to assist in meeting present and future needs.

Attendees will witness the wealth of local schools that have achieved full Internet access. See and hear how teachers, students and organizations are working together to provide the next generation affordable access to the vast library of information available via the Internet.

Learn how Internet services and tools are reshaping the community to achieve equal access for everyone, and see how the fine arts as well as high-tech industries are embracing new technologies. Hear how local media is distributing information and combining forms of media to meet increasing customer needs.

For More Info

The Fair is sponsored by the WWW team, composed of members throughout Langley. For more information, visit the Internet Fair home page at URL http://www.larc.nasa.gov/if2/ or call Gretchen Gottlich at 42303.

Meet Me at the Fair

BY DONNA ROPER

"Would you like to crash an airplane?" asked Dr. Karen Jackson of the Landing and Impact Dynamics Branch. "Sure" was the response as a fourth-grade class gathered around the mock-up of the crash facility to learn why anyone would crash airplanes for a living. These students were just a few of the 10,000 fourth-graders who visited the Langley exhibits at the Virginia State Fair between Sept. 21 and Oct. 1.

Langley's exhibits were located in the Commonwealth Technology Building, near the main entrance of the Fair. This year was the first time that the fair had a building dedicated to the theme of technology and the information superhighway. Fair officials hoped that the exhibits in this building would heighten awareness of the significant impact that science and technology have on people's lives.

According to Dr. Joe Heyman, deputy director, Technology Applications Group (TAG), "The fair was a great opportunity for us to educate the public about how our programs and technology transfer process benefit them directly."

Photos by Fred Jones

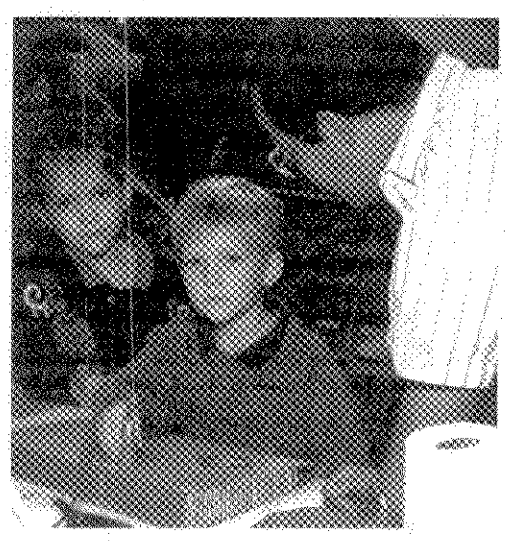
Dr. Karen Jackson demonstrates the crash facility to fourth grade students.

Langley's TAG and TOPS on the World Wide Web (WWW) were two of the 15 exhibits showcased at the fair. Many of these exhibits were designed to show how NASA develops technology and then passes it on to industry.

At Dr. Min Namkung's exhibit, visitors could use a hand-held instrument to detect cracks in an airfoil. Langley developed the technology and licensed it to KrautKramer Branson for production of the "Crack Finder."

Two technologies in the "Spinoffs" exhibit included the infrared beacon used in Desert Storm and the Fetal Heart Monitor, originally developed with Native Americans in Washington. Other interactive exhibits were designed to educate the public and spark their imagination. Visitors learned about aeronautics and wind tunnels using the remote controls to operate an F-18 freeflight model or watching an airplane model in a small-scale spin tunnel.

At the "Smart Materials" exhibits, visitors discovered how Langley researchers plan to use piezoelectrics (pressure electricity) devices as mechanical actuators for flutter and jitter control to make quieter cars and plane cabins.



Dr. Min Namkung shows Susannah and Micah Miller the Crack Finder.

In keeping with the building's "information superhighway" theme, one popular exhibit was "NASA on the Web." Here visitors used the WWW to learn about NASA programs and find photos of its facilities and astronauts.

"The public response was favorable and supportive of NASA," said Bert Rockey, a retiree staffing the information booth. "Many visitors commented that they didn't know we did so many things."

A "More Bytes for the Buck" exhibit showed visitors about Langley's High Performance Computing and Communications (HPCC) K-12 program, a partnership between Langley, New Horizons Regional Education Center and six school divisions, that has developed a low-cost networking approach providing direct Internet access for about 140 schools.

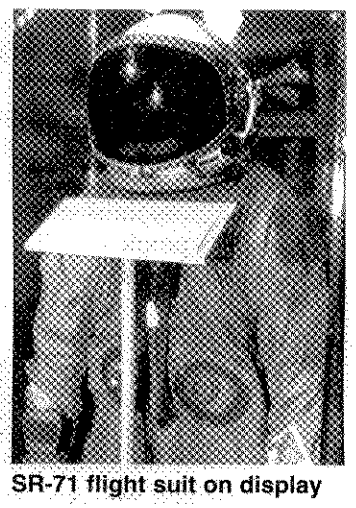
Fair exhibits were sponsored by the Office of Public Services, TAG, HPCC K-12 program, and the Materials, Structures, Fabrication and Operations Support divisions.

Pushing the Limits of Flight

Exhibit Highlights a Century of Flight Research

BY MARK CHAMBERS

With help from the Smithsonian's National Air and Space Museum in Washington, D.C., which donated and loaned the core elements, a new exhibit gallery highlighting major accomplishments and innovations in flight research has been installed in the Virginia Air and Space Center. The exhibit traces the development of manned winged flight technology from its infancy to the evolution of today's complex systems. It is dedicated to the feats of those who sought to expand the frontiers of flight.



SR-71 flight suit on display

The new exhibit should be of special interest to Langley staff members since they contributed greatly to many of the flight accomplishments depicted. The gallery emphasizes the importance of data obtained both in flight and on the ground, and is divided into three chronologically arranged sections. The sections are preceded by a dedication to the exploits of glider pioneer Otto Lilienthal, who helped to attract international interest in the advancement of manned winged flight.

Section one, entitled "Flight Testing from the Wright Brothers through World War II," chronicles early attempts at powered flight. It addresses the contributions of early NACA research into the basic flying qualities of aircraft and the use of the NACA low-drag cowling which earned NACA the 1929 Collier Trophy, aviation's highest achievement award. Also featured are the contributions of Jimmy Doolittle, the development of flight instrument and navigational aids, and testing of the first aircraft with a pressurized cabin, Lockheed's XC-35.

Flight testing of prototype military aircraft during World War II is also displayed.

"The Supersonic Breakthrough," covers the challenge of breaking the sound barrier and the development of high-performance swept-wing jet aircraft. Included in this section are innovations such as the testing of VTOL (Vertical Takeoff and Landing) aircraft.

The final section, "Flight Research Confirms New Design Theories," shows the development of advanced high-performance aircraft and the design challenges that had to be overcome, including making conventional aircraft fly faster than the speed of sound, and testing aircraft that could fly to the edge of space. These tasks involved heavy use of NASA's test resources and the engineering expertise of its personnel.

The gallery also features several floor exhibits and a hanging EA-6B Prowler model that was tested in Langley's historic 30 x 60-Foot Full-Scale Tunnel. Floor exhibits include an SR-71 flight suit and a refurbished High-Speed Flight Research (HSFR) Center communications jeep. The gallery is open for visitor viewing daily from 10 a.m. to 5 p.m.

A High-Speed Research Center communications jeep is part of the gallery floor exhibits. *Photos by Fred Jones*

Volunteers Needed at the Va. Air and Space Center

The Virginia Air and Space Center is seeking volunteers to serve as docents for weekdays and/or weekends. Docent training will begin Oct. 28 and Nov. 1 at 1 p.m. in the center's Orientation Theater. For more information on the full training schedule or for opportunities to serve as a greeter or an assistant in the Teacher Resource Center, call Bert Smith at 727-0900, ext. 735.

Career Transitions Are Smooth with Help from CTAP

On Sept. 11, President Clinton signed a memorandum instructing all federal agencies to develop career transition programs. A program that offers career transition training is available to all Langley civil service employees and their spouses. The Career Transition Assistance Program (CTAP) Center is staffed with professionals from Resource Consultants, Inc., a career transition consulting firm, headquartered in Vienna, Va., that serves a large number of federal employees.

Langley and NASA as a whole are taking a very strong, proactive role to provide a variety of career-oriented seminars and counseling services for their employees. "The Career Transition Assistance Center is enthusiastic about its ability to offer 'one-stop' career services to our Langley clients," said Joe Aloisi, center manager and senior counselor. "The center is staffed with qualified and experienced professionals who can work successfully with NASA's scientific, technical and administrative personnel."

CTAP's services include seminars and presentations for those seeking new career options. Several two-day seminars have been conducted as well as a one-day seminar titled "Want to Start Your Own Business?" A specially-designed seminar on career options was presented to those early retirement employees who left Langley in March 1995. A Financial Planning Seminar will be presented Oct. 10.

Other CTAP services include videotaped interview training; resume design and preparation; negotiation skills training; extensive one-on-one counseling; access to the CTAP's job banks and databases, listing government and private industry positions throughout the world; electronic bulletin boards that are updated daily with worldwide job openings; and federal application and cover letter preparation. Employees may also use laser printers, fax machines, copiers and telephones at the career center located in Building 1232-A, second floor (6A Langley Boulevard).

Serving Langley via CTAP's services along with Aloisi are Martin Brown, senior counselor, and Jeanette Graebener, systems administrator. Aloisi and Brown have extensive career management, consulting and university teaching backgrounds. Graebener assists clients in the use of databases and in scheduling services. She has served CTAP for four years in both the United States and Germany. To reach the center, call ext. 45000, fax 45040 or QuickMail them at CTAP. For one success story, see below.

Ellis' Rebirth — Life after Langley

Sharon Ellis of the Computational Mechanics Branch often thought about going into business for herself. While she considered NASA's "buyout" to Langley employees, she asked herself. "What will I do if I accept it?" In thinking about alternatives, she said, "I always knew I like working with people, and I had the administrative skills needed to run a business, so I decided to give it a try."

What helped her on the road to success? Ellis credits CTAP and her husband, family and friends. She said, "The staff at Career Transition Assistance Center was very helpful. They answered my questions, provided reference materials, and helped with marketing and networking suggestions and recommendations. I also attended their seminars."

The result is Alternative Temporary Workforce, Inc. (A-TEMPS), a temp agency that Ellis presently owns and operates. "I applied for a license in February, began soliciting resumes in March and began interviewing candidates and marketing my services in April. Since then, I have eight large client companies, and a list of 40 others who want to use A-TEMPS services."

After 17 years of government service, eight years at Fort Monroe, and nine split between Langley and NASA Headquarters, Ellis saw that, "local companies are reorganizing and downsizing but their work loads often remain constant. It was a good time for me to offer an alternative way to handle their work loads using a temporary workforce."

Ellis is a member of Virginia Peninsula Chamber of Commerce, The Peninsula Women's Network, Tidewater Regional Minority Council and Virginia Minority Council. Ellis said, "Here's what I like best — It's great working for myself. I call the shots, and I like the unlimited earning potential. If I work hard, I can make money and enjoy what I do."

Science-By-Mail Program Links Students With NASA Researchers

BY CATHERINE WATSON

In the late 1980s, the Boston Museum of Science began a unique program to link scientists and engineers with schoolchildren in grades 4 to 8. The goal – to get kids excited about science and engineering. Since 1989, many of these children have teamed up with researchers at Langley to explore the scientific method and learn how research is really done.

As part of the Science-By-Mail program, students receive two science activity packets during the school year that detail that year's topic(s). Each packet contains five or six simple experiments and several advanced experiments. Each team or classroom group is paired with a scientist or engineer pen pal who gives them guidance and encouragement as they go through the activities. This school year, the students will focus on the science of sports and planetary science.

David Bowker, a retired NASA scientist, has worked with Science-By-Mail students for several years. "[It's] fun getting in touch with them and answering their questions," Bowker said. The activities in the two packages lead up to a grand challenge at the end of the year. This grand challenge lets the students use their new knowledge in what Bowker called "inventive work." As their scientist pen pal, Bowker would grade the students' work as they progressed through the activities and let them know how they were doing. Bowker said he worked mostly with students in rural areas who were "very excited" to work with a scientist.

Dr. Mary Ann Smith, a senior research scientist in the Atmospheric Sciences Division, has been a Science-By-Mail participant since 1989. Smith said the program has been especially important for girls. "The girls," Smith said, "have a chance to write to a real scientist, who's a woman." While working with Smith on their Science-By-Mail project, a group of fourth grade girls in Virginia Beach formed a science club and continued to write to Smith after the project was over. Smith said a girl in Poquoson has been her pen pal for the last two years after they met through Science-By-Mail.

Bart Singer, a research engineer with High Technology Corp. working with the Fluid Mechanics and Acoustics Division, has been in the program for four years. Singer said he works the projects himself at the beginning of the school year to look for pitfalls so he can forewarn his pen pals. Singer's most memorable project was the design of an environmentally-friendly city. The activity packages gave the students the layout of the land where their city would be built – the location the forest, river and hills. The students were tasked to design a city around that environment. Singer said, "It was also interesting to see what it's important in their lives. They had two shopping malls with the same [square] area as all the homes." As part of the project, Singer said the children learned about such topics as insulation and composting. They studied insulation by putting a box in a refrigerator and recording the change in temperature inside the box. They even built their own compost piles.

From 1989-1995, the Science Museum of Virginia was responsible for registering Virginia researchers and teaming them with Virginia schoolchildren. This year the registration is being handled by the Boston museum. According to Charlotte Pritchett, the previous registrar for the Science-By-Mail program at the Science Museum in Richmond, "They still need Virginia scientists." Pritchett said there were more than 1,000 Virginia children involved in the program last year. "It can be used by individuals too . . . home schoolers find it very useful," Pritchett said.

At the end of each school year, the researcher pen pals can meet their student pen pals at a Science-By-Mail day, which will be held in Boston this year. Those interested in volunteering should contact Melissa Cotter at the Science-By-Mail headquarters, Boston Museum of Science, (617) 589-0437 or (800) 729-3300. The Science-By-Mail program is partially funded through the National Science Foundation.

Retirement and Financial Planning Seminar Announced

Thinking about retirement or possible early retirement? Some employees may be considering combining retirement with a part-time career. Others may be contemplating starting their own business ventures. Financial considerations undoubtedly play a key role in making such decisions.

The Career Transition Assistance Program Center (CTAP) has invited the president of the Hampton Roads Society of the Institute of Certified Financial Planners, accompanied by panel members from the institute, to lead the seminar. The seminar will be Tuesday, Oct. 10, from 9 a.m. to noon at the Pearl I. Young Theater, 5A N. Dryden St. Presenters will focus on retirement costs, savings, investment strategies, IRA rollovers, Social Security, distribution options and tax impacts of early cash payouts. The participative seminar will also include a question and answer period. Seating is limited therefore reservations are necessary. Call the career planning center at ext. 45000.

Meteorological Society to Meet

The American Meteorological Society, Hampton Roads Chapter meetings are open to all. The next one is at Keith's Dockside in Phoebus, Wednesday, Oct. 18, at 6:30 p.m., with dinner at 7 and a speaker from 8 to 9. Call Dr. Vic Delnore, ext. 41812, for more information.

Health Corner

Desynchronous Conditions Discussed

The human body is highly chronobiological, and synchronized to the 24-hour clock called circadian rhythms. Shift workers and transmeridian flyers often experience conflicts between their natural, internal biorhythms and external time cues, a condition called desynchronosis.

Desynchronosis is associated with a variety of symptoms, both physical and emotional. The lecturer, Leroy Gross, M.D., M.P.H., Medical Director, will discuss some important physiological and psychological effects of desynchronosis on worker performance, and recommended countermeasures.

The seminar will be held on Oct. 12 at 2 p.m. in the H.J.E. Reid Conference Center.

Happenings

WANTED: A copy of *Stability Criteria for Linear Dynamical Systems* by Brian Porter, Academic Press, 1968. Contact Susie Newman at the Hampton Public Library at 727-1900, 851-4450 at home, or snewman@leo.vsla.edu.

AIAA OYSTER ROAST: American Institute of Aeronautics and Astronautics' annual Oyster Roast will be held Monday, Oct. 16, 4:30-8 p.m. on the Activity Center's picnic grounds. Cost for AIAA members and family is $7.50 each; student members, $4.50; nonmembers, $10; children under 10, $3; children under 3, free. Reservations are requested by Oct. 12 to Tom Gates, 864-3400, or Beth Lee-Rausch, 864-2269. NOTE: Join AIAA and eat free!

FOR RENT: Furnished condo near NASA, one-week minimum, utilities included, 2BR, 2-1/2 baths, jacuzzi, VCR, hotel rates. Call Chuck at 988-2851.

EXCHANGE SHOP: During October, receive a 10 percent discount on business card orders. Call ext. 41585 for more information.

FOR RENT: 2BR, 1-1/2 bath townhouse in Magruder Commons, Hampton. Equipped with all appliances, fenced back yard, storage room, wall-to-wall carpet, $500/mo. Security deposit and credit check required; available Oct. 1. Call 766-8695, days, 868-0046, evenings.

FOR SALE: In Courthouse Green, Newport News, 3BR, 1-1/2 bath townhouse, new paint and carpet. Asking $48,900. Call 877-9066.

SQUARE DANCE: Classes are in session Tuesday evenings at Sedgefield School, Newport News. Caller/instructor is Frank Vaughan. Call Lloyd Keafer at 898-5961 for more information.

SKI WEEK: Last chance to sign up for the fifth annual Agency-wide ski trip, Jan. 13-20 at Crested Butte, Colo. Trip is open to all NASA personnel, contractors, retirees, friends and family. Cost is $889 double occupancy. Contact Michael Schooley at ext. 48524 or 867-8093 for more information.

LAA ACTIVITIES: The annual **Turkey Shoot** will be Saturday, Oct. 28 from 9 a.m. to 3 p.m. Raffle tickets are available from members of any LAA-sponsored club/league, and cost $.50 each. A **Country Western Dance** will be Saturday, Oct. 14 at the H.J.E. Reid Conference Center, 6:15 p.m.; lessons at 7 p.m.; dance from 8 to 11 p.m. Cost is $3 per person. (No outside drinks allowed) The **LAA Social** is Oct. 13 from 4 to 8 p.m., with entertainment by the Hampton Express starting at 4:30 p.m. **LAA Raffle** will feature a Kenwood CD player. Cost is $.50 per chance, available at the LAA lounge. The drawing will be at the **Halloween social hour**, Oct. 27. For information, call ext. 46369.

FOR SALE: Canoe, Old Town, 17', new yoke, thwart, seat webbing and skid pads, in excellent condition, $650. Call 247-5144 before 9 p.m.

FOR SALE: Hampton Club 2BR condo, 1 bath, wall-to-wall carpet, extra appliances, ceiling fans, vertical and mini-blinds, security system, pool and fitness center, near Langley and shopping. Call Dorothy Burch at 827-1400.

Langley Disability Awareness Day is Oct. 19

All employees are invited to attend Langley's Disability Awareness Day from 8 a.m. to 3 p.m., Thursday, Oct. 19 at the H.J.E. Reid Conference Center. Highlights will include opening remarks at 10 a.m. and "Chairman of the Court" wheelchair tennis at 1 p.m. on the tennis courts, followed by wheelchair basketball inside the gym. Other activities are Kids on the Block, Canine Companions, free diabetes screening, blood pressure tests, hearing and eye testing. The awareness day is sponsored by the Satellite Committee for People with Disabilities. Civil service employees should charge their time to Job Order A5006. For information, call Marylou Phillips at ext. 42516.

Step Out on Strokes and Heart Attacks

Grab a friend and lace up those sneakers. Langley is forming a group of walkers to participate in this year's American Heart Walk, Oct. 14 at 1 p.m. at Newport News Park. The walk is five miles and anyone can join: co-workers, friends and family. Help fight against heart attacks and strokes. Walk in memory of someone you know with heart disease. For more details, and to register, call the Fitness Center at ext. 46387.

VAN POOL: The Gloucester van pool has openings for workers on the 7:30 a.m. to 4 p.m. shift. For information, contact Jon Thompson at ext. 47254, 693-2827 or j.e.thompson@larc.nasa.gov

FOR SALE: Two karate suits, a size 3 (about middle-school student size) and one larger size (adult), best reasonable offer. Call 898-8463, evenings.

FINE ART: The Peninsula Fine Arts Center Annual Juried Exhibition 1995 is on display until Nov. 5, Tuesday through Sunday from 10 a.m. to 5 p.m. The show contains a painting by Lockheed Martin's Mahyar Malekpour who works in the Systems Integration Branch. The center is located adjacent to the Mariner's Museum in Newport News. For information, call 596-8175.

Presenting the CFC cake, following the Sept. 28 kickoff ceremony for the 1995 Combined Federal Campaign, are, left to right, CFC Committee Chairperson Irving Abel, chief of the Structures Division, Robert I. Bonar Jr., president and CEO of the Children's Hospital of the King's Daughters, and Center Director Paul F. Holloway. The CFC Office is located in Building 1218, room 209, Mail Stop 950. The office will be open Oct. 2 to Oct. 20 from 8 a.m. to noon.

Photo by Fred Jones

Researcher News

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 21 ❖ October 20, 1995

Tires for Tomorrow's Commercial Air Transports

BY MARK CHAMBERS

NASA Langley is helping industry develop lightweight, heavy-duty main gear tires for the nation's next generation of large commercial transport aircraft. These new aircraft, including the conventional Boeing 777 and an eventual high-speed civil transport, have been designed to serve as mainstays of the U.S. long-range commercial air fleet well into the next century.

Widely recognized for its pioneering research involving the effects of aircraft and automobile tire hydroplaning, and its research role in the development of lightweight, durable tires for the space shuttle orbiter, Langley was called upon by the Michelin Aircraft Tire Corp. to begin mechanical properties testing of advanced radial aircraft tires. The Langley/Michelin partnership is being supported under the provisions of a Space Act Agreement.

The Center has a unique landing loads facility, constructed to test aircraft tires and landing gear systems. "We can do some really good things concerning tire cornering forces, loads, wear and so forth," said Langley Tire Project engineer Bob Daugherty.

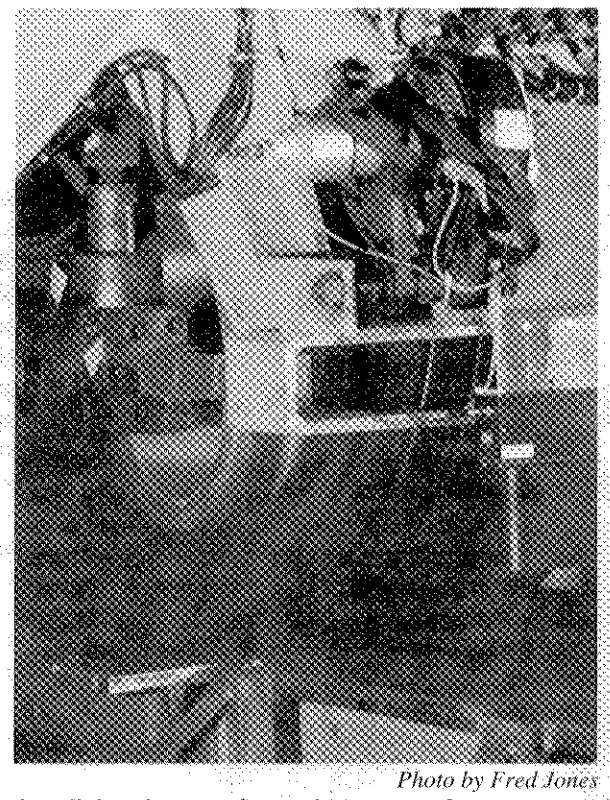


Photo by Fred Jones

A radial main gear tire undergoes performance tests on Langley's "frictionless platform."

Helping the Customer Make Better Tires

The large main gear tire tests at Langley are designed to define the mechanical properties of the tires at different loads. According to Daugherty, the "rated load" of these large tires can be nearly 30 tons. The requirements of aircraft manufacturers are to test the tires at double the rated load, because, in most cases, if a tire fails, the other tire on the axle will have to bear the brunt of the load.

The Challenges of Heavy Duty Aircraft Tire Research

The tests at Langley involved using a carriage test bed equipped with a test tire that was run at slow speeds. The tests were intended to define the relaxation length of a tire or the length of tire reaction time to step input. Daugherty said, "As the tire starts rolling, it starts grabbing and trying to go sideways but it can't, so the side force that it develops climbs and reaches some constant value. The distance it takes to reach the value, or steady force, is known as the relaxation length." Yaw relaxation lengths were also measured in which the tire was turned against the direction in which it was to be towed. Certain loads were exerted on the tire which was then towed forward.

As an aircraft rolls down the runway, providing a steering input takes a certain amount of time before that input has an effect on the direction in which the aircraft is traveling. The response of the tire to the change in direction at specific speeds can be put into simulators which allows pilots to feel how the tire reacts (i.e. is it quick or slow) in actual landings and taxiing. The tendency of the wheel on a particular landing gear unit to return to the neutral or straight position, was also measured. These factors ultimately have an impact on how the aircraft landing gear and flight systems should be designed.

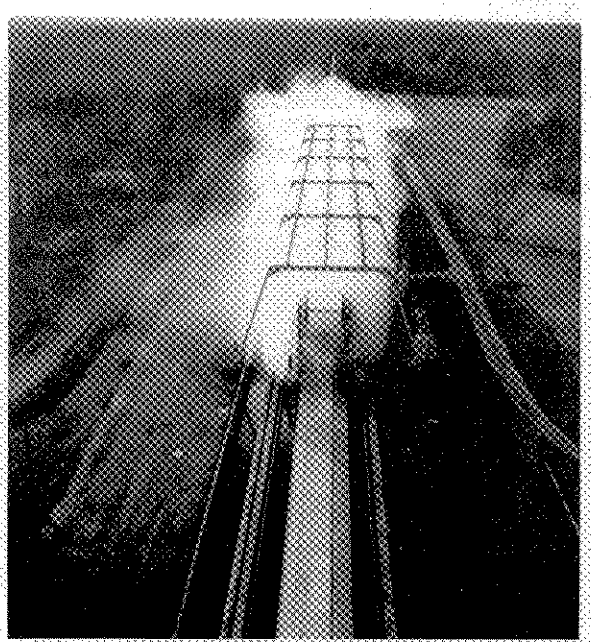
"Michelin knew Langley's Aircraft Landing Dynamics Facility (ALDF) could conduct tests at nearly 60 tons of vertical load which would meet U.S. certification requirements for these advanced radial tires," Daugherty said. In addition, unyawed relaxation length in the tires was also measured in which a side force was created in a tire.

Daugherty said, "The Langley landing loads team decided that the best way to induce such a force and measure its effect was to put the wheel on the surface and pull the surface sideways to induce a preload into the tire, then roll it forward so that the side force value returns to zero." To conduct such a test, a new 15-foot-long simulated steel runway was built in the Landing Loads carriage hangar. A "frictionless platform" was positioned at the end of the runway. The platform rotates and can be pulled sideways, pulling the test tire with it. "This was a big challenge. It has taken about six months to come up with this system and now we are three-quarters of the way through with these tests. It's working extremely well," Daugherty said.

Customer Impressed

So far, Michelin has been so impressed with the advanced tire research that they have requested that

Continued on Page 3



NASA Langley Research Center

Langley's Aircraft Landing Dynamics Facility offers a capability in aircraft tire testing second to none throughout the world.

LASE Instrument Aces Final Validation Tests

BY CATHERINE WATSON

Flying out of Wallops every other day for 19 days this past September, the Langley Lidar Atmospheric Sensing Experiment (LASE) underwent its final validation tests. "It could not have gone better," said Dr. Edward Browell, the LASE principal investigator, "I give it an A-plus. The LASE instrument was really exceptional. It performed without any lost data whatsoever, and no down days for instrument problems."

Photo by Carole Chapman

The ER-2, a former spy jet, takes off to probe the atmosphere with a new laser water vapor sensor. It was part of Langley's Lidar Atmospheric Sensing Experiment (LASE) validation studies.

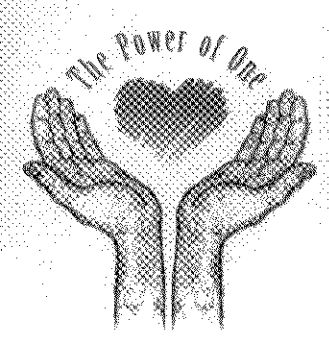
The LASE instrument, flying aboard the NASA ER-2, is the first autonomous, aircraft-based lidar (Light Detection and Ranging) system to measure water vapor in the atmosphere. The LASE instrument transmits laser light down into the atmosphere and measures the amount of light reflected back to detect and measure the amount of water vapor present. Water vapor plays an important role in many atmospheric processes related to weather and climate change, the global water cycle and atmospheric chemistry.

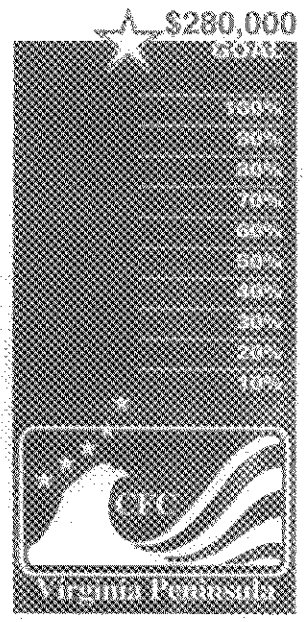
Continued on Page 3

CFC Needs the Power of Your Donation

Members of the local, regional, national and international community depend on your Combined Federal Campaign (CFC) donation. Please talk with your "key person" to set up a payroll deduction or one-time donation to this year's CFC.

You can make a difference in the lives of others through your CFC dollars as well as with your time and efforts as a volunteer. Exercise "The Power of One" in your local area.





on the Virginia Peninsula

News Briefs

Around the Agency

SPACE-AGE FORCEPS COULD MAKE INFANT DELIVERY SAFER – NASA technology, using composite materials and fiber optic sensing, may soon be at work in hospital delivery rooms, making childbirth safer and easier. Marshall Space Flight Center, Huntsville, Ala., recently signed a Space Act Agreement with Dr. Jason H. Collins of the Collins Clinic in Slidell, La., to redesign the obstetrical forceps used to properly position an infant in a mother's womb prior to delivery. The research will seek to identify a suitable composite material from which safer forceps can be made, and also help design instrumentation to measure the forces being applied to an infant during an instrument-assisted delivery. "Metal forceps currently used do not allow the attending physician to assess the force the instrument is placing on the infant," Collins said. "If excessive, the infant could be injured." The instrumentation of the forceps will benefit medical students by allowing obstetrical students to learn to use forceps within safe limits before entering practice. "We hope to complete work on the new forceps early next year," said Stan Smeltzer, design engineer at Marshall's Structures and Dynamics Laboratory. "Using composite materials will help ensure that a safer distribution of pressure will be applied to the infant through the forceps used by the physician," Smeltzer said. "By using space program instrumentation technology, fiber optic sensors will be embedded in the composite material during the manufacturing process," said Seth Lawson, manufacturing engineer at Marshall's Materials and Processes Laboratory. "These sensors will enable the physician to monitor forces on the infant throughout the delivery."

Astronaut Presented "Silver Snoopy" Space Award to Five Langley Employees

Julia Boatwright Applin

Richard Couch

Dr. Peter A. Gnoffo

Curtis R. Regan

Patrick Troutman

Astronaut Wendy Lawrence

Astronaut Navy Lt. Cmdr. Wendy Lawrence presented Silver Snoopy awards to five Langley employees for their outstanding contributions to the U.S. human spaceflight program.

Awards were presented to Junilla Boatwright Applin, Aeronautical Systems Engineering Branch for her work as technical project engineer for the Gas Permeable Polymer Materials (GPPM) shuttle project; Richard Couch, Sensor Systems Branch, for his role as operations director of the STS-64 Lidar In-space Technology Experiment (LITE); Dr. Peter A. Gnoffo, Aerothermodynamics Branch for his work in support of the space shuttle program in the field of computational fluid dynamics; Curtis R. Regan, Electronic Systems Branch, for his work in developing the Digital Data Handling Unit for LITE; and Patrick Troutman, Spacecraft and Sensors Branch, for significant contributions to the international Space Station Program.

The Silver Snoopy awards began with the Apollo program as a way of recognizing individual workers who contribute to the success of the U.S. human spaceflight program. The Silver Snoopy is based on the dog in Charles Schulz's Peanuts comic strip.

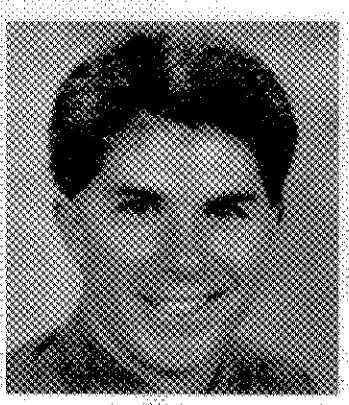
Lawrence was a mission specialist aboard the Space Shuttle Endeavour (STS-67) in March 1995.

We Goofed!!

In the Oct. 22 issue, we mixed up two of the photos of the graduates from the 1995 Engineering Technician Apprentice Engineers Program. Our apologies to Eddie D. Rhyne and Chad E. Rice, and for the record, they appear at right above their own names.

— Researcher News staff

Eddie D. Rhyne


Chad E. Rice

Finneran to Head Public Affairs

Michael Finneran

Michael Finneran has been named head of the Office of Public Affairs. In this position, he supervises all news media relations on Center.

Finneran has worked in Langley's public affairs office on two separate occasions, from September 1991 to February 1993 and from October 1994 to the present. In between, he served in the public affairs office at Goddard Space Flight Center in Greenbelt, Md.

Prior to joining NASA, Finneran was a daily newspaper journalist, first a reporter and then an editor, and has won several writing awards. He worked at the Miami Herald; the Virginian Pilot; the (Bergen) Record in Hackensack, N.J.; and the Fitchburg Sentinel in Fitchburg, Mass.

Key projects in which he has been involved at Langley include spearheading publicity for the development of technology for a next-generation supersonic passenger airliner, the transfer of NASA technology to private industry, and the development of advance-warning wind shear sensors for the airline industry. The media campaign for Langley's Airborne Wind Shear Sensors Program won the Aviation/Space Writers Association 1993 Award of Excellence for Government Public Affairs.

At Goddard, Finneran was responsible for space sciences public affairs. He was leader of that center's Comet Shoemaker-Levy public affairs campaign in July 1994, when Goddard served as the media's "Comet Central." He was co-leader of public affairs activities for the Goddard-managed Hubble Space Telescope First Servicing Mission in December 1993.

Health Corner

The Office of Occupational Health Services announces the scheduling of Mammography Screening for 1995. As in the past, a Riverside Mobile Mammography van will be located in the Health Clinic parking area on Nov. 13, 20, 27, 28, 29, 30, Dec. 4, 5, 6, 11, 13, 18, 21 and Jan. 8, 11 and 22.

The cost is $75, and payment may be made by cash, check or Visa/MasterCard. In order to file under your personal health benefits bring your health card to the screening. A receipt will be provided for insurance purposes.

The American Cancer Society states that breast cancer will strike one in nine women during her lifetime. Early detection through breast self-examination and mammography screening is the best "preventive medicine."

This on-site service is open to all Langley employees, contractors and retirees and their family members. To make an appointment during working hours, call the Riverside Diagnostic Center at 594-2773 and state your NASA affiliation. Civil service employees may charge the time to Job Order B1008.

Women's Seminar

A women's health seminar on "Mammography and the Importance of Breast Self-Examination" will be presented by Marian Rupp, a registered mammographer at Riverside Regional Medical Center, on Nov. 8 at 2 p.m. in the Pearl I. Young Theater, 5A North Dryden Street. Rupp will discuss the guidelines for mammography, risk factors for breast disease and the importance of breast self-examination.

For more information call Karen Ridlon at ext. 43194. Civil service employees may charge their time to Job Order B1008.

CFC Depends on "The Power of One"

News Researcher

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Tuesday following the date of this issue.

Managing Editor ..... Catherine Watson

Editor ..... Ann C. Gaudreaux, Science and Technology Corp.

Assistant Editor ..... Jeane Shanks, Science and Technology Corp.

Photojournalist ... Carole Petrachenko Chapman, Science and Technology Corp.

Photographer ..... Fred Jones

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.

LASE . . .

