National Aeronautics and Space Administration
Langley Research Center

Researcher News

Bi-weekly Employee and Contractor Publication

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Adams Moves From HRMD Chief To New Position As Assistant Director

Dr. Belinda H. Adams has been named to the new position of assistant director of Langley. Adams most recently served as chief of the Human Resources Management Division.

In her new post, Adams will participate in overall management of Langley. She will lead strategic planning activities and overall intra-Center communications, manage special studies and oversee analyses and assignments that involve interdisciplinary or inter-organizational approaches.

In addition, she will direct Langley's continuous improvement process and manage such operational issues as the Center's full-time equivalent, executive and career development, upward mobility and work force utilization, ensuring emphasis on cultural diversity.

Adams joined the Center in 1963 as an aerospace technologist in the Analysis and Computation Division. She served as an operations research analyst from 1970 to 1973, working first in the Programs and Resources Division (PRD) and then in the Business Data Systems Division.

Adams returned to PRD in 1973 as assistant head of the Institutional Programs Branch. She was named branch head in 1975, assistant division chief in 1981 and chief in 1984.

Adams attended the Massachusetts Institute of Technology (MIT) from 1989 to 1990 as NASA's Sloan Fellow. When the program concluded, she was detailed briefly to Headquarters.

In addition to her NASA position, Adams served on the teaching staff of George Washington University's Tidewater Center from 1970 to 1976.

The Mississippi native has a doctorate in business administration from the University of North Carolina and a master of science degree from MIT. She also has an associate degree from Hinds Junior College in Mississippi and a bachelor of science degree in mathematics from the University of Mississippi.

She also attended the Office of Personnel Management Executive Development Seminar at Kings Point, N.Y.

Her numerous honors include a NASA Exceptional Service Medal. In 1977, she was NASA's nominee for the William A. Jump Memorial Award for distinguished career service in public administration.

Adams has served on various teams and committees, including a team that supported a NASA task force on performance appraisal and merit pay, for which the agency received the first Udall/Derwinski Award for excellence in civil service reform.

She is outgoing chairwoman of Langley's 1992-93 Combined Federal Campaign. She also is serving on the NASA Office of Aeronautics team tasked to recommend organizational structure, functions and management processes for the new organization. In addition, Adams is co-chairman of the Center's Institutional Red Team, chartered to review the sizing and management processes associated with the support and services that undergird Langley's research program.

Dr. Belinda H. Adams

Petersen Appointed To Head Virginia Air And Space Center

Former Center Director Richard H. Petersen has been named executive director of the Virginia Air and Space Center and Hampton Roads History Center. The appointment is effective in mid-January, according to a statement from Edwin C. Kilgore, president of the air and space center's board of directors.

Richard H. Petersen

Petersen left Langley in 1991 to serve as associate administrator for the Office of Aeronautics and Space Technology at NASA Headquarters. He retired from that position January 3.

Petersen has been with NASA and its predecessor, the National Advisory Committee for Aeronautics (NACA) since 1957.

Petersen will direct operations of the new $30-million center, which opened in April 1992 on the downtown waterfront of Hampton.

Petersen was instrumental in the development of the center and recently received the Thomas P. Chisman Memorial Award for his efforts.

Kilgore also announced that the acting executive director, Jeannette B. Petrolia, will become the center's deputy director. She has been with the center for six years and previously was director of marketing and development.

As an associate administrator, Petersen has been leading NASA's aeronautics and space technology programs and promoting the agency's commitment to advance these technologies for the nation's civil and military aviation endeavors and for future space missions.

He also has been directing NASA's activities for the joint NASA-Air Force National Aero-Space Plane program.

Before joining Langley as deputy director in 1980, Petersen had worked at Ames Research Center in Mountain View, Calif., since 1957. At Ames, he was chief of the Aerodynamics Division, managed computer studies of advanced aircraft and worked in theoretical and experimental aerodynamics.

He has a bachelor of science degree in aeronautical engineering, with highest distinction, and a master of science degree in aeronautics from the California Institute of Technology. He also was a Sloan Executive Fellow at the Stanford University Graduate School of Business.

In 1991, the American Institute of Aeronautics and Astronautics selected Petersen for the Reed Aeronautics Award for notable achievement in aeronautical science and engineering.

He earned the Presidential Rank of Distinguished Executive in 1989, NASA's Distinguished Service Medal in 1990 and the Outstanding Leadership Medal in 1984.

Time Capsule Buried At Dedication Ceremony

Last Event of 75th Anniversary Year

A share of Langley's past and present was committed to the future last month with the burial of a time capsule near West Durand Street and the Technical Library.

The capsule—containing more than 50 items, from Center Director Paul F. Holloway's business card to a pack of tomato seeds that spent six years in space—was lowered into an underground concrete chamber Thursday, December 17.

"I'd really like to be here when this thing gets opened up," Acting Center Director Dr. H. Lee Beach Jr. told the handful of Langley employees who braved the drizzly morning weather to attend a dedication ceremony. "Maybe I will be."

The chemical-resistant plastic capsule, about the size of a 55-gallon drum and pressurized with inert gas, is due to be unearthed at intervals of 25, 50 and 100 years. It rests below an aluminum span sculpture marking the site at the end of the pedestrian greenspace mall where the Langley Conservation Club recently planted trees commemorating the Center's 75th Anniversary. Dedication of the capsule was the last official act in recognition of the anniversary.

Photo by Fred Jones

Acting Director Dr. H. Lee Beach Jr. dedicates the time capsule.

Capsule contents

The following items were included in the capsule: greetings from 1992; documents explaining Total Quality Management; a space structure joint; an aerial photo of the Center today; "class" pictures from the Child Development Center; a telephone directory; air and water samples to symbolize Langley's commitment to environmental concerns; issues of the *Researcher News;* a video supplement to a forthcoming technical paper by Dr. Robert C. Costen and Larry V. Stock entitled "Inertial Oscillation of a Rotating Draft with Application to a Supercell Storm;" the tall tale about the testing of a sea gull in the early days and "proving" that sea gulls cannot fly; calligraphy of the law establishing the National Advisory Committee for Aeronautics, a statement about the universe by Abraham Lincoln and Neil Armstrong's first words from the moon; a photo of the worm and meatball logos together on the hangar; an Earth Day tree-planting photo; a Federal Women's Program tree-planting photo; an album of Analysis and Computation Division computer bulletins

Details about the time capsule, and the text of "Greetings from 1992," appear on Page 5.

See **CAPSULE,** *on* **Page 5**

News Briefs

AROUND THE AGENCY

NASA ACHIEVES LASER SPACE COMMUNICATIONS MILESTONE — A major milestone in space communications was achieved recently when NASA scientists successfully transmitted laser signals to the Galileo spacecraft at a distance of 1.3 million miles. Laser beams were simultaneously transmitted to Galileo from a 24-inch telescope at Table Mountain Observatory in California and a 60-inch telescope at the U.S. Air Force Phillips Laboratory's Starfire Optical Range near Albuquerque, N.M. "This experiment is part of a program to show that future deep space missions can use laser beams to send back to Earth larger volumes of space-acquired data than is currently possible using radio signals," said Dr. James Lesh, principal investigator at the Jet Propulsion Laboratory in California.

HUBBLE UNCOVERS PLANETARY EVIDENCE — NASA's Hubble Space Telescope has uncovered the strongest evidence yet that many stars may form planetary systems. Dr. C. Robert O'Dell of Rice University, Houston, and colleagues have used Hubble to discover extended disks of dust around 15 newly formed starts in the Orion Nebula starbirth region 1,500 light years away. Such disks are a prerequisite for the formation of solar systems like Earth's, astronomers say. Hubble's detailed images confirm more than a century of speculation, conjecture and theory about the genesis of a solar system.

SHUTTLE CREW ASSIGNMENTS ANNOUNCED — Veteran NASA astronauts Richard O. Covey and Kenneth Bowersox and European Space Agency (ESA) astronaut Claude Nicollier have been named to the crew for STS-61, the Hubble Space Telescope (HST) servicing mission. Covey will be mission commander and Bowersox the pilot. Nicollier will be a mission specialist. The three join other crew members previously named: Story Musgrave, payload commander; and mission specialist Tom Akers, Jeffrey A. Hoffman and Kathryn D. Thornton.

Banquet Will Honor Engineer Of The Year

The Peninsula Engineers Council will sponsor a banquet February 20 at the Radisson Hotel in Hampton.

The Peninsula Engineer of the Year will be honored at the event. The banquet is being held in connection with National Engineers Week, which starts February 15.

Nominations are accepted each year from more than 20 member technical societies represented on the council. Each society has one vote.

The election will be held at the council's meeting January 12. Results will be announced at that time. The following individuals have been nominated this year by the society that follows each name:

Dr. Roland L. Bowles, American Institute of Aeronautics and Astronautics; **Thomas T. Bales,** ASM International; **David A. Pellett,** American Society of Naval Engineers; **Edryn "Ed" K. Long,** American Welding Society; **Cornelius Driver,** Engineers' Club of the Virginia Peninsula; **Cary R. Spitzer,** Institute of Electrical and Electronics Engineers; **Gen. Michael A. McAuliffe,** Society of Military Engineers; and **Feridun K. Serim,** Society of Naval Architects and Marine Engineers.

For more information, call George M. Bonnett at (919) 261-3840.

Holiday Reception

Photo by Fred Jones

Center Director Paul F. Holloway, right, and his wife, Barbara, center, greet guests at a holiday reception that was held December 18 at the H.J.E. Reid Conference Center. Holloway is shown talking with Lana H. Couch, director of Langley's National Aero-Space Plane Office. Hundreds of Langley employees, contractors and retirees attended the event and had the opportunity to greet the Holloways.

LETTERS

The following letters have been submitted by Langley employees, contractors or retirees:

Bland A. Stein writes: I wish to express my sincere thanks to all who participated in my retirement party and to all my LaRC friends who offered their best wishes on my retirement. My hope for LaRC is that the tradition of technical excellence, friendliness and a conscientious desire of the staff to help each other will continue into the future. These qualities were extended to me during my 36-plus years here. I know that my colleagues and associations at LaRC will always be remembered among the unforgettable highlights of my life.

Otis S. Childress writes: I would like to express my appreciation to my friends who made my retirement dinner such a pleasurable and memorable occasion. Thank you so very much.

S. Janet Dail writes: I would like to express my sincere gratitude to all who helped me during my recent illness. I am very appreciative of all the donated leave, flowers and cards and, most importantly, the thoughts and prayers. I could not have made it without your help. Thank you.

AIAA Speaker Will Discuss The Aerodynamics Of Skiing

An internationally recognized expert in the aerodynamics of downhill ski racing and jumping will lecture at 6 p.m. Tuesday, January 26, at the H.J.E. Reid Conference Center during a dinner meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA).

Dr. Michael Holden of the Calspan Corp., Buffalo, N.Y., has traveled with the U.S. ski teams and participated in their on-slope and wind tunnel training. He will describe the results of his aerodynamic research in downhill racing, ski jumping, speed skating and the luge. The studies were designed as a training tool for athletes and as a means of evaluating, experimentally and theoretically, techniques to obtain maximum performance.

Computer simulations were performed to examine the parameters controlling skiing performance using measurements made in the experimental studies.

A major emphasis in the design of the experimental facilities, particularly those that simulate ski jumping, was to provide the correct "feel" of the simulated environment. Visual, audio and computer information was provided directly to the skiers so that they could evaluate and improve their performance during the training sessions.

The meeting will begin with a cash bar, followed by dinner at 8 p.m. and then the program. The cost is $8 for members and their guests, $10 for non-members and $6 for students. Checks should be made payable to "L.A.A." A $5 charge will be assessed for no-shows. Reservations are required by noon Thursday, January 21. For more information, call Stan Lamkin at 865-7093 during the day or 640-0415 evenings.

Langley's PDP Nominees To Be Selected In February

Nominations are being sought for the NASA Professional Development Program (PDP). The program provides 12-month work assignments at Headquarters or other agency installations.

The work assignment provides experiential learning in new tasks and functions from an agency-wide perspective and is supplemented with briefings and formal training.

Those selected will participate in assignments that begin in August.

The PDP has two levels within the Headquarters-sponsored program:

- Level I for employees at GS/GM-15 and Senior Executive Service.
- Level II for those at GS/GM-13 and 14, and GS-12 in special circumstances.

Individuals may nominate themselves to their directorate offices if they are in the specified grades and believe they have demonstrated the potential to take on broader responsibilities in future positions.

The Langley Executive Resources Panel will select the Center's nominees in early February.

For more information, call Louise C. Hamilton, Employee Development Branch, at ext. 42571.

To request a nomination form, call E. Rose Mustain, ext. 42586, and inform your directorate office as soon as you decide to complete the form.

The nomination deadline for directorate offices is in January.

IN MEMORIAM

William R. Messick, 71, died Monday, December 14. He retired as a machinist in 1976.

Wayne D. Hurlbutt died Friday, December 11. He retired in 1976.

Clarence I. Brooks Sr., 66, died Wednesday, December 16. He retired as an engineering technician.

Audrey H. Caffee, 83, a Langley retiree, died Friday, December 11.

CLARIFICATION

Michelle Sample of the Acquisitions Division was inadvertently omitted from the list, published in the December 18 *Researcher News*, naming the members of the Quality Action Team responsible for the Procurement, Receipt Inspection, and Costs Enhancement (PRINCE) Project.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... Marny Skora

Editor ..... Michael Finneran

Assistant Editor ..... Susan A. Smigielski

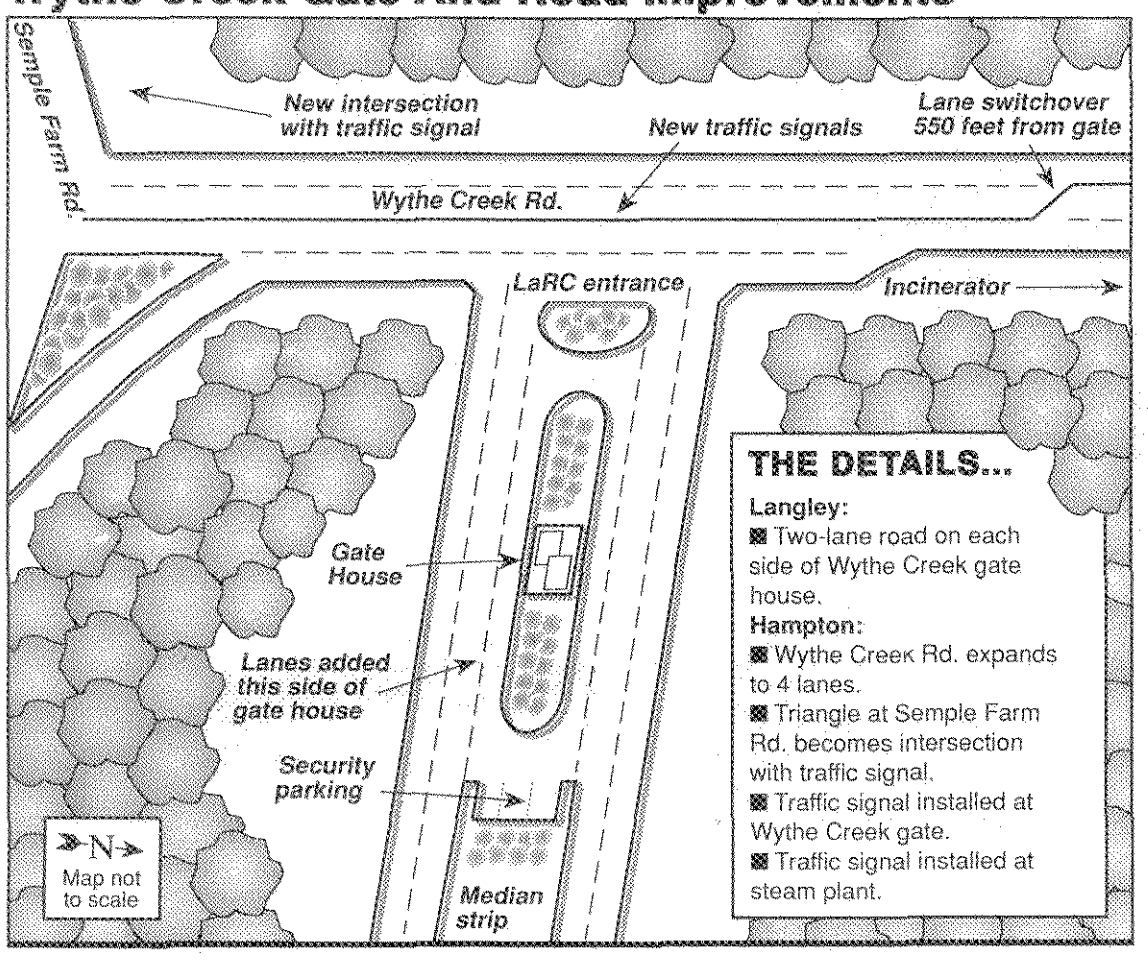
Photojournalist ..... Carol Petrachenko

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.

Wythe Creek Gate And Road Improvements



Map shows improvements to Wythe Creek gate and road.

Project Will Improve Traffic Flow And Safety

Work is scheduled to begin soon to improve Langley's Wythe Creek Gate entrance and widen Wythe Creek Road.

The project, a combined effort of Langley and the city of Hampton, is intended to improve safety and traffic flow to and from the Center.

The project will include three new traffic signals on Wythe Creek Road: at the intersection of Semple Farm Road, at the Langley gate and at the steam plant.

Construction is expected to start before spring on the city's portion, said John Mouring, Langley's master planner.

Upon approval of funding for the Center's part of the project, improvements will include widening Langley Boulevard at the gate so that traffic flows on both sides of it.

The gate house will sit on an island, with two one-way lanes on either side. A median will divide the boulevard, with two openings allowing cars to turn around or park.

The city plans to widen Wythe Creek Road from two to four lanes in front of the gate. The widening will extend north toward the steam plant and south to Semple Road, where a new intersection will be created with an island and traffic signals.

Center To Take Part In da Vinci Month At VASC

The Virginia Air and Space Center and Hampton Roads History Center has dedicated January as Leonardo da Vinci Month and is offering weekend programs and films that will focus on his inventions, creativity and scientific approach.

The programs will relate to the center's IBM–Leonardo da Vinci exhibition featuring 20 working models, including the parachute, helicopter, triple-tiered machine gun and flying machine.

The films will be shown daily at the regular admission rate. All of the weekend programs are $3 for members and $4 for non-members. Space is limited, so call 727-0900, ext. 756, for reservations.

The following programs will be held from 10 a.m. to noon:

January 23: "He's an Artist: You're an Artist:" Bill Kluge, of Langley's Graphics Section, will teach children ages 5 through 6 how to use their imaginations to create an image or object using a variety of methods. Reservations are required by January 20.

January 23: "Measuring Up:" Langley engineer Sharon Tanner will show children ages 7 through 8 da Vinci's measuring tools and how to devise their own ways of measuring items. Reservations are required by January 20.

January 30: "Inventive Inventiveness:" Patent lawyers Dr. George Helfrich, Kevin Osborne and Kimberly Bower will help children ages 10 through 12 discover their creative talents. Participants will create trademarks, logos and slogans for devices they make. Reservations are required by January 27.

February 6: "Model Ideas:" Tammy Eller and Lana Hicks, Langley model-maker technicians, will help children ages 8 to 12 discover skills and techniques for successful model making. Reservations are required by February 3.

Entries Are Sought For 1992 R&D 100 Awards

Langley employees who have developed any product, material, process, software, program or system of scientific or technical origin in 1992 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 by organizations throughout the world.

Langley has won 23 of these prestigious awards in the 30 years of the competition.

February 17 deadline

Individuals who are uncertain of the candidacy of their proposed development, or who need an entry form, should call the Technology Utilization & Applications Office (TU&AO) at ext. 42482. Completed entry forms should arrive in the TU&AO by February 17 to assure that they are checked for completeness and forwarded to meet the deadline. The TU&AO will provide the entry fee.

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

Langley Employees Respond To Red Cross Call For Help

BY MARNY SKORA

T'was the day before Christmas and . . . 12 Langley employees spent eight hours helping at the Red Cross Blood Drive at the Hampton Coliseum.

Over 200 pints of blood were collected at this Christmas Eve event —which almost didn't happen. The local chapter had no volunteers to assist blood donors and Red Cross workers.

"Our regular volunteers had worked all month long," said Mati Brisbane, director of Volunteer Services. "If it weren't for the NASA volunteers, we couldn't have held this event."

Of the 25 volunteers this Christmas Eve, 17 were NASA employees or family members.

The volunteers arrived at 8 a.m. for training in registering donors, making up donor packets and manning the hospitality area.

"I just wanted to do something for the community," said Shirwin Moore, Flight Management Division. Moore's daughter, Heather Green, volunteered also. "It was a way to do something for someone else and spend time with my mother as well," Heather said.

Carol Wieseman, Configuration Aeroelasticity Branch, said she thought the blood drive was a neat—and worthwhile—thing to do on Christmas Eve.

Karla Jones, Occupational Health Services Office, said she realized how important it would be to have a good supply of blood on hand in case of accidents over the holidays. "It's the season to give!" she said.

Olaf Storaasli, Computational Mechanics Branch, not only gave up his day, but brought his two sons along. Olaf Jr., a sophomore at Virginia Polytechnic Institute and State University, and Paul, a 10th grader at Kecoughtan High School, were enthusiastic and dedicated helpers.

Jackie Osborne, Interdisciplinary Research Office, also made this a family project. She and her son Matt worked at the children's table. Matt, who gets around in a wheel chair, had established a route to and from the snack table serving the children of donors and volunteers. "It's important for Matt to see that he can help too," said Osborne.

Tina Hawks, Landing and Impact Dynamics Branch, also helped out at the children's table. "There was plenty of work for all of us. It was a very busy day."

Dave Duxbury, Projects Division, had planned to be off on Christmas Eve. He decided this was a better way to practice the Christmas spirit. "I was amazed by the dedication of the Red Cross team. One nurse was from Greenville, N.C. She worked the whole day and then planned to drive back home."

Jeanette George, Business Data Systems Division, said she just likes to volunteer. "There's really no substitute for another set of hands in any worthwhile endeavor," she reasons. She and Carmen Torres-Nisbet helped at the hospitality area.

Ginger Freeman, Employee Development Division, and Natiki Mahmood, Human Resources Management Division, were among the first to greet donors. They registered the 213 residents who took part in the drive.

"This was an urgent situation for the community," said Dr. H. Lee Beach Jr., Langley's acting director. "I'm extremely pleased our employees could lend a helping hand."

Response to the call for volunteers was overwhelming. The announcement went out over QuickMail and within hours a dozen people had volunteered.

"This is just one example of the many ways NASA employees can help others," said Beach. "Through our community services program, we hope to participate in other such worthwhile projects."

Photo by Hubert Lloyd

Helping out at the Red Cross Blood Drive are, from left, Jeanette George and Carmen Torres-Nisbet. Twelve Langley employees assisted during the Christmas Eve drive.

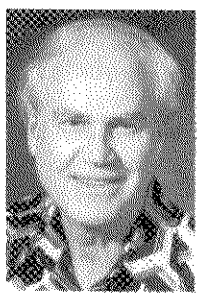
IN PERSON

Negative Experience Often Invokes Murphy's Law

BY BILL TAYLOR

LAL, LMAL, NACA, NASA? You need a photo for a report/publication and have a number. Is it valid? Was it L83-684 or 83,684; L58-1202 or L58-1202a? Each is a different negative of a different subject. Murphy (of Murphy's Law) was an optimist.

The Langley photo lab has approximately 480,000 negatives in seven—count 'em, seven—different filing systems. Negative #1 was shot in 1921 and marked LAL (Langley Aeronautical Laboratory). When the numbers reached 97,253 in December 1956, the system was changed to the present one: the year first, a dash, then the sequence number, i.e., L57-1234. This leads to confusion (and still does) if you request 57234 when you really mean 57-234 and not 57,234!



Murphy smiles.

On October 1, 1958, Murphy struck again when NACA became NASA. The first negative of the NACA year was L58-1. The first NASA negative, on October 1, was—ready for this?—L58-1a. All negatives to the end of the year ('58 only) bore the small "a" after the number.

Murphy giggles!

Photos altered for reports came out with a decimal number: L71-531, for example, is the original, while L71-531.4 has parts labeled. One negative with decimals has 162 negatives.

We have a short separate file for retirements and parties of bygone years (year unknown) numbered from 4 (?) to 1410, no other designation. Murphy chuckles!

In 1976, Viking came along, and we now have LV (Langley Viking) numbers for the project. Murphy struck again in 1977 and we have LCH (Langley Charts). Separate files.

Murphy laughs!

The old negatives from the 1920s and 1930s were shot on nitrate-base film and were highly flammable, almost explosive. They were copied and the originals destroyed. Unfortunately, not all of the negatives survived to be copied.

Requests come in for a numbered negative from the early days and there is no negative of it in the files. The originator has a copy, or sometimes an original print in good condition. Good: We borrow the original, copy it, return the original and fill a hole in our files. During World War II, thousands of negatives were transferred to other installations, never to return.

All of the negatives of the original seven astronauts training programs, shot here, were transferred to Johnson Space Center.

Murphy guffaws!

In some instances, numbered negatives are inadvertently sent out with an order and, if not returned, are lost. If you have any negatives with numbers printed or hand-lettered on them, they probably belong in the lab archive and should be returned.

Murphy chortles!

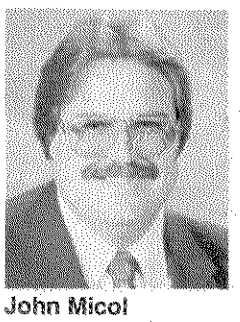
The most common error in ordering prints is typographical; i.e., L58-123 through 145 is requested. When pulled in the archives, it involves three totally different projects, from high-tech to a burned-out motor, to rust on the gantry rail. A call verifies that the number is L53 and not L58. If L83-684 is written L83,684 or vice-versa, these are two different negatives.

Murphy howls!

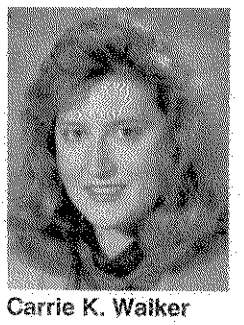
Visitors to Langley have included Orville Wright, Franklin D. Roosevelt, Charles Lindbergh, then-Sen. Harry Truman, Amelia Earhart, other notables and a group of Scandinavian gentlemen. All were dutifully photographed, but almost all identified as "Visitors." No names.

If you need a print, check the number. Play Santa Claus—make a list and check it twice. Nobody's purfekt! Don't tickle Murphy's tummy.

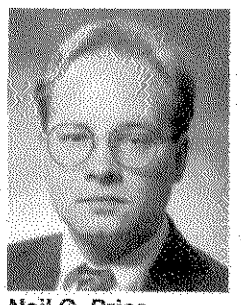
Bill Taylor works for Mason & Hanger Services Inc. in the Photographics Section, Research Information and Applications Division.



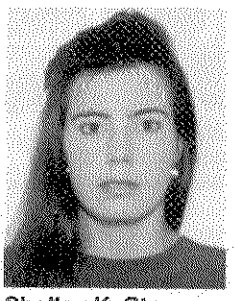
John Micol



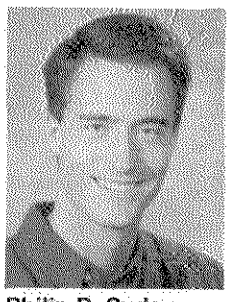
Carrie K. Walker



Neil G. Price



Shelley K. Stover



Philip D. Sydow

Six More Employees Earn Advanced Degrees in 1992

Six more Langley staff members have earned advanced degrees through the Graduate Study Program in fiscal 1992. This makes a total of eight doctorates and 22 master's degrees received from 15 institutes during the year.

Master of science degrees were awarded to six employees: John R. Micol, Space Systems Division, master of science in fluid mechanics and thermal sciences from George Washington University; Paul S. Miner, Information Systems Division, master of science in computer science from The College of William and Mary; Neil G. Price, Acquisitions Division, master of science in contract and acquisition management, Florida Institute of Technology; Shelley K. Stover, Flight Electronics Division, master of science in electrical engineering from Georgia Institute of Technology; Philip D. Sydow, Structural Mechanics Division, master of science in engineering from Stanford University; and Carrie K. Walker, Information Systems Division, master of science in computer science from the University of Colorado.

The Employee Development Branch congratulates these individuals for the long hours and hard work necessary for this academic accomplishment. Such work not only brings additional expertise to Langley but also enhances the individual's professional growth and career development.

Employees interested in pursuing an advanced degree on a full-time basis, or who have questions about the program, should call the Employee Development Branch at ext. 42594.

Employee Awards

Lori A. Nichols, voucher examiner, Financial Management Division (FMD), for maintaining high quality coupled with high productivity in processing payments within the Commercial Accounting Section.

Lisa A. McAlhaney, accountant, FMD, for exemplary accounting support and excellent service in the maintenance and reconciliation of the official financial records and associated accounting tasks for LaRC.

Julie E. Callahan, accountant, FMD, for exemplary accounting support and excellent service in the maintenance and reconciliation of the official financial records and associated accounting tasks for LaRC.

Barbara A. Reed, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Ethel Wescott, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Jo H. Legette, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Paula D. Green, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Shirley T. Boswick, voucher examiner, FMD, for a high degree of dedication and support in the Travel Section.

More employee awards appear on Pages 6 and 7.

Joyce E. Fly, civilian pay supervisor, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Heide C. Ellis, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Gerri R. Edmonds, civilian pay technician, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Marion S. Chaltry, accounting assistant, FMD, for exceptional technical achievements and outstanding teamwork in implementing changes and improvements to the payroll process.

Jane V. Gage, voucher examiner, FMD, for a high degree of dedication and support which has contributed greatly to the accomplishment of the mission of the Travel Section.

Thomas E. Frasher, systems accountant, FMD, for extraordinary assistance and accomplishment in the creation of an overtime report for use in tracking and budgeting for Center manpower needs.

Kendall W. Sherman, secretary, Guidance and Control Division (GCD), for management and dedicated support throughout the 5th NASA/DOD CSI Technology Conference.

James G. Batterson, supervisory aerospace engineer, GCD, for leadership and contributions in the organization and chairmanship of a session on Vehicle Trajectory Optimization at the AIAA AFM Conference.

David L. Raney, aerospace engineer, GCD, for superior performance in developing control concepts for maneuvering NASP-like vehicles in air-breathing hypersonic flight.

John D. McMinn, aerospace engineer, GCD, for timely technical contributions enabling the first release of the NASP Integrated Atmospheric Model for use with real-time and batch simulations for the National Aero-Space Plane.

Lin Wins Toastmaster Competition

Representing NASA Toastmaster Club No. 3184, Dr. John C. Lin won the Tall Tale Division Contest at the Peninsula Toastmaster Club on December 16.

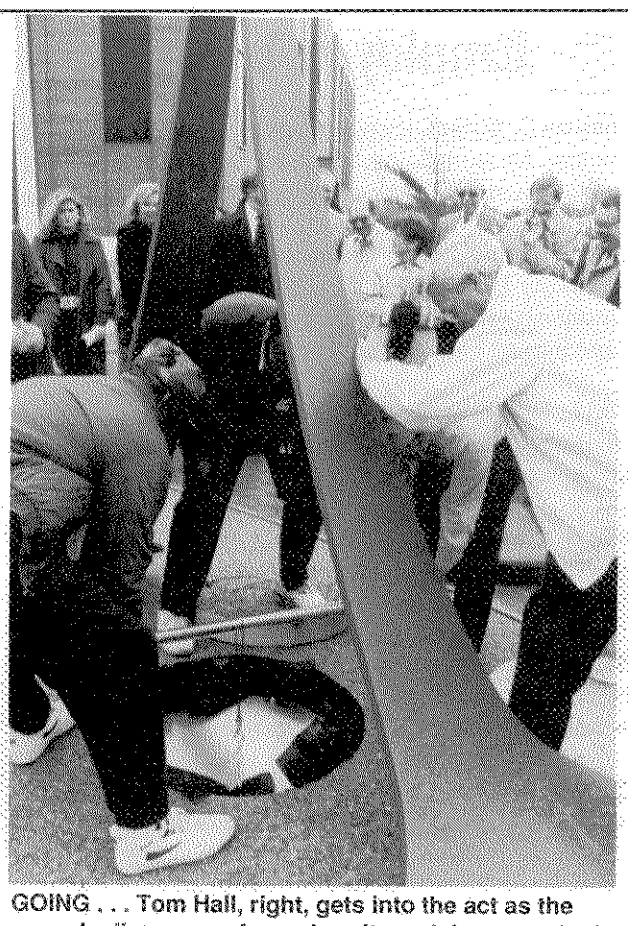
He will continue to compete against the best Toastmasters at the state level in Charlottesville.

Lin works in the Experimental Flow Physics Branch, Fluid Mechanics Division.

Retirement Party Set For Harvey

A retirement party will be held for Don Harvey on Friday, January 29, at 11:30 a.m. in Building 1251, Room 209. Heavy hors d'oeuvres will be served. The cost is $8 per person, which a includes gift. Those who would like to attend or make a gift contribution should contact Velma Martin at ext. 43761 or Mail Stop 403.

GOING . . . Alvin Abramson, left, and Mark Cannon lower Langley's time capsule into its concrete chamber during a ceremony December 17.



GOING . . . Tom Hall, right, gets into the act as the capsule disappears from view. It won't be unearthed for at least 25 years.

Photos by Fred Jones

GONE . . . Chancer Hill helps Cannon and Abramson seal the chamber.

Greetings From 1992: Langley's 75th Anniversary And 'Year Of Seventeens'

The following "Greetings from 1992," were buried in Langley's time capsule. The text was delivered by Acting Center Director Dr. H. Lee Beach Jr. during the time capsule dedication December 17.

The staff and management of Langley Research Center send greetings to our counterparts in 2017.

This 75th Anniversary year has been a "year of seventeens" for Langley. We have enjoyed many highlights and activities this year, but three have been particularly significant: July 17, our birthday party in the aircraft hangar, on a beautiful warm and breezy (but not Virginia Summer hot) day; October 17, our open house attended by at least 13,000 citizens; and perhaps an appropriate finale, December 17, the anniversary of first flight and the day we dedicated this time capsule to you, our future.

We trust this time capsule, sponsored by our Exchange Council, will give you some insight into the Langley Research Center of 1992. You will find the listing of contents with this greeting. These contents are listed in random order, which should make it more interesting to uncover our "secrets."

One item you will find particularly interesting is Center Director Paul Holloway's State of the Center notes and viewgraphs. This address will give you a good overview of our research programs, our personnel and general resource status for FY 1992. There is also a section on our 75 years of history and accomplishment.

NASA as an agency has been in a state of transition this year. In April, TRW executive Dan Goldin was appointed administrator, replacing Dick Truly. Goldin represents a determined "agent of change" for NASA, bringing with him a strong belief in quality management emphasizing empowerment of the workforce and service to the customer—the American people. His motto is "better, faster, cheaper, with safety." He seems determined to solve the chronic agency problem of "too much program chasing too few dollars."

A Democratic president, Bill Clinton, was elected in November. This Democratic administration will be the first one in Washington in 12 years. Clinton and his vice president-elect, Al Gore, appear to be strong supporters of NASA. Today, as we seal this capsule, we can only guess how NASA will fare under this new leadership.

A salute

We salute you, our posterity, and hope we helped deliver a creative, productive and sound Langley Research Center to you in 2017. We have carefully selected these symbols of our history. Take some, leave some if you wish, add your own, and pass this legacy of now 100 years on to our collective future.

CAPSULE:

Continued from Page 1

from the last 18 years; the Center's Master Plan completed in 1992; a module from Langley's most current supercomputer and from a late 1960s STAR1 computer, with an explanation of their functions; group photos from 1992; a photo and program from the apprentice class of 1992; a Construction of Facilities five-year plan (yellow book) July 1992; the 1991 and 1992 H.J.E. Reid Award papers; a 75th Anniversary media kit; a 75th Anniversary video; documents and photos of the White Pelican, the largest paper airplane, in the Guinness Book of World Records; four blue sheets; a NASA badge; a meatball pin; a worm pin; the NASA administrator's announcement resurrecting the meatball; several Langley Management Instructions; several Langley forms in current use; the program for the 1992 Honor Awards Ceremony; items relating to Space Station Freedom, atmospheric sciences, aeronautics, structures/materials and instrumentation; a copy of the *Winds of Change* 75th Anniversary book; 75th Anniversary programs and stamp cancellations; copies of proclamations; a NASA motor vehicle decal; the Center director's meatball business card; a pack of tomato seeds from the Long Duration Exposure Facility; Space Directorate castings of wind tunnel models; current union agreements; a "remove before flight" tag from Langley's 737 research aircraft; a flow visualization tuft from a research aircraft; the Center director's State of the Center notes and viewgraphs; a VG recorder with operating manual; a Viking microdot; a selection of cafeteria menus; the first issue of *This Week at LaRC;* five retirement notices that were posted on bulletin boards; and the 75th Anniversary flag that flew on the headquarters pole from January 1 to October 14, 1992.

Reminder: HST Colloquium Is Scheduled For Tuesday

Development of a supersonic airliner aimed at filling the rapidly growing long-haul air travel market will be outlined in a talk at 2 p.m. Tuesday, January 19, at the H.J.E. Reid Conference Center.

The presentation is open to NASA employees, contractors and retirees and is part of the monthly Colloquium Series.

Louis J. Williams, director of High-Speed Research at NASA Headquarters, will present the lecture.

Air traffic assessments have indicated a substantial market for a High-Speed Civil Transport (HSCT) to satisfy increasing demand for long-haul air travel. Capturing this market is worth about $200 billion in sales and 140,000 new jobs.

Experts anticipate the development of a supersonic transport shortly after the turn of the century.

Studies indicate that an environmentally compatible and economically viable HSCT may be feasible—but that the required technology represents an extremely difficult challenge.

Time Capsule And Burial Site Designed To Stand Test Of Time

The following description of the time capsule was provided by Center Master Planner John Mouring:

The site of the time capsule visually anchors the south terminal of Langley's greenspace pedestrian mall.

The new concrete paving of the viewing pad has an exposed-aggregate finish to set it apart from the conventional concrete of the bordering sidewalk.

As with most time capsules, Langley's is installed below-ground for long-term protection and minimal maintenance.

The capsule is a chemically-resistant polypropylene drum with an o-ring seal plus an application of long-life sealant compound. It is fitted with a stainless steel harness to aid retrieval in 2017.

The capsule receptacle or chamber is a piece of concrete drainage pipe set vertically in a concrete pit floor and sealed against ground-water intrusion.

A concrete lid is concealed beneath the cast brass dedicatory cover. The lid and cover are compound-sealed monolithically to repel surface water and together provide approximately 455 pounds of ballast in the unlikely event of chamber flooding.

The brass cover is uncoated so that it may weather to the olive green color of the Langley Memorial.

Span sculpture

The "span sculpture" provides both a visual designation of the site and a measure of protection.

The sculpture halves were roll-formed of aluminum plate, given an anodized finish of weathered bronze and fitted with a matching finial.

The connotation of the sculpture signifies two entities—present and future—that span the time interval while uniting in an ever-rising endeavor: the Langley mission.

People & Places

Employee Awards

Anthony Fontana, flight experiments manager, Guidance and Control Division (GCD), for providing leadership and direction in the development of MACE, the first on-orbit CSI experiment.

Ty D. Moen, engineering technician, Operations Support Division (OSD), for exceptional technical support provided to research facilities.

Larry M. Merrill, visual information specialist, Research, Information and Applications Division (RIAD), for exceptional performance and dedication in the preparation of the State of the Center visuals and the redesign of the director's overview presentation book.

Myra D. Green, secretary, University Affairs Office, for exemplary performance in administrative support of the office.

Patsy L. Campbell, equal employment specialist, Equal Opportunity Programs Office, for superior leadership in managing the Federal Women's Program.

Judy R. Neil, office secretary, Facilities Program Development Office, for continual high standards of performance and proficiency in helping the office accomplish its daily missions and goals.

Kenneth H. Crumbly, project manager, Projects Division (PD), for exemplary development and leadership of the Project Team for the SEDS-EM Payload Project.

Jerome T. Foughner Jr., chief engineer, Facilities Planning Office, for sustained high-quality performance in developing and reporting the Aeronautics Directorate Construction of Facilities Plan.

Granville L. Webb, aerospace engineer, Structural Dynamics Division (SDyD), for significant contributions to the ALDF valve body replacement C of F project.

Robert K. Sleeper, aerospace engineer, SDyD, for successfully conducting an investigation to measure the turbulence environment in the Transonic Dynamics Tunnel for air and for performing highly innovative analyses to assess the results.

Paul Cooper, aerospace technologist, SDyD, for exceptional leadership in initiating integrated assembly dynamics analysis of SSF/RMS/STS.

Stanley R. Cole, aerospace engineer, SDyD, for outstanding program management and a successful wind tunnel demonstration of multi-function control laws on the Active Flexible Wing Model in the TDT.

David R. Brooks, lead engineering technician, OSD, for sustained high quality performance and dedicated support to research conducted at the 30- by 60-Foot Tunnel.

James W. Cheely, aerospace engineer, Systems Engineering Division (SED) for outstanding performance and continuous dedication in the technical management of the development of the LITE Laser Transmitter Module.

Steve Katzberg, aerospace technologist, Space Station Freedom Office, for leading the Lunar Return Aerobrake Design Team in the development of an exceptional technical product.

Sang H. Choi, aerospace technologist, Space Systems Division (SSD), for outstanding and sustained performance in designing and developing the Hypersonic Flow Generator Facility.

Virginia K. Anderson, division secretary, Office of Chief Counsel, for outstanding dedication and efficient performance of duties which underpin the effectiveness and efficiency of the office.

Theresa C. Walker, legal technician, Office of Chief Counsel, for outstanding dedication and contributions to the success of the Langley intellectual property program.

Jerome T. Kegelman, aerospace engineer, Fluid Mechanics Division (FldMD), for excellence in nonintrusive instrumentation development in the Experimental Flow Physics Branch.

Carl L. Moore, engineering technician, Fabrication Division (FD), for exceptional performance during fabrication of the active control wing and actuators.

Lori S. Rowland, secretary, FldMD, for providing excellent stenographic support during the Vision, Mission, Values Team meeting, June 3-5, 1992.

Betty F. Millard, mathematics technician, FldMD, for outstanding contributions to the diverse research program at the Low-Turbulence Pressure Tunnel.

Clayton P. Turner, aerospace technologist, SED, for outstanding dedication and technical capabilities in support of the Electrical Systems Section and the Boresight Subsystem of the LITE instrument.

Robert W. Moses, aerospace engineer, SED, for exceptional performance in providing structural analyses for the conceptual design of the Spectroscopy of the Atmosphere Using Far Infrared Emission (SAFIRE) experiment.

Joseph R. Phillips, aerospace engineering technician, SED, for outstanding technical leadership, coordination and dedication in support of the HALOE Repeat Gas Response Test ground-support equipment recertification and recalibration activity.

Susan N. Price, secretary, SED, for significant contributions to administrative functions and exemplary performance of secretarial duties.

Homer F. Rush Jr., senior design specialist and technical advisor, SED, for outstanding effort on numerous high-priority, quick-response tasks critical to the success of NASA-LaRC research efforts.

Christopher L. Moore, aerospace engineer, SED, for sustained high level of performance in support of the LITE project.

Dana C. Gould, project thermal analyst, SED, for exceptional performance in the development and application of thermal analysis software for the NASP and SAGE III projects.

Thomas R. Levin, engineering technician, SED, for contributions made to enhance the capabilities of environmental testing facilities.

Elvin L. Ahl, mechanical engineer, SED, for sustained high level of performance in support of the design, fabrication, assembly and environmental testing of the LASE Thermal Control System.

Ruth M. Amundsen, technical project engineer, SED, for exceptional performance in support of the engineering design, analysis and testing of the SUNLITE Project.

Brian F. Beaton, aerospace engineer, SED, for outstanding effort in the design of the F-16XL laminar flow wing glove candidate configurations.

Ralph D. Buehrle, aerospace engineer, SED, for outstanding technical leadership, coordination and dedication in support of the vibration testing of the LITE and SEMP flight experiments.

Cindy W. Albertson, aerospace engineer, Structural Mechanics Division (SMD), for authoring an outstanding research paper in compressible boundary-layer technology selected as the best paper published by the division in 1991.

Robert D. Brown, industrial hygienist, Systems Safety, Quality and Reliability Division (SSQRD), for continued contributions to the LaRC Environmental Compliance Program.

Harold W. Beazley, safety engineer, SSQRD, for timely and effective support to the LaRC Safety Engineering Program.

Jackie W. Holloway, safety and occupation health specialist, SSQRD, for outstanding support to the LaRC fire detection and protection system maintenance program.

Ronald D. Brown, aerospace technologist, SMD, for outstanding contributions in establishing the feasibility of starting and operating the 8-Foot High-Temperature Tunnel with the NASP concept demonstrator engine mounted in the tunnel.

Max L. Blosser, research engineer, SMD, for contributions to the development of the Thermal Structures Research Laboratory.

Susan W. Bostic, computer engineer, SMD, for innovative research in efficient computational algorithms for high-performance computers.

L. David Wall Jr., technical assistant, SMD, for superior accomplishment in support of the division office during 1991-1992.

Judith J. Watson, research engineer, SMD, for superior accomplishment in support of the Space Exploration Initiative Office aerobrake research activities during 1991-1992.

Damodar R. Ambur, research engineer, SMD, for directing and developing the design and analysis of the Combined Load Test System.

Stephen J. Scotti, senior research engineer, SMD, for outstanding contributions to structural analysis and sizing studies for High-Speed Civil Transport aircraft.

Marshall Rouse, research engineer, SMD, for contributions to the planning and coordinating of the implementation of the Combined Load Test System.

Richard L. Puster, aerospace engineer, SMD, for outstanding contributions to the design and validation of an innovative, highly stable fuel injector and flameout detector for the 8-Foot High-Temperature Tunnel.

William T. Miller Jr., aerospace technologist, SMD, for outstanding contributions in the development and implementation of plans for the selection, installation and performance verification of all instrumentation for the 8-Foot High-Temperature Tunnel shakedown.

Sharon A. Mills, secretary, SMD, for significant efficiency improvements in the operation of the Computational Mechanics Branch office.

Timothy J. Collins, research engineer, SMD, for superior accomplishment in support of the Spacecraft Structures Branch precision structures research program during 1991-1992.

Barbara B. Eutsler, secretary, SMD, for outstanding achievement in support of the division during 1991-1992.

Walter L. Heard Jr., senior research engineer, SMD, for superior accomplishment in demonstrating a pioneering truss assembly method in neutral buoyancy.

L. Roane Hunt, aerospace engineer, SMD, for outstanding contributions in the analysis of data, evaluation of component performance, and timely and sound recommendations to the 8-Foot High-Temperature Tunnel Shakedown Team.

Employee Awards

Mark S. Lake, research engineer, SMD, for superior accomplishment in support of the Spacecraft Structures Branch precision reflector neutral buoyancy assembly experiment.

E. Vincent Zoby, aerospace engineer, SSD, for outstanding technical direction and accomplishments in aerothermodynamic assessment of hypersonic vehicles.

Donald W. Monnell, aerospace engineer, Space Station Freedom Office, for achieving a major breakthrough in the Space Station Freedom Program by getting evolution requirements consideration into the Level II and work package design efforts.

Patrick A. Troutman, aerospace technologist, Space Station Freedom Office, for superior performance in defining and evaluating alternative Space Station Freedom/Heavy Launch Vehicle Configurations.

Dina S. Weiss, secretary, Applied Aerodynamics Division (AAD), for outstanding efforts in training secretarial co-ops in the High-Reynolds-Number Aerodynamics Branch.

S. Paul Pao, group leader/research engineer, AAD, for the development of computational fluid dynamics methods for propulsion integration research.

John R. Carlson, research engineer, AAD, for the development of a computational fluid dynamics performance prediction method for advanced nozzles.

Chuck L. Carpenter, computer engineer, Analysis and Computation Division (ACD), for exceptional technical leadership in the design and development of flight and ground software systems for the LITE experiment.

Joseph W. Young, mathematician, ACD, for outstanding contributions to the development and implementation of Central Scientific Computing Systems.

Donald R. Bennington, electronics engineer, ACD, for exceptional achievement in interfacing minicomputer equipped devices to the Advanced Real-Time Simulation System Network.

Darrell W. Sacra, electronics technician, ACD, for superior achievement in design and development of video signal distribution systems for flight simulators.

Kurt E. Severance, computer engineer, ACD, for exceptional achievement in the development of an application of visualization software systems.

Elijahu Siman-Tov, mission software manager, ACD, for exceptional technical management of the development of flight and ground software systems for the CERES Experiment.

Robert L. Spruill, senior level electronics technician, ACD, for exceptional achievement in upgrading the differential maneuvering simulator with a computer-generated target image generator system.

Linda W. Sutherland, secretary (stenography), Acoustics Division (AcoD), for outstanding administrative support to the division.

Christopher L. Rumsey, aerospace engineer, Aeronautics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

John K. Molloy, technical assistant, Director for Aeronautics, for contributions to the directorate and the NASP government work packages.

Brenda N. Steele, secretary, Facilities Planning Office, for outstanding support in organizing and conducting the Industry/DOD/NASA Workshop on Aero/ Aerothermodynamics/Acoustics Ground and Flight Test Requirements.

Guy T. Kemmerly, aerospace engineer, Aeronautics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management at LaRC.

Debra J. Carraway, supervisory electronics engineer, Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Laurie W. Andrews, program analyst, Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Christyl M. Chamblee, electronics engineer, Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Arthur L. Gooden, mathematician, Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Donna L. Martin, secretary (stenography), Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

David B. Rhodes, aerospace technologist, Electronics Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Peter J. Edgette, health manager, Management Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Michael Glenn, supervisory employee development specialist, Management Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Howard R. Puckett Jr., management analysis officer, Management Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Irwin J. Schauer, management and program analysis, Management Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Ruth M. Martin, supervisory aerospace engineer, Structures Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Woodrow Whitlow Jr., supervisory aerospace engineer, Structures Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Delwin R. Croom Jr., quality assurance specialist, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Charles E. (Rusty) Jenkins Jr., aerospace engineer, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

J. Milam Walters, aerospace engineer, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Davis B. Wright Jr., aerospace technologist, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Scott R. Young, engineering technician, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Henry N. Zumbrun, engineering technician, Systems Engineering and Operations Directorate, for demonstrating extraordinary expertise and dedication in support of Total Quality Management implementation at LaRC.

Donald L. Maiden, aerospace engineer, Advanced Vehicles Division (AVD), for outstanding contributions to the High-Speed Research Program's system studies contract with Boeing and responsiveness to the NASA High-Speed Research Team.

Barbara A. Fryer, secretary, Director's Office, for exemplary performance of duties, both assigned and assumed, in support of the office.

Sandy W. Patrick, secretary Director's Office, for exemplary performance of duties, both assigned and assumed, in support of the office.

Carolyn C. Wilt, secretary (stenography), Office of Director for Flight Systems, for consistent excellence and outstanding judgement as office secretary.

Gary P. Beasley, technical assistant, Office of Director for Flight Systems, for defining and implementing processes which have significantly improved directorate performance.

Elizabeth C. Page, procurement assistant, Acquisition Division (AD), for sustained superior performance in providing support to the LaRC Grants Office.

Cynthia K. Cowan, contract specialist, AD, for continued excellence in procurement preparation and contract administration.

Linda P. Fitzgerald, procurement analyst, AD, for extraordinary efforts to promote the agency's socio-economic goals and the contract competition rate.

Joan Y. Crepps, contract specialist, AD, for exceptional effort involved with the successful negotiation and timely award of contract NAS1-19710 with Cray Research Inc., for supercomputer expansion.

Betty B. Lane, contract specialist, AD, for exceptional effort in the administration of the Center's pilot Indefinite Delivery, Indefinite Quantity (IDIQ) ADP contract.

James W. Cresawn, supervisory contract price analyst, AD, for outstanding contributions in providing in-depth analysis of technical and cost issues attendant to the Ames Moffett acquisition.

Patricia M. Turgeon, procurement assistant, AD, for sustained excellence in procurement expediting and administration.

Linda S. Urquhart, procurement assistant, AD, for outstanding performance in evaluating the current bid result information process and the establishment of a new telephonic bid result service.

Christopher W. Tremper, computer specialist, Business Data Systems Division (BDSD), for exceptional personal contributions on the special project teams for implementing EPRS and TADS Centerwide.

Happenings

SPACE SOCIETY MEETING: The Langley National Space Society will hold a dinner meeting at 5:30 p.m. Monday, January 25, at the Warwick Restaurant in Newport News. All those interested in creating a spacefaring civilization are invited. For more information, call Doug Stanley at ext. 44518.

FOUND: Blue Cannondale bike bag. Call Eric at ext. 46288.

FOUND: Watch in the parking lot between buildings 1195 and 1194 in early December. Call Rose Mustain, Employee Relations Branch, at ext. 42586.

SKI TRIP: Thursday, January 21, at Wintergreen Ski Resort. The cost is $59. The bus will leave from Newmarket South at 5 a.m. and return at 10 p.m. Please send all checks to Richard Bennett at Mail Stop 397. For more information, call Bennett at 599-5585.

READING SERVICE: The Voice of the Peninsula, a free radio reading service for visually or print-impaired people, provides daily reading of local newspapers. This volunteer service provides the necessary radio receivers free of charge to anyone with disabilities that prevent them from reading for themselves. If you would like to receive this service or volunteer, call 245-1041 or 599-6540.

TOWNHOUSE FOR SALE: By owner, Poquoson, 2,000 square feet, 3-bedrooms, 2½ baths, eat-in kitchen, bay windows, hardwood floors on first floor, fireplace, 3 skylights, end unit, with windows overlooking large side and rear yard. $97,000. Call 868-7422.

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A., 723-5227.

HOUSE FOR RENT: Single-family house in Williamsburg, furnished, including refrigerator, dishwasher, washer/dryer, 3 bedrooms (or 2 plus study), 2 baths, 10 minutes from college, on cul-de-sac, convenient to high school and junior high. Living room with fireplace, deck, garage, central air, ideal for faculty, professional couple or small family. Available after December 20. Rent $650 per month. Call 221-3454.

CAMPSITE FOR SALE: "Virginia Landing" on the Eastern Shore, reached from Route 13 at Painter and Quimby. On ocean, with good beach, marina, deep channel, pool and tennis courts. Call Pat Shea, 722-7045.

FOR SALE: Laser sailboat, complete equipment, $600. Also, an Optimist sailing dinghy with two North sails, blades with carrier, hull cover, race equipped, $1,200. Call 850-2859.

LOST: Glasses case, padded soft brown plastic. Lost Wednesday, December 9, probably along West Taylor Street or West Taylor Road between Buildings 1293B and 1268A. Call Dan Giesy, ext. 44006.

TOWNHOME FOR RENT: In Victoria Station in Denbigh, 1,650 square feet, 3 bedrooms, 2½ baths, front and back porch, shed, attic, pool, $645 per month. Call 591-8419.

HOUSE FOR RENT: In Yorktown's Running Man subdivision, a 3-bedroom, 2-bath house with refrigerator, stove, gas fireplace, washer/dryer, Jacuzzi, large deck and garage. Five minutes from Langley. Lease and deposit required. Rent $900 per month. Available from December 1 to July 31. Call Pater at 723-7742 before 5 p.m. and at 827-1124 after 5 p.m.

PRIVATE TUTORING: All grade levels, experienced and degreed. References available. Call 723-6932.

LAA AEROBICS: Join the LAA Aerobics Club and learn step aerobics in 1993! Step classes are featured in addition to low-impact, which tone muscles while burning fat! Benches and free weights are provided and free body composition analysis is given before class. Classes are held Tuesdays and Thursdays, 5 to 6 p.m., in the LAA gym and 9:30 to 10:30 a.m. Saturdays in January in the H.J.E. Reid Conference Center auditorium. The first class is free. Classes are open to all employees, contractors and their families. Call ext. 42295 for more information.

TELA TAX SERVICE: Member, National Association of Tax Practitioners. Electronic filing. Small-business bookkeeping services. By appointment. Call 874-3121.

TOWNHOUSE FOR SALE: Near NASA, Summer Place, 1,150 square feet, 2 bedrooms, 1½ baths, eat-in kitchen, den area with fireplace, living room, central air, privacy fenced backyard, all appliances, $64,800. Call 693-5053 (Gloucester).

TOASTMASTERS: Whether you're speaking to one or 1,000, a Toastmasters Club can help you speak clearly and confidently. The Langley Toastmasters will meet January 27 from 11:30 a.m. to 1 p.m. in Building 1222.

FREE AEROBICS: Get energized with NASA aerobics! Open to all employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Monday, Wednesday and Friday from 6:15 to 7:15 a.m. Lunchtime Energizer is held from 11 to 11:45 a.m. For more information, call ext. 46387.

CALL FOR PAPERS: The 2nd International Symposium on Magnetic Suspension Technology will be held in Seattle, Wash., August 11 through 13. March 1 is the deadline for submission of one-page abstracts. For more information, contact Gin Marks at ext. 41714 or Mail Stop 479.

Researcher News

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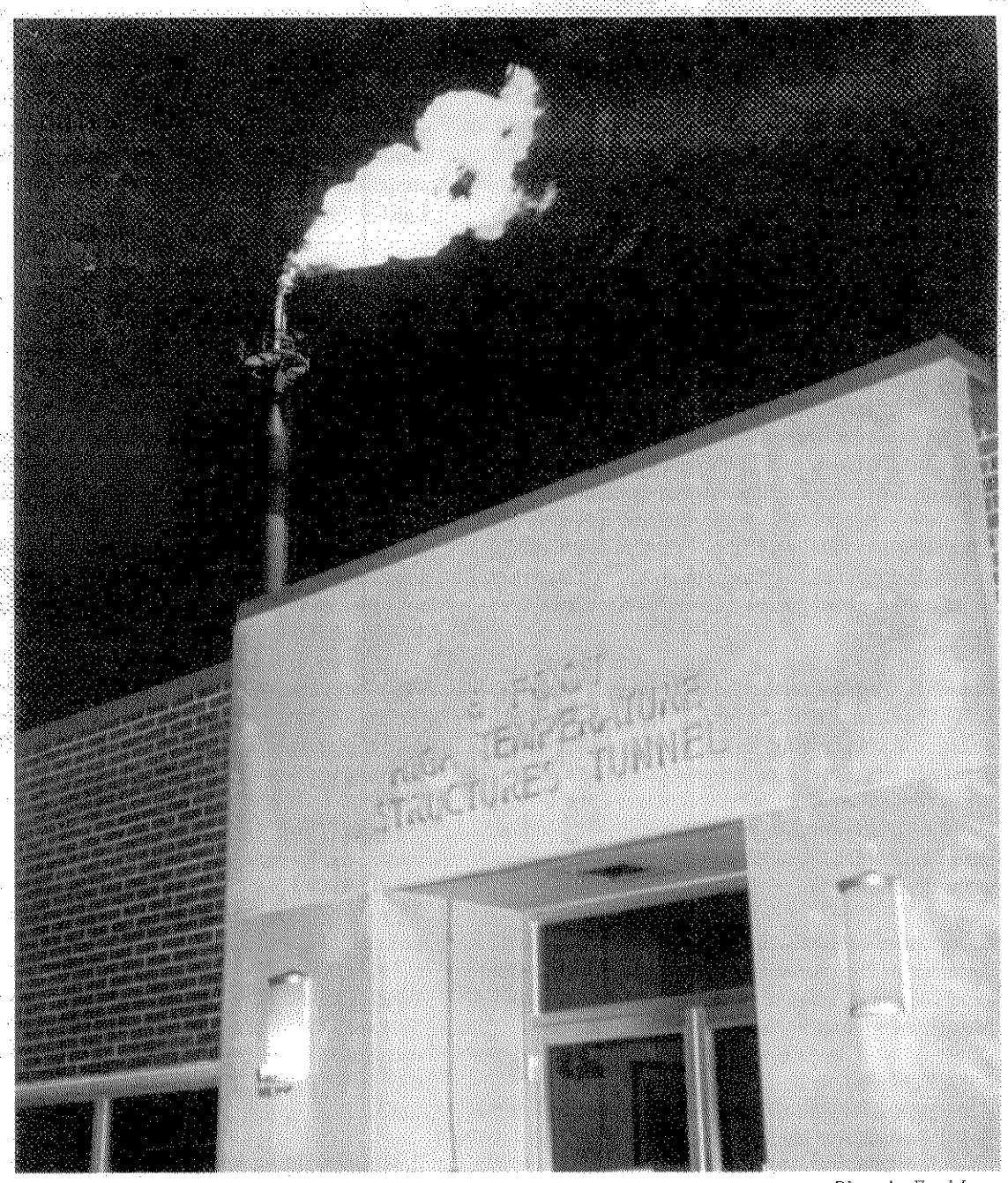


Photo by Fred Jones

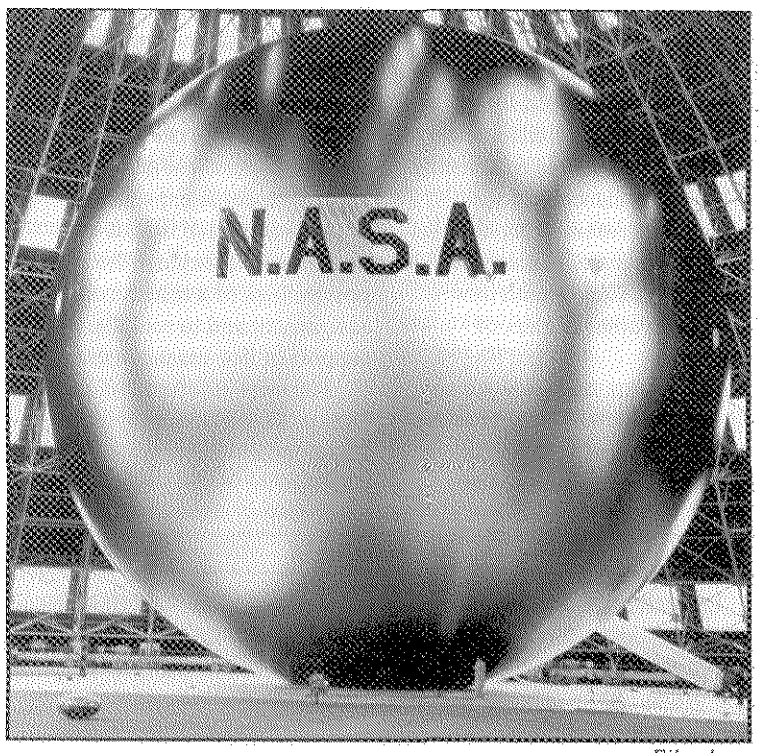
HOT STUFF: Towering flames from the fuel vent stack at the 8-Foot High-Temperature Tunnel are the result of excess methane gas burning off before or after a run. The tunnel has undergone a major modification for testing hypersonic engines called scramjets. Fully operational status is planned for the second half of this year.

National Aeronautics and Space Administration
Langley Research Center

Langley Researcher News

Biweekly Employee and Contractor Publication

Volume 7 ❖ Issue 2 ❖ January 29, 1993



File photo

Echo, though 100 feet in diameter, weighed only 150 pounds.

The Big Balloon Named Echo Was A High-Flying Langley First

BY SUSAN A. SMIGIELSKI

The worldwide communications capabilities of today were put into gear in 1960 with research results netted from a big balloon known as Echo. Inflated in orbit, the giant balloon measured 100 feet in diameter and was the nation's first passive communications satellite.

According to Edwin Kilgore, who headed balloon development at Langley from the start in 1958, the satellite was considered passive because all the electronics were on the ground.

"The microwave signal generated on Earth was beamed up to space and then bounced back from the 100-foot balloon to another point on Earth," said Kilgore. Hence the name Echo.

But while the balloon was passive, its visual impact was anything but. Because of its size and close proximity to Earth, Echo could be seen with the naked eye by most of the planet's population.

Echo I cost $1 million, which was a real bargain, said Kilgore, now retired and president of the board of directors for the Virginia Air and Space Center and Hampton Roads History Center. All of the testing and development was done in-house by Langley personnel.

See **ECHO,** *on* **Page 4**

Lead Coffins And Colonial Life Are Topics Of Feb. 3 Colloquium

The man who headed the research team that is examining 300-year-old lead coffins unearthed in Maryland will speak at Langley on Wednesday, February 3.

Dr. Henry M. Miller will deliver his Colloquium Series lecture at 2 p.m. in the auditorium at the H.J.E. Reid Conference Center, 14 Langley Blvd. The title of the talk is "Searching for Our Colonial Roots."

Miller, director of research and chief archaeologist for St. Mary's City, Md., will present the research conducted on the three intact lead coffins found in 1990 under the ruins of a 17th Century church. They are the oldest lead coffins found by archaeologists in North America and it is hypothesized that they contain members of Maryland's founding family, the Calverts.

The 300-year-old containers offered unusual research opportunities, and an advisory committee—including members of Langley's Atmospheric Sciences Division—was formed to guide the investigation. After two years of planning, Project Lead Coffins was begun by a diverse group of scientists who hoped to identify the individuals in the coffins and learn as much as possible from them about life in early America.

Miller's colloquium presentation will discuss the research plan, scientific teams and initial results of gamma ray imaging, air sampling, forensic study and trace element analysis.

Miller has long been involved in the study of colonial times. He has a bachelor's degree in anthropology from the University of Arkansas and master's and doctoral degrees in anthropology from Michigan

See **COFFINS,** *on* **Page 4**

Langley Headed Toward Participation In EPA's New Model Cleanup Program

Langley has been encouraged to begin a process that leads to participation in a model program for the accelerated cleanup of hazardous materials.

The Center expects to be listed by the federal Environmental Protection Agency (EPA) as a Superfund site sometime this year as the result of six sites that Langley has identified as contaminated or possibly contaminated by hazardous substances, said John Lee, head of the Environmental Engineering Branch, Systems Safety, Quality and Reliability Division.

The sites are Tabbs Creek, the warehouse area, a construction debris landfill, a chemical waste pit, the Stratton Road substation and portions of the stormwater collection system (see map below). Nine additional sites are in earlier stages of investigation.

The new EPA program, called the Superfund Accelerated Cleanup Model (SACM), is designed to speed a cleanup process that has moved slowly ever since it was established in 1980. Of about 1,200 sites the EPA has placed on its National Priorities List (NPL), only 43 have been cleaned up and removed from the list.

"SACM is intended to quickly reduce the risk to people and the environment by eliminating delays and funneling tax dollars into cleanup instead of studies," Lee said. "It offers a way to clean up the problem as quickly, safely and effectively as possible so as to minimize exposure to Langley employees and residents in surrounding communities."

Lee said the new program is being tested at selected sites across the nation. Facilities that succeed with it, he said, will have the distinction of serving as models for future site cleanups.

"We have been moving out for several years, at our own initiative, on what the EPA would require us to do if we were cited by them as a Superfund site," he added. "I think that speaks pretty well of us. This kind of good-faith effort is what the EPA is looking for when it decides whom to select to participate in this innovative new program."

For more information, call the Environmental Engineering Branch at ext. 43350.

See Page 3 for:
- **Details about Langley's six sites.**
- **Question & Answer: Langley and the Superfund process.**
- **List of available fact sheets.**
- **Chart outlining site identification and cleanup process.**

Employee concerns

Lee said that, for the most part, contamination levels at Langley are low and isolated within the Center's boundaries.

"Based on our extensive and ongoing studies, the potential for employee contact with those contaminants is considered remote," he said. "We have restricted access to these sites. We have cleaned up some of them, and have cut off the source of the contaminants."

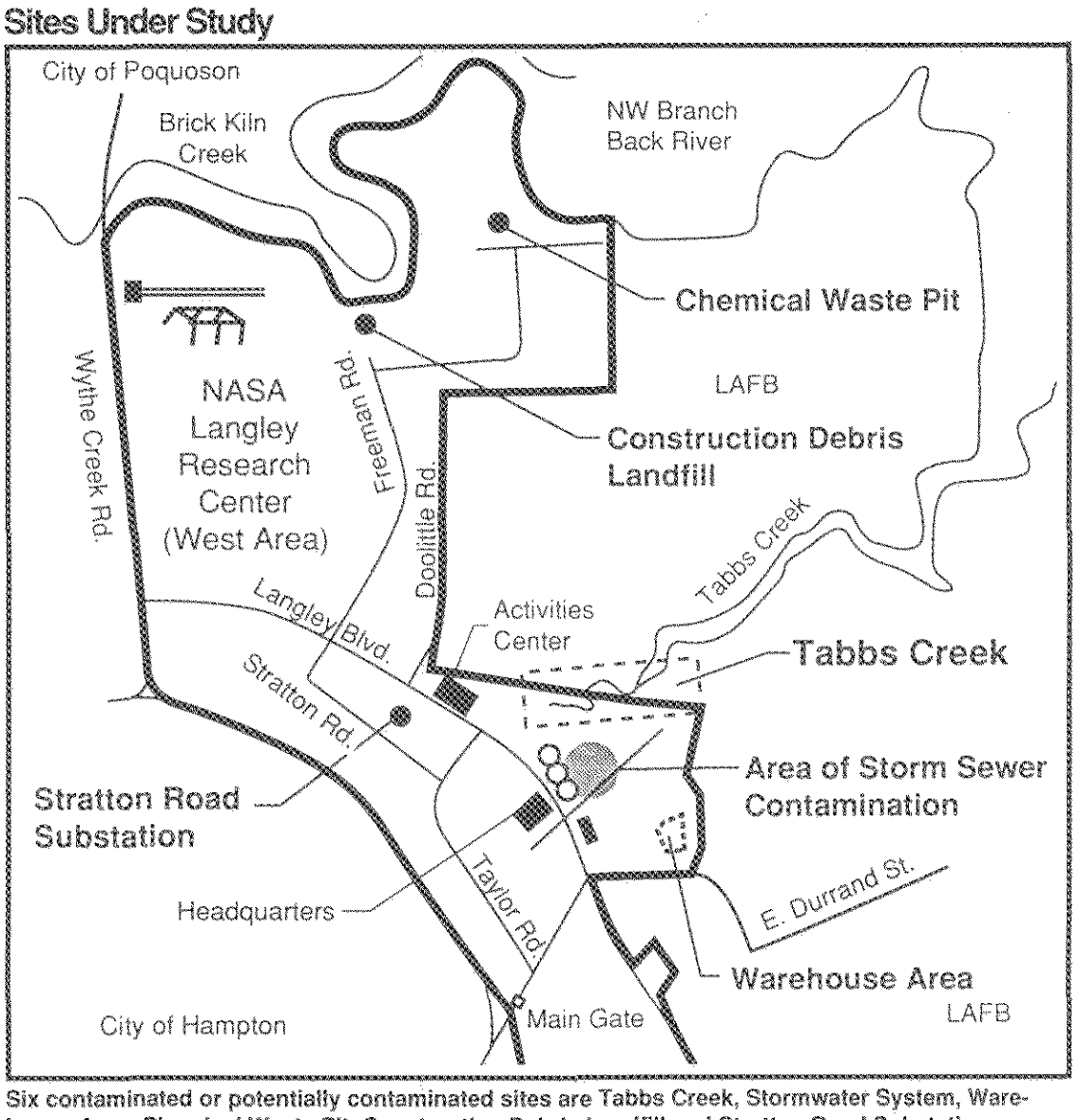
As part of the process, Lee added, Langley will seek input from the community and Center employees in an effort to ensure that concerns are addressed.

Center representatives plan to begin conducting interviews with community residents this month. Langley employees also will be included in this process, Lee said.

Thus far, a newspaper notice has been published to encourage residents to contact the Center if

See **CLEANUP,** *on* **Page 2**

Sites Under Study



Six contaminated or potentially contaminated sites are Tabbs Creek, Stormwater System, Warehouse Area, Chemical Waste Pit, Construction Debris Landfill and Stratton Road Substation.

News Briefs

AROUND THE AGENCY

Space Institute Vice President To Head Aeronautics

Dr. Wesley L. Harris has been named associate administrator for aeronautics at NASA Headquarters.

In his new position, Harris is responsible for directing research and technology development efforts in support of America's aeronautics industry. This includes fundamental research in aerodynamics, materials and propulsion, flight tests with advanced aircraft and efforts to improve safety.

"Dr. Harris brings to this critical position an extensive background in aeronautical engineering and management," NASA Administrator Daniel S. Goldin said in announcing the appointment. "It is imperative that NASA move aggressively to help America regain the leading edge in aeronautics. Dr. Harris' appointment is a key step in that effort."

Harris, an aeronautical engineer, comes to NASA after serving as vice president of the University of Tennessee Space Institute since 1990. Previously, he was dean of the School of Engineering at the University of Connecticut, Storrs, from 1985 to 1990.

From 1981 to 1985, he was professor of aeronautics and astronautics at the Massachusetts Institute of Technology (MIT) in Cambridge, Mass. From 1979 to 1980, Harris took a leave of absence from MIT to work at NASA as manager of computational methods in the Office of Aeronautics and Space Technology. He was an associate professor of aeronautics and astronautics and of ocean engineering at MIT from 1973 to 1979.

Harris has published more than 100 technical articles. He received a bachelor's degree in aeronautical engineering from the University of Virginia and a doctorate from Princeton University.

Equal Opportunity AA named

Dr. Yvonne Freeman has been named assistant administrator for equal opportunity programs at NASA Headquarters. She was manager of the Minority Science and Engineering Program at the Jet Propulsion Laboratory (JPL) in California prior to this appointment. Before that, she was manager of the Minority University Program at NASA Headquarters. "Dr. Freeman has an excellent background in equal opportunity programs, particularly in the education area," said NASA Administrator Daniel S. Goldin in announcing the appointment. "She knows NASA, and it will be great to have her back at headquarters. She shares my deep commitment to developing a NASA workforce that reflects the rich diversity of our society."

Volunteerism Is On The Rise At Langley And Across Nation

If you aren't a volunteer, chances are good that the person sitting next to you is. According to a recent Gallup poll, 98.4 million Americans—over 50 percent of the population—served as volunteers in 1990, a healthy boost over the 80 million reported in 1988.

Statistics show a significant increase in the number of people who volunteer their time to charitable organizations. Langley's recent community service survey bears out those numbers.

At Langley, 20 percent of those polled completed the volunteer activities questionnaire. The 579 returns show that 487 Langley civil servants volunteer more than 1,250 hours per month, most notably in education and with area youth.

In addition to current volunteer activity, the survey also polled those interested in volunteering. Interest is highest in helping in the educational area, with the environment and youth activities a close second. Many respondents cited several areas of interest.

To keep you informed of the many interests of our employees and the numerous opportunities to help in our surrounding communities, we will publish both employee-volunteer profiles and calls for help in upcoming issues of the *Researcher News*. Today we debut the Community Corner (below), a short segment detailing a specific or pressing need of a local community service agency.

Please help us identify Langley volunteers. If you know of a fellow employee involved in a much needed and interesting type of volunteer work, please call Marny Skora at ext. 43315. Likewise, contact Marny if you know of a local agency that has a particular need our employees could fill.

Procurement Award Won By Langley For Contract Work

Langley has won a NASA Procurement Award for Outstanding Competition Advocacy.

The Center was recognized for its achievements in obtaining competition for more of its contracts than any other NASA center, both in dollars and separate contracts.

More than 92 percent of Langley's contracts were awarded competitively as a result of less restrictive requirements, innovative and effective methods of publicizing future contracts and the opening up of communications so interested companies can more easily obtain information to prepare proposals.

Government agencies, including NASA, have been closely monitored since passage of the 1984 Competition in Contracting Act to ensure that contracts are competed whenever possible.

COMMUNITY CORNER

Service Group Needs Help With Computer System

The following is the first in a series of volunteer opportunities that will be published monthly in the Researcher News. *If you know of other community service agencies that have a specific or pressing need, call Marny Skora, community services officer, ext. 43315.*

A local community service organization, HomeBase, has an immediate need for a volunteer computer specialist or enthusiast who can help streamline its database so it can better serve its clients.

Background: HomeBase wants to prevent homelessness on the Virginia Peninsula.

Founded in 1990 under a United Way grant, HomeBase is a central resource center that helps individuals resolve housing problems resulting from eviction, poverty, unemployment or underemployment.

HomeBase serves nearly 3,000 individuals or families in the area who need a place to live. The small central office makes and receives close to 2,500 calls per month—nearly 125 per day—to arrange emergency shelter, food and assistance.

Here's how you can help: The office operates with an NCR computer, model 386, using dBASE III plus. Its goal is to access client files quickly and easily to initiate or update records as phone calls come in.

If you think you can help, call Marjorie Scott, client services coordinator, at HomeBase, 825-9485.

Thompson Fellow Applications Must Be Turned In By Feb. 17

Applications are being accepted for the 17th annual Floyd L. Thompson Fellowship Program. Completed applications must be received by February 19 to be considered.

The program was established in 1977 to enhance an individual's research capabilities and provide a mechanism for infusing the Center with new ideas from other centers of excellence.

Applicants may propose an area of research to be pursued at Langley or other research or educational institutions. The research effort may last one to two years, of which no more than a year may be spent in sabbatical away from Langley.

One or two fellows will selected and supported by salary, travel and per diem and other general research expenses.

Interested individuals are encouraged to explore the possibilities of a research assignment and to seek the support of line management.

For more information, call George D. Allison, Employee Development Branch, ext. 42594.

IN MEMORIAM

Lawrence W. Taylor Jr., chief scientist of the Guidance and Control Division (GCD), died Friday, January 15.

Taylor began his NASA career in 1957 at Dryden Flight Research Facility in California. From 1970 to 1974, he was an aerospace technologist at Langley in the Theoretical Mechanics Branch, and in 1975 became manager of the Active Controls Project Office.

He served as deputy director for the Electronics Division, Office of Aeronautics and Space Technology at NASA Headquarters in Washington, D.C., from 1975 to 1979. Taylor returned to Langley in 1979 as an aerospace technologist in the Flight Dynamics Branch and was branch head from 1980 to 1986. From 1986 to the present, he was chief scientist for GCD.

Taylor had a master's degree in aerospace engineering from the University of Southern California and was a member of the American Institute of Aeronautics and Astronautics and Sigma Gamma Tau. He was the author of more than 60 technical papers.

Lawrence D. Guy, 70, died Wednesday, December 2. He retired in 1978 as a research aerospace engineer in the Structures and Dynamics Division.

Lee Edward McDaniel Jr., 77, died Wednesday, January 6. He retired in 1979 after 33 years of service.

Jean Bunting Elliott, 64, died Thursday, December 31. She retired in 1981 after 30 years of service.

CLEANUP:

Continued from Page 1

they would like to be interviewed. Once the interviews and focus groups are completed, Langley will publish a community relations plan that specifies how the community will be involved in the cleanup process. The plan and other informational materials will be available off-Center and at the Technical Library.

Langley also has published a public notice announcing that fact sheets about the contaminated sites are available in public libraries in York County, Newport News, Hampton and Poquoson. In addition, fact sheets are available at Langley's Technical Library.

Lee said that the process of identifying contaminated sites and preparing cleanup plans has been an aggressive, ongoing effort at Langley for several years.

Part of the process, he said, has involved working closely with the EPA and keeping the state of Virginia informed. The Center also has hired a contractor, Ebasco Environmental, of Arlington, Va., to assist in the process.

The Center will continue its cleanup efforts whether or not it is put on the NPL, Lee stressed.

"It happens to be something that we believe strongly in doing," he said.

"So whether or not we become a Superfund site, we plan to continue with our efforts to make Langley a leader in environmental compliance and pollution prevention."

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... Marny Skora

Editor ..... Michael Finneran, The Bionetics Corp.

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

Photojournalist ..... Carol Petrachenko, 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.

Though Not A Superfund Site, Center Still Complies With Laws

Q. What is "Superfund?"

A. Superfund is the name often used to refer to the Comprehensive Environmental Response, Compensation and Liability Act, a federal law enacted in 1980 requiring the investigation and cleanup of contaminated sites throughout the country.

Q. What does Superfund do?

A. The Superfund cleanup process is designed to control short- and long-term threats to public health and the environment caused by the uncontrolled release of hazardous substances. The program responds to hazardous waste emergencies wherever they take place, but sites must be listed on the National Priorities List (NPL) to be eligible for cleanup under Superfund.

Q. How does Superfund affect Langley?

A. The Superfund Amendments and Reauthorization Act (SARA), passed in 1986, required federal facilities such as Langley to investigate past waste management practices.

Q. What was Langley's first step toward complying with Superfund laws?

A. The Center responded to these laws by first conducting a "preliminary assessment" that reviewed records describing the use, handling, storage and disposal of hazardous materials, and interviewed current and former employees.

Q. How were sites identified as possibly contaminated?

A. The Center conducted a "site inspection" of potentially contaminated areas, during which soil and water samples were taken to confirm or rule out the presence of contamination.

Q. How was this information put to use?

A. The information collected for the preliminary assessment and site inspection was sent to the federal Environmental Protection Agency (EPA) and is being used to determine whether the Center should be added to the 1,200 sites on the NPL. The NPL lists sites nationwide that require cleanup under Superfund.

Seeking Community Involvement

PUBLIC NOTICE
LANGLEY RESEARCH CENTER

National Aeronautics and Space Administration

NASA is currently planning to conduct a series of community interviews and small group meetings during January and February 1993 to determine community concerns regarding environmental activities being conducted at the Langley Research Center in cooperation with the United States Environmental Protection Agency.

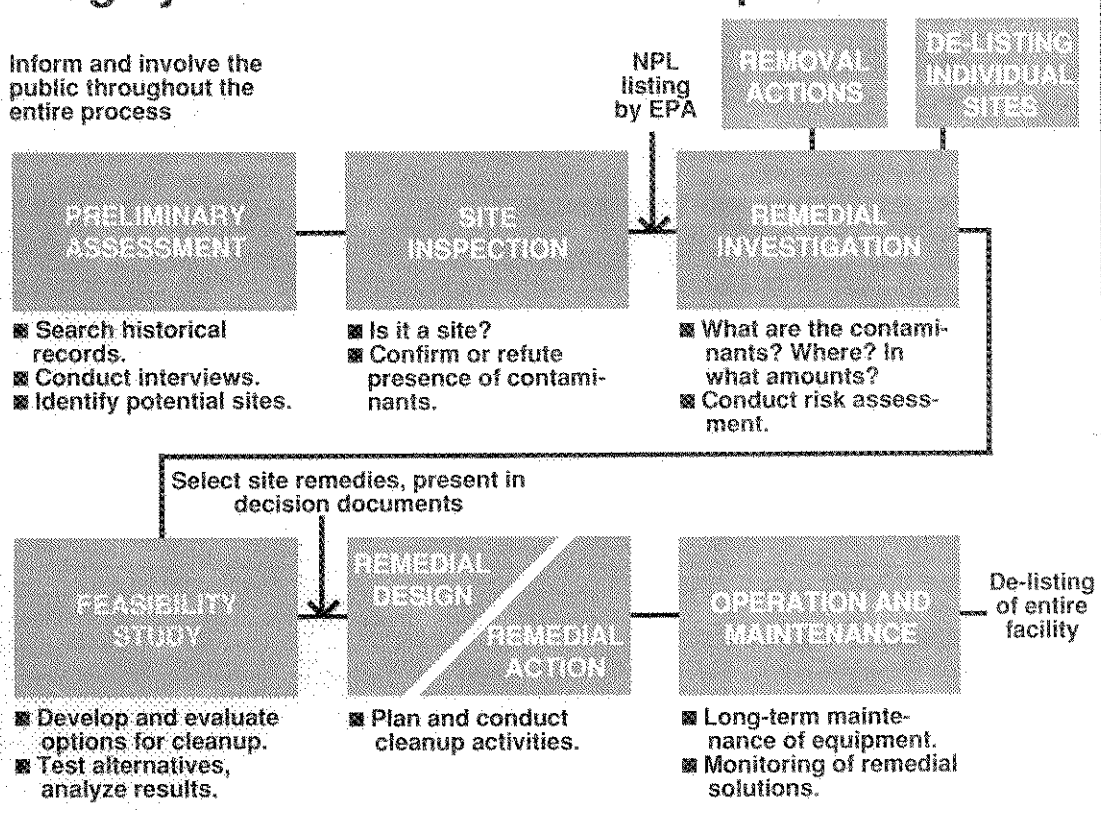
NASA desires community input regarding these activities to assure community concerns are addressed.

Individuals wishing to express their concern or participate in the interviews or small group meetings should call or write NASA at the address below by January 20,1993.

The ENVIRONMENTAL ENGINEERING BRANCH
Mail Stop 429
NASA Langley Research Center
Hampton, VA 23681-0001
804-864-3500

This public notice ran in January in the *Daily Press*. The advertisement is part of an aggressive Langley program for identifying community concerns as part of the cleanup of contaminated sites on Center.

Langley's Environmental Cleanup Process



This chart describes the investigatory and cleanup phases to be performed at the Center. It is a generalized version of the standard approach for cleaning up hazardous waste sites under Superfund. The process can vary from site to site depending on site conditions. In some instances, investigations may be combined for practical or economic reasons. In others, a study may find no source of contamination, and further action may not be required. And in some cases, contaminated material such as soil or groundwater may be removed during the early stages of investigation to prevent further contamination.

Fact Sheets Describe Status Of Langley Sites

Six sites at Langley have been identified as contaminated or potentially contaminated. The following are brief descriptions of the sites and their status:

Tabbs Creek. A portion of Langley's stormwater system released polychlorinated bipheynls (PCBs) and polychlorinated terphenyls (PCTs) into the creek. The PCBs and PCTs were present in chemicals used as fire retardant additives in electrical insulating oil and lubricating and hydraulic oils. In 1989, the Center discovered that hydraulic fluid from a wind tunnel control system at Building 1247D had been inadvertently released into the storm sewer that flowed into the creek. The Center immediately stopped the operation, informed the EPA and began a study to determine the magnitude of the release. The Center still is in the process of determining the extent of this contamination. A remedial investigation is underway, with completion expected in February 1993. Following the investigation, a feasibility study will be completed to evaluate cleanup options.

Contamination is a concern because PCBs and PCTs could contaminate oysters and blue crabs. However, the Virginia State Shellfish Sanitation Department already has banned commercial oyster harvesting in the creek due to bacterial contamination from a source other than Langley. Thus, the potential for human exposure is limited, though it could occur during swimming or wading, or contact with sediments stirred from the creek bottom.

Fact sheets are available at the Technical Library on six sites: Tabbs Creek, Stormwater Collection System, Warehouse Area, Chemical Waste Pit, Construction Debris Landfill and Stratton Road Substation.

Stormwater Collection System. PCBs and PCTs in low levels were found in parts of the system from the hydraulic system in Building 1247D and a service air condensate drain in Building 640. The Center halted the operation, notified the EPA and began investigating to determine the extent of the release. Initial results showed the contamination to be limited to the parts of the systems that flow into Tabbs Creek behind Building 1256. A cleanup plan is expected to be ready by May 1993.

Warehouse Area. Soil analysis showed slightly elevated levels of lead, manganese, mercury and PCBs. All contaminants were within allowable state and federal limits and did not show evidence of groundwater or surface water contamination. Contamination is believed to have come from storage of oils, solvents and other chemicals in drums. Electrical transformers also were stored at the site while awaiting disposal. A cleanup plan is under review, with site cleanup to begin in early 1993.

Chemical Waste Pit near Building 1270. Groundwater analyses and soil samples showed very low levels of methylene chloride and acetone and bis(2-ethylhexyl)phthalate. Low levels of mercury, lead and vanadium also were detected in groundwater samples. The contamination may be the result of a 1968 burial of chemicals in small plastic, metal and glass containers. Access to the site, about 30 feet wide and 20 feet deep, is limited by a locked fence. A cleanup plan will be developed following the conclusion of studies in early 1993.

Construction Debris Landfill. Groundwater samples contained low levels of several inorganic compounds, including arsenic, cadmium, selenium and vanadium. Soil samples indicated the possible presence of organic compounds including tetrachloroethene and toluene. Semi-volatile compounds detected primarily were polycyclic aromatic hydrocarbons, possibly the result of material burned on the site. Levels of all inorganic compounds were within normal ranges. The four-acre site was used to store oils, solvents and other chemicals in drums during the 1960s and 1970s. A cleanup plan is expected to be completed in early 1993, with work to begin in late 1994.

Stratton Road Substation. PCB contamination already has been removed from soil around the substation, which was built in 1946 and houses four electrical power distribution transformers and related equipment. The transformers, which contained PCBs, had leaked. Results of a site investigation are expected in early 1993. Remediation needs will be based on results of the investigation.

ECHO:

Continued from Page 1

A contract was awarded to Schedahl Co. for assembly of the balloon.

Many materials for the balloon were considered, but aluminized Mylar proved to have the required toughness and reflectivity.

Once the material was selected and the balloon constructed, the next trick was folding the 150-pound, 100-foot-diameter structure into a 28-inch diameter canister in a Delta rocket nose cone.

"The contractor called at one point and said that they could not get the balloon in a small room, much less into a 28-inch sphere," Kilgore recalled.

The solution arrived one day with a little help from Kilgore's wife, Ann, and the weather. Mrs. Kilgore came home one rainy afternoon wearing a plastic rain bonnet.

When she took it off, she pulled its ends in opposite directions and, like an accordion, it folded neatly into place. Echo eventually was folded in much the same manner.

Work as delicate

As the team progressed with testing the balloon, Kilgore said care had to be taken to prevent it from inflating too rapidly in the vacuum of space.

"If it inflated too fast, the balloon would tear and become confetti in space," he said. "We found that we had to pull a vacuum on the balloon during folding to eliminate the residual air inside the folded balloon."

In space, only several pounds of gas would be needed to inflate the huge balloon. On the ground, however, it took 40,000 pounds of air.

But the first time the group inflated Echo inside a balloon hanger in Weeksville, N.C., they watched their hard work come apart at the seams.

Kilgore said the adhesive was not the same formula that had been tested and approved for the project.

> *"It was great to be part of its development because worldwide communications from space was a great plum for the nation."*
>
> **—Edwin Kilgore**

"It seems DuPont changed the formula between the time we tested it and its actual use, and the 'creep' strength of the adhesive decreased dramatically. We stood and watched the tapes on the seams slowly creep and part, leaving 100-foot-long gaps staring back at us," he said. "It was very frustrating. But we found a new glue and started over."

Once aloft, Echo fulfilled its function as a limited communications relay reflecting radio and radar signals. By tracking the vagaries of its orbit, it also was used to plot variations in air density at the top of the atmosphere.

The balloon had a finite life in orbit, eventually burning up as it reentered the Earth's atmosphere.

Following the first Echo, another was built and launched into orbit. Kilgore said the second Echo featured stiffer material and improved microwave reflectivity.

Active satellites eventually proved superior to passive structures like Echo, but Kilgore said the project was worth the effort.

"It was great to be a part of its development, because worldwide communications from space was a great economic plum for the nation," he said. "The success of Echo was also important to Langley."

COFFINS:

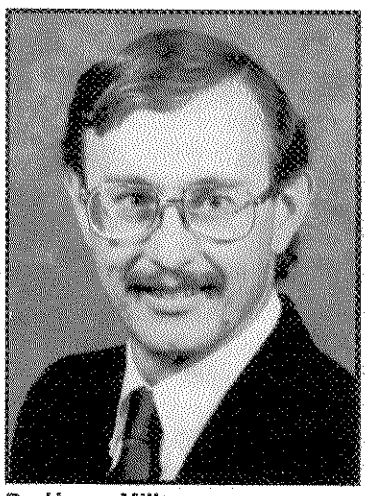
Continued from Page 1

State University.

His doctoral thesis was an analysis of animal remains from 25 colonial Chesapeake archaeological sites. Miller examined the remains to reconstruct human subsistence practices and study human-induced changes in Chesapeake ecology.

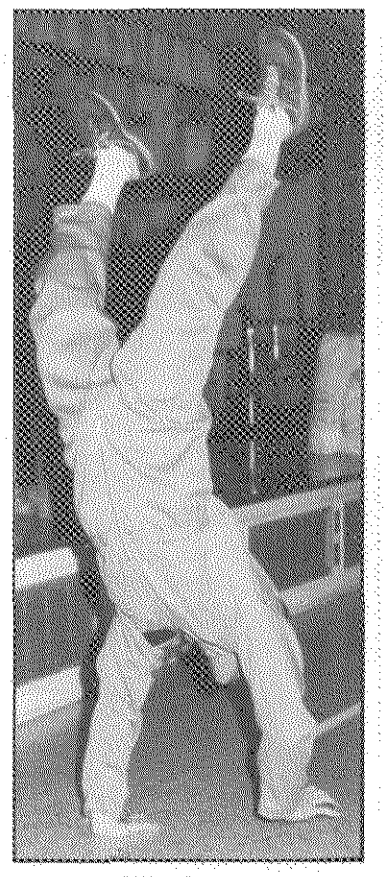
Miller's research interests include zooarchaeology, human colonization processes, spatial analysis and cultural behavior, mortuary practices and social change, archaeological site formation processes, methodology in material culture analysis, and town planning in early America.

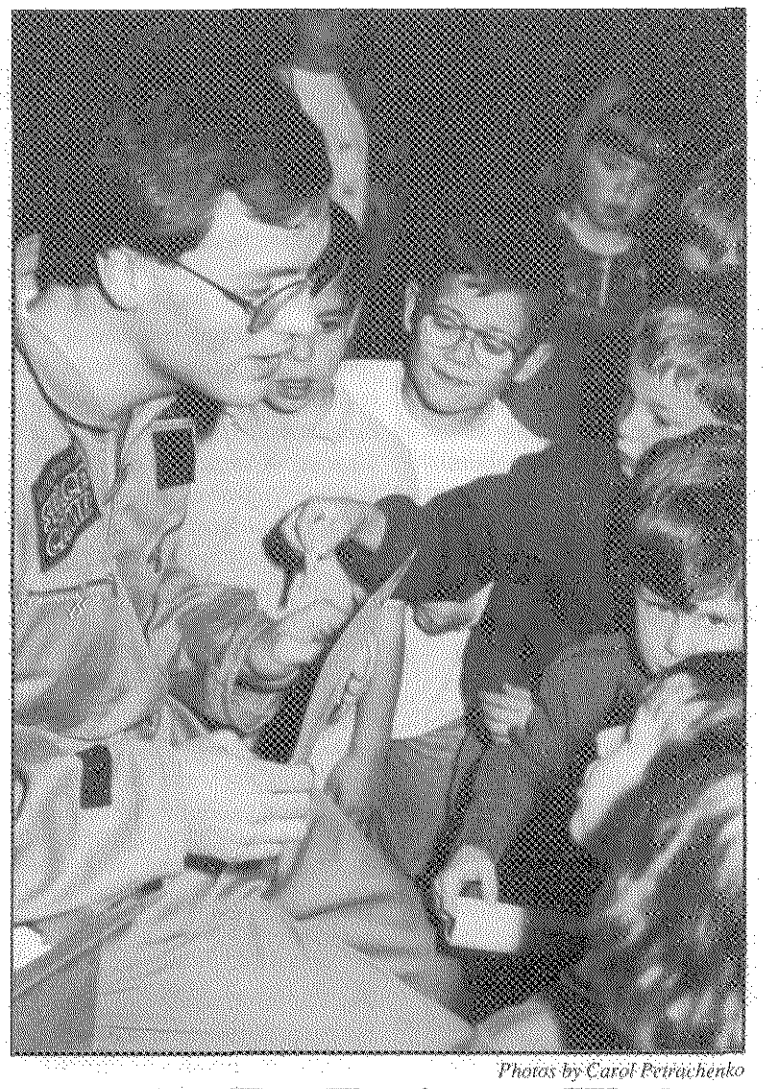
Employees, contractors and retirees are encouraged to attend the colloquium, which is free



Dr. Henry Miller

and does not require a reservation. Employees should charge time to job order A1980. Miller will deliver his presentation later the same day at 7:30 p.m. in the Virginia Air and Space Center in Hampton as part of the Sigma Series of free public lectures.





Engineer Mike Scott, above, wows first and second graders in Chesapeake during National Engineers Week last year. At right, he uses balloons to teach propulsion principles.

Photos by Carol Petrachenko

February 2 Workshop Set For Engineers Week

Mike Scott literally turned upside down to capture the attention of first and second graders in Chesapeake during his presentations for National Engineers Week last year.

The Langley engineer graphically described how astronauts encounter weightlessness in space and what it's like to work in zero gravity. He was among the 280 Langley employees and contractors who ventured into 182 schools in 12 local school districts to promote math, science, engineering and careers that support each.

Again this year, NASA will support this educational outreach during National Engineers Week, February 14 to 20. To help our volunteer "teachers" prepare for their presentations, a workshop—co-sponsored by the Office of Public Services and Women in Aerospace—will be held Tuesday, February 2, in the H.J.E. Reid Conference Center.

Three sessions will be offered:

Elementary: 8:30-10 a.m.

Middle school: 10:30 a.m.-noon.