Continued from Page 1

Testing LASE

To test how well LASE worked, water vapor data from the LASE instrument was compared to data from instruments aboard a NASA C-130 aircraft and a NASA Lear jet that flew below the ER-2. A lidar system similar to LASE was also flown aboard the C-130 to compare its remote measurements of water vapor and aerosols with LASE over the same region of the atmosphere. Instrumented balloons launched from Wallops and Langley also measured water vapor for comparison to LASE and the instruments on the other two aircraft. After an initial analysis of the LASE data Browell said, "We're seeing very good agreement between the LASE measurements and the measurements made from the Lear, the C-130 and the balloons."

During the 10 LASE flights, the team managed to sample all the case studies they had planned to test, including documenting the development of a sea breeze, flying across a cold front and studying cirrus cloud formation. The validation team also had the opportunity to fly LASE over a hurricane.

LASE Probes Hurricane Luis

On Sept. 8, as Hurricane Luis stormed across the Atlantic just off the East Coast, LASE flew across the hurricane to examine the inflow of water vapor into the storm. The ER-2, an extensively refitted former spy plane known as the U-2, flew over the hurricane at about 70,000 feet. Browell said, "It's a first for making any laser water vapor measurements around a hurricane. This will help us understand one of the major sources of energy that help feed a hurricane. We have never previously been able to see the distribution of water vapor flowing into a hurricane, and that is an important source of energy for sustaining and intensifying a hurricane."

The LASE Design

LASE has a modular design, that allows engineers to upgrade any portion of the instrument with improved technology, according to Browell. "One thing we'll be doing is incorporating some newer technology as it comes along that will not only enhance LASE's capability, but also test some new techniques we would want to incorporate into a future satellite system," he said.

The Future of LASE

The LASE system is nearing completion of its development, having successfully completed a series of engineering flights aboard the ER-2 in May and September 1994 and in June 1995. With the completion of this final validation experiment, the LASE system will be prepared for atmospheric investigations involving water vapor, aerosols and clouds. It will also be ready for developing and testing advanced laser technology and techniques needed for future spaceborne laser water vapor investigations. A spaceborne laser system similar to LASE could give scientists a more accurate view of the global distribution of water vapor than is presently available.

Browell said, "We want to begin using LASE in conducting more comprehensive atmospheric studies and taking advantage of our ability to look at cloud and water vapor information simultaneously . . . we're exploring several opportunities for the coming year." One future possibility, according to Browell, is to put a LASE-like system on a small satellite, a microsat, to study hurricanes.

Browell said, "This type of spaceborne lidar system can make a major contribution to our understanding of hurricane intensification," which would help forecasters better predict what a hurricane will do.

The large data set, more than 50 hours from the LASE instrument alone, obtained during the LASE final validation study will help atmospheric scientists better understand a wide range of atmospheric processes including how well atmospheric computer models predict the distribution of water vapor and clouds in the atmosphere, how water vapor and clouds affect the Earth's energy budget, how water vapor affects severe storm development, how water vapor enters the atmosphere from the Earth's surface and how water vapor varies across warm and cold fronts.

Browell added, "LASE has opened up a new era for laser remote sensing. LASE not only makes an important and unique contribution to atmospheric sciences research, but it leads the way to a future spaceborne lidar system for global measurements of water vapor, aerosols and clouds."

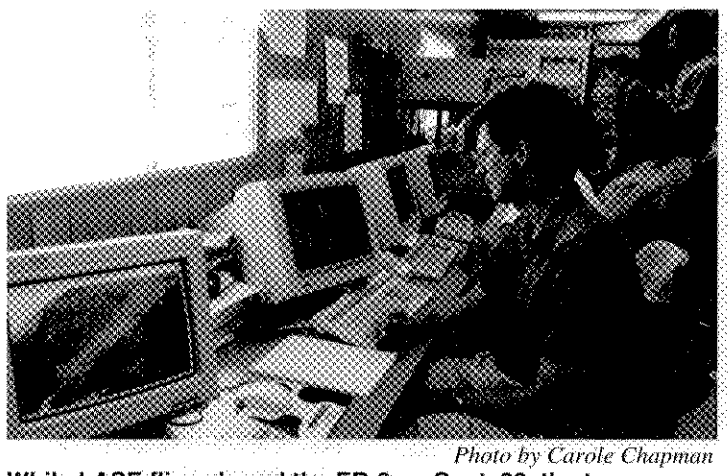


Photo by Carole Chapman

While LASE flies aboard the ER-2 on Sept. 20, the team works in an operations trailer at Wallops Flight Facility. Monitoring the LASE instrument are (front to back) Alan Little, Miles Riley (hidden), Chuck Antill and Frank Novak. Behind them, Dr. Ed Browell and Susan Kooi get a first look at real-time LASE data. These researchers are only a few of the more than 70 people who worked to make the LASE validation experiments a success.

Tires for Tomorrow . . .

Continued from Page 1

Langley perform an additional series of tire tests and have also expressed interest in establishing a long-term partnership with Langley.

"Kim Rappold, Michelin Aircraft Tire Test Facility Manager said, "We have been truly impressed with the professionalism and response of Langley Research Center."

Radial Tire's Future in U.S. Air Industry

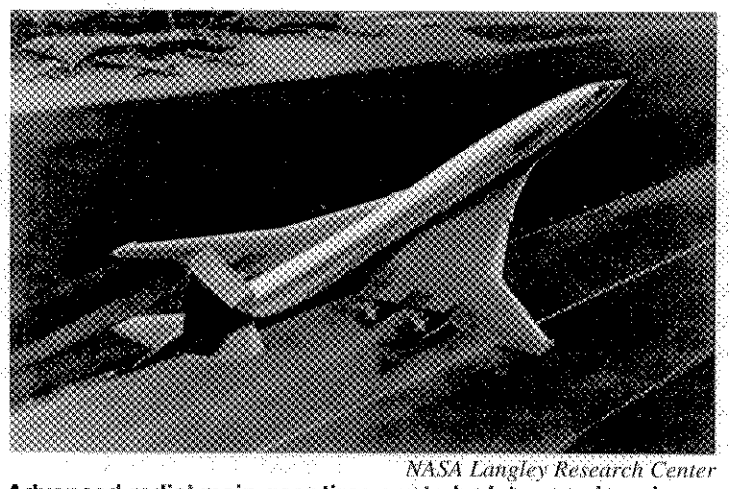
The huge radial tires like those used on the B-777, and envisioned for the HSCT, are the largest in commercial use. Radial aircraft tires are also relatively new to the aircraft industry in this country. More widely used by the Europeans, radial tires have proven to be lightweight, produce less drag and generate less heat.

According to Daugherty, by testing the tires in the U.S. and evaluating the data as NASA and Michelin have done it is almost certain that the radial tire certification process (aircraft tires are ultimately approved for use by the aircraft manufacturers) will be speeded up. "This will benefit everyone, the fuel costs and savings produced are just phenomenal," Daugherty said.

Currently, Michelin radial main gear tires are being used on the B-777. Plans are being made to use 18 advanced radial tires on our nation's envisioned supersonic transport. "Once our country gets used to flying radial tires, then airline companies can start retrofitting 737s, 747s, etc. The savings and durability factors also mean that the airlines will have to buy less tires in the future," said Daugherty.

Photo courtesy of Boeing

Radial main gear tires are being used on America's next generation of large conventional commercial jet transports, starting with the Boeing 777.



NASA Langley Research Center

Advanced radial main gear tires are to be later employed on the nation's envisioned supersonic transport.

NASA Minority Contractors of the Year Named

NASA Administrator Daniel S. Goldin named two firms as minority contractor and subcontractor of the year for their contributions to the nation's space program. Mnemonic Systems, Inc. (MSI), Washington, D.C., was named NASA Minority Contractor of the Year and MEVATEC Inc., Huntsville, Ala., was named NASA Minority Subcontractor of the Year.

"These two firms are on the cutting edge of technology and are indicative of industry's diversity and talent which contributes so greatly to the success and future of NASA," Goldin said.

MSI was recognized for developing the Agencywide Distributed Environment (ADE), a system that integrates the computing resources of all NASA centers. Artis G. Isaac is President and CEO of MSI, and has led the firm in its growth over the past six years from 28 employees to nearly 250.

MEVATEC Inc. was recognized for innovative science such as the development of the Optical Transient Detector (OTD), an infrared lightning detector. In May of this year, the OTD was launched in a low-Earth orbit and began sending scientific information on the occurrences and phenomenon of lightning. Nancy Archuleta, President and CEO, has spearheaded MEVATEC's growth from a five-person family business in 1988 to a 275-person operation today.

Notice: Leave Scheduling and Exigencies of the Public Business

This is to bring to your attention that the current leave year ends Jan. 6, 1996, to emphasize the importance of proper leave scheduling, and to identify management's responsibility in the exigency and leave restoration process.

It is the joint responsibility of supervisors and employees to effectively plan and schedule annual leave throughout the leave year. Supervisors must approve annual leave if work load permits. However, if the leave must be denied, the supervisor and the employee should work together to reschedule the leave to the satisfaction of the employee and still meet mission requirements.

Approval of an exigency of the public business must be obtained prior to cancellation or denial of leave if the leave is subject to forfeiture. "Use or lose" annual leave may be restored only when the leave is forfeited due to an exigency of the public business — not 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 (Nov. 25, 1995). A properly executed Standard Form (SF) 71, "Application for Leave," satisfies this requirement.

A key element in the leave restoration process is line management's determination that a sufficiently critical problem or situation exists to declare an exigency. Such exigencies should be rare events having significant program cost or schedule impact, or involve safety considerations. Poor planning on the part of employees and supervisors is not acceptable. Approval of an exigency of the public business must be obtained prior to canceling or denying leave in the "use or lose" category.

For individual employees who are requesting an exigency not affiliated with a project or team, the request for exigency must be processed through organizational channels to group level and must include the following: 1) A complete description of the exigency; 2) the reason why the employee cannot use scheduled annual leave, and why the leave cannot be rescheduled prior to the end of the leave year; 3) the proposed beginning and ending dates of the exigency; and 4) a completed SF 71 for the employee affected by the exigency, dated before Nov. 25, 1995.

For employees who are members of projects or teams, please check with your line management to ensure that your project or team has been submitted as a group by your group director. The procedure for teams/projects is as follows:

1. Employees associated with a project/team execute an SF 71 requesting leave use of use or lose annual leave.
2. Group directors respond to request from the Employee Relations Office to identify projects/teams for consideration of an exigency.
3. Deputy director line item vetoes or approves request for project/team exigencies.
4. Employee Relations Office notifies group directors of approved project/team.
5. Supervisors deny use of use or lose annual leave for the employees associated with the approved project/team.
6. Employees are responsible for holding properly executed SF 71s until the end of the leave year, Jan. 6, 1996.
7. Employees forward **copies** of properly executed SF 71s to Lisa Allen, at Mail Stop 129 by close of business Jan. 31, 1996.

NOTE: For employees affiliated with an approved project or team, in order for the SF 71 to be considered properly executed, it must contain the following additional information: project/team employee association; the number of hours **actually lost** and the number of hours scheduled; and employee and supervisor signature dated **before** Nov. 25, 1995.

"Use or lose" annual leave which has been scheduled by Nov. 25, 1995, may be denied or canceled only if the deputy director determines that an exigency of the public business of major importance exists. Exigency requests should be addressed to the deputy director and routed through appropriate organizational channels to the Employee Relations Office, Mail Stop 129.

"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.

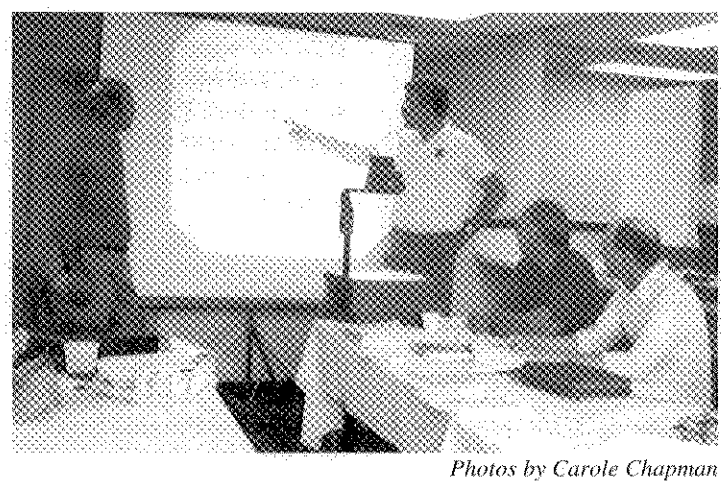
For more information about the exigency process or the Voluntary Leave Transfer Program, contact Lisa Allen at ext. 42610.

PPMI Accelerates Progress Toward Mach 2.4

Planning and Research Integration Workshop Sets Tone for Future High-Speed Civil Transport Development

BY MARK CHAMBERS

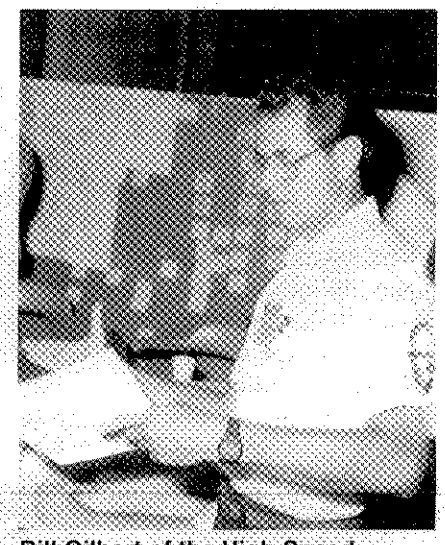
Phase 2 of the NASA/industry effort to develop the technology for the nation's first high-speed civil transport (HSCT) shifted into high gear with the calling to session of the High-Speed Research (HSR) Planning and Integration Workshop held at The Chamberlain Hotel on Fort Monroe in mid-September. More than 168 participants were present at the workshop including officials and engineers from three NASA research centers (Langley, Lewis and Ames) as well as from Boeing, Douglas, Lockheed and Northrop corporations. The workshop, supported by NASA Headquarters under the Program/Project Management Initiative (PPMI), used NASA expertise and the Blackhawk Management Corporation to teach the HSR Integrated Technology Development teams the latest advances in project management and planning skills. Specific tools presented to the attendees included the "one-pager" tracking methods, logic networks, and team building approaches.



Photos by Carole Chapman

Dr. Alan Wilhite , standing left, and Peter Coen, right, conduct one of the planning and integration sessions at the HSR workshop held at Fort Monroe.

At the workshop, the high-speed research agenda for the next three years was set regarding HSCT airframe development. The sessions involved the efforts of 16 NASA/industry teams representing the following areas of study: structures and materials, aerodynamic performance, flight deck technology, environmental impact and overall technology integration. Phase 1 of the HSCT development program, involving technical solutions for environmental concerns will be completed this year. Phase 2 of the program was fully implemented this year and is addressing the cost effectiveness and economic viability of the aircraft systems.



Bill Gilbert of the High-Speed Research Project office discusses the integration phase for HSCT research.

NASA facilities, including advanced computer simulators, wind tunnels and labs, are being utilized to develop an HSCT technological database. Dr. Alan Wilhite, Deputy Director of the High-Speed Research Project Office at Langley, said "Technology is being developed for industry use in the year 2001."

Speakers Bureau Report

The following employees participated in the Speakers Bureau in July, August and September.

John Mouring spoke to the Newport News Rotary Club about Langley's historical landmarks.

Dr. Christine Darden spoke to the National Urban Coalition on the topic "NASA Aeronautics."

Lynda Foernsler spoke at McIntosh Elementary School, Newport News, about "Spaceflight."

Pamela Davis spoke at the Smith College Math and Science Program about "Careers in Math and Science Fields."

Don Lansing spoke to the First Flight Society about a "Historical and Future Look at Aviation."

Robert Rivers spoke at the 114th Aviation Company Reunion about "NASA Langley Today and Tomorrow."

Carey Buttrill spoke at the Kiwanis Club of Virginia Beach about "High-Speed Research at NASA."

Robert Kudlinski spoke to the Data Processing Managers Association about "How NASA Langley Uses Computers."

Lance Bush spoke to the Virginia Peninsula Retired Officers Association on the topic "NASA Transfers its Technology."

Gene Monroe Jr. spoke at the Virginia Air and Space Center about "Robotics."

Marcus McElroy spoke at the Alternate Learning Center about "Careers in Science."

Notice: Time to Request 1996 Calendars

The 1996 calendars are in stock. Stock requests (SF 55) should be submitted to the Stockroom, Mail Stop 382. Each branch secretary should submit branch and section requirements to reduce the number of requests.

The stock numbers for the calendars are listed:

- NSN 7510-01-337-4706 for calendar wall display three months, 11-5/8" by 8-7/8," 10 each per unit
- NSN 7510-01-337-4711 for calendar desk blotter, 18" by 22," one per pkg.
- NSN 7510-01-363-3704 for calendar pad regular flipover, 3-5/8" by 5-7/8," one per pkg.
- NSN 7530-01-337-4697 for weekly appointment book, 11" by 8-1/2," one per pkg.
- NSN 7530-01-363-6706 for loose-leaf appointment book refill for six-ring binder, one per pkg.

The Continuing Budget Process: Part V

BY LEE RICH, CONGRESSIONAL AFFAIRS OFFICER, EXT. 46529

We've made it through the first FY '96 (Fiscal Year 1996) gate! A government shutdown on Oct. 1 was avoided by a device known as a Continuing Resolution, or CR, in which the Administration and the Congress agree to a temporary level of funding for a given time period, until Nov. 13 in this case, in order to allow the government to operate until the 13 Appropriations bills go through the steps required, including the President's signature, to become law. More than one CR may be enacted.

Do not think, however, that shutdown worries are over for this year. The next potential for shutdown is dead ahead — mid-November — when the national debt limit, or ceiling, now set at $4.9 trillion, must be raised to allow the government to pay its bills. On Nov. 15 the government must, among other obligations, pay $25 billion in interest on the national debt — or default. Never before has this happened in the history of the republic. When the Continental Congress considered defaulting on Revolutionary War debt, Alexander Hamilton warned that the new nation's credibility would be forever compromised by such a step and Congress ordered payment.

The 104th Congress can act to raise the debt limit, however, Speaker of the House Newt Gingrich has, in a number of speeches this fall tied Debt-Limit Increase Legislation to the "Reconciliation" bill due to be finished in late November. He said that only if the President agrees to sign the Republican measure, designed to reconcile tax and spending policies with deficit-reduction goals ($900 billion over seven years), will he schedule a vote on raising the debt ceiling. Other Republicans have threatened to attach the debt ceiling increase to the Reconciliation package. Naturally, there have been predictions of severe repercussions in financial circles should the debt limit not be raised. Most observers though believe that the government will neither default nor shut down.

In the Reconciliation bill, not only will cuts in Medicare, Medicaid, student loans and many other programs be detailed, changes in Federal employee benefits will also be spelled out. Recently, the Senate Governmental Affairs Committee, under its new Chair (resulting from changes following Sen. Packwood's resignation) Sen. Ted Stevens (R-AK), voted to increase federal employee contributions to the pension fund, leave "high three" alone (retirement benefits calculated on an employee's three highest earning years), not increase employee share of health insurance premiums, and continue paying cost-of-living-adjustments (COLA) to retirees in April rather than allowing the COLA payment to revert back to January in 1997. Stevens was quoted as saying, "This is the best I can do." It remains to be seen what the House will propose and what provisions will emerge as part of the final "Reconciliation package."

Negotiations are continuing on a number of the Appropriations bills, including the Veterans Affairs (VA), Housing and Urban Development (HUD) and Independent Agencies (IA) bill, HR 2099, which appropriates NASA's funds. NASA's budgetary outlook for FY '96 to FY 2000, based on assumptions made in the Concurrent Budget Resolution, H.Con.Res. 67, is lean indeed. See the chart below.

YEAR	NASA BUDGET AUTHORITY (billions)
FY1996	$13.782
FY1997	$13.384
FY1998	$12.989
FY1999	$12.646
FY2000	$12.317

CFC Dollars Lend a Healing Hand

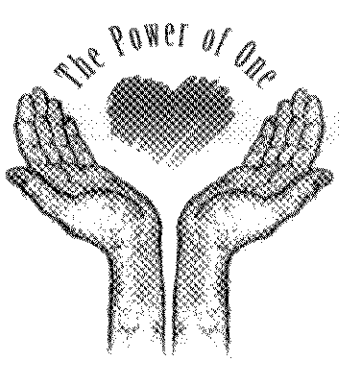
Dr. Ann B. Carlson

When Dr. Ann Carlson's parents learned that she had a severe case of scoliosis, a congenital deformity of the spine, they needed to turn to someone for help. Carlson, assistant head of the Radiation Sciences Branch, said that a family friend, a Shriner, recommended that they take her for evaluation and treatment at the Shriner's Hospital in Montreal, Canada.

"I was hospitalized there for the first time when I was ten years old, stayed there six more times in four years for periods from a week to three months, had the first of two surgeries on my spine at age 12, and remained an outpatient until age 16," she said. "The Shriners paid for it all."

The Shriner's hospitals are among the many organizations helped by contributions made through the Combined Federal Campaign (CFC). Each year, Carlson designates her CFC contributions to them and to a few other agencies she chooses. She also volunteers her time each year — another contribution to her community.

Carlson is on the American Red Cross Disaster Preparedness Team and is a former board member of the York County/Poquoson chapter. She donates her time to the National Episcopal AIDS Coalition through Operation Amen, their local affiliate. The group offers AIDS-related services such as hospice care, community education, legal services, counseling and healing services to AIDS patients, their families, and the broader community. She is the Convener of Integrity/Tidewater, the local chapter of a national Episcopal Gay/Lesbian advocacy group. She also serves as her church librarian, teaches night classes in math and physics at St. Leo College, takes voice lessons and sings wherever and whenever she gets a chance.



Carlson, and husband John Carlson of the Component Integration Branch, are obviously active people. She said, "My parents could never have afforded the years of medical treatment my deformity required. I would not be alive today if it had not been for the Shriners and their hospitals."

Proposals and Workshop Leaders Needed for Student Environmental Conference

The Hampton Roads Clean Community Systems (HRCCS) is seeking proposals for 50-minute presentations for the 1996 Student Environmental Conference that will be held at Old Dominion University on Saturday, March 2, 1996.

The theme of the conference is "Connections: The Environment and You." Proposed student workshops should relate to regional or global environmental topics concerning air quality, water quality, solid waste management, wildlife and habitat preservation, environmental careers or other general environmental information. Workshops should be of interest to students in middle and high school grade levels. Proposals should include title of presentation, specifics of the general topic and an outline of information to be covered as well as the workshop or presentation techniques to be used and the level of the material to be presented.

Student workshop proposals should be mailed to Debbie Blanton, Recycling Coordinator, 2 Eaton St., Suite 502, Hampton, Va. 23669, or faxed to (804) 728-2076 by Nov. 3.

Teacher Workshops

Workshops for teachers will also be available at the conference. Proposers for teacher workshops should plan a four contact-hour workshop that would provide curriculum training or other teacher education skills to teachers of all grade levels. Proposals for teacher training should specify grade levels. Teacher workshop proposals should be mailed to Gail Bradshaw, Special Programs Coordinator, Chesapeake Parks and Recreation, P.O. Box 15225, Chesapeake, Va. 23328, or faxed to (804) 436-8418.

Exhibits & Information

For exhibit space information, contact Denise Jeffries, Executive Coordinator, Hampton Clean City Commission, 22 Lincoln St., Hampton, or call 727-6394.

The Hampton Roads Clean Community Systems is a coalition of local and regional Clean Community and Recycling Coordinators who work to promote litter control, recycling, beautification and environmental awareness through educational projects designed to reach all sectors of the regional community.

Virginia Choral Society Plans Their 65th Season

The Virginia Choral Society will premier its 65th anniversary season with "An Evening In Paradise" in concert with the Hotel Paradise Roof Garden Orchestra. Come, sit back and enjoy music of the 1920s and 1930s with James Powers, interim artistic director and the 80-voice chorus joining with Lynn Summerall's orchestra. There will be two performances: Friday, Nov. 3 at Hampton Roads Academy, Newport News and Saturday, Nov. 4 at Matthew Whaley School, Williamsburg. Both concerts begin at 8 p.m. Tickets are available at the door: general admission is $7, family admission (admits 4) is $18; senior citizens, students and military admissions are $5. For further information, call 851-9114 or 800-400-4VCS.

Langley Cited at State Fair

Maurice Rown III, chairman, and Oris L. Brown, president of the State Fair of Virginia, recognized Langley "for innovation, creativity, quality of exhibit presentation and outstanding interaction with fair guests in the Commonwealth Technology Center" during the 1995 State Fair of Virginia. The citation was presented to Dr. Karen Credeur, head of the Office of Public Services, on Oct 1, the final day of the State Fair.

LaRC This Week Goes Electronic

Starring Tuesday, Nov. 7, *LaRC This Week* will be available only on the World Wide Web under the Lantern, Langley's Internal Home Page, accessible through NetScape or Mosaic. Look for details in the upcoming editions of *LaRC This Week*.

NASA Strategic Management – Mission to Planet Earth

BY GREG WILLIAMS, NASA HEADQUARTERS

To protect the global environment now and in future generations, we must build a long-term understanding of the Earth system. NASA's Mission to Planet Earth is working to understand this complex system which includes the couplings and changes of the solid Earth, land surface, oceans, ice, atmosphere and biota. The Mission to Planet Earth strategic enterprise conducts basic research on Earth system processes that are of great scientific importance and practical value to society. The vantage point of space allows scientists to study these systems, and gather information that is not obtainable any other way.

The transport of energy and moisture between oceans and atmosphere is a key subject of fundamental process studies. This research is leading to an ability to forecast weather patterns that cause drought and flooding in agriculturally-sensitive areas of the United States and throughout the world. The Tropical Rainfall Measurement Mission, a joint program with Japan, being readied for 1997, will enhance the quality of this research.

Mission to Planet Earth Studies

Mission to Planet Earth studies of land processes are enabling scientists to understand the rates and effects of deforestation in the Amazon. This research may lead to a host of applications for farmers, foresters, urban planners and natural disaster response managers. The Landsat 7 and EOS-AM1 (Earth Observing System) spacecraft will provide global coverage with resolutions fine enough for a wide variety of research and economic uses.

The Mission to Planet Earth research and analysis program provides the foundation for Earth system science. It employs aircraft and balloon campaigns and field observations to prepare for, and augment, space-based missions. Early Earth observation missions, such as the Upper Atmosphere Research Satellite and the Shuttle-based Space Radar Laboratory, are returning data on critical Earth sciences questions, such as ozone loss and recovery.

What EOS Will Do

The EOS program, beginning with the AM1 launch in 1998, will kick off a true study of global climate change. Humans will then be able to form a globally-integrated picture of land, sea and ocean interactions. The Mission to Planet Earth's strategic enterprise plan has four major goals. They are to integrate understanding of the Earth as an integrated environmental system and of its vulnerability to natural variations and human influences; observe and characterize the entire Earth system, and make the resulting research data widely available; contribute to wise and timely national and international environmental policy; and foster the development of an environmentally-informed public.

Goddard Space Flight Center leads the Mission to Planet Earth program. Contributors are the Langley and Ames Research Centers, Jet Propulsion Laboratory and Marshall Space Flight Center. NASA collaborates with other agencies on Earth research, including the National Oceanic and Atmospheric Administration, U.S. Geological Survey, Environmental Protection Agency and National Science Foundation.

Global change research is an inherently international endeavor, and NASA has more than 60 agreements with 20 countries. Today's program lays the foundation for an ability to understand and predict global and regional Earth system processes. For more information, contact the Mission to Planet Earth Office, at (202) 358-0241.

Design for Small Communications Satellite Capable of Monitoring Natural Hazards Wins Japanese Award

Photo by Fred Jones

The George Washington University students whose satellite design was selected for an award are, left to right, Mark A. Johnson, Hung-Sheng Chern, Katherine L. Karr and Geoffrey M. Cook.

Four Graduate Research Scholar Assistants with The George Washington University's (GWU) Joint Institute for Advancement of Flight Sciences (JIAFS) program presented their design for a small communications satellite in Tokyo, Japan in midsummer. The satellite design was selected as one of four finalists in the Third Annual Satellite Design Contest. Geoffrey Cook and Katherine Karr went to Japan to present the satellite design to the Executive Board of the contest. The GWU-JIAFS entry, which was presented earlier to Orbital Sciences Corporation, was the only foreign entry in the final review process. The designers received an award from the electronics and communications sponsor of the contest.

The satellite was designed by Hung-Sheng Chern, Geoffrey M. Cook, Mark A. Johnson and Katherine L. Karr as part of the requirements for ME 286 - Special Topics in Mechanical Engineering (Spacecraft Systems Engineering), a GWU graduate course taught during the Spring 1995 semester by Dr. Jer-Nan Juang of the Structural Dynamics Branch. The design is entitled "A Small Communication Satellite with Capability of Monitoring Natural Hazards."

The satellite is three-axis stabilized and will be placed into a geostationary orbit. It weighs less than 50 kilograms and fits within a 45 x 45 x 45 centimeter cube at launch. The initial estimated cost is less than $500,000 for the hardware materials and $170,000 for launch. The satellite is designed to be launched as a secondary payload in the Ariane-4 launch vehicle which will place the satellite into a geosynchronous transfer orbit. The satellite will then use its orbit injection thruster to place it in geostationary orbit where it will be capable of handling voice communications and data transmission. It is also designed to function as a space-based warning system and automatic lifeline shutdown system in the event of natural disasters such as earthquakes.

Many new and innovative technologies are incorporated on the satellite. State-of-the-art miniature gyros and sun sensors are used for attitude determination. The solar array is unique in design, materials and deployment mechanism. A lightweight microstrip antenna will be flown for the first time as the primary send/receive communications antenna. The new ALOHA access protocol will be used for the communications system, allowing for efficient monitoring of the multiple ground stations. The earthquake response system is original, enabling the satellite to predict seismic wave propagations and control the lifeline systems, such as utilities and transportation, in the event of an earthquake.

The contest was sponsored by three Japanese organizations equivalent to the American Institute of Aeronautics and Astronautics. Five awards were given to the 11 satellites entered in the Design and Idea competitions, one of which was the GWU-JIAFS entry. The award consisted of a small trophy and a certificate. The satellite design also received much attention from the Japanese corporations present at the contest.

ASEE 1995 Competition Winners Announced

Dr. Samuel E. Massenberg, director of the Office of Education, presents certificate of first place recognition in the 1995 Langley ASEE summer faculty program Best Research competition to Dr. Faruk Bursal. Looking on, from left to right, are Dr. Daniel C. Adams, Roger Hathaway, University Affairs officer, Dr. Richard Tipping, Dr. Surendra Tiwari, Prof. John Spencer, and Debbie Young, ASEE administrative assistant.

NASA has supported a program of summer faculty fellowships for engineering and science educators since 1964, through the American Society for Engineering Education (ASEE) Summer Faculty Fellowship Program. This summer, Langley hosted 54 faculty members, representing 35 institutions from across the country.

At the end of this year's program, the ASEE final presentations were held at Langley. The eight presenters were selected from within each of Langley's five research groups. For the first time, a panel of distinguished researchers judged the presentations. The panel included Dennis M. Bushnell, Langley's Senior Scientist; Dr. Jag J. Singh, Internal Operations Group; Dr. Robert C. Costen, Research and Technology Group; and ASEE co-directors Prof. John H. Spencer, Hampton University and Dr. Surendra N. Tiwari, Old Dominion University.

Recognized for first place was Dr. Faruk H. Bursal, assistant professor at Virginia Polytechnic Institute and State University's Department of Mechanical Engineering. His research topic was "Analysis of Uncertainty in Force Balance Calibration." Working with him as his Langley associate was Dr. Ping Tcheng of the Experimental Testing Technology Division. As first place winner, Bursal will receive one visit during the academic year with Tcheng, funded by the ASEE program, as well as a plaque.

Dr. Richard Tipping, professor of physics at the University of Alabama, received a second place award for his presentation entitled "The Shape of Lines: The Importance of the Far Wings." Dr. Mary Ann Smith of the Space and Atmospheric Sciences Program Group, served as his associate.

Third place recognition went to Dr. Daniel O. Adams, Iowa State University's assistant professor of aerospace engineering and engineering mechanics. He worked with Clarence C. Poe of the Research and Technology Group.

Questions about the ASEE program can be directed to Debbie Young at Mail Stop 400, ext. 45215, fax 49701 or via e-mail: d.b.young@larc

Internet Fair 2 Promises Education and Fun

BY DONNA ROPER

If you want to learn more about how Langley, local businesses, and universities are using the Internet, then don't miss the second annual Internet Fair, which will be held at the H.J.E. Reid Conference Center, Monday and Tuesday, Oct. 23 and 24 from 9 a.m. - 4:30 p.m.

Wolfgang Tölle, managing director for the Virginia Center of Innovative Technology, will give a keynote address from 11:30 a.m. to noon on Oct. 23. Also on Oct. 23, after touring the exhibits, visitors can attend the Information Superhighway Roadkill Barbeque, sponsored by the Technicians Communication Terminal Team, from 5 p.m. to 8 p.m.. The cost is $3.50 per person, and tickets are available at the Fair. While at the Internet Fair, be sure to register for a free Internet Fair 2 tee shirt, which will be given away at 3:30 p.m. on Oct. 24.

The mission of the Internet Fair is to exchange NASA and Hampton Roads information technology while emphasizing challenges and solutions for the future. The Fair will include 40 exhibits from the following focus areas:

NASA Langley Research Center Exhibits

- ADAPT - Approach to Data Management, Archive, Protection, and Transmission
- CAEDE - Computer Aided Engineering and Design for Electronics
- The General Aviation Program
- Geographic Information Systems
- Information Technology Security
- Langley Distributed Active Archive Center (DAAC) Earth Observing System Data and Information System (EOSDIS)
- Langley Procurement Information (using World Wide Web)
- Langley Technical Report Server (LTRS)
- LaRCNET & E-Mail
- LISAR - Langley Image Scanning, Archiving, and Retrieval
- Office of Public Affairs
- Software Engineering and Ada Laboratory
- Technician Communication Terminal (TCT)
- Technology Transfer
- World Wide Web Project Team
- GetHelp!

Regional Technology Enterprises Exhibits

- Bell Atlantic
- BusiNetics
- CEBAF
- Global Connect
- Interactive Productions
- iTribe
- Norfolk International Airport
- The Patent Agency
- Pinnacle
- Texcom
- Widomaker

Educational Exhibits

- Community Use and Assessment of the Global Change Data and Information System (NASA, University of Virginia and the College of William and Mary)
- Embry-Riddle Aeronautical University
- High Performance Computing and Communications (HPCC) K-12 Program
- Teaching Internet Use
- Hampton University
- Norfolk State University
- Virginia Air and Space Center
- Virginia Space Grant Consortium

Community Redefinition Exhibits

- Satellite Committee for People with Disabilities
- SEVAnet and Network Hampton Roads
- Women in Aerospace

Entertainment and Media Exhibits

- Everything (an alternative band from Harrisonburg, Va.)
- WVEC TV-13

For More Information

The Fair is sponsored by the World Wide Web team, which is composed of members from throughout NASA Langley. For more information, visit the Internet Fair home page at URL http://www.larc.nasa.gov/if2/ or call Gretchen Gottlich at ext. 42303.

Langley Employees Receive EEO Awards

Michael A. Chapman

Dr. Edward R. Generazio

Dr. Terry St. Clair

Three Langley employees were recently presented Superior Achievement Awards in the area of equal employment opportunity by Center Deputy Director Dr. H. Lee Beach.

Michael A. Chapman of the Data Systems and Instrument Support Branch was cited "For sustained superior leadership in promoting cultural diversity principles at Langley and in the outside community."

Dr. Edward R. Generazio of the Nondestructive Evaluation Sciences Branch and Dr. Terry St. Clair, head of the Composites and Polymers Branch, were each given the award "In recognition of personal commitment and leadership in advocating the ideals of the equal opportunity program at the Langley Research Center."