High school: 1:30-3 p.m.

To register, call ext. 43293 or 43297 by January 29.

Garden-Envy Yields The Year Of The Zucchini

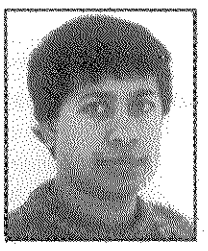
BY RAMKI KRISHNAN

IN PERSON

One hobby I wish I could be really good at is gardening. I have observed expert gardeners at social gatherings holding people spellbound by reciting the procreational practices of ladybugs, the manure-packing potential of earthworms and the cannibalistic behavior of Japanese beetles caught in a trap. I always ask myself, will I ever be such a fount of gardening facts?

For the past three years, my wife and I have tried our hand at nurturing little "veggie" plants. Each year, we tout a brand-new philosophy based, ostensibly, on lessons learned the previous years. This year, we shelled out a handsome amount of money for a book titled *Vegetable Gardens for the Pale-Thumbed.* This book prescribed soil additives with aromatic properties that, by comparison, made even a dead skunk smell like Chanel No. 5.

These exotic ingredients gave us a chance to impress our neighbors, and whenever they chanced by, I would bellow, "Did we add the dihexofromide?" and my wife would shovel back, "Yeah, just before we ultra-fossilized the argonium zomate." Being good friends, they always moved to a discreet distance where they could unplug their noses and laugh themselves silly. Maybe it was the soil additives, maybe it was us, or maybe it was the unusual weather patterns we had.



Whatever it was, our tomato, pepper, and okra plants retreated in the face of a dramatic explosion of zucchini . The zucchinis that appeared on the vine were gargantuan, suffusing us with maternal pride and joy. We picked them, took pictures of them in various states of repose and mailed these photos to our relatives. Sadly, they seemed not to appreciate the magnificence of our labor.

At first, it didn't bother us that our daily meals featured, almost exclusively, zucchini salads, zucchini stir-fry, zucchini hot curry, zucchini on pizza and zucchini fritters. It was only when we started looking like Leonardo and his three buddies that I took our zucchinis to work and forced them on reluctant friends. That scheme soon backfired as disgruntled ex-friends returned the favor by presenting us loafs of zucchini bread. Clearly, we had to find alternate measures to stem the swelling zucchini tide. We were desperate, and probably zucchini-crazed, but I believe we went too far in wrapping up our garden produce as birthday, anniversary, and get-well gifts for friends. In the last two weeks, a few of those friends have started talking to us again.

I blame our vegetable-garden debacle on the book we purchased, but my wife insists that the book has a few redeeming features, including a list of fertilizer sources such as banana peels, grass clippings and used paper. I haven't mentioned this to my wife yet, but I take great pleasure in knowing exactly where some our fertilizer is going to come from next year.

People & Places

Subsonic Tunnel

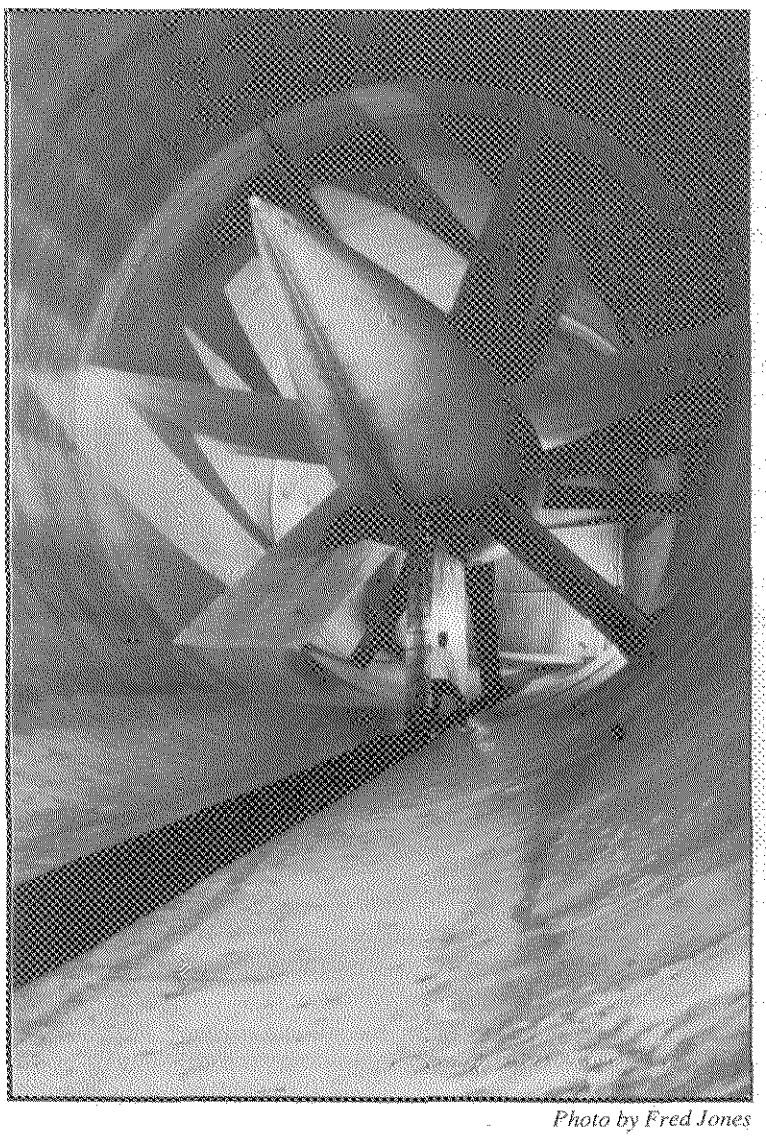


Photo by Fred Jones

Spheres

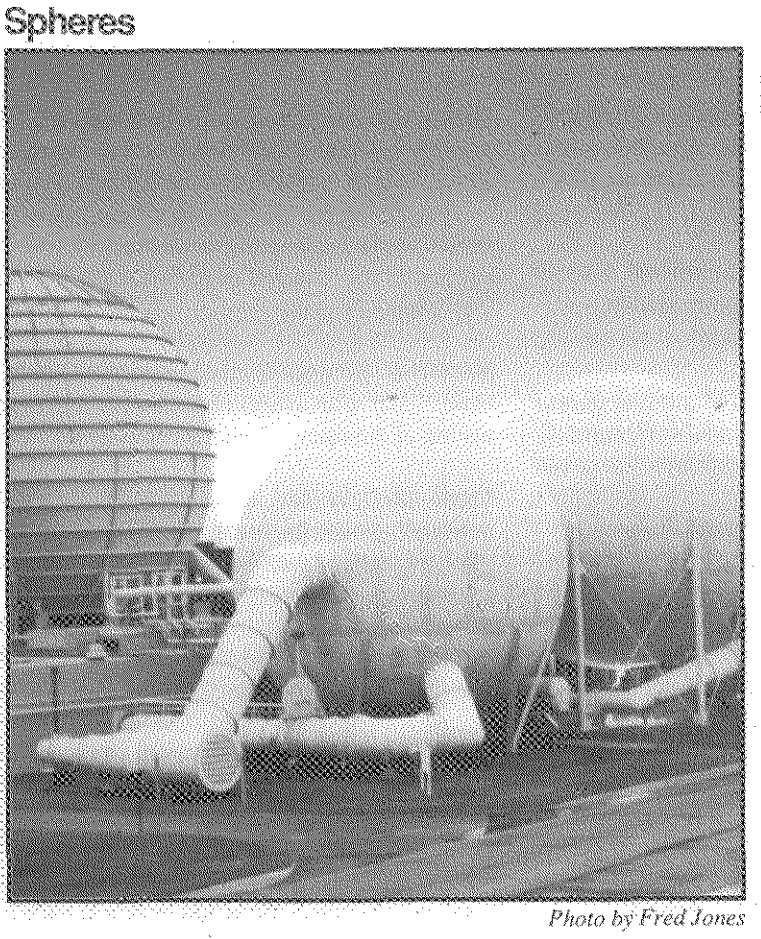


Photo by Fred Jones

737 In Orlando

Photo by Carol Petrachenko

Langley photographers Fred Jones and Carol Petrachenko cleaned up in the annual photo competition sponsored by *Aviation Week & Space Technology* magazine. The December 28, 1992, issue ran three winning photos from Langley. Jones won two honors—more than any other contestant—and Petrachenko won in one. Jones, won first prize in the Aeronautics & Avionics category with his treatment of the 14- x 22-Foot Subsonic Wind Tunnel, which also shows technician Mike Ramsey (above). He was a runner-up in the same category with his photo of the 60-foot spheres on Langley Boulevard (upper right). Jones works in the Photographic Section, Research Information and Applications Division. Petrachenko was runner-up, again in the same category, with her nighttime portrait (lower right) of Langley's 737 research aircraft at Orlando International Airport during Wind Shear Program Office flight tests of windshear sensors in August. Petrachenko works for The Bionetics Corp. as a photojournalist for the Office of Public Affairs.

Tuskegee Exhibit At VASC Salutes Black History

The Virginia Air and Space Center and Hampton Roads History Center will salute Black History Month in February with the Tuskegee Exhibition and weekend programs.

The Tuskegee Exhibition shows visitors how blacks became an important part of military aviation through the Tuskegee Experiment. The Tuskegee Airmen achieved a record of unique accomplishments, dedication and heroism. Artifacts and photos trace the history, development and contributions of the Tuskegee Airmen to the war effort.

The following weekend programs are available at the regular admission rate:

February 6 and 7 - documentary films on the Tuskegee Experiment and blacks in the military in the 20th Century, including *Wings for this Man*, narrated by Ronald Reagan for the U.S. Army in 1944.

February 13 - Black living history interpreters will share life experiences during the Civil War and Reconstruction.

February 27 - Members of the Tuskegee Airmen will discuss the role of blacks in World War I and World War II.

Storyteller Program Set For February 11

The Office of Equal Opportunity Programs is sponsoring a program in observance of Black History Month on February 11 at 1 p.m. in the H.J.E Reid Center. A storyteller from the Colonial Williamsburg Foundation's African American Interpretation and Presentation Office will perform 18th Century African-Virginia stories designed to educate as well as entertain. All employees, contractors and retirees are invited.

BLACK HISTORY MONTH

Runners' Club Race

The Langley Runners' Club Interdirectorate 5-kilometer race December 3 was won by the Electronics Directorate team. The team earned 21 points, which was the sum of finish positions of team members Chris Slominski, John Hoppe, Bob Ferguson and Richard Dickson.

UNISYS had 35 points to win the mixed team division, with members Steve Robbins, Ken Evans, Ann Cole and Pat Parker. Chris Slominski came in first at 18:11. The first woman was Ann Cole at 33:34.

Retirement Party

A retirement party will be held for Henry Parker on February 24, at 6 p.m. at the Fort Monroe Officers' Club. A beef and burgundy buffet will be served. The cost is $26 per couple or $15 per person, which includes the gift. To attend or make a gift contribution, contact Gloria Ragsdale, ext. 46915, or John Taylor, ext. 46924.

Volunteers Needed For Regional Science Bowl

The Continuous Electron Beam Accelerator Facility (CEBAF) is hosting the 1993 Regional Science Bowl on February 27.

Ninety students from 18 Virginia and North Carolina high schools will participate in a tournament-style competition on science, math and computer science. The winner, with all expenses paid, will compete in the 1993 National Science Bowl at the Department of Energy in Washington, D.C., April 16 through 19.

The eight bowl subjects are astronomy, biology, chemistry, computer science, general science, earth science, mathematics and physics.

Eight competitions will run at the same time, and volunteers are needed to serve as:

- Moderators - read questions and call on the responder.
- Scientific judges/timekeepers - resolve problems with questions, answers and interpretation; and keep time.
- Scorekeepers.
- Runners - relay information and direct participation.

Those interested in helping or who wish more information should call Roger Hathaway at ext. 43312 or Teresa Beatty at CEBAF at 249-7560. February 10 is the deadline to volunteer.

Microwave Workshop To Be Held February 22

Distinguished speakers and experts from around the world will convene at the Continuous Electron Beam Accelerator Facility (CEBAF) February 22 through 24 for a workshop titled "Microwave-Absorbing Materials for Accelerators."

Topics will include microwave-absorbing materials in accelerators, microwave-power tubes and other applications; ceramic, ferrite, dielectric and artificial dielectric materials; manufacturing methods; microwave, structural, thermal and vacuum properties and their characterization; and absorber design.

Tour included

A tour of CEBAF and a banquet in Williamsburg are among the planned events. The registration fee is $250.

For more information, contact Dr. Isidoro E. Campisi, workshop organizer, at Mail Stop 58 B, CEBAF, 12000 Jefferson Ave., Newport News, Va. 23606-1909.

Campisi may be reached by phone at 249-7650 or by fax at 249-7658.

To register, contact Paul Wheeler, workshop coordinator, at the same address or by calling 249-7407.

Speakers Bureau

The following Langley representatives recently addressed the public through the Speakers Bureau:

Bill Hood discussed lasers and optics in six presentations at Scout Troop 303; one at the Roundtable Scout Leaders College; and four at the Jefferson Davis Middle School in Hampton; and at the Warwick Assembly of Good.

Ian MacConochie discussed the status of single-stage-to-orbit before the American Society of Materials International Hampton Roads Chapter.

Paul Tartabini discussed NASA careers at Solon High School in Solon, Ohio.

Employee Awards

Clements C. Mayes, scientific and technical photographer, Research Information and Applications Division (RIAD), for outstanding photographic support to the Langley Airborne Field Mill Project.

Hubert E. Lloyd Jr., scientific and technical photographer, RIAD, for outstanding photographic support to the Aerothermal Loads Branch.

Donna L. McIntosh, secretarial co-op, Flight Electronics Division (FED), for outstanding individual contributions in implementing the division reorganization.

J. Milam Walters, senior systems engineer, Systems Engineering Division (SED), for outstanding dedication and creative abilities in support of the development of a systems engineering process.

James P. Anderson, engineering technician, Fabrication Division (FD), for superior fabrication support in the manufacturing process of the computational fluid dynamics static nozzles.

Bruce R. Barkstrom, principal investigator, Atmospheric Sciences Division (ASD), for outstanding leadership and contributions in developing flight opportunities for the Clouds and the Earth's Radiant Energy System (CERES) on various satellites.

Donald F. Booth, electronics engineer, Analysis and Computation Division (ACD) for outstanding performance resulting in improved communications services to the Langley community.

Linwood B. Callis, aerospace technologist, ASD, for outstanding contributions and dedicated service in the development and application of atmospheric simulation models to study observed trends in atmospheric ozone.

Stacey M. Crum, secretarial co-op student, ACD, for exceptional secretarial service to the division.

Walter L. Snow, aerospace technologist, Instrument Research Division (IRD) for outstanding guidance in video measurement techniques that enhance facility productivity for the Spin Tunnel and the Transonic Dynamics Tunnel.

Carmen O. Torres-Nisbet, computer specialist, Business Data Systems Division (BDSD), for exceptional personal contributions on the special project teams for implementing EPRS and TADS Centerwide.

Constance B. Basnett, computer specialist, BDSD, for exceptional personal contributions on the special project team for assessing imaging technologies.

Richard T. Bright II, resources management specialist, Flight Applications Division (FAD), for project leadership leading to the successful completion of the Airborne Field Mill Project.

Long P. Yip, aerospace engineer, FAD, for outstanding technical and managerial leadership in conduct of subsonic transport high-lift flight research.

Robert L. Fox, electronics technician, FD, for superior performance in microelectronic fabrication.

Stephen K. Geissinger, engineering technician, FD, for dedicated and highly effective support of the 8-Foot High-Temperature Tunnel transpiration-cooled nozzle rehabilitation.

Mark S. Griffith, engineering technician, FD, for sustained dedicated performance on the monitoring of National Transonic Facility fan blades.

Purnell Hopson Jr., electronics technician, FD, for outstanding technical contributions in the development of innovative microelectronic fabrication techniques.

Carolyn J. James, engineering technician, FD, for exceptional support and dedication to ultrasonic c-scan inspections of composite materials at Langley.

Paul Daspit, engineering technician, FD, for excellent support of the National Aero-Space Plane (NASP) Force Test Model Project.

Morton W. Boston, engineering technician, FD, for exceptional support and dedication to the nondestructive testing of facilities at Langley.

Frederick D. Wilson, electronics technician, FD, for outstanding contributions in the design, development and implementation of surface mount technology utilization in electronic packaging.

Elizabeth A. Yeager, secretary, FD, for exceptional job performance and dedication to secretarial duties.

Dominic R. Trombetta, electronics technician apprentice, FD, for outstanding contributions in microelectronic fabrication.

Noel T. Hudgins, electronics technician, FD, for outstanding contributions and technical excellence in support of the Windshear Radar Development Program.

Deborah G. Vines, stay-in-school student, FD, for exceptional job performance and dedication to duty.

Clarence W. Bailey, electronics technician, FD, for exceptional technical skill, dedication and innovative support of the MAPS Project.

Bertrand E. Fullerton, engineering technician, FD, for outstanding support of the Structural Mechanics Division precision segmented reflector panels.

Garland D. Reece, NC programmer, FD, for exceptional performance in programming the SCI blocks.

Kenneth A. Deyerle, engineering technician, FD, for exceptional performance on the NASP Force Test Model.

Thomas J. Abbott, engineering technician, FD, for outstanding performance in the design and fabrication of the Aerobrake Display Model.

Franklin O. Mayhew, engineering technician, FD, for outstanding support of the systems engineering division on the liquid thermal unit components for the LASE Project.

Leland W. Wilkinson, engineering technician, FD, for outstanding support of the wind tunnel model modifications.

S. Eugene Sutton, electronics technician, FD, for excellence in electronic packaging in support of the Lidar In-Space Technology Experiment (LITE).

Edward H. Kist, electronics engineer, FED, for outstanding contributions to the test and characterization of the LITE science detector subsystems.

William T. Stevens, electronics engineer, FED, for outstanding contributions to the test and characterization of the LITE boresight detector subsystem.

Denise M. Linthicum, electronics technician, FED, for outstanding and sustained exceptional support to the development of the LITE electronics subsystem.

Michael R. Koch, electronics engineer, FED, for sustained technical leadership and design contributions in the development of the LITE electronics subsystem.

Samuel Sokol, electronics engineer, FED, for sustained technical leadership and exceptional contributions in the development of spaceflight electronics for the NASA space sciences mission.

Jon Thompson, aerospace technologist, Facilities Engineering Division (FEngD), for continued superior support of the 8-Foot High-Temperature Tunnel shakedown data evaluation.

Anne Holland, aerospace technologist, FEngD, for continued superior performance in the support of Langley research facilities.

Lindy Fleck, aerospace technologist, FEngD, for continued and sustained high performances associated with the 8-Foot High-Temperature Tunnel shakedown.

Brian S. Luoto, civil engineer, FEngD, for outstanding project management for the addition to the Aircraft Acoustics Research Facility.

Roger F. Ferguson, civil engineer, FEngD, for outstanding project management for Work Package 3.0-Building Addition for Modification to the National Transonic Facility.

Robert L. Gage, engineering co-op, FEngD, for continually exceeding expectation in performance and dedication.

Joan D. Luoto, engineering technician, FEngD, for excellent design, construction management and contributions to the Langley Child Development Center.

Robert L. Charles Jr., mechanical engineer, FEngD, for outstanding performance and contributions in support of Langley's energy conservation effort and in the design and installation of various construction-of-facilities projects.

Howard K. Knight, electrical engineering technician, FEngD, for outstanding performance and contributions in the design and installation of various construction-of-facilities projects.

Frank E. Strehle, electrical engineer, FEngD, for outstanding performance and contributions in support of the design and installation of various construction-of-facilities projects.

William T. Shinn, electrical engineer, FEngD, for outstanding performance and contributions in support of the design and installation of various construction-of-facilities and research projects.

James R. Morris, electrical engineer, FEngD, for exceptional technical guidance in the performance of various construction-of-facilities projects.

Mary J. Harris, program analyst, FEngD, for exceptional service in the management of construction-of-facilities construction funds and for exceptional service as executive secretary of the director's bi-monthly construction-of-facilities meeting.

Michael B. Crawford, electronics technician, FEngD, for quality improvements and productivity gains through innovative automation of assigned duties.

David A. Gwaltney, electrical engineer, FEngD, for the paper entitled, "Ground-Based Implementation and Verification of Control Laws for Tethered Satellites," and introducing fuzzy logic control concepts to Langley facility automation systems.

Gloria F. Ragsdale, branch secretary, FEngD, for successfully implementing the electronic purchase request and electronic time and attendance systems within the Facility System Branch with very few problems and minimal disruptions.

Thomas G. Popernack, aerospace technologist, FEngD, for exceptional work as the WPM for the 8-Foot High-Temperature Tunnel Lox system, as the cryogenic systems standard practice engineer and on other engineering assignments.

Employee Awards

Sheridan R. Barringer, technical project engineer, FEngD, for exceptional work as project manager for the modifications to NTF, for productivity and as technical project engineer for the Combined Loads Test System Engineering Study.

Henry H. Haskin, aerospace technologist, FEngD, for contributions leading to the successful design, construction and testing of the mixed flow nozzles in the Jet Noise Facility, particularly the axi-symmetric nozzle, which was recently tested with very impressive results.

Robert J. Wallis, civil engineer, FEngD, for excellent design and construction management support for modification to the High Pressure Air System Project.

Michael A. Basnett, head aerospace engineering technician, Flight Management Division (FltMD), for the outstanding leadership and motivation that returned the ATOPS B-737 to a flight readiness condition in time to meet wind shear program objectives for 1992.

Cary R. Spitzer, aerospace technologist, FltMD, for contributions in support of Langley's TQM goals.

Wendell R. Ricks, aerospace engineer, FltMD, for outstanding performance of research in flight deck information management, including experiments on identifying information attributes and determining pilot information requirements in approach to landing.

Alan T. Pope, aerospace technologist, FltMD, for outstanding leadership of the Human Engineering Methods group and for the development, conduct and technology transfer of research efforts in pilot hazardous states of awareness.

Randall L. Harris Sr., aerospace technologist, FltMD for timely response to an opportunity to evaluate the Federal Aviation Administration's synthetic vision research aircraft and skillful, insightful evaluation and reporting on its performance.

Anna C. Trujillo, aerospace engineer, FltMD, for outstanding performance of research experiment on pilot display of subsystem trend information, and for contributions towards a baseline fault management capability for simulation testing.

John P. Weidner, aerospace engineer, Fluid Mechanics Division (FldMD), for continuing excellence in hypersonic airbreathing propulsion research.

Earl H. Andrews Jr., aerospace engineer, FldMD, for continuing dedication and excellence in performing research duties and, as project engineer, for playing a major role in writing a memorandum-of-agreement for hydrocarbon-fueled scramjet research.

Anita M. Runkel, voucher examiner, Financial Management Division (FMD), for exceptional high level of production within the Commercial Accounting Section.

John D. Shaughnessy, aerospace engineer, GCD, for technical leadership and timely contributions enabling the first release of the NASP Integrated Atmospheric Model for use with real-time and batch simulations for the National Aero-Space Plane.

Millie N. Boone, employee development assistant, Human Resources Management Division (HRMD), for exceptional performance of duties that resulted in improved processes which significantly increased the accuracy and timeliness of training fiscal account management.

Sarah M. Roberson, principal cashier, FMD, for exceptional service and dedication demonstrated in the performance of duties as the principal cashier of the Imprest Fund for Langley.

Jeffrey A. Parker, program analysis officer, Office of the Director for Management Operations, for exemplary efforts in the implementation of the Office of Aeronautics and Space Technology reorganization and duties associated with the Institutional Resources and Policy Analysis Division.

Robert T. Neece, electronics engineer, Guidance and Control Division (GCD), for outstanding management of the close-out activities for the Microwave Reflectometer Ionization Sensor Experiment.

Linda K. Jones, voucher examiner, FMD, for a high degree of accuracy and timeliness in the processing of travel vouchers within the Travel Section.

Patricia Kerr, mathematician, ACD, for outstanding contributions to the development and application of Computer-Aided Design (CAD) capabilities in GEOLAB.

Chase P. Hearn, electronics engineer, GCD, for contributions to the success of research close-out tasks for the Microwave Reflectometer Ionization Sensor experiment and publication of research results.

Roland W. Lawrence, aerospace technologist, GCD, for contributions to the success of data algorithm development and documentation for the Microwave Reflectometer Ionization Sensor Experiment.

Peter M. Kjeldsen, engineering technician apprentice, Operations Support Division (OSD), for exceptional technical support to the 0.3-Meter Transonic Cryogenic Tunnel focusing schlieren test.

Mack G. Lawrence, supervisory engineering technician, OSD, for exceptional supervisory and leadership skills in support of the 8-Foot High-Temperature Tunnel shakedown operations.

Elbert W. Lee, quality assurance specialist, FAD, for outstanding support of the B-737 wind shear deployments.

Robert B. Lee III, aerospace technologist, ASD, for exceptional contributions to the measurement and analysis of solar irradiance and its impact on Earth's climate.

Harold C. Lester, aerospace engineer, Acoustics Division (AcoD), for the development and implementation of analytical techniques for active control of aircraft interior noise.

Dal V. Maddalon, aerospace engineer, FAD, for outstanding contributions to the success of the General Electric Hybrid Laminar Flow Nacelle Flight Experiment.

Michael J. Mann, aerospace engineer, Advanced Vehicles Division (AVD), for outstanding performance in support of the high-lift element of the High-Speed Research (HSR) Program.

John W. Meador, engineering technician, OSD, for exceptional systems operational support at the National Transonic Facility.

L. Kerry Mitchell, research engineer, AcoD, for the pioneering application of the sharp focus schlieren technique to supersonic jet flowfield measurement.

Martin G. Mlynczak, scientist, ASD, for outstanding contributions to the development of proposed experiments SAFIRE, SABER and METRE for studying the stratosphere, mesosphere and lower thermosphere.

Arnold W. Mueller, aerospace engineer, AcoD, for exceptional performance in the identification of rotorcraft noise due to maneuvers and wind.

Doreen O. Neil, aerospace technologist, ASD, for outstanding efforts in the development of tropospheric remote sensing technology and leadership in the TQM program.

Marie S. Noland, computer specialist, ACD, for outstanding contributions to the workshop on software systems for surface modeling and grid generation.

Lisa F. Peckham, branch secretary, Information Systems Division (ISD), for providing critical support for the highly successful formal methods and fly-by-light workshops.

R. Bradley Pierce, scientist, ASD, for outstanding contributions to the understanding of dynamical processes in the stratosphere through model simulations and observational analysis.

Delores K. Poupard, computer specialist, AVD, for exceptional support to the High-Speed Research and Advanced Aircraft programs in providing financial information critical to the management of resources.

Floyd S. Shipman, aerospace technologist, ISD, for significant contributions to the Systems Architecture Branch by the installation, configuration control and problem resolution of all desktop computers and software.

John A. Ritter, principal investigator, ASD, for outstanding leadership in the development and application of regional airborne measurements of trace gas emissions.

Anthony W. Robbins, engineering technician, OSD, for exceptional technical contributions and innovative improvements to the Low Turbulence Pressure Tunnel.

Christopher A. Scales, clerk, FEngD, for exceptional service while performing the Specifications and Contract Coordination Office's clerical work and for assisting in the processing of construction management documents.

Dennis L. Dicus, materials research engineer, Materials Division (MD), for outstanding contributions in the planning, coordination and conduct of research activities associated with the development of light alloy materials for NASP and High-Speed Civil Transport (HSCT), which have led to significant accomplishments in both of these programs.

Genevieve A. Dellinger, aerospace engineer, SED, for exceptional performance in providing structural analyses of the UV-DIAL instrumentation rack, the OV-10 aircraft wing boom and the RFC wind-tunnel model.

Randall C. Davis, research project engineer, Structures Technology Program Office, for contributions in development of textile preform composites.

Susan L. Conry, secretary, FltMD, for excellent contributions to supporting the division office during the extended absence of the division secretary.

David H. Butler, lead mechanical design engineer, SED, for sustained high level of performance in support of the development of Langley advocacy proposals.

R. Keith Bird, materials research engineer, MD, for significant contributions in the development and characterization of titanium matrix composites, which have contributed greatly to the hypersonic research and National Aero-Space Plane programs.

Amy Antill, secretary, FltMD, for excellent contributions to supporting the division office during the extended absence of the division secretary.

Marcella F. Hogge, secretary, FltMD, for excellent contributions to supporting the division office during the extended absence of the division secretary.

Happenings

LOTS FOR SALE: Looking for neighbors to divide parcel in a custom residential neighborhood in the Tabb area of York County. For information, call 838-9506.

FOUND: Watch in the parking lot between buildings 1195 and 1194 in early December. Call Rose Mustain, Employee Relations Branch, at ext. 42586.

READING SERVICE: The Voice of the Peninsula, a free radio reading service for visually or print-impaired people, provides daily reading of local newspapers. This volunteer service provides radio receivers free of charge to anyone with disabilities that prevent them from reading for themselves. If you would like to receive this service or volunteer, call 245-1041 or 599-6540.

PRIVATE TUTORING: All grade levels, experienced and degreed. References available. Call 723-6932.

TOWNHOUSE FOR SALE: By owner, Poquoson, 2,000 square feet, three bedrooms, 2½ baths, eat-in kitchen, bay windows, hardwood floors on first floor, fireplace, 3 skylights, end unit, with windows overlooking large side and rear yard. $97,000. Call 868-7422.

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A., 723-5227.

FREE AEROBICS: Get energized with NASA aerobics! Open to all employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Monday, Wednesday and Friday from 6:15 to 7:15 a.m. Lunchtime Energizer is held from 11 to 11:45 a.m. For more information, call ext. 46387.

HOUSE FOR RENT: Single-family house in Williamsburg, furnished, including refrigerator, dishwasher, washer/dryer, 3 bedrooms (or 2 plus study), 2 baths, 10 minutes from college, on cul-de-sac, convenient to high school and junior high. Living room with fireplace, deck, garage, central air, ideal for faculty, professional couple or small family. Available after December 20. Rent $650 per month. Call 221-3454.

STEP AEROBICS: Join the LAA Aerobics Club and learn step aerobics in 1993! Step classes are featured in addition to low-impact, which tone muscles while burning fat! Benches and free weights are provided and free body composition analysis is given before class. Classes are held Tuesdays and Thursdays, 5 to 6 p.m., in the LAA gym and 9:30 to 10:30 a.m. Saturdays in January in the H.J.E. Reid Conference Center auditorium. The first class is free. Classes are open to all employees, contractors and their families. Call ext. 42295 for more information.

LITE-LIFE: Lighten up 1993 with Lite-Life. Designed for everyone, Lite-Life classes are offered by the Langley Fitness Center to help individuals lose weight and live a healthier lifestyle by learning how to eat smart and make exercise a part of life. This eight-week class meets weekly for lunch-and-learn seminars from noon to 1 p.m. Thursdays. Sessions will cover nutrition, exercise and weight loss. The staff will assist each participant with individual assessment and establishment of goals and schedules. There are no restrictions for enrollment. Call ext. 46387 for details and an application.

TOWNHOUSE FOR SALE: Near NASA, Summer Place, 1,150 square feet, 2 bedrooms, 1½ baths, eat-in kitchen, den area with fireplace, living room, central air, privacy fenced backyard, all appliances, $64,800. Call 693-5053 (Gloucester).

RINGS FOUND: Two silver rings were found in Building 1229 before Christmas. For more information, call Kendall at ext. 46488.

CONDO FOR RENT: Hampton Club condo, one bedroom, new carpet and paint, 10 minutes to NASA, washer/dryer and all appliances convey, $410 per month and deposit. Call 868-9130.

BIBLE STUDY: Roundtable discussion each Tuesday from 4:30 to 5:30 p.m. at 16 W. Taylor St., Building B1213. Call Roane Hunt at 693-3467 or Chris Benner at 229-3091.

TELA TAX SERVICE: Member, National Association of Tax Practitioners. Electronic filing. Small-business bookkeeping services. By appointment. Call 874-3121.

TOASTMASTERS: Whether you're speaking to one or 1,000, a Toastmasters Club can help you speak clearly and confidently. The Langley Toastmasters will meet February 10 from 11:30 a.m. to 1 p.m. in Building 1222.

CALL FOR PAPERS: The 2nd International Symposium on Magnetic Suspension Technology will be held in Seattle, Wash., August 11 through 13. March 1 is the deadline for submission of one-page abstracts. For more information, contact Gin Marks at ext. 41714 or Mail Stop 479.

VOLUNTEERS NEEDED: To repair small aircraft models for the Virginia Air and Space Center Educational Programs Office. Call 727-0900, ext. 714.

TUPPERWARE SALE: The Langley Child Development Center is sponsoring a Tupperware sale February 1 through 13. Call the center, ext. 44827, for a catalog and order forms.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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News Researcher

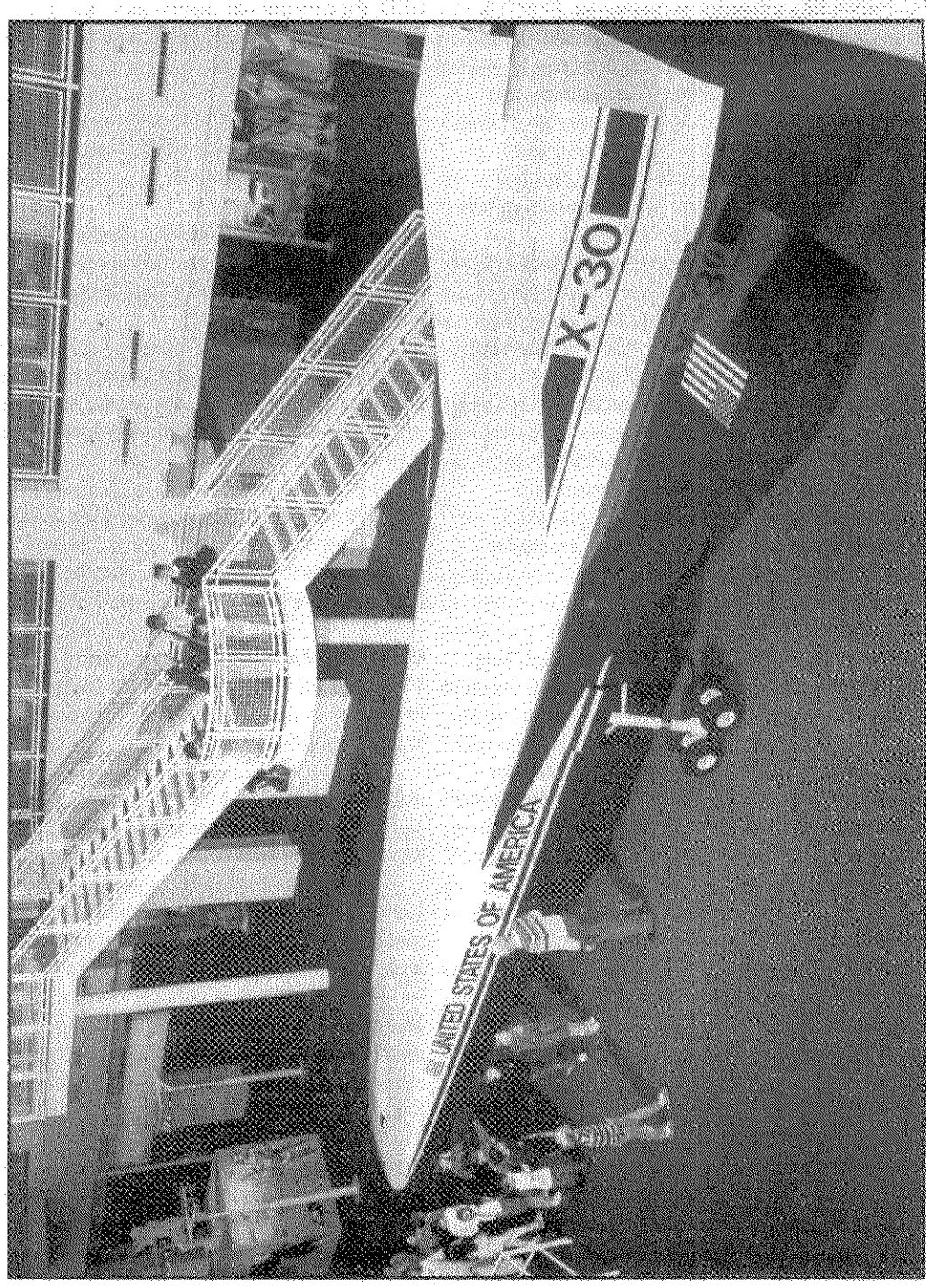


Photo by Fred Jones

The National Aero-Space Plane (NASP) model is on display at the Virginia Air and Space Center in Hampton through February. The one-third-scale model was built by senior aerospace engineering students at Mississippi State University.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 3 ❖ February 12, 1993

TQM Bulletin Board Will Let Employees 'Own A Problem'

Got a problem? Now you can own it, or at least be part of the team that does.

An "Own-A-Problem" TQM bulletin board will be erected in the cafeteria this month for employees who want to help solve problems in five areas: facilities, communications, administrative procedures, research methods and a miscellaneous category called "other."

"We're looking for highly motivated people who are willing to get involved with an improvement project rather than waiting to be assigned to a team," said Irwin J. Schauer, Langley's quality and productivity officer.

How do problems get listed on the bulletin board?

"Employees put them there themselves," Schauer said. "This is intended to empower employees to identify problems and solve them. After all, the employees are the ones who most often are in the best position to see what needs improving, and then to prepare and execute a plan for making those improvements. That's what TQM is all about."

Here are the guidelines:

- Review the postings for a problem you are willing to work.
- Add your name and phone extension to the list.
- Start a new list if necessary. Date it and check it regularly. Incomplete lists will be removed in about 30 days.
- After five to 10 names accumulate on a list, the originator should remove it and call the team together.
- The team should hold one or two meetings clarifying the problem and selecting the team leader.
- A TQM facilitator should then be enrolled to assist in the team problem-solving process. With the help of the facilitator, the team will prepare a goal statement and take it forward to the appropriate manager for sponsorship.
- The team would then meet no more frequently than once a week for about one hour each time.
- The team should follow the "Roadmap To Problem Solving" approach.

The bulletin board will be set up in the cafeteria later this month.

The idea for the bulletin board came from Guy T. Kemmerly, an aerospace technologist in the Subsonic Aerodynamics Branch, Applied Aerodynamics Division.

"People were leaving our TQM classes inspired, but having no way to be involved in the quality process," said Kemmerly, who has been a TQM facilitator since 1991. "They all had great ideas on ways things could be improved – but no way to do it. This is a mechanism for them to do that."

In The Wind Tunnel

Photo by Fred Jones

Technician Dave Platz checks a wind tunnel model of the F/A-18-E/F between runs. Wind flow over the model is analyzed by electronic sensors. The information will be used to develop computer software for the flight control system on the newest configuration of the Navy fighter-bomber. The aircraft will have a larger wing and longer fuselage for increased range and weapons load.

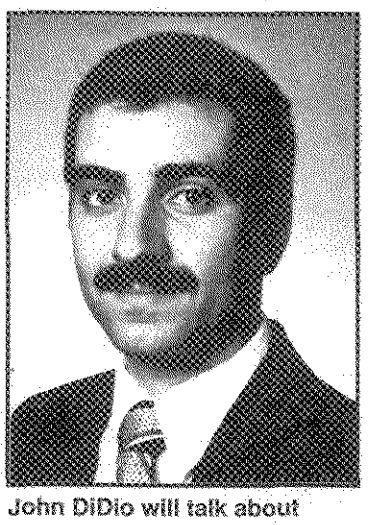
Black History Month Speaker Will Discuss Multiculturalism

The Federal Women's Program Committee will sponsor a seminar on multiculturalism in honor of Black History Month on Friday, February 19.

The program will feature a speaker who is an expert in equal employment opportunity and personnel management. John DiDio, president of Professional Personnel Services in Norfolk, will deliver his remarks at the H.J.E. Reid Conference Center from 10 a.m. to noon.

DiDio has been involved with human relations in government and private organizations for more than 16 years. While with the Norfolk area office as director for the Equal Employment Opportunity Commission, he received a special commendation for his performance.

He has a bachelor of arts degree in education from Norwich University, and two master's degrees—in human relations and public administration—from Golden Gate University.



John DiDio will talk about multiculturalism on February 19 at Langley.

Employees who attend the program should charge time to job order A2987. For more information, call Patsy Campbell at ext. 43291.

College Scholarships Available To NASA Employee Dependents

March 31 is the deadline for applicants seeking a scholarship from the NASA College Scholarship Fund, a nonprofit organization established to help current and former employee dependents agency-wide.

The scholarships will be available for the 1993-94 academic year.

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

The scholarships are worth up to $1,500 per year for each dependent, up to a maximum of $6,000 over six calendar years.

Completed application forms must be received at Johnson Space Center in Houston 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, contact Marny Skora at ext. 43315.

Gift from Michener

The scholarship fund was established through a substantial, unsolicited offer by Pulitzer Prize winning author James Michener. Many NASA employees have also contributed to the fund—primarily through the Combined Federal Campaign—since it was established 11 years ago.

The last Langley employee to receive a scholarship was Timothy Olin Jarrett, son of Olin Jarrett Jr., an aerospace engineer in the Fluid Mechanics Division. Jarrett won a scholarship in 1990.

Russian Scientist Says Pinatubo Affects Climate

BY KRISTINA MURDEN

Langley and Russian scientists agree that the massive eruption of Mount Pinatubo in June 1991 has manipulated climates globally.

Russian scientist Dr. Pavel Ya. Groisman visited Langley in January to discuss the climatic consequences of the largest eruption of the century. He concluded that the volcanic aerosols emitted from the massive blast will create deviations in weather patterns until 1994.

"The climatic consequences are coming and some of them have already occurred," said Groisman, "and they generally last two to three years."

According to Groisman,

See **PINATUBO,** *on* **Page 5**

News Briefs

AROUND THE AGENCY

ACTING AA NAMED FOR PUBLIC AFFAIRS — Geoffrey H. Vincent has been named acting associate administrator for public affairs at NASA Headquarters. He replaces William A. Livingstone, a non-career executive. His last day at NASA was January 22. Also resigning was Livingtone's deputy, Sue Mathis Richard. Vincent joined NASA in 1987 and was director of the Program Management Division in the Office of Public Affairs at headquarters, overseeing resources, administrative services, Freedom of Information requests and coordinating issues among various parts of the public affairs organization.

OZONE STILL DEPLETING — The depletion of stratospheric ozone over Antarctica in 1992 was as severe as any previous year, according to continuing observations by the Nimbus-7 and Meteor-3 Total Ozone Mapping Spectrometer (TOMS) instruments. In 1992, the "ozone hole" developed one to two weeks earlier than in previous years. Scientists at Goddard Space Flight Center in Maryland also have confirmed that on September 23, the Antarctic ozone hole was the largest on record—8.9 million square miles. By comparison, the surface of North America covers 9.4 million square miles.

PROCUREMENT AA APPOINTED — Deidre A. Lee has been named acting associate administrator for procurement, replacing Don G. Bush, who plans to leave NASA in September. Lee had been deputy assistant administrator for procurement since September 1992. Prior to that, she was the executive officer to NASA's acting deputy administrator. Earlier, she managed a variety of procurement activities in NASA and the Air Force.

Langley Retirees

The following employees have retired:

Analysis and Computation Division: Joseph W. Young, effective January 3.

Structures Technology Program Office: Linda E. Edmunson, effective December 27.

Flight Applications Division: Jimmy W. Usry, effective January 3; Paul R. Pfeffer, effective January 2.

Management Support Division: Billy J. Smith, effective December 31.

Instrument Research Division: Wayne D. Rowland, effective January 3; Richard F. Zasimowich, effective January 3; James W. Campbell, effective January 3; Miriam A. Hall, effective October 1992.

Facilities Engineering Division: Henry G. Parker, effective January 3; Cecil E. Nichols Jr., effective January 3.

Fabrication Division: Clyde C. Lane, effective January 3; Raymond D. Burris, effective January 3; Lawrence J. Farrow, effective October 1992.

Operations Support Division: James A. Keaton, effective January 3; Albert H. Bell, effective January 3; John T. Benthall Jr., effective January 3; James H. Neal, effective January 3; Marshall D. Johnson, effective January 1; Judson S. Black Jr., effective February 28; Robert I. Armistead, effective October 1992.

Guidance and Control Division: Joseph J. Davis, effective October 1992.

Acquisition Division: M. Patricia F. Turgeon, effective November 1992.

Human Resources Management Division: Annette L. Forrest, effective December 31; Clarence M. Cole, effective January 3.

Research Information and Applications Division: Charles R. Pruitt, effective January 3; John R. Cunningham, effective January 3.

Advanced Vehicles Division: William D. Harvey, effective January 3.

Atmospheric Sciences Division: Bordie D. Poole Jr., effective January 27; James W. Youngblood, effective March 1.

Materials Division: Louis A. Teichman, effective January 31.

Applied Aerodynamics Division: Charles L. Ladson, effective September 1992.

Acoustics Division: Otis S. Childress Jr., effective October 1992.

Space Station Freedom Office: E. Eugene Hall, effective October 1992.

Celebrating Tall Tales

Langley Toastmasters gather around Dr. John C. Lin, who won the state Tall Tales contest in Charlottesville on January 9. He won previously at the club and division levels. From left are Dr. Marco Egoavil, president; Gregory McCarthy, past international director; Sadie Boyer, past president; Dr. Lin, vice president for public relations; Richard Booth, district area governor; George Ganoe, secretary; Myra Walton, vice president for education; and Dr. Robin Cravey, vice president for membership.

Papers Are Sought For May Meeting Of Science Academy

Papers are being solicited for presentation in the Aeronautical and Aerospace Sciences Section at the annual meeting of the Virginia Academy of Science on May 20 at Old Dominion University in Norfolk.

Authors should submit a proposed title to Naomi McMillin, Mail Stop 413, or Leroy Spearman, Mail Stop 406, before February 25.

Red Cross Bloodmobile Donor Report

The Red Cross Bloodmobile will be at Langley March 17, May 19, July 28, September 22 and November 24.

The following individuals have donated to the Bloodmobile: 15 gallons - Stanley L. Pearle; 13 gallons - Billy W. Beasley; 12 gallons - Joseph F. Powers; 10 gallons - Herny Zumbrum; 9 gallons - Joseph Price; 7 gallons - Charles Dunton and Edgar L. Collier; 5 gallons - Mark Wynkoop, Wayne George and Brian Luoto; 4 gallons - Robert Huffman Jr., Ronald Staples, Tammi Eller and Lin Hartung; 3 gallons - David Barnes and Carol Satterwhite; 2 gallons - James Green, Charles Townsley and John Inge; 1 gallon - Dominic Trombetta, Ben Copeland, Robert Jordan, Ramsey Michael, Jocelyn Pritchard, Lynda Foernsler, Joyce Tucker, Michelle Lynn and Sandra Harrison. First-time donors - Ginger Freeman, Bill Simmonds, Annie Wright and Oden Obrahium.

SAIC-Hampton Seeking Intern

SAIC-Hampton is seeking highly qualified and strongly motivated upper-level undergraduate and graduate students to participate in a summer intern program June 1 to September 15 in affiliation with an ongoing contract at Langley Research Center.

Candidates may have experience, a degree, or be seeking a degree in any of the following fields: earth sciences, physics, engineering, mathematics, and scientific computer programming.

For an application or more information, contact Doris Stroup at 827-4849 or by fax at 825-9129.

Computer Show Set For Feb. 23

The Evaluation and Information Center is hosting a free computer show Tuesday, February 23, from 10 a.m. to 3 p.m. at the H.J.E. Reid Conference Center.

For more information, call the center at ext. 42342, or National Trade Productions at 1 (800) 638-8510, ext. 291.

IN MEMORIAM

Robert L. Wright, of the Experiments Office of the Space Station Freedom Office, died Tuesday, January 26.

Wright began his NASA career in aerothermodynamic research in the Applied Materials and Physics Division in 1961. From 1970 to 1974, he was technical assistant for flight projects, the Viking Project Office and the Space Applications and Technology Division.

From 1976 through 1990, he was with the Systems and Experiments and the Spacecraft Analysis branches in the Space Systems Division. He developed plans for shuttle experiments and was on the Spacelab and orbiter flight test evaluation panels.

After a year in the Control of Flexible Structures Project Office, he returned to the Spacecraft Analysis Branch, where he contributed to many program study efforts including the lunar and Mars space exploration initiative and the Mission to Planet Earth program.

He had a bachelor's degree in aeronautical engineering from the University of Virginia. He delivered about 250 presentations and was author or co-author of more than 60 papers.

LETTERS

Noel A. Talcott Jr. writes: My wife Nancy and I would like to thank all who sent cards and flowers following Natalie's death. Your kind expressions of sympathy are deeply appreciated. We feel so fortunate and grateful to have had so much support from everyone and everywhere. It's also comforting to know that you are still there and will be there if we need anything as time goes on. I am very grateful to those who donated annual leave so that I could be with Nancy and Natalie.

Martha C. Brown writes: I would like to personally thank each and every one who donated their leave hours for the five weeks I was out of work in the summer of 1992. I am truly blessed to know there are kind and generous people who were able to help me in my time of need. May God bless you and your families.

Joseph W. Young writes: I wish to express my sincere appreciation to all of my Langley friends and retirees who participated in my retirement luncheon. The luncheon was truly a pleasurable experience and will always be remembered. My 36 years at Langley have been challenging and enjoyable. I will always remember my colleagues. Thanks for being such nice people. I thank you for the many parting gifts, of which some will be used and others will be put on display. Thank you again, and the best to each of you in the future.

Jeanne Buchanan writes: I would like to express my sincere gratitude to all who donated leave during my recent illness. Also, I am very appreciative of all the flowers and cards that were sent to me in the hospital. I could not have made it without your help. Thank you.

The family of **Lawrence W. Taylor Jr.** writes: We want to thank each and every one of you for the expressions of love and support extended to us during the days following Larry's untimely death. You have made a difficult time less painful through your prayers, visits, phone calls, cards and hugs when they were so desperately needed.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... Marny Skora

Editor ..... Michael Finneran, The Bionetics Corp.

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

Photojournalist ..... Carol Petrachenko, 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.

Flight Management's Spitzer Named Engineer Of The Year By Peninsula Council

Cary R. Spitzer has been named Engineer of the Year by the Peninsula Engineers Council. He had been nominated for the award by the Institute of Electrical and Electronic Engineers (IEEE).

"I am honored to have been selected for the award, especially in view of the many well-qualified candidates," Spitzer said.

"My work at Langley combines the wonder of flight with the power of the electron to make a job that in itself is very rewarding. Being named Engineer of the Year simply adds to the rewards."

Spitzer is manager of contracts in the Advanced Transport Operating Systems Program Office, Flight Management Division. He is leading an effort to acquire a replacement aircraft for Langley's Boeing 737 "flying laboratory," which has served as the platform for numerous research programs.

He began his NASA career in 1962 conducting research on thermal sensors for models being tested in Langley wind tunnels.

Spitzer joined the Viking Project Office in 1969 and later served as deputy project manager for Langley operations.

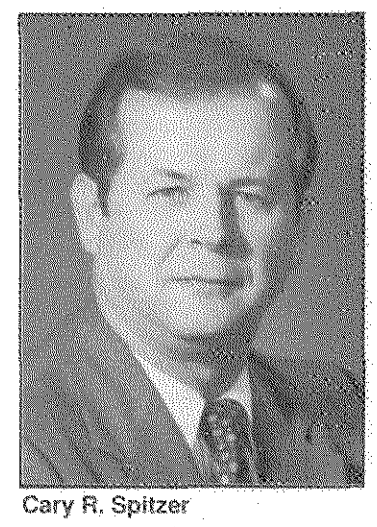
He formulated research programs in avionics for advanced aircraft and spacecraft in the Systems Application Office from 1978 to 1985, when he assumed his current position.

Spitzer holds two patents, has published more than 40 papers and was editor of the book *Viking Orbiter View of Mars*. He also wrote the book *Digital Avionics Systems*.

He has a bachelor's degree in electrical engineering from the Virginia Polytechnic Institute and State University and a master's degree in engineering management from George Washington University.

Spitzer has won several awards and belongs to organizations including the IEEE, the American Institute of Aeronautics and Astronautics and the American Association for the Advancement of Science.

In 1991, he was nominated for the Collier Trophy for his research in automatic landing of aircraft using navigation satellite signals.



Cary R. Spitzer

Langley Team Kicks Off National Engineers Week

BY CAROL PETRACHENKO

"Why do you think Engineers Week is always in February?" asked Shelley Canright, education specialist in the Office of Public Services as she surveyed 38 sixth-grade students at Grafton-Bethel Elementary School.

Canright was part of a team of four that kicked off Langley's 1993 National Engineers Week with a preview presentation titled "The Physics of Toys."

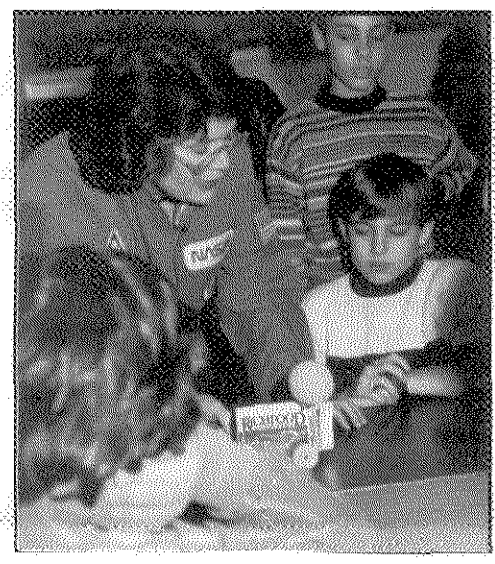
A forest of hands shot up in response to Canright's question.

"Because of Valentine's Day?"

"Black History Month?"

When a student suggested President's Day, Canright agreed. "Our first president was a civil engineer. And that's why National Engineers Week is always the same week as President's Day."

More than 250 scientists, engineers, technicians and support personnel will visit schools in 12 local school districts February 14 to 20. The goal of this educational outreach initiative is to illustrate the importance of studying math and science for success in an increasingly technological world.



Sharon Tanner demonstrates Newton's law of inertia while a student prepares to catch the ball when the cart stops.

"Each classroom is usually visited by one representative for about an hour," said Marny Skora, who has been coordinating the effort the last two years.

However, Grafton-Bethel's sixth-graders had the good fortune of being blitzed by a team of four with a hands-on demonstration that spanned two hours.

The team at Grafton-Bethel kept their presentation snappy by changing speakers with every new topic. Canright was followed by Sharon Tanner, a structural dynamicist/mechanical engineer who introduced a spirited lesson in Newtonian physics.

Veloria Martinson, a mechanical engineer, involved the students by asking questions on the functioning of the space shuttle.

And Lance Bush, an aerospace engineer, tied science to the Bills-Cowboys game literally with a kick-off. After the introduction, which included a review of pertinent physical laws, the class was divided into smaller groups to study various toys such as magnetic marbles, a "slinky," and a wind-up plastic mouse nick-named "Rat Stuff" because "he had the 'rat' stuff."

The students used Newtonian physics to describe the motion of the toys in earth's gravity. Then, based on their understanding of these laws in a microgravity environment, they predicted the behavior of the toys in space.

In a forum mimicking a scientific conference, individual students delivered their predictions to the class. These calculated guesses were confirmed or negated by excerpts from a video showing the actual performance of the toys during STS-51D and STS-54 in January.

Photos by Carol Petrachenko

Amanda Ankenman holds the ball (a la Lucy) while Lance Bush prepares to do a "Charlie Brown."

Amusement, surprise, and sometimes disappointment showed on their faces as the toys either did or did not conform to their predictions.

"The best thing from a teacher's point of view," said Teddy Eckstrom, one of their teachers, "was that actual engineers worked on projects with the students in real hands-on activities. That's the way students learn. It's so much better than lectures or demonstrations."

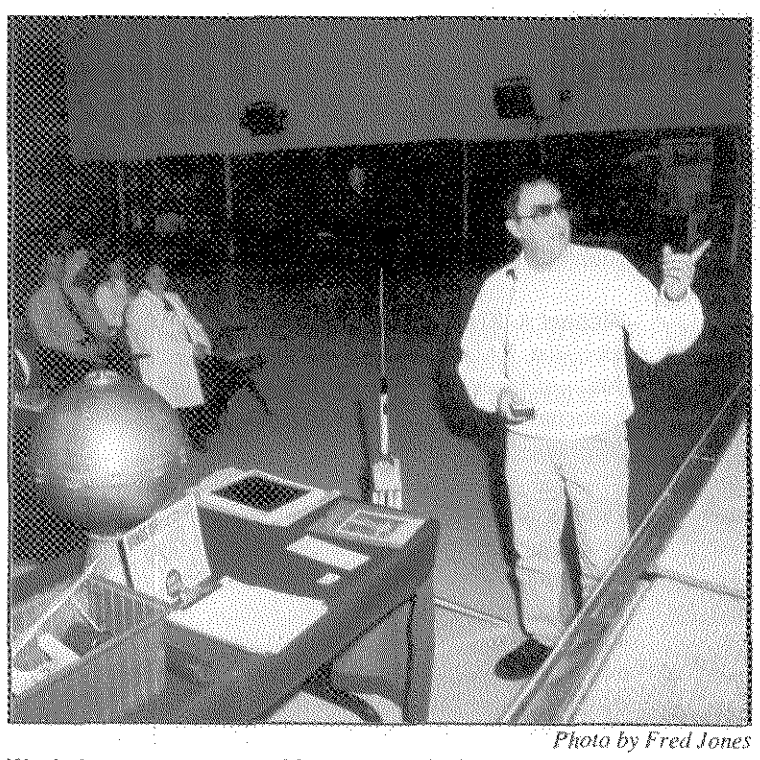


Photo by Fred Jones

Workshop presenter and Langley technician Dave Shuster explains the basic concepts of rocketry.

Practice Makes Perfect For 'Teaching' Employees

More than 150 Langley engineers, scientists, technicians and support personnel vacated their offices and labs for 90 minutes February 2. It wasn't an evacuation exercise but an educational workshop to help prepare employees to go into classrooms in 12 local school districts during National Engineers Week.

Co-sponsored by Langley and the local chapter of the Women in Aerospace (WIA), the three workshops targeted elementary, middle and high school students.

"The main thrust of our Engineers Week school visitation program is to reinforce the study of math and science," said Marny Skora, project manager. "The agency and the Center feel a responsibility to help prepare young people—our workforce of the future—to function in this increasingly technological world."

The exercise helped prepare personnel for classroom visits.

Workshop presenters were former program volunteers who shared ideas about how to get students involved and keep their interest. During the general session, hands-on demonstrations dominated as presentation "experts" gave short "teasers" involving a great deal of audience participation.

Later, participants visited learning stations staffed by individuals who had gathered work-related paraphernalia, experiment components and sample lesson plans to share.

"The workshops gave volunteers the opportunity to talk one-on-one with successful presenters who could share tips about what works and, more importantly, what to avoid when planning a school lesson," said Sharon Tanner, a structural engineer and WIA education committee chairperson.

The annual Engineers Week program is Langley's most visible and widely supported education outreach program. This year, more than 250 Langley employees and contractors will "teach" close to 800 classes in Hampton Roads.

Employee Awards

Robert C. Andrews, engineering technician trainee, Fabrication Division (FD), for exceptional performance during fabrication of the Free Flight Rotor Rescue Vehicle Project.

Steven W. Gayle, engineering technician, FD, for exceptional performance during fabrication of the active control wing and actuators.

Eric K. Hoffman, materials research engineer, Materials Division (MD), for significant contributions in the development and characterization of brazing technology for joining titanium matrix composites and determining their effects on properties which have contributed greatly to the National Aero-Space Plane program.

Frank L. Jordan Jr., technical assistant, Flight Applications Division (FAD), for exceptional contributions in support of facility upgrades to the 30- by 60-Foot and 12-Foot Low-Speed tunnels.

Charles L. Ladson, aerospace technologist, Applied Aerodynamics Division (AAD), for outstanding efforts in supporting the modifications of the 0.3-Meter TCT for heavy gas tests.

Wendy B. Hoffman, research engineer, FAD, for research in developing and documenting predictive techniques for application to High-Speed Civil Transport configurations.

Lewis R. Owens Jr., aerospace engineer, AAD, for outstanding efforts in the testing, analysis and reporting of the National Transonic Facility forebody test.

Luther L. Richardson, engineering technician, FD, for exceptional effectiveness in the performance of duty.

Donald R. Riley, research engineer, FAD, for significant contributions in developing piloted simulations in support of the High-Speed Research Program.

Drew J. Hope, Systems Engineering Division (SED), for outstanding engineering design and leadership in the development of the self-adaptive airfoil with passive venting.

David O. Roberts, engineering technician, FD, for exceptional job performance and dedication to duty.

Gautam H. Shah, research engineer, FAD, for exceptional contributions in support of the structural loads analysis for the HARV with actuated nose strakes.

Geraldine M. Tucker, secretary, Flight Management Division (FltMD), for excellent contributions to supporting the division office during extended absence of the division secretary.

Richard A. Wahls, aerospace engineer, AAD, for outstanding efforts in the support of the NASA/Boeing Cooperative Program for the testing of the 767 in the National Transonic Facility.

Terryl A. Wallace, materials research engineer, MD, for significant contributions to the understanding of the oxidation behavior of candidate titanium alloys for titanium matrix composites and determining the effects of such oxidation on mechanical properties.

Nancy N. Shields, engineering contract specialist, Facilities Engineering Division (FEngD), for maintaining quality service in reviewing specifications and administering contracts while temporarily assuming an extremely heavy work load.

R. Thayer Sheets, technology utilization specialist, Research Information and Applications Division (RIAD), for exceptional performance in the management and administration of the Small Business Innovation Research Program.

Raymond S. Calloway, electronics engineer, FED, for excellent performance and technical management of the CLASS development and research flight tests for the NASA/FAA Wind Shear Sensor Technology Program.

Cynthia L. Hahne, aerospace technologist, FEngD, for successfully completing the construction and installation of Test Section Isolation Doors in the 14- x 22-Foot Wind Tunnel in a professional and timely manner.

Arthur H. Hayhurst, quality assurance specialist, Systems Safety, Quality and Reliability Division (SSQRD), for excellent effort in coordinating the implementation of a receiving inspection quality assurance lab.

James L. Leiffer, assurance specialist, SSQRD, for excellent support in coordination of the LITE integration and testing activities.

Paul D. Prillaman, quality assurance specialist, SSQRD, for excellent performance in implementing the Quality Assurance Plan for the MAPS Instrument.

Lloyd L. Smith, product assurance engineer, SSQRD, for developing a configuration management manual for spaceflight hardware and software.

Michael D. Uenking, engineering technician apprentice, FEngD, for completing the supporting designs of several critical research funded projects, including the Hangar Antenna Platform Installation Project, in a professional and timely manner.

Blas F. Villanueva, quality assurance specialist, SSQRD, for excellent support for the Laser Transmitter Module subsystem of the Lidar In-Space Technology Experiment.

Andrew L. Forbes Jr., lead schedule analyst, Projects Division (PD), for outstanding performance of duties as schedule analyst in support of the LITE project during the summer of 1992.

Linda S. DeVol, secretary, Operations Support Division (OSD), for exceptional personal initiative and secretarial proficiency in support of the division.

Otis S. Childress Jr., assistant manager, Acoustics Division (AcoD), for outstanding management skills and dedicated personal efforts in advancing the Rotorcraft Program in the areas of rotorcraft noise reduction and tiltrotor noise technology.

Ricky W. Butler, senior researcher, Information Systems Division (ISD), for producing a peer review and workshop in support of formal methods research.

Christina E. Agee, stay-in-school secretarial student, ISD, for excellent secretarial support to the Systems Architecture Branch and the division staff.

Herbert D. Hendricks, aerospace technologist, ISD, for the development of a 1.8-watt diode laser.

Paul J. Hayes, aerospace technologist, ISD, for the development of the ATAMM computer operating system.

Pamela L. Howard, secretary, FEngD, for outstanding performance in support of the administrative functions of the division.

Friedrich O. Huck, electronics engineer, ISD, for the application of Shannon's communication theory and Wiener optimal restoration to visual communication.

Charles B. Marushi, aerospace technologist, FEngD, for outstanding contributions that minimized Langley's critical research facility downtime and excellent technical consulting services provided to OSD, SSQRD, FEngD and research customers.

Janet J. Nagele, secretary, Analysis and Computation Division (ACD), for superior contributions during a six-month period of a substantially-increased work load.

Tracey L. Patterson, secretarial co-op and clerical assistant, FEngD, for outstanding performance in support of the clerical functions of the division.

Faye E. Satterthwaite, division secretary, RIAD, for outstanding executive secretarial support to the division.

William L. Terrill, program analyst, PD, for dedicated and outstanding performance of duties as schedule analyst in support of the fiscal 1992 National Transonic Facility Modifications Project.

Tony L. Trexler, supervisory aerospace engineering technician, FAD, for outstanding support of the July 17, 1992 75th Anniversary celebration.

Janice R. Wunder, personnel management specialist, Human Resources Management Division (HRMD), for positive attitude and exceptional effort in support of the implementation of NPPS.

Charles B. Lunsford, electronics technician, IRD, for outstanding contributions and innovation in supporting the development of the division's open architecture data systems lab.

Sandra S. Duncan, computer specialist, HRMD, for conversion of urgently needed user-generated computer programs and for technical assistance to the Integrated Personnel/Payroll System implementation team.

Mary H. Lewis, employee development specialist, HRMD, for exceptional performance of duties related to the development of the Advisor Handbook, Employer Career Planning Handbook, and Career Coaching and Counseling Course for Supervisors.

James F. Meyers, personnel management specialist, HRMD, for outstanding support of the division by implementing transition of the manpower/FTE function and leadership of division ADP activities.

Frederick M. Thompson, employee development specialist, HRMD, for exceptional performance of duties that resulted in significant improvements in the Apprentice and Technician Cooperative Education Program.

David R. Brooks, lead engineering technician, OSD, for leadership in the performance of the duties of alternate facility coordinator, and for contributions in furtherance of the goals and objectives of the safety program.

Michael A. Klebitz, supervisory quality assurance specialist, FAD, for leadership in the performance of the complex duties of facility safety head, and for selfless dedication in furtherance of the goals and objectives of the safety program in our research environment.

Susan O. Palmer, mechanical engineer, SED, leadership in the performance of the complex duties of facility safety head, and for contributions in furtherance of the goals and objectives of the safety program.

Michael A. Klebitz, supervisory quality assurance specialist, FAD, for leadership in the performance of the duties of facility safety head and for contributions in furtherance of the goals and objectives of the safety program.

Tammy K. Hopkins, engineering technician, OSD, for exceptional technical support to the mechanical testing in the Structures and Materials Laboratory.

Victor E. Jenkins, engineering technician, OSD, for outstanding effort in planning and monitoring the fabrication and installation of the oxygen cleaning system for the 8-Foot High-Temperature Tunnel.

Employee Awards

Powell D. Mitchell, engineering technician, OSD, for outstanding support of research in the Structures and Materials Laboratory.

Robert M. Peterson, supervisory electronics technician, FAD, for outstanding support of the Wind Shear Deployment.

Maria K. Elliott, secretary, Business Data Systems Division (BDSD), for exceptional performance and invaluable support of the division.

David R. Schryer, electronics engineer, IRD, for outstanding contributions in the development and advancement of catalyst technology for ground-based and flight applications.

Shirley D. Evans, contract specialist, Acquisitions Division (AD), for efficient award of a contract for the development of high-temperature fibers.

Elizabeth C. Napier, secretary, National Aero-Space Plane Office, for outstanding administrative support in arranging very high-level workshops/meetings for the office.

Donald R. Fachko, general lithographer, RIAD, for outstanding performance and contribution to the Center's printing requirement.

Roscoe C. Edge, labor relations specialist, HRMD, for exceptional performance of duties in the implementation of numerous initiatives generated by SCAN, TQM, senior management and Headquarters.

Marie D. Dunn, photographic control assistant, RIAD, for exceptional service in scheduling photographic assignments.

Charles M. Kahlert, facility management specialist, OSD, for outstanding contributions to the safe and effective operation of facilities while serving as a duty officer.

Shirley W. Lawson, secretary, Advanced Vehicles Division (AVD), for exceptional support to the many major activities of the division and for producing quality results with maximum customer interaction.

Marva J. Mabry, senior project secretary, PD, for outstanding performance and individual excellence in support of an extensive TQM search and an extensive multi-project travel estimate.

Heather L. Layne, engineering technician apprentice, OSD, for outstanding contributions in support of research for the Advanced Aircraft Technology Program.

Donald C. McCracken, program analyst, PD, for exceptional performance as manager of the Scout Support Office in planning and implementing the close-out of the Scout Project.

John R. Nayadley, engineering technician, OSD, for exemplary performance in the overhaul of the ALDF 20-inch high-propulsion shutter valve and modifications to its hydraulic systems.

Mellissa P. Poe, clerk, RIAD, for exceptional level of performance in completing special assignments while maintaining daily activities in support of the Technical Library Branch.

Fred L. Rudolph, engineering technician, OSD, for outstanding contributions to the Advanced Aircraft Technology Program.

Kenneth F. Test, mechanical engineering technician, OSD, for superior technical support in the modifications to the 0.3-Meter Transonic Cryogenic Tunnel.

Amanda K. Fitzgerald, secretarial co-op, RIAD, for performance above and beyond the normal expectations of her regular assignment.

Douglas W. Grizzle, engineering technician, FD, for exceptional fabrication performance on the SAB-08 model.

Vincent B. Cruz, electronics technician, FD, for superior performance and significant technical contributions in microelectronic fabrication.

Ronald R. Long Jr., engineering technician apprentice, OSD, for exceptional technical and operational support to the High-Speed Research Project.

Richard F. Mason, lead technician, FD, for outstanding support of the Advanced Control Test Facility.

Sam Pollard, engineering technician, FD, for exceptional performance during fabrication of the Plunge and Pitch Apparatus (PAPA) Wing.

R. Wayne Barfoot, quality assurance specialist, FD, for excellence in the performance of Quality Assurance Assignments on the LITE Project.

Daniel J. Jobson, aerospace technologist, ISD, for improving current insight into the contour/texture discrimination problem in spatial vision.

Donna L. McIntosh, secretarial co-op, FED, for outstanding individual contributions to the division in implementing the FED reorganization.

Anne E. Overbay, secretary, FED, for outstanding individual contributions to the division office in achieving a smooth transition to the new organization.

Jeremy Becker-Weits, attorney advisor, Office of Chief Counsel, for exemplary performance as lead trial counsel during the ASRATSS procurement protest to the GSBCA and the subsequent negotiations with GSA.

Jon Thompson, aerospace technologist, FEngD, for the successful completion of the 8-Foot High-Temperature Tunnel Phase IV/V data analysis activity and presenting SES's efforts in a highly professional and complete manner.

Harriet M. Berkley, personnel clerk, HRMD, for positive attitude and exceptional effort in support of the implementation of NPPS.

Karen A. Ault, personnel clerk, HRMD, for ingenuity, initiative and creativity in graphics preparation and for work with the Langley Disabled Persons Advisory Committee.

Janet M. McKenzie, employee development specialist, HRMD, for exemplary support to the Center's Performance Management Program and processing of performance-based adverse action.

Econyes F. Lowe, personnel assistant, HRMD, for positive attitude and exceptional effort in support of implementation of NPPS.

Lisa J. Klaugh, personnel clerk, HRMD, for positive attitude and exceptional effort in support of implementation of NPPS.

Simone S. Foretich, lead personnel assistant, HRMD, for positive attitude and exceptional effort in support of the implementation of NPPS.

Marilyn C. Outlaw, personnel clerk, HRMD, for positive attitude and exceptional effort in support of implementation of NPPS.

Sherry L. Sullivan, administrative officer, HRMD, for invaluable contributions in successfully effecting a major reorganization in RIAD.

Carlie E. Johanson, secretary, HRMD, for positive attitude and exceptional effort in providing secretarial services for the Placement and Position Management Branch.

PINATUBO:

Continued from Page 1

cooler summers in eastern Europe and the northeastern United States are probable until next year. Also, the unusually warm winter of 1991-92 in eastern Europe coincided with the pattern following earlier eruptions. Groisman postulates that climates moderated following volcanic eruptions are due to changes in jet stream patterns.

Pinatubo's eruption transported huge quantities of sulfur into the stratosphere, amounts higher than any other disastrous eruption this century. When the products of large volcanic eruptions, especially sulfur-containing gases, enter the stratosphere, the heat balance of the Earth is significantly disturbed for one to three years. This can usually result in significant global climatic changes.

However, it is extremely difficult to estimate the effects of these changes regionally.

"This is where our findings are different from Groisman," said Dr. William Grant, senior research scientist, Atmospheric Science Division (ASD). "We know that climates are affected, but haven't pinpointed continents, as Groisman has. Also, my main interest in the volcano lies in studying whether its aerosols cause ozone depletion. Climatic changes are not a main thrust."

Groisman takes an empirical/historical approach to understand how and where climate is affected following major volcanic eruptions.

"At Langley we quantify the things that change the weather by measuring materials in the atmosphere. Dr. Groisman quantifies that the weather has changed by studying past deviations," said Pat Minnis, senior research scientist, ASD.

El Nino's influence

In spite of predictions, the new weather patterns could be altered by an unusual El Nino, the warming of the tropical Pacific that occurs every three to seven years. It could disturb the forecast of cooler summers over eastern Europe and the northeastern United States.

For some regions, that change would not matter. However, for some it would sharply reduce the chance of drought, and for others decrease vegetation periods. During a warmer winter, the absence of snow cover could harm overwintering crops in central Russia and part of the Ukraine.

Measurements of global temperature change caused by a volcano were first taken in 1880, said Groisman.

"Since the discovery of the stratospheric aerosol layer, the total effect of volcanic eruptions on surface air temperature has been thoroughly investigated," he said. "Global cooling of surface air occurs for a few years after an explosive eruption as a result of sulfur-acid stratospheric aerosols."

Langley scientists have analyzed direct measurements from satellites of the radiation budget, along with the optical properties of aerosols to quantify volcanic forcing of the Earth's climate. They first measured climatic changes resulting from volcanic aerosols after the 1980 eruption of Mount St. Helens.

Groisman has studied the climatic effects of volcanic eruptions since the mid-1980s. He is a senior research scientist at the Laboratory for Contemporary Climatic and Water Resources Change Research, State Hydrological Institute, in St. Petersburg, Russia, and is a visiting scientist at the National Environmental Satellite, Data and Information Service in Ashville, N.C. The service is part of the National Oceanographic and Atmospheric Administration.

Talk Set On Soviet Space Program

The Hampton Roads section of Women in Aerospace is sponsoring a lecture entitled "The Soviet Race to the Moon—A Historical Perspective on the Soviet Space Program." The lecture will be given by Peter Gorin on Thursday, February 25, from 2 to 3 p.m. in the H.J.E. Reid Conference Center.

Gorin is a former political analyst and space program historian from the Soviet Union. He is now a consultant and volunteer conducting research in the history of space technology at the National Air and Space Museum's Space History Department. All employees, contractors and retirees are invited. For more information, contact Gaudy Bezos-O'Connor at ext. 45083.

Happenings

LOST: ECN G73623 Krohn-Hite model 7500 wide-band power amplifier, 75 watts, rack mountable, tan-colored front panel, blue-green chassis. If you have seen this instrument, please contact T.S. Daniels at ext. 44659.

LOT FOR SALE: At Wintergreen, a .37-acre corner wooded lot on the mountain, one block from a pool. Includes WPI. Priced below tax-assessed value at $34,500. Pictures available. Call 220-1129 after 7 p.m.

PARADISE FOR RENT: Sandy beach, beautiful shells abound on Florida's Sanibel Island. Elegant Gulf-front condo, one bedroom, living room, full kitchen, tennis pool, cable, VCR, on-site management, $540 per week from May through November. Call 565-1849 5 to 8 p.m.

SCARF FOUND: Hanging on pole outside the cafeteria. Black and white. Call Martha Jones, ext. 42580.

LAA SOCIAL: An LAA social will be held February 26 from 4 to 8 p.m. at the H.J.E. Reid Conference Center. Music will be provided by disk jockey Warren Briggs. Cover charge is $1.

ROOMMATE NEEDED: Need female roommate to share expenses in a three-bedroom apartment close to NASA. Private bathroom. Call 865-0592.

FOR SALE: Tyco HO 4- by 8-foot train board with track, trestle bridge, switches, signs, two locomotives and six freight cars, $65 negotiable. Call 851-0552.

LOTS FOR SALE: Looking for neighbors to divide parcel in a custom residential neighborhood in the Tabb area of York County. For information, call 838-9506.

RINGS FOUND: Two silver rings were found in Building 1229 before Christmas. For more information, call Kendall at ext. 46488.

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A., 723-5227.

TOWNHOUSE FOR SALE: By owner, Poquoson, 2,000 square feet, 3 bedrooms, 2½ baths, eat-in kitchen, bay windows, hardwood floors on first floor, fireplace, 3 skylights, end unit, with windows overlooking large side and rear yard. $97,000. Call 868-7422.

FREE AEROBICS: Get energized with NASA aerobics! Open to all employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Monday, Wednesday and Friday from 6:15 to 7:15 a.m. Lunchtime Energizer is held from 11 to 11:45 a.m. For more information, call ext. 46387.

PROFESSIONAL PROGRAM: The Federal Women's Program Committee will sponsor a briefing on the Certified Professional Program on Tuesday, March 9, from 10 to 11 a.m., in the H.J.E. Reid Conference Center. Julie Vaisvil, of the Hampton Roads Police Academy, will speak. Langley and contract employees are invited to attend. The point of contact is Patsy Campbell, ext. 43291.

LITE-LIFE: Lighten up 1993 with Lite-Life. Designed for everyone, Lite-Life classes are offered by the Langley Fitness Center to help individuals lose weight and live a healthier lifestyle by learning how to eat smart and make exercise a part of life. This eight-week class meets weekly for lunch-and-learn seminars from noon to 1 p.m. Thursdays. Sessions will cover nutrition, exercise and weight loss. The staff will assist each participant with individual assessment and establishment of goals and schedules. There are no restrictions for enrollment. Call ext. 46387 for details and an application.

ANNIVERSARY VIDEO: The 75th Anniversary video "Pictures in the Mind" will be replayed over NASA Select TV on February 19 at 12:30 p.m.

TOASTMASTERS: The Langley Toastmasters Club meets February 24, 11:30 a.m. to 1 p.m, Building 1222.

CONDO FOR RENT: Hampton Club condo, one bedroom, new carpet and paint, 10 minutes to NASA, washer/dryer and all appliances convey, $410 per month and deposit. Call 868-9130.

TELA TAX SERVICE: Member, National Association of Tax Practitioners. Electronic filing. Small-business bookkeeping services. By appointment. Call 874-3121.

RELIEVE STRESS: Did you know you can relieve stress right at your desk? With just a few tips, you can improve your posture, reduce muscle strains and stress by helping your body feel more relaxed. To find out how, come to the brown-bag seminar at noon on February 18 in the cafeteria executive dining room.

OSHKOSH FORUMS: NASA will sponsor an exhibit at the annual convention of the Experimental Aircraft Association in Oshkosh, Wisc. The NASA exhibit will include one-hour presentations on a variety of topics. Anyone interested in presenting a forum topic should contact Harry Verstynen at ext. 43875 by February 19.

NEW BENCH CIRCUIT TRAINING CLASSES: Get the benefit of fat-burning (bench and low-impact), lower body toning, upper body weighted workout and abdominals in one session. Benches and free-weights provided. Free body composition analysis will be given before class. Classes are Tuesdays and Thursdays from 5 to 6 p.m. and Saturdays from 9:30 to 10:30 a.m. in the LAA gym. Classes are open to employees, contractors and their families. Call ext. 42295 for more information.

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News Researcher

Photo by Fred Jones

An exhibit showing the "cool suit" developed by Langley has been put on display at the Virginia Air and Space Center. Visitors can get a feel for the suit by sticking their hand into the display. Derived from the suits worn by astronauts, the cool suits can also be used by race car drivers during the blistering heat of competition or by people with medical problems. The suit's non-NASA applications were made possible through the Technology Utilization and Applications Office.

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 4 ❖ February 26, 1993

Colloquium Speaker To Discuss Luck And The Scientific Process

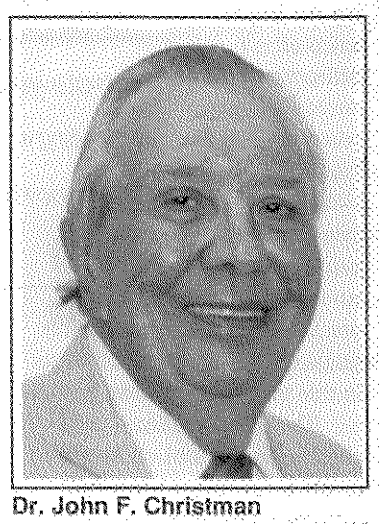
The elements of luck involved in great scientific discoveries will be the topic of the next Colloquium Series lecture at 2 p.m. Monday, March 8, in the H.J.E. Reid Conference Center.

Employees, contractors and retirees are encouraged to attend the colloquium, which is free and does not require a reservation.

Dr. John F. Christman, who recently retired from Loyola University in New Orleans, will discuss significant events in the careers of Alfred B. Nobel and Louis Pasteur. He also will examine the discovery of teflon.

The major thrust of the discussion will be the importance of awareness on the part of the scientist during research. Christman will identify the particular serendipity that brought fame to many discoverers.

According to Christman, the great discoveries of science must contain at least one element that is unplanned and unanticipated. Sometimes the scientist is unaware of this element even after it happens.



Dr. John F. Christman

But since scientific discoveries are published after the whole discovery has been accomplished, all too often the "luck" is not included in the publication.

Christman's research and more than 40 publications have included biochemistry and the history and philosophy of science. His biochemistry work focused on the mode of action of vitamins and the purification of biologically important materials.

Between 1974 and 1990, he gave more than 100 American Chemical Society sponsored tour lectures on the subject of the pathways of discovery in science.

Christman recently retired as director of research and graduate studies at Loyola. He holds a bachelor of science degree in chemistry from the University of Notre Dame, a master of arts degree from Indiana University and a master of science degree and a doctorate from the University of Tennessee.

He has been as academician and professor since 1948 at the University of Tennessee, Louisiana State University, Oak Ridge National Laboratories, the National Science Foundation and Loyola.

Christman will present the lecture later the same day at 7:30 p.m. at the Virginia Air and Space Center in Hampton as part of the Sigma Series of free public lectures.

Quality Action Team Reports On Progress At Conference

The Procurement, Receipt and Inspection and Cost Enhancement (PRINCE) Quality Action Team has delivered its first annual status report.

The team is making significant progress in streamlining internal ordering, receiving and inspection of acquisition procedures, Ron Krodel, chief of the Management Support Division (MSD), said at the February 3 meeting at the Hampton Holiday Inn Conference Center.

"It was beneficial for the team members who did attend. I hope that we can send more members in the future," he said.

Jerry Hoerger and Bruce Adderholdt, of MSD, attended the conference with Krodel.

The conference was sponsored by the Virginia Peninsula Total Quality Institute, a cooperative venture of Thomas Nelson Community College and the Virginia Peninsula Chamber of Commerce. More than 200 people from Peninsula industry, government and educational institutions attended.

Irwin Schauer, Langley's quality and productivity officer, moderated a session at which the 1st Medical Group and 1st Fighter Wing Teams from Langley Air Force Base reported on their successes in the continuous improvement process.

Researcher Moves

The *Researcher News* has moved to Building 1153, 1 W. Reid St., Mail Stop 146. Please address all correspondence to this new address. The phone number remains the same, ext. 46126. The fax number is new: ext. 47732.

Photo by Carol Petrachenko

Abingdon Elementary students observe a magnet floating over a superconductor. They also studied the properties of liquid nitrogen through experiments such as freezing rubber bands.

Engineers Week Puts Langley In The Classroom

BY CAROL PETRACHENKO

"I hope to have your paperwork go across my desk someday," said Acting Director Dr. Lee Beach to the classroom of fifth grade students at Kraft Elementary School. Beach's Engineers Week presentation centered on the types of careers available at NASA and the decisions a student in grade five would have to make now to keep his or her options open for such a career.

"It's this age, nine and ten years old, when some of the major decisions affecting a person's career are made," said Beach. "This is when students decide whether or not to emphasize mathematics and the sciences in their course choices in middle school. Without math and science, students may not be able to make their dreams come true."

After a presentation which included a career video, Beach was delighted to hear the types of questions posed by the class, which also included Young Astronaut Club members.

"How do you expect to get the X-30 in space if it has an air-intake engine?"

"How many years in college does it take to get a Ph.D.?"

"How much gas does the shuttle carry?"

Before Beach left, he gave students a homework assignment and a kit to make a paper NASP model.

"In all, over 250 Langley volunteers spoke to more than 800 classes in 145 schools in 12 districts," said Marny Skora, Engineers Week project manager. "The main message," she said, "is that careers as scientists, engineers, technicians and support personnel at NASA begin with strong backgrounds in math and science."

> *"My slogan is to 'Think Big.' You can be anything you want to be."*
>
> —Clyde Medley

Although the main message was the same, each of the volunteers presented their message differently. Beach, who has seen the paperwork for so many employees in his 23 years at NASA, appropriately spoke on the education necessary for a NASA career.

On the other hand, the highlight of the presentation by Nancy Kruse, an electronics technician who works with cryosensors and superconductivity, was a liquid nitrogen hands-on demonstration.

Clyde Medley went "home" to the elementary school he had once attended in the heart of downtown Norfolk.

Tidewater Park Elementary School remains locked until a buzzer is sounded for the school secretary to open the door. All visitors are badged and must sign in and out. This doesn't faze Medley. He had instant rapport with the students when he told them which apartment buildings had been his home as a child.

A number of the students live there now. He spoke their

See **SCIENCE**, *on* **Page 5**

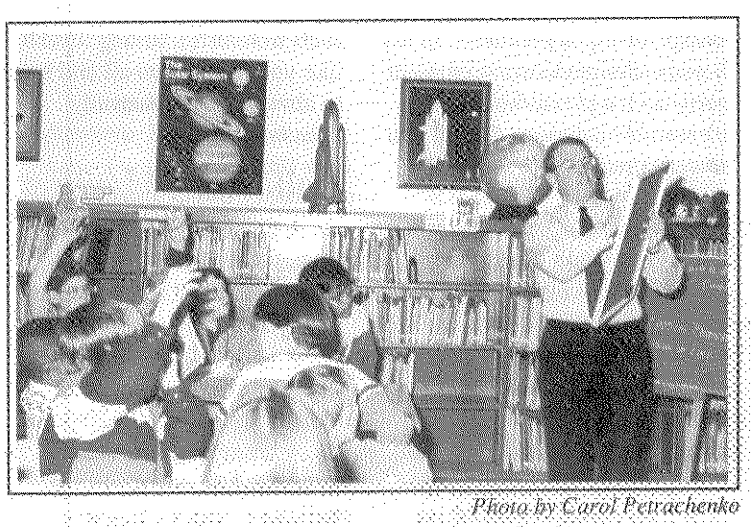


Photo by Carol Petrachenko

Dr. H. Lee Beach Jr. tells kids about math and science.

News Briefs

AROUND THE AGENCY

NASA ACHIEVES LASER SPACE COMMUNICATIONS MILESTONE — A major milestone in space communications was achieved recently when NASA scientists successfully transmitted laser signals to the Galileo spacecraft at a distance of 1.3 million miles. Laser beams were simultaneously transmitted to Galileo from a 24-inch telescope at Table Mountain Observatory in California and a 60-inch telescope at the U.S. Air Force Phillips Laboratory's Starfire Optical Range near Albuquerque, N.M. "This experiment is part of a program to show that future deep space missions can use laser beams to send back to Earth larger volumes of space-acquired data than is currently possible using radio signals," said Dr. James Lesh, principal investigator at the Jet Propulsion Laboratory in California.

HUBBLE UNCOVERS PLANETARY EVIDENCE — NASA's Hubble Space Telescope has uncovered the strongest evidence yet that many stars may form planetary systems. Dr. C. Robert O'Dell of Rice University, Houston, and colleagues have used Hubble to discover extended disks of dust around 15 newly formed starts in the Orion Nebula starbirth region 1,500 light years away. Such disks are a prerequisite for the formation of solar systems like Earth's, astronomers say. Hubble's detailed images confirm more than a century of speculation, conjecture and theory about the genesis of a solar system.

SHUTTLE CREW ASSIGNMENTS ANNOUNCED — Veteran NASA astronauts Richard O. Covey and Kenneth Bowersox and European Space Agency (ESA) astronaut Claude Nicollier have been named to the crew for STS-61, the Hubble Space Telescope (HST) servicing mission. Covey will be mission commander and Bowersox the pilot. Nicollier will be a mission specialist. The three join other crew members previously named: Story Musgrave, payload commander; and mission specialists Tom Akers, Jeffrey A. Hoffman and Kathryn D. Thornton.

Harris Receives 1993 Alvah K. Borman Award

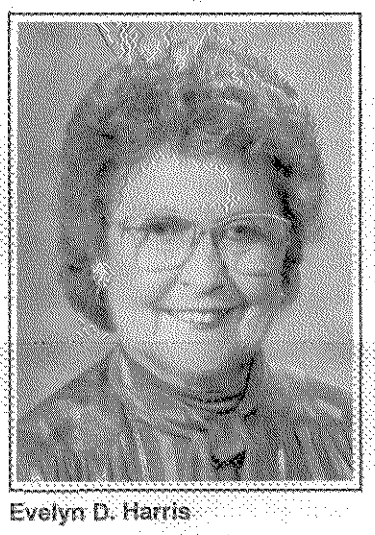
Evelyn D. Harris, cooperative education coordinator in the Employee Development Branch, has received the 1993 Alvah K. Borman Award from the Cooperative Education Division (CED) of the American Society for Engineering Education (ASEE).

The award is presented yearly to CED members, past or present, who have made sustained, honorable and meritorious contributions to the promotion of the philosophy and practice of cooperative education in the field of engineering and engineering technology.

The award was presented January 28 at the College-Industry Education Conference in Lake Buena Vista, Fla.

Harris has been manager of Langley's Engineering Cooperative Education Program since 1978. Under her direction, it was expanded dramatically in size and quality.

Harris, who began her NASA career at Langley in 1960, has been recognized by many other organizations during her 33 years of service.



Evelyn D. Harris

Bigelow Lends Skills To FAA

Dr. Catherine Bigelow, a senior researcher in fracture mechanics, has been detailed on a one-year assignment to the Federal Aviation Administration's Atlantic City Technical Center under a cooperative agreement for the Aging Aircraft Program.

She will work with FAA researchers to develop methods for calculating the stress-intensity factors for cracks extending from countersunk rivets in aircraft fuselage structures.

The work addresses development of structural fatigue prediction methodologies necessary to extend the life of commercial aircraft beyond their original design economic life goals.

LETTERS

The following letters have been submitted by Langley employees, contractors or retirees:

Don Harvey writes: I would like to express my appreciation to my friends who made my retirement party such a pleasurable and memorable occasion. Thank you so very much.

Cassandra Dee Stevens writes: During the years I have been absent from work, I have not had much of an opportunity to express personal thanks to all the people that have stood beside me. Thank you! It still doesn't seem nearly enough for all the caring people who have asked how I am doing, where I have been and if I'll be all right. I just want to let you know that I am doing much better because I have you all here in my heart. I have not gone too far from you all, and I'm going to be all right because I am blessed to have such wonderful, loving friends like you. I love you all and hope to always have you as my friends.

Volleyball Meeting

A general meeting of the Volleyball Club will be held Monday, March 8, at 7 p.m. in the gym.

A vote will be taken on constitutional amendments.

Clinics begin at 7:30 p.m.

A schedule will posted in the gym. Stop by and check the bulletin board for league information.

AIAA Presents Best Presentation Award

Two Langley employees have won the Best Presentation Award for a paper.

Honored were Michael G. Gilbert, assistant head, Spacecraft Dynamics Branch, and Michael A. Scott, aerospace technologist, Acoustics and Anemometry Instrumentation Section.

The paper, "Real-Time Simulation of Shuttle RMS Active Damping Augmentation," was presented to the American Institute of Aeronautics and Astronautics (AIAA) 1992 Guidance, Navigation and Control Conference in Hilton Head, S.C., in August.

Parenting Seminar

The psychological and medical aspects of parenting will be the topic of the next health seminar at the H.J.E Reid Conference Center on Wednesday, March 10, from 2 to 3 p.m.

Pat Mesazaros, a counselor at Perspectives Employee Assistance, will speak. She has a master's degree in social work from Ohio State University and has been in the counseling field since she graduated in 1976.

The seminar is open to all employees, contractors and their families. Civil servants should charge time to A-1619.

Conservation Club To Sponsor Earth Day Student Art Contest

During the week of April 22, the Langley Activities Association Conservation Club is participating in Earth Day 1993, an international event recognizing the importance of dedicating oneself to the preservation of the planet. As a part of the event, the club is inviting students from pre-kindergarten through 12th grade to contribute their talents in this year's art contest.

Illustrate your slogan with a drawing that artfully portrays its meaning.

The Conservation Club is challenging school children to create a new slogan that will influence kids their age to save the Earth or be more conscious of the need to protect natural resources.

Students are being asked to illustrate the slogan with a drawing that artfully portrays its meaning, including an explanation of the slogan and drawing in 50 words or less. The slogan and drawing should pertain to conserving, protecting and/or restoring the environment.

The contest is sponsored by the Conservation Club, the Virginia Air and Space Center and the NASA Langley Gift Shop. Each entry must be no smaller than 14 inches by 18 inches and no larger than 24 inches by 36 inches. Entries must have the contestant's full name, address, age and grade on the back of the drawing, along with the name and mail stop of their NASA contacts and must be received by April 9. Entries not meeting the above rules will be disqualified. Limit one entry per person. Winners will be notified April 20. The work must be done by the contestant; however, pre-kindergarten to second-graders may dictate their written descriptions to an adult.

The contest is not restricted to dependents of NASA employees and contractors. There are four entry categories: grades pre-kindergarten to two, grades three to five, grades six to nine and grades 10 to 12.

Winners will be displayed at Langley the week of April 22 and at the Virginia Air and Space Center the next week.

Prize levels in each category:

First - $100 savings bond, a NASA t-shirt and four complimentary tickets to the Virginia Air and Space Center.

Second - $50 savings bond and a NASA t-shirt.

Third - a NASA t-shirt and patch.

Send entries to Earth Day Art Contest, Mail Stop 169, or deliver to Building 1268A, Room 1148. For more information, call ext. 46447 or 46644.

IN MEMORIAM

Catherine H. Herstrom died Feb. 12 following an automobile accident.

She began her NASA career April 1980 in the Structural Mechanics Division (SMD). She most recently designed the software system for the Automated Structure Assembly Laboratory (ASAL) and developed software for Precision Segmented Reflector research.

Herstrom was awarded four NASA Group Achievement and Langley Group Accomplishment awards for team activities.

She was recognized individually with a Superior Accomplishment Award for co-authoring the best paper published by the Structural Mechanics Division in 1990 and a quality step increase for outstanding performance in 1992. She had a bachelor of arts degree in mathematics from Christopher Newport University and master's in computer science from The College of William and Mary.

"Cathy was an extremely capable person and an extraordinarily caring friend," said Harold Bush, head of the Spacecraft Structures Branch. "Those qualities for which Cathy will be missed are also the same qualities for which she will be remembered."

Catherine H. Herstrom

News 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 ..... Marny Skora

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

Photojournalist ..... Carol Petrachenko, 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.

Update On Legislative Affairs In Virginia And Nationally

The following legislative update is provided by the Federal Women's Program:

Langley Research Center
FWP
Federal Women's Program

Family and medical leave bill. Signed by President Clinton on Friday, February 5, it becomes effective in six months. Key elements of the bill include:

- Up to 12 weeks unpaid leave to care for newborn, adopted child or critically ill family member.
- Only workers who have been employed for at least one year or 1,250 hours per year are covered.
- Cannot be a "critical" worker in top 10 percent of company pay scale.

The bill is expected to cover five percent of companies and 40 percent of the workforce.

Voter registration. A bill on the House floor known as the "motor voter" bill would provide voter registration forms at offices that provide public assistance such as unemployment and welfare checks, and at vehicle registration and driver's license offices.

The measure also would require states to provide for uniform mail-in registration.

Information on the following may be obtained from the Technical Library. Call Gretchen Gottlich at ext. 42303:

- A full listing of House and Senate members.
- Legislative fact sheets on the Family and Medical Leave Act, including the voting record; federal employees' health benefits program reform; Hatch Act reform, including sample letter; and an order form for legislative fact sheets on a variety of topics.

In the Virginia Assembly:

Child care reform. Bill No. 776, introduced by Sen. Stanley C. Walker, D-Norfolk, was approved by the Senate and had advanced to the House Committee of General Laws as of February 12. The bill would overhaul Virginia's child-care regulations but exempt church-run daycare centers from state health and safety standards.