Photos by Hubert Lloyd

Virginia Air and Space Center News

Officers, Board of Directors Named

The Virginia Air and Space Center, Langley's official visitor center, has named new officers to its governing board. Attorney **James S. McNider III** was elected president; NASA retiree **Duncan E. McIver** is executive vice president; Attorney **A. Lewis Allen** is vice president; Hampton City Manager **Robert J. O'Neill Jr.** is secretary; and **William M. Grace**, president of Grace Industries, Inc., is treasurer.

New members to the center's Board of Directors are **James R. Joseph,** chairman, Hampton Arts Commission; **Douglas B. Juanarena**, president of Pressure Systems, Inc.; and **Benjamin A. Williams III**, attorney with Patten, Wornom & Watkins.

Continuing members of the Board are **Raymond B. Bottom Jr.**, chairman and CEO, Centennial Communications Corp. (WGNT-TV); **Robert E. Bower**, NASA retiree; **Dr. George W. Brooks**, NASA retiree; **Dr. Billy K. Cannaday Jr.**, superintendent, Hampton City Schools; **J.W. Whiting Chisman Jr.**; **Horace L. Copeland Jr.**, senior vice president, Land Development, Inc.; **D. Stephen Elliott**, vice president of education, Colonial Williamsburg Foundation; **Andrew S. Fine**, president, The Runnymede Corporation; **Edwin C. Kilgore**, NASA retiree; **Mary M. Lake**, former executive director, Peninsula Fine Arts Center; **Cynthia C. Lee**, deputy, Langley Subsonic Transportation Office; **David L. Peebles**, chairman, Ferguson Enterprises, Inc.; **Ann L. Phillips**, civic leader; **Gen. Robert D. Russ**, USAF, retired; and **William R. Van Buren Jr.**, owner, Old Hampton Bookstore and former president, Daily Press, Inc.

At the Center's annual meeting, a special citation for exemplary service was awarded to retiring Board member **Dr. Stephen J. Wright**, former president, Fisk University. A commemorative plaque and special kudos were awarded to **Edwin C. Kilgore** who had served with distinction as resident of the Virginia Air and Space Center Board of Directors since 1991.

The Air and Space Center Hosts Halloween Party

The center and radio station WAFX (106.9) present fun, spooks and safe trick-or-treating at the center's Fourth Annual Sci-Fi Halloween Party on Saturday, Oct. 28 from 5 to 7:30 p.m.

The event will feature a scavenger hunt, games and make-and-take crafts. The highlight of the event will be a costume contest for all ages with great prizes from local businesses. Trick-or-treaters may ride the center's new Space Ball and experience weightlessness. Be sure to bring a camera to take pictures with a Vulcan, a Klingon, the Star Fleet Commander or one of the other Star Trek characters.

Admission to the Halloween party is $3 for the general public and $2 for Air and Space Center members. The price includes admission to all exhibits and a ride on the Space Ball. For information, call 727-0900.

Virginia Air and Space Center
Hampton Roads History Center

Flight Research Gallery

A Flight Research gallery is open at the center with three sections of exhibits that focus on "Flight Testing from the Wright Brothers through World War II," the "Supersonic Breakthrough" and "Flight Research Confirms New Design Theories."

The gallery also features several floor exhibits and a hanging EA-6B Prowler model that was tested in Langley's historic 30- by 60-Foot Full-Scale Tunnel. Floor exhibits include an SR-71 flight suit and a refurbished High-Speed Flight Research (HSFR) Center communications jeep. The gallery is open for visitor viewing daily from 10 a.m. to 5 p.m.

Volunteers Are Needed at the Center

The Virginia Air and Space Center is seeking volunteers to serve as docents for weekdays and/or weekends. Docent training will begin Oct. 28 and Nov. 1 at 1 p.m. in the center's Orientation Theater. For more information on the full training schedule or for opportunities to serve as a greeter or an assistant in the Teacher Resource Center, call Bert Smith at 727-0900, ext. 735.

Happenings

EXCHANGE SHOP: October is business card month. For the whole month, the Exchange Shop will offer a 10 percent discount on all orders received by Oct. 31. Stop by the shop to pick up order forms or call ext. 41585. Forms can be faxed or mailed directly to employees. The shop is in the cafeteria and is open from 7:30 a.m. to 2 p.m., Monday through Friday.

FOR SALE: Cemetery plots, eight burial spaces in the Peninsula's Memorial Park's Gardens; value of lots #66N and 67N is $5,195, asking $4,750 for both or $2,500 per lot. Contact H.R. Ivey, 1610 Chinook Trail, Maitland , FL 32751, (407) 644-5086. To visit the site, call (804) 930-1197, to get directions from the cemetery personnel.

FOR SALE: Wilson Hammer 4.0, wide-body, dual-taper beam, unstrung, brand new, $100 or best offer. Call Sunny at 595-7601.

FOR SALE: 1991 Ford Tempo GL, 46,000 miles, red, 4 dr. sedan, almost perfect condition, fully loaded. Asking $5995 or best offer. Call 488-8849.

FOR SALE: 486DX-33 Intel processor chip, $40, or best offer. Call Jonathan at 249-1721 (eves).

WANTED: Roommate, professional, non-smoker wanted to share new Kiln Creek townhouse w/owner after completion in Spring '96. Master suite, private bath, all the amenities, $400/mo + 1/2 util. Call Matt at 766-1050.

FOR SALE: Hampton Club 2BR condo, 1 bath, wall-to-wall carpet, extra appliances, ceiling fans, security system, pool and fitness center, near Langley and shopping. Call D. Burch at 827-1400.

SCHOLARSHIP OPPORTUNITY: Students pursuing studies in fields related to aerospace may qualify for scholarships and fellowships offered by the Virginia Space Grant Consortium for the 1996-97 academic year. Students must attend the College of William and Mary, Hampton University, Old Dominion University, the University of Virginia or Virginia Tech to qualify. The deadline is Jan. 22, 1996. For information and applications, call Anne Pierce at 865-0726.

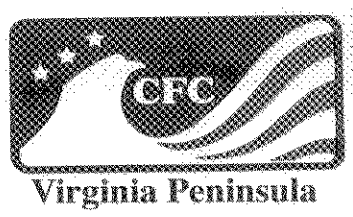
SYMPHONY: 20 percent off tickets for all Langley employees to all Virginia Symphony Masterworks, Pops and Mozart concerts. Next Masterworks is Nov. 10 and 11, and includes Mahler *Symphony No. 4*. A Halloween "Trick or Treat" afternoon concert for families, is Oct. 28, and includes games, prizes and a costume contest. Call the Virginia Symphony ticket store at 623-2310.

SKYWATCHERS ASTRONOMY CLUB will host telescopic viewing of the sky on Friday, Nov. 3, from 8 p.m. until midnight at the club observatory, Building 1231A. Telescopes will be set up for this event, which is free and open to the public. No reservations are necessary. Children are welcome, and adults need to show a photo ID and mention the event at the main gate. If the sky is cloudy, the event will be held the following night, Saturday, Nov. 4. For information call Marilyn Ogburn at ext. 41175.

30- by 60-Foot Tunnel Closing Ceremony

The 30- by 60-Foot Tunnel Ceremony and Reception will be Friday, Oct. 27 at 4 p.m. **(please note time change)** at Building 643, 224 Hunting Avenue at Langley.

A NASA badge or visitor's pass is required for entry to Langley Research Center. For gate pass or information, call (804) 864-6320. Parking is limited at Building 643, and carpooling is encouraged.



CFC NOTICE: CFC Keyworkers and Coordinators: Make sure all completed CFC materials are turned in by Friday, Oct. 20, to Building 1218, room 209. Thank you for your support of this year's Combined Federal Campaign.

Coleman Bridge Information Meetings Set

Two public information open houses on the Coleman Bridge widening project will be held by the Virginia Department of Transportation (VDOT). The first is Nov. 14 from 4 to 8 p.m. at the Yorktown Middle School cafeteria, 11201 George Washington Highway (Route 17). The second is Nov. 15 from 4 to 8 p.m. at the Page Middle School cafeteria, on Route 17 approximately eight miles north of the bridge.

Representatives from VDOT, Tidewater Construction Corporation and Middle Peninsula Rideshare will be available to answer questions. In addition, Tidewater Construction will unveil their plan to float the new bridge spans from the Norfolk International Terminal to Gloucester.

There will be no formal presentation. Instead, citizens will be able to interact with representatives on a one-to-one basis. The open houses will present an excellent opportunity for citizens to start planning, with the help of experts, how they will travel during the 12-day period in April/May 1996 when the bridge will be closed.

Photo by Fred Jones

A 27 percent scale X-31 Drop Model is released from Langley's UH-1H helicopter off Wallops Island, Va., marking the first drop model program since the testing at Plum Tree Island stopped. The test was to help re-establish drop model testing techniques at Wallops since vacating Plum Tree, and to conduct flight dynamics research on the modified tailless configuration. In the background is a view of Wallops Island and the Atlantic Ocean.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business. Penalty for Private Use $300.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 9 ❖ Issue 22 ❖ November 3, 1995

Lee Person to Address November Colloquium

A Colloquium lecture: "Earthbound 'Flying' Simulators for Weightless Rendezvous and Lunar Landings," will be presented by Lee H. Person Jr., Tuesday, Nov. 14, at 2 p.m. in the H.J.E. Reid Conference Center.

Simulating Space

Person will use slides, videos and memories to introduce some of the earthbound space simulators which were developed in the 1960s for studying vehicle dynamics and as training aids to prepare the original seven astronauts for maneuvering in space and on the moon.

When the space program moved into high gear in the early 1960s, Person, as well as other Langley flight-research pilots, participated in prototype lunar-landing research vehicle flight tests. The tests were conducted at the Langley Lunar Landing Research Facility to evaluate the last 150-feet of descent to the surface of the moon. He will discuss the challenges in development of these simulators as well as in development of the rendezvous and docking simulator in Langley's Flight Hangar.

Person will also discuss his experiences with one-person vehicles such as Icarus and Pogo. Envisioned by Langley engineer Don Hewes, Icarus was a backpack with peroxide thrusters intended for travel on the lunar surface. The Rocketbelt/Pogo, a vehicle also designed for lunar travel, was developed by Bell Aerosystems.

Person says his talk is about "small steps to aid our knights-in-shining-armor on their journey to the moon—and some dragons we encountered along the way."

Research Pilot Speaks

Person recently retired from his position as a research pilot for the Center. His flying career began with Naval Aviation training in 1954 and, except for a short break to obtain a Mechanical Engineering degree from North Carolina State University in 1961, he has been flying ever since. After joining Langley in 1962, his research flying centered around aircraft handling qualities and advanced cockpit controls and

Lee H. Person Jr.

displays. His flight experience includes nearly 10,000 hours in more than 100 types of fixed-wing, rotary-wing and V/STOL aircraft.

For the past 20 years he functioned as lead pilot for NASA's Advanced Transport Operating Systems (ATOPS) Program, spending most of his time in the aft research flight deck of Langley's Boeing 737-100 aircraft.

Person is a graduate of the Naval Test Pilot School, a member of the Society of Experimental Test Pilots and the SAE S-7 Committee, a recipient of the IR-100 Award (now known as R&D 100) for the Takeoff Performance Monitoring System (TOPMS), and a recent recipient of the NASA Exceptional Service Medal.

The Colloquium is open to all Langley employees. Civil service personnel should charge their time to Job Order B1010.

Sigma Lecture

At the Virginia Air and Space Center, Person will lecture on "Simulating Space" at 7:30 p.m. Admission is free. After the lecture, the center will show the IMAX® film *Destiny in Space* at regular prices: adults $5.50; seniors, military, NASA and family w/ID, and children ages 3 to 11, $4.50.

Colloquium Notice

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.htm or from the NASA Langley Home Page http://www.larc.nasa.gov/larc.html under General Information about Langley.

Langley Hosts Hampton Roads Internet Fair

BY CATHERINE WATSON

For two days last month, Langley played host to more than 1,200 visitors each of whom had one thing in common, they wanted to know more about the Internet. The 38 exhibits highlighted the many ways information technology is revolutionizing the way we work, learn and play. At the fair, Langley researchers explained such topics as how to set up a computer network, use electronic mail, ensure computer security and, for businesses, how to get your product information on the World Wide Web.

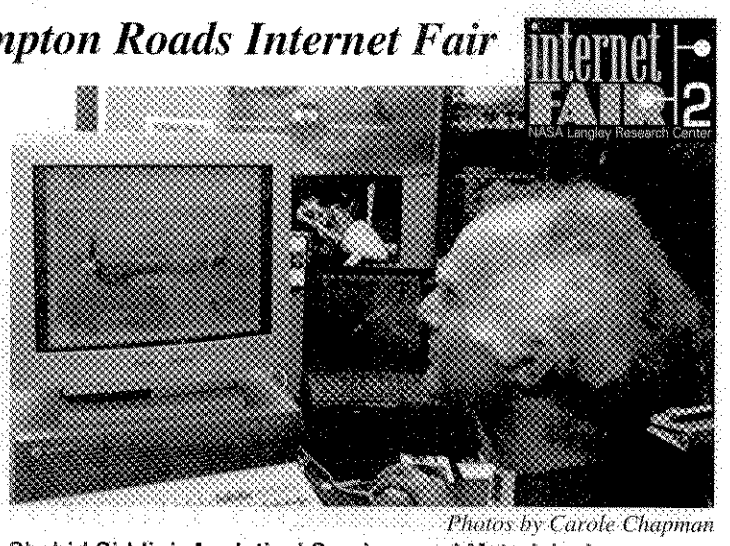
Sixteen of the exhibitors were from Langley including Procurement; Data Management; general aviation; Distributed Active Archive Center; Langley Technical Report Server; Langley Image Scanning, Archiving, and Retrieval System; Office of External Affairs; Technology Applications Group; High Performance Computing and Communications K-12 Program; and the Technician Communication Terminal. Embry-Riddle Aeronautical University exhibitors came the farthest to share their knowledge — from Daytona Beach, Fla. Local exhibitors included CEBAF, Bell Atlantic, four universities, Norfolk International Airport and several regional Internet providers.

Using Information Technology

Gretchen Gottlich, chairperson of the Internet Fair team and leader of the all-volunteer Langley World Wide Web (WWW) team said, "It was an opportunity for the community and NASA to come together to demonstrate how Hampton Roads is using information technology. How we do aerospace research is a product in itself. How we're using World Wide Web technology to streamline our business processes, that's applicable to all businesses."

Fair participants were also given the opportunity for hands-on training with the WWW. They were instructed in the use of computer software, a net browser that allows users to interact with the Web. Eighty-seven participants were then given hands-on training on the actual

Continued on Page 3



Photos by Carole Chapman

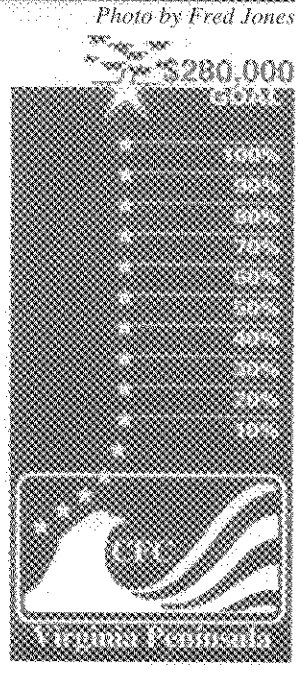
Shahid Siddiqi, Analytical Services and Materials, Inc., explains Langley's general aviation Internet home page.

Gretchen Gottlich, left, of the Advanced Computer Systems Branch, demonstrates the capabilities of the Langley internal home page (LANTERN) to Lee Arslan of NASA Headquarters.

Langley Shows That "The Power of One" Works!

Photo by Fred Jones

1995 CFC Committee Chair Irving Abel watches as Robert I. Bonar Jr., president and CEO, and Beth Duke, both of the Children's Hospital of the King's Daughters, and Center Director Paul F. Holloway display their "Power of One" tee shirts following this year's CFC Kickoff ceremony. The Center has already exceeded its goal of $280,000. To date, more than $300,000 has been pledged and pledge cards are still being collected. The average gift per person has increased by about $25. Your contributions will help people all over the world and right next door. Thank you for showing that Langley employees can demonstrate the power of one, and how joining together as one, we can do so much more.



News Briefs

Around the Agency

EDUCATIONAL BROADCASTS LET STUDENTS FLY HIGH – During October, students all across America had the opportunity to take a virtual journey aboard a NASA research aircraft flying more than 40,000 feet above the Earth on a mission to study planets, stars and galaxies. From the comfort of their classrooms, students interacted with astronomers and scientists who are using sophisticated infrared detectors to probe the skies in an effort to unlock the secrets of the Universe. This unique educational project, called "Live from the Stratosphere" (LFS), was built around more than eight hours of live television coverage supported by two-way audio and computer network connections to schools, science museums and planetariums throughout the U.S. The Kuiper Airborne Observatory (KAO), a converted C-141 military transport based at the Ames Research Center, Mountain View, Calif., was the setting for the astronomy research missions. The Kuiper, which carries a 36-inch reflecting telescope, is the world's only airborne astronomical research facility, and has been conducting missions for more than 20 years. Scientists use the Kuiper to study heat patterns from celestial sources by operating at an altitude above 99 percent of the Earth's radiation-absorbing atmospheric water vapor. This makes the vehicle an ideal platform from which to conduct infrared astronomy observations. On-line resources can be accessed via several routes. For those connected to the World Wide Web, visit the LFS home page at: http://quest.arc.nasa.gov/livefrom/stratosphere.html. For those with access to Gopher, go to: quest.arc.nasa.gov. To receive regular project announcements, send an e-mail message to: listmanager@quest.arc.nasa.gov and write: subscribe updates-lfs in the body of the message.

Seven More Langley Employees Earn Advanced Degrees, Bringing 1995 Total to 28

Seven Langley staff members have earned advanced degrees in Fiscal Year 1995, bringing the total to 28 for the year. Nine doctorates and nineteen master's degrees have been earned.

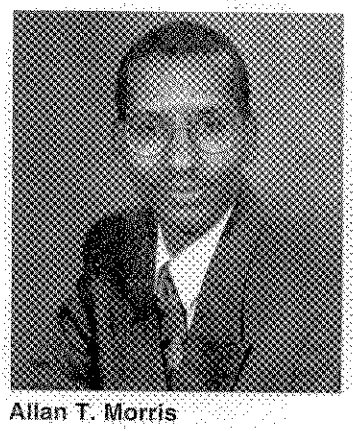
Marchelle D. Canright, Office of Education, earned a doctor of philosophy in instructional systems from Pennsylvania State University.

Marchelle D. Canright

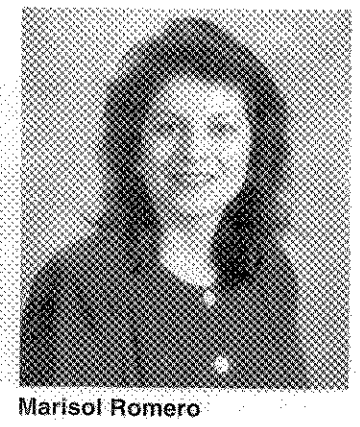
Six other employees earned master's degrees. Allan T. Morris, Information and Electromagnetic Technology Division, earned a master of engineering degree in electrical engineering from Old Dominion University; Marisol Romero, Technology Applications Group, earned a master of engineering degree in electrical engineering from Old Dominion University; Catharine G. Schauer, Office of Public Services, earned a master of public administration degree from Troy State University; Irwin J. Schauer, Planning and Resources Management Office, earned a master of public administration degree from Troy State University; Regina L. Spellman, Facility Systems Engineering Division, earned a master of engineering degree in mechanical engineering from the University of Virginia; Michael T. Stubbs, Acquisition Division, earned a master of science degree in contract management from Florida Institute of Technology.

The Employee Development Branch congratulates these individuals for the long hours and hard work necessary for this accomplishment. "Such work not only brings additional expertise to Langley," George Allison, Employee Development Branch, said, "but also enhances the individual's professional growth and career development."

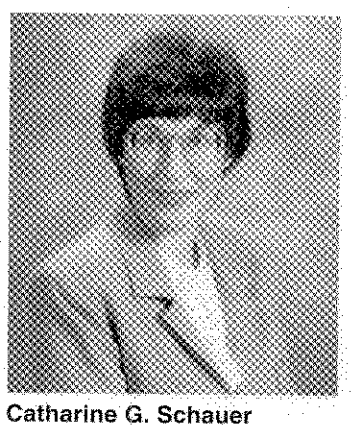
For information on the Center's Graduate Study Program, call Allison at ext. 42594.



Allan T. Morris



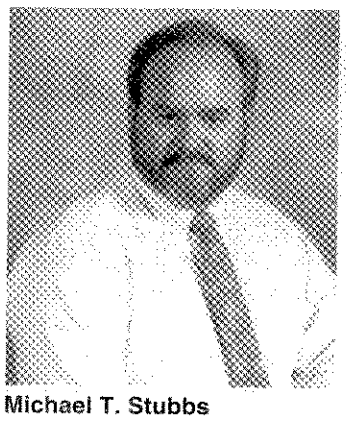
Marisol Romero



Catharine G. Schauer

Irwin J. Schauer

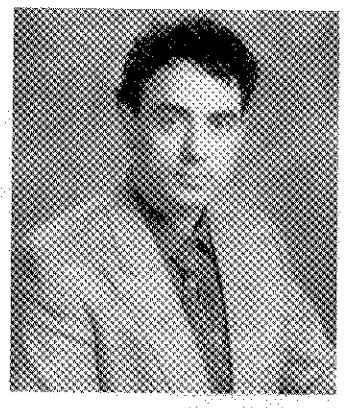
Regina L. Spellman



Michael T. Stubbs

Cucinotta Is Floyd Thompson Fellowship Winner

Dr. Francis A. Cucinotta, a materials research engineer in the Environmental Interactions Branch, is a 1995 recipient of the Floyd L. Thompson Fellowship Program award. As a Thompson Fellow, he will be spending a year doing research, six months at Johns Hopkins University and the remainder of the year at the Medical Research Council in the United Kingdom.



Dr. Francis A. Cucinotta

Cucinotta's research centers on studying the biological effects of radiation fields to help establish the optimal shielding material compositions for the design of future aircraft and spacecraft structures. He hopes to establish methods that will allow for the reduction of risk to human tissue from lengthy exposure to low doses of different radiation types, such as heavy ions and neutrons — both characteristic of the upper atmosphere and space environment.

"There is no human experience to estimate the effects of long-term exposure to the heavy-ion component of space radiations," Cucinotta said. "The approach I will try is to relate the basic understanding of the biological response to x-rays or gamma-rays to that of the upper atmosphere or space, through the characteristics of energy deposition in DNA of individual radiation types."

Cucinotta holds a bachelor of arts degree in physics from Rutgers University and a doctorate in physics from Old Dominion University. He worked in the Radiation Physics Division at the Department of Energy's Environmental Measurements Laboratory and for Rockwell International at Johnson Space Center in Houston. He came to Langley in 1990 and has been an adjunct assistant professor of physics at Old Dominion University since 1991.

Cucinotta has received four NASA individual and group awards, and has published more than 100 articles and reports in the areas of radiation and nuclear physics.

Researcher News Deadline Changes

To enable us to serve you better, the deadline for the *Researcher News* has been moved up to noon on Monday — the Monday following the date of each issue.

Send articles, photos, announcements, etc., to: Ann Gaudreaux, editor, *Researcher News*, Mail Stop 146, ext. 46126, fax 48810. For best results, send articles via QuickMail (Ann Gaudreaux) or e-mail (a.c.gaudreaux@larc.nasa.gov).

The deadlines for the rest of 1995, therefore, are Nov. 6 for the Nov. 17 issue; Nov. 20 for the Dec. 1 issue and Dec. 4 for the Dec. 15 issue. The *Researcher News* schedule for 1996 will be published in the next issue.

In Memoriam

W. Richard Burks

W. Richard Burks, 75, died Wednesday, Oct. 4, in Hampton. He had been a Peninsula resident since 1939.

Burks retired from Langley in 1984 as an inspector after 38 years of service.

Leonard P. Wells

Leonard P. Wells, 86, died Sunday, Oct. 8 in Newport News. He had been a Peninsula resident for 42 years.

Wells retired from Langley's Fabrication Division in 1972 after 30 years of service.

Researcher News

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. **Articles, photos and announcements are due at noon the Monday following the date of this issue.**

Managing Editor..... Catherine Watson

Editor..... Ann C. Gaudreaux
Science and Technology Corp.

Assistant Editor..... Jeane Shenks
Science and Technology Corp.

Photojournalist... Carole Petrachenko Chapman
Science and Technology Corp.

Photographer..... Fred Jones

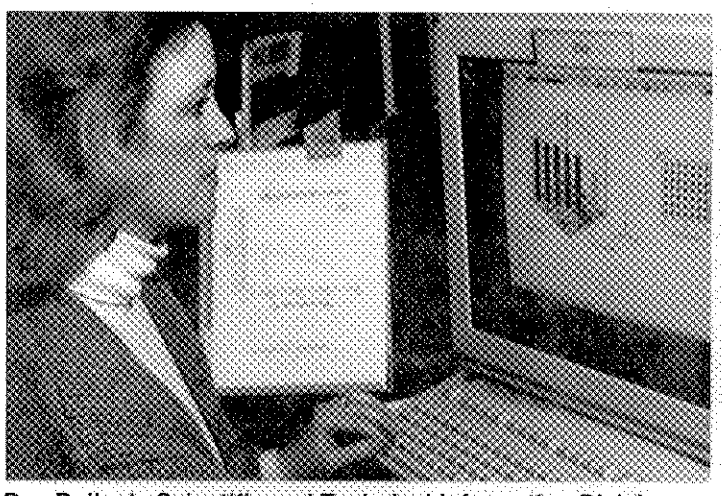
The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

NASA Langley at Forefront of Electronic Publishing

Technical Reports and Journal Articles Available On-Line for the Scientific Community BY JOHN HARRIS

The "paperless office" may still be a long way off, but NASA Langley is focusing aggressively on the electronic publishing of technical reports and journal articles, both through on-line editing and through electronic access to these documents.

Langley, an early leader within NASA in electronic publishing of technical documents, developed the Langley Technical Report Server (LTRS), and now serves as lead center and host for the NASA Technical Report Server (NTRS). The LTRS and NTRS were developed through a joint project with the Research Publishing and Printing Branch (RPPB) staff members, Michael Nelson and Gretchen Gottlich of the Information Systems and Services Division, and NASA Headquarters. To date, more than 600 full-text technical documents, dating from 1986 to 1995, have been put on-line on the Langley server, the highest number in NASA.



Dee Bullock, Scientific and Technical Information Division, produces on-line graphics for research reports.

Importance to Customers

Langley research is used globally, a fact that is reflected by the diverse audiences that read and use the large volume of research documented at the Center. Langley authors publish nearly 140 formal reports, 120 informal reports and about 300 journal articles annually. These reports cover a variety of fields such as aeronautics, astronautics, chemistry and materials, engineering, geosciences, mathematical and computer sciences, and physics. Dr. Thomas E. Pinelli, head of the Visual Imaging Branch, recently completed a survey of U.S. aerospace engineers and scientists as part of the NASA/Department of Defense Aerospace Knowledge Diffusion Research Project. He surveyed 300 recipients of Langley technical reports. Commenting on the results, Pinelli said, "Eighty-three percent of the respondents indicated they used Langley technical reports in performing their present professional duties. Slightly more than 60 percent indicated that these reports were very important to the performance of their work, and about 40 percent of the respondents noted that they used electronic versions of Langley reports."

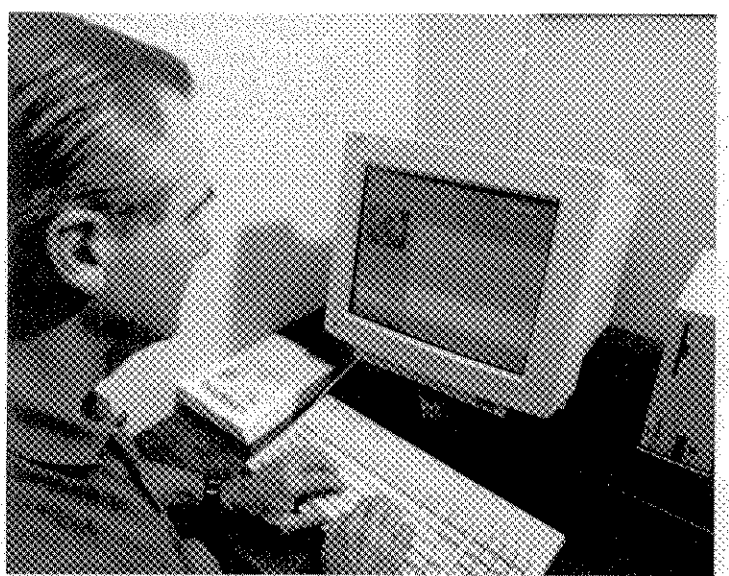
Why the Emphasis to Publish On-line?

NASA is actively working to speed technology transfer by reducing the time between research and the use of the research. Documenting the research using on-line production and dissemination techniques gives a faster, wider and less expensive dissemination, and achieves faster secondary dissemination. On-line documents are also achieving national and international readership via the Internet and the World Wide Web (WWW) — a readership that can be identified and tracked for feedback using server analysis techniques.

Dennis Bushnell, Langley's Chief Scientist, said "Anything published electronically, however, must first be cleared with management for unlimited distribution. The on-line information dissemination of research produced at Langley is more suitable for science purposes than for technology."

Growing Use of LTRS

The statistics from LTRS for a typical month show the increasing growth of on-line use of technical reports. In June 1995, Langley handled nearly 45,000 requests for information from the LTRS. More than 5,700 requests came from NASA centers; nearly 10,000 came from U.S. commercial interests; about 5,700 were received from U.S. educational interests; approximately 1,300 were from U.S. government and military groups; and more than 6,700 were from foreign countries. The average daily access to LTRS in June was 1,510 requests. By September, the average daily access had risen to 2,879 requests.



Wayne Melton of the Research Publishing and Printing Branch edits on-line for *Research and Technology Highlights 1994*. The book is available in both paper-copy distribution and on-line via the Internet.

What Does LTRS Include?

All publicly available formal technical reports at Langley are automatically put on the LTRS in Adobe PostScript format once the production process has been completed. Authors can also add their journal articles or other documents to the server through a process explained on the server itself. Having a paper on the server also ensures that it will be available through the Langley WWW home page and the NTRS. The NTRS, in turn, links to a much broader database of documents. It provides links to documents from the other NASA centers, the Smithsonian Astrophysical Observatory, the Institute for Computer Applications in Science and Engineering, and the Center for Aerospace Information, NASA's contractor to disseminate research information. The LTRS can be accessed from the Langley home page at http://techreports.larc.nasa.gov/ltrs/ltrs.html and the NTRS at http://techreports.larc.nasa.gov/cgi-bin/NTRS.

Digital Technology to the Desktop

On-line publishing means technical reports can now be downloaded, copied, shared and manipulated in a more interactive way. Added services will help transfer technology more effectively and faster.

In addition to using formal technical reports to publish, trend data show that Langley authors are increasingly contributing articles to journals that publish electronically. To help these authors, RPPB will provide electronic journal templates for Langley authors for the most-requested journals — the American Institute of Aeronautics and Astronautics (AIAA) Journal and the Journal of Geophysical Research. These templates are also available to authors at the Lewis and Ames Research Centers and Dryden Flight Research Center.

Mary McCaskill, head of RPPB, said, "Langley has led the way for the Agency in the electronic transfer of technical reports both with the LTRS and NTRS. In the future, combining the technical report server concept with print-on-demand and electronic publishing technology will bring a succession of digital document services to the computer desktop."

On-Line Help for Authors

Extensive guidance about writing and publishing technical reports can be found on the RPPB WWW home page at http://sti.larc.nasa.gov/teb.html. This home page can also be accessed from the Langley home page under "Langley Organizations On-Line," and answers to the most frequently asked "how to" questions about publishing procedures can be accessed from LANTERN, the Langley internal home page.

For more information, contact McCaskill via e-mail at m.k.mccaskill@larc.nasa.gov or at ext. 42506. Pinelli can answer questions about the Aerospace Knowledge Diffusion Research Project via e-mail to t.e.pinelli@larc.nasa.gov or at ext. 42491. To add a document to LTRS — an electronic version of a conference paper, journal preprint, high-number technical memorandum or thesis — contact Marilou Phillips at ext. 42516 or m.s.phillips@larc.nasa.gov. For more information on journal templates or to have additional templates made available, contact Cheryl Winstead at ext. 42497 or at c.w.winstead@larc.nasa.gov.

John Harris was a 1995 LARSS student.

internet FAIR 2
NASA Langley Research Center

Internet Fair . . .

Continued from Page 1

use of the software to search the Internet for information.

How Hampton Roads Uses The Internet

One of the local businesses represented at the fair was the Norfolk International Airport. Charlie Baden, head of market development for the Norfolk Airport Authority, said of their Internet experience, "As far as getting out to the public, letting them know of our services, it's been a very easy access type of medium to use, and very flexible too."

John Meyer, Facilities Program Development Office, demonstrated a unique use of the Global Positioning Satellite (GPS) system as part of the Geographic Information System (GIS) exhibit at the fair. Using a GPS receiver in a backpack, Meyer and his colleagues are able to survey Langley's buildings and utility lines. Meyer said, "We can effectively survey electronically, and determine exactly where buildings are, and where underground utilities are. We can use this technology to get a more accurate view of the topology of the Center." The GPS coordinates collected by Meyer are overlaid on an aerial view of Langley. The GIS team is emphasizing the use of the World Wide Web to distribute and update this information.

How'd It Go?

Michael Nelson, Advanced Computer Systems Branch, said most of the more than 1,200 attendees stayed several hours. According to him, many participants commented that the fair was a great way to let the local community learn what Langley does and how we use the Internet. If you missed the fair in real-time, check out the Internet Fair 2 home page on the World Wide Web at http://www.larc.nasa.gov/if2/.

Thanksgiving Blood Drive

All Langley employees, retirees and contractors are invited to participate in the next blood drive, Wednesday, Nov. 22. Plan to attend the drive between 9 a.m. and 3 p.m. in the H.J.E. Reid Conference Center. Freshly-baked Otis Spunkmeyer cookies will be served. Help make this blood drive a big success! For more information, call ext. 43194.

A Reminder: Internet Usage Policy

The following serves as a reminder to all Langley employees of the Internet Usage Policy. It was released as Chief Information Office (CIO) Directive 02-95, effective 3/14/95.

1.1 The Internet Usage Policy establishes the Agency's position for electronic publication and dissemination of NASA information for public access over Internet. The subject shall be applicable to any information stored on resources in the "nasa.gov" domain.

1.2 The Internet is a fundamental communications tool for executing the Agency's missions which include "providing for the widest practicable and appropriate dissemination of information concerning activities and the results thereof," as directed in the National Aeronautics and Space Act.

1.3 The Internet is recognized as a worldwide electronic access mechanism to information and services. It is the policy of NASA that all information disseminated through official NASA computing resources shall be directly related to the official duties and responsibilities of individuals and organizations within NASA. Also, any information accessible to the public must be authored in accordance with NASA's policies pertaining to the release of public information.

• **1.3.1** When information regarding NASA activities, missions, organizations, publications, etc., is posted on the Internet via NASA "servers" for public access, using World Wide Web, Gopher, or other Internet information service, there must be clear accountability for the accuracy and appropriateness of the information displayed. This accountability also applies to direct reference ("hyperlinks") to external information sources. This accountability is independent of the creative flexibility of the Web designers and recognizes the rapidly changing technologies and techniques used to implement these Internet information services.

•**1.3.2** Descriptions, images, etc., representing the products of any NASA entity, must be accompanied by the identification of the NASA official responsible for its content. Approval from the appropriate NASA manager must be obtained prior to storage of any information accessible via Internet.

1.4 Internet information services, created and disseminated by NASA representatives using official Government computing resources, are subject to established policies concerning abuse, misuse, or unofficial uses by NASA civil service and contractor employees. Specifically, software developed under NASA auspices can be made available to the Internet for other public dissemination media only after such software has been reviewed in accordance with established NASA policy on commercial technology transfer. Information intended for "NASA ONLY" shall be appropriately protected and restricted from public access.

1.5 The responsibilities of Chief Information Officers in the Headquarters and Field Installations are as follows:

• **1.5.1** Implement a process that ensures accountability for all information accessible by the Internet.