Parental school choice. Bill No. 1993, sponsored by Del. Phil Hamilton, R-Newport News, has passed the Senate and was in the Senate Education and Health Committee.

One Minute of Fame

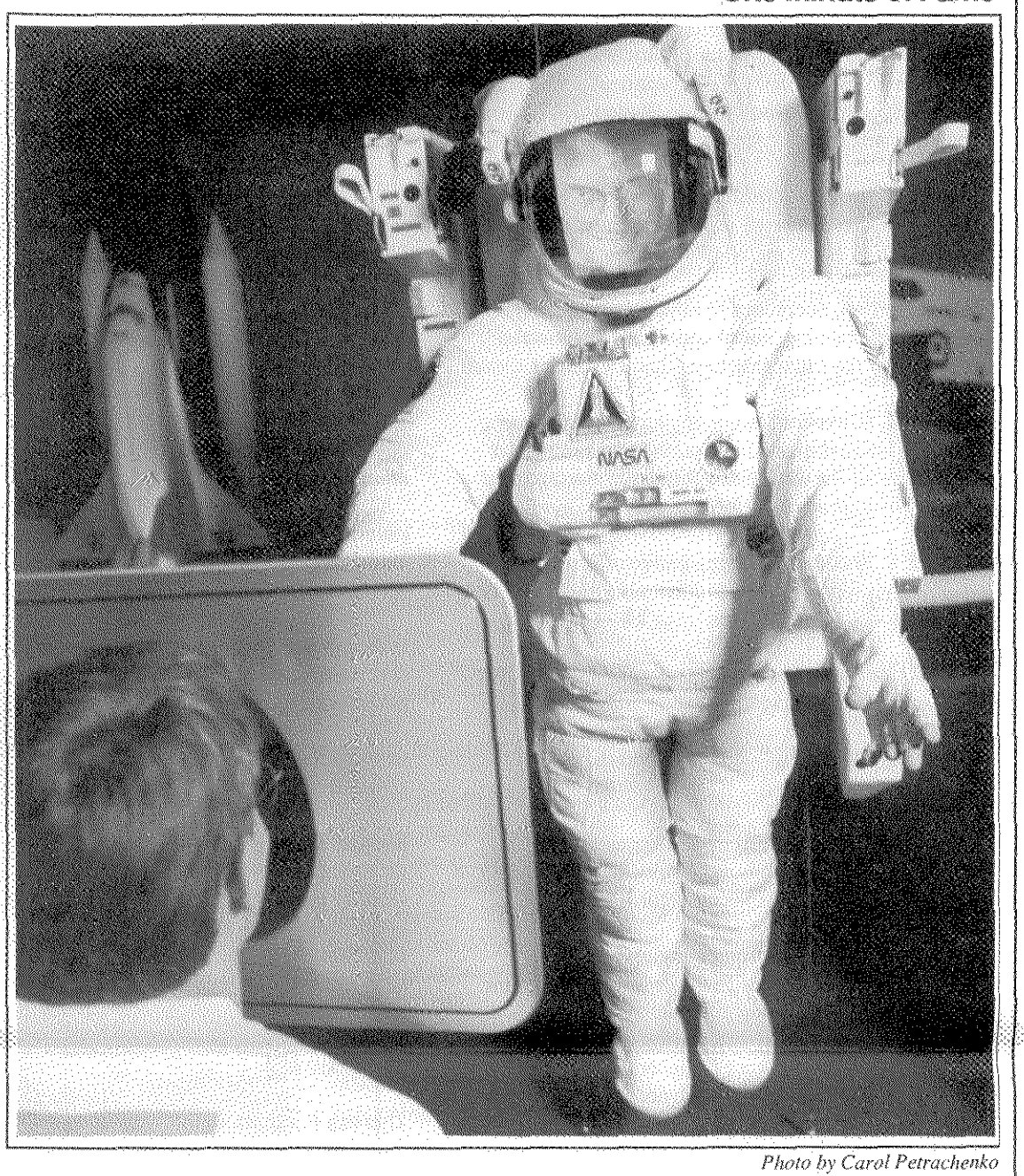
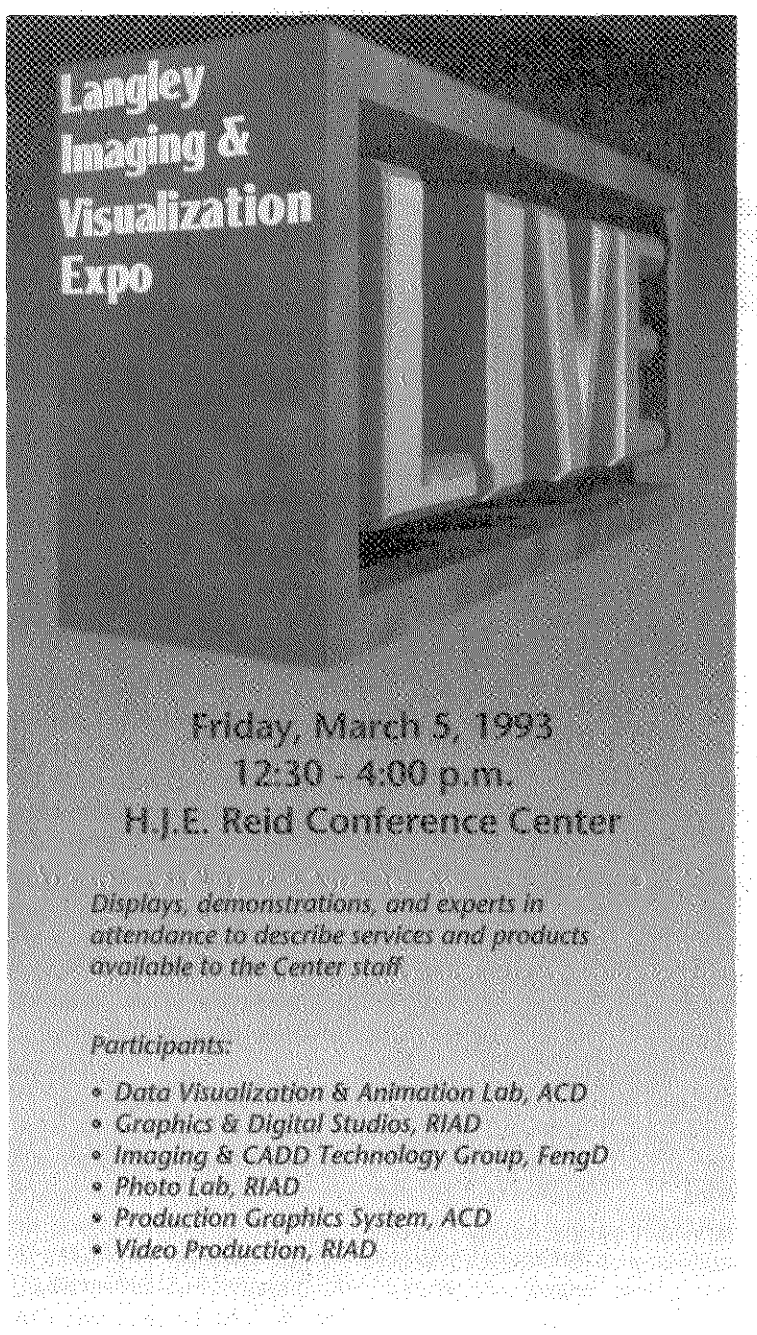


Photo by Carol Petrachenko

A visitor to the Virginia Air and Space Center becomes an astronaut while trying out the Astronaut-for-a-Minute exhibit. The exhibit works by projecting a visitor's face into the astronaut suit.



Family Leave A Success With Center Employees

Program Allows Spending Time With Family

BY DONNA G. ROPER

When it comes to helping a friend or co-worker in need, Langley employees are extremely generous. Last year alone, they donated almost 9,000 hours of their annual leave to help co-workers experiencing personal or family emergencies.

Langley employees have donated leave through the Voluntary Leave Transfer Program since 1988, when Congress authorized the five-year program.

Langley was one of the first centers to implement the program, and every year more employees participate. According to Linda Park, the program manager, the amount of donated leave has more than doubled since 1988.

"In fact, 1992 was the program's most successful leave year," said Park. "Employees donated enough leave to meet all of the needs of the leave recipients."

The Voluntary Leave Transfer Program allows employees and their families to handle medical emergencies without experiencing a substantial loss of income due to the unavailability of paid leave.

> *"1992 was the program's most successful leave year. Employees donated enough leave to meet all of the needs of the leave recipients."*
>
> —Linda Park

Without the program, many of these employees could not afford to be with family members when they need to be.

To qualify as a leave recipient, employees must submit a written request with medical documentation to the Employee Relations Office.

In addition, employees must have used all of their earned leave and expect to be out another 80 hours.

The Employee Relations Office usually approves applications in two or three days. Once approved, the employees can begin receiving donated leave immediately.

To donate leave, employees simply fill out Form 630-A, which specifies the number of hours to be transferred and the leave recipient.

Employees cannot donate leave to their immediate supervisor or donate more than half of the total annual leave that they accrue during the year.

They also cannot donate more leave than there are hours left in the leave year. For instance, on the last day of the leave year, employees can only donate eight hours.

Although donations come in throughout the year, many employees donate use-or-lose leave in November and December.

At this time, leave recipients who have a negative leave balance because they did not receive enough donations during the year may be compensated for lost time.

Unless Congress extends the program, it will be terminated October 31, 1993. However, those involved with the program are optimistic.

"I fully anticipate that the program will continue in some form," said Park. "It's just too popular of a program not to, especially with the current emphasis on family."

Employee Awards

Tracy W. Stevens, stay-in-school student, Instrument Research Division (IRD), for exceptional performance in the transition of the Nonintrusive Diagnostics Branch to computerized record systems.

William H. Prosser, electronics engineer, IRD, for significant advancements and improvements in the application of AE to materials testing.

Bob G. Batten, operations research analyst, IRD, for outstanding planning, coordination and direction in establishing the Microstructure Characterization Group.

William C. Graveline, senior engineering technician, IRD, for leadership and innovation in designing and implementing the universal information management system for contractor-performed work.

Garnett L. Knuteson, administrative officer, IRD, for exemplary support to the administrative management of the division.

Billy T. Upchurch, senior research scientist, IRD, for outstanding scientific contributions and technical leadership in the advancement of measurement technology for both ground-based and flight instrumentation systems.

George M. Wood Jr., electronics engineer, IRD, for outstanding contributions as co-principal investigator in preparing the GPPM experiment for flight.

Mark E. Froggatt, electronics engineer, IRD, for outstanding contributions to the development of new pulsed-phase locked-loop systems.

Min Namkung, electronics engineer, IRD, for outstanding leadership in the advancement of magnetic NDE techniques for NASA.

Natalie H. Shrader, secretary (stenography), IRD, for outstanding performance in the Acoustics and Mechanical Measurements Branch.

Marvin B. Dow, materials research engineer, Materials Division (MD), for outstanding performance in developing advanced composite materials for aircraft primary structures and establishing a new program of research to address important concerns related to quality assurance.

S. Dawn Amole, secretary, MD, for exemplary performance in preparing viewgraph charts for numerous briefings and program reviews for NASA Headquarters while maintaining a high level of productivity in everyday branch secretarial duties.

James F. Dezern, facility safety head, MD, for the development and implementation of a strategy for prudent chemical maintenance.

Robert G. Bryant, chemical engineer, MD, for the development of a novel class of high performance polymers which exhibit considerable potential as membranes for chemical separations.

Wallace L. Vaughn, materials research engineer, MD, for sustained outstanding performance in the development and evaluation of oxidation-resistant carbon-carbon composite materials.

Jeffrey A. Hinkley, aerospace technologist, MD, for the development of a computational materials program for polymer synthesis.

Diane M. Stoakley, aerospace technologist, MD, for the development of a novel class of low coefficient of thermal expansion material.

Charlie B. Harris Jr., traffic management specialist, Management Support Division (MSD), for significant improvements in transportation systems.

Arthur S. Johnson, supervisory inventory management specialist, MSD, for leadership in the development and implementation of automated supply management systems.

Ruth A. Koren, lead mail and file clerk, MSD, for sustained superior accomplishments in providing uninterrupted correspondence support to the Center.

Judy W. Lowe, supply technician, MSD, for exemplary supply support to the Center.

Fabiola C. Martin, supervisory inventory management specialist, MSD, for significant achievement in developing an accountability system for controlling wind tunnel models.

Helen I. Mason, management assistant, MSD, for exemplary services to the Directives and Forms Management Office.

Deborah T. Powell, industrial property management specialist, MSD, for efficient execution of contractor property transfers and reconciliation of records.

Rhonda S. Smith, management analyst, MSD, for efficient execution of contractor property transfers.

Michael C. Rammel, physical security specialist, MSD, for exemplary performance and support to the Center's security program.

Suzanne N. Barnes, secretary, MSD, for exemplary support to the Center's security program.

Susan C. Tillman, supply technician, MSD, for exemplary supply support to the Center.

Theresa F. Elliott, supply systems analyst, MSD, for significant achievement in exchange and sale of government property.

Meghan E. Woodcock, student aid, Office of Public Services (OPS), for exceptional performance and dedication in support of Langley's 75th Anniversary Activities and Electronic Computer Services Network.

Jenny M. Branch, student aid, OPS, for exceptional performance and dedication in support of LaRC's 75th Anniversary Activities and Electronic Computer Services Network.

Catharine G. Schauer, public affairs specialist, OPS, for outstanding management of numerous activities throughout 1992 to celebrate the 75th Anniversary of NASA Langley Research Center.

Mary Margaret Skora, public affairs specialist, Office of Public Affairs (OPA), for outstanding service as speech writer in support of Langley's 75th Anniversary observances.

Lisa E. Jones, aerospace engineer, Structural Dynamics Division, for exceptional performance and dedication in support of Langley's pre-college and college programs.

Marchelle D. Canright, education and information specialist, OPS, for outstanding management of the transition of NASA Langley's Visitor Center to the Virginia Air and Space Center.

Jerry A. Williams, engineering technician, Operations Support Division (OSD), for high-quality craftsmanship skills and exceptional performance in support of the Airborne U.V. D.I.A.L. System for the TRACE-A Program.

Vernie W. Boyd, engineering technician, OSD, for excellent technical support to the recently completed extensive inspection and repairs to the ALDF High "G" Carriage and its systems.

Ricky L. Martin, engineering technician, OSD, for excellent technical support to the recently completed extensive inspection and repairs to the ALDF High "G" Carriage and its systems.

Jaye A. Moen, engineering technician, OSD, for developing innovative techniques for bonding PZT actuators to adaptive noise control test structures.

Harold C. Neal, engineering technician, OSD, for high quality technical support provided to the High Frequency Jet Noise Test.

George F. Palko III, engineering technician, OSD, for exceptional technical support to the installation and modifications of the Vertical Drop Machine.

Robert F. Graham, supervisory engineering technician, OSD, for leadership in the performance of the duties of Facility Safety Head and for contributions in furtherance of the goals and objectives of the Langley Safety Program.

Michael T. Harrell, engineering technician, OSD, for exceptional initiative designing and installing actuator bearing support in Building 1236.

Ronald S. Geouge, engineering technician, OSD, for exceptional support for new nozzle installation in Building 1251A continuous flow.

James K. Geiger, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Thomas A. Gabany, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Harry L. Belvin, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Alton Barnes, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Chad E. Rice, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Kelly S. Tarkenton, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Lanier Westbrook, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Joseph W. Moore, engineering technician, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Charles A. Poupard, lead engineering tech, OSD, for extraordinary contributions to the team effort in the 16-Foot Transonic Tunnel for blade removal and installation.

Gloria S. Evans, secretary, OSD, for excellent administrative support provided as secretary to Source Evaluation Committees.

Robert E. Darby, engineering technician, OSD, for exceptional support in the formulation of a research model storage information and location system to allow

Shih Tzu Can't Compete With 'Floating' Magnet, Liquid Nitrogen

Photo by Carol Petrachenko

Nancy Kruse shows a pitcher of liquid nitrogen to students at Abingdon Elementary School.

BY CAROL PETRACHENKO

At Abingdon Elementary School in Gloucester, Nancy Kruse proved that a good science demonstration can enthrall a class of fifth-graders despite an enticing distraction.

Kruse's National Engineers Week presentation was sailing along smoothly. In her Southern drawl, she talked about how she'd started as a secretary in the model shop and then went for apprenticeship training through Thomas Nelson Community College to become an electronics technician.

> *"The favorite part of my job is going out and talking with kids. It's the hands-on demonstrations that keep the students involved."*
>
> —Nancy Kruse

She asked questions that involved the students:

"We are walking, talking sensors," she said. "If you walk in a room that's just been painted, what do you notice?"

The students volunteered sights and smells.

"But an airplane can't tell us how it feels. That's why we make sensors—to tell us what's happening with an airplane model."

"The favorite part of my job," says Kruse, "is going out and talking with kids. It's the hands-on demonstrations that keep the students involved."

She asked a student volunteer to use a blow-dryer-like instrument to heat a sensor attached to a stealth bomber model. The students raised in their seats to see the temperature change on the thermocouple connected to the sensor.

All was proceeding splendidly. And then, a man and woman walked into the classroom carrying a dog-transporter and the cutest little pink-bowed Shih Tzu. The couple was not lost. They were not walking through. *They were not leaving.* They were early for the next topic—a 4-H project. They parked themselves and the red-leashed dog, which began sniffing students, at the back of the classroom.

Twenty-three fifth graders twisted their necks to watch the dog and began whispering among themselves.

How was this soft-spoken, albeit determined, young woman going to recapture their attention?

Donning a pair of safety glasses and holding a smoking pitcher in an insulated-gloved hand, Kruse explained the cautions involved in working with liquid nitrogen.

The students were instantly riveted by the demonstration.

"Why does it smoke if it's cold?"

"Will it hurt if I touch it?"

"Will it freeze the table?"

Kruse organized the students row-by-row to "crack" rubber bands instantly frozen by the liquid nitrogen. Then she wowed them with a "floating magnet," her demonstration of superconductivity.

Kruse worked with two fifth grade classrooms that day. The students in the second class were so taken with her demonstration that their teacher asked Kruse to stay an hour longer.

"I won't go out without it," says Kruse of the liquid nitrogen. "They love it. It's a show in itself."

What dog?

SCIENCE:

Continued from Page 1

language when he encouraged the students to get a good education:

"My father worked in the lumberyard. My mother in the laundry. But that didn't mean I couldn't be an electronics engineering technician at NASA," said the Norfolk State graduate, who maintains the 8-Foot High-Temperature Tunnel.

Medley brought a couple of electric circuit boards. He challenged the students to connect the wires on the boards so that a buzzer and bell would sound.

At first the students were shy and unsure of themselves. But by the end of class, their hands shot up in the air as they vied for an opportunity to connect telephones on the boards and talk to each other over the machinery.

"My slogan is 'Think Big,'" said Medley. "You can be anything you want to be. Anyone who tells you different, push them aside. I want you to take math until the end of high school, because you're going to need it to survive."

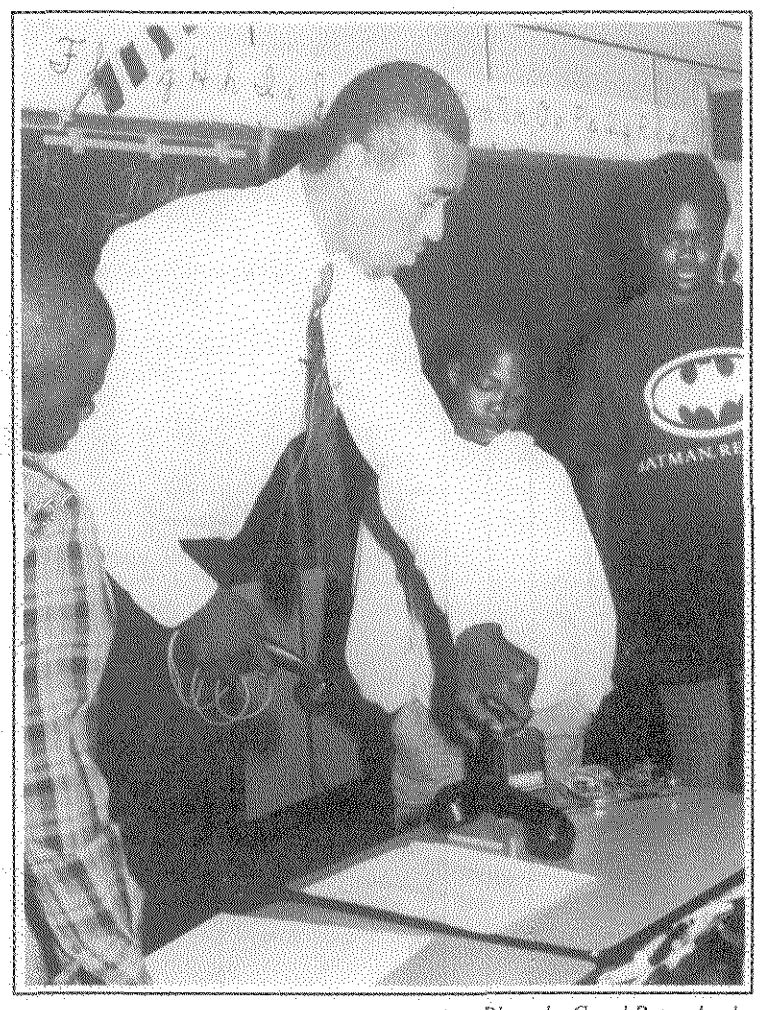


Photo by Carol Petrachenko

Clyde Medley shows students at Tidewater Park Elementary School in Norfolk how to connect a buzzer, a bell and a telephone to a battery using a circuit board.

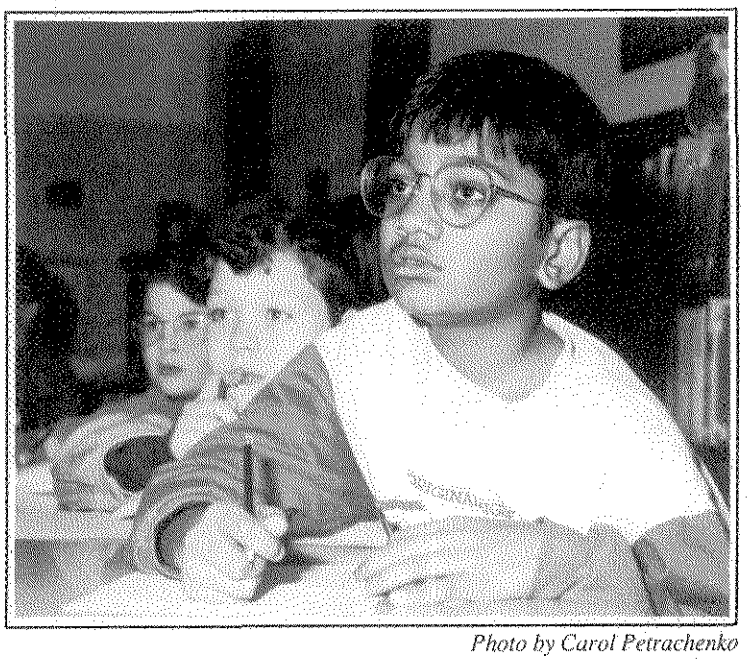


Photo by Carol Petrachenko

Students at Kraft Elementary School listen attentively as Acting Center Director Dr. H. Lee Beach Jr. tells them about careers in science and mathematics.

Happenings

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A., 723-5227.

FREE AEROBICS: Get energized with NASA aerobics! Open to all employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Monday, Wednesday and Friday from 6:15 to 7:15 a.m. Lunchtime Energizer is held from 11 to 11:45 a.m. For more information, call ext. 46387.

TOASTMASTERS: The Langley Toastmasters Club meets March 10, 11:30 a.m. to 1 p.m., Building 1222.

LAA SOCIAL: A social will be held from 4 to 8 p.m. in the H.J.E. Reid Conference Center on Friday, February 26. Music will be provided by disk jockey Warren Briggs. Cover charge is $1.

PUP FOR SALE: Miniature schnauzer pup, AKC-registered, champion bloodline, born February 6. Deposit to hold one male, $300. Call 591-0940 after 4:30 p.m.

TELA TAX SERVICE: Member, National Association of Tax Practitioners. Electronic filing. Small-business bookkeeping services. By appointment. Call 874-3121.

ROOMMATE NEEDED: Need female roommate to share expenses in a three-bedroom apartment close to NASA. Private bedroom. Call 865-0592.

LOT FOR SALE: At Wintergreen, a .37-acre corner wooded lot on the mountain, one block from a pool. Includes WPI. Priced below tax-assessed value at $34,500. Pictures available. Call 220-1129 after 7 p.m.

PARADISE FOR RENT: Sandy beach, beautiful shells abound on Florida's Sanibel Island. Elegant gulf-front condo, one bedroom, living room, full kitchen, tennis, pool, cable, VCR, on-site management, $540 per week from May through November. Call 565-1849, 5 to 8 p.m.

PROFESSIONAL SECRETARY PROGRAM: The Federal Women's Program Committee will sponsor a briefing on the Certified Professional Secretary Program on Tuesday, March 9, from 10 to 11 a.m., in the H.J.E. Reid Conference Center. Julie Vaisvil, of the Hampton Roads Police Academy, will speak. Langley and contract employees are invited to attend. The point of contact is Patsy Campbell, ext. 43291.

NEW BENCH CIRCUIT TRAINING CLASSES: Get the benefit of fat-burning (bench and low-impact), lower body toning, upper body weighted workout and abdominals in one session. Benches and free-weights provided. Free body composition analysis will be given before class. Classes are Tuesdays and Thursdays from 5 to 6 p.m. and Saturdays from 9:30 to 10:30 a.m. in the LAA gym. Classes are open to employees, contractors and their families. Call ext. 42295 for more information.

FOUND: Pair of prescription glasses in the dispensary. Call Joyce, ext. 43193.

FOR SALE: Tyco HO 4-by-8 foot train board with track, trestle bridge, switches, signs, two locomotives and six freight cars, $65 negotiable. Call 851-0552.

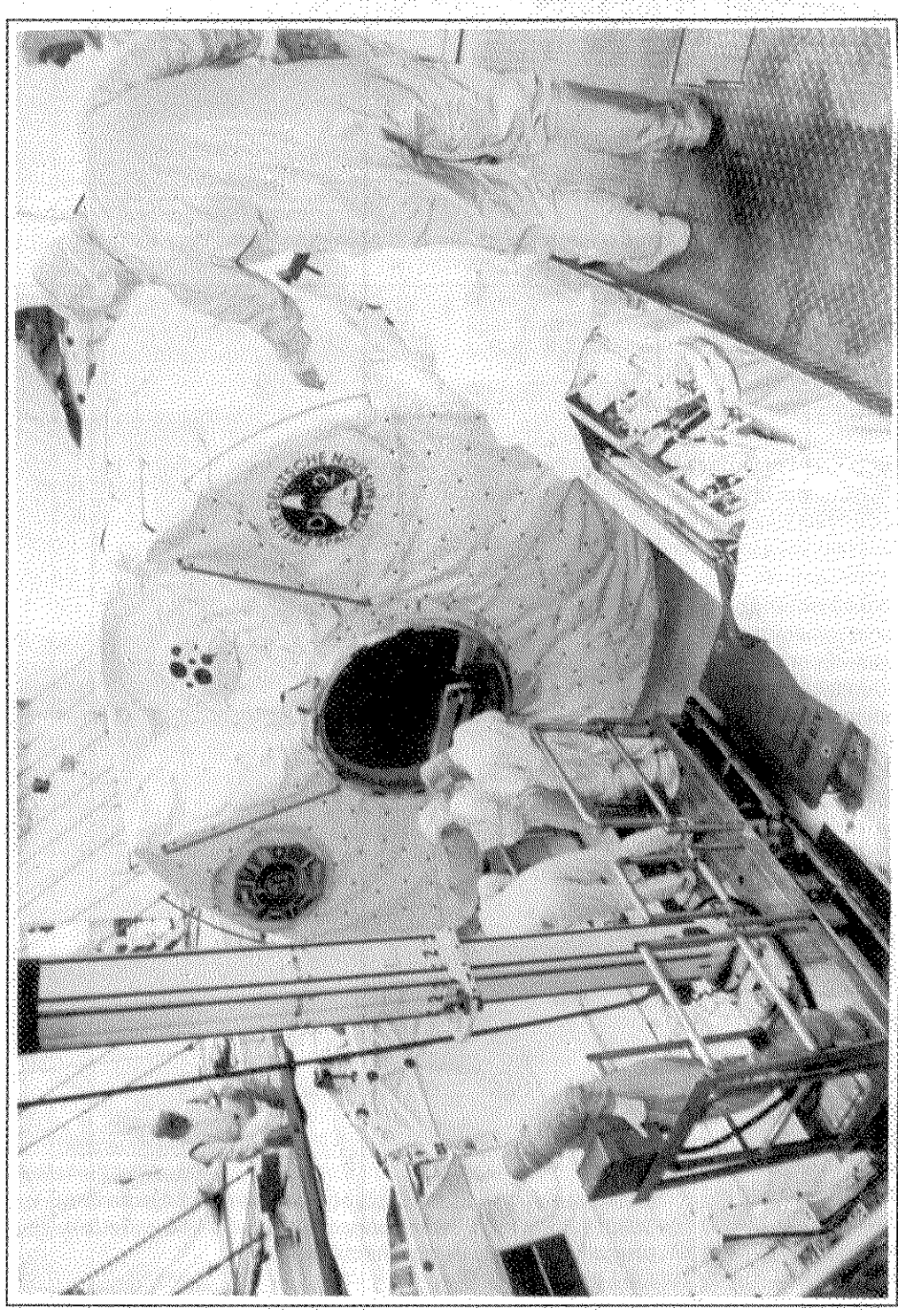
LOST: ECN G73623 Krohn-Hite model 7500 wide-band power amplifier, 75 watts, rack mountable, tan-colored front panel, blue-green chassis. If you have seen this instrument, please contact T.S. Daniels at ext. 44659.

LOTS FOR SALE: Looking for neighbors to divide parcel in a custom residential neighborhood in the Tabb area of York County. For more information, call 838-9506.

TOWNHOUSE FOR SALE: By owner, Poquoson, 2,000 square feet, 3 bedrooms, 2½ baths, eat-in kitchen, bay windows, hardwood floors on first floor, fireplace, 3 skylights, end unit with windows overlooking large side and rear yard. $97,000. Call 868-7422.

CANAAN VALLEY SKI TRIP: Canaan Valley Ski Trip, March 12 to 14. Will leave Friday, March 12, at 5:30 p.m. for the ski lodge and return Sunday, March 14, at 5 p.m. Trip includes two full days of skiing, two nights of relaxation and three meals. Beautiful scenery! Cost $179. If interested, call Richard Bennett at 599-5585.

CONDO FOR RENT: Hampton Club condo, one bedroom, new carpet and paint, 10 minutes to NASA, washer/dryer and all appliances convey, $410 per month and deposit. Call 868-9130.



Kennedy Space Center Photo

In the Orbiter Processing Facility high bay, workers are installing the Spacelab D-2 module into the payload bay of the orbiter Columbia. Workers can gain full access to the payload and cargo bay with the payload bay work buckets, suspended from an overhead bridge. D-2 is scheduled to fly on Space Shuttle Mission STS-55 in early 1993.

Researcher News

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News Researcher

Bi-Weekly Employee and Contractor Publication

Volume 7 ❖ Issue 5 ❖ March 12, 1993

Langley Named Lead For High Speed Research

BY H. KEITH HENRY

Langley has been named lead NASA center for management of the agency's technology development program for a future high-speed civil transport (HSCT). In response, Langley has established a High-Speed Research Project Office (HSRPO).

The Administration and Congress are considering final funding for a HSR Phase II that would accelerate technology development beginning in FY 1994.

New technology promises to help the U.S. aerospace industry build an environmentally feasible, economically viable commercial transport that could contribute up to 140,000 jobs and $200 billion to the national economy starting in the year 2000.

Elements from two Langley research divisions will form the core of the new office: the current High-Speed Research Program Office, Advanced Vehicles Division, and the F-16XL Supersonic Laminar Flow Control Flight Experiment Project Office, Projects Division.

The new Langley office will report to the NASA Headquarters HSR Program Office and work closely with Ames, Ames-Dryden, Lewis and industry. A permanent head for the office will be selected based on a nationwide search .

Langley will manage high-speed technology in areas of aerodynamic performance, airframe materials and structures, the flight deck, and airframe and systems integration.

In addition to the work of NASA's industry partners, each center is working hands-on in its own areas of expertise.

Ames is performing high-altitude flight work to help analyze the impact of an HSCT's engine emissions on the atmosphere.

Lewis is working to dramatically limit harmful engine emissions in the first place.

Ames-Dryden is flight testing a drag-reduction concept called laminar flow control that promises to significantly improve the efficiency of a transport wing.

Langley researchers are working to limit engine noise and sonic boom and to reduce overall structural weight.

Under Langley's technological lead, the HSR program will move to complete Phase I, which has focused on environmental challenges, and begin Phase II, which will focus on developing economic viability.

The joint NASA-industry effort would provide a technical foundation that the nation's aerospace companies could use to make intelligent business decisions about future airframe and engine development programs.

With that technology in hand, the first U.S. supersonic airliner could roll out of the hangar by the year 2005 — and a new chapter in the history of air transportation would begin.

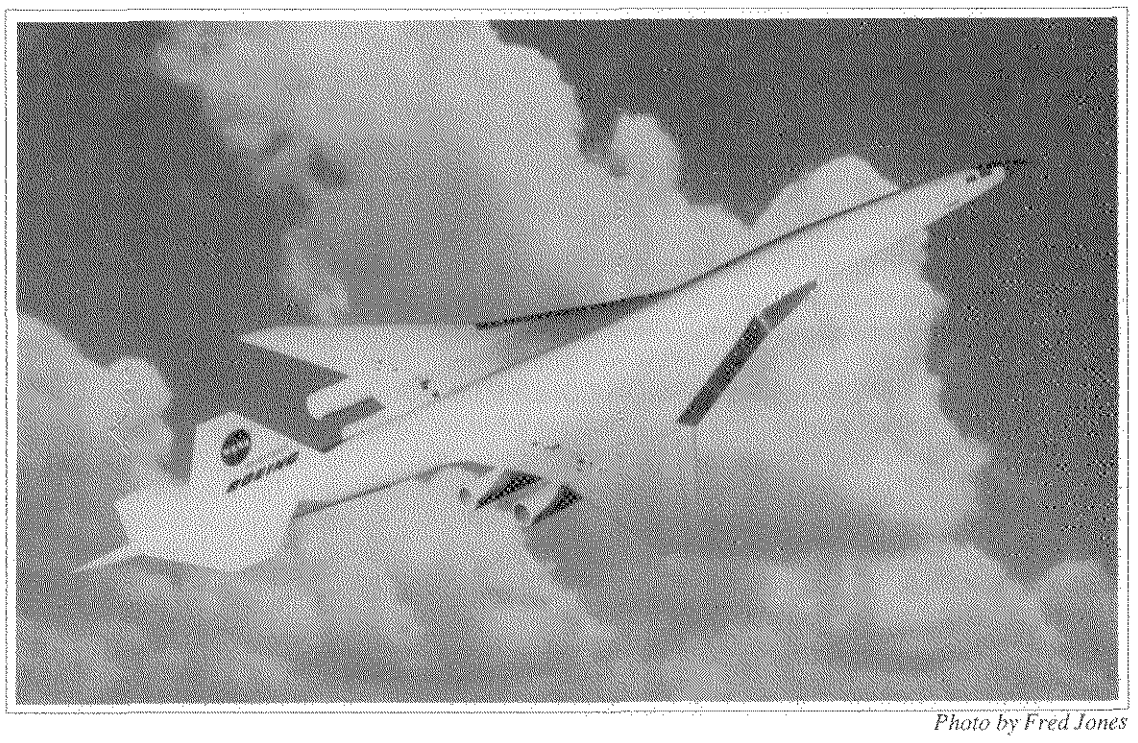


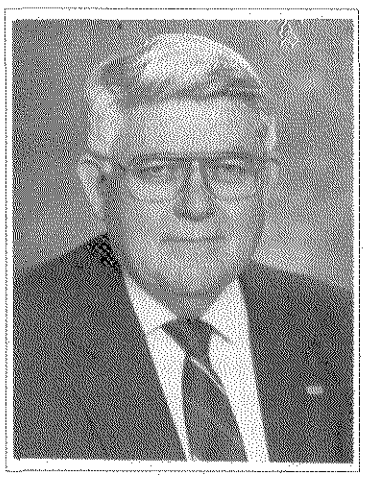
Photo by Fred Jones

Boeing conceptual design for a Mach 2.4 high-speed civil transport is sized to carry approximately 250 passengers across the Pacific in less than half the time of a comparable subsonic flight.

Search On For Head Of New High-Speed Office

Hook Directs Start-Up

BY H. KEITH HENRY



W. Ray Hook

Pending the outcome of a nationwide executive search, W. Ray Hook has been named to head the new High-Speed Research Project Office (see above story). Hook is temporarily relieved of his duties as director for space.

"Hook's previous program management experience, coupled with his involvement in the Atmospheric Science Division's analysis of the potential environmental impact of a high-speed transport and his unique experience as the leader of the NASA Aeronautics Red Team, make him especially well qualified for this important leadership position," said H. Lee Beach, acting Langley director.

See **HOOK,** *on* **Page 3**

STATE-OF-THE-CENTER SCHEDULE

The annual State-of-the-Center Message will be given by Acting Director Dr. H. Lee Beach, in April, over a two-day period. Employees, contractors and retirees are encouraged to attend.

APRIL 7: 1:30 p.m. Office of Director, Office of Education Programs, Aeronautics Directorate, High-Speed Research Project Office, Fabrication Division.

3 p.m. Electronics Directorate, Management Operations Directorate, Office of Comptroller, National Aero-Space Plane Office.

APRIL 8: 8:30 a.m. Systems Engineering and Operations Directorate (except for Fabrication Division and the Operations Support Division), Structures Directorate.

10 a.m. Space Directorate, Flight Systems Directorate, Operations Support Division.

Global Cooling Confirmed

NASA Satellites Observe Mt. Pinatubo

BY CATHY SCHAUER

Satellite observations confirm that Mount Pinatubo's eruption in June 1991 resulted in a temporary cooling of the Earth that equates to a decrease in global surface temperature of approximately 1 degree Fahrenheit.

"A 1 degree decrease in global temperature is significant," said Dr. Patrick Minnis of Langley's Atmospheric Sciences Division. The increase in solar radiation reflected from the Earth, responsible for this cooling, continued through October 1991 and is well correlated with the gradual spread of the Pinatubo dust cloud over the globe."

Minnis, a senior researcher on this project, said, "Data show that the relative cooling produced by Mount Pinatubo is 60 percent greater than any other climate disturbance since 1976. Systematic global observation of the Earth's radiation balance began that year.

"Surface cooling may follow the radiative response by several months to a year, and the effect of Mount Pinatubo may be evident for some time after most of the dust cloud has settled back to the surface. Indications are that the effects of Mount Pinatubo may be felt through early 1994," he concludes.

> *"Indications are that the effects of Mount Pinatubo may be felt through early 1994."*
>
> —Dr. Patrick Minnis

Volcanic activity has been suspected of causing significant short-term climate changes. Powerful volcanic eruptions typically send huge quantities of gases and ash into the stratosphere. The gases and ash produce aerosols that may remain for years.

Analysis of measurements from the Earth Radiation Budget Experiment (ERBE) satellite has provided the first conclusive evidence of a significant change in global energy due to a volcanic eruption.

ERBE satellite measurements provide the data needed to understand the link between

See **WARMING,** *on* **Page 3**

Petersen Elected To National Academy of Engineering

Virginia Air and Space Center Executive Director Richard H. Petersen has been elected to the prestigious National Academy of Engineering for his "contributions to aeronautical engineering in all flight regimes." Election to the Academy is among the highest professional awards accorded an engineer.

The National Academy of Engineering was founded in 1964 to promote the advancement and wise use of engineering and technology as both an economic and social necessity. The Academy acts as advisor to the federal government and, through its independent programs, provides a channel for the advancement of engineering and technology to benefit humanity.

Petersen became director of the center in January 1993 after serving as associate administrator for aeronautics and space technology at NASA Headquarters and as director of Langley from 1985-1991.

He holds a bachelor's degree in aeronautical engineering, with highest distinction, from Purdue and a master of science degree in aeronautics from the California Institute of Technology.

News Briefs

AROUND THE AGENCY

NASA CO-SPONSORED HIGH-TECH SMALL BUSINESS CONFERENCE - Small, minority-owned and women-owned businesses obtained information on how to do business with NASA and other government agencies at the 1993 High-Technology and Small Business Development Procurement Conference March 1-2 in Los Angeles. NASA, the Jet Propulsion Laboratory (JPL), Pasadena, Calif., and the Southern California Small Business Utilization Council co-sponsored the fifth annual conference at the Hyatt Hotel Los Angeles International Airport, Los Angeles. About 200 government prime contractors, federal agencies and other large procurement organizations participated in the conference. They offered guidance on contracting opportunities, particularly in the form of requests for quotations, requests for proposals and invitations.

NASA STUDY MAY HELP REDUCE LIGHTHEADEDNESS - A study at NASA's Ames Research Center, Mountain View, Calif., may lead to improved ways of keeping astronauts from feeling faint when they stand after returning to Earth from space. Dr. Joan Verikos, the study's principal investigator, said a reduced level of plasma is believed to contribute to this tendency to feel faint. Plasma is the fluid part of the blood, without blood cells. "The primary purpose of this study is to compare the effectiveness of two procedures that expand plasma volume," said Verikos, chief of Ames' Life Science Division.
She added that, without the pull of Earth's gravity, astronauts experience an upward shift of body fluids. The body responds to what it perceives as excess fluid and reduces the amount of circulating fluid volume by excreting more urine.

NASA SELECTS NEW SCIENCE MISSION CONCEPTS - NASA selected 11 new science mission concepts in the Discovery Program which have been identified for further study during this fiscal year. The mission candidates were selected from 73 concepts discussed at the Discovery Mission Workshop held at the San Juan Capistrano Research Institute in California last November. The potential projects were those considered to have the highest scientific value as well as a reasonable chance of meeting strict budgetary guidelines. Discovery mission are designed to proceed from development to flight in less than three years, combining well-defined objectives, proven instruments and flight systems, costs limited to no more than $150 million and acceptance of a greater level of risk.

Demeo Earns "Best Presentation"

Martha E. Demeo, of ViGYAN, earned the "Best Presentation" award (Control-Structure Interaction session) at the August 1992 AIAA Guidance Navigation and Control Conference in Hilton Head, SC. The paper, "Real-Time Simulation of Shuttle RMS Active Damping Augmentation," was co-authored by Langley employees Michael A. Scott, Spacecraft Controls Branch, and Michael G. Gilbert, assistant head, Spacecraft Dynamics Branch, and others.

Choral Society Performances Planned

The Virginia Choral Society is brushing up its Russian to sing Rachmaninoff's cantata "Becha" (Spring) and works by other Russian and Czech composers.

Selected works by American composers, including Barber, Copeland and Gershwin, will round out the program "East Meets West" March 12 at Old Dominion University's Chandler Recital Hall and March 13 at Trinity Lutheran Church, 6807 Huntington Avenue in Newport News. The concerts begin at 8 p.m. General admission price is $8, and $5 for senior citizens, students and military. For information call (800) 400-4VCS.

COMMUNITY CORNER

The following is the second in a series of community service opportunities that will be published monthly in the ***Researcher News****. If you know of other community service agencies that have a specific or pressing need, call Marny Skora, Community Services Officer, at 864-43315.*

You Can Help Fight Hunger In Virginia

"Check-Out-Hunger in Virginia" is an innovative campaign to unite major supermarkets and **you** to help feed Virginia's hungry.

From now until April 3, IGA, Belo, Farm Fresh supermarkets and the Price Club will display coupons which, when presented at the checkout, will add $1.00 to your bill—every cent of that dollar will go to the local Foodbank.

The power of the donated dollar: The Foodbank can turn a dollar donation into nearly $20 worth of free food for the needy.

Within our state alone, over 30 million pounds of food is distributed each year through over 3,500 non-profit organizations who have feeding programs to help nourish the nearly 600,000 Virginia citizens living below the poverty level. Over half of the million meals each month go to children.

This is the first state-wide effort to help alleviate hunger in Virginia. The Foodbank of the Virginia Peninsula serves the greater Peninsula area, including Williamsburg, Gloucester and Mathews.

The Foodbank of Southeastern Virginia serves Southside, including Norfolk, Portsmouth, Virginia Beach, Suffolk, Smithfield and Western Tidewater. Proceeds go to the Foodbank in the area where funds are raised.

Donate in your own community and feed your hungry neighbors.

Presidential Sports Challenge Issued

The challenge for the Presidential Sports Award has been issued.

The objective is to showcase NASA as a federal agency where employees participate in physical activities due to a concern about personal health.

The Langley objective is to be recognized as the top center contributor to the NASA Challenge.

Those wishing to participate should, within four months, complete the requirements set forth for any of 56 sports categories.

The time is between March 1 and August 31. Any NASA employee, contractor or family member may participate.

Categories include running, walking, biking, swimming, bowling and many other sports and fitness activities.

Langley was the top facility to record family participation last year.

Children over the age of six are encouraged to participate.

Co-workers should encourage each other.

For more information call the Langley Fitness Center at ext. 46387.

LETTERS

Audrey Coppedge, Resource Center coordinator and **Susan Smigielski,** Public Mail Technician write:

Thanks so much to the docents who supported us in preparation for Engineers Week.

Without the help of Ken Curtis, Mary Levin, David Workman, Gladys Hardrath and Tammy Robinson, the school visitation program could not have been so successful.

Aerospace Symposium Set

The 27th Aerospace Mechanisms Symposium will be held May 12-14 at NASA Ames Research Center in Mountain View, Calif.

The symposium is co-sponsored by NASA, the California Institute of Technology and Lockheed Missiles and Space Company, Inc. The AMS is the only symposium in the United States devoted to aerospace mechanisms, and promotes discussions of problems related to the design, development and use of these mechanisms. Last year, more than 150 persons attended from the United States, Japan and Europe, representing academia, the NASA centers and more than 40 aerospace companies.

There will be 24 papers presented, including those from engineers in Japan, the Netherlands and Germany. Authors are encouraged to discuss anomalies that have occurred during design and development of mechanisms and thus help avoid similar problems in the future. Specific topics of discussion include pyrotechnics, space lubricants, deployment actuators, pointing and optical mechanisms and ground test mechanisms. Hardware, designed and developed for the space shuttle, missiles and satellites will be displayed.

This year's meeting will be chaired by Ron Mancini of NASA Ames Research Center. The Symposia General Chairman is Dr. Charles W. Coale, and the Operations Chairman is Stuart H. Loewenthal.

Further information may be obtained from Loewenthal, LMSC, P.O. Box 3504, 0/77-30, B/551, Sunnyvale, CA 94088-3504, telephone (408) 743-2491, FAX (408) 742-2461; or Mancini, NASA ARC, Mail Stop 213-4, Moffett Field, CA 94035-4000, telephone (415) 604-6319, FAX (415)604-4984.

Runners Compete Despite Cold Weather

The Runners Club held the Pick-Your-Distance Race Feb. 24. With the weather near freezing, everyone picked the 2-mile race. The top finishers for men were James A. Brown with a time of 14:15; Craig Cleckner with a time of 15:02; and Glenn Bobskill with a time of 16:38. The winners for women included Jan Spangler with a time of 15:49; Sheri Brown with a time of 18:51; and Lisa Stone with a time of 24:18. For information on the Runners Club call Richard Shearer at ext. 47036.

Tennis Club Preps For Upcoming Season

Preparations have started for a great tennis season this year with rehab work underway on the tennis courts. Installation of a new surface, fencing and wind screen should be completed in May. In addition to four different tennis ladder competitions, three leagues and ten tournaments during the year, members can also get tennis lessons. Annual club membership dues are $10 and application forms can be obtained at the LAA, the cafeteria or by calling Julia Whitehead at ext. 41685 or Tom Yager at ext. 41304.

Brown Bag Medical Seminar Planned

Colon cancer is the third most common and third most deadly of the cancers that occur in developed countries. Recent research indicates there are preventive measures one can take to avoid this disease.

The Occupational Health Service will present a "Brown Bag Medical Seminar" on preventing colon cancer in the Executive Dining Room of the Cafeteria, Building 1213, at noon March 16. Learn how to minimize your risk of colon cancer.