• **1.5.2** Ensure that information intended for "NASA ONLY" is not accessible to the Internet.

•**1.5.3** Implement metrics for tracking the number of information sources, i.e., home pages that are subject to paragraphs **1.5.1** and **1.5.2**.

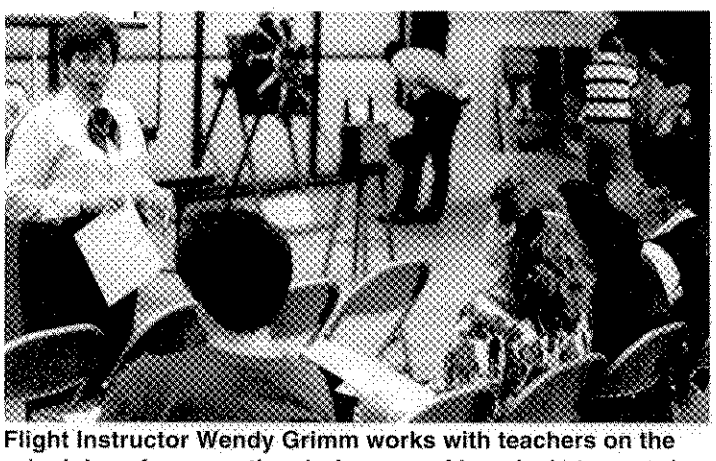
Team Science Members Needed for Project EXCEL, Physics & Computer Science

Are you looking to provide some meaningful educational activities toward community service? Here is a project that will fulfill this task very admirably. Twelve research and design teams will be formed from area middle schools, drawing from promising minority seventh and eighth grade students. These students need mentors who will treat the students as apprentices. They will be looking for guidance on how to do science and ways of working with them on a scientific project. The challenge will be presented on Nov. 4 with a second meeting on Nov. 18 and a final meeting on Dec. 9, 1995. Each of the meetings lasts two hours, while another 10 to 14 hours with the team will be required for the teams project completion.

An honorarium of $150. will be provided to non-civil service personnel. This is a volunteer effort. The real reward is the personal satisfaction that you are making a significant difference in a child's life and how they use their mathematics and science skills. For information about Project EXCEL and Team Science, contact: Randall Caton, Dept. of Physics and Computer Science, Christopher Newport University, Newport News, Va., 23606, 804-594-7065, rcaton@pcs.cnu.edu

Flight Instructor of the Year — Eastern Region Helps Langley's Summer Teacher Programs

As an innovative addition to the summer teacher enhancement programs — NASA Education Workshop for Elementary Science Teachers (NEWEST), the Teacher Enhancement Institute and the Urban Community Enrichment Program — for the last two summers, Aerospace Education Specialist Peter D. Thomas has included an entire day at a general aviation flight school. Thomas, a retired Naval aviator and current "weekend general aviation pilot" wanted to incorporate aeronautics into the Langley two-week summer programs. "Aeronautics can be used as a vehicle for the teachers to experience, firsthand, the principles of aeronautics," he said, "It can help strengthen the mathematics and science skills of their students by using flight as a 'hook' to catch and hold their students' attention."



Flight Instructor Wendy Grimm works with teachers on the principles of aeronautics during one of Langley's two-week summer programs for teachers.

Thomas held discussions with Wendy L. Grimm, the chief flight instructor of Piedmont Aviation, Inc. at Norfolk International and, subsequently Patriot Aviation, Inc. at Newport News/ Williamsburg International Airport. The result was an excellent lead-in day to each of the teacher programs.

Dr. Samuel E. Massenberg, director of Langley's Office of Education, said "Wendy Grimm has been instrumental in providing aeronautics orientation activities for our summer teacher enhancement programs. We in the Office of Education, specifically the Precollege Programs, have utilized Ms. Grimm's superior skill and talents for the training of more than 270 teachers in the last two years."

Grimm has been named as Flight Instructor of the Year, Eastern Region, by the Federal Aviation Administration, and will be considered for the National Award. "This award is another indication of the strong partnership endeavors of both the Office of Education and businesses to strengthen the viability of precollege educational programs," Thomas said.

Langley Teams Have the Right Stuff

The Peninsula Tennis Patrons Association/Wheat Securities senior men's doubles league recently completed their 1995 match schedule. NASA Langley Team Thunder rumbled to the championship for the second year in a row with a 12-2 record. The other teams in this league represented Village Green, Fort Monroe, Kingsmill, Briarfield, Riverside Wellness & Fitness Center, Hilton and another Langley team, Team Lightning. Team Captain Tom Yager thunderously pronounced "We plan to repeat as champions again next year!" NASA Thunder championship tennis team players, above left to right, are Don Petrine, Tom Yager, Charles Bryant, John Wilson, Maynard Sandford, and Dennis Bartlett. Team members not in photo are Bob Smith, Leonard Credeur and George Lawrence.

At left, a Langley Tennis Team photo shows 20 of the 44 team members who competed in the Center vs. Center Tournament from Sept. 29 to Oct. 1.

Langley's 1994 Runner of the Year Named

Results of the NASA Intercenter Competitions for 1994 have finally been tallied and John Hoppe of the Acoustic, Optical, and Chemical Branch has been named the 1994 Langley Runner of the Year. He earned 56.64 points by placing first in his age group in all four races of the 1994 Spring and Fall NASA Intercenter Competition. His times were 40:42 and 39:45 in the 10-kilometer and 12:14 and 11:58 in the 2-Mile.

Hoppe had also won the title in 1978. Jan Spangler of Analytical Services & Materials, Inc. and Steve Sudik of Computer Sciences Corp. tied for second with 52.64 points. Other top finishers were Don Brown, 51.64 points; Gale Harvey, 51.64; David Witte, 31.14; Earl Arrowood, 28.48; Bill Rogers, 28.32; Robert Tattle, 28.32; and Kathy Powell, 27.32.

For more information about the annual competition, contact Richard L. Shearer, Analysis and Test Engineering Branch, r.l.shearer @larc.nasa.gov, ext. 47036.

NASA Acquisition Services Now Available on Internet

NASA procurement procedures have gone on-line to provide industry with instant access to acquisition information. Here are some of the most frequently asked questions and their answers to help guide NASA customers and employees through the Internet.

What is the NAIS?

The NASA Acquisition Internet Service (NAIS) is a World Wide Web service, from which industry has immediate access to current acquisition information over the Internet. The NAIS is a collection of on-line servers operated at each NASA field center and all are interconnected to ease the vendor's access to all NASA acquisitions.

What is the Internet and the World Wide Web?

The Internet is a collection of computer networks, computers and leased telephone lines. These computer systems are owned and operated by government agencies, educational institutions, corporations and non-profit organizations throughout the world, all interconnected and working as one, because they adhere to standard protocols. Consequently, Internet users share a compatible means for interacting with one another. The World Wide Web (WWW) is the newest and most popular information retrieval system on the Internet. It is a system by which files or documents are linked together, whether they are located at the same site or at opposite ends of the globe.

What do I get from NAIS?

Synopses, solicitations, award notices, acquisition forecasts, regulations and small business assistance. Since Oct. 1, 1995, the Internet has been the only source of Midrange acquisitions (synopses and solicitations), less than $500,000 per year.

Why Internet and World Wide Web?

Internet is quickly becoming the global marketplace. Due to relaxed restrictions on conducting electronic commerce over the Internet and recent software developments, navigating the Internet is now much easier. Arcane computer tools have been replaced by user-friendly, point and click applications. Commercial organizations now make up the largest segment of Internet growth. Companies have, in recent years, requested electronic copies of solicitations like floppy diskettes or CD ROMs. Now companies not only get electronic copies, but they can also retrieve solicitations immediately upon release, avoiding several days of document reproduction and mail time. The solicitation documents are filed in common formats that can be downloaded and used in most word processing applications to build proposals.

Why not use dial-up bulletin boards?

While many federal contracting activities operate electronic bulletin boards, NASA feels that its Internet service minimizes the barriers to entry for businesses. Vendors moving from one bulletin board to another are faced with unique keyboard commands of proprietary, host computer systems at each stop. As the number of bulletin boards proliferate, vendors' searches for on-line acquisitions become laborious and time consuming. In addition, it can become very expensive for those having to make long distance dial-up connections to download large acquisition files.

The NAIS follows Internet standards, and the user interface remains constant, because the user commands are made within the client software on the vendor's end of the transaction rather than on the host computer. The client software is an Internet browser program which enables easy navigation throughout the Internet. As the vendor visits multiple procurement sites across the Internet, the functionality remains the same, which eliminates the need to learn new commands.

Why is NASA not using the current FACNET?

NASA is indeed pursuing FACNET when it applies. The federal-wide Electronic Commerce (EC) initiative, which is intended to establish a single face to industry, prescribes a special architecture, now commonly referred to as FACNET, and Electronic Data Interchange (EDI) formats that are best suited for very simple acquisitions with a high volume of turnover, e.g., supplies.

NASA is prototyping EDI solutions for such acquisitions. However, many of the acquisitions one finds on NASA's Internet service do not fit that scenario. Instead, they are more unique and complex, and currently preclude the use of the standard EDI formats. The federal EDI architecture is not expected to address such acquisitions in the near future. In the meantime, the Internet and WWW supports a wider variety of file formats, so it is much easier to provide electronic copies to NASA solicitations with existing word processing tools. Since industry is already becoming accustomed to the Internet and its many useful applications, NASA has chosen this method. The availability of inexpensive Internet access throughout the country has practically eliminated the barriers to entry. Access can be achieved with a personal computer, modem and dial-up access for as little as the cost of a local phone call.

What is Midrange?

Midrange is a NASA pilot program designed to streamline those acquisitions that fall between the simplified acquisition threshold of $50,000, and larger, more complex contracts over $1,000,000. The pilot program derived its name from this middle range of contracts. The Midrange Pilot Program reduces transaction costs and labor resources, for both government and industry, involved in the acquisition process.

The program is advancing with great success based on several process enhancements, such as employing small, dedicated buying teams, implementing best-value selection and eliminating numerous internal documents. Another critical component in the Midrange success story is the establishment of an electronic transmission mechanism for advance notices and solicitations, the genesis of the NASA Acquisition Internet Service, which now provides access to much more than Midrange acquisitions.

Why can't I find NASA's Midrange acquisitions in the Commerce Business Daily?

The Federal Acquisition Streamlining Act of 1994 granted NASA a waiver to the Commercial Business Daily (CBD) posting requirements, based on its ability to provide quicker access to acquisitions than the standard CBD publication process. Federal agencies must withhold the release of solicitations until 15 days after CBD publication of the notice, followed by another 30 to 45 days before solicitations can be closed and proposal evaluations begin.

Now that vendors have immediate access to NASA's synopses and solicitations, NASA will shrink the current waiting periods. Instead of taking 45 days, or more, to advertise requirements and solicit offers, NASA plans to receive offers on many of its Midrange acquisitions in as little as 15 days after posting the advance notice.

The time savings are even greater for smaller procurements. Recent changes in federal procurement rules, which cover simplified acquisitions up to $50,000, allow the synopses to serve as the solicitation itself. Consequently, NASA's WWW services will potentially slash the time to receive quotes from days and weeks to a matter of hours.

How do I access the Internet and World Wide Web?

Check your local area for Internet providers or one of the national on-line services. Local Internet providers and on-line service companies now operate in most metropolitan areas throughout the United States. But, be sure to ask for Internet access that allows you to get to WWW sites. Plus, you will need an Internet browser software program to navigate the Internet and retrieve files from WWW sites. There are close to 100 Internet browser software programs, some available commercially and others freely available over the Internet. Most Internet access providers and on-line service companies will provide a browser program or assist users in acquiring one.

How can I find Internet access providers?

Check the yellow pages of the phone book, and watch for newspaper, magazine and television ads. With access to e-mail, listings of providers can be retrieved. Internet providers are entering the market regularly. Send an e-mail to info-deli-server @netcom.com with the phrase "Send PDIAL" in the message area. Or send a four-line message to ftpmail@decwrl.dec.com which reads: (line 1) connect ftp.colossus.net (line 2) chdir / (line 3) get list (line 4) quit.

How do I learn more about the Internet and World Wide Web?

There are dozens of Internet books at local libraries and bookstores. Here are a few suggestions (please note - this is not a direct endorsement): Daniel P. Dern, *The Internet Guide for New Users*, McGraw-Hill (New York, NY), 1994; Peter Kent, *10-Minute Guide to the Internet*, Alpha Books (Indianapolis, IN), 1994; Michael Fraase, *The Windows Internet Tour Guide: Cruising the Internet the Easy Way*, Ventana Press (Chapel Hill, NC), 1994. (Versions also available for PC and Macintosh); and Ed Krol, *The Whole Internet: User's Guide and Catalog*, O'Reilly & Associates (Sebastopol, CA), 1994.

Health Corner

Chemical Dependency in Adolescents

Chemical dependency in adolescents is frightening both for the young people and for their parents. To further complicate the issue, many normal adolescent developmental changes can mimic the signs and symptoms of chemical dependency.

Pat Meszaros, MSW, will review normal adolescent developmental changes at an upcoming Brown Bag Seminar. She will discuss the types of drugs commonly used by adolescents, and the signs and symptoms of chemical dependency. Meszaros will also talk about what to do if you suspect your teenager is using drugs. The seminar will be held in the Executive Dining Room at noon on Tuesday, Nov. 14.

Mammography Screening

Mammography screening will be done by Riverside Mobile Mammography. A van will be located in the Health Clinic parking lot Nov. 13, 20, 27, 28, 29, 30, Dec. 4, 5, 6, 11, 13, 18, 21 and Jan. 8, 11 and 22.

The cost is $75, and payment may be made by cash, check or Visa/MasterCard. To file under your personal health benefits bring your health card to the screening. A receipt will be provided for insurance.

The American Cancer Society states that early detection through breast self-examination and mammography screening is the best "preventive medicine."

This on-site service is open to all Langley employees, contractors and retirees and their family members. To make an appointment during working hours, call the Riverside Diagnostic Center at 594-2773 and state your NASA affiliation. Civil service employees may charge their time to Job Order B1008.

Women's Seminar

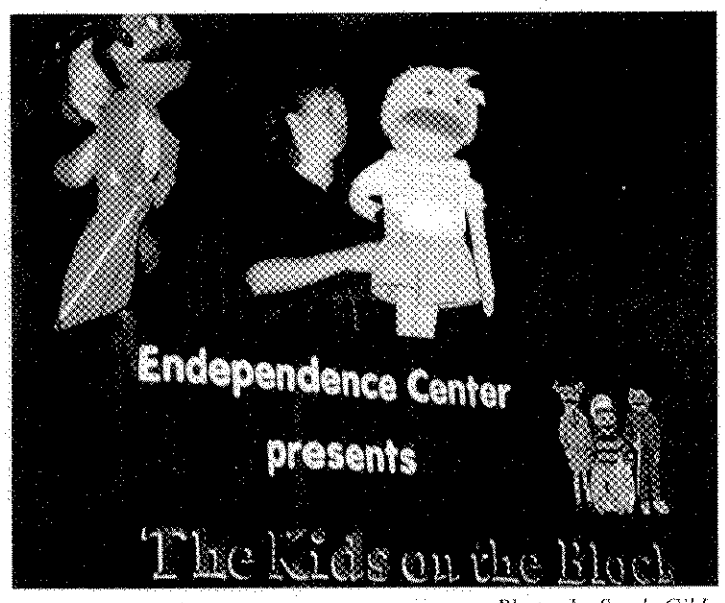
A women's health seminar on "Mammography and the Importance of Breast Self-Examination" will be presented by Marian Rupp, a registered mammographer at Riverside Regional Medical Center, Nov. 8 at 2 p.m. in the Pearl I. Young Theater, 5A N. Dryden St. Rupp will discuss the guidelines for mammography, risk factors for breast disease and the importance of breast self-examination.

For more information call Karen Ridlon at ext. 43194. Civil service employees may charge their time to Job Order B1008.

Disability Awareness Day Deemed a Success

More than 250 people participated in Langley's Disability Awareness Day sponsored by the Satellite Committee for People with Disabilities (SCPD), according to Kathy Powell of the Office of Education, chair of SCPD's Outreach subcommittee that helped organize the event. Langley employees, as well as students from the Langley Child Development Center, Kecoughtan, Phoebus, Hampton and Bethel High Schools and Corporate Landing Elementary School in Virginia Beach, were on hand to hear remarks by Center Director Paul F. Holloway. Attendees were then treated to an interactive puppet show, "The Kids on the Block." The puppets are used to make people aware that persons with disabilities are people too. The "puppets" answered questions posed by the audience.

The Occupational Health Clinic staff offered blood pressure and diabetes screening and Lions Club members gave hearing and sight tests. Canine Companion for Independence, Langley Fire and Rescue Squads, Langley Wheelchair Tennis and Wheelchair Basketball also demonstrated their capabilities. SCPD is chaired by Gerri Pardue of the Resources Support Office.



Photos by Sandy Gibbs

Puppeteers Barbara Taliaferro and Lisa Russo of the Endependence Center, above, present a puppet show at Disability Awareness Day. Below, Langley Director Paul Holloway and Satellite Committee for People with Disabilities Chairperson Gerri Pardue started the day off with opening remarks.

Paper Recycling Expands

Center employees have received individual blue plastic containers for white paper recycling. Larger blue and green central collection containers have also been distributed. Blue containers are for white paper only; the green containers are for mixed paper only. A Langley support service contractor, World Recycling, Inc., will provide central container collection to meet the needs of the recycling customer beginning November 1. Here are some tips on how to recycle your office paper:

White Paper Recyclables

- Use BLUE containers
- Recycle these:
  - Computer paper
  - White letterhead
  - White typing paper
  - White photocopy and fax paper
  - White memos
- Ink on white paper is OK
- No food wrappers or cups
- No "crack and peel" (laser printer labels)

Mixed Paper Recyclables

- Use GREEN containers
- Recycle these:
  - Colored paper
  - Carbon paper
  - Newspapers
  - Magazines and catalogues
  - Glossy Paper
  - Post-it Notes
- No food wrappers or cups
- No "crack & peel" (laser printer labels)

Here are some reasons to recycle office paper

- Federal law requires Federal agencies to recycle.
- Federal agencies are allowed to retain funds generated from the sale of recycled materials; the funds must be used to enhance or establish other recycling or pollution prevention programs.
- Executive Order 12873 requires federal agencies to procure and use office paper containing 50% recycled content, greatly increasing the market value for recycled paper.
- Results of the recycling climate survey conducted at the Center indicated that 96 percent of respondents have a strong interest in recycling.

Need more reasons to recycle paper?

See the Office of Safety, Environment and Mission Assurance's Channel 11 broadcasting station. The Video Section has produced a six-minute video on white paper recycling at the Center. If you have more questions or comments, call Leslie Holland, Office of Environmental Engineering at ext. 48690, or Dollie McCown, Logistics Management Division at ext. 43561. If you experience a backlog of paper at any time, call Dave Stiegerwald of the Bionetics Corporation at ext. 48058 for paper pick-up.

Langley Walkers Stepped Out

A special thank you from the American Heart Association and the entire Langley Fitness Center staff goes to all those volunteers who participated in the American Heart Walk '95 and those who donated money. The Langley team was part of the 300 walkers that gathered on a rainy day to "Step Out against Heart Disease and Stroke." From the Langley team of walkers, five raised $100 or more. They are, clockwise, Mark Lake, Jannie Davis, Betty Lane and Lauretta Payne. The fifth, Gwen Leach, is not pictured.

Freedom-from-Smoking Classes Offered

A free orientation meeting for Freedom-from-Smoking classes will be at 6:30 p.m. on Monday, Nov. 20 at the Sentara CarePlex Center, Coliseum Drive, Hampton. The eight-week class sessions cost $50 and are open to everyone. For registration or more information, call Nancy LaCross, American Lung Association coordinator at 723-4393.

Astronaut Donates Pictures for Easter Seals Auction

Many people know Dr. Byron Lichtenberg as a Payload Specialist but to the Easter Seal Society he is a hero on Earth too.

Lichtenberg has flown two shuttle missions, representing more than 100 scientists with experiments from all over the world. He studied the upper atmosphere and the sun on the shuttle Atlantis in March 1992 and had the opportunity to take many pictures.

Lichtenberg donated several of the pictures to be auctioned at the Easter Seal Fourth Annual Celebrity Art and Silent Auction fundraiser to be held Thursday, Nov. 16, 7 to 10 p.m. at Animation Restaurant in Virginia Beach. Photos include a sunrise and sunset, the launch, an aurora, Florida, the landing, the Atlas Mountains of Africa and the seven crew members of the ATLAS-1 mission.

The event will benefit critically needed programs and services that allow disabled persons to achieve equality and independence. For information and reservations, call Easter Seals at 468-3140.

A Message from the Director

Congratulations to all NASA Langley Research Center employees and contractor staff who helped the Center recycle 125 tons of paper during the past year! 125 tons represents a healthy start to a responsible recycling program, but we must do more. Federal mandate requires all Federal agencies to recycle. But, more importantly, recycling is an effective way to reduce pollution and save energy and water while preserving our natural resources. Funds generated from the sale of recycled materials can be used to enhance the Center's recycling and pollution prevention programs. As we move towards the 21st century, the Center will strive to achieve a "paperless" office environment. As we make that transition together, I ask each one of you to participate in this worthwhile effort to the fullest extent possible.

— Paul F. Holloway, Center Director

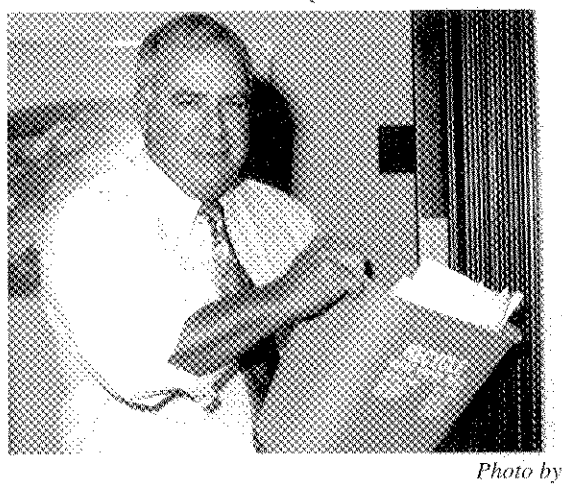


Photo by Katie Reid

Center Director Paul F. Holloway leads the way in Langley's recycling efforts.

CFC Helps Make the Peninsula Habitable for Community Residents

Peninsula Habitat for Humanity Celebrates Its 10th Anniversary

Since 1985, Peninsula Habitat for Humanity (PHH) volunteers have been building homes in partnership with the Peninsula community's residents — people in need of housing. Habitat's mission is to provide affordable home ownership to families who otherwise may never be able to own a home because of low or modest income. The organization helps build quality homes for low-income folks and then sets up an interest-free mortgage for them.

Dr. Russell DeYoung, a research scientist in the Chemistry and Dynamics Branch, is the president of Peninsula Habitat for Humanity (PHH). This year, PHH is celebrating its 10th anniversary. To mark this date, PHH has established a goal of building 10 homes in 1995. Seven are presently under construction. "Peninsula Habitat for Humanity is committed to building simple, decent affordable housing for low-income families throughout the Peninsula until everyone has a decent place to live," DeYoung said. "We also try to build things besides houses — people's self-esteem, teamwork, sharing and ultimately, people's lives. Habitat is a vehicle for churches and community groups to reach out to the poor."

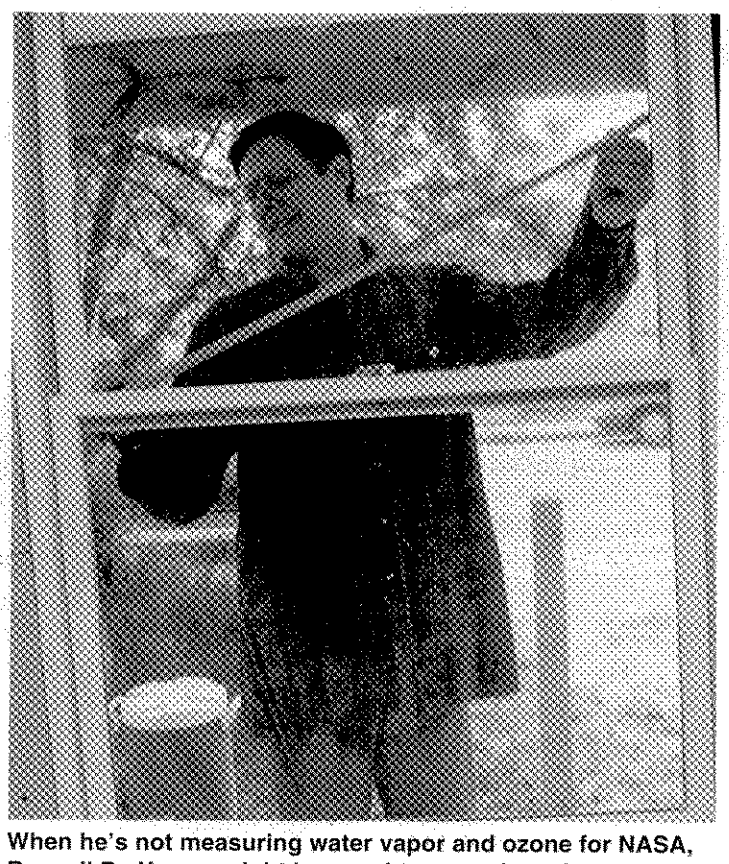
In addition to houses and lives, PHH builds partnerships and communities that will assist families for the long term. Home owners aren't the only ones who benefit from Habitat's vigor. Volunteers improve their own creative and construction skills, get a chance to meet new people, travel with work groups, and enjoy a rewarding endeavor that's also a lot of fun. "By helping others in a practical way, working with PHH helps all of us forge a more solid, healthy community," DeYoung said.

Habitat for Humanity is a Combined Federal Campaign-funded agency that can be supported by Langley employees' contributions to the CFC. Consider your contribution to PHH or the national Habitat for Humanity, a helping hand for people like you who want to build homes and lives and families.

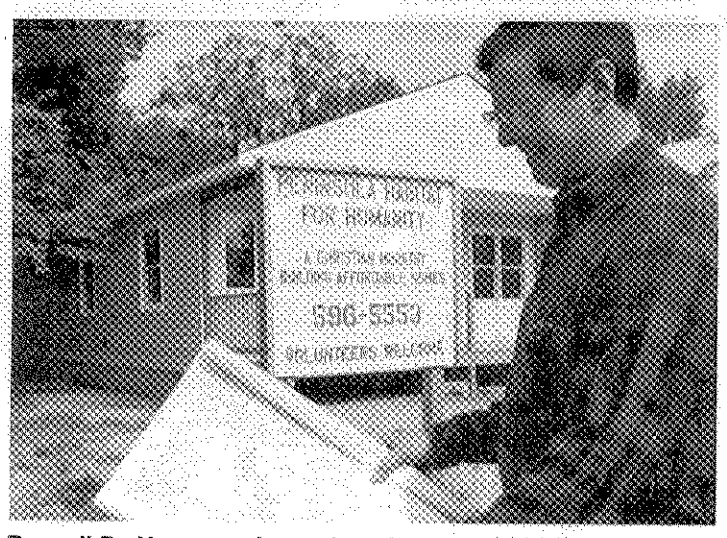
"Habitat is one of today's best investments by people who want to help others. Habitat's key to success is not providing charity, but capital, to worthy families shackled by poverty," said former U.S. President and Habitat for Humanity volunteer Jimmy Carter.

As stated in the PHH Mission Statement, "We will build homes with voluntary labor and donated materials so home construction cost will be minimized . . . We will treat all Habitat home owners with respect and dignity . . . accomplish our mission by establishing partnerships with people of other faiths, local governments, business, civic organizations and churches . . . strive to work with the citizens where our homes are built. Together we will combat substandard housing and make affordable housing a matter of conscience. . ."

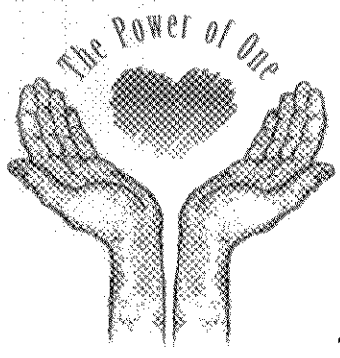
To find out how you can volunteer on the Peninsula, call Peninsula Habitat for Humanity at 596-5553.



When he's not measuring water vapor and ozone for NASA, Russell De Young might be caught measuring windows for one of the Peninsula Habitat for Humanity's affordable homes. Volunteers form the foundation of Habitat. Prospective home owners log 400 hours of "sweat equity" in the construction of their own or another Habitat home.



Russell De Young reviews plans for one of Peninsula Habitat for Humanity's affordable homes. De Young, a research scientist in Langley's Atmospheric Science Division, is a co-founder and the current president of this 10-year-old ministry. To celebrate this decade of service to the Peninsula, he is leading Habitat to build 10 homes this year as part of their Ten for the Tenth publicity campaign. Seven are currently under construction.



Reading's Fun Bookfair Returns

At the August *Reading's Fun* Bookfair, shoppers make their purchases. The bookfair is an opportunity to make great gift purchases for the holiday season.

Stop and mark your calendars! The excitement continues as the *Reading's Fun* Bookfair returns to Langley for a third time. It will be here just in time for Langley employees to make holiday gift purchases.

Tables will be set up in the Cafeteria Building 1213 for purchases Wednesday, Nov. 15 through Friday, Nov. 17 from 9:30 a.m. to 2 p.m. If you missed the earlier bookfairs, make time to stop by to see what is available for purchase.

A sampling of books will be on displayed Monday and Tuesday, Nov. 13 and 14 outside the Exchange Shop. Selections will include adult and children's books, stationary, photo albums and children's games, all at up to 70 percent off the retail price. No back orders will be taken. Selection is limited so plan to purchase gifts early.

This will be the last opportunity to take advantage of the bookfair before the holiday season. For more information, call the Exchange Shop at ext. 41585.

AIAA HRS Invites Nominations

The American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section (HRS) is pleased to announce the call for nominations for the 1996 "Engineer-of-the-Year" award. Through this award, one member of the AIAA HRS is recognized each year 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 selected individual will be subsequently nominated for AIAA Region I and AIAA National Engineer-of-the-Year awards by the Hampton Roads Section. Past winners for this prestigious local award were Wilmer H. Reed, III (1995) and Neil Driver (1994).

Everyone is invited to submit a nomination by sending the name and phone number of a deserving candidate by Nov. 10, 1995. Based on the number of nominations received, the nominating committee will contact the individuals for more specific information.

This year's nomination committee members are: Dr. Paresh Parikh, Dr. Steve A. Rizzi, A. Gary Price, Brian F. Beaton and Wilmer H. Reed. Please send information via e-mail to "Parainc@aol.com" or contact Paresh Parikh at ext. 42244.

CFC Brochure First of its Kind

Langley is the first organization in the United States to put the Combined Federal Campaign (CFC) brochure on the Internet, according to Jack Clough, United Way program manager for the Combined Federal Campaign.

Jack Garber of United Way of America said, "The monster CFC brochure is the single most expensive element of CFC campaigns across the nation and putting it on the web [World Wide Web] is revolutionary! Other CFC communities will soon adopt the Peninsula initiative as a model. Thank you NASA Langley Research Center." "Congratulations all! Thank you so much," Clough said.

Happenings

SKYWATCHERS ASTRONOMY CLUB will host telescopic viewing of the sky on Friday, Nov. 3, from 8 p.m. until midnight at the club observatory, Building 1231A. Telescopes will be set up for this event, which is free and open to the public. No reservations are necessary. Children are welcome, and adults need to show a photo ID and mention the event at the main gate. If the sky is cloudy, the event will be held the following night, Saturday, Nov. 4. For information call Marilyn Ogburn at ext. 41175.

THE WILLIAMSBURG SYMPHONIA: The 1995-96 season has begun. The Dec. 10 concert will feature Handel's *Overture to Messiah*, Menotti's *Amahl and the Night Visitors* and other holiday favorites. March 24 and May 20, 1996 are the dates for future "Music for all Seasons" concerts. For information, or to reserve tickets, call The Symphonia office at 229-9857.

FOR SALE: Apple color high-resolution, RGB 14-inch monitor, excellent condition. Asking $215. or best offer. Call Ruby at 456-9134

SKI CANADA: Ski six days at Mont Tremblant, Quebec, Jan. 21 to 27, 1996. Trip includes round-trip transportation, 6-day lift pass, six nights lodging at Chalet des Chutes and six breakfasts and dinners, for $643. Call Norman Willey at ext. 44130 or 482-9559.

FREE FENCE: About 50 feet of fencing, 5-feet-high chain link with top rail and gate in very good condition. Dig it up and haul it away. Call Roger at 838-1734.

FOR SALE: Hampton Club 2BR condo, 1 bath, wall-to-wall carpet, extra appliances, ceiling fans, vertical and mini-blinds, security system, pool and fitness center, near Langley and shopping, Call Dorothy Burch at 827-1400.

BADGE CORDS: NASA colors — limited time only. Comfortable, classy satin rope badge cords in NASA colors of red, blue and white are now available at the Exchange Shop, along with the standard colors of black, white, red, blue, green, purple and gold. Be the first in your building to show your colors! For information call ext. 41585.

TRAVEL SPECIALS: Cancun trips on sale until January 1996; great deals on Hawaii until Dec. 15; shopping weekends in Montreal and Toronto; discounts for seniors on cruises through Dec. 16. For details, call Shannon at ext. 47696.

THE VIRGINIA CHORAL SOCIETY will premier its 65th anniversary season with "An Evening In Paradise" in concert with the Hotel Paradise Roof Garden Orchestra. Enjoy music of the 1920s and 1930s with James Powers, interim artistic director, and the 80 voice chorus joining with Lynn Summerall's orchestra. Two performances, Friday, Nov. 3 at Hampton Roads Academy, Newport News, and Saturday, Nov. 4 at Matthew Whaley School, Williamsburg. Both concerts begin at 8 p.m. Tickets, available at the door: general admission $7, family $18 (admits 4); senior citizens, students and military $5. For further information Call 851-9114 or 800-400-4VCS.

FOR SALE: 1978 Oldsmobile 88, one owner, asking $650. Call 229-0188.

Federally Employed Women to Meet

Langley Chapter, Federally Employed Women: "Career Transition Table Talk" is the topic for the monthly meeting on Nov. 6 at 6 p.m. at the Olive Garden Restaurant, Mercury Boulevard, Hampton. Sharon Ellis, former Langley employee, will be the facilitator. After taking the buyout this year, Ellis founded Alternative Temporary Workforce, Inc. (A-TEMPS), a temp agency that she owns and operates. She has eight large client companies, and a list of 40 others who want to use A-TEMPS services. Come join in the "table talk" and learn how you can make the transition from being employed to employing others! For reservations, call Patsy Campbell, ext. 43291.

AIAA MEETING: Insurance Coverage for the Young Engineer — not a sales pitch, but an explanation of how the insurance system works and what you need to be adequately covered. The speaker will be James P. Bradner of The Chesapeake Agency, presented by the AIAA Young Members Committee at 5 p.m., Tuesday, Nov. 14, in the H.J.E. Reid Conference Center Langley Room. Open to all employees. Reservations are not required and refreshments will be served. For additional details, contact Lynda Foernsler at ext. 48146.

Notice: Time to Request 1996 Calendars

The 1996 calendars are in stock. Stock requests (SF 55) should be submitted to the Stockroom, Mail Stop 382. Each branch secretary should submit branch and section requirements to reduce the number of requests.

The stock numbers for the calendars are listed:

- NSN 7510-01-337-4706 for calendar wall display three months, 11-5/8" by 8-7/8," unit of issue (U/I) pkg. 10 each
- NSN 7510-01-337-4711 for calendar desk blotter, 18" by 22," U/I each
- NSN 7510-01-363-3704 for calendar pad regular flipover, 3" by 3-5/8" U/I each
- NSN 7510-01-363-4996, calendar pad executive flipover, 3-5/8" by 5-7/8," U/I each
- NSN 7530-01-337-4697 for weekly appointment book, 11" by 8-1/2," U/I each
- NSN 7530-01-363-6706 for loose-leaf appointment book refill for six-ring binder, U/I each

Photo by Carole Chapman

Jay Waravdekar, left, of Computer Science Corp., helps John Meyer of the Facilities Program Development Office into a Global Positioning System (GPS) backpack at Internet Fair 2. As part of the Geographical Information System (GIS) traveling equipment, Meyer can survey and update Langley's topology data, including buildings and utility lines. (See the Internet Fair story on Page 1)

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 23 ❖ November 17, 1995

Special Colloquium: Astronaut Thagard To Tell About Life Aboard Mir

BY MARNY SKORA

America's longest-flying space traveler, astronaut Norman Thagard will be the guest speaker at a special colloquium Dec. 5 at 2 p.m. at the H.J.E. Reid Conference Center. He will relate his more than 100-day experience as an inhabitant of the Russian space station Mir.

Mir Experience

Thagard blasted off into space on a Russian Soyuz-TM rocket from the Baikonur Cosmodrome in Kazakhstan March 14 with cosmonauts Vladimir Dezhurov and Gennady Strekalov. The three returned to Earth July 7 after more than three months aboard the Russian station.

Their return necessitated the docking 245 miles above Earth of the Shuttle Atlantis with the Mir, the two largest vehicles ever to meet in space. It took some of NASA's best precision flying to pull off the delicate space link, the first since the Apollo-Soyuz mission 20 years ago. Atlantis commander Robert "Hoot" Gibson had a three-inch margin in which to maneuver as he eased the shuttle into Mir's docking port. Thagard will relate details of the historic linkup as he watched from the Mir point of view.

An electrical engineer, a licensed physician and a pilot, Thagard will talk extensively about life aboard the Mir.

During the Mir 18 mission, Thagard and his Russian counterparts conducted 28 scientific experiments. Even more important than their "work" in space, though, was the opportunity to study the mental and physical well-being of culturally diverse crews who will live together on the international space station.

Norman E. Thagard, M.D.

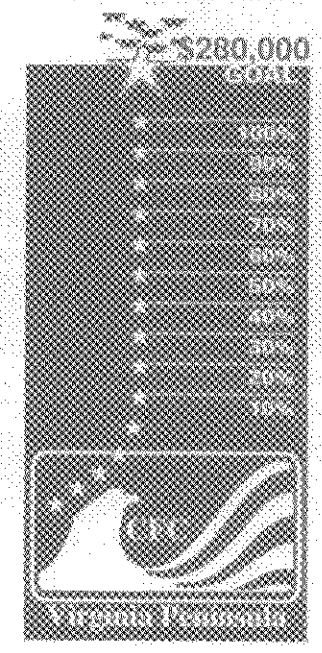
In addition, Dr. Thagard, the new U.S. record holder for continuous space flight, will give a first-hand account of what it is like to readapt to Earth's gravity after prolonged periods in space. The near-zero gravity environment of space is known to stretch the spine, wither bone and muscles, shrink the heart, confuse the brain and confound the senses. The astronaut and cosmonauts underwent extensive medical examinations upon their return to Earth and have had periodic checkups since. In fact, the Mir mission has given physicians the best idea yet of how to combat the effects of long-term weightlessness on the human body.

Sigma Series

Thagard will make the same presentation at 7:30 p.m. at the Virginia Air and Space Center as a Sigma Series Lecture. The Sigma Series, sponsored by NASA Langley Research Center, the Virginia Air and Space Center and *The Daily Press* is free to the public.

Born in Marianna, Florida, Thagard is a graduate of Florida State University with bachelor's and master's degrees in engineering science. He earned his medical degree from the University of Texas Southwestern Medical School, following duty as a combat pilot with the Marine Corps in Vietnam. Thagard flew 163 combat missions in Vietnam as an F-4 pilot, from 1969-70. He joined NASA as an astronaut in January 1978. A veteran of five space flights, Thagard has logged a U.S. record of 140 days in space.

CFC — Over the Top — Thanks for Doing It Again!



This Year's Numbers

With 73 percent employee participation, three percent higher than last year, the Center reached 110 percent of its 1995 Combined Federal Campaign goal. Nearly $308,000 was collected or pledged this year and the average gift was $18 higher than last year's.

A Thank You from the Director . . .

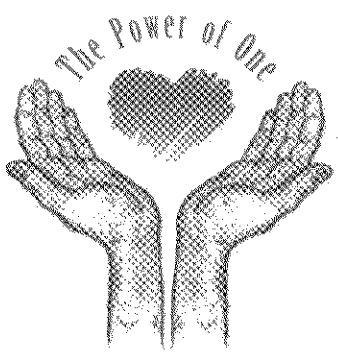
Thanks to your generosity, the Center has once again exceeded its Combined Federal Campaign goal of $280,000.

We thank each of you who contributed for your support as individuals and as a Center. Your generous response reinforced the value of the Power of One and, as you know, will make a difference for those less fortunate.

– Paul F. Holloway
Center Director

A Thank You from the Chairperson . . .

On behalf of the CFC Team, I would like to thank each of you for your generosity in supporting this year's campaign. With the help of the CFC Team, the Organizational Coordinators, and the Key Persons, the campaign to date has received pledge cards totaling over $307,800. The average gift this year increased by more than 13 percent and the participation rate increased by two percent.



Your response to the campaign, in light of the pressures facing LaRC and its employees, is another measure of your spirit and confidence in the future.

Thank you once again.

— Irving Abel
CFC Chairperson

How to Make The Best Use of Your Langley Public Affairs Office

BY CATHERINE E. WATSON

Do you have a project that deserves attention from the news media? The NASA Langley Office of Public Affairs can help.

As the liaison between the Center and the media locally, nationally and around the world, public affairs is the place to go if you've got an invention, discovered something new about the Earth, sent an experiment into space or have some other newsworthy story to tell.

In fact, the act of Congress that created NASA actually requires "the widest practicable and appropriate dissemination of information concerning its activities and results thereof."

Public affairs can help get your story out by:

- Developing a plan for attracting media attention.
- Providing coaching on how to work with the media.
- Generating a variety of media products such as news releases, fact sheets, video, photographs, graphics and animation.

Here are a few tips to help you get the most from your public affairs office:

Plan ahead. It sounds simple, but many researchers don't put public affairs into their initial project plans. Public affairs should be involved with your project from the beginning. We can help you determine what media materials you will need, and how to best explain your research to the media.

Video is king. If you don't take video footage of your project, you'll probably get no coverage from local television stations, and none from national TV. Video for television must be in BETA format (no VHS!), short (less than five minutes) and to the point (no music or narration). Video must also be accompanied by an interview with the appropriate researcher to explain what the project means. If done properly, this video can also be transmitted over the NASA satellite, through the daily NASA TV Videofile, to stations around the country. Tomorrow morning, people in Iowa could be discussing the latest research to come out of NASA Langley Research Center – your research.

A picture is worth a thousand words. The right graphic or photograph can help the media and their audience better understand what your project means and how it works. Look through your newspaper and examine the graphics used to explain difficult concepts. You'll find they're very different from the graphics you use to explain concepts to colleagues. Public affairs, with the help of Langley's graphics shop, can help you develop the right illustrations to explain your project and its ultimate results. The office also can help you take photos that highlight your project and its importance.

The KISS principle. We know what you mean when you say you're getting great data on 'frequencies and mode shapes,' but would your parents or your next door neighbor? Public affairs can help you explain technical concepts in a simple, straightforward way. If people don't understand what you're doing and what it means to them, why should they be interested in your research? Public affairs can help you develop fact sheets that will explain the important concepts of your project to the media so they can convey the message to the American taxpayer.

Continued on Page 2

News Briefs

Around the Agency

ASTRONAUT PRECOURT HEADS TO RUSSIA – Astronaut Charles J. Precourt will replace Michael A. Baker as the NASA manager of operational activities at Star City, Russia, near Moscow. As Director of Operations, Russia, Precourt will support training and preparations of NASA astronauts at the Gagarin Cosmonaut Training Center (GCTC), Star City. He also will be the primary link between NASA and the GCTC management, coordinating all training and other operations involving NASA or contractor personnel in Star City. Precourt, the fifth astronaut to serve in this rotational assignment will continue to establish operational and personal relationships with Star City management and the cosmonauts. These relationships are pivotal to successful, long-term joint operations involving NASA, the Russian Space Agency and GCTC. Precourt will join fellow astronauts Shannon W. Lucid, Ph.D. and Jerry M. Linenger (Commander, USN), who are training in Star City for future missions aboard Mir. Precourt was the pilot aboard STS-71, the Atlantis/Mir rendezvous in June.

NASA CHARTS COURSE FOR FIRST NEW MILLENNIUM FLIGHT – NASA officials have confirmed the basic mission profile and technology plan for the first launch in the agency's New Millennium program, and selected the mission's primary industrial partner and its team leader. The first of three deep space missions to be flown by the year 2000 under the New Millennium technology validation effort will feature a 1998 launch of a small spacecraft destined for a flyby of an asteroid and a comet. Spectrum Astro, Inc., of Gilbert, Ariz. was selected as the primary industrial partner on the first mission team, which will be led by David Lehman of NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif. The proposed 220-pound spacecraft will demonstrate a variety of advanced technologies that help enable many ambitious deep space and Earth-orbiting missions envisioned by NASA for flight early in the next century. The spacecraft also will be the first to rely on solar electric propulsion for its main source of thrust, rather than conventional solid or liquid propellant-based systems.

NASA INSTRUMENT ILLUMINATES LINKS BETWEEN LIGHTNING, TORNADOES – A NASA lightning detector is intriguing scientists with the possibility of identifying the formation of tornadoes and severe storms from space. Research scientists at the Marshall Space Flight Center, Huntsville, Ala., using data from the Optical Transient Detector (OTD), are building a global picture of the role of lightning in the atmosphere, including lightning produced by large storms. These data are significant because the "flashrate" of lightning may provide, in conjunction with other detection systems, an indication of the formation of tornadoes. Launched April 3 aboard a Pegasus rocket, NASA's OTD has been observing lightning flashes as it passes over severe storms. Taking advantage of the perspective from orbit, the detector gives researchers a much more comprehensive view of lightning generated by severe storms than is generally available from ground observations.

Public Affairs . . .

Continued from Page 1

Be realistic. Some topics intrinsically are more appealing than others to the news media, so be prepared for a candid appraisal from the public affairs staff. But don't let that scare you off – the office will do its best to help.

Remember, the squeaky wheel gets the grease. If you want attention for your project, public affairs can help, but only if the office knows your project exists. Even if you're doing proprietary work now, when the project is finished you'll want to have lots of photos and video to show for your work. When that big company tells everyone it achieved a breakthrough with the help of NASA Langley, we should be prepared to tell our side of the story with photos, fact sheets, graphics and video.

The head of public affairs is Michael Finneran at ext. 46121. Aeronautics, technology transfer and high-speed research is handled by Keith Henry at ext. 46120. Space and atmospheric sciences are handled by Catherine Watson at ext. 46122. If you don't know where your project falls, call ext. 46123 and a secretary will direct you.

While you're at it, you might take a look at the NASA Langley OPA home page at: http://www.larc.nasa.gov/org/pao/

Whitesides Honored by IAF

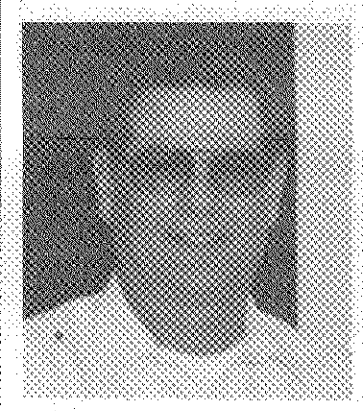
Dr. John L. Whitesides

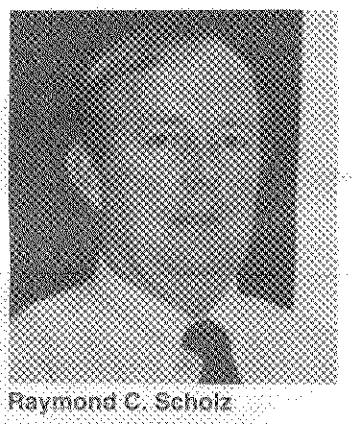
Dr. John L. Whitesides, professor of engineering and applied science, The George Washington University and Associate Director, Joint Institute for Advancement of Flight Sciences (JIAFS) at Langley, was presented the Frank J. Malina Medal by the International Astronautical Federation. The presentation was made at the 46th International Astronautical Congress in Oslo, Norway on Oct. 6. Whitesides was cited for "Outstanding contributions to space education" by the Federation.

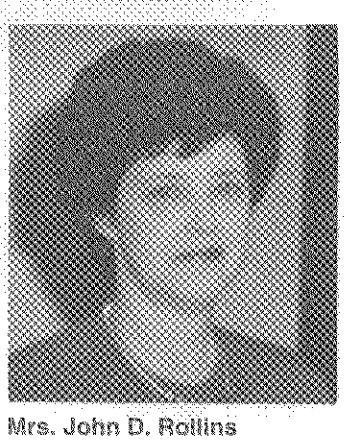
Executive Safety Board Presents Awards

At the Executive Safety Board meeting Oct. 25, Deputy Director Dr. H. Lee Beach presented the following people with awards. The Annual Facility Coordinator Award was given to Raymond C. Scholz, Buildings 1257 to 1262. The Annual Facility Safety Head Award was awarded posthumously to John D. Rollins, and accepted by Mrs. Rollins, for Building 1268A. A quarterly Facility Safety Head Award was given to John T. Hughes III of Building 1296.

Beach thanked each of these employees for their support in their important safety duties.


John T. Hughes


Raymond C. Scholz


Mrs. John D. Rollins

In Memoriam

Donald H. Ward

Donald Henry Ward, age 71, died Sunday, Oct. 29.

Ward worked for the National Advisory Committee for Aeronautics (NACA) and its successor, NASA Langley, for 36 years, retiring in 1982 as construction manager of the National Transonic Facility.

His career spanned aeronautic research work in advanced wind tunnels and crossed into the space age with lead positions in Langley-managed re-entry and space flight projects to the moon and Mars.

Grover C. Collie

Grover C. Collie died Monday, August 21. He retired from the Scout Office in 1981 after nearly 30 years of service at Langley.

Robert S. Holloway

Robert Stephen Holloway, age 91, died Tuesday, Oct. 24. He was a native and lifelong resident of Poquoson.

Holloway retired from Langley in 1967.

Walter C. Williams

Walter C. Williams, age 76, died Saturday, Oct. 7 in California.

His career in government and private industry spanned five decades and included a term as the associate director of the Johnson Space Flight Center. He joined Langley in 1959 as associate director of the Space Task Group, a group of experts that gathered to develop the human space flight effort known as Project Mercury. He retired from NASA Headquarters in 1982.

Community Corner

THANKSGIVING DINNER FOR THE PENINSULA FAMILY

The Salvation Army — with help from our local schools and churches — provides food for Thanksgiving dinner for hundreds of families on the Peninsula who might otherwise not enjoy this tradition.

What a wonderful way to burn "use or lose" leave and perform a valuable community service!

HERE'S HOW YOU CAN HELP

The Salvation Army needs volunteers to:

- **pick up donated food** at area schools and churches
- **pack food baskets** for the local needy
- **distribute baskets** to Peninsula families

Pickup and packing will take place Monday and Tuesday, Nov. 20 and 21. Do you have a truck you could use to transport donated food? Volunteers should meet at the Salvation Army facility, 1033 Big Bethel Rd., Hampton. Call Patricia Ann Dixon at 838-1443 to say you can help.

Correction: A photo of Dee Bullock in the article entitled "NASA Langley at Forefront of Electronic Publishing," should read "of the Research Publishing and Printing Branch," The Scientific and Technical Information Division no longer exists.

News Researcher

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. **Articles, photos and announcements are due at noon the Monday following the date of this issue.**

Managing Editor. . . . . Catherine Watson

Editor. . . . . Ann C. Gaudreaux
Science and Technology Corp.

Assistant Editor. . . . . Jeane Shanks
Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman
Science and Technology Corp.

Photographer . . . . . Fred Jones

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 Dishes Serve As World-Wide Communication Links

STORY AND PHOTOS BY CAROLE CHAPMAN

How many times have you driven or walked by Langley's satellite dishes and wondered why they were there? You probably know that they are used to communicate with other NASA centers, and to receive satellite programs. Did you know, however, that the use of the dishes has changed over the years in response to advances in technology?

The dishes most prominently visible are situated across from the H.J.E. Reid Conference Center and across from Building 1268A, 24 West Taylor St. Only one of the three is presently in operation — the large dish closest to the conference center. It is both an uplink and downlink to NASA-TV, the NASA satellite television system. Live programs such as certain colloquiua and educational programs are transmitted via this dish. If Administrator Daniel Goldin were to speak to all of NASA during a Langley visit, his speech, at the conference center, would be transmitted from that dish.

The Simulsat Dish

The Center's most versatile satellite dish, a 2-year-old newcomer, is an unusually shaped antenna located behind Building 1201, 15 West Taylor St., called the Simulsat. The Simulsat can simultaneously downlink from 11 of the approximately 35 communication satellites in geosynchronous orbit serving North America. Presently, it receives CNN®; The Weather Channel®; Headline News®; C-SPAN®; C-SPAN 2®; and National Technological University, a consortium of universities that provide classes for advanced degrees. In addition, Simulsat functions as a backup to receive, but not transmit (it is only a downlink), NASA-TV. The remaining channels are used to downlink occasional broadcasts from various satellite services. The Simulsat has saved Langley the cost of installing many individual antennas.

Although the stationary Simulsat is relatively hidden behind Building 1201, the three steerable dishes on top of the building are easily visible. Presently, two are used to receive broadcasts from satellites that are not serviced by the Simulstat.

Ground-Trackers

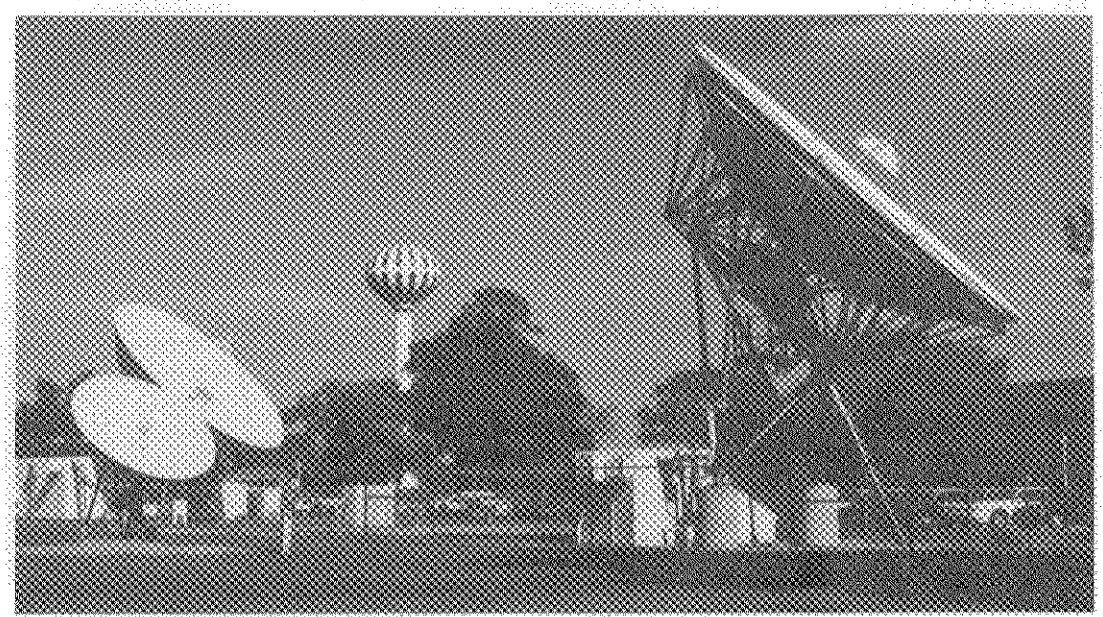
When visitors go to the Pearl I. Young Theater, they see two satellite dishes in the parking lot across from the theater and next to Building 1299, 8 North Dryden St. The antennas are not in use now but have an interesting history. Originally moved here from Coquino Beach in North Carolina, the dishes had been used at ground-tracking stations to follow re-entry nose cones launched from Wallops Island.

At Langley, they were used to demonstrate that visual images of NASA rocket launches and deep space probes could be received from satellites and displayed for Langley employees at the H.J.E. Reid Conference Center. Their successful results justified the construction of the dishes across from the center, described earlier.

Weather Dishes

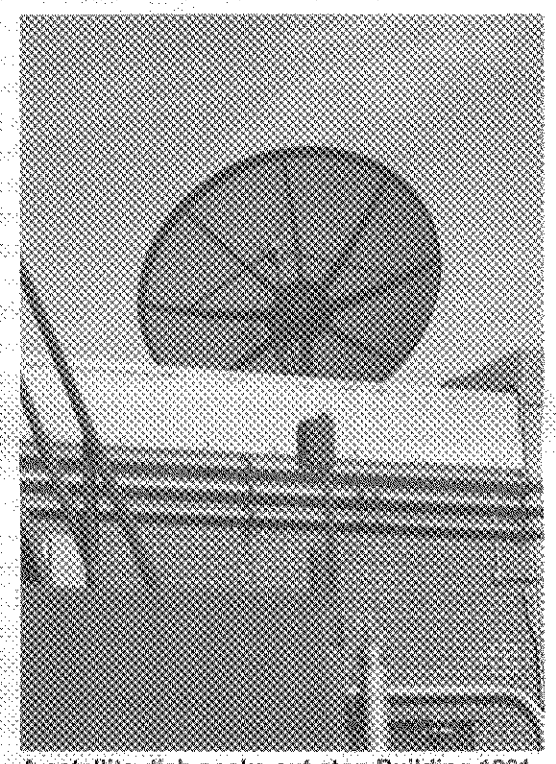
Two little-known antennas are located on the top of Building 1250, 21 Langley Blvd. Casualties of recent budget cuts, they had been used from 1985 until early 1994 to receive weather information and satellite imagery at the Atmospheric Sciences Division's Global Meteorological Data Facility. This data was used in support of atmospheric sciences field experiments throughout the world, which included the NASA Global Tropospheric Experiment missions in Africa, Alaska, Brazil, Canada, Guam, Hong Kong and Japan.

Other Langley antennas include two on the hangar, Building 1244, now used for weather information and telemetry tracking. Several dishes on top of the Impact Dynamics Research Facility, "The Gantry" also receive radio signals from WHRO, Langley security, safety, fire, flight operations, the Air Force and other government agencies.

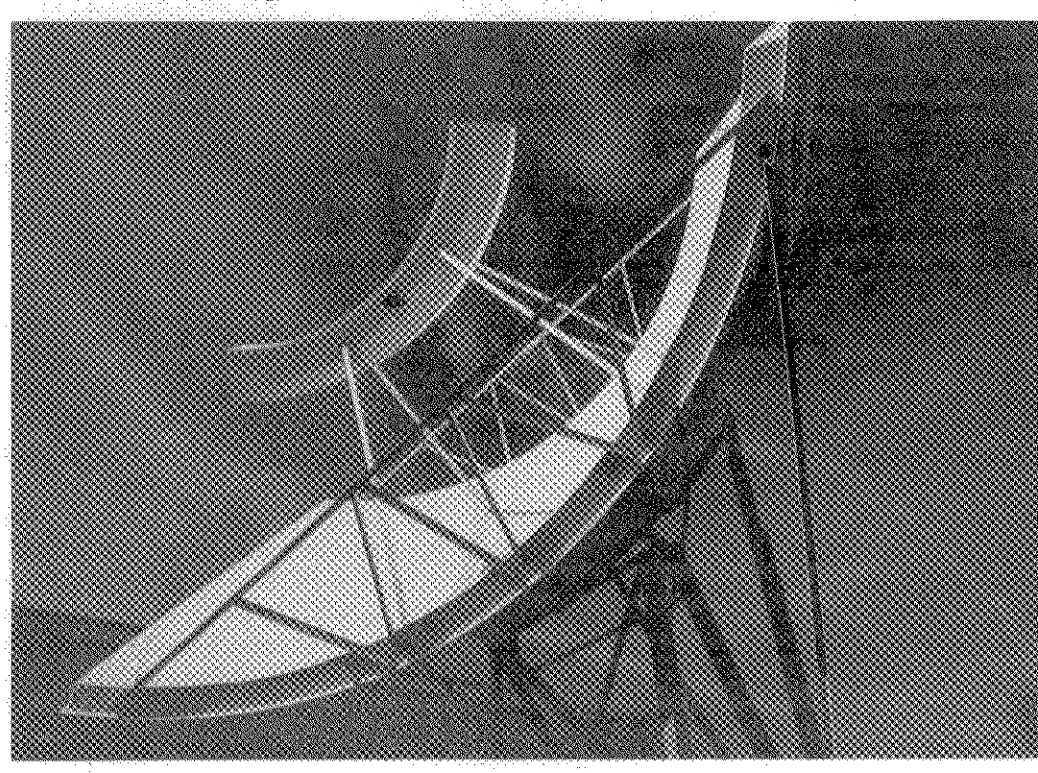


The three satellite dishes near the H.J.E. Reid Conference Center are across the street from Building 1268A on Taylor Street. The Langley water tower rises in the background.

Located in the parking lot across the street from the Pearl I. Young Theater, this dish was moved to Langley from North Carolina.

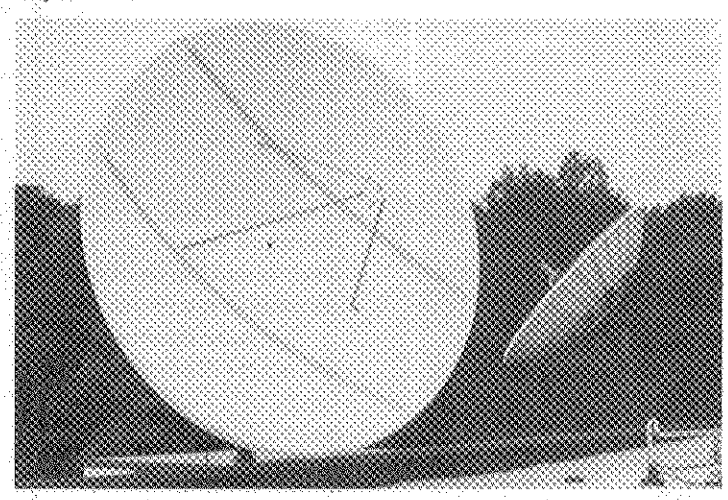


A satellite dish peeks out atop Building 1201.



The Simulsat, left, with its innovative shape, is versatile enough to be able to receive information from multiple satellites.

Found on top of Building 1250, below, are satellite dishes that were used to support atmospheric sciences field experiments.



Langley's "Cultural Diversity in the Workplace" Training

BY ANN CARLSON, MARY ANN STEUCK AND MIKE MITCHELL

Cultural diversity is a phrase used to identify differences among groups and individuals in the workplace. It includes, but is not limited to race, age, sexual orientation, gender, ethnicity, color, national origin, class, disability or religion. Multiculturalism is the concept of maintaining the differences that people bring with them to the workplace. A multicultural organization values and reflects the contributions and interests of diverse cultures in its mission, operations, products and services.

Learning In Class

Where does Langley fit in? Is it diverse? Is it a multicultural organization? In Langley's "Cultural Diversity in the Workplace" class participants learn more about these concepts and the benefits of working in a multicultural organization. The two-day workshop has not been what many people expected. A team leader from the Internal Operations Group (IOG) commented, "I took the course and enjoyed it very much. It was not only a useful training experience but also a lot of fun! It laid to rest any speculation about what multiculturalism and diversity are. I highly recommend it."

Overview Of Training

The short overview that follows may help prepare future participants.

The class is about recognizing cultural differences in the workplace and examining the ways, both individually and organizationally, that employees deal with differences. It's about discovering our own cultural "lenses" and how they affect our approaches to work and interactions with colleagues. It's also about how we can make Langley's organizations more effective in the face of the existing and future diversity of the Center's workforce. A technician from IOG said, "To me, the most important concept in the class is that in dealing with others, it is easy to 'stereotype' people as having certain, undesirable traits, and how negative that behavior can be. The class stressed being sensitive to people from different backgrounds. It also demonstrated the value of working in a diverse environment."

Learn Through Experience

Because studies show that adults learn best through experience, the workshop uses simulations where participants experience the concepts discussed during the class in a controlled environment. There is plenty of interaction where participants learn from each other. Lectures are confined to communicating basic concepts and developing a shared vocabulary for discussing cultural differences. A research engineer in the Space and Atmospheric Sciences Program Group said, "I went to the course ready to be annoyed but found it enlightening. I'm convinced that the quality and effectiveness of the course was greatly enhanced by the employment of professional diversity instructors from outside the Langley culture."

What It Is Not

It's important that participants know what the class is not. No attempt is made to give attendees extensive information about various cultures — it's not possible to define "all you need to know" in that way. The class is not about blaming, the root causes of prejudice, or righting past wrongs. For this workshop, diversity is understood to be a fact of life and facilitators emphasize how to best work with the diversity that exists and will continue to exist at Langley. Some specific tools for dealing with certain common situations will be presented, although this is not a "methods" course with formulaic solutions. Instead, presenters try to give participants more options and a broader framework for assessing experiences and deciding appropriate actions.

Bring an open mind to the training sessions. They are meant to be a non-threatening, worthwhile investment of employees' time — and fun as well. A personnel specialist from the Office of Human Resources said, "The course stressed how we can make a difference on an individual level. It was the best class I've attended in my 15 years here."

For more information, contact the Multicultural Leadership Team at mclt+ideas@larc.nasa.gov or call Mike Mitchell at ext. 44815. Multicultural Diversity workshops are scheduled for all civil service employees through February 1996.

VASEF Third Annual Aerospace Teacher's Workshop

BY PETER THOMAS

Seventy K-12 teachers from across the state of Virginia participated in the third annual Virginia Aviation and Space Educator's Forum (VASEF) Aerospace Teacher's workshop at the Virginia Aviation Museum this fall. The six-hour workshop was designed as a kick-off for Virginia Aviation Week. The teachers were treated to a keynote speech by Dr. W. Bosher Jr., superintendent for Public Instruction, Virginia Department of Education, who is an instrument-rated, private pilot. Bosher related numerous anecdotes related to flying and education with the methodology of teaching aviation-related subjects in the classroom.

The teachers participated in various aerospace activities from a pre-flight of a general aviation aircraft, pre-flight planning with the required weather considerations, en route planning, a rocketry fabrication and launch, model aircraft building and launching and, finally, a lighter-than-air construction of nine-foot-tall hot air balloons capable of flight.

The teachers were recommended to receive 15 recertification points toward the 180 points required every five years in the state of Virginia. A follow-up program is planned for early winter so that participants can contribute meaningful ideas into lesson plans or articles describing aviation activities that they have implemented in the classroom. The lesson plans or articles will be shared in the VASEF newsletters with all participants and the Langley Office of Education precollege specialists.

This program is another example of the type of program designed to fulfill Executive Order 12821, executed by President Bush, which charged all Federal agencies with scientific missions to assist in science and mathematics education to meet the National Education Goals. The highest priority is to establish teacher enhancement programs. Langley's Office of Education, in partnership with the Virginia Department of Aviation, developed the VASEF workshop as one way to comply with the executive order.

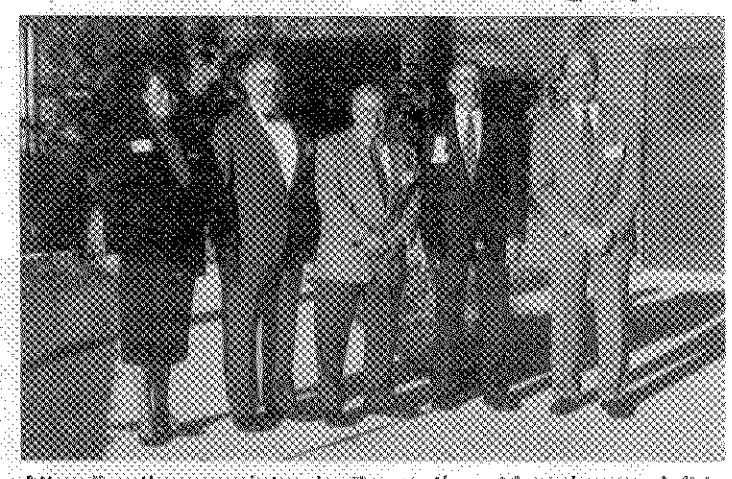
Office of Education's Peter Thomas, above kneeling, shows teachers pieces of the hot air balloons to be constructed. Below, teams of teachers successfully assembled and launched several nine-foot-tall hot air balloons.

Photos by Ken Wilson

Education Superintendents Meet at Langley

Representatives from the State Superintendents Offices of Education, Public Instruction, in Langley's five-state region for kindergarten through grade 12 (K-12) education, visited Langley's Office of Education in late October. They were here to discuss their state's critical needs in precollege education, as well as to explore potential partnerships with Langley. The states invited were Kentucky, North Carolina, South Carolina, Virginia and West Virginia. Langley supports these meetings as part of the mandated role that NASA has, because of Executive Order (EO) 12821, in mathematics and science education. EO 12821, Improving Mathematics and Science Education in the National Education Goals states that NASA will:

- Assist in the mathematics and science education of our Nation's students, teachers, parents and the public;
- Establish Agency programs to train teachers;
- Transfer education-related equipment to schools with the greatest needs; and
- Provide training and technical assistance in the use of equipment.



Attending the superintendent's meeting at Langley are, left to right, Dr. Nancy Dunlap, senior executive assistant for Collaboration, South Carolina Dept. of Education; Dr. William Bosher Jr., superintendent, Public Instruction, Virginia Department of Education; Center Director Paul Holloway; Dr. James Strom, director, Information Resources Management, North Carolina Dept. of Public Instruction; and Dr. Keith Smith, assistant state superintendent, West Virginia Dept. of Education.

Among other topics discussed by the representatives were the Stevenson-Wydler Technology Innovation Act, Distance Learning Initiatives and the High Performance Computing and Communications Program.

Schuster Wins Lockheed's Highest Technical Award

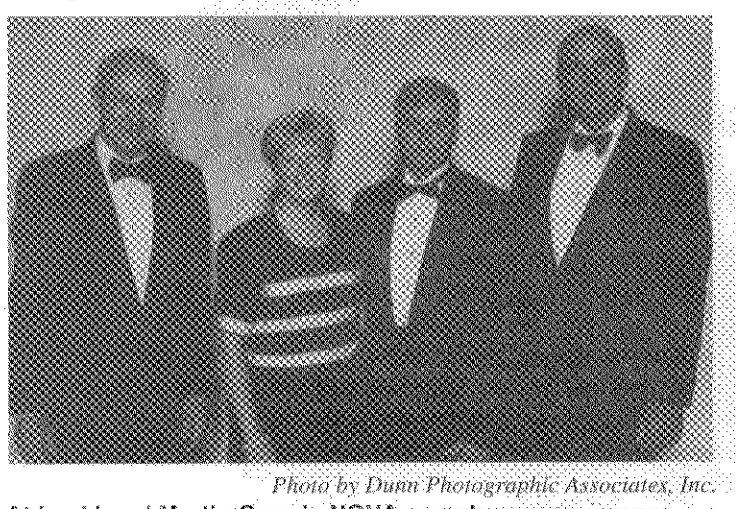


Photo by Dunn Photographic Associates, Inc.

At Lockheed Martin Corp.'s NOVA awards ceremony were, left to right, Dan Tellep, chairman and CEO, Lee Schuster, Dave Schuster and Norm Augustine, president.

Dr. David M. Schuster of Lockheed Martin Engineering and Sciences' Langley Program Office, was one of the winners of Lockheed's corporate NOVA awards. The awards are given each year to individuals who have made outstanding contributions to the Lockheed Martin Corporation.

Schuster's award was based on work he performed supporting Langley's former Unsteady Aerodynamics Branch. There he worked on the development, application and verification of computational aeroelasticity methods. The specific application recognized by the NOVA award was the development of concepts for improving performance of advanced fighter aircraft. Schuster combined Navier-Stokes computational fluid dynamics (CFD) methods and aeroelastic tailoring to reduce the trimmed pressure drag on fighter aircraft wings performing high-g maneuvers employing a simultaneous application of control surface deflection and aeroelastic twist. His paper describing this technique was named Best Paper at the 1993 American Institute of Aeronautics and Astronautics Applied Aerodynamics Conference.