IN MEMORIAM

Melvin Carmel, 76, died Feb. 22. He retired as an engineer in 1976.

Robert E. Hunt, 90, died Feb. 20. He retired as an aircraft inspector in 1972.

CORRECTION

Catherine Herstrom died Feb. 12. The previous edition of the *Researcher News* inadvertently printed the incorrect date.

Retirement Party For Witherspoon

John Witherspoon invites his friends to the Langley Room of the Reid Conference Center April 2 between 4 and 6 p.m. to help celebrate his retirement. Reservations are not required and he asks for no speeches or gifts.

News 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 ..... Marny Skora

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

Photojournalist ..... Carol Petrachenko, 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.

WARMING:

Continued from Page 1

volcanic dust and temperature changes at the Earth's surface.

The gases and ash ejected by volcanos can penetrate into the stratosphere, where the debris may form a dust veil that spreads over the globe and slowly filters down to the surface over several years.

The dust veil reflects some of the sun's rays back to space, thus cooling the Earth's surface.

Volcanic dust can also produce a greenhouse warming effect by trapping the infrared rays emitted by the Earth.

The net effect ultimately determines changes in the surface temperature.

Whether the dust cloud cools or warms the Earth and by how much depends on the concentration, sizes and shapes of the particles in the dust cloud. Because the latter two quantities are difficult to estimate, climate computer-model predictions are subject to potentially large uncertainty.

Heating and cooling of the Earth is determined by the balance between absorbed solar radiation and emitted infrared radiation.

Solar radiation that is not reflected by clouds, the atmosphere or the surface is absorbed and causes the Earth to warm.

The emitted infrared radiation cools the Earth by carrying heat away from the planet.

ERBE directly observes changes in the emitted infrared and reflected solar radiation and enables scientists to match the radiation predictions with ERBE data.

Launched in 1984, ERBE is one of the precursor missions in NASA's long-term Mission to Planet Earth program for studying climate change. The ERBE instruments were developed at Langley and the TRW Corporation, in Redondo Beach, Calif.

Langley is responsible for data analysis.

The results of the study "Radiative Climate Forcing by the Mount Pinatubo Eruption" are published in the March 5 issue of *Science*.

Laminar Flow Team To Be Honored

The Boeing-NASA-Air Force Hybrid Laminar Flow Team has been selected to receive the National Space Club's 1993 Nelson P. Jackson Award March 26 in Washington, D.C.

The award recognizes "that U.S. firm which has made the most outstanding contribution to missiles, aircraft or space endeavors over the past year."

The team will receive the award for demonstrating extensive drag-reducing laminar flow on the wing of a Boeing 757 commercial transport in a cooperative flight test program.

The NASA team members are Joseph W. Stickle (retired), Office of the Director; Richard E. Davis, Flight Electronics Division; Marie E. Ashe, Joseph R. Chambers, Dal V. Maddalon, Richard D. Wagner, Dr. Fayette Collier, Flight Applications Division; Dennis W. Bartlett, Advanced Vehicles Division; and Dr. Ralph J. Muraca, Joseph D. Pride, Systems Engineering Division.

The team also includes members from Analytical Services and Materials, Inc., CDi Corporation, Wright Laboratory and Boeing Commercial Airplanes.

Mastaler, Winner Of Value Engineering Award

Michael D. Mastaler, Systems Engineering and Operations Division, has been named winner of the Third Annual Value Engineering Award. He is honored for his efforts as Work Package Manager for the $11 million Air Storage System for the High Pressure Air Storage System Modifications Project.

The $1000 citation is for initiative and leadership in applying value engineering principles in the configuration and procurement of the High-Pressure Air System Project's Air Storage System.

The project includes a work package to augment the existing high-pressure air storage field to satisfy anticipated research requirements.

Mastaler identified the most cost effective approach. The combined cost saved as a result of this project is expected to be in more than $745,000.

He was nominated for the award by Robert L. Swain, director for Systems Engineering and Operations.

NASA's Value Engineering Program is an effort to analyze the functions of hardware, software, services and facilities to achieve the lowest life-cycle cost consistent with required performance, reliability, maintainability, human factors, logistics, quality and safety. The program addresses both contracted and in-house activities.

To nominate an individual for the next Value Engineering Award, submit a letter through line management to the Employee Relations Section, Employee Development and Services Branch, Mail Stop 129. Individuals and groups are eligible. Nominations will be considered through December 31 and the winner will be announced shortly afterward.

Photo By Alfonso S. Perabeles

Michael D. Mastaler, receives the Value Engineering Award from Acting Center Director Dr. H. Lee Beach.

Collier Receives General Electric Moss Award

Dr. Fayette S. Collier Jr., Flight Applications Division, received the Dr. Sanford A. Moss Award from General Electric for his work with the Hybrid Laminar Flow Nacelle (HLFN) Program team. The award is given for the most outstanding contribution for engine or component testing that leading to the development, qualification or field performance of a General Electric aircraft engine product.

Every year General Electric aircraft engines observes Engineering Recognition Day to give special recognition to people, by the company and their peers, who have made outstanding technical contributions during the year.

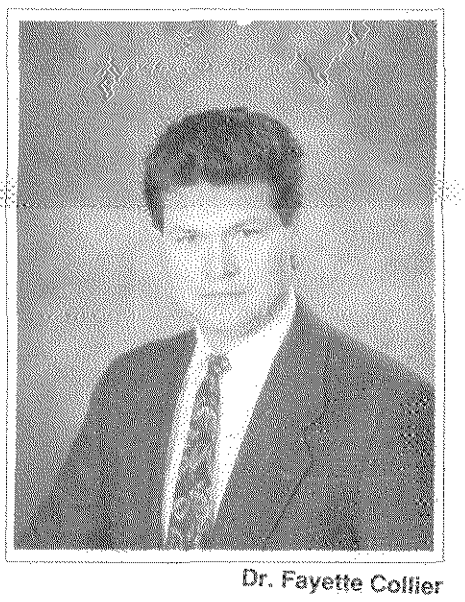
The HLFN Program could improve fuel burn in a typical commercial aircraft application by more than 1 percent.

To demonstrate the feasibility of this advanced design, flight tests were conducted that demonstrated that the HLFN reduces drag without compromising low-speed operation. The team designed the HLFN so that significant performance gains could be realized by laminar flow under cruise conditions, while not sacrificing performance at other speeds.

Nacelle (engine housing) friction drag accounts for about 4 to 5 percent of total friction drag on a typical commercial aircraft. This component of drag can be reduced by maintaining a laminar-flow boundary layer over key portions of the nacelle surface, or engine housing.

Lessons learned will provide the aero, mechanical and structural guidelines in arriving at a production type HLFN for commercial aircraft powered by a GE engine.

The project was selected as one of the most outstanding business-related accomplishments nationwide. Each of the 11 team members will receive a citation and a plaque commemorating the achievement. Collier is the only NASA member of team composed of GE, Allied Signal and Rohr employees.



Dr. Fayette Collier

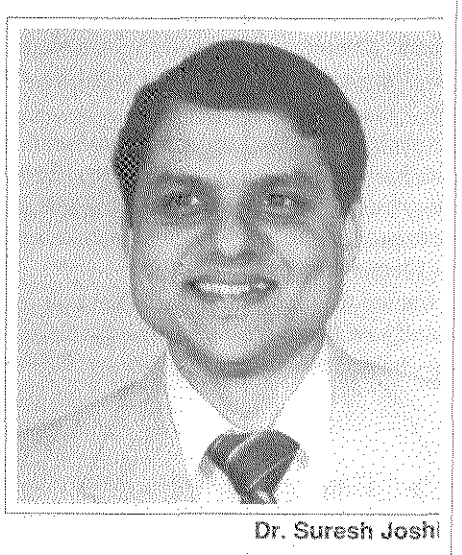
Dr. Joshi Elected IEEE Fellow

Dr. Suresh M. Joshi, senior research scientist in the Spacecraft Controls Branch, Guidance Control Division, has been elected a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). Joshi has been honored for "contributions to the analysis and synthesis of control systems for large flexible spacecraft and leadership in developing design methodologies for advanced space systems." The IEEE is the largest professional engineering society in the world, with nearly 300,000 members worldwide.

Joshi received his Ph.D. in electrical engineering in 1973 from Rensselaer Polytechnic Institute, Troy, NY.

He started his NASA career in 1983. Before that he worked at Langley as a National Research Council research associate and a research faculty member with Old Dominion University. Joshi is internationally recognized for his research on robust control and stability theory and applications to flexible space structures.

He is the author of a book, an editor of three American Society Of Mechanical Engineers (ASME) volumes, and the author or co-author of nearly 120 papers. He is presently a member of the IEEE-Control System Society's Board of Governors, an Associate Fellow of the AIAA, and a member of the American Society of Mechanical Engineers. He is also listed in several "Who's Who" publications.



Dr. Suresh Joshi

HOOK:

Continued from Page 1

Hook has overseen space research at Langley since 1988. He was responsible for advanced space transportation, planetary entry, Space Station Freedom, large space antenna research and Langley's atmospheric sciences program.

He began his federal career at Langley in 1955 as an aeronautical reseach intern. After serving in the Air Force, he returned to Langley as an aerospace engineer and was project co-engineer on the Trailblazer II Program.

As study manager for the Manned Orbiting Research Laboratory Office, Hook helped develop space station concepts, flight experiments and operational procedures that were adapted for the Skylab Program. He is Langley's representative on NASA's Space Control Board.

He has received numerous awards, including the Presidential Rank of Meritorious Executive in the Senior Executive Service in 1989 for his outstanding contributions to the management of NASA programs.

Many thanks to these Langley employees who volunteered to "teach" classes during National Engineers Week: Bill Adkins * Elvin Ahl * Ruth Amundser

Pamela Davis * Richard Davis * John Deaton * Robert DeCoursey * Vic Delnore * Robert Desmarias * Stephen E. Devan * Russell DeYoung * Glenn Di

* Linda Hunt * Craig Hunter * W. Steven Johnson * Gregory Jones * Kennie Jones * Lisa Jones * Sharon Jones * Stanley Jones * Mark Jones *

* Robert Myers * Dinesh Naik * Michael Nelson * Gim Shek Ng * Burton Northam * Matthew O'Rourke * James Osborn * Rosa Osegu

* Mary Ann Steuck * Bill Stevens * Brian Stewart * Alan Stockwell * Olaf Storaasli * Bob Stuever * Karen Taminger * Sharon Ta

* Bob Young * Otto Youngbluth * Denna Zacharias * and all those managers and supervisors who supported our "teachers."

illiam Cullifer * William Culliton * Tom Daniels *

oskins * Julie Hudgens * C. Michael Hudson

y * Harvey Murray * Gretchen Murri

Gene Monroe * Eugene Morelli * Clark Morledge * Tom Moul * Kelly Murphy *

eroy Spearman * Cary Spitzer

kolaut * Mary Ann Smith * Royce Snider * Jaroslaw Sobieski * David Sobota *

Bill Willshire * Dick Winning * Glenn Woodell * Ken Wright * Mary Beth Wusk *

* Bob Williams * Julie Williams-Byrd * Tom Yager * Steve Yaros *

wen * Travis Cox * K. Elliott Cramer * Catherine Croall * Sharon Crockett * William Cullifer * Larry Cowen * Victor Cooley * Larry B. Cooper III * Larry Cowen * Bruce Conway * Victor Cooley * Larry B. Cooper III * Larry Cowen *

gge * Chip Holloway * Bruce Holmes * William Hood * John Hoppe * Warren Hoskins * Julie Hudgens * C. Michael Hudson * Gloria Hernandez * Lana Hicks * Keith Hoffler * Edward Hogge *

Photo by Carol Petrachenko

Karen Ault, center, personnel clerk in the Human Resources Management Division, reads to a Saunders Elementary hearing-impaired class as Annette Bene interprets in sign language.

Engineers Weel

National Engineers Week is over ar
volunteers are still reporting on their r
applauding the outstanding presentatio
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motivated. One teacher aptly summed
were spellbound. You inspired some f
and engineers today. We want to do th

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A Special Class, A Special Presenter

No Request Too Specific For Langley Talent To Answer

BY MARNY SKORA

All seven students in Mr. Warmbrand's class were wired for sound—but, unlike many kids today, they were not wearing Walkmans.

Each wore a body aid, a very large hearing device that amplifies every sound in the room. Each of these seven students was hearing impaired, but every face lit up when personnel clerk Karen Ault showed them what she had brought to their classroom.

"Some of my friends at NASA Langley fly ____," said Ault.

And the primary school students answered in unison, "Airplanes!"

Ault's was just one of over 800 classes taught during National Engineers Week by Langley scientists, engineers, technicians and support personnel in the 12 surrounding school districts.

Teacher Leigh Warmbrand saw the announcement for NASA presentations and felt his students deserved to be included in the program. "I specified a hearing impaired presenter," said Warmbrand. "We really enjoyed Mrs. Ault's lesson; it was good!" he said over and over.

Just into her presentation, Ault stopped for a moment and said, "You know, I can't hear you. Can you hear me?" Seven hands raised. "You can all hear me a little bit, but I can't hear you at all. I'm deaf and I've worked at NASA for three-and-a-half years."

Karen Ault, deaf since she was 18 years old, speaks fluently and reads lips. Surgery to remove benign tumors on her auditory nerves took away her hearing and, perhaps, a tendency to pursue teaching. She was a "natural" with the Saunders Elementary group.

Ault wanted the children to learn the main parts of an airplane and how the moveable parts—the flaps, rudder and elevators—helped the plane to fly fast and slow, right and left, up and down. Langley interpreter Annette Bene interpreted in sign language for the students as Ault demonstrated.

After reading *Mr. Little's Noisy Airplane* as Bene interpreted, Ault helped the class build an airplane using a balloon as the fuselage. They added wings and tail sections and then "flew" the plane on a runway made of string. That flight drew "oooooohs" and "aaaaaaahs" and was undoubtedly repeated in a home or two in Newport News that evening.

Saunders principal Louise Wylie was delighted with the visit. "The children were so excited about their government speaker, some told their parents that the President was coming to their class," said Wylie. "We had phone calls all morning from inquisitive moms and dads!"

Bill Clinton undoubtedly had another appointment that Friday, but he'd be glad to know that Langley's Karen Ault did government employees proud as she helped wrap up another successful Engineers Week school visitation program. Mr. Warmbrand's seven were among the 25,000 students all over Tidewater who were encouraged to study hard, especially math and science—so they could grow up to be anything they wanted to be.

**They're hoc
are drawn i
airplane as**

Thomas Walker * Tina Leticia Wallace * Robert Wallis * Richard Wallsom * Myra Walton * Martin Waszak * Judith Watson * Jo

* Steve Robinson * Patrick E. Rodi * Jim Rogers * Courtney Rollins * James R. Rooker * Donna Roper * Christopher Rumsey * Prina

Karen Lyle * Ian MacConochie * Donald Maiden * William Malone * Michael Mann * Veloria Martinson * Anthony Maturo * Janice

* Terence Ghee * Larry Gilbert * Larry Gordley * Gretchen Gottlich * Teresa Graham * Irene Gregory * Don Grisgby * David Guthrie * Lori Guy

Pat Biggs * Vernet Boone * Jay Brandon * Tracy Bridges * Phil Brown * Ellen Bullock * Lance Bush * Don Cahoon * Tony Calabrase * Michelle Callov

ichard Antcliff * Scott Asbury * Patrick Ashley * Karen Ault * John Austin * Majdi Baddourah * Raj Bagga * Robert Bakewell * Alexander Barnes * Ron Barnes * Jim Batterson * Steven Bauer * Willard Bauserman * Lee Beach * Sheri Beam * Harold Beazley * Laurence Bement * Fabio Bertolotti * Todd Beyer * Gaudy Bezos-O'Connor * Ted Biess *

* Ben DiVito * Scott Dorsey * David Dress * Kevin Dutton * Doug Dwoyer * Bill Dziedzic * William Edwards * Carl Elks * Bob Fairbairn * Fereidoun Farassat * Brett Fathauer * Joseph Faulkner * Melvin Ferebee * James Fields * Jack Fishman * Lynda Foernsler * Jerome Foughner * Archie Fripp * George Ganoe * Richard Garfield *

yd Keafer * Jerry Kegelman * Guy Kemmerly * Eleanor Ketchum * Ferdous Khan * Mark Kiser * Steve Klausmeyer * Bill Kluge * Roberta Knight * John Korte * Nancy Kruse * Robert Kudlinski * Sue Kullerd * John Lamar * Allen Larar * Elizabeth Lee-Rausch * Chen-Huei Liu * Mike Logan * Gary Lohr *

Bruce Outlaw * Rolando Padilla * Vickie Parsons * Sid Pauls * Wendy Pennington * Burnett W. Peters * William Phaup * William Phillips * Joe Posey * Ed Prior * Dan Pritchard * E. Brian Pritchard * Dave Pruett * P. Frank Quinto * Fernandus Rattliff * Ray Reaux * William Roberts *

* Paul Tartabini * Beverly Taylor * Cheryl Taylor * Lawrence Taylor * Darrel Tenney * Geoff Tennille * Bill Tennis * Steve Tompkins * James Townsend * Clayton Turner * Dave Turnock * Michael Uenking * Bill Vance * Harry Verstynen * Dan D. Vicroy * Carl Voglewede *

Activities Emphasize Importance of Math and Science

at an expanded week it was! Langley
ing experiences and local educators are
hey say their students have been enter-
d, startled, captivated and, above all,
e enthusiasm generated: "My students
scientists, mathematicians, technicians
in next year."

gh the approaches were many, the results
y singular--to stress the importance of
ath and science. Tremendous thanks go
volunteers, civil servant and contractor,
ipervisors for making this effort so

iative was challenging: over 154 schools
school districts requested NASA
Our employees taught over 800 classes,
over 25,000 students in the Tidewater

special thanks to Bionetics employees
ppedge, Resource Center coordinator,
Smigielski, Public Mail technician, for
n coordinating this effort.

Marny Skora
Office of Public Services

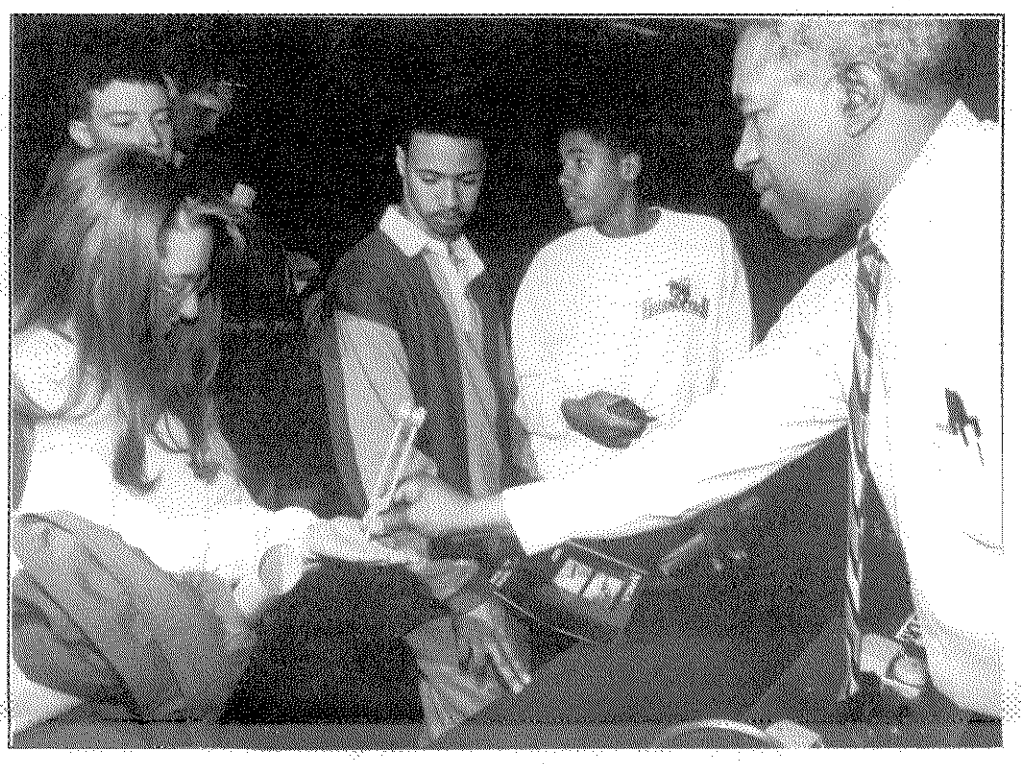


Photo by Fred Jones

Lorenzo Clark, technical assistant in the Acoustics Division, demonstrates how sound is generated when the prongs of a tuning fork are made to vibrate.

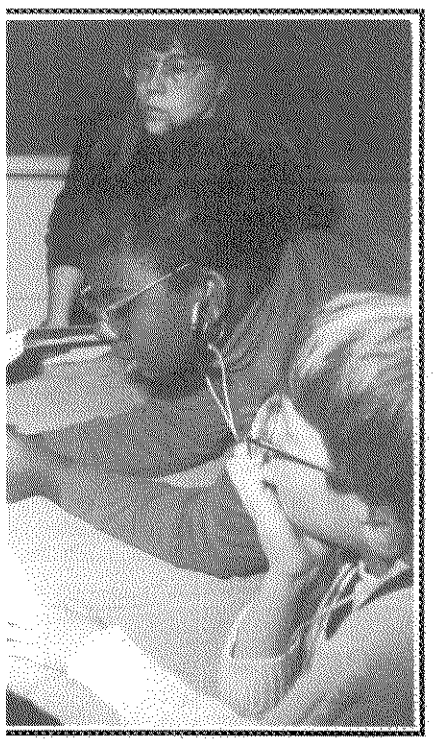


Photo by Carol Petrachenko

**n airplanes! Mr. Warmbrand's students
e lesson as they point out the parts of an
Ault asks questions.**

Career Days Draw Area High School Students

BY MARNY SKORA

Over 550 selected high school students and teachers from the Greater Hampton Roads area converged at NASA Langley for Career Days February 17 and 18.

Cosponsored by NASA and the Peninsula Engineers Council (PEC), Career Day provides an opportunity for students to interact with local engineers, scientists and technicians. "In keeping with the educational focus of National Engineers Week," said Pete Thomas, project coordinator, "a main objective of this activity is to reinforce or broaden student career interests."

Assistant Director Belinda Adams welcomed the students and challenged them to make the most of the morning opportunity. "The professionals assembled here today have valuable information for you. . . Ask them about their jobs, ask them for their advice. It could be a turning point in your career."

Charles R. Adams, 1992 PEC Engineer of the Year was the keynote speaker. Adams, whose career spanned 37 years, retired from Newport News Shipbuilding in 1991 as manager of Advanced Technology.

During an interactive session, students had the opportunity to discuss careers and related topics with practicing engineers from PEC member societies, NASA, Newport News Shipbuilding and the Supervisor of Shipbuilding. Nearly 40 exhibitors displayed work-related equipment and communicated details of a typical engineer's day.

Schools from Hampton, Newport News, Gloucester, Mathews, Williamsburg-James City County, York County, Norfolk, Chesapeake, Virginia Beach and the private sector participated in this year's event.

"As a follow-up to Career Day, local engineers visited area high school classes to present hands-on demonstrations and talk career planning," said Abraham Leiss, PEC president. "Our aim is to make studying math and science relevant to today's students."

atts * Rosa Webster * Noel West * John White * Richard White * Woodrow Whitlow * Carol Wieseman * Norman Willey

Russell * James Russell * Odilyn Santa Maria * Michael Schooley * David Schuster * Jeff Seaton * David Shannon * Dave Shuster

Collum * Steve McCoy * Colon McMath * Naomi McMillin * Clyde Medley * N. Duane Melson * James Miller * Raymond Mineck

obert Hall * William Hampton * Allan Hanrahan * F. Keith Harris * Timothy Harris * Stewart Harris * Roger Hathaway * Michael Hemsch

* Robert Calloway * Shelley Canright * Mark Carpenter * Victor Carreno * Angela Carter * Terry Clark * Tim Coats * Janet Connelly * Brian Connor

Volleyball Champions

The Spikemeisters

The Spikemeisters are the D-League volleyball tournament champions. From left: Steve Williams, Jim Wells, Lon Kelly (captain), Jim Prince, Debbie Busquets and Tony Busquets.

Missed Approach

Missed Approach is the C-League volleyball tournament champion. Front row: Trish Glaab, Dale Ashcomb and Karen Suzuki. Back row: Steve Williams, David Barnes, Jim Prince and David Cooke (captain). Not pictured: Cathy Stacey.

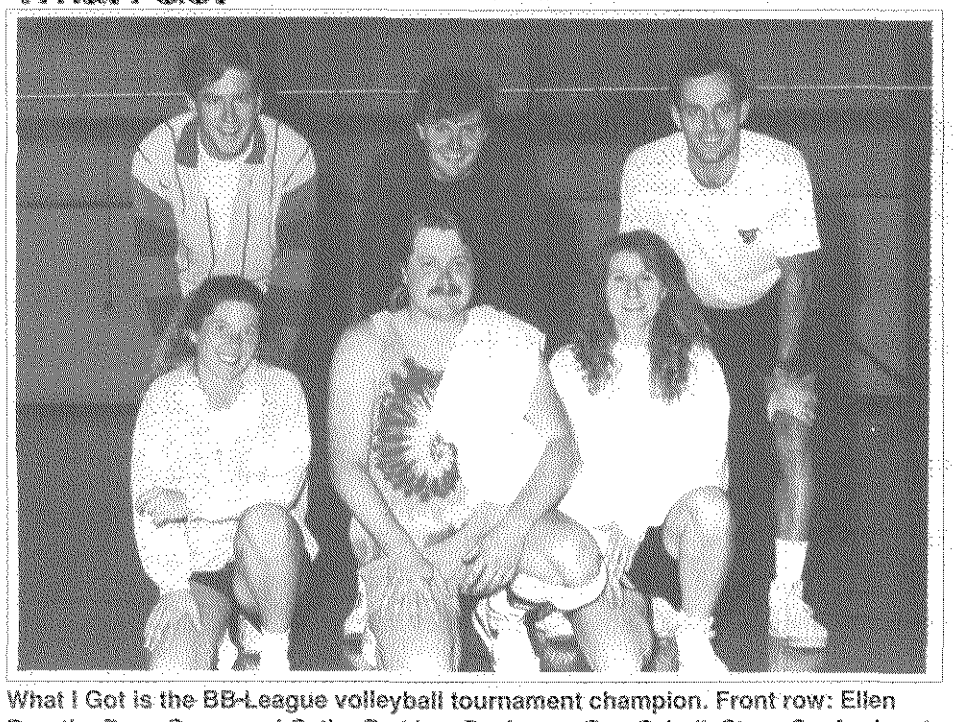
The Sultry Wenches

The Sultry Wenches are the Women's League volleyball tournament champions. Front row: Maylene Hugh, Julie Gould and Ellen Brantley. Back row: Robin Land, Elka Ertur, Ellen Sanford and Laura Brewer.

Too Legie II

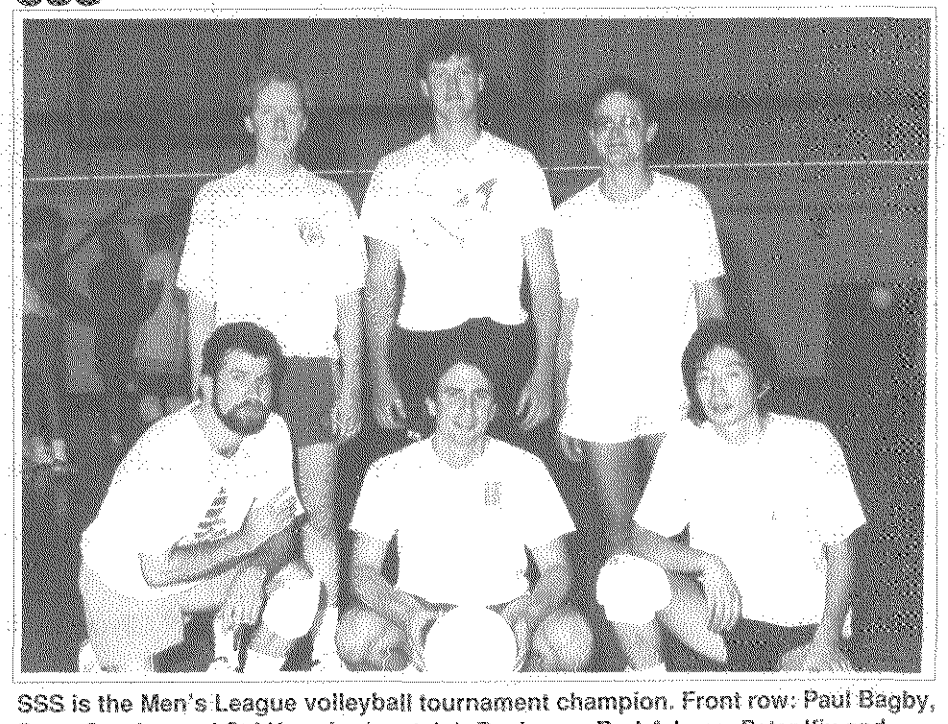
Too Legie II is the B-League volleyball tournament champion. Front row: Gaudy Bezos-O'Connor, Wayne Hollenbaugh (captain) and Janice Bayer. Back row: Scott Martinson, Neil O'Connor, Judy Hannon, Tom Weih and Henry Chambers.

What I Got



What I Got is the BB-League volleyball tournament champion. Front row: Ellen Brantly, Dave Carey and Cathy Perkins. Back row: Ran Cabell, Steve Sanford and Bill Nelson. Not shown: captain Pat Cosgrave.

SSS



SSS is the Men's League volleyball tournament champion. Front row: Paul Bagby, Doug Stanley and Sei Kawabe (captain). Back row: Rod Adams, Peter Ifju and Wayne Hollenbaugh.

Employee Awards

Beverly J. Anderson, engineering technician, Operations Support Division (OSD), for exceptional high level of performance and excellence in support of the High-Speed Civil Transport (HSCT) Program, Langley Jet Noise Laboratory.

Jennie B. Banks, production controller, OSD, for excellent contributions to work request processing operations during the recent work control section transition period.

William C. Alexander, lead engineering technician, OSD, for exceptional technical leadership to the Construction of Facility Shutdown at the National Transonic Facility.

William K. Williams, task area manager, OSD, for excellence on the support services contract.

Marian L. Jones, secretary (typing), OSD, for outstanding performance in maintaining accurate and timely Time and Attendance Records under the new Variable Day Schedule.

Michael K. Kizer, engineering technician, OSD, for exceptional support in the formulation of research model storage information and location system to allow quick access to research models.

Terry A. Oden, secretary, OSD, for excellent administrative support provided as secretary to the Laboratories Operations Branch.

Ronald W. Rader, engineering technician, OSD, for exceptional support in the formulation of a research model storage information and location system to allow quick access to research models.

Reginald C. Rose, engineering technician, OSD, for exceptional operational and model preparation support on the Variable-Geometry Inlet/Isolator Model in the Mach 4 Blowdown Tunnel.

Steven D. Seider, engineering technician apprentice, OSD, for exceptional technical and operational support to the LOX System Shakedown test operations at the 8-Foot High-Temperature Tunnel.

William L. Jones, engineering technician, OSD, for exceptional technical abilities in support of Barocel Modifications and Interlock Maintenance.

Donald R. Bagwell, engineering technician, OSD, for exceptional technical support to the Airborne In-Situ Ozone Measurements System preparation/participation in the TRACE-A Expedition.

Charlie E. Spruill Jr., engineering technician, OSD, for exceptional technical skill and innovative support to research conducted in the 16- by 24-Inch Water Tunnel and Jet Exit Test Facility.

Timothy Harris III, engineering technician, OSD, for exceptional high level of performance and excellence in support of the HSCT Program, Langley Jet Noise Laboratory.

Spencer D. Boullianne, engineering technician, OSD, for exceptional high level of performance and excellence in support of the HSCT Program, Langley Jet Noise Laboratory.

Clifford B. Williford, engineering technician, OSD, for exceptional high level of performance and excellence in support of the HSCT Program, Langley Jet Noise Laboratory.

Lisa H. Davis, division secretary, Programs and Resources Division (PRD), for exceptional service in performing the secretarial duties required in preparing the Center's Integrated Program Plan submission to Headquarters.

Lawrence M. Merrill, visual information specialist, Research Information and Applications Division (RIAD), for creative concepts and unique solutions to a number of unusual graphic requests.

V. Chris Johansen, program analysis officer, PRD, for exceptional service in performing the duties of assistant director for Institutional Resource Management while on detail to NASA Headquarters.

Delores K. Poupard, computer specialist, PRD, for significant contributions to several distributed computer system developments outside the normal scope of duties.

Joyce A. Clemens, directorate analyst, PRD, for exceptional service in performing the duties as a technical resources analyst and as lead analyst for OS&MQ in such a professional, diligent and thorough manner.

Amy C. Radford, program assistant, PRD, for personal initiative in developing new report formats and the enhancement of existing data collection sheets to improve information quality.

Gail R.D. Blow, program analyst, PRD, for extraordinary effort and precision in forecasting, tracking and controlling Langley's Personnel and Related Costs Budgets.

Margaret C. Pancoast, photographer, RIAD, for professionalism, dedication and expertise in support of wind tunnel tests in the area of the store carriage and separation program.

William C. Salyer Jr., lead photographer, RIAD, for professionalism, dedication and expertise in support of wind tunnel tests in the area of the store carriage and separation program.

Lillian M. Wentz, lead editorial assistant, RIAD, for superior performance in coordinating and reviewing the National Aero-Space Plane (NASP) series of reports and in compiling the proceedings of NASP Symposia.

Jennifer A. Sanchez, secretarial co-op, RIAD, for exceptional service in performance of secretarial duties while assigned to the Printing and Graphics Branch.

Robert L. Williams, electronics engineer, Information Systems Division (ISD), for dedicated and professional support for the Langley Guidance, Navigation and Control Technical Committee and coordination of the Langley Workshop on Automation and Robotics.

Philip R. Schaffner, electronics engineer, Guidance and Control Division (GCD), for superior performance during intense schedule demands in directing the development of the windshear radar signal processor.

William L. Poole, electronics technician, GCD, for contributions to the successful development and deployment of the mobile windshear radar facility to support the 1992 windshear flight experiments.

William R. Jones, electronics engineer, GCD, for leadership in the development of the mobile windshear radar facility to support the 1992 windshear flight experiments.

Emedio M. Bracalente, electronics engineer, GCD, for superior performance during intense schedule demands in directing the windshear radar development team.

Steven D. Harrah, electronics engineer, GCD, for contributing to the successful development and operation of the real-time windshear airborne and mobile facility to support the 1992 flight experiments.

Stacy L. Hunt, engineering technician, OSD, for innovative improvements to the hardware and tool supply and inventory system at the 30-by 60-Foot Wind Tunnel.

Pendleton M. Jackson, program manager, Facilities Program Development Office, for dedicated, professional support in preparing and teaching the Planning Module for the NASA Program/Project Management Initiative Construction of Facilities Training Course.

Stanley E. Woodard, aerospace engineer, GCD, for conception, planning, coordination and oversight of the Upper Atmospheric Research Satellite (UARS) Disturbance Experiment.

Catherine M. Morris, secretary, Space Station Freedom Office (SSFO), for exceptional performance and dedication in support of the Change Request activity within the SSFO.

Angela Corbin, clerk stenographer (student trainee), for superior accomplishment in providing secretarial support to the Hypersonic Propulsion Branch research staff and management.

Quinton Duncan, engineering technician apprentice, OSD, for exceptional performance in design and fabrication of the Palladium Deposition Gun needed in materials coating for the NASP program.

Sandra D. Muraca, contract specialist, Acquisition Division (AD), for recognition of outstanding management of the SAGE III instrument contract and all SAGE III support contracts.

Sharmon D. Scriven, procurement clerk, AD, for recognition of outstanding contributions to the Research and Projects Contracts Branch in the procurement process leading to the award of the SBIR contracts.

Frances M. Sleigher, computer specialist, AD, for recognition of tireless efforts to enhance the AMS and database usage.

Zachary T. Applin, aerospace engineer, Applied Aerodynamics Division (AAD), for outstanding coordination of the joint NASA., Pratt & Whitney and Boeing Advanced Ducted Propeller Experimental Research Program in the 14- by 22- Foot Subsonic Tunnel.

Laurence J. Bement, aerospace engineer, Systems Engineering Division (SED), for outstanding technical leadership, coordination and dedication in improving pyrotechnics and their application through standardized testing to identify and eliminate problems.

Richard L. Campbell, aerospace engineer, AAD, for creating an efficient Navier-Stokes design technique by coupling the Direct Iterative Surface Curvature method with the multigrid flow solver TLNS3D.

John M. Franke, aerospace technologist optical physics, Instrument Research Division (IRD), for significant innovative electro-optical measurement techniques in ground facility and flight program tests.

Connie A. Smith, secretary (stenography), AAD, for outstanding coordination of all business pertinent to the Vortex-Flow Aerodynamics Peer Review as secretary of the Transonic Aerodynamics Branch.

Dawn M. Winder, clerk, AAD, for outstanding secretarial support to the Transonic Aerodynamics Branch.

Marcus A. Wayne, nondestructive testing technician, Fabrication Division (FD), for exceptional support and dedication to nondestructive evaluation and inspection of facilities at LaRC.

Robert F. Berry, Jr., nondestructive testing technician, FD, for exceptional support and dedication to the inspection of the Boeing 737 Aircraft.

Happenings

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A., 723-5227.

FREE AEROBICS: Get energized with NASA aerobics! Open to all employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Monday, Wednesday and Friday from 6:15 to 7:15 a.m. Lunchtime Energizer is held from 11 to 11:45 a.m. For more information, call ext. 46387.

PUP FOR SALE: Miniature schnauzer pup, AKC-registered, champion bloodline, born February 6. Deposit to hold one male, $300. Call 591-0940 after 4:30 p.m.

TELA TAX SERVICE: Member, National Association of Tax Practitioners. Electronic filing. Small business bookkeeping services. By appointment. Call 874-3121.

ROOMMATE NEEDED: Need female roommate to share expenses in a three-bedroom apartment close to NASA. Private bedroom. Call 865-0592.

LOT FOR SALE: At Wintergreen, a .37-acre corner wooded lot on the mountain, one block from a pool. Includes WPI. Priced below tax-assessed value at $34,500. Pictures available. Call 220-1129 after 7 p.m.

FOR SALE: Tyco HO 4-by 8-foot train board with track, trestle bridge, switches, signs, two locomotives and six freight cars, $65 negotiable. Call 851-0552.

LOW-IMPACT, BENCH & CARDIO-CIRCUIT: Get the benefit of fat-burning (bench and low-impact), lower body toning, upper body weighted workout and abdominals in one session. Benches and free-weights provided. Free body composition analysis will be given before class. Classes are Tuesdays and Thursdays from 5 to 6 p.m. and Saturdays from 9:30 to 10:30 a.m. in the LAA gym. Classes are open to employees, contractors and their families. First class is free. Call ext. 42295 for more information.

FOUND: Pair of prescription glasses in the clinic. Call Joyce, ext. 43193.

LOTS FOR SALE: Looking for neighbors to divide parcel in a custom residential neighborhood in the Tabb area of York County. Call 838-9506.

TOWNHOUSE FOR SALE: By owner, Poquoson, 2,000 square feet, 3 bedrooms, 2½ baths, eat-in kitchen, bay windows, hardwood floors on first floor, fireplace, 3 skylights, end unit with windows overlooking large side and rear yard. $97,000. Call 868-7422.

CONDO FOR RENT: Hampton Club condo, one bedroom, new carpet and paint, 10 minutes to NASA, washer/dryer and all appliances convey. $410 per month and deposit. Call 868-9130.

THE NASA -LANGLEY APICULTURE CLUB (HONEYBUNCH) will meet March 15 at 7 p.m. in the Executive Dining Room of Building 1213. An open forum discussion of the honey bee colony overwintering (92-93) experience will be held at the program. All interested persons are welcome. Call Henk at ext. 47226.

FOR RENT: York County owner must rent in order to close on new home. 2 Master BR, 1 1/2 bath, fireplace, mini-blinds, wall-to-wall carpet, all appliances included washer/dryer, end unit with fenced backyard. Fees paid by owner. Deposit nego. $595.00 / Mo. Military discount available. Pets and children OK. Call 890-0994 after 5:00 p.m.

NASA LANGLEY TOASTMASTERS CLUB meets March 24 in the H.J.E. Reid Conference Center, Building 1222, from 11:30 a.m. to 1 p.m.

LOST EQUIPMENT: 8-inch model tip turbine fans made by Tech Development Inc., sold to Langley in 1971. There are five type 292-C and two type 292-L fans. Used in tunnels tests in the 1970s. Call John C. Wilson at ext. 45056.

DRESSES FOR SALE: Prom/Bridesmaid dresses, never worn, sizes 7/8 and 13/14; tea-length, V-back, short sleeves, blue/teal color. $120 each. Call 838-8422.

HOUSE FOR SALE: Whealton Heights, Hampton, five bedrooms, hardwood floors, carpet, four baths, formal living and dining rooms, den with fireplace, large kitchen, eight ceiling fans, patios, basketball court, shed, new water heater, dishwasher and kitchen counter tops. $132,000. Call 826-6994.

ROOM FOR RENT: Unfurnished in luxury townhouse. Less than 15 minutes from NASA, vicinity of I-64 and Oyster Point Road. Private master bedroom with large bath and balcony. Private phone line, cable, washer and dryer, fireplace, pool. Nonsmoker only. Deposit and reference required. Available March 1. $370 per month includes all utilities. Leave message at 591-0712.

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News Researcher

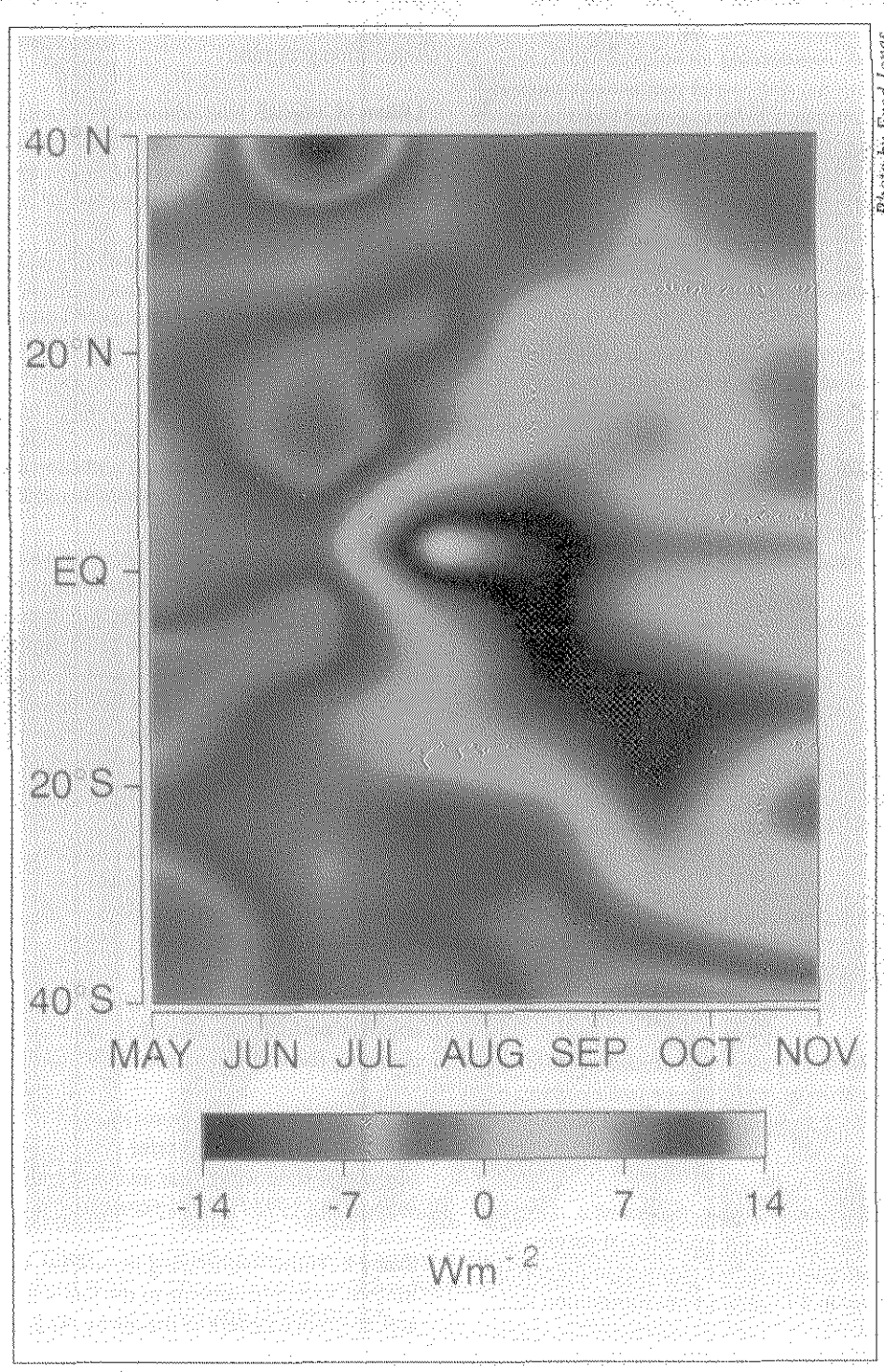


Photo by Fred Jones.

The volcanic aerosols ejected from the June 1991 eruption of Mt. Pinatubo in the Philippines were measured by the NASA Earth Radiation Budget Experiment (ERBE). The figure shows ERBE satellite results of how the aerosols affect incoming energy from the sun. The horizontal scale is latitude from 40 degrees south to 40 degrees north, and the vertical scale is time from May to November, 1991. The presence of volcanic aerosols causes more of the sun's energy to be reflected back to space (light areas) than before the eruption. See story Page 1.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Biweekly Employee and Contractor Publication

Volume 7 ❖ Issue 5 ❖ March 26, 1993

Langley Plays Important Role In SEDS Experiment

Langley has a key piece of an experiment designed to learn more about the way tethers behave in space. The Small Expendable Deployer System (SEDS) was set to be launched on an Air Force Delta II rocket last week.

"There are all kinds of possibilities for tethers," said Kenneth Crumbly, SEDS project manager at Langley. "But until you fly them, you're just doing theoretical studies."

Future applications could include using tethers to:

•Link observatories and microgravity experiments, or keep hazardous supplies at a safe distance from a space station.

•Transmit power from orbiting generators.

•Lower atmospheric experiments into the upper atmosphere from a space shuttle.

•Drag models through the atmosphere from space to learn more about the aerothermodynamics of air and spacecraft.

Tethers could even play a role in creating artificial gravity on a Mars mission. In this scenario, tethers link two spacecraft that are set spinning counter to each other to produce gravity through centrifugal force.

The present experiment is similar to the one deployed by a space shuttle in August 1992, though smaller, less complex and less costly. It is also the first U. S. tether mission – the tether experiment last August was technically an Italian effort.

SEDS hardware consists of a toaster-size electronics box, a braking system, a 12-mile tether and a tether cutter all developed by Marshall Space Flight Center and a payload designed, developed and fabricated at Langley. The Instrument Research, Flight Electronics, Systems Engineering, Fabrications and Projects Divisions all contributed to the development of the payload.

The payload, with an independent data system and software, will transmit information such as tether tension, severed-tether behavior and payload movement to tracking stations on the ground.

The hope is that the data will provide correlating evidence about a tether's actual capability in space. To date, the engineers have only computer models to predict how they work.

The mission called for data to be gathered during a 90-minute deployment. Like a fisherman's spinning reel, a canister the size of a two-gallon gas can was released toward Earth, with more than a dozen miles of super-strong polyethylene fiber. Resembling several twisted strands of dental floss, the tether can withstand 175 pounds of stress before breaking.

The mission also called for Langley's 57-pound payload — about the size of a small portable television — to be at the end of the line, unreeling for more than an hour before a braking mechanism slowed it to a stop.

Once unraveled, the payload was to swing like a pendulum at the end of the tether for 20 minutes.

The tether was to be cut and data gathering efforts to cease as the payload reentered the Earth's atmosphere and burned up.

"After the mission, the data collected on tether dynamics will be processed and compared with the existing computer-generated prediction models," he said.