Schuster has been a Lockheed Martin employee for 18 years. He began his career with the former Lockheed-Georgia Co. as an engineering co-op in 1977, and in 1991 joined Lockheed Martin at Langley where he has been performing aeroelasticity studies under contract to Langley.

Schuster's NOVA award plaque reads, "For outstanding technical achievement in the development of a Navier-Stokes aeroelastic method to improve fighter wing performance at maneuver flight conditions without compromising cruise performance."

OMDC Team Recognized for Clementine Mission

Photo by Peggy Hopkins and Sandy Gibb

Following the Orbital Meteoroid and Debris Counting (OMDC) Experiment Team awards ceremony, held in August, Project Manager Burt Lightner, center, stands with fellow team members. Lightner recently retired from the Space Projects Office. Not all team members listed in the article were available for the photo.

The Orbital Meteoroid and Debris Counting (OMDC) Experiment Team, led by Project Manager E. Burton Lightner of the Space Projects Office, and William H. Kinard, OMDC's chief scientist, were honored during a ceremony this summer.

OMDC Explained

The OMDC experiment satellite was carried on a space probe named Clementine that was launched in February 1994. Clementine went on toward the moon but left an interstage adapter carrying OMDC to orbit the Earth for three months. OMDC's job was to get hit by speeding micro-meteoroids and floating space debris and collect data.

Lightner, now retired, said, "We were confident that this would be a successful experiment and we were rewarded with lots of data to analyze."

Kinard said, "The results from the OMDC experiment have shown that spacecraft can encounter, for periods as long as several days, clusters or swarms of natural meteoroids. During these encounters, the impact fluxes can increase orders of magnitude over the background sporadic impact flux."

The OMDC Team

Team members honored at the ceremony were William H. Kinard and James L. Jones, Materials Division; John A. Greco, Arthur R. Hayhurst, Henk A. Roelant and Robert W. Wallace, Office of Safety, Environment and Mission Assurance; E. Burton Lightner, Space Projects Office; Curtis D. Armstrong, Michael A. Flood, Denise M. Linthicum, William R. Motley III, Curtis R. Regan and Thomas A. Shull, Aerospace Electronic Systems Division; Sharon K. Crockett, Thomas A. Grepiotis, Charles E. Jenkins Jr., Howard C. Jones, Jeffrey R. Knutson, Thomas R. Levin, Jeffrey J. Pierro, J. Richard Rawls and Charles J. Wittkopp, Aerospace Mechanical Systems Division; Harriet R. Dismond and Philip C. Kassel Jr., Experimental Testing Technologies Division; and Clarence W. Bailey, Lloyd W. Binger, Kevin M. Bonila, Donald G. Bowen, Ernest C. Burt III, James Fields Jr., Peggy W. Harmon, Samuel E. Harper Jr., Jane M. Hogge, Jimmy L. McRae, Louis E. Simmons, Michael E. Tall, Thomas M.Walker and Henry N. Zumbrun, Fabrication Division. Also on the OMDC team were William M. Munden III, Calvin N. Nguyen and Lyman A. Stilley, Lockheed Martin Engineering and Sciences Corp.; Peggy McCloud, Raytheon Support Services Co.; Bruce Ash, Brian Hornung, Vena Misra and Jimmie J. Wortman, North Carolina State University; and John P. Oliver, University of Florida.

Virginia Air and Space Center News

Virginia Air and Space Center
Hampton Roads History Center

Weekend Programs

In conjunction with new IMAX® film *Wings of Courage*, the center is offering new educational programs during November. *Why Do Planes Fly?* programs are every Saturday and Sunday from 11 a.m. to 4 p.m. in the main gallery. The program is free with admission.

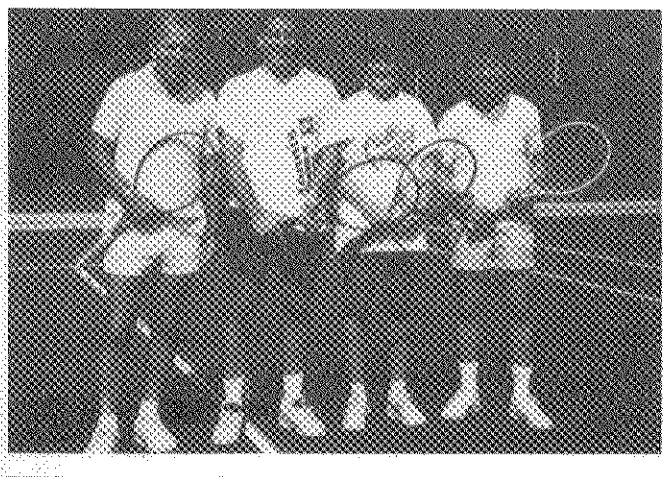
Explore the miracle of flight and learn about the four forces of flight. Visitors can also build a simple astrolab and discover the reality of Bernoulli's Principle.

Center admission is $6 for adults, and $4 for seniors (age 65+), military, NASA employees with identification and children ages 3 to 11.

Astroblast Holiday Camp

Come to an Astroblast Holiday Camp, Dec. 27 through 29 from 9 a.m. to 3 p.m. each day.

Spend three days at the home of the Apollo 12 Capsule exploring the final frontier. Enjoy the fun of working in space by participating in both individual and group projects. Participants will make lots of make-and-take items to show off their creativity. Price for the camp is $60 per child for all three days. It includes snacks and an IMAX® film. Children need to bring their own lunch. For more information, call 727-0900.



Winners of Langley's Mixed Singles Tennis League

Langley's Mixed Singles Tennis League games were played at the Langley tennis courts from June 26 to Sept. 12. The league format was four teams each with four players. Team 4 won the league's final tournament with a combined record of 36-12. Team 4 members, from left to right, are Joe Drozdowski, Sean Sullivan, Sarah Sullivan and Dr. John C. Lin.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program is designed to permit employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. Please contact Lisa Allen at extension 42610 for more information. Your annual leave donations are greatly appreciated.

The following Langley Research Center employees are approved leave recipients: Marilyn Aldrich; Lisa Peckham; Cassandra Stevens; Charles Washington; Beckie Williams; and Joni Williams.

Happenings

CHESAPEAKE BAY RAILROADERS: Open House is Saturday, Nov. 18, 10 a.m. to 5 p.m., Sunday, Nov. 19, 1 to 5 p.m. on Dare Rd. behind the Grafton Hobby Center. Railroad Flea Market will be at Dare Elementary School, 10 a.m. to 5 p.m. Saturday, Nov. 18. Admission is $2 for adults, children under 12 are free. Call 898-0717.

FREEDOM FROM SMOKING: Free orientation session, Nov. 20 at 6:30 p.m. at the Sentara CarePlex Center, Coliseum Drive, Hampton. Eight-week class cost is $50. Call Nancy LaCross for registration/ information at 723-4393.

BUY HOLIDAY BADGE CORDS: Festive satin rope badge cords in holiday colors for Hanukkah and Christmas are now at the Langley Exchange Shop.

FOR SALE: 1984 Buick Skyhawk; $600 or best offer. Call 888-8879.

FOR SALE: Hampton Club 2BR condo, 1 bath, extra appliances, security system. Call D. Burch at 827-1400.

NATIONAL TECHNICAL ASSOCIATION (NTA): Monday, Nov. 20, the NTA Hampton Roads Chapter invites you to its monthly meeting at 7 p.m at the Hampton Central Public Library, Victoria Blvd. and Kecoughtan Road. Contact Melvin Ferebee, ext. 44421, or Robert Lee, ext. 45679, for more information.

BOSNIA RESCUE MISSION: The American Helicopter Society is sponsoring a dinner meeting and presentation by Maj. Mike Ogden, USMC, one of the pilots who executed the rescue mission of USAF Capt. Scott O'Grady from Bosnia. The meeting is Tuesday, Dec. 5 at the Hampton Yacht Club, 4707 Victoria Blvd, starting at 5:30 p.m with a social. Dinner is at 6:30 p.m. Non-members are welcome. Reservations are required by Nov. 28. For information, call Ruth Martin at 864-3723.

ROOMMATE WANTED: Seek dependable person who likes children. Buckroe area, $262.50 + 1/2 util, per month. Small deposit. Call 851-7627, leave message.

THE LAA AEROBICS CLUB features muscle-step classes throughout the holiday season. The class format was tested by the American College of Sports Medicine, and was shown to reduce fat and build muscle mass on participants in a recent study. Classes are taught by certified personal trainers and aerobic instructors. All Langley employees, and families are welcome. All equipment is provided. Classes are from 5 to 6 p.m. on Tuesdays and Thursdays and 9:30 to 10:30 a.m. on Saturday in the LAA gym. Call ext. 42295 for more information.

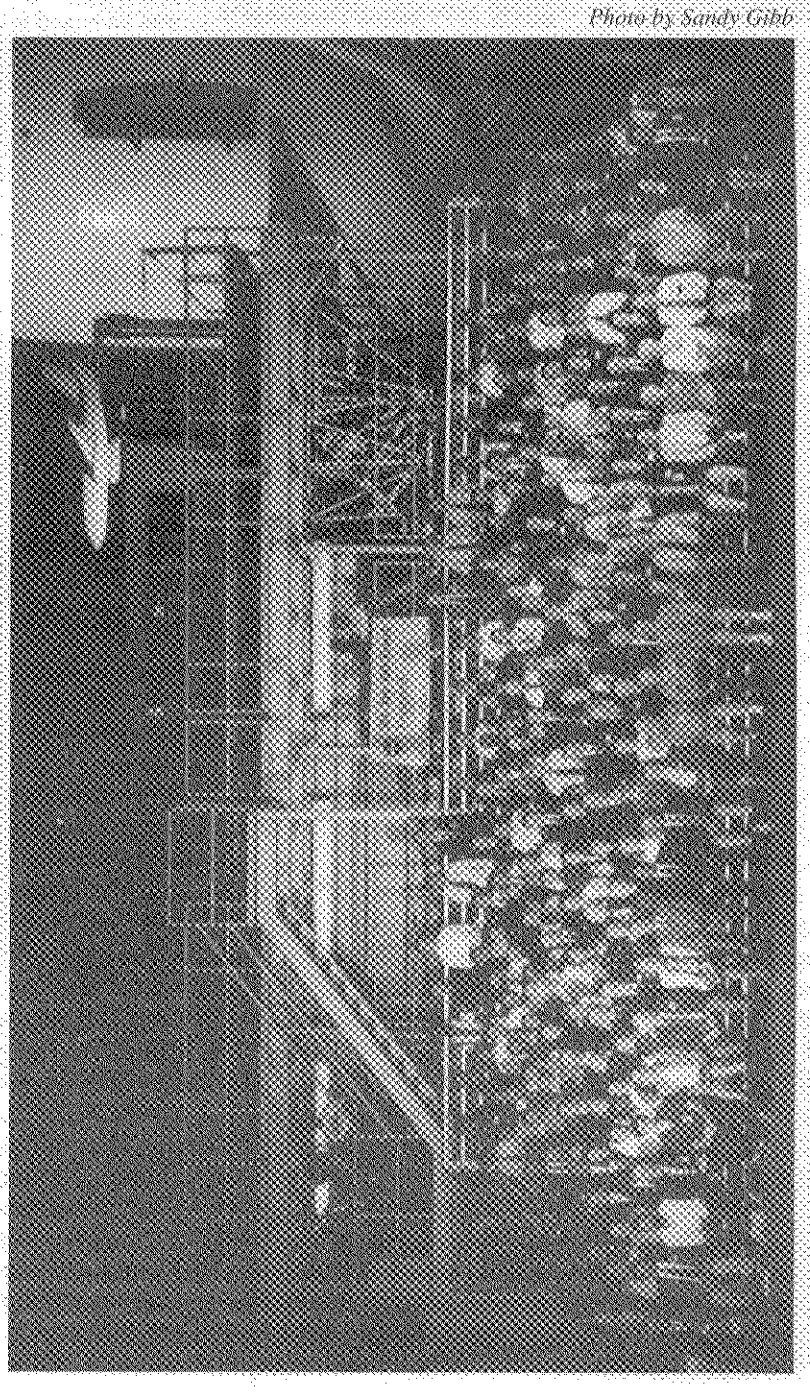
VA SYMPHONY: 20% off tickets for all NASA employees to Virginia Symphony Masterworks, Pops and Mozart concerts, all season. Holiday Pops concert with the Symphony Chorus is Dec. 2 and 3 at the Opera House. Call the ticket store at 623-2310.

AT CNU: Students interested in science and technology at the undergraduate and graduate levels are invited to Christopher Newport University College of Science and Technology Open House, Saturday, Nov. 18 from 11 a.m. to 1 p.m.

Researcher News Schedule for 1996

Deadline	Distribution
January 2	January 12
January 16	January 26
January 29	February 9
February 13	February 23
February 26	March 8
March 11	March 22
March 25	April 5
April 8	April 19
April 22	May 3
May 6	May 17
May 20	May 31
June 3	June 14
June 17	June 28
July 1	July 12
July 15	July 26
July 29	August 9
August 12	August 23
August 26	September 6
September 9	September 20
September 23	October 4
October 7	October 18
October 21	November 1
November 4	November 15
November 18	November 29
December 2	December 13

Photo by Sandy Gibb



30- BY 60-FOOT TUNNEL CLOSES: In the tunnel, about 200 Langley employees, retirees and well-wishers gathered for the Oct. 27 "retirement party" for NASA's oldest operating wind tunnel, celebrating the end of 64 years of testing. Its work will now be done by other wind tunnels. The 30- by 60-Foot Tunnel was declared a National Historic Landmark in 1985.

National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
Official Business. Penalty for Private Use $300.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

NEWS
Researcher

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 24 ❖ December 1, 1995

Thagard to Speak Dec. 5

Astronaut Norman Thagard will be the guest speaker at a special colloquium Dec. 5. America's longest-flying space traveler will relate his more than 100-day experience as an inhabitant of the Russian space station Mir at 2 p.m. at the H.J.E. Reid Conference Center.

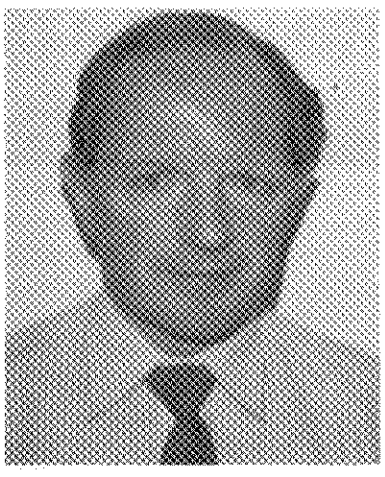
Thagard blasted off into space on a Russian Soyuz rocket from the Baikonur Cosmodrome in Kazakhstan March 14 with cosmonauts Vladimir Dezhurov and Gennady Strekalov. The three returned to Earth July 7.

Thagard will relate details of the historic linkup of the Shuttle Atlantis with the Mir as he watched from the Mir 245 miles above Earth. It took some of NASA's best precision flying to pull off the delicate space link, the first since the Apollo-Soyuz mission 20 years ago.

Thagard will make the same presentation at 7:30 p.m. at the Virginia Air and Space Center as a Sigma Series Lecture. The Sigma Series, sponsored by NASA Langley Research Center, the Virginia Air and Space Center and *The Daily Press* is free.

McWha to Speak on Teamwork During 777 Development

A Colloquium entitled "The 777 - 'Working Together' Works" will be presented by Jim McWha, chief engineer of Flight Systems for the Boeing Company. The talk will be given at 2 p.m. Dec. 12 at the H.J.E. Reid Conference Center.


Jim McWha

The 777 is the latest member of the Boeing family, the largest twin-engine airplane ever built and certified on schedule for long duration, over-water flights. The development of this airplane set a new standard for cooperation between Boeing and the airlines, the suppliers and especially between engineering and operations within Boeing.

The Boeing 777

The new airplane uses a number of sophisticated systems to provide the level of functionality and maintainability required. With the interdependency of many of the systems, there are opportunities for errors due to miscommunication. The 777 program, however, relied on the "Working Together" spirit of the inter-functional teams, and the most comprehensive test program ever undertaken to produce a service-ready airplane.

McWha will provide an overview of the program and describe some of the new features of the airplane, such as the flight control system, the first commercial airplane from Boeing to rely entirely on fly-by-wire controls.

Presenting the Speaker

McWha is chief engineer of Flight Systems in the Boeing Commercial Airplane Group. This organization is responsible for flight deck design, primary and secondary flight control systems and automatic flight controls for all Boeing airplanes.

McWha has been with Boeing for 29 years and worked, primarily in flight controls, on all of Boeing's airplanes at various times. He managed the flight controls organization throughout the development of the 777; significant because it was the first fully fly-by-wire flight control system for Boeing.

Before joining Boeing, McWha graduated from Queen's University, Belfast and worked for Short Bros. McWha is a member of American Institute of Aeronautics and Astronautics (AIAA), an SAE Control and Guidance Committee member, a member of the National RC Committee on Airplane-Pilot Coupling and, recently, a member of the Guidance and Control ARTS subcommittee which reviews NASA research programs.

In celebration of the Holiday Season
The Director of Langley Research Center
and Mrs. Paul F. Holloway
cordially invite all NASA civil service employees,
retirees and contractors
to attend a Reception at the
H.J.E. Reid Conference Center
on the afternoon of December 15, 1995
from one to three o'clock

Sponsored by the Langley Activities Association,
the Langley Federal Credit Union and
the Office of Public Services

Government Presents An Open and Shut Case

After congressional leaders and President Clinton could not reach an agreement on the latest budget spending bills by midnight on Monday, Nov. 13, Langley employees joined the company of 800,000 other federal workers and were sent home at noon Nov. 14 to begin an involuntary furlough.

All employees were required to report for work on Tuesday, the 14th and, had budget talks held more promise, workers might not have been dismissed.

Of the more than 2,500 civil service employees on Center, some security and emergency workers, "excepted personnel," stayed on to work. Of the nearly 2,000 contractors at Langley, several were allowed to stay on to carry on essential services. The total came to about 25 people. Approximately 18,000 federal workers were affected on the Peninsula alone. President Clinton vetoed two spending bills presented to him by Congress. Each bill held language about Medicare premium increases and other appendages concerning education, the environment and affordable health care that the President found unacceptable.

As the gridlock continued for several days, Langley employees and the nation in general were left wondering when and how it would end. Would a temporary funding measure allow everyone back on Center to get back to work, or would a "deal" be cut that would resolve the impasse? Even though employees who had been working for the government had seen furloughs and shutdowns in the past, none had gone on for more than a day, and several had lasted only a few hours, allowing a more or less seamless workflow. This time, things were different. People began to be concerned, especially with the holiday season looming.

By Sunday, Nov. 19, federal employees had been enduring the longest furlough in the country's history, and hoped for a rapid end to the shut down. President Clinton announced a temporary solution had been reached that would enable the government to reopen, at least until Dec. 15 when the whole process could begin again.

See photo on Page 4.

Budget Process Part VI: Support of Research — A Congressional Update on Page 3

News Briefs

Around the Agency

NASA ACHIEVES FIRST PROPULSION-CONTROLLED LANDING OF A TRANSPORT AIRCRAFT – Using only engine power for control, NASA research pilot and former astronaut Gordon Fullerton landed a McDonnell-Douglas MD-11 transport aircraft recently at Dryden Flight Research Center, Edwards, Calif. The milestone flight was part of a NASA project to develop a computer-assisted engine control system that enables a pilot to land a plane safely when its normal control surfaces are disabled. Following several incidents in which hydraulic failures resulted in loss of part or all of their flight controls, NASA started developing a propulsion-controlled aircraft (PCA) system in which engine thrust provides the control needed to land an aircraft safely. The PCA system uses standard auto pilot controls already present in the cockpit, together with the new programming in the aircraft's flight control computers. The PCA concept is simple—for pitch control, the program increases thrust to climb and reduces thrust to descend. To turn right, the auto pilot increases the left engine thrust while decreasing the right engine thrust. Since thrust response is slow, and the control forces are relatively small, a pilot would require extensive practice and intense concentration to do this task manually. Using computer-controlled thrust greatly improves flight precision and reduces pilot workload.

Speakers Bureau Report

The following persons participated in the Speakers Bureau program during October and early November.

Cary Spitzer, spoke at the Institute for Learning and Retirement about "Exploring Mars."

Dr. Joseph Heyman spoke at the Institute for Learning and Retirement about "Technology Transfer: NASA Langley's Partnerships with Non-Aerospace Industries."

Gretchen Gottlich spoke at the Institute for Learning and Retirement about "Doing Business with the World Wide Web."

Dr. Pat McCormick spoke at the Institute for Learning and Retirement about "The First Lidar in Space: LITE."

John Mouring spoke at the Awareness Lecture and Cultural Art Series on "National Historic Landmarks."

Doreen Neil spoke to the Physics Department, the University of Richmond, about "Measurement of Atmospheric Pollution from Satellites (MAPS)."

Sue Grafton spoke to the members of the Amateur Radio Club about "Full-Scale Tunnels and Langley History."

Eli Siman-Tov spoke to the members of Eta Kappa Nu at Old Dominion University (ODU) about "Computer Engineering."

Paul Miner spoke at ODU's Peninsula Graduate Center about "Formal Methods Applied to Floating-Point Arithmetic."

Leonard Weinstein spoke to the American Association of Aeronautics and Astronautics (AIAA) Hampton Roads Section about "Optical Technique for Examining Aircraft Shock Wave Structure in Flight."

Sharon Crockett spoke at Virginia Tech Prep Project Directors' Staff Development Workshop about "The Benefit of a Tech-Prep Curriculum for the Employer."

Mary Wusk spoke at ODU's Electrical Engineering Department about "Life after College."

Bruce Fisher gave a presentation to the AIAA Langley Student Branch entitled "Lightning Effects on Aircraft."

Jane Hogge spoke to students at Colrain Elementary School, Colrain, Mass., about "NASA: Past, Present and Future."

Speakers Bureau: You Make a Difference

Do you get recognized for the volunteer talks you give to groups in the community or do you just shrug off your contributions?

Langley is proud of its Speakers Bureau and of the employees who support it. Please let us know if you speak to a community organization or at an educational institution.

Any civil service or contract employee on Center who speaks about NASA's work, either as the result of a request from the Speakers Bureau coordinator, or a direct request, should send his or her name, mail stop and phone number, date and place of the talk, title of the talk and the number of attendees to "Speakers Bureau, Mail Stop 154" the month the talk is given. Please include a point of contact, address and phone number for the requesting organization.

This information is used to identify the areas and levels of interest the community has in Langley's work, the kinds of organizations requesting speakers, and the number of people that have been reached by Langley employees. The success of the Speakers Bureau program cannot be measured without the support of its participants. Help us a do a better job and recognize your efforts at the same time.

For more information, call Cathy Schauer, Speakers Bureau coordinator, at ext. 43314.

CIT President Appointed to Space Flight Authority

Governor Allen of Virginia announced the appointment of Dr. Robert Templin Jr., president of Virginia's Center for Innovative Technology, to the Virginia Commercial Space Flight Authority. The authority, established this year by Virginia's General Assembly, will benefit the life sciences, telecommunications and environmental protection fields by assisting in creating a commercial space flight center at Wallops Island.

"Think of the possibilities . . . the state will attract more aerospace companies as well as better service the more than 250 aerospace companies currently in Virginia," Templin said.

The current facility at Wallops Island has been in existence for more than 50 years and has already launched more than 15,000 small to medium-sized rockets and balloons for experimental purposes.

Letters

Thank You Letter

From Vernon Vann: "I would like to thank each and every one of you who took the time to express your concern during my recent surgery. Life is a very precious gift and, when illness strikes, it makes one realize how important it is to have the support of family, friends and co-workers. It would be hard for me to thank each one of you personally but please know that everything was appreciated."

In Memoriam

William E. Felty

William Elbert "Bill" Felty, age 66, died Nov. 5. Felty had been a resident of the Peninsula for the past 30 years.

He was an engineering technician in the 8-Foot High-Temperature Operations Section at Langley for 28 years before his retirement earlier this year.

A Message from the Director

The holiday season is upon us. For many, the holidays involve traveling on our nation's highways to visit family and friends.

December has been proclaimed National Drunk Driving Prevention Month. Langley Research Center fully supports this nationwide effort to reduce motor accidents on our highways.

Aside from the tragic loss of life, the health care costs resulting from motor vehicle injuries cost Americans more than $14 billion annually. We save $35,000 in health care costs alone for each serious injury prevented. Last year, there were 10,258 persons injured in alcohol-related accidents in Virginia alone. Nearly 380 of those injuries were fatal. By increasing highway safety awareness we can help in the effort to save lives, prevent injuries and reduce traffic-related health care costs.

The most valuable commodity we possess at Langley is our workforce. My concern in this instance is not only for our employees, but for your families and friends as well. Let's all join together to make this holiday season safe, happy and healthy.

Paul — **Paul F. Holloway, Center Director**

Webb Named Outstanding Employee of the Year

Harry Webb, a computer specialist in the Management Information Systems Branch, was recently named "Employee of the Year" by the Hampton Mayor's Committee for People with Disabilities. The award was presented to Webb by Hampton Mayor Jimmy Eason.

Webb was honored because of his long-time work with Langley's Satellite Committee for People with Disabilities (SCPD), his diligence in making disability information available via the World Wide Web, and his commitment to helping both managers and peers better understand the needs and concerns of people with disabilities.

His work in the Management Information Systems Branch centers on the transfer of information systems and communications. His volunteer work as a member of SCPD has been as a go-between for management and persons with disabilities to help them discuss their concerns and initiate changes where necessary.

Webb has been at Langley since 1980 when he started working in what is now the Logistics Management Division. He said "I am honored to have received the recognition but there are other people on the SCPD just as deserving as myself — Beckie Williams, Gerry Pardue, Larry Cooper, Bill Vance, just to name a few. I want to acknowledge my family — parents, brothers and sisters — who have been very supportive since my injury. Without them I think I would have thrown in the towel a long time ago. And I also want to thank all the members of the SCPD and Disability Program Advisory Committee for the time and effort to make Langley what it is — an asset to the community and a great place to work."

News Researcher

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor . . . . . Catherine Watson

Editor . . . . . Ann C. Gaudreaux, Science and Technology Corp.

Assistant Editor . . . . . Jeane Shanks, Science and Technology Corp.

Photojournalist . . . Carole Petrachenko Chapman, Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Spearman Honored

M. Leroy Spearman

M. Leroy Spearman, a NASA distinguished research associate, was honored in November with the Auburn Engineering Achievement Award, by Auburn University, Auburn, Ala.

Spearman, in his fifty-second year of government service, was cited as follows: "Whereas technical and inventive achievements are the hallmarks of the engineering profession and its source of collective pride . . . and the achievements of our engineers have raised the quality of life to levels never before attainable . . . Auburn University is honored to have educated engineers who have excelled throughout a lifetime of exceptional achievements, both technically and in human affairs . . . the College of Engineering wishes to recognize the accomplishments of that select group of engineers who have proven themselves through the attainment of high achievement . . therefore, the Auburn Alumni Engineering Council hereby confers the Auburn Engineering Achievement Award in recognition of exemplary qualities and outstanding achievement to the profession of engineering."

Spearman was honored in 1994 for 50 years of government service, all of them at the National Advisory Committee for Aeronautics (NACA)/NASA Langley.

Reading's Fun Bookfair to Return

Due to the furlough, the *Reading's Fun* Bookfair has been rescheduled for Wednesday, Dec. 13, from 9:30 a.m. to 2 p.m. in the cafeteria, Building 1213.

The bookfair is returning for the third time so Langley employees can make their holiday gift purchases. A sampling of books will displayed Thursday and Friday, Dec. 7 and 8 outside the Exchange Shop. Tables will be set up in the cafeteria for purchases. Selection will include adult and children's books, stationary, photo albums and children's games, all up to 70 percent off the retail price.

Cash, checks and charge cards will be accepted but no back orders will be taken. Selection is limited so plan to purchase early. For more information, call the Exchange Shop at ext. 41585.

NASM Trophy Winners Announced

Sen. John Glenn (D-Ohio), the first American to orbit the Earth, presented the 1995 National Air and Space Museum (NASM) Trophy to X-31 International Test Organization and aviation leader Najeeb E. Halaby.

The X-31 Team received the current achievement award for extraordinary accomplishments in engineering and flight exploration. The X-31 is the first international X-plane, designed and built to prove the feasibility of controlled flight in close-air combat.

Halaby, winner of NASM's lifetime achievement award, has played a leadership role in all facets of aviation — military, government, airplanes and general aviation. He served under President Eisenhower to help shape the Federal Aviation Administration, and under President Kennedy as administrator of the Independent Federal Aviation Agency. He was CEO of Pan American World Airways from 1969 to 1972 and is now president of Halaby International Corp.

Budget Process Part VI: Support of Research

BY LEE RICH, CONGRESSIONAL LIAISON, EXT. 46529

It is interesting that "furlough" is no longer an abstraction and that one furlough may not be enough. The Continuing Resolution (HJ Res 122) enacted Nov. 20 keeps all parts of the Government running through Dec. 15. Should the Appropriations Bill (HR 2099) that funds the Veterans Administration (VA), Housing and Urban Development (HUD) and Independent Agencies, of which NASA is one, not be signed by that time, federal employees would be faced with another furlough. To remind readers what the debate is about, please see the guide below.

Appropriations Bills: Thirteen annual spending bills that fund various departments of the government should have been enacted by Oct.1, the beginning of the fiscal year, for the government to continue to function. Six of the 13 have been passed by Congress and signed into law by the President. Most of the others, including the VA/HUD bill, remain the subject of intense debate.

Continuing Resolutions (CR): Temporary spending measures to fund the government in the absence of appropriations. An initial CR, passed Sept. 30 expired Monday, Nov. 13, with most appropriations bills still outstanding . There was a shutdown. On Nov. 20, another CR was enacted and it expires Dec. 13.

Budget Reconciliation: A long-term plan that defines the steps the Republican Congress will take to achieve a balanced budget by 2002. Passed by both House and Senate, the President vetoed it.

Past Events

Events of the past few months have shown how vulnerable Langley is to political tides. In July, the House VA-HUD Appropriations Subcommittee's move to close Langley was a lesson in hard reality. Programs were targeted for major cuts like Advanced Subsonic Technology and Mission To Planet Earth.

If the focus on Langley and its programs is broadened to include the situation and outlook for all Federally-sponsored research, the picture is indeed grim. A series of bar charts from the National Science Foundation shows why:

Figures 1 and 2 show 1992 R&D expenditures by four countries as percentages of Gross Domestic Product (GDP), to account for differences in the size of economies, for all Research and Development (R&D) and for non-defense R&D. Table 1 shows the breakdown in 1994 of all spending on research and technology in the United States.

Research Is Paramount to Growth

As is well appreciated by Langley, the Federal Government has a long history of involvement in scientific research and technology. There are thousands of examples: the $30,000 given to Samuel Morse in 1842 to build a telegraph line, land-grant colleges to teach agriculture and mechanical arts, the development of transistors, lasers and biotechnology — efforts which have improved the country's economy over and over again. United States leadership in many sectors, not the least of which is aerospace, can be directly traced to Federally-funded research.

However, for a number of reasons — including reform, downsizing, privatization and free enterprise — Congressional action is likely to change the situation dramatically. Figure 3, which is a combination of actual (1990-1995) and projected (1996-2002) expenditures from "Analytical Perspectives: Budget of the United States Government, FY 1996" shows a cut in expenditures of about 30 percent if the Congressional Budget Resolution becomes reality.

Figure 4, from a 1995 report by the Council of Economic Advisors on the Federal Government's role in supporting R&D, is based on the announced intention of the Japanese Government to double its R&D expenditures by the year 2000. The comparison with the projected U.S. expenditures on non-defense research and technology is based on total dollars, not a percentage of GDP. In 1997 Japan begins to outpace the United States and thereafter to take a significant lead.

Table 1 — Sources of Funds for R&D in 1994

	All R&D		Basic Research	Applied Research	Development
	$billions	percent		percent	
Federal Government	62.2	36	58	35	29
Industry	102.1	59	26	58	70
Universities and Colleges	5.3	3	10	5	*
Non-Profits	3.0	2	6	2	*
TOTAL	172.6	100	100	100	100

*less than one percent

Data for Figures 1 and 2 and Table 1 are from the National Science Foundation. National Patterns of R&D Resources: An SRS Special Report. NSF 95-304. 1995.

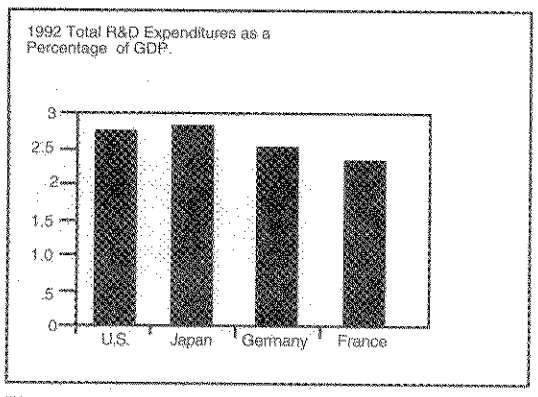


Figure 1

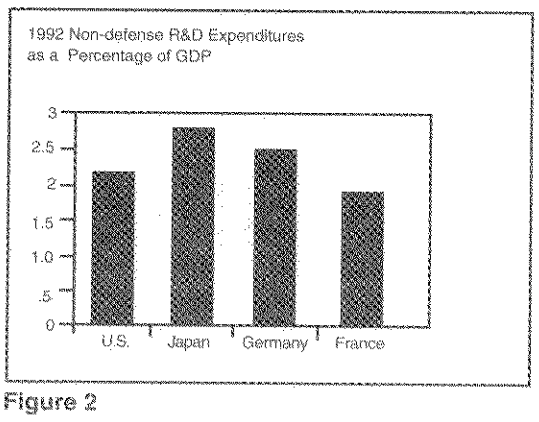


Figure 2

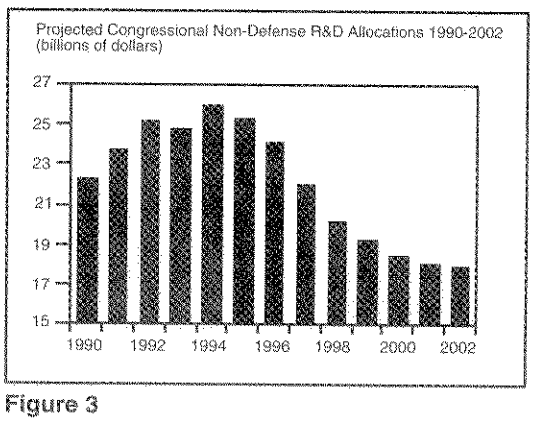


Figure 3

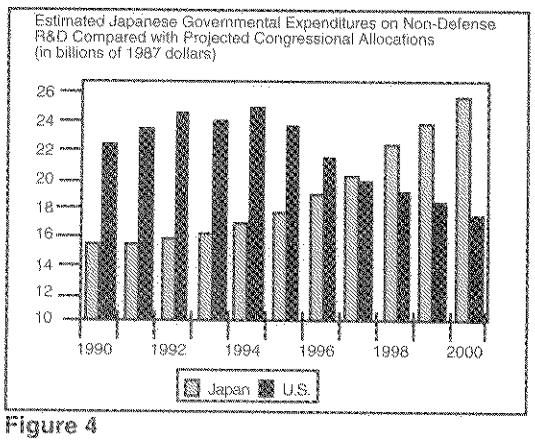


Figure 4

Happenings

FOR SALE: 1977 Toyota Celica GT, 5-speed, good condition, $1,000 negotiable. Call 642-9585 after 6 p.m.

FOR SALE: 1992 Charleston mobile home, 14 x 80, 2 BR, 2 full baths, glamour bath, master BR, large living room and kitchen, central air, $20,000. Call 888-2415.

HOUSE FOR SALE/ RENT/Rent w/option to buy: 3 story, 3 BR, 2 bath Victorian in historical district of Hampton. Finished hardwood floors, workshop, all appliances, 15 min. to Langley. Must see. Call Edward, (301) 595-5841, collect.

OLD TIMERS GET-TOGETHER: The "Old Timers" doughnut and coffee Get-Together will be held Saturday, Dec. 16 from 9 to 11 a.m. in Rm. 121 of Bldg. 1244. For more information, call Calvin or Susie at ext. 43900.

FOR SALE: Hampton Club, 2BR condo, one bath, extra appliances, wall-to-wall carpet, security system, pool, near Langley. Call Dorothy Burch at 827-1400.

Community Corner

Holiday Dinner for the Peninsula Family

The Salvation Army — with help from our local schools and churches — provides food for the Holidays for hundreds of families on the Peninsula who might otherwise not have enough to eat. This is a great way to burn "use or lose" leave and perform a valuable community service!

Here's How You Can Help

The Salvation Army needs volunteers to:

- **pick up donated food** at area schools and churches Dec. 12, 13 and 14;
- **distribute baskets** to Peninsula families Dec. 15 and 18 to 22.

The Salvation Army plans to distribute 3,600 boxes of donated food for the Holidays. In addition to helping hands, trucks are needed for food pickup. Food will be distributed from the Salvation Army facility, 1033 Big Bethel Road, Hampton. Please call Patricia Ann Dixon at 838-1443 to say you can help.

Cookie Power

Help Sweeten Someone's Holiday

Holiday treats can turn a frown upside down! Langley employees can help verify this theory tested in millions of households annually. Just bake an extra batch of cookies or your favorite holiday treat for someone less fortunate.

Last year, over 150 dozen cookies, brownies, fruit bars and specialty items were collected for the Salvation Army's Mobile Soup Kitchen that helps feed the area's homeless. The Langley Community Service Program and the Cafeteria are again sponsoring "Cookie Power." Help us beat last year's record.

- Pick up a plastic container at the cafeteria display
- Fill it when you do your holiday baking
- Seal the container and pop it in your freezer -- or --
- Bring the filled container to the cafeteria for storage
- Return all containers to the cafeteria by December 15

Treats will be delivered to the needy on Monday, December 18.

Holiday Programs Encourage Employees to "Earn Their Wings"

Langley employees are challenged to join the Center's Acquisition Division who traditionally "adopt" Angel Tree kids. A Salvation Army program, Angel Trees are set up in local department stores, malls and churches. These trees are decorated with tags in the shape of angels. The tags carry age and size information about needy children whose holiday "wish" may not otherwise be granted.

Last year more than 6,000 children were helped through the Angel Tree program. Toys and gift items are great, but the real need is warm clothing. Employees can participate by choosing a tag at their favorite shopping location and placing their gift under Langley's Angel Tree located in the cafeteria. The Salvation Army requests that clothing and gifts be new and not be wrapped but placed in plastic bags with the Angel Tree label affixed to the bag.

For more information on the Angel Tree program, call Marny Skora, Langley's Community Service officer, at ext. 43315.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program allows employees to donate annual leave to other employees who are experiencing personal or family medical emergencies. The following Langley employees are approved leave recipients: Marilyn K. Aldrich, Sally C. Johnson, Geraldine N. Pardue, Tammy Jo Price, Lisa F. Peckham, Cassandra Stevens, Charles S. Washington, Carol R. Williams, Joni W. Williams and Darrell A. Wood.

Donors interested in giving "use or lose" leave to recipients currently in the program should send donations via the "Request to Donate Annual Leave to Leave Recipient Under the Leave Transfer Program" form, found in your computer in Informed Manager, to Mail Stop 293, Office of Occupational Health Services or faxed to Karen Ridlon at 49114 by Dec.15. Annual leave donations are greatly appreciated. For more information, call Ridlon at ext. 43194.

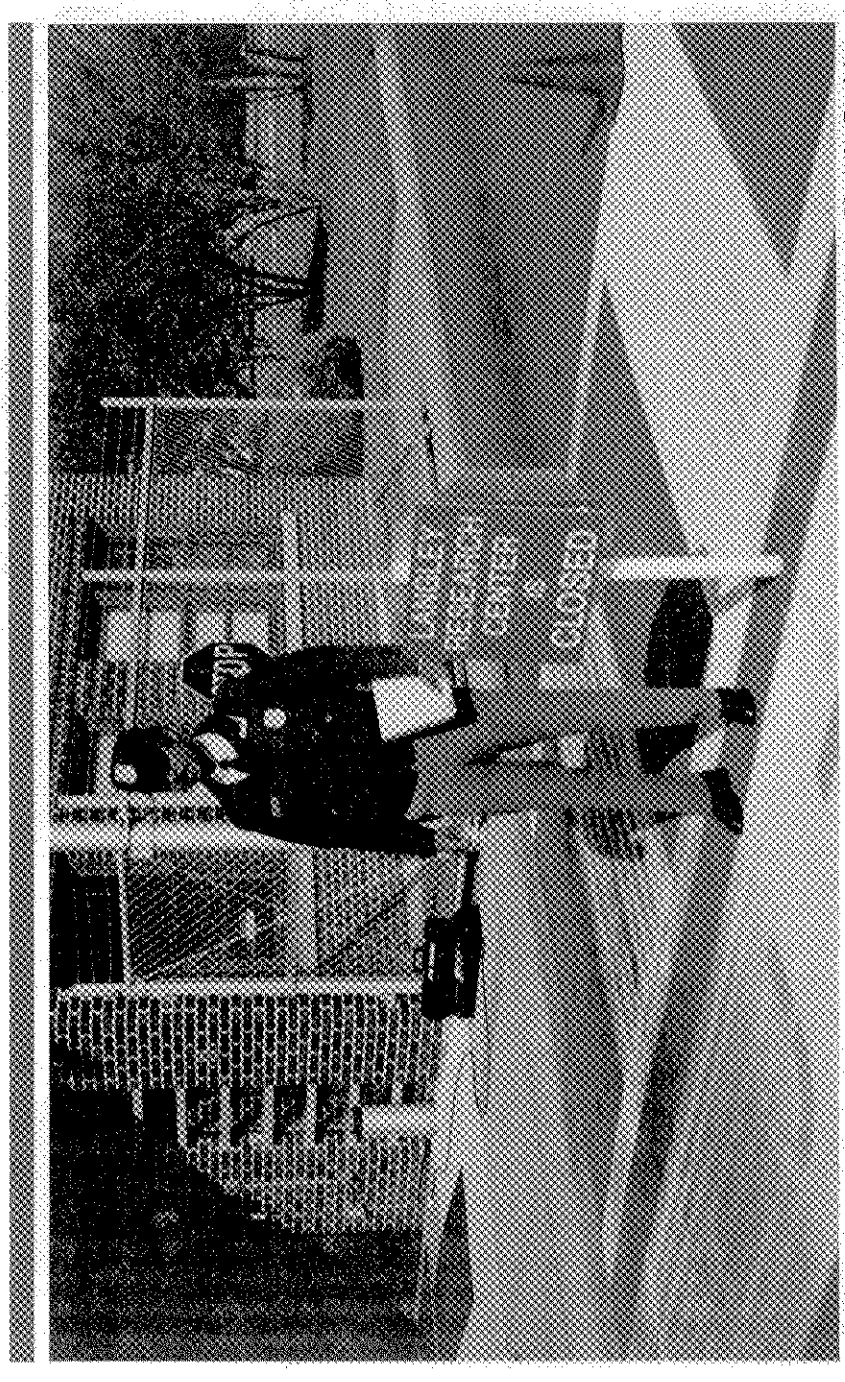


Photo by Fred Jones

Mason and Hanger security guard Randolph Yokum, one of the few security and safety workers who remained at Langley during the recent furlough, guards the main gate to the Center. The shutdown left most of Langley's 4,500 workers with unexpected time off.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business: Penalty for Private Use $300.

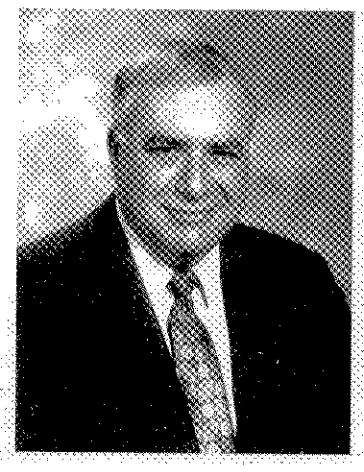
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 9 ❖ Issue 25 ❖ December 15, 1995

A Holiday Message from the Director



The senior staff and I would like to wish you and your family a happy holiday season and a prosperous new year in 1996. We have faced many challenges together this year, and will continue to face many more as the federal government works to build an effective budget. Through it all, however, our research has gone forward, and will continue to do so. As always, our people have been the key to our success.

During this year's Combined Federal Campaign, the people of Langley set aside their personal worries and pledged themselves to help those less fortunate. As we enter this holiday season, I hope each of you will take the time to reflect on everything for which we here at Langley have to be grateful.

Again, I want to thank each and every person at Langley, every civil service and contract worker, for all your exceptional efforts and outstanding accomplishments during this challenging year. We look forward to 1996 knowing that we can meet whatever opportunities and challenges lie ahead with a commitment to excellence and a dedication to the task at hand.

With my best wishes,

Paul F. Holloway,
Center Director

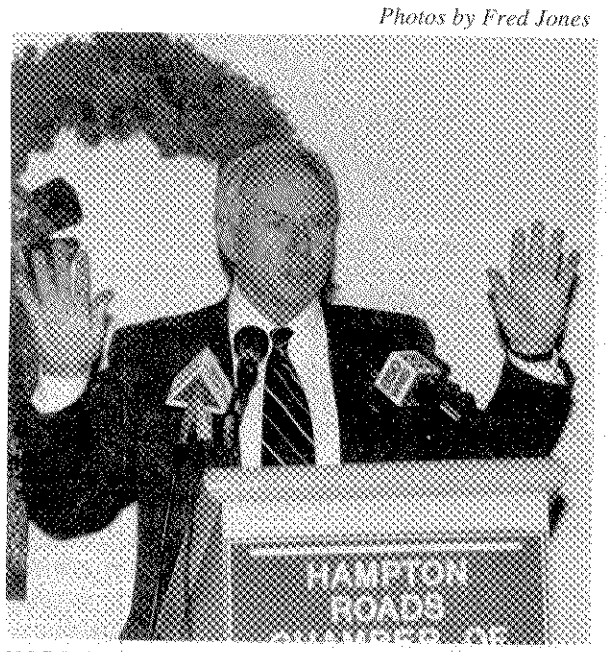
In celebration of the Holiday Season
The Director of Langley Research Center
Paul F. Holloway
cordially invites all NASA civil service employees,
retirees and contractors
to attend a Reception at the
H.J.E. Reid Conference Center
on the afternoon of December 15, 1995
from one to three o'clock

Sponsored by the Langley Activities Association
and
the Office of Public Services

Goldin Visits South Hampton Roads

NASA Administrator Daniel S. Goldin went on a whirlwind tour of the Chesapeake area on Friday, Dec. 1, visiting two businesses, including one that has an agreement with NASA; two high schools with NASA astronaut Wendy Lawrence; and speaking to the Chesapeake Branch of the Hampton Roads Chamber of Commerce.

Photos by Fred Jones



NASA Administrator Daniel S. Goldin focused on supporting research and development during his speech to the Chesapeake Branch of the Hampton Roads Chamber of Commerce.

Goldin, left, confers with Dr. Joe Heyman, deputy director, and Charlie Blankenship , director, Technology Applications Group, prior to his Chamber of Commerce talk.

Early in the day, Goldin and Congressman Norm Sisisky (D–4th) arrived at Técnico, a small minority-owned company in Chesapeake. In 1993, Técnico executives saw some Langley technology at the Technology Opportunities Showcase (TOPS). Since TOPS, Langley personnel have worked with employees at Técnico. "Langley transferred its technology used for manufacturing complex composite materials parts. Técnico is using it for ship repair and missile parts," Goldin said. "This is just one of thousands of tech transfer success stories throughout the country."

In his speech to the chamber, Goldin focused on the value of NASA's research and development capabilities. "We cannot take a break from research and development and expect the world to stand still," he said. "If we step back from R&D, other countries will fill the vacuum."

The government should be backing long-term research, according to Goldin, since American industry can only support research with short-term projections. The government is becoming more efficient, in line with the President's government reinvention plan. "At NASA, we are becoming more efficient and more effective," he said. "We are doing things better, faster and cheaper."

Goldin cited NASA's commitment to the state of Virginia where NASA awarded nearly $438 million in contracts last year, almost a third of the money for small businesses. More than $12.5 million was spent on women-owned business and $64 million went to

Continued on Page 4

News Briefs

Around the Agency

COSMIC RAY MYSTERY MAY BE SOLVED – Physicists from Japan and the United States have discovered a possible solution to the puzzle of the origin of high energy cosmic rays that bombard Earth from all directions in space. Using data from the Japanese/U.S. X-ray astronomical satellite ASCA, physicists have found what they term "the first strong observational evidence" for the production of these particles in the shock wave of a supernova remnant, the expanding fireball produced by the explosion of a star. Cosmic rays were discovered in 1912 by the Austrian physicist Victor Hess, who subsequently received the Nobel Prize in physics for that work. They are subatomic particles, mostly electrons and protons, that travel near the speed of light. Ever since their discovery, scientists have debated where they come from and how ordinary subatomic particles can be accelerated to such high speeds. Supernova remnants have long been thought to provide the high energy cosmic rays, but the evidence has been lacking until now. The international team of investigators used the satellite to determine that cosmic rays are generated at a high rate in the remains of the Supernova of 1006 AD — which appeared to medieval viewers to be as bright as the Moon — and that they are accelerated to high velocities by a process first suggested by the nuclear physicist Enrico Fermi in 1949. The satellite contains telescopes for simultaneously taking images and spectra of X-rays from celestial sources, allowing astronomers to distinguish different types of X-ray emission from nearby regions of the same object. The tell-tale clue to the discovery was the detection of two oppositely-located regions in the rapidly expanding supernova remnant, the debris from the stellar explosion. The two regions glow intensely in what is called synchrotron radiation, produced when electrons move at nearly the speed of light through a magnetic field in space. The remainder of the supernova remnant, in contrast, produces ordinary "thermal" X-ray emission.

Voluntary Leave Transfer Program

The Voluntary Leave Transfer Program permits employees to donate annual leave to other employees who are experiencing personal or family medical emergencies.

The following Langley employees are approved leave recipients: Marilyn K. Aldrich, Gresha P. Brown, Janet L. Edmondson, Sally C. Johnson, Geraldine N. Pardue, Tammy J. Price, Cassandra Stevens, Charles S. Washington and Carol R. Williams.

For any potential leave donors interested in donating "use or lose" leave to recipients currently in the Volunteer Leave Transfer Program, we request your donations be sent on the "Request to Donate Annual Leave to Leave Recipient Under the Leave Transfer Program" form, which may be found via your computer in Informed Manager, to Mail Stop 293, Office of Occupational Health Services or faxed to 864-9114, Attn: Karen Ridlon by Dec. 15. This will help administrative and payroll personnel process the leave transfers efficiently. Annual leave donations are greatly appreciated. For more information, call Ridlon at ext. 43194.

Third Annual Army Office Awards Banquet

The U.S. Army Research Laboratory, Vehicle Structures Directorate hosted its third Army Office Annual Awards Ceremony at the Fort Eustis Officers' Club on Nov. 17. The event was attended by 60 Langley employees. Awards were presented to employees from all three Army commands collocated on Center that helped accomplish the Army's mission at Langley during 1995.

Team spirit awards were presented to John Loughlin, Donald Beasley and Maj. Peter Weiland, Army Research Laboratory (ARL), and David Connor, Aviation and Troop Command (ATCOM) for "outstanding leadership in promoting and demonstrating the ideals of team building and integrated multidisciplinary research;" and technology transfer awards were presented to Dr. T. Kevin O'Brien, ARL, and Dr. John D. Berry and Susan Gorton, ATCOM for "individual achievement in providing timely and meaningful technology support to outside organizations and customers." The quality enhancement award was presented to Henry P. Russell of ARL for "taking an active role in facilitating the continuing improvement processes that exemplify the goals of Total Quality Management." Customer service awards were presented to Arthur Johnson and John Goon, ARL and Robert Powell, Peninsula Civilian Personnel Support Activity, and Nettie M. Orie and Timothy Hepner, ATCOM for "special and selfless contributions in working with customers to meet their expectations and to enhance the competencies of the Army." The Director's Administrative Support Award was presented to Wayne Melton, ARL, and Mary Lee Taylor, Communication and Electronics Command (CECOM) for "exceptional individual or team achievement in support of the Army/NASA mission and goals;" and the director's technical support award was presented to Chester D. Langston, ARL and Pacita Tiemsin and Timothy Bryant, CECOM for "exceptional individual or team achievement in support of the Army/NASA mission and goals." The director's scientific achievement award was presented to Dr. Mark Nixon for "exceptional individual or team achievement in contributing to the scientific advancement of technology for the Army, NASA, and customer community."

In Memoriam

Mercedes F. Hobbs

Mercedes Figueras Hobbs, a Peninsula resident for 45 years, died Friday, Dec. 1. She was born in New York City.

Hobbs retired from the Office of Research Grants at Langley in 1984.

Rowena D. Becker

Rowena Daniel Becker died Sunday Dec. 3. She worked on the computer staff of the National Advisory Committee for Aeronautics (NACA).

Letters

From the Group XV Astronaut Class of 1995:

"Dear colleagues: This year, as part of our training as astronaut candidates, we've had the pleasure of visiting the various centers within the NASA family. The primary objective of these visits has been to educate us on the NASA organization we've joined, and the functions performed at each of the centers. A definite highlight of our visits has been to meet many of you either in briefings, visits to work sites or just in passing. Everywhere we've been we have found that people welcomed us and willingly took time to visit, answer our questions and show us what it is that truly defines the National Aeronautics and Space Administration. Without exception, the teamwork, professionalism and dedication displayed by everyone we have met has been outstanding. Our only regret is that we were unable to meet more of you during our visits.

Since we haven't had the opportunity to thank many of you personally for your efforts, we, as a group, would like to thank you now. Next year, as we begin receiving flight assignments and technical job assignments, we look forward to the honor of working with you individually and as members of Shuttle crews.

With our sincere appreciation . . ."

Joshi Receives IEEE Award

Dr. Suresh M. Joshi

Dr. Suresh M. Joshi, Senior Research Scientist in the Flight Dynamics and Control Division, has been named recipient of the 1995 Institute of Electrical and Electronics Engineers (IEEE) Control System Technology Award. The award is presented annually in "recognition of outstanding contributions to control systems technology," and was presented on Dec. 14 at the IEEE Conference on Decision and Control in New Orleans.

Joshi received his doctorate in electrical engineering from Rensselaer Polytechnic Institute, Troy, N.Y. in 1973. He started his Langley career in 1983, prior to which 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 and stability theory and applications to aerospace systems. He is the author of numerous technical papers and a book (published by Springer-Verlag), as well as editor of three volumes published by the American Society of Mechanical Engineers (ASME). He is a fellow of two major professional societies, the American Institute of Aeronautics and Astronautics (AIAA) and the IEEE.

Speakers Bureau Report

These speakers represented Langley during November.

John Mouring spoke to the George Washington University Student Chapter of the American Institute of Aeronautics and Astronautics about "National Historic Landmarks."

Leroy Spearman spoke to Auburn University's Department of Aerospace Engineering with "A Review of 50 Years of Research with NACA/NASA."

Linwood Callis spoke to the members of the Suffolk Lions Club about "The U.S. Space Program" and "The Ozone Layer."

Debbie Bartolome spoke at the College of William and Mary about "Brainwave Research Applications at Langley."

Michael Uenking spoke to students at the Williams Elementary School's CHROME Club about "Engineering and Design."

Jane Hogge spoke to students at Addison Aerospace Middle School in Roanoke about "Wardrobe for Space." In Roanoke, she also addressed students at Fairview Magnet Elementary School about "Working in Space."

Craig Hunter spoke at the College of William and Mary and gave "An Introduction to the Mathematical Physics of Jet Noise with a Focus on Meeting the U.S. High-Speed Civil Transport Jet Noise Challenge."

Dr. Christine Darden spoke at Spellman College about NASA's High-Speed Research Program.

Gretchen Gottlich spoke to the Hampton Roads Internet Society about "LANTERN: A Working Intranet at the City of NASA Langley."

Bill Grant spoke to the Sierra Club about "Silent Summer: The Role of Air Pollution in Killing America's Forests."

News Researcher

The *Researcher News* is an official publication of the 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. Submit contributions to the editor via e-mail (a.c.gaudreaux@larc.nasa.gov), QuickMail (Ann Gaudreaux), fax 1 (804) 864-8810, telephone 1 (804) 864-6126 or Mail Stop 146. Articles, photos and announcements are due at noon the Monday following the date of this issue.

Managing Editor . . . . . Catherine Watson

Editor . . . . . Ann C. Gaudreaux, Science and Technology Corp.

Assistant Editor . . . . . Jeane Shanks, Science and Technology Corp.

Photojournalist . . Carole Petrachenko Chapman, Science and Technology Corp.

Photographer . . . . . Fred Jones

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.

Joint Force of Army and NASA Yields Productive Results

BY MARK CHAMBERS AND RON HARVEY

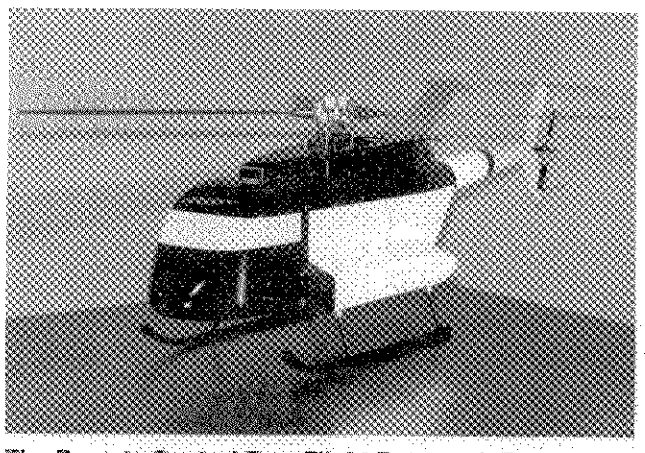
The U.S. Army has been no stranger to the confines of NASA's research centers. The agency's first research aircraft, a Curtiss JN-4H Jenny biplane, was loaned to the Langley Memorial Laboratory (now Langley Research Center) by the Army in June 1919. Aerospace-related research has strengthened this relationship in the form of testing high-performance World War II fighter aircraft and 1950s and 1960s vertical takeoff vehicles and the latest in missile and vehicle component technology. The key to the success of the NASA/Army partnership has been a "quiet spirit of close cooperation," says Dr. Wolf Elber, head, Army Vehicle Structures Directorate.

Rotorcraft Research

After World War II, the Army maintained a strong interest in rotorcraft vehicles. It funded the development of several helicopter prototypes produced by companies like Sikorsky and Bell, but it didn't have facilities to conduct its own research. To keep its rotorcraft mission alive, Army personnel decided to enter into a joint partnership with NASA, to use NASA facilities for its studies. Before 1970, research was conducted exclusively at the Ames Research Center in Mountain View, Calif.

During the 1960s, involvement in the Vietnam war necessitated more rotorcraft research and development as more advanced helicopters were needed for the transportation and support of ground forces in combat "hot spots" in Southeast Asia. Ames did not possess propulsion, structures and scale-testing research capabilities that were available at other centers. The Army and NASA signed a formal Agreement for Joint Participation in Aeronautical Technology in 1969, which extended Army rotorcraft research operations to Lewis and Langley. The Army decided that its personnel would engage in rotorcraft propulsion system research at Lewis and in structures research at Langley. Langley's research was oriented more toward aeromechanics than "pure structures."

Over the past 26 years, the partnership has yielded a multitude of significant gains in aerospace technology. The relationship led to the development of the highly successful tilt rotor concept demonstrator, the Bell/Vertol XV-15 (a precursor to the V-22 Osprey), which was flight tested at Ames, and the development of a full-scale rotor system test aircraft, the Rotor Systems Research Aircraft (RSRA).



The Remote Control Free Flight Rotorcraft Research Vehicle was developed to test the aerodynamic flight characteristics of helicopters outside the limitations of the wind-tunnel environment.

Productive Programs at Langley

On Center, Army research has resulted in several extremely productive programs. One of the most important, according to Elber, was DAMVIBS (Design Analysis Method for Vibrations), conducted during the late 1980s. This program involved structures research focused on how rotorcraft react to vibrational forces from air turbulence. Other programs dealt with the study of rotor vibration reduction systems. Charles Blankenship, former director of the Structures Directorate said, "The Langley/Army partnership has resulted in a better understanding of the structural integrity of aircraft and rotorcraft, the crash dynamics of rotor craft vehicles, and their elastic stability characteristics and the noise/acoustic aspects of rotorcraft operations."

William T. (Todd) Hodges, an Army researcher assigned to the Langley 14- by 22-Foot Subsonic Tunnel, reflected on the Army/NASA cooperative agreement. "We can both chip in on some generic research topics and both carry away answers—more answers and better answers than either could get individually," he said.

Another significant success story has been the cooperation the Army research projects and personnel have experienced while working with Langley's support organizations. Hodges noted that Langley has a great deal of capabilities in the development of instrumentation and the fabrication of components. "You can walk down the street, talk to the technicians and iron things out in 10 minutes. I'm very glad that Langley has been able to retain these in-house capabilities. It benefits the Army research projects a great deal," he said.

Henry Kelley, a 25-year member of the Army organization with 11 years of prior NASA experience, is deputy manager of the Rotorcraft Program Office. Kelley enjoys the Army/NASA liaison and cited the success of Langley's Rotorcraft Program as one example "Resources, facilities and funding are 'pooled' to achieve the objectives of the program."

Transitioned Projects

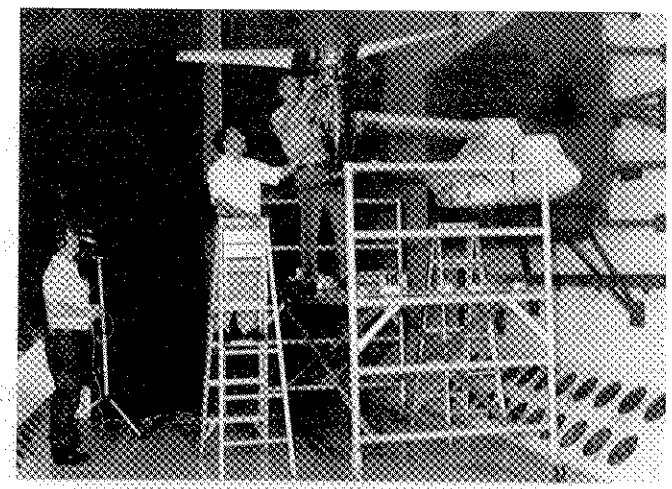
Kelley highlighted two rotorcraft projects that have made the transition from Army concepts to technology transfers to today's marketplace. One, the advanced helicopter blade airfoil designs, was tested in Langley facilities and patented by Army developers Kevin Noonan and Gene Bingham. The designs are now in full-scale development by a local company, Advanced Technologies Inc. (ATI). Advanced composite helicopter blades that use Bing-ham's tip and Noonan's inboard airfoil designs are being fabricated by ATI to replace the metal blades on the Sikorsky S-61 helicopters operated by Carson Services Incorporated of Pennsylvania. ATI provides engineering and fabrication services in support of the aerospace industry and is building affordable advanced sport helicopters.

A second rotorcraft technology transfer comes in the form of helicopter tailboom strakes. These devices have significantly reduced the side forces on helicopter booms under certain hovering cross-wind conditions. This technology was developed by John C. Wilson (retired) and Kelley through wind-tunnel and flight research. The technology resulted in improved directional controllability through a reduction in tail rotor power requirements. The strakes are used in McDonnell-Douglas Helicopter Systems NOTAR (no tail rotor) helicopters and on the U.S. Presidential S61 Sea King helicopter transports.

Theoretical Models Receive Achievement Award

Another example of the close Army/NASA cooperative research was recently recognized by Dr. John Lyons, director of the Army Research Laboratory (ARL)—the command responsible for the Army's Vehicle Structures Directorate at Langley. On Nov. 8, Dr. Mark Nixon, an Army researcher in the Transonic Dynamics Tunnel, received ARL's Scientific Achievement Award for his development of theoretical models that improve the knowledge of composite construction effects in helicopter rotor blade dynamic analyses. These models have played a significant role in NASA's Short Haul Civil Transport program.

Since 1969, the Army staff at Langley has grown from 10 to 80 employees. Workers are located in several important facilities, including the Impact Dynamics Facility, the Transonic Dynamics Tunnel, the Structures and Materials Laboratory, the Nondestructive Evaluation Research Laboratory, the 14- by 22-Foot Subsonic Tunnel and Acoustics Research Laboratory. "Seventy percent of the Langley Army branch consists of researchers who are working on projects related to the total national rotorcraft program, 10 percent of the staff are involved in specific military rotorcraft programs, and the remaining 20 percent are working on generic issues related to multi-customer interests," Elber said.



An aeroelastic stability V-22 Osprey tilt-rotor model is prepared for testing in Langley's Transonic Dynamics Tunnel by (from left to right) Paul Mirick, Army; Nabil Hamorda, Lockheed Engineering & Sciences Corporation; and a Bell technician.

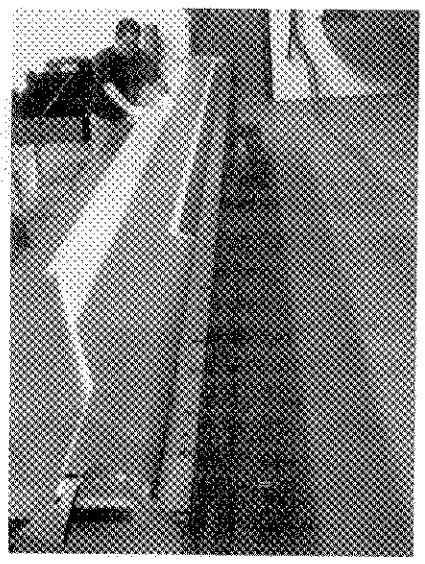
Cooperation/Integration the Key

According to Elber, the Army branch at Langley differs from those at Ames and Lewis in that it is more integrated. "The integration at Langley is more intense than at the other centers. At Langley, we are closely coupled with the Center's operational system and have no engineers working separately on Army issues; at Ames and Lewis, there is a large body of engineers working on Army projects only."

Army operations at Langley are distinguishable from those at nearby Fort Eustis in that here operations deal more specifically with the basic sciences and technologies. "At Fort Eustis, they handle specific vehicle and customer problems," Elber said.

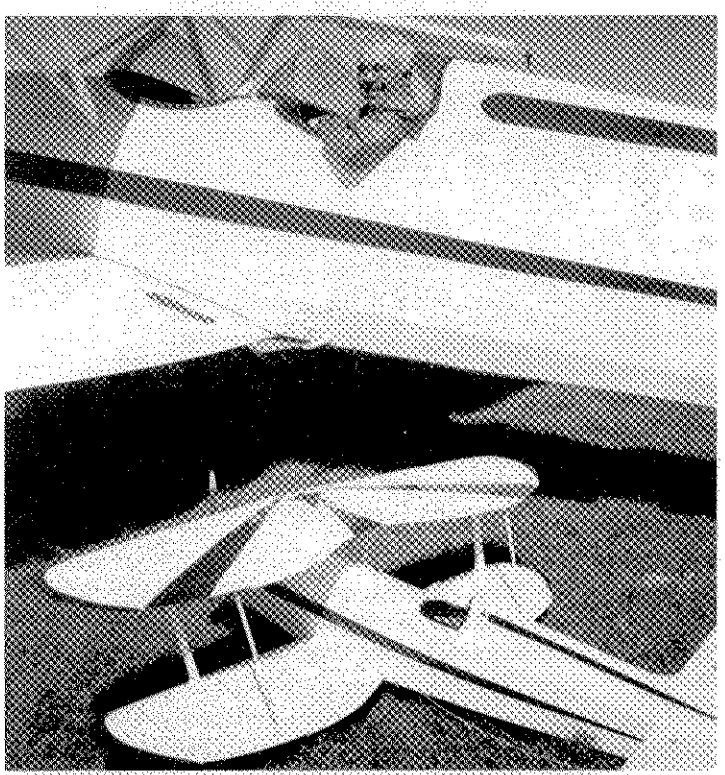
Today, Army-related rotorcraft research is stronger than ever, with directorates performing aeromechanics and structural research at Langley. "We worked the people issues and made sure that Army personnel were located at all the major Center areas and were involved in all the major programs. It's been a win-win situation. The Army has brought outstanding talent to the NASA ranks, and the agency is seeking to extend that talent by providing opportunities for career growth both professionally and educationally," Blankenship said.

Presently, NASA shares the overhead costs of making its facilities available for Army use. The NASA/Army partnership has saved the nation money in several respects. Elber said, "The Army was seeking to build its own research facilities, and we would have duplicated commercial and military support for rotorcraft. Using this as a baseline for savings, there is a vast difference. For the Army to be 'world class,' the decision to enter the partnership with NASA in the late 1960s has saved the country a $1 billion investment."



Composite helicopter blades using Army/NASA airfoil technology are being fabricated by Advanced Technologies, Inc. (ATI), an aerospace company in Newport News.

Life After Langley: Retiree Jim Patton Still Plies the Skies



Langley retiree James Patton aboard his Starduster. The smaller plane on the ground is a radio-controlled model built by one of Patton's friends.

BY RON HARVEY

For James (Jim) M. Patton Jr., life is still spinning merrily along, literally. His experience dates to the time of his first solo in 1945. By the time he retired in 1987 as chief of Aircraft Operations at Langley, Patton had become a nationally recognized expert in the field of aircraft spins.

The spin, a significant cause of accidents in light airplanes, occurs when an airplane's speed and angle of attack causes it to stall, lose lift, and fall off to one side in a downward uncontrolled rotation. Patton's skill and knowledge of flying in this flight regime has been recognized nationally through numerous awards.

Since retirement, Patton's love of flying has kept him active in flight testing of new and modified airplanes, in-cluding spin testing. "It's re-warding when my work results in changes to the air-plane to make it safer to fly," he said.

In addition to test work on experimental airplanes, Patton is a Federal Aviation Administration (FAA) designated engineering representative (DER). As such, Patton tests and approves airplanes for FAA certification. One such project, completed in October of this year, was spin testing of the Maule turboprop amphibious float plane. Some of his flight test reports have been included in national publications. One of Patton's projects with ties to Langley was the Cirrus VK30 4-place pusher airplane, in which he made the first flight and two years of subsequent developmental flight testing. It was noteworthy not only for its novel pusher configuration, but also for its laminar flow design by Langley's Jeff Viken. Dr. Bruce Holmes, also of Langley, was instrumental in promoting the concept of laminar flow technology in airplane design.

Patton said retirement has provided a wonderful life for he and his wife Marcie. "I can't imagine a better mix of occasional flight test projects, travel and just kicking back," he said. "Marcie has led me into volunteer activities: Meals on Wheels, hospital volunteer and, currently, in hospice patient care."

When at home, Patton enjoys their house, on salt water south of Crystal River on Florida's Gulf coast. "The fishing is good and the scenery inspiring," he said. He took up tennis a few years ago. "Fun, and sometimes humbling," he said. And he just completed an "awesome" eight-day white water rafting trip through the Grand Canyon with Marcie and daughter Ellen.

Always the pilot, Patton sums up his life saying, "it's still a great ride!"

NTA Announces Meeting

On Dec.16, from 6 to 11 p.m., the National Technical Association (NTA) Hampton Roads chapter will hold its December business meeting and annual Christmas social at the Wyndham Apts. Clubhouse, 2 Wyndham Dr., Hampton. Members/interested parties are invited to attend. A $5 donation per member is requested. Non-members are asked to bring a non-perishable food item for donation to a food bank. For more information, contact Melvin Ferebee Jr., ext. 44421 or e-mail m.j.ferebee@larc.nasa.gov

Langley Cable Vision Set to Change

The number of channels available on the Langley cable system are scheduled to be reduced beginning in December.

For many years, the Center has been receiving several commercial cable channels at no cost, including CNN, Headline News, C-Span 1 and 2 and the Weather Channel.

Due to changes in cable company rules, however, these commercial channels no longer will be available to Langley at no cost.