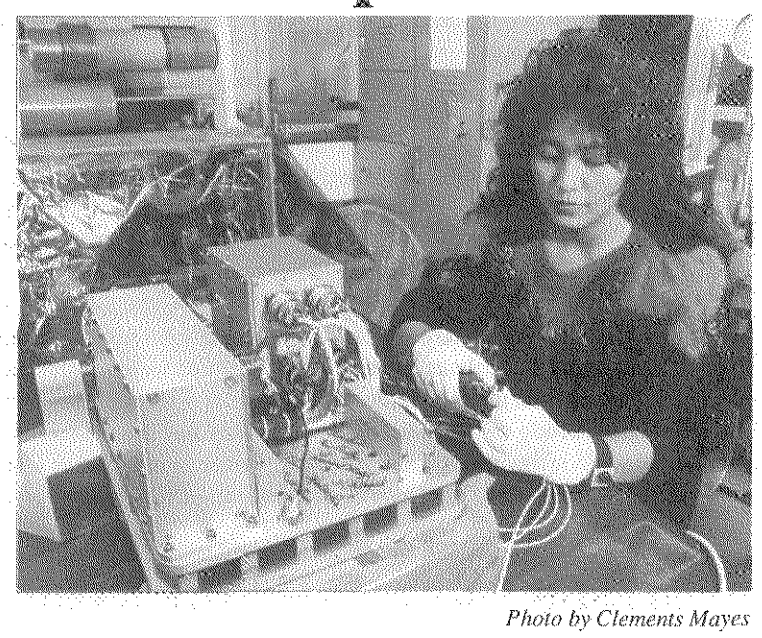
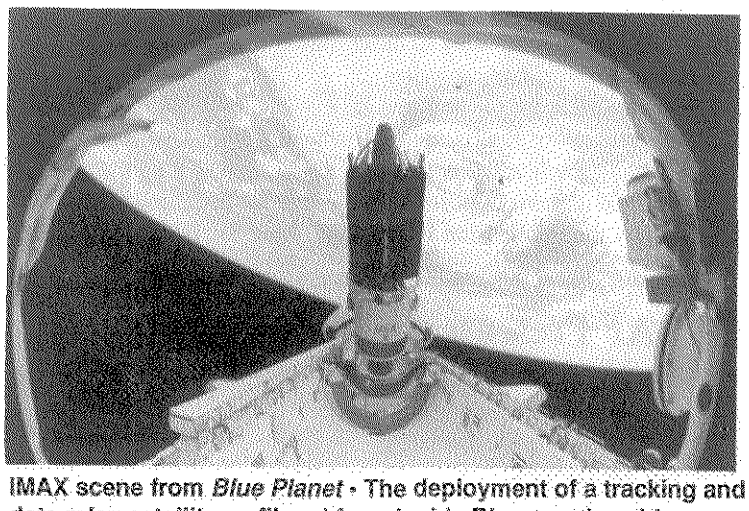


Photo by Clements Mayes

Lorina Yahatta assembles the final wiring harness for the payload. Information gathered on the mission will help engineers understand different types of testing that needs to be done on future missions.

"Using this information, engineers will be able to better understand the different types of testing that should be done on future missions," he added.

A second SEDS mission in about a year will more extensively test the use of the tether braking system to control the tether. A third mission is planned by the Students for the Exploration and Development of Space Satellites (SEDSAT) at the University of Alabama in Huntsville. If approved, a payload consisting of television cameras will take pictures of the Earth's surface.



IMAX scene from *Blue Planet* • The deployment of a tracking and data relay satellite as filmed from inside Discovery's cabin.

VASC Celebrates First Year

The Virginia Air and Space Center invites everyone to celebrate its first birthday April 3-4. A new IMAX film, children's activities and free Sunday admission are highlights of the celebration.

Over a quarter million people from around the globe have visited the Center since it opened last April. The Center has educated and entertained more people than it ever expected to, hosted more than 75 special events, won numerous awards and filled the pages of national magazines. The $30 million, world-class facility is a collaborative effort between the City of Hampton, the Commonwealth and NASA. It features Hampton Roads' and NASA Langley's past, present and future.

Celebration Events
SATURDAY, APRIL 3

Free Famous Tomato Seeds: The first 50 educators to visit the NASA Teacher Resource Center will receive some of the famous seeds that were flown aboard the Long Duration Exposure Facility (LDEF), which was launched April 6, 1984, on Space Shuttle Challenger and returned to Earth January 20, 1990, aboard Space Shuttle Columbia. The seeds are part of a kit prepared for educators to promote awareness of the Earth, space and the environment.

Blue Planet: Filmed hundreds of miles above the Earth, this larger-than-life

See **VASC**, *on* **Page 3**

A Letter To Employees

If anything is clear from the newspapers, television and radio, it's that these are very dynamic and very challenging times. For the Nation, we have a new president with different views from his predecessor and very strong views on technology development and technology transfer. For NASA, we have an administrator who continues to be an agent for change; the Space Station program is being redefined, both in its configuration and its management, and the outcome could impact the direction of the Agency for years to come. Our Center Director is temporarily in Washington assisting Dan Goldin, Jack Dailey and others leading the Agency through these turbulent times.

In light of all this, you might ask how things look for Langley. My answer would be: unbelievably positive! There has been an extremely strong commitment to aeronautics by the new administration. This commitment could very well be manifested into new national aeronautical facilities and major funding increases for subsonic, supersonic and hypersonic aircraft technology. In fact, in my 23 years with NASA, the prospects for aeronautics have never looked stronger. In all of these aeronautic areas, Langley is being asked to assume major leadership roles of various kinds.

In contrast to aeronautics, the space technology forecast is not quite clear, but there are indications that Langley will be asked to assume selected new leadership roles here as well. Our commitment to atmospheric sciences and associated disciplines remains unchanged, and this will surely be reinforced by the new vice-president who is openly concerned about the environment. So, it is an understatement to say that I'm optimistic about the future for Langley. In fact, for us, the biggest near-term challenge may be to decide how we can effectively and efficiently step up to the critical programmatic and management responsibilities before us. This may well involve some significant changes for us. We cannot spread ourselves thinner and thinner without sacrificing quality, and Langley people have always put quality first. We will need to make some choices, and undoubtedly these choices will have an impact upon the content of our program.

"In fact, in my 23 years with NASA, the prospects for aeronautics have never looked stronger."

We are currently working hard defining what some of those choices may be and defining subsequent strategies. I am confident that, whatever choices are made and whatever changes are actually implemented, the overall impact for Langley will be very, very positive. I am also confident that the outstanding people of Langley will rise to the occasion and lead NASA's aeronautics, space technology and atmospheric sciences programs smartly into the 21st century. I am looking forward to sharing more thoughts with you in the State-of-the-Center message in early April.

Lee

H. Lee Beach Jr.
Acting Director

News Briefs

AROUND THE AGENCY

STS-62 CREW NAMED - U.S. Air Force Col. John H. Casper will command the STS-62 mission carrying the second U.S. Microgravity Payload (USMP) and the second Office of Space and Terrestrial Applications payload, called OAST-2, aboard Columbia. Other crew members are U.S. Marine Corps Maj. Andrew M. Allen, pilot and mission specialists U.S. Navy Cdr. Pierre J. Thuot, U.S. Army Lt. Col. Charles D. "Sam" Gemar and Marsha S. Ivins. Experiments on STS-62, a 13-day extended duration orbiter mission, include growing crystals of semi-conductor materials, investigating the properties of xenon during phase transitions, investigating the fundamental behavior of materials as they solidify into structures known as dendrites and monitoring equipment that will measure and record disturbances in the microgravity environment of the USMP carrier. These experiments allow the scientific and commercial communities to test space-based processes for beneficial applications on Earth.

STS-59 NAMES COMMANDER - U.S. Air Force Col. Sidney M. Gutierrez will command the STS-59 Space Radar Laboratory mission aboard Atlantis. Other crew members include U.S. Air Force Col. Kevin P. Chilton, pilot, and mission specialists Jay Apt, Ph.D., and U.S. Army Lt. Col. Michael R. Clifford. Previously announced crew members are Linda M. Godwin, Ph.D., named payload commander in August and Thomas D. Jones, Ph.D., named mission specialist in February.

GOLDIN MAKES MANAGEMENT CHANGES - A series of organizational changes to improve the focus on programs and enhance external relationships were announced recently by NASA Administrator Daniel S. Goldin. In a move to strengthen the the top-level management of the agency, Goldin named John R. Dailey acting deputy administrator. Dailey has been associate deputy administrator since November 1992 after retiring from a 36-year career in the Marine Corps. Goldin also named Dr. Joseph Shea assistant deputy administrator for Space Station Analysis. He will have oversight of all Space Station related development activities.

Team Earns Top General Electric Award

NASA's members of the General Electric/Rohr/Allied Signal/NASA Hybrid Laminar Flow Nacelle Flight Validation Team were recognized March 23 by Donald F. Keck, manager, Nacelle and Installation Products Operation, General Electric Aircraft Engines at Langley.

The NASA/Industry team successfully flight demonstrated the concept of drag reducing laminar flow control applied to the external surface of a transport aircraft engine nacelle in a series of flight experiments conducted last July and August in Mojave, Calif.

The NASA and support service contractor team members include; Fayette S. Collier Jr., Dal V. Maddalon, Cynthia C. Lee and Clifford J. Obara of the Flight Applications Division; Vernie H. Knight Jr., Daniel R. Norfolk, Neil C. Coffey, Franklin K. Harris and R. E. Davis of the Flight Electronics Division; Thomas C. Moore Sr. of the Instrument Research Division; James R. Elliott Jr. of the Systems Engineering Division; Jeffrey K. Viken, Naval K. Agrawal and Werner Pfenninger of Analytical Services and Materials, Inc.; Paul M. H. W. Vijgen of High Technology Corporation; Bryant D. Taylor of Lockheed and M. Roth of Modern Machine.

Learned Optimism Taught At Seminar

Robbins, Parker and Associates will conduct a Learned Optimism seminar March 30 for the Hampton Roads Section of the American Institute of Aeronautics and Astronautics at the H.J.E. Reid Conference Center. The event will begin with a social at 4:30 p.m. followed by the program at 5 p.m.

Learned Optimism, as recent studies show, is a powerful force that can nurture health and professional growth. The seminar will include scientific testing, professional motivation and organizational and personal outlook strategies that lead to success. The seminar will be directed by Jane E. Parker, vice president, and Joyce W. Robbins, president of Robbins, Parker and Associates. The company is a professional services firm specializing in training, development and communications.

For more information about the Learned Optimism seminar, call Elizabeth Lee-Rausch at ext. 42269.

Conservation Club Sponsors Art Contest

The L.A.A. Conservation Club challenges your kids (Pre-K to 12th grade) to enter its annual art contest. Students must create a slogan which they believe will influence their peers to save our Earth or be more conscious of the need to save and protect our natural resources. Students must illustrate their slogan. Finally, an essay of 50 words or less, should describe the idea. Prizes will be awarded. Entries must be received by April 9.

For more information and contest rules, call ext. 46447 or 46644.

Runners Club Plans Races For Spring

The Runners Club is gearing up for the warm weather. Spring races will be as follows: The 10 km races are on April 5, 15, 19 and 29 and the 2-mile races are April 8, 22, and 26. These races will start at 5 p.m. on Doolittle Road. In addition, a 2-mile race will be held at noon April 13 on the Bethel High School track. All NASA employees, retirees, on-site contractors and co-ops at work earn points for Langley by participating. Walkers are welcome in all races. For more information on the races or the Runners Club, call Richard Shearer at ext. 47036.

SPEAKERS BUREAU

The following Langley personnel participated in the Speakers Bureau in January:

Nicholas T. Lagen spoke at the NASA Education Workshop for Elementary Teachers at the Virginia Air and Space Center on "A History and the Principles of Flight."

Sharon Tanner spoke at Wakefield Elementary School on the "Invisibile Source of Gravity" and on "Estimation and Accuracy in Measurements."

Richard Eckman spoke at National Refrigeration Service on the "Antarctic Ozone Hole: The Impact of CFCs and Implications for the Future."

Dr. M. Patrick McCormick spoke at the Poquoson Lions Club on the "Impact of Volcanic Eruption of Mt. Pinatubo on the Earth's Atmosphere."

Dr. John Buckley and Robert Fox spoke at the Amherst County Public Library on "Induction Heating For Fabrication and Repairs in Space."

Dr. Karen Jackson spoke to the Department of the Army's Federal Women's Program on "Women in NASA" and Vint Hill Farms Army Station, Warrenton, Va., Federal Women's Program on the "Crash Dynamics Research" Program.

Dr. Joel Levine spoke to the Women in Aerospace in Washington, D.C., on "A Planet at Risk" and to the Society of Engineers, Hampton Roads Section, on "A Planet at Risk."

Douglas Stanley spoke to the Smithfield Kiwanis on the "Next Generation of Space Shuttle."

Joe Talbot spoke to the Williamsburg Rotary Club on the Russian Space Program.

IN MEMORIAM

Robert J. Mayhue died March 1. He retired in 1981 as an engineer.

FWP Hosts Awards, FEW Sponsors Programs

The Federal Women's Program Committee (FWPC) will host the Second Annual FWPC Awards Program March 30 at 1p.m. in the H. J. E. Reid Conference Center.

Awards will be given for Employee of the Year and Supervisor of the Year. The awards recognize outstanding contributions to the advancement of women in the work force.

Keynote speaker Dr. Mary Lewis will discuss career development. Dr. Lewis facilitated a workshop on the subject at the U.S. Coast Guard Reserve Training Center in Yorktown in October 1991. All employees and contractors are encouraged to attend. The J.O. is A2987. For more information, call Patsy Campbell at ext. 43291 or your directorate FWPC representative.

In observance of the Federally Employed Women, Inc.'s (FEW) 25th anniversary, the Langley chapter will sponsor a training program. The program will be April 3 from 8 a.m.-noon at Southall Landing in Hampton. Mini workshops scheduled include the history of FEW, career transitions, financial planning, physical fitness and chapter compliance.

This training program is open to FEW members and non-members. For registration and information call Beverly Thomas-Burse at ext. 42420.

PBS Show Encourages Math and Science Study

To encourage children to study math and science, Public Broadcasting Service will air a new one-hour prime-time special, "Living and Working in Space: The Countdown Has Begun," on March 31 at 8 p.m.

The program intersperses celebrity appearances with interviews of aerospace professionals and features a dozen NASA employees. NASA's contribution to the special also included the development of educational materials and activities.

Jaime Escalante, the celebrated math teacher portrayed in the Academy Award-nominated film "Stand and Deliver," stars with celebrities Kathy Bates, "Weird" Al Yankovic, and Jackee.

" I told my kids that they will be living and working in space. They don't believe me. So, we made a show about it," said Escalente.

The program opens the door to the abundance of opportunities for today's kids in space. It also makes the point that children need to study math and science in order to cope in a technology-based society.

"We wanted to spotlight some of life's day-to-day activities that might need some rethinking in outer space," said Steven Heard, executive producer and co-writer.

This program, for the entire family, is funded by ARCO and the U.S. Department of Energy. NASA provided additional funding for educational materials and activities.

A limited amount of posters for classrooms are available by stopping by the Public Mail Room, 1 W. Reid St., Bldg. 1153, Room 115.

CEBAF Presents Open House

The Continuous Electron Beam Accelerator Facility (CEBAF), a nuclear physics laboratory under construction in Newport News, will present its second annual open house April 3 from 9 a.m. to 5 p.m.

Scheduled events include tours though the underground accelerator, an experimental hall and the laboratory area where accelerator components are assembled and tested. Knowledgeable employees in key areas will assist visitors.

Parking for the general public will be a marked area near the Hess's end of Patrick Henry Mall on Jefferson Avenue. Bus service between the mall and CEBAF will begin at 8:50 a.m. and continue until 3 p.m. To make special arrangments for the disabled and large groups, call 249-7100 by March 26. Children under the age of 16 are encouraged to attend but need to be accompanied by an adult. Flat shoes are required.

Holmes Retirement Party

A retirement party honoring David C.E. Holmes will be April 13 at the Reid Conference Center. Social hour is at 6 p.m. followed by a buffet dinner and program. Cost is $13 per person. Contributions for a gift only are welcome. Please reply by April 5 to Arte Jessup, Mail Stop 256, Ext. 3971, or Wes Easley, Mail Stop 256, Ext. 43981. Call Easley for more information.

News 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 ..... Marny Skora

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

Photojournalist ..... Carol Petrachenko, The Bionetics Corp.

Photographer ..... Fred Jones

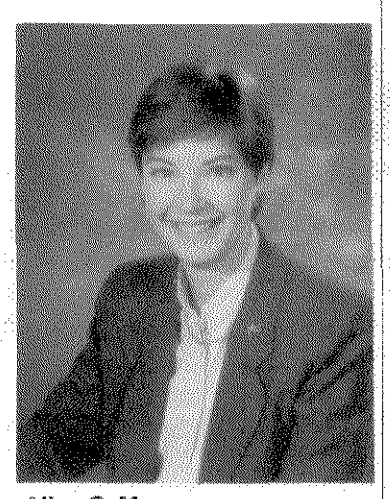
The privilege of advertising in this publication is restricted to the employees and retirees of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin.

All materials are subject to editing.

People & Places

Massey, New HRMD Chief

Replaces Dr. Belinda Adams, Now Assistant Director


Alice C. Massey

Alice C. Massey has been selected as Langley's chief of the Human Resources Management Division. In this position, effective March 7, she is responsible for developing and managing comprehensive personnel programs, including recruitment, promotions, classification, benefits, labor relations, employee development and occupational health. Massey is the principal advisor to Langley management concerning personnel matters, ensuring regulatory compliance with both NASA Headquarters and the Office of Personnel Management.

Massey began her NASA career in September 1973 as an equal opportunity specialist, serving as the Center's Federal Women's Program coordinator.

Massey subsequently served in the Programs and Resources Division as a program analyst and then as head of the Research and Programs Management Branch. She was responsible for centralized program analyses and resources utilization control services for Center management as well as development and integration of the institutional budget. Massey specializes in budget planning and preparation.

In September 1990, she was named assistant chief of the Human Resources Management Division. In that position, she was in charge of internal personnel operations, handling many of the day-to-day operational activities within the division.

She has received a NASA Exceptional Service Medal, a NASA Outstanding Leadership Award and a NASA Equal Opportunity Award.

Retiree Wins National Volunteer Award

Dr. George W. Brooks, retired director of structures, has been awarded the Geico Public Service Award for his outstanding commitment to volunteerism.

Brooks was awarded $2,500 for outstanding achievements in the fields of substance abuse and prevention.

To be nominated is a rare distinction. Brooks is one of 2,000,000 eligible retired federal employees. For over two decades, Brooks has done volunteer work with eight public service organizations, among them the Red Cross, York-Poquoson Department of Social Services and the Virginia Air and Space Center.

"I feel that I need to give back to society because life has been so good to me."

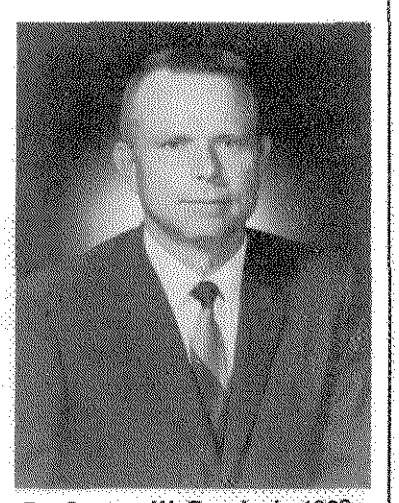
Brooks' passion to help others began long before his retirement. During his 25-year career with NASA, he initiated many volunteer programs, such as one designed to spark an interest in young people to pursue technical fields. "I feel that I need to give back to society because life has been so good to me," Brooks said.

His life and career have been characterized by tremendous accomplishment and devotion to others. For the past 18 years since his retirement, he has worked nearly full time as a volunteer in social and community organizations–working with the young, the elderly and the disadvantaged. "I come from a family who lives to be a ripe old age and I never plan to quit doing these things because I plan to live to be over 100," he said.

Brooks has been very involved with young people and has spent considerable voluntary time over the past decades developing programs and activities designed to give them alternatives to substance abuse and delinquency.

He has either personally created or managed the creation of skill and trade programs, Sea Scout programs, free museum access programs and other local social activites, all aimed at giving disadvantaged children options to help make them more productive citizens.

A distinguished scientist of international reputation, Brooks has played significant roles in the lives of countless people, especially the young.


Dr. George W. Brooks in 1968

Brooks was honored at a reception in Washington, D.C. March 1.

The Geico Public Service Awards were established to help focus attention on those who make important contributions to the quality of life in our nation.

Recipients are chosen through a worldwide selection process involving federal government employees and nationally recognized experts.

Brooks began his career in 1949 as an aeronautical engineer. From 1968 to 1974, he was Langley's assistant director and director for structures.

Southall Named Chief, Operations Support Division; Mason Retires

Charles M. Southall III has been named chief of the Operations Support Division.

Southall replaces Roy W. Mason who is retiring next month.

In his new position Southall will be responsible for approximately 400 employees organized in five branches.

The position requires planning, developing, evaluating and budgeting for technical support to operate and maintain the research test facilities and associated systems along with other equipment on Center.

Southall's most prominent project was the support of the Lunar Landing Research Facility during the Apollo Program.

He designed a new altimeter servo system, flight simulation system and a new method to control the pitch and roll trim systems on board the Lunar Landing Research Vehicle.

This new trim system's design earned Southall the biggest award given to a technician at the time.

He began his career at Langley as an apprentice 30 years ago. He completed course work at Old Dominion University and Thomas Nelson Community College.

Southall received an Outstanding Performance Award in 1992.

Mason began his career at Langley in 1955 as an apprentice electrician with NASA's predecessor agency, the National Advisory Committee for Aeronautics. He graduated from apprentice school in 1960.

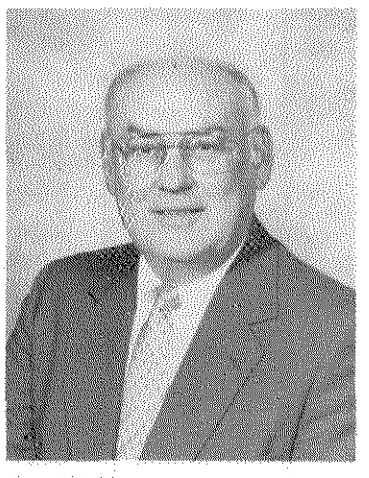
He was selected as supervisor of technicians at the Lunar Landing Research Facility in 1970.

In 1972, Mason became supervisor of technicians in the Aircraft Noise Reduction Laboratory. He was named head of Technical Support Section "A," Laboratories Operations Branch, in 1980, and manager of the the branch in 1986. He was named chief of the Operations Support Division in 1989.

Mason has been involved in significant research projects, including the Rendezvous and Docking Simulator where spacecraft docking techniques were investigated for the Gemini Project.

Mason was also assigned to the Lunar Landing Research Facility where Apollo astronauts learned lunar landing skills.

Charles M. Southall III


Roy W. Mason

VASC:

Continued from Page 1

IMAX film explores the fragile balance of nature and the forces that affect it including typhoons, hurricanes, earthquakes and even humans.

Visitors will leave with a better understanding and appreciation of our planet. The film is sponsored locally by 2WD Radio, Abbitt Realty, WTKR Television Channel 3 and Sanfill, Inc. Combination admission to the Center and IMAX film is $6 for adults, $5.50 for senior citizens and military and $4.25 for children.

Children's Activities: Children can gain a better understanding of our world and their role in it by designing a "world" button and creating a tree using their own handprints. Programs will be held in Center classrooms from 11 a.m. to 3 p.m.

Participants will also receive a free cut-out NASA Space Shuttle glider kit. Basic admission to the Center is $3 for adults, $2.50 for senior citizens and military and $1.50 for children.

World Game Workshop: Visit the Center from 10 a.m. to 1 p.m. and watch invited guests participate in the World Game Workshop featuring the largest and most accurate map of the world.

More than 50,000 people have experienced the World Game Workshop since it began in 1982.

The workshop is designed to heighten global awareness and to increase geographic knowledge. The workshop is free with basic admission to the Center.

SUNDAY, APRIL 4

Open House: The basic admission fee will be waived and visitors are welcome to make a donation to the Virginia Air and Space Center. See either IMAX film for $3.

Team Awarded Honorable Mention

Dr. John A. Tanner, Ahmed K. Noor and Jeanne M. Peters were awarded an Honorable Mention March 23 by the Tire Society, Inc.

The group received the award for their paper: "Reduced Bias Technique For Evaluating Sensitivity Derivatives of the Nonlinear Response of the Space Shuttle Nose-Gear Tire."

The award was presented at the 1993 Tire Society Conference in Akron, Ohio.

Happenings

LANGLEY ALUMNI ASSOCIATION will host a weekend retreat for former employees and their guests May 21-23 at the Foxfire Resort and Country Club in Jackson Springs, N.C. A $30 deposit is required by April 1. Call Abe Leiss at 877-2939 for details.

FOR SALE: Sears exerciser with stair stepper, similar to solo-flex, $300. Call Darrell Wood at 872-9546.

TRAILER FOR SALE: Poquoson, '73, 12-feet by 60-feet, 2 BR, 2 BA, living room, E-I kit., central air & heat, stove, refrigerator, washing machine, newly renovated, $6,500. Call 868-7800 days or 868-7519 nights.

LANGLEY CHAPTER OF THE NATIONAL SPACE SOCIETY will have a dinner meeting at 5:30 p.m. March 29 at the Warwick Restaurant, 12306 Warwick Blvd., Newport News. Peter Gorin, a Russian space historian, will discuss past and current Russian space activities. For more information, call Doug Stanley at ext. 44518.

INCOME TAX PREPARATION: Member of the National Association of Tax Practitioners. Electronic filing and direct deposit offered. Small Business bookkeeping. We travel to you. By appointment. Call 844-3121.

GRADUATE STUDY: Langley employees planning to apply for Center support for full-time graduate study during fiscal year 1993 should contact George D. Allison at ext. 42594 before April 9.

FOR SALE: 1988 Baretta Open Bow, 18-1/2 feet, 165 hp I/O 4 cy 1 Merc Engine, very low time. Includes trailer, automatic bilge pump, halon extinguisher system, covers. $6,000. Call 723-1005.

LOT FOR SALE: Wintergreen, .37-acre corner wooded lot on the mountain, one block from pool. Includes WPI. Priced below tax-assessed value at $34,500. Pictures available. Call 220-1129 after 7 p.m.

FLORIDA/BAHAMAS VACATION FOR TWO: Five days/four nights, includes Florida and Bahamas hotel costs, day cruise (breakfast, lunch and dinner on boat) to and from Bahamas. Can be taken anytime except September. $235. Call 827-4991.

FOR SALE: Racing Optimist by Lange, 2 North Sails (1 racing sail, 1 practice sail), a mast-head wind indicator, blades w/ carrying bag, shock cords, nylon hull cover. Perfect condition. $1,200. Call 850-2859 for more information.

CAMPGROUND SITE FOR SALE: Virginia Landing, Eastern Shore reached from Highway 13 at Painter and Quimby on Atlantic Ocean. Beach, marina and deep channel. Swimming, fishing, pool and tennis courts. $6,000 or best offer. Call 722-7045.

LOST EARRING: Sterling silver hoop (with post). Possibly lost on the way to the cafeteria during the week of March 8. Please call Carolyn at ext. 42529.

PARADISE FOUND: Sanibel Island, Fla. Beautiful Gulf-front, ground floor condo, 1 BR/1 BA, full kit, A/C, tennis, pool, cable, VCR, on-site management. May-December, $540 per week. Call 565-1849. 5-8 p.m.

RIDE NEEDED: Riverdale to NASA•7, 7:30 or 8 a.m. Will pay expenses. Call Henri at ext. 45254.

FOUND: Prescription glasses in the clinic. Call Joyce at ext. 43192.

TAX PREPARATION: Electronically filed at the lowest price in town. We come to you anytime, anywhere. Call 838-6394.

DRESSES FOR SALE: Prom/bridesmaid dresses, never worn, sizes 7/8 and 13/14; tea-length, V-back, short sleeves, blue/teal color. $120 each. Call 838-8422.

HOUSE FOR SALE: Whealton Heights, Hampton, 5 BR, hardwood floors, carpet, 4 BA, formal living and dining rooms, den with fireplace, large kitchen, eight ceiling fans, backyard patio, basketball court, shed, new water heater, dishwasher and kitchen counter tops. $132,00. Call 826-6994.

INCOME TAX PREPARATION: Member of National Association of Enrolled Agents. Please call and leave name and phone number for appointment. Nancy Taylor, E.A. 723-5227.

FREE AEROBICS: Open to employees and contractors. Low-impact with interval weight training classes in the LAA gym. Body Dynamics are held Mondays, Wednesdays and Fridays, 6:15 - 7:15 a.m. Lunchtime Energizer 11-11:45 a.m. For more information, call ext. 46387.

LOW IMPACT, BENCH & CARDIO-CIRCUIT: Get the benefit of fat-burning (bench and low-impact), lower body toning, upper body weighted workout and abdominals in one session. Benches and free weights provided. Free body composition analysis will be given before class. Tuesdays and Thursdays 5-6 p.m. and Saturdays, 9:30-10:30 a.m. in the LAA gym. Classes are open to employees, contractors and their families. First class is free. Call ext. 42295 for more information.

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Researcher News

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STATE OF THE CENTER

Era of Change, Challenge, Opportunity

H. Lee Beach, Jr.

H.J.E.Reid Conference Center

14 Langley Boulevard

Four sessions have been scheduled to permit as many employees as possible to attend.

This invitation is also extended to all retirees and support services contract personnel. These individuals are encouraged to attend the session scheduled for the organization they support(ed).

April 7

1:30 - 2:15 p.m.
- Office of the Director
- Aeronautics Directorate
- Office of Education Programs
- High-Speed Research Project Office
- Fabrication Division

3:00 - 3:45 p.m.
- Electronics Directorate
- Management Operations Directorate
- Office of the Comptroller
- National Aero-Space Plane Office

April 8

8:30 - 9:15 a.m.
- Systems Engineering and Operations Directorate
  except for the Fabrication Division and the Operations Support Division
- Structures Directorate

10:00 - 10:45 a.m.
- Space Directorate
- Flight Systems Directorate
- Operations Support Division

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 7 ❖ April 9, 1993

Langley's ALDF Friction Tests Improve Safety for Land and Airborne Vehicles

BY KRISTINA MURDEN

The sled that zooms from 0-250 mph in 400 feet is teaching NASA and the aviation industry how to improve aircraft safety in snow, ice, rain, and in the near future, even volcanic ash.

Langley's unique Aircraft Landing Dynamics Facility (ALDF) is running potentially lifesaving tests designed to make safer take-offs and landings for the nation's commercial and military aircraft, and the Space Shuttle fleet. "New surface treatments, tire designs and evaluation of different pavement contaminants are our current thrusts," said Tom Yager, senior engineer, Landing and Impact Dynamics Branch.

RUNWAY CONTAMINANTS

Deicing Fluids

Ice on aircraft has contributed to eight major airline accidents since 1982. A deicing/anti-icing chemical, introduced in 1988, is now being used by our commercial airline fleet for the first time this year because of a Federal Aviation Administration mandate. European and Federal Express (overseas) aircraft have been using the new treatment for three years. The Type II glycol-based fluid is superior to the Type I of the past because it not only removes ice but helps to prevent its re-accumulation. "It stays on wings longer, giving pilots longer holdover periods," said Yager. Ground maintenance crews apply the chemical.

"What we must resolve is whether the Type II fluids degrade braking of incoming aircraft on wet runways. Its effects remain unclear," he said. When treated aircraft take-off, the chemicals end up on runways. Airport officials argue that dropping the Type II chemical on wet runways may replace one safety problem with another.

"The aim of our one-month ALDF program," said Yager, "is to better define the effects of Type II chemical depositions on tire friction performance. The ALDF 2,800-foot track is set up to test four surfaces per run: one dry, one water only, one chemical only and one 75 percent water/25 percent chemical. "We look at braking and cornering operational modes (pavement friction performance) for the tires attached to the carriage that rumbles down the track, simulating aircraft takeoffs and landings."

The aircraft industry hopes it is headed toward a point where pilots can have greater confidence that a take-off in freezing precipitation will be predictable, almost commonplace–not a "did-they-get-it-all" exercise in blind faith.

"Testing at the ALDF has advantages over flight testing because of safety, economy, parameter control and versatility," said Yager. "Tests can be made at extreme limits with no in-flight danger."

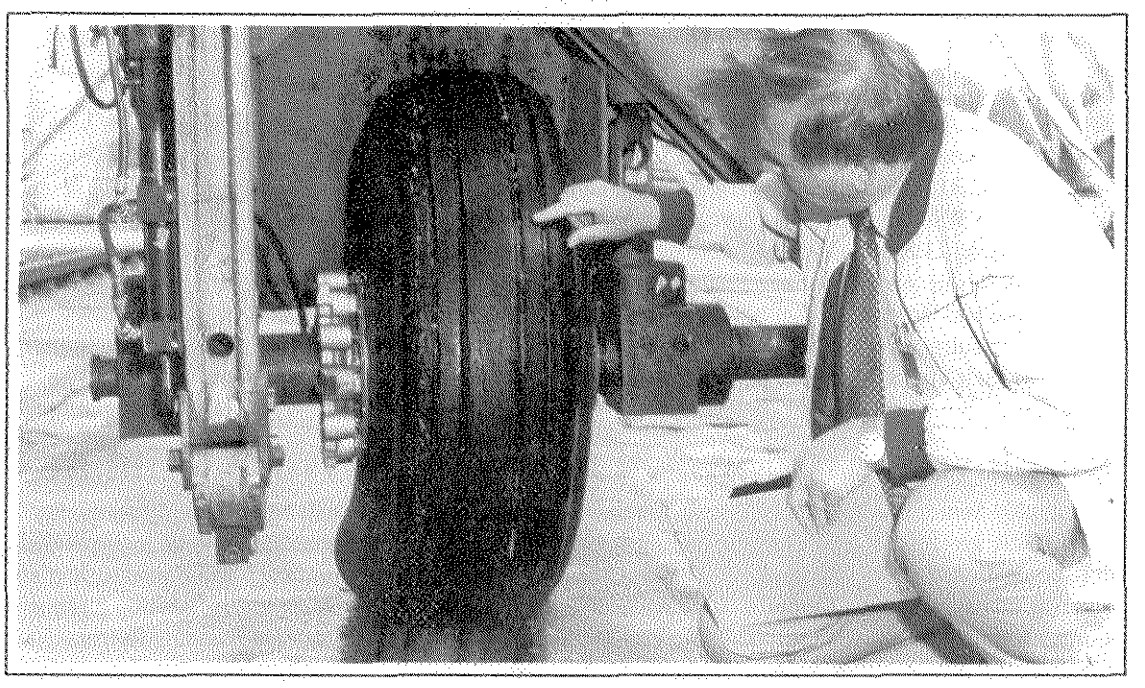


Photo by Don Ward

Researcher Tom Yager inspects aircraft tire tread following low-speed cornering friction tests on a concrete surface coated with Type II aircraft chemical deicer. The new chemical removes ice and helps prevent it from reforming but may present a problem in the process.

Volcanic Ash

"The main runway contaminants we study are excessive amounts of water, snow and ice. A new aspect we may be requested to study is volcanic ash," Yager said. In the past 12 years, more than 60 modern jet airplanes, mostly jumbo jets, have been damaged by drifting clouds of volcanic ash that have contaminated air routes and airport facilities. If the proposed program receives Federal Aviation Administration and aviation industry support, "we are going to bring ash in from Washington State for runway friction tests at ALDF and possibly NASA Wallops Flight Facility," said Yager. Ash covering airport runways and taxiways easily lingers for days to weeks, despite wind and ground movement of aircraft takeoffs, landings and taxiing. Ingestion of remaining ash by jet engines, especially during full power on takeoff, may be just as damaging as ash encountered while in flight.

When wet, ash becomes slippery because of its fine grain. Slippery ash reduces friction between tires and the runway surface, thus affecting the braking and turning performance of aircraft. "Efficient ash removal techniques must be developed," said Yager, "together with establishing adequate criteria for re-opening runways to air traffic."

INNOVATIVE PAVEMENT TREATMENTS

Pavement Grooving and Grinding

From January 1981 through January 1988 there were nearly 400 commercial airline traction-related accidents. Aircraft ran off ends of runways or veered off shoulders. The resulting crew and passenger fatalities motivated intense research programs between government agencies and industry. Langley has evaluated various grooved pavement surfaces that improve tire to runway friction levels by 200 to 300 percent.

"Our goal is to define runway surface maintenance requirements and minimum friction level limits in adverse conditions," said Yager.

"We are studying how tire properties interact with runway surfaces. Water removal from runways in wet weather is also a problem. Water must be rapidly

— See Friction Test, Page 3

ON THE INSIDE

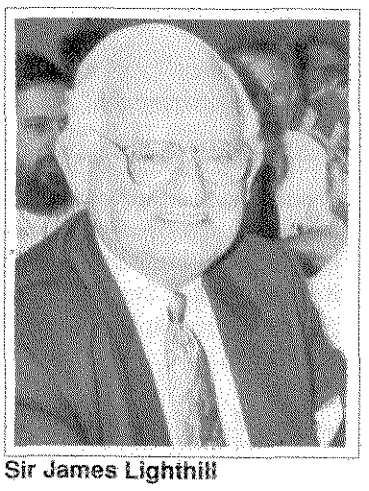
- **The Spin Tunnel has undergone a number of changes to make it the best in the country on Page 3.**
- **The State of the Center report shows us where we've been and where we are headed on Pages 4 & 5.**

Inaugural Lectureship Features Sir James Lighthill

BY KRISTINA MURDEN

A distinguished British aeronautics researcher and educator, Sir James Lighthill, University College London, will inaugarate the Theodorsen Lectureship award program with his discussion of "Aspects of Aeroacoustics of High-Speed Jets" on April 19. He will also present "Hurricane Dynamics" at the Virginia Air and Space Center (VASC) April 20 at 7 p.m.

At Langley, Lighthill will sketch a background of contemporary jet aeroacoustics. He will discuss the potential of how aircraft engines may be designed to reduce ground noise levels. Intense analysis of high-speed jet noise levels has been provoked by faster, and therefore, noisier, jet designs. He will speak at 2 p.m. at the H.J.E. Reid Conference Center. At the VASC, he will discuss hurricanes, emphasizing the basic science underlying these immensely destructive phenomena.



Sir James Lighthill

The Theodorsen Lectureship is an annual award sponsored by ICASE (Institute for Computer Applications in Science and Engineering) and NASA Langley, recognizing individuals who have significantly contributed to our understanding of a variety of scientific and engineering problems. It is in this spirit that Theodorsen contributed to Langley.

Lighthill's research record encompasses topics ranging from marine science and biofluid-mechanics to hurricane dynamics. His accomplishments include the initiation of the science of aerodynamic sound generation.

He has publications in the areas of Fourier analysis, waves in fluids, theoretical fluid mechanics and aeroacoustics.

After serving as director of the Royal Aircraft Establishment, Farnborough, England, Lighthill was the Royal Society Research Professor at Imperial College. In 1969, he moved to Cambridge, where, until 1979, he occupied the Lucasian Chair of Applied Mathematics (once held by Sir Isaac Newton). He left Cambridge University to become Provost of University College London.

Lighthill's honors and awards include the Royal Medal of the Royal Society, the AIAA Aeroacoustics Award, the Prandtl Ring, the Harvey Prize of Israel, and the G.I. Taylor Medal of the Society of Engineering Science.

If you plan to attend the Langley lecture, please call Emily Todd at 864-2175.

THEODORSEN'S CONTRIBUTIONS TO LANGLEY SPANNED A 17-YEAR CAREER

Theodore Theodorsen began a 17-year career at Langley in 1929, after receiving his Ph.D. from Johns Hopkins University. He was instrumental in injecting theoretical analysis and insight into research programs. In the 1930s and 1940s, he significantly contributed to the study of the aerodynamics of wing sections and propeller aerodynamics. He produced two insightful papers on the structure and mechanism of turbulence, ahead of his time. They contained concepts that are now the cornerstone of modern turbulent boundary-layer dynamics.

News Briefs

AROUND THE AGENCY

NASA'S PIONEER VENUS ORBITER FINDS OCEANS AND LIGHTNING - The last findings by the Pioneer Venus Orbiter spacecraft have provided strong evidence that the planet Venus once had three and one-half times more water than earlier thought, enough to cover its entire surface between two and 75 feet deep. These findings also give new support to the presence of lightning on Venus. "Findings that Venus was once fairly wet does not prove that major oceans existed, but make their existence far more likely," said Dr. Thomas Donahue, University of Michigan, head of the Pioneer Venus science steering group. "The new Pioneer data provides evidence that large amounts of water were definitely there." Pioneer entered Venus' atmosphere on October 8, 1992, and burned up soon after, ending 14 years of exploration.

NASA/OHIO AEROSPACE INSTITUTE TO HOST CYBERSPACE CONFERENCE - NASA's Lewis Research Center, Cleveland, and the Ohio Aerospace Institute hosted a conference in Cleveland on March 30 and 31, focusing on the new world of Cyberspace. Cyberspace is a metaphor coined by science fiction author William Gibson to represent the "universe" that human beings enter when they use computers. The Vision 21 Symposium on Interdisciplinary Science and Engineering in the Era of Cyberspace focused on this new metaphor and featured a series of speakers. "This event provided a panoramic view of the research and technology that will assist humans in exploration activities," said Dr. Sheila Bailey, conference chairperson and a Lewis research physicist. Five speakers presented various interdisciplinary aspects of their vision of cyberspace as a world where computers, robots and the human mind will be more closely linked.

Employees Encouraged to Evaluate Work Climate

Langley Senior Management has recently given approval to an implementation plan for two long-standing milestones in the Center's journey toward cultural change. Although the two activities are not directly related, both will begin during the next six months, and both provide an opportunity for each employee to assess the environment in which he or she works.

The first milestone activity has begun. The SCAN team recommended that each supervisor be evaluated annually by his or her subordinates. Senior management approved this idea but adjusted the interval between evaluations to two years. The Center is now prepared to act on the first cycle of this recommendation. The evaluation begins with the Center Director and will include each organizational level by the end of the fiscal year. Anonymous responses from each person in an organizational unit will be scored and analyzed by an independent contractor. The results will be sent directly to the supervisor to use in improving the immediate work environment.

Three supervisors have completed pilot evaluations and enthusiastically endorse the undertaking. Acting Director Dr. H. Lee Beach Jr. has begun the Center-wide process by distributing evaluation forms to those reporting directly to him. Each person is encouraged to participate when the process reaches his or her level. This is an opportunity to make the environment more effective and enjoyable.

The second milestone is an employee survey that will provide a baseline for the Center's implementation of Total Quality Management (TQM) and will serve to identify "areas of improvement." This quality climate survey will begin in mid-April and will maintain organizational identity down to the branch level. Results will be available in early June. Organizational results will be available at each level from the branch to a Center composite for the senior staff. Results will be translated into quality goals that will be incorporated into the Center's strategic plan by senior staff during its June strategic planning retreat.

Resulting integration of the Center's strategic plan and quality goals will be called Langley Research Center's Strategic/Quality Plan. Maximum employee participation is needed for an accurate baseline of our current TQM environment and to focus our improvement efforts on areas most important to our needs.

RETIREES

These employees have recently retired: Bernard Spencer Jr., Space Systems Division; Barbara V. Murphy, Structural Dynamics Division; John Witherspoon, Office of the Director; John L. Allen, Space Station Freedom Office; Harold W. Burks, Materials Division; Walter F. Presson and Powell D. Mitchell, Operations Support Division; Michael C. Garula, Business Data Systems Division; Robert R. Moore Jr., Management Operations Division; Lillian Wentz, Research Information and Applications Division.

Speaker's Bureau Ceremony Honors "Speakers of the Year"

The Speakers Bureau Ceremony recognized those who have spoken to various groups throughout the year. Front row from left includes Christine Darden, Lisa Jones, Karen Jackson, Sharon Tanner. Back row from left includes Leroy Spearman, Ian MacConochie, George Heffrich, Beverly Taylor, Pat McCormick, Joel Levine, Victor Delnore and William Hood. Levine and Hood were honored as Speakers of the Year.

LETTERS

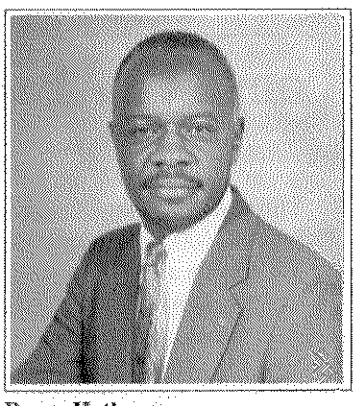
Leave Transfer Thanks

From **Jeannie and John Duncan**: "Even though we don't know the names of the people who transferred leave to me through the Voluntary Leave Transfer Program, I still know who you are! We can never adequately express our gratitude for all of your generosity to us. We will never forget how your leave transfers last year helped to make a very difficult situation easier."

Thank You from GEICO Award Winner

From **George Brooks**: "My thanks to all of you and, in particular, to Gary Price and Kristina Murden, for your efforts to nominate me for the 1992 GEICO Public Service Award, making me feel that my retirement activities are worthwhile."

Roger Hathaway Leaves for Special Assignment at NASA Headquarters



Roger Hathaway

Roger Hathaway, education specialist in the new Office of Education Programs, was assigned to headquarters to serve as assistant to Paul Holloway, who is currently the assistant to the Administrator. Hathaway will work with Holloway as his executive officer. Hathaway will also be responsible for administrative functions and activities of the office during his three-month assignment, effective April 5.

"I welcome this unique and prestigious opportunity, and I believe the past support and encouragement of the Langley family will assist me in this brief but important role," said Hathaway.

LaRC's Annual Honor Awards

Langley' Annual Honor Awards Ceremony will be held on Friday, April 16, 1993, at 1:30 p.m., in the H.J.E. Reid Conference Center. Dr. Wesley L. Harris, associate administrator for the Office of Aeronautics, NASA Headquarters, will deliver the address.

Forty-eight individuals and 18 teams will be awarded NASA medals. Langley's 1992 H.J.E. Reid Award recipient and the recipients of the 1993 Langley Research Center Contractors Excellence Award for Quality and Productivity will also be recognized. The H.J.E. Reid Award is an annual award, given to the person who submits the Center's outstanding research paper.

The ceremony will be broadcast on television monitors in buildings connected to the Center's video distribution system. Time spent in attendance should be charged to Job Order A2329.

A Call for Papers

Papers are being solicited for presentation at Technology 2003 in Anaheim, California, December 7–9, 1993. Abstracts will be judged on technical merit and potential commercial or industrial applications. Abstracts are due in the Technology Utilization Office (TUO) by April 27, 1993. Papers in the following categories are being sought: Advanced Manufacturing, Artificial Intelligence, Biotechnology, Computer Software, Computer Hardware, Electronics, Environmental Technology, Life Sciences, Materials Science, Medical Technology, Optics/Lasers, Power & Energy, Simulation/Video/Imaging, Test & Measurement and Robotics. Contact the TUO, ext. 42484, for the abstract form or for more information.

Technical Library Will Host Open House

In honor of International Special Librarians Day, the Technical Library will host an open house on April 22 from 10 a.m. til 2 p.m. on the third floor of Bldg. 1194. All NASA employees and contractors are invited to to learn about the many informational services that are available to Langley scientists, engineers and support staff. Some of the services are the library's STILAS on-line catalog, CD-ROM bibliographic databases, Current Contents on diskette, the NACA full text CD-ROM project, IEEE/IEE full text CD-ROM as well as comprehensive research by technical information specialists. All attendees will be eligible for prizes including free passes to the Virginia Air and Space Center.

Researcher News Has New Location

Please note that the ***Researcher News*** office has moved. We are now located in Building 1153, Room 112, Mail Stop 146. The phone number remains the same, 864-6126.

IN MEMORIAM

Hovis C. Carter

Hovis Carcera Carter, 79, died Friday, March 19.

Mr. Carter was a resident of Phoebus for 60 years. He retired in 1969 after 39 years at NASA Langley.

News 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 ..... Marny Skora

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

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

Photojournalist ..... Carol Petrachenko, 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.