Therefore, over the next few weeks, all commercial channels will be removed from general distribution on the Langley Cable Vision System. In addition, the channel numbers will be reordered.

Some commercial channels, such as the Weather Channel, will be retained in key locations such as the cafeteria, security, safety, the duty office and flight operations, where the information is important to the function of the organization.

The new channel line-up is listed below. Commercial channels 2 through 6 will be blocked in most buildings on Center by Dec. 31. For more information call the Office of External Affairs at ext. 46123.

Channel	Name
2	CNN
3	C-SPAN
4	C-SPAN 2
5	Headline News
6	The Weather Channel
7	Langley Channel (Town Meetings, etc.)
8	NASA TV
9	H.J.E. Reid Conference Center Channel
10	Education
11	Safety Channel
12-14	(N/A)
15	NTU 1 (National Technological University)
16	NTU

Transition Training Continues in December

Due to the unscheduled pre-Thanksgiving break, the Career Transition Assistance Program Center (CTAPC) has rescheduled some of its training for the remainder of 1995. Sign up for training that is designed specifically for Langley employees. If you have registered for a seminar, you need not register again. Before the scheduled holiday break in December, the following seminars are on tap:

• **Planning Career Milestones for 1996:** Get a jump on 1996 and plan now how you will achieve your career goals in 1996, Dec. 15, 9 a.m. to noon.

• **Franchising:** Learn more about the opportunities in the world of franchising; the joys and pitfalls of joining a major corporation as a private entrepreneur, Dec. 20, 1:30 to 4 p.m.

All NASA employees and their spouses are authorized to attend these events. Please call Susan Costello, ext. 45000, for more information and to register. Also, let CTAPC know other career development training you'd like to see offered in 1996.

Goldin Visits . . .

Continued from Page 1

Small Disadvantaged Businesses, over 80 percent of which are in southern Virginia.

He highlighted Langley's Technology Applications Group and their technology transfer efforts as "having a tremendous impact on the infusion of high-tech jobs and industries in this area."

Goldin also mentioned Langley's carbon monoxide catalyst and how it breaks carbon monoxide down into safer components. He noted that it will be used by several different companies to manufacture products that will protect firefighters and miners, act as furnace filters, reduce airborne chemicals in 'sick' buildings and possibly improve the life span of certain lasers. "This is only one technology," he said, "and it is going to change the way four companies do business as well as improving peoples' lives." He also mentioned Langley's Crack Finder, 'smart' ceramic materials and other technologies.

During his talk, Goldin also focused on the Information Age and its development in this society. Langley employees set up a demonstration of the Internet for attendees, showing the TOPS home page and TAG information network.

Flight Testing Begins for F-18 Nose Strakes

BY KEITH HENRY

NASA is flight testing a new aircraft control device that promises to give fighter pilots of the future increased maneuverability and agility in air combat situations.

Two moveable "flipper-like" panels called strakes have been installed on the nose of an F-18 aircraft at the Dryden Flight Research Center, Edwards, Calif. When opened, the strakes interact with strong vortices of air generated by the nose of the aircraft. This interaction produces side forces which can give a pilot yaw (left or right) control of the aircraft's nose at high angles of attack when conventional rudders lose their effectiveness.

During maneuvers, pilots often fly at extreme angles of attack, with the nose pitched up while the aircraft continues in its original direction. This can lead to conditions in which the flow of air over the rudder is not enough for the pilot to maintain yaw control.

The strake project, called Actuated Nose Strakes for Enhanced Rolling (ANSER), is managed by Langley. The current flight project is validating extensive wind tunnel and simulation data by Langley and Ames Research Center, Moffett Field, Calif.

Strake testing is being carried out with the modified F-18 NASA has been using for high angle of attack studies since the late 1980s.

About 65 flights to study the strakes at various angles and speeds are planned before the ANSER project is scheduled to conclude.

GWU Announces Spring Classes

George Washington University's School of Science's Joint Institute for Advancement of Flight Sciences at Langley offers the following degrees: master of science, professional and doctor of science degrees in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal sciences, structural engineering and structural dynamics, and master of engineering management. Registration dates for the Spring semester are Dec. 11 to 15 and Jan. 8 to 12, 1996. For a complete listing of courses and tele-phone registration procedures, call at ext. 41982.

From Devil's Island to Earth Orbit — The Kourou Spaceport

BY CATHERINE WATSON

From the ruins of the infamous Devil's Island prison, one can look across the water at the most modern launch facilities in the world. Carved out of the jungles of French Guiana, Aerospatiale, with the financial backing of the 14-member European Space Agency (ESA), has completed the world's newest gateway to space — a new launch facility for their latest version of the Ariane rocket. Chuck Eldred, head of the Vehicle Analysis Branch, recently had the opportunity to tour the new Ariane 5 facilities in Kourou, French Guiana as part of the international American Institute of Aeronautics and Astronautics (AIAA) Technical Committee on Space Transportation.

The Ariane 5 rocket was originally designed to take the Hermes vehicle into orbit, Eldred said. Funding for Hermes, however, was recently cut from the ESA budget. Hermes, similar to the American space shuttle, would have enabled the Europeans to take humans into space without depending upon the Americans or Russians.

Aerospatiale built the new Ariane 5 launch facilities using the operational lessons they learned from the Ariane 4, Eldred said. "The Ariane 4 now has quite a backlog. They're launching those about once a month - as fast as they can process them," he said. According to Eldred, the new launch facilities were designed around the new launch vehicle instead of designing the launch vehicle around the existing launch facilities. Eldred said this allowed the Europeans to take advantage of the latest technologies, making for more efficient and cost effective access to space. According to him, the Ariane 5 rocket can go from the processing building to orbit in just nine hours. "They roll it out, make the connections to the platform, fuel it and go," he said. "All these facilities are new, and they're highly integrated — it's beautiful."

The Ariane rockets are assembled at Kourou mostly from components brought from Europe. "A lot of it is shipped over from Europe," Eldred said, though, "in the case of Ariane 5, they actually do the solid propellant manufacturing right there. They also build the motors right there, as part of their launch facility, which is pretty unique."

"Space transportation is a big issue in the United States," Eldred said. "There's been a lot of work over the last decade, trying to find ways to improve the United States' space transportation capabilities. We currently have the Reusable Launch Vehicle program, and the X-33 and X-34 parts of that, which are aimed at trying to improve the space transportation capabilities in the United States."

"A lot of the things we've talked about for new launch vehicles, and ways of doing more efficient operations, they're doing now," Eldred added. "In the past, there's been a certain arrogance about American superiority in space. Now there are impressive capabilities being developed outside the U.S. and the competition is becoming very tough."

VCES Holds Opening Ceremonies

After years of planning and working together, the University of Virginia (UVA), Old Dominion University (ODU), the College of William and Mary and Virginia Polytechnic Institute and State University (Va. Tech) have formed the Virginia Consortium of Engineering and Science Universities (VCES).

The consortium has been offering on-site engineering and science courses at the Peninsula Graduate Center in Hampton as well as satellite courses for some time now but officially opened for business this fall in their own building on Butler Farm Road in Hampton. Courses taught by Peninsula-based professors are also beamed to other consortium universities as needed.

Speaking at the official opening ceremonies were Rep. Robert Scott (D-Va.); Langley Deputy Director Dr. H. Lee Beach; VCES Director David Chestnutt; and deans from the four institutions.

Dean Grif McRee, ODU, said, "Competition for the acquisition of resources has been great, but VCES has helped join forces to share those educational resources."

Dr. George Cohen, UVA, expressed his thanks to Chestnutt for all that has happened. He said, "This (VCES) marks a new paradigm for higher education in Virginia. VCES is a grand experiment and, when analyzing future data about this experiment, I know we'll be able to say that it works."

Photos by Florence Vanel

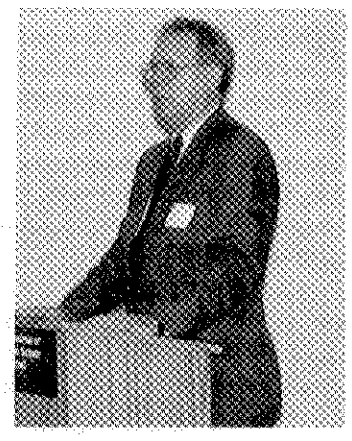
Dr. Mike Vorster, associate dean of Virginia Tech's School of Engineering addressed attendees at the Virginia Consortium of Engineering and Science Universities (VCES) grand opening ceremonies.

At VCES offices, doctoral students will serve a residency at the center, rather than at their home institutions. Dr. Robert Scholnick of William and Mary called the consortium "An enterprise that lives through the supporting institutions." Students from the participating schools may take up to 50 percent of their course work from the other consortium members while meeting the degree requirements at the school of their major professor. A resident director, who works closely with faculty from all four schools, helps each student plan a program of study.

VCES offers a high-quality, resident doctorate program to all NASA Langley employees as well as area businesses and residents of the area. It also hopes to attract individuals who want to take advantage of Langley's facilities as part of their graduate study.

Dr. Mike Vorster, Virginia Tech, said, "Looking at the present state of graduate education, we are trying to bring educational resources closer to the customer. This is terribly important. We need to leave the classic 'ivory tower and green campus,' and use television and instructional technology to support our instructional capabilities."

VCES is at 303 Butler Farm Road, Suite 101. For information, call David Chestnutt at 865-4830.



VCES Director David Chestnutt, right, hosted the ceremonies. Guests included speakers from all four participating consortium universities as well as Congressman Robert Scott and Langley Deputy Director Dr. H. Lee Beach.

Aerospace Cooperative Efforts between Former Superpowers Shift into High Gear

BY MARK CHAMBERS

A spirit of cooperation is now being felt in the high-tech realm of aerospace research, where industry and government agencies from the United States and Russia are pooling talents and resources to tackle the technical challenges of developing future high-speed transport aircraft.

Leading the way on the Russian side is the world-renowned aeronautical giant, the Tupolev Joint-Stock Co. The chief of its Equipment Division, Vyacheslav A. Sablev, shared the company's distinguished history and expressed its vision for the future to an American audience at a technical briefing and presentation held at Langley's Pearl I. Young Theater on Nov. 29.

Tupolev Presented

In his presentation, entitled "Tupolev: Past, Present and Future," Sablev described the company's recent and future involvement with NASA in joint high-speed supersonic transport research.

Founded in 1922, the company went on to introduce several significant innovations into the world of aviation and produced a total of 35 different aircraft/vehicle designs that were manufactured in mass quantity. During World War II, the company produced a myriad of aircraft, including high-speed bombers that saw front-line service with seven other European nations.

In 1955, the company successfully demonstrated one of the world's first modern jetliners, and produced several new long-range military jet bomber/reconnaissance aircraft, with nuclear weapons carrying capability, including the Tu-16 Badger and the Tu-95 Bear that would keep the air forces of western nations on guard throughout the Cold War.

Cooperative Efforts

Since the fall of communist Russia, Tupelov lifted the "veil" on some of its technologies and, in 1993, invited a team from the west to inspect their Tu-144 marvel. In 1992, officials from NASA and Tupolev had reached a cooperative agreement whereby the Tu-144 would serve as a "flying laboratory," being used jointly for high-speed civil transport research. Under the cooperative program, the bulk of the research will be coordinated and managed by the Dryden Flight Research Center, with Langley providing support for the structure/cabin noise experiment through the Structural Acoustics and Flight Instrumentation branches. Flight tests are scheduled to begin in February, and will be conducted exclusively in Russia.

Photo by Fred Jones

Russian Vyacheslav A. Sablev, chief of Tupolev Joint-Stock Co.'s Equipment Division, left, is introduced by Dr. Steve Rizzi, Structural Acoustics Branch, at a recent technical briefing.

Understanding How Objects Move in Space

BY CATHERINE WATSON

In 1995, NASA Langley researchers flew three experiments aboard the space shuttle to study how objects move in the microgravity environment of space. Each of these highly successful missions was designed to help engineers design better and less expensive space structures, including the international Space Station.

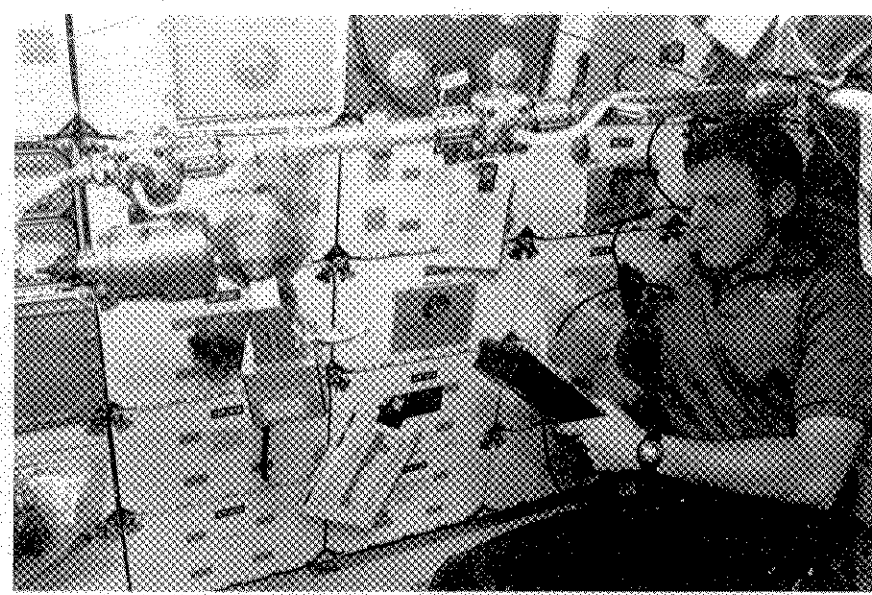


Photo courtesy of Johnson Space Center

The Middeck Active Control Experiment (MACE) test platform is shown floating in the middeck area of the Space Shuttle Endeavour (STS-67) above Commander Steve Oswald. MACE is connected to the MACE Experiment Support Module through a power and data umbilical cord and controlled by a hand-held key pad.

Middeck Active Control Experiment (MACE)

The dynamics studies began in March with the flight of the Space Shuttle Endeavour (STS-67). During the record-setting 16-day flight, as the STS-67 mission specialists studied the universe with the ASTRO-2 payload, shuttle commander Steve Oswald and pilot Bill Gregory worked in the middeck area of the orbiter with the Middeck Active Control Experiment (MACE). According to Greg Stover, MACE project manager in the Flight Experiments Development Office, Oswald completed not only the 381 planned MACE tests, but an additional 203, giving the MACE researchers more than 10 billion bytes of data — over 40 hours of microgravity data.

MACE, built on the concept of a previous shuttle experiment, the Middeck 0-Gravity Dynamics Experiment (MODE), was designed to study how spacecraft payloads interact with each other and the spacecraft's structures. Attachments to spacecraft, such as solar arrays on long booms and environmental sensors that scan back and forth, can cause small vibrations in the spacecraft. These vibrations can move from one end of the spacecraft to the other, causing sensitive instruments to be misaligned and long booms to bow and bend. If these vibrations can be limited, spacecraft will not need heavy, expensive, rigid structures.

Early in the flight, Oswald performed a series of pre-programmed movements with the MACE platform. The effects of these movements were recorded aboard the orbiter, then transmitted to engineers on the ground with the project-developed Ku-band Interface System (KIS). The engineers then transmitted changes to the onboard software to account for any differences between the expected, modeled results, and the actual measured results. The KIS was also used extensively by the ASTRO-2 scientists on the ground and the STS-67 crew to send and receive messages.

Joint Damping Experiment (JDX)

In August, the Joint Damping Experiment (JDX) flew aboard the Space Shuttle Endeavour (STS-69) to gather data on how one type of joint used in space structures, a pin-joint, is able to dampen (dissipate) vibrations. Understanding how the absence of gravity changes the way components of a space structure respond to vibrations is essential to the design of control systems that will actively control undesirable motions in future space structures, such as the international Space Station. Pin-joints generally dissipate vibrations faster than other joint types, such as hard mechanical joints, primarily because the components undergo very tiny movements relative to each other.

The JDX test structure, carried in the payload bay of Endeavour, was instrumented with precisely arranged, highly sensitive sensors to measure the magnitude and frequency of any movements. A unique arrangement of mechanical levers and electromagnetic latches applied bending and twisting forces to the test structure while on orbit. The movements were controlled by a battery powered controller/data acquisition system that automatically conducted the tests and stored the test data for post-mission analysis.

According to Sherwin Beck, the JDX project manager in the Flight Experiments Development Office, JDX performed flawlessly. The data collected showed that the JDX test article responded almost identically in the microgravity of space as during flights in low gravity aircraft tests. The data from JDX will be analyzed and presented in three master's theses at Utah State University in June 1996.

Photogrammetric Appendage Structural Dynamics Experiment (PASDE)

In November, the Photogrammetric Appendage Structural Dynamics Experiment (PASDE) flew aboard the Space Shuttle Atlantis (STS-74) during the shuttle's second rendezvous flight with the Russian Space Station Mir. PASDE was developed to study vibrations in a solar array on the Russian space station by videotaping movements in the solar array during docking. The data returned by PASDE can be used to help eliminate unacceptable vibrations on the solar arrays of the international Space Station and other space structures. Additionally, analysis of PASDE data may provide large cost savings by assisting spacecraft designers in the development of the optimum weight and stiffness of future solar arrays.

Photogrammetry involves photographing an object with one or more cameras, from two or more locations. Since the object is viewed from many different angles, three-dimensional coordinates can be determined from the two-dimensional measurements on the film. This is done by a process known as optical triangulation. Using this technique, PASDE engineers hope to discern movements as small as 1/10 inch in the tips of the Mir solar arrays.

The six PASDE video cameras, located in three canisters in the payload bay of Atlantis, photographed movements in Mir's Kvant-2 solar array and Atlantis' robot arm (remote manipulator system). "Everything went super!" Dr. Mike Gilbert, PASDE co-investigator in the Structural Dynamics Branch, said. "We met all our experiment objectives." In addition to measuring the effects of the docking of the two 100-ton spacecraft, PASDE was able to measure heating and cooling effects on the solar array as Mir crossed the terminator from day to night. PASDE also gathered data on the movements in the solar arrays as the arrays moved to track the sun, and during firing of the orbiter's small maneuvering jets.

Both MACE and PASDE are scheduled for future space shuttle flights in 1997 as Langley researchers continue to expand their knowledge of how objects move in space.

LINK Up for the Holidays

BY LARRY HARVEY

Newport News LINK (Living Interfaith Network) is an organization of 40 churches, synagogues and mosques. Its members join together to help those with limited resources find housing, jobs, food and other necessary services, like child care, counseling and medical care. LINK is also a Combined Federal Campaign-supported agency.

Each December, LINK's Share the Spirit program accepts new, unwrapped toys and clothing for children from one month to 10 years old. Needy parents are then given vouchers that they can use to obtain gifts for their children. Last year, congregations donated hundreds of items for "sale."

I have been a LINK volunteer for nearly five years, and served on the Finance Committee and in the Inner City Garden Program. Many Langley employees have become volunteers in LINK's newest program PORT — People Offering Resources Together. Downtown congregations now open their doors at night to the homeless during the colder months. Volunteers help monitor, serve dinner and breakfast and offer help in other ways.

LINK is helping many deserving people. If you would like to be part of its services, call 380-5301.

Larry Harvey, Fabrication Division, distributes Newport News LINK brochures and answers questions at Sam's Club during an open house.

Scholarships Available for 1996-97

The Virginia Space Grant Consortium announced that scholarship monies are available for students pursuing a course of study that will lead to a teaching certification in the sciences, mathematics or technology at the College of William and Mary, Hampton University, Old Dominion University, the University of Virginia and Virginia Polytechnic Institute and State University. Scholarships are also available for Virginia's community college students pursuing studies in high-technology fields.

The $1,000 awards will be based on competitions in each category. Applications, available from the Space Grant office, are due on March 11, 1996 for the Teacher Education Scholarships and March 15 for the Community College Scholarship competition. For details, call Anne Pierce at 865-0726 or contact the consortium at Old Dominion University Peninsula Graduate Center, 2713-D Magruder Boulevard, Hampton, Va. 23666, vsgc@pen.k12.va.us

AS&M Awarded Contract

NASA has selected Analytical Services and Materials, Inc. (AS&M) of Hampton, a Small and Disadvantaged Business, for a contract to support flight research projects at the Dryden Flight Research Center, Edwards Air Force Base, Calif. The Engineering and Technical Services contract covers a multitude of areas in flight research. AS&M was established in 1983. It provides specialized technical and scientific support services mostly to Langley and several other government and commercial customers.

Students Launch Into Aerospace Career Experience

BY MARNY SKORA

The flyer announced the opportunity to "be a real rocket scientist." That's how 40 Phoebus High School students were recruited for a unique mission — to design, build and launch a high-powered rocket.

The project is the brain child of the Langley Chapter of the National Space Society (NSS) in cooperation with Langley and the Hampton Roads Section of the American Institute for Aeronautics and Astronautics (AIAA). It is an outgrowth of a 1994 NSS effort to construct, successfully launch and retrieve a 12-foot rocket capable of reaching an altitude of over one-quarter mile. "Our goal for the rocket project for 1995 was to bring it into the educational system and use it as a vehicle for helping stu-dents better understand the central concepts of physics and mathematics." former NSS president Knut Oxnevad said.

Coordination with the Hampton Public Schools was facilitated by AIAA education member and Hampton math and science curriculum leader Joyce Weeks. Weeks called on Phoebus physics teacher Jim Sherrard to stimulate student interest and select participants.

"We couldn't have chosen a better champion than Joyce," said project coordinator Dianne DeTurris, a member of AIAA and NSS. "She led us to the best teacher representative, who ultimately chose a cadre of attentive students who are excited about the project and willing to work hard."

"I am not aware of another high-powered rocket project done at the high school level," said NSS member Eric Dahlstrom, who coordinated a model rocket segment to introduce the students to rocketry.

The principles of rocket building were dramatically brought home as project participants built and launched scale model Estes rockets with size A engines. Phoebus students learned by doing. Terms such as nosecone, fin, parachute, bulkhead, ignition system and performance analysis took on a new meaning and a related importance.

Following the model rocket experiment, students divided into groups mentored by engineers and rocket specialists. These groups worked on the aspects of the challenge that had previously been only new vocabulary words.

Those charged with designing and fabricating the nosecone did the work at Micro Craft, Inc., a NASA contractor. This allowed them to get a behind-the-scenes look at an aerospace contract operation as well as use facilities better suited to working with fiberglass, the material selected for the nosecone. The task was supervised and, the use of these facilities was arranged by AIAA and NSS member and Micro Craft employee Jim Mack.

The fins, originally constructed of plywood, were covered with balsa wood, a challenge introduced by AIAA member Bob Biedron. The balsa was then sanded down to airfoil shapes to make them more aerodynamic.

Langley employee Hugh Pinkston and Dahlstrom monitored the parachute group. Eighteen yards of rip-stop nylon was donated by The Fabric Market in Hampton. Physics students who designed the parachute and cut the mountain of fabric were joined by Elizabeth Wells' home economics students who did the sewing. The students chose Phoebus school colors — blue and gold — for the 10-gored parachute that has a diameter of 16 feet.

A key donation was the computer software that allowed the students to perform all the necessary equations required for estimating values for max altitude, velocity, acceleration, drag force, parachute opening time and ground impact velocity, all central to the design of a safe, successful rocket trajectory. National Instruments donated a student version of their program called LabVIEW.

The payload group, guided by AIAA member Shelly Spencer and Navy engineer Ted Sadowski, agreed to launch a radiosonde and an altimeter. The radiosonde recorded temperature, pressure and humidity. The data was recorded on a microcassette and analyzed on the ground using LabVIEW.

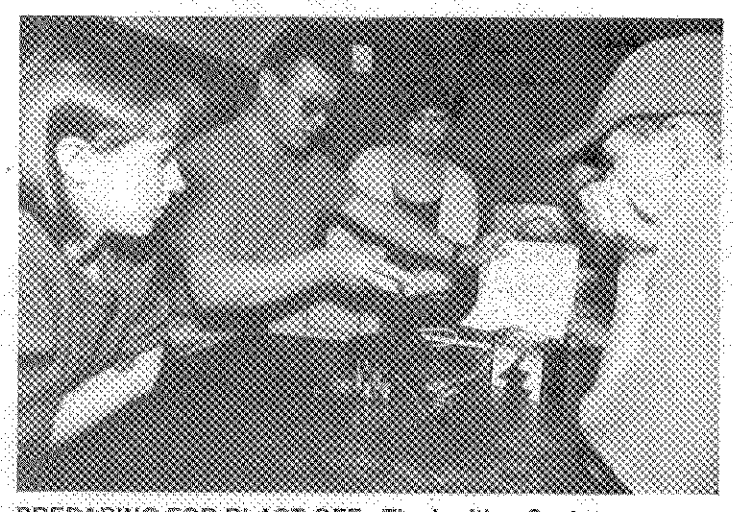
The launch is set for December at Wallops Flight Research Center on the Eastern Shore. It will be combined with a tour of the Wallops control center, the payload integration facility and the launch site.

"These Phoebus students have been intensely involved in designing and constructing a rocket that will launch a payload of their own choice. They will have predicted the trajectory and the landing," DeTurris said. "How many high school students have their own high-powered rocket?"

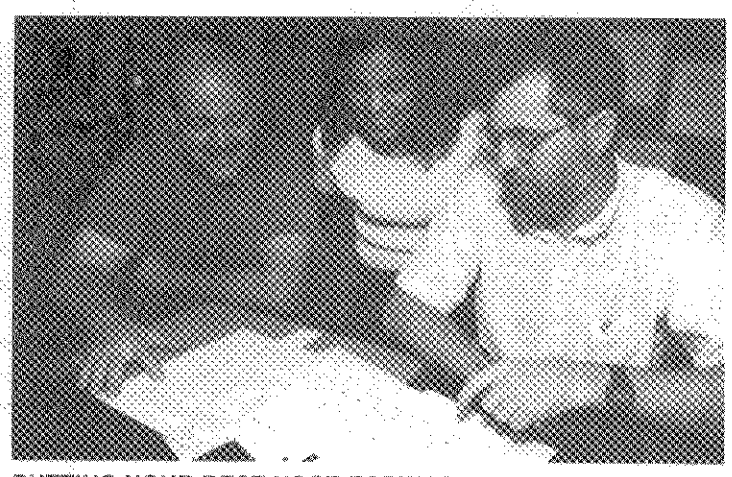
ON A SMALLER SCALE. Phoebus High School students, left to right, Paul Gray, Penny King and Edward Pearson construct scale model rockets under the watchful eye of project coordinator Dianne DeTurris, center right.

Photos by Fred Jones

PRESENTING THE PROPER IMAGE. Making decisions with mentors Knut Oxnevad and David Hahn, center left and right, on how the final product will look are Design Group members Beth Everett, far left, and Melissa Warden and Robert Rufus Bradley, far right.



PREPARING FOR BLAST-OFF. The Ignition System group members Angela Eaton, left; Jamie Maya, center, and Matt Smith, right, discuss pyrotechnics with mentor Peter Gorin.



PUTTING YOUR BEST NOSE FORWARD. Micro Craft employees Daniel Luke, left, and Greg Howland give Kim Romero her choice on nosecone designs taking into consideration the relative advantages of each.

Virginia Air and Space Center News

Virginia Air and Space Center
Hampton Roads History Center

Center Launches New Exhibit

The center has opened a new exhibit with the support of the Smithsonian Institution's National Air and Space Museum entitled *Higher, Faster, Further: Reaching the Edge of Space*.

The exhibit tells the story of the history of flight designs and testing from its infancy through the present, highlighting major accomplishments and innovations. Artifacts and photographs trace the progression in 10-year increments of flight research and include flight models, videos, pressure suits, testing gear and equipment. Of special local interest is the hanging EA-6B Prowler model tested in Langley's historic 30- by 60-Foot Tunnel.

One segment of the exhibit is devoted to the transition of the space program from subsonic to supersonic travel, including the testing of Vertical Take-Off and Landing (VTOL) aircraft and to space research and the space program in the 1950s.

Surfing The Net

The center has opened a new permanent exhibit offering guests access to the latest in global communications through the Internet. With help from Langley, the interactive exhibit that includes five active computer terminals is on-line daily. Visitors will have access to blocks of pertinent information on the U.S. government, the White House, the Virginia Air and Space Center, the Hampton Roads area and weather information as well as vast amounts of other data. There is an extensive amount of information about Langley including Langley Technical Access Services and Projects, Teams and Initiatives.

Guests will find step-by-step instructions to guide them through their first trip on the information superhighway. For more information, call 727-0900.

Happenings

Volunteers Sought for Engineers Week 1996

Volunteers are needed to teach classes stressing the importance of math and science during Engineers Week, February 18-24, 1996. Visitations to schools will be scheduled for the month of February. Registration forms were distributed last month to contract managers and to civil service employees. Anyone who needs an extra form should call Cathy Schauer at ext. 43314. Return forms to Mail Stop 154 by Jan. 16.

SYMPHONIA WINTER CONCERT: The winter concert will be at the John W. Gaines Theatre at Christopher Newport University, Monday, Dec. 18 at 8:15 p.m. Some selections will be Handels' *Overture to Messiah*, Mozart's *Toy Symphony* and Menotti's *Amahl and the Night Visitors*. Tickets are $15 with special prices for students and children. Call 229-9857 for more information.

CONDO FOR SALE: Hampton Club, 2BR, 1 bath, wall-to-wall carpet, extra appliances, security system, pool et al, near Langley. Call Dorothy Burch at 827-1400.

HOME FOR SALE: Jamestown Farms, two miles from William and Mary. Brick/frame rancher with 3BR, 2.5 baths and 2,000 sq. ft., many pluses: .45-acre wooded lot, 2-car garage, hardwood floors, two fireplaces, central air, pine-paneled family room, laundry and workshop areas, deck, neighborhood pool, lots of light, and more. Asking $139,900. Call 898-3015.

FOR RENT: Poquoson, 3 BR, eat-in kitchen with appliances and washer/dryer, detached one-car garage, 1-1/2 story, quiet open space. Available Jan. 1, $625/month. Call 868-9551.

VIRGINIA SYMPHONY: Mozart & More on Dec. 15 at Phi Beta Kappa Hall, Williamsburg; Handel's *Messiah* Dec. 22 & 23 and New Year's Eve Special Concert at Harrison Opera House. 20% off tickets for NASA and contractors to Masterworks, Pops, and Mozart concerts — all season. Call Virginia Symphony ticket store, 623-2310.

CONDUCTOR NEEDED: The York River Orchestra is accepting applications for the position of conductor. Call 875-9130 after 5 p.m. for an application form or for more information.

HOME FOR SALE: Four-year-old brick house in Fairfax, Va., 4BR, 4 baths, 2/3 acre with 19-foot foyer, two-car garage and much more. Asking $389,000. Call (703) 352-3521.

Educational Outreach Fair Set for January 10

Calls for science, math and technology presentations from schools, community and civic groups are growing. These organizations recognize that the best way to prepare young people for an increasingly technological world is to match them with successful professionals in fields in demand today.

The AIAA Pre-College Education Committee will present an *Outreach Fair* from 4:30 to 6:30 p.m., Wednesday, Jan. 10, in the H.J.E. Reid Conference Center. The Fair will highlight the myriad of opportunities for volunteers to get involved in a single event or in an ongoing activity as mentors to area students.

Also included will be several demonstrations of lessons that can be adapted by volunteers as well as outreach materials and props that can be checked out from the AIAA Education Library. Take a look at the volunteer opportunities available and stay for pizza. For more information on the event, contact Alan Stockwell, Lockheed Martin Engineering and Sciences Co., at 766-9646 or by e-mail at a.e.stockwell @ larc. nasa.gov

Cafeteria Asbestos Removal

After Dec. 15, an asbestos removal project will begin in the cafeteria, Building 1213. This project will affect building operations as follows: The front entrance hall will be partially blocked due to the asbestos containment wall. For your convenience, use other doors where possible. The private dining room will be closed for the duration of this project. Reservations made during this time must be rescheduled.

Because the asbestos removal involves the steam pipes, there will be no heat in the main cafeteria. Extra tables will be moved into the addition during this time since the heat will be on in that area.

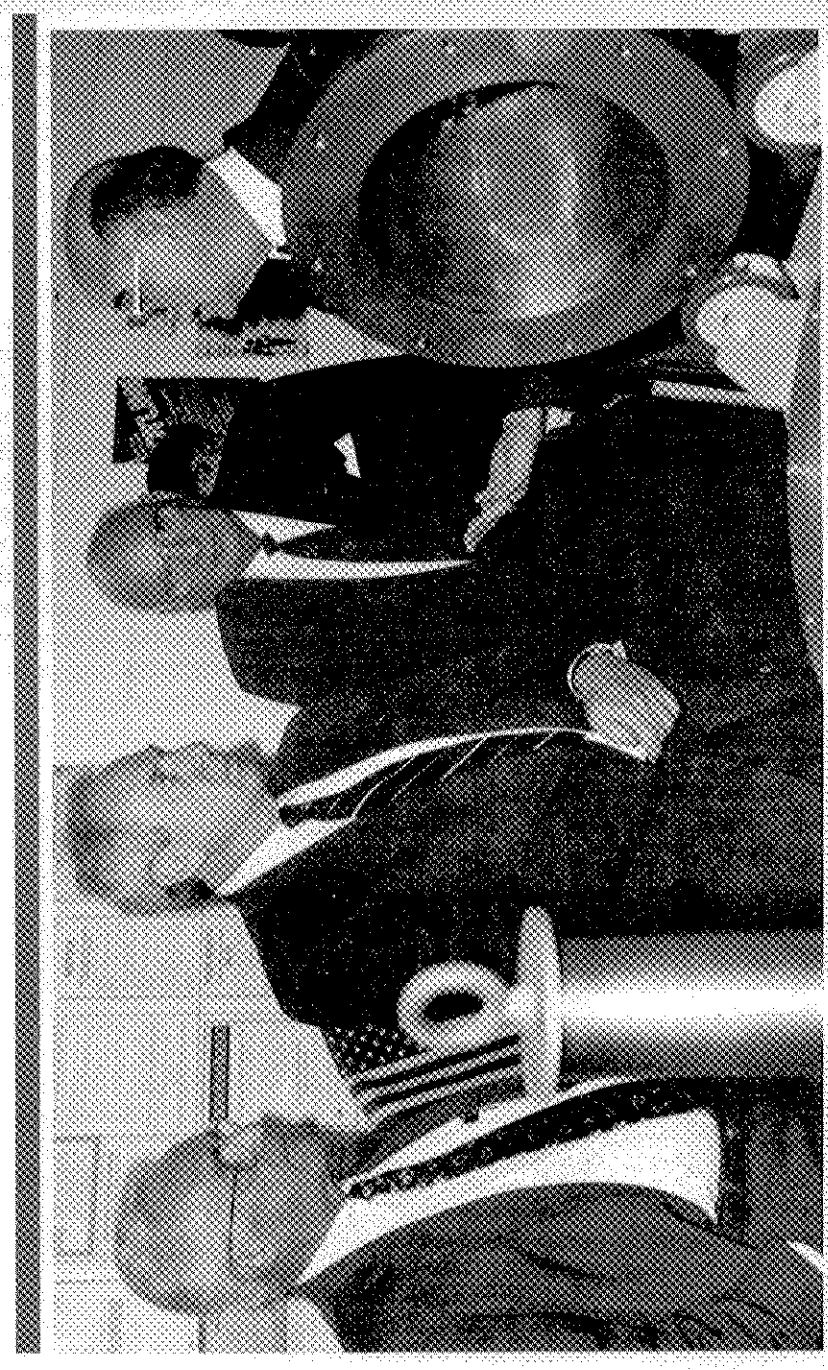


Photo by Fred Jones

During a visit to Técnico, a small disadvantaged company sharing Langley technology, NASA Administrator Daniel S. Goldin, second from left, listens as John Hildebrandt , right, Técnico's group manager, Advanced Materials Group, talks about uses for their composite materials. At left is Técnico president Ralph Torrech and, at center, is Congressman Norm Sisisky.

BULK RATE
POSTAGE & FEES PAID
NASA Washington, D.C.
Permit No. G-27

Researcher News

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

Official Business, Penalty for Private Use $300.