Spin Tunnel Undergoes Upgrades, Making It the Best

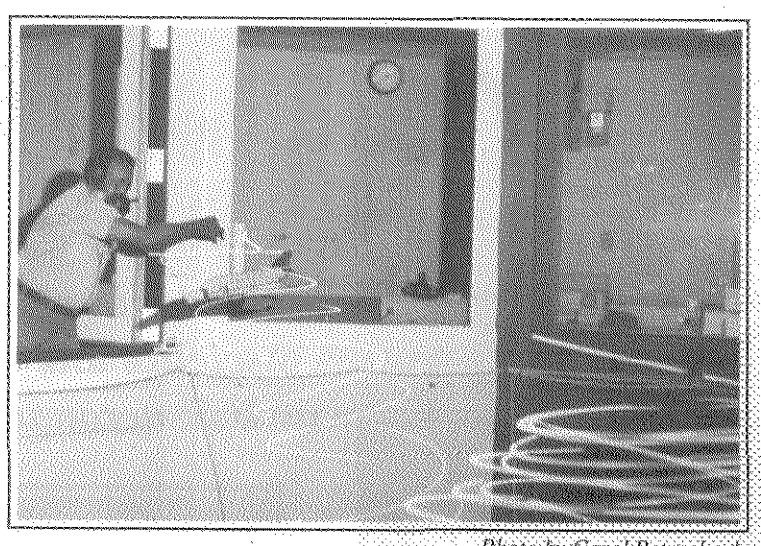


Photo by Carol Petrachenko

A spiral path of lights is created by the X-31 model undergoing supermanueverability tests in Langley's 20-Foot Spin Tunnel. The Spin Tunnel continues its revitalization.

BY KRISTINA MURDEN

A flick of the hand and an aircraft dives into a life-threatening spin. It is unrecoverable. It could be fatal. Luckily it is only a model in Langley's 20-Foot Vertical Spin Tunnel, that continues to undergo upgrades that will make it the largest and most productive spin tunnel in the world.

The $1.9 million three-phase refurbishment project that began last April will replace or recondition the tunnel's primary components. "The tunnel will be back in action in April and we're anxious to catch up on our backlog," said Raymond D. Whipple, spin research group leader in the Flight Dynamics Branch, Flight Applications Division. "When all the work is completed we'll have the best spin tunnel there is."

Phases of the project that are complete include:

• The rotary balance system, including a new control panel. The panel will examine aerodynamic forces under rotating conditions. It is one of the three main phases of the project.

• Replacement of the net used to catch free-spinning models. The new net has been strung flat across the bottom of the tunnel, which is vertical. The old net hung in a bowl shape from the sides of the tunnel, that "messed up the airflow," said Whipple.

• The tunnel's walls have been padded to protect models from damage. "These models often cost us $100,000, so this was an important addition," he added.

• The honeycomb at the bottom of the tunnel has been moved up several feet to improve airflow.

• An automated video-tracking system has replaced a hand-operated system. "Now we can operate with fewer people," said Whipple.

The two other main phases still in progress are:

• Motor upgrade. The original, from 1941 when the tunnel was built, will be replaced by modern, solid-state technology, its horsepower boosted to 700 from the current 400.

• Fan replacement. The three-blade, fixed pitch wood fan will be replaced with a five-blade, variable-pitch composite fan and all the associated controls. This upgrade is intended to provide the important ability to change the speed of the airflow.

Spin tunnel data is vital because it develops life-saving aircraft spin recovery methods. It is on the list of Critical National Facilities. "With the tunnel data we can design better aircraft by knowing spin characteristics," said Whipple. Nearly every U.S. fighter, light bomber, attack plane and trainer has been tested in Langley's spin tunnel. Future work will include tumbling research, X-31 support, testing of the F-18 E-F models, and F-22 models. Future and existing aircraft models are tested in the tunnel. "We can test anything that is going to fly," he said.

HOW A SPIN TUNNEL WORKS

• Air is drawn upward through the test section by a fan at the top. After passing through the fan, the air circulates through turning vanes that direct it into an annular return passage and back up the test section.

• Models are hand-launched from the control room. A flick of the hand imparts spin; the model's fall is offset by up-rushing air. Model surfaces are driven by tiny electric servo-actuators, which are activated by radio signals to initiate spin recovery.

FRICTION TESTS

Continued from Page 1

expelled or it may create unsafe conditions for aircraft," he said.

"Last year the main runway at Langley Air Force Base was transversely grooved. It has improved friction performance dramatically." Right now there are about 800 out of 1,500 U.S. airport runways with grooved pavement. "With proper runway cross slope, some of these grooved runways provide dry friction levels in rain." Grooved pavement provides escape routes for water compressed between tire tread and pavement and, consequently, enhances braking and cornering.

Grooving and grinding properties also apply to highways. The greatest use of highway grooving is found in California where wet pavement accident frequency has been reduced 98 percent at some highway sites. Maintenance costs were also reduced thanks to the grooving. The use of grinding to reduce highway pavement bumps has also been shown to provide better wet friction performance. At NASA Wallops, a special runway has been constructed with several different grooved and non-grooved pavements for evaluation by both instrumented aircraft, such as Langley's B-737 aircraft, and a variety of ground friction measuring vehicles.

CONCRETE PAVER BLOCKS

For the past six months, two shapes of interlocking concrete paver blocks have been evaluated in wet and dry surface conditions at the ALDF using both radial belted and bias-ply aircraft tires.

"While results so far have been encouraging, we still need more information relative to aircraft tire friction performance on these concrete blocks," said Yager. "This is why we are evaluating different paver block designs aimed at optimizing wet friction performance." Hexagonal and uni-anchorlock paver block shapes have been tested and two new designs will be installed this spring for testing.

Paver blocks at an airport in England withstood over a million aircraft movements, provided excellent durability, low maintenance requirements and resistance to jet blasts, abrasion, snow plow operations, freeze-thaw cycles and chemical spills involving fuel, hydraulic fluids, and anti-icing and deicing chemicals. "The paver blocks have a lot of potential." Future testing will include different paver block designs to identify which one provides the highest wet friction performance.

Photo by Fred Jones

Granville Webb, ALDF facility manager, applies aircraft chemical deicer to a concrete test surface prior to a carriage run.

NEW TIRE DESIGNS

Tire evaluations at the ALDF will yield improved safety for aircraft and the Space Shuttle. "So far, performance of the radial-belted tires have been better for cornering than the bias-ply tire, currently used by U.S. commercial airlines," said Yager.

Bias-ply tires are more rigid and heavier than radials. Two of three tire sizes have been tested at ALDF now, and a third will be evaluated this spring. Preliminary data indicates that radial-belted aircraft tires offer comparable braking and better steering performance than the bias-ply. They also provided better tread wear performance on dry concrete.

"This data will be substantiated by further analysis using larger tires and different pavement test surfaces," said Yager. "These tests represent a transitional stage in tire technology. The radial aircraft tire is no longer theory."

The keys to the aviation industry's acceptance of radial tires are safety, reliability and durability. "We will continue this study in a joint effort with the Federal Aviation Administration and the aviation industry," said Yager.

The ALDF will continue to provide lifesaving information that will increase the safety of aircraft ground operations by finding ways to create improved runway surfaces and aircraft tires.

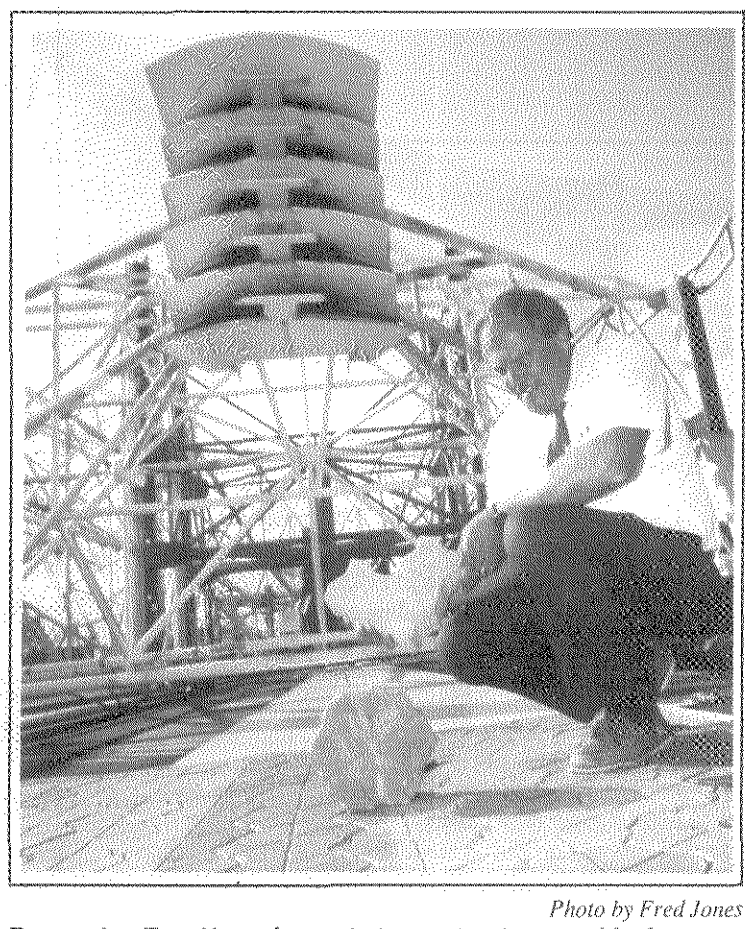
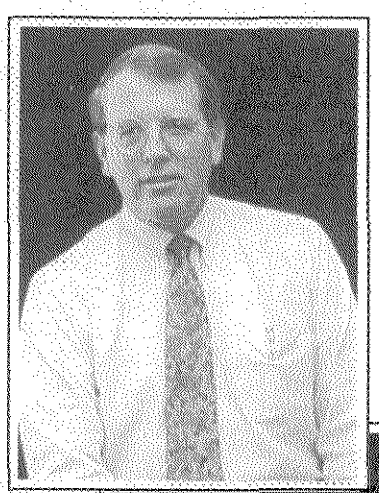


Photo by Fred Jones

Researcher Tom Yager inspects two concrete paver block designs evaluated for wet friction performance at the Aircraft Landing Dynamics Facility.

Era of Change, Challenge, Opportunity . . .



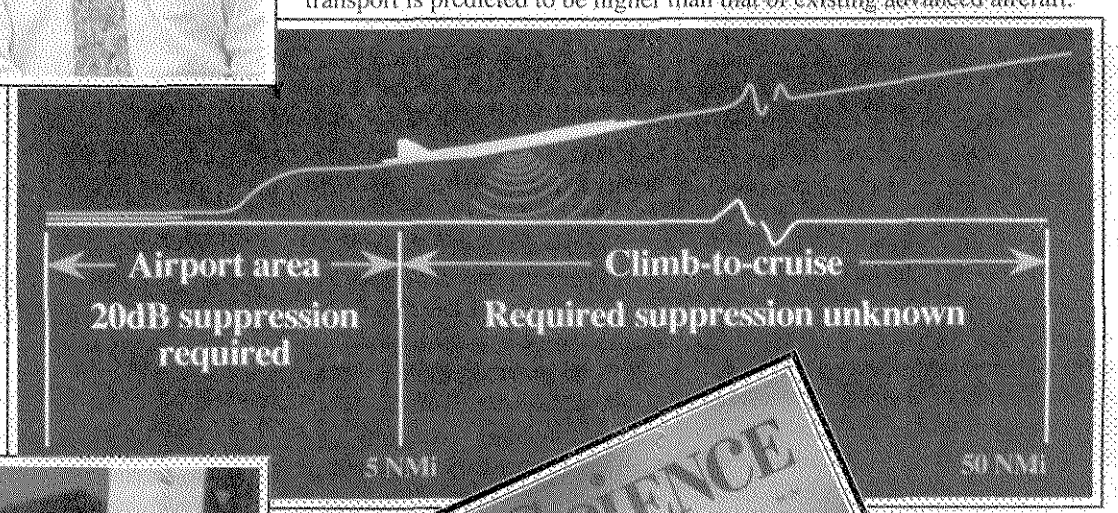
"The 1990s can certainly be called an era of change. And with change, I always see challenge and opportunity.

This is a demanding year for all of us because of the current economic situation and some very real challenges facing the Agency. Rather than a dismal outlook, though, I think 1993 signals a bright future for Langley that includes increased opportunities.

Langley has confidence and vision because of the depth, the strength and the creativity of our work force. Therefore, amidst the turmoil, I firmly believe Langley is poised for leadership."

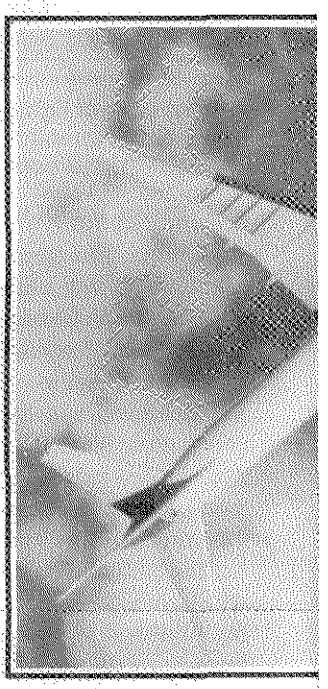
"Langley's recent successes are far too numerous to enumerate. Let me give you just a few examples of Center accomplishments during 1992 that point to the expertise and spirit of cooperation characteristic of Langley."

Our people have been involved in flight tests at NASA Dryden to study aircraft noise both in the vicinity of the airport and in the surrounding community. The climbout noise for a high-speed civil transport is predicted to be higher than that of existing advanced aircraft.



Langley Visi

To be the world leader in pionee science and inno U.S. aeronautic



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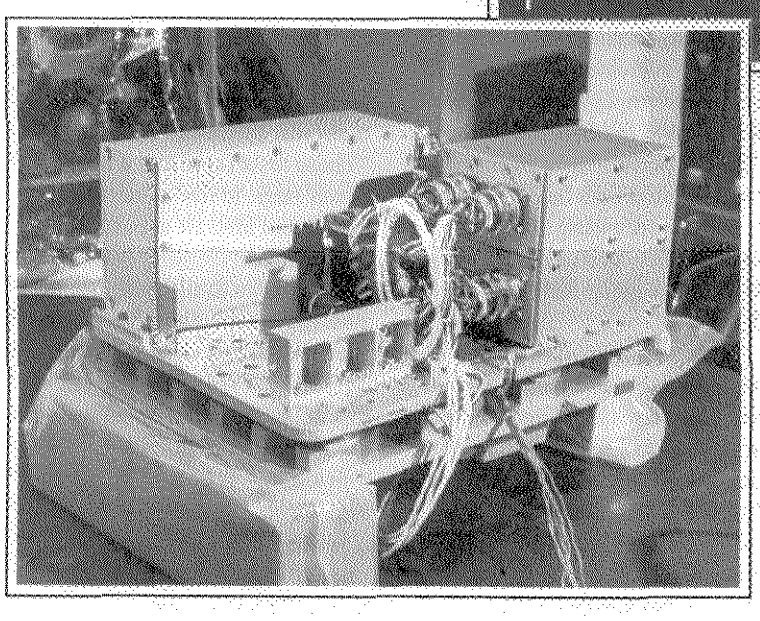
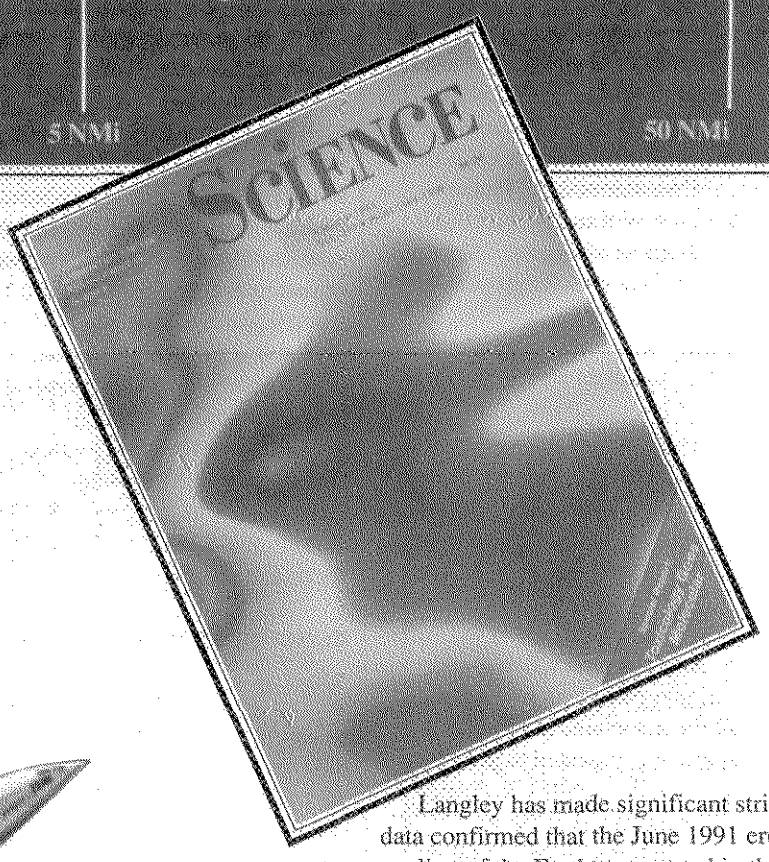
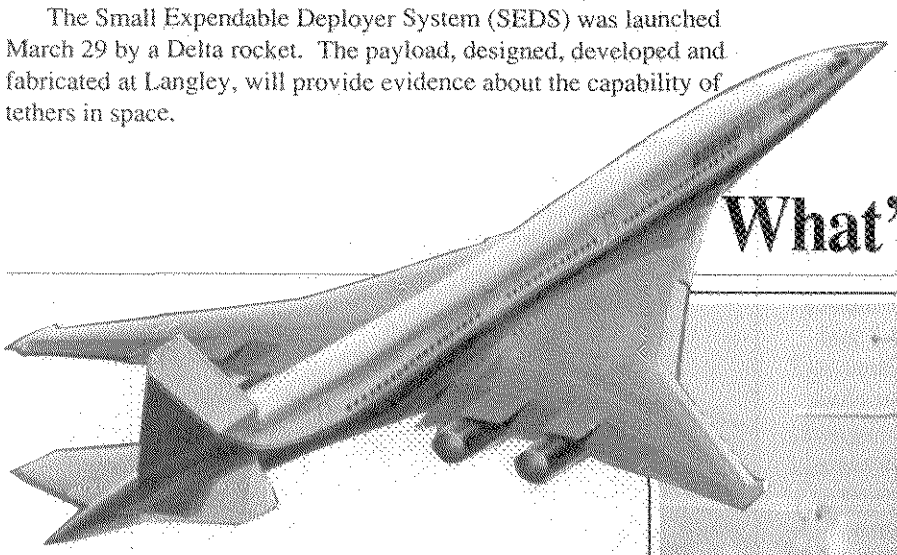


The Small Expendable Deployer System (SEDS) was launched March 29 by a Delta rocket. The payload, designed, developed and fabricated at Langley, will provide evidence about the capability of tethers in space.



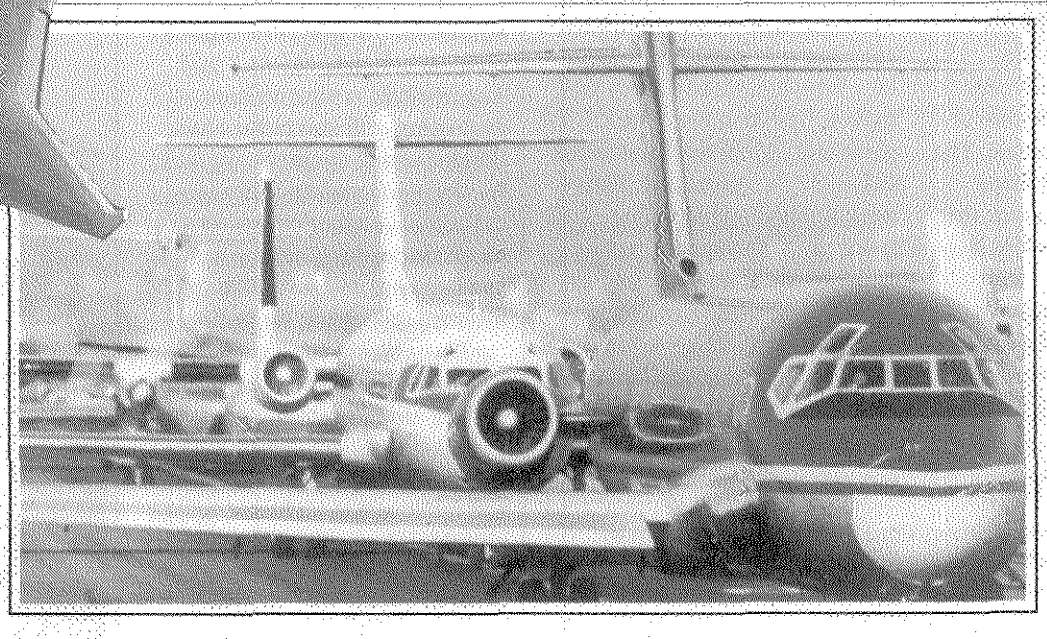
Langley has made significant strides in remote sensing. ERBE satellite data confirmed that the June 1991 eruption of Mt. Pinatubo caused temporar cooling of the Earth as reported in the March 5 issue of *Science*.

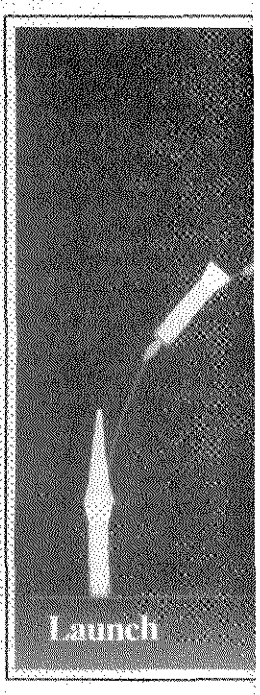
What's in the future for Langley?



High-Speed Research

Langley has been chosen the lead center for High-Speed Research, one of the largest projects in aeronautics ever undertaken in NASA. Pictured is an artist's concept of the baseline configuration being used by the NASA/industry team. Langley researchers are now studying flight deck, structures and materials, aerodynamics, and noise technologies that will lead to an economically viable high-speed civil transport.





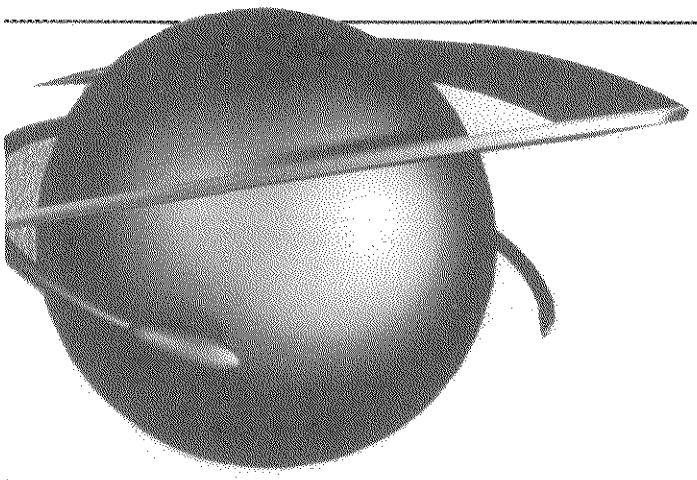
NASA

Lan Flight T develop Minute trajecto

Subsonics

According to the FAA, the challenge of the '90s will be the challenge of system capacity . . . to be sure our national airspace system and our airports will be able to handle the ever increasing traffic demand in the years ahead. Langley is studying terminal area productivity to provide clear-weather capacity under instrument conditions. Additionally in the subsonic area, Langley is working to develop and validate the technology for concurrent integrated wing design and active noise control.

For your convenience, the State-of-the-Center Address is available on video tape by calling the Technical Library at 864-2373.



Langley: Poised for Leadership

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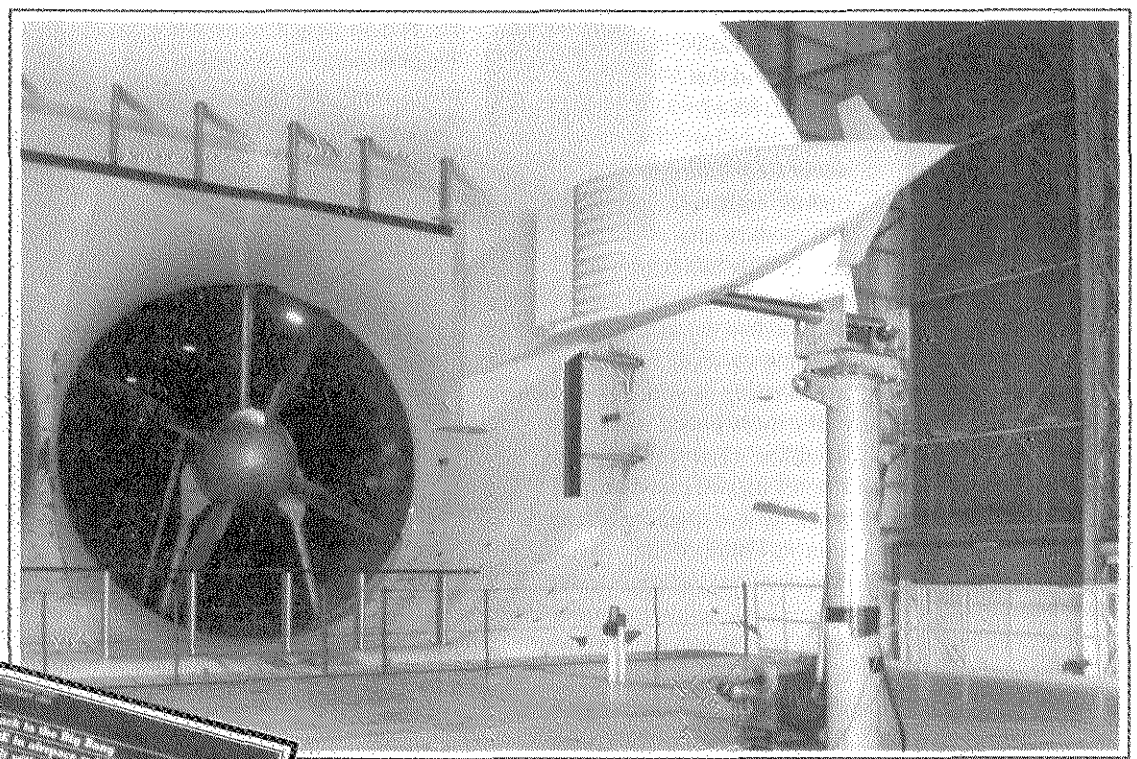
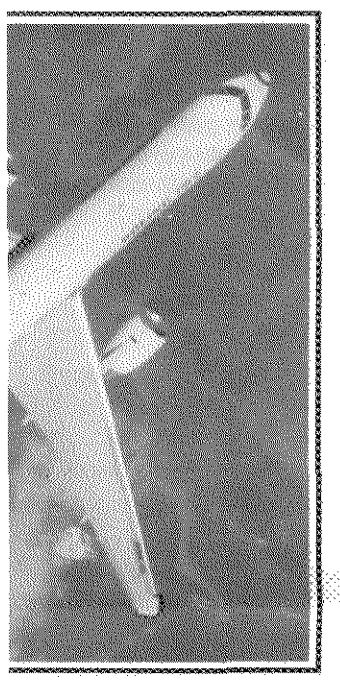


The Test Technique Demonstrator (TTD) model in the 30- by 60-Foot Wind Tunnel tested NASP aerodynamics from Mach 0 to Mach 10.



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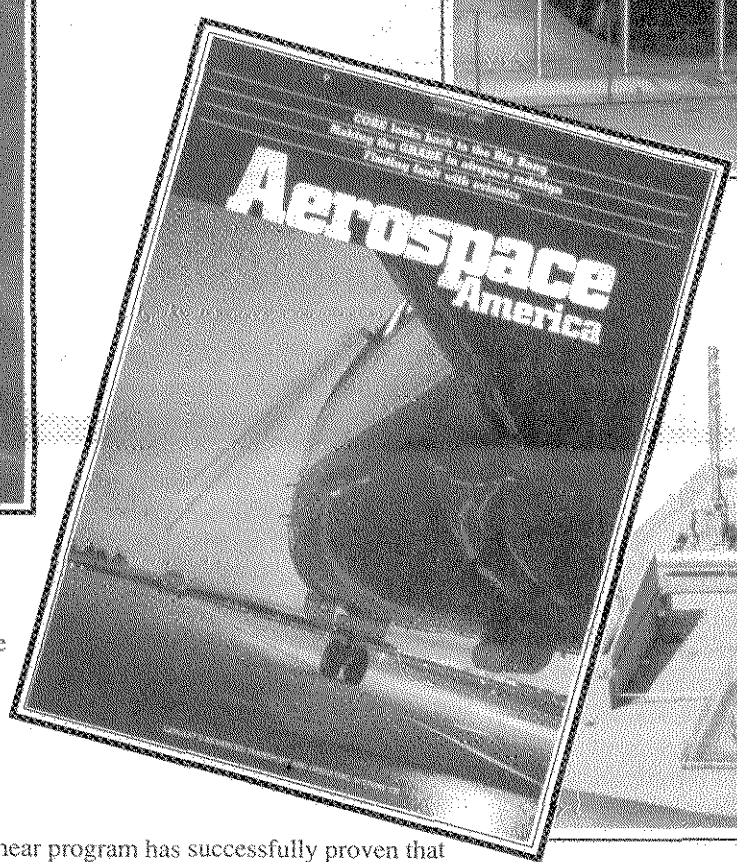
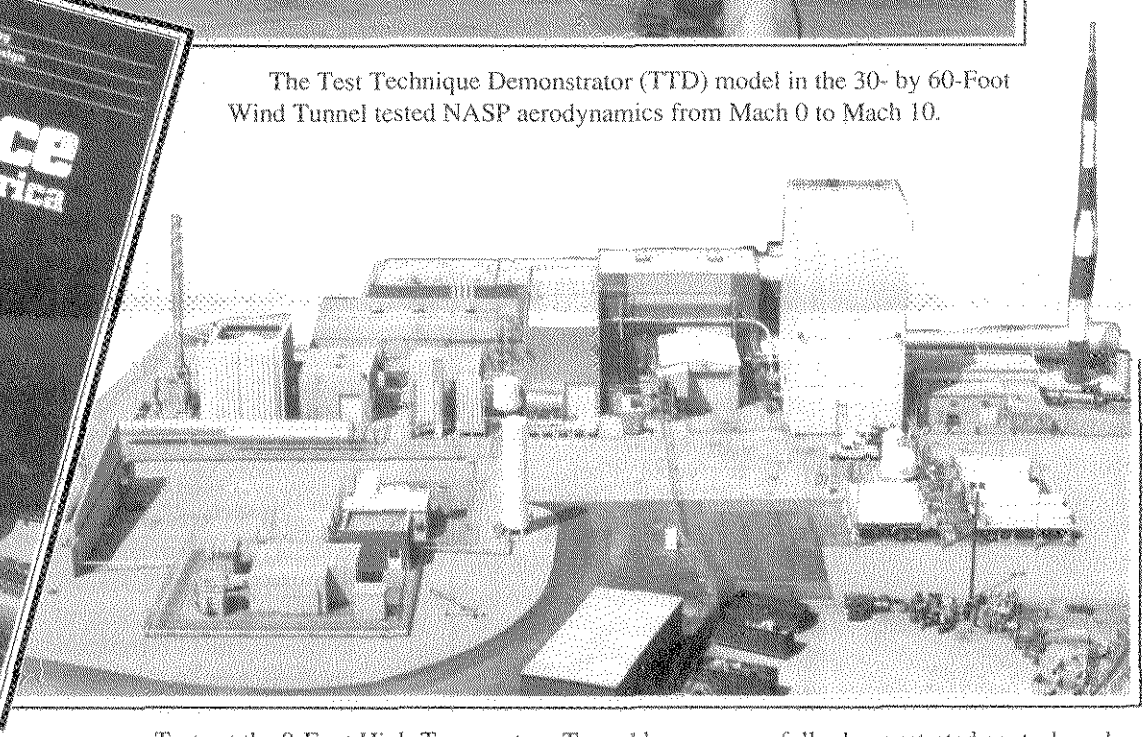
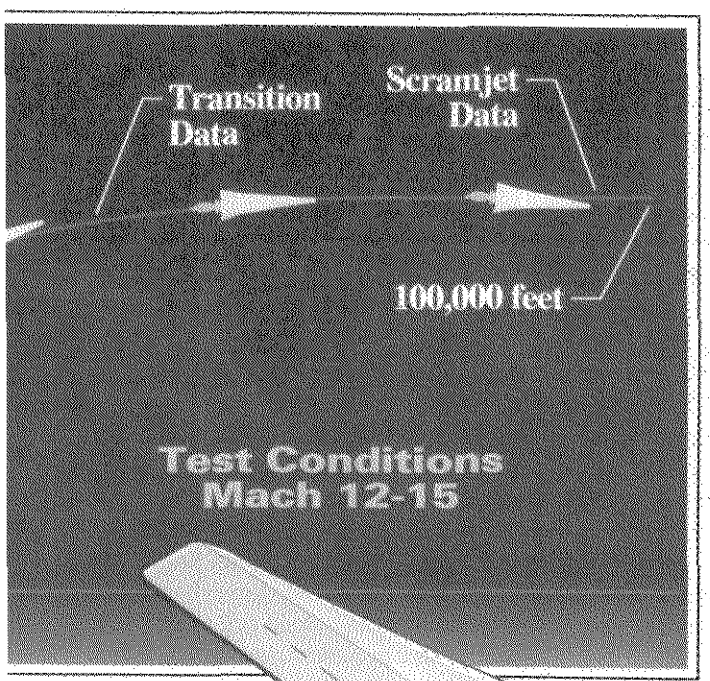
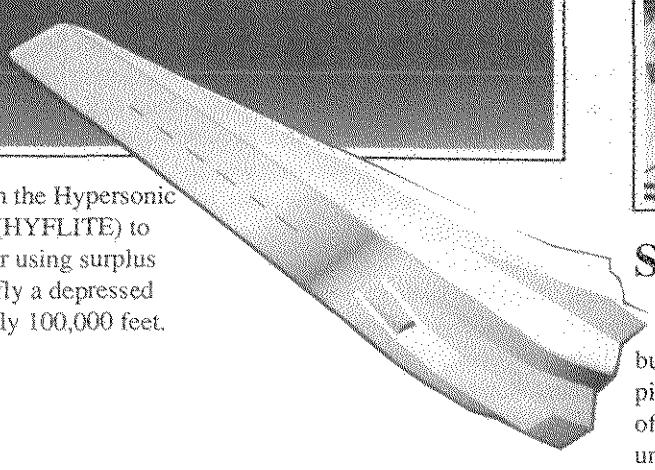


Langley's wind shear program has successfully proven that airborne remote sensors can both accurately predict and warn the flight crew of hazardous conditions. This program was selected the Agency candidate for the Collier Trophy.



Tests at the 8-Foot High-Temperature Tunnel have successfully demonstrated controls and hardware modifications for Mach 7 operations, including operation with liquid oxygen.





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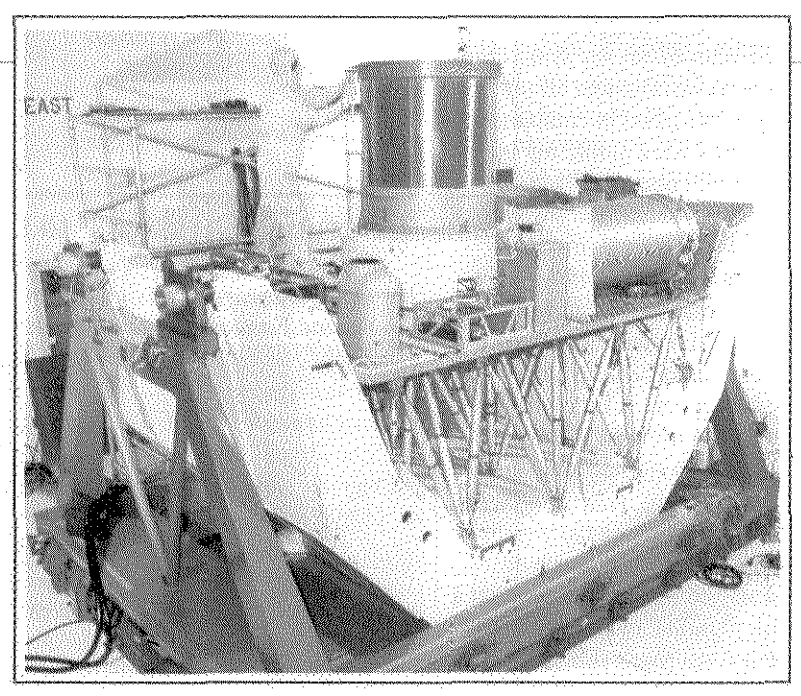


Space

Langley's Lidar In-space Technology Experiment (LITE) instrument, built in-house and scheduled to fly on the Shuttle later this year, will pioneer active remote sensing. LITE combines the proven technologies of the laser and the telescope to measure the atmosphere from the unrestricted vantage point of outer space.

Spacecraft Technology

Langley has established itself as a leader in many of the technologies required for improved spacecraft performance. The Center's research efforts in controls-structures interaction, smart structures and advanced lightweight material for spacecraft have put Langley in an excellent position to lead NASA's effort in this exciting area.

"Langley can claim leadership in so many of the areas critical to the Agency because of the talented men and women who work here. Let me repeat, I think Langley indeed has a very bright future."

H. Lee Beach Jr.
Acting Director

1992 Employee Awards

Judy Wainwright, secretary SEO, in recognition of outstanding performance of administrative and secretarial duties in support of the Center's safety, quality and environmental compliance programs.

Theodore R. Creel Jr., aerospace engineer, Fluid Mechanics Division, for outstanding initiative and technical competence in conducting GWP#2 for the National Aero-Space Plane (NASP) program.

Wesley L. Goodman, operations engineer, Fluid Mechanics Division, for outstanding contributions to the high Reynolds number program at the Low Turbulence Pressure Tunnel.

James W. Gormsen, senior engineering technician, Instrument Research Division, for leadership and innovation in meeting the instrumentation needs of structures research test facilities.

Richard G. Irby, aerospace technologist, Fluid Mechanics Division, for dedicated and skillful service and innovative problem solving in the operation of the Arc-Heated Scramjet Test Facility during NASP Scramjet engine tests.

Lori J. Jones, secretary, Acoustics Division (AcoD), for significant improvements in operations and procedures of the Structural Acoustics Branch.

Jack D. Leatherwood, aerospace engineer, AcoD, for planning, conducting and interpreting High-Speed Research sonic boom human response studies.

Joseph S. Murray, contracting officer, Acquisition Division, for exceptional performance in carrying out the duties of a contracting officer while diligently executing his responsibilities as a contract specialist, and for exceptional performance in awarding and administering the basic ordering agreements for nozzles and precision hardware.

John M. Seiner, senior researcher, AcoD, for outstanding contributions to the fundamental understanding of the aeroacoustics of high supersonic jets.

Kenneth H. Crumbly, project manager, Projects Division, for exemplary development and leadership of the Project Team for the SEDS-EM Payload Project.

IN PERSON

Ballet, A Cure for the Cold

by Ramki Krishnan

I habitually languish in the backwaters of fine culture by never frequenting operas, ballets, and modern arts shows. The last time I was dragged, kicking and screaming, to a modern art exhibit, the first painting my eyes fell on struck me as being remarkably similar to the mess I once made on a neighbor's brand-new carpet, when I tripped and squished the paint set a toddler was using. Of course, I blamed the inarticulate 2-year-old as the perpetrator. When I saw evidence of my misdeeds displayed, I realized what Shakespeare's Macbeth must have felt when he glimpsed Banquo's ghost at the banquet. As the author of quite a few accidents, I have taken great pains to avoid all modern art shows ever since.

A couple of months ago, my wife picked up tickets for a performance of the classic ballet, the Nutcracker. It happened to be scheduled on the same Sunday as a crucial Redskins/Eagles football game, and I tried to reason with my spouse, "Ballet ? When I can behold big, beefy, bullet-headed behemoths being beaten up on the boob tube?" My pleas fell on deaf ears. I had to come up with something better to be excused from attending the ballet.

Luckily, I came down with a linebacker-sized cold the day before the ballet. For the first time in my life, I welcomed a head-splitting, sniffle-laden cold like a dear friend. I thought I had the perfect excuse for missing the ballet until, on that dreaded day, my wife whipped up a home-remedy for my symptoms. It was so horrible that all my body aches paled in comparison, my senses went numb, my brain shifted into neutral.

Hours later, as the second act of the ballet started, my brain creaked back into action. I also realized that the numbing effects of the cold remedy were wearing off as I cut loose with a high-decibel sneeze. A little girl, seated in a row just ahead of ours, was so startled that she burst into tears. This resulted in a ballerina twisting the big toe she was doing a pirouette on, and started the child in front on a fresh round of sobs. This turned into a disastrous cycle of sneezing and crying. The mother's threat to her child, that was actually directed at me, was, "If you cry one more time, I'll have to get you out of here!"

*The **Researcher News** staff invites you to submit articles or stories of interest to all readers. Send them to **Researcher News**, Mail Stop 146.*

Quality Action Team Completes Major Project and Receives Excellence Award

In March, Acting Director Dr. H. Lee Beach Jr. presented a Team Excellence Award to members of the Langley Quality Action Team (QAT) for Streamlining Management Instructions. The QAT was formed in July 1992 at the request of the Center Director to look at redelegating authority to the appropriate level and to assist in cutting "red tape." Specifically, their charter was to streamline Langley Management Instructions (LMIs), Langley Handbooks (LHBs), and forms; and to review and suggest revisions/cancellations of NASA Management Instructions (NMIs) and NASA Handbooks (NHBs).

The team reviewed 255 LMIs and LHBs and identified 143 requiring changes: Reduce signature authority (25), cancel (5), consolidate (43), revise (70); reviewed 175 Langley forms with Center-wide application and identified 56 forms requiring changes: reduce signature authority (5), cancel (38), and revise (13). Also reviewed were 292 NMIs and NHBs with recommendations for revision. This March, the 11 recommendations were presented to General John R. Dailey, associate deputy administrator, NASA Headquarters, by Paul F. Holloway, center director; Robert R. Moore, assistant director, Management Operations; and Ronald R. Krodel, chief, Management Support Division. The 11 recommendations will now be evaluated through Headquarter's directives review process.

Members of the Langley Quality Action Team with their Team Excellence Award are (first row, left to right), Gin Marks, Jean LaNeave, Pat West, Ron Krodel, Margie Turner, Sally Mauldin and Nola Graves. In the second row are Howard Puckett, Garnett Knuteson, Bob Moore, Sue Mason, Chuck Zeitman, Diane Weiting, Willard Weaver, Judy Evans, Colon McMath and Jay Taylor. Not pictured, Marshall Johnson.

Quotable

"The art of teaching is the art of assisting discovery."

— Mark Van Doren

"Focus on Quality" March Meeting Hosted at Langley

Focus on Quality (FOQ) is an organization that meets monthly to share information on quality improvement and to learn about other organizations' progress in implementing and working with Total Quality Management. FOQ consists of representatives from businesses, as well as city, state and Federal government agencies in the Hampton Roads area.

Langley hosted the March meeting where Irwin Schauer, quality and productivity officer, welcomed the group and presented a brief overview of the Center, describing the quality process at Langley. Ron Krodel, chief, Management Support Division, described the outcome of the team established to streamline Langley management directives, when they reviewed 292 NASA directives for redelegation authority. He also described the PRINCE Project (Procurement, Receipt Inspection and Cost Enhancement). PRINCE is the quality action team that has been established to evaluate acquisition procedures to streamline internal ordering, receiving and inspection processes.

Doug Grossenbaugh of Canon, Virginia, Inc. showed a film describing Canon's mission and operating philosophy, working environment and community involvement. He said that Canon's employees are encouraged to submit suggestions for continuous improvement and that in 1992, 48,000 suggestions were submitted by their 1,400 employees. Following the FOQ meeting, Ann Suit conducted a brief tour of a wind tunnel and a flight simulator for the attendees.

Insurance Says "No" to Cancer Treatment that Could Save a Life

Carolyn Reaves, NASA Langley Research Center's health benefits clerk, has gained a reputation in her nearly 20 years of service at the Center as the person who knows the most about the health plans under the Federal Employee's Health Benefit (FEHB) Program. It seems ironic that now, when she needs a particular cancer treatment, it is not covered by the FEHB Program.

First diagnosed with breast cancer in January 1992, she seemed to respond well to chemotherapy. Reaves has now been told by her doctors that high-dose chemotherapy, supported by transplant of her previously harvested blood stem cells, is her only chance of survival. She had been accepted into Duke University Hospital's bone marrow transplant program, one that requires an up-front payment of $116,000. Instead, she has opted for a treatment offered by the Impact Center of Hampton Roads. The Impact Center's treatment harvests the patient's blood stem cells prior to high-dose chemotherapy and then reinfuses them into the patient after chemotherapy to regenerate the white blood cell count.

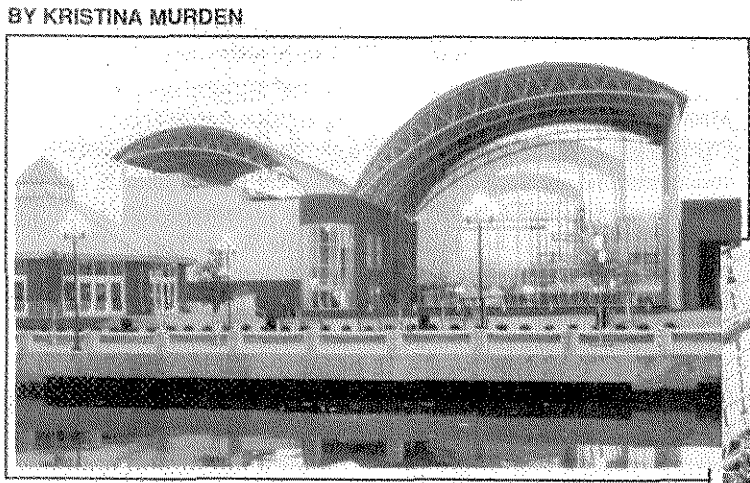
The local procedure is far less expensive, $50,000 to $90,000, with a minimum down payment of $10,000. Carolyn will need to have the procedure done in about two months. She is expected to remain in the hospital for eight to 16 days, while her white blood count is dangerously low, to protect her against infection. She will be out of work for two to three months.

"My decision to use the local procedure," said Reaves, "will allow me to spend more time with my 4-year-old daughter, Shanda, and my husband, Ronald." Since they will not have to travel far to support her during her medical treatment, there will be less stress and expense on her family and friends.

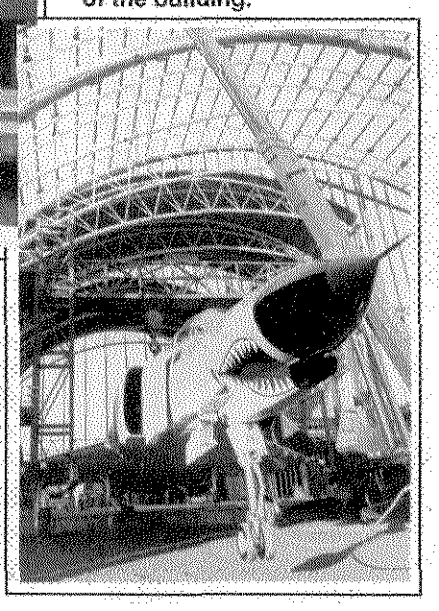
A trust fund has been established to help with medical expenses. Anyone who would like to contribute should send a check to Carolyn Reaves Cancer Recovery Fund, c/o Old Point National Bank, P.O. Box 3392, Hampton, VA 23663. Anyone interested in the fund raising efforts, call Nancy Davis, 850-4426.

Virginia Air and Space Center Celebrates First Anniversary

BY KRISTINA MURDEN



At left, the Virginia Air and Space Center is near the Hampton River. Below, an F-4 Phantom had to be installed in the Virginia Air and Space Center prior to the completion of the building.



A quarter of a million people from around the world saw a Shuttle launch, became an astronaut and relived the day Neil Armstrong planted the American flag on the moon right here in Hampton—during the Virginia Air and Space Center and Hampton Roads History Center's first year in operation.

The dynamic "winged" complex, Langley's official visitor center, celebrated its first birthday April 5, 1993. Anniversary events held on April 3 and 4 included a global awareness game, a children's button designing contest, free admission and free tomato seeds that flew in space for six years.

The center has educated and entertained more people than it ever expected, hosted more than 75 special events, won numerous awards and filled the pages of national magazines. 1992 was the beginning of great success and tremendous popularity for the $30 million, world-class facility that takes you to Hampton Roads' and NASA Langley's past, present and future. "Our tremendous success is even better than we anticipated," said Kim Hinson, event and media coordinator for the center.

The center's award-winning complex has more than 100 history, aeronautics and space exhibits. With its dangling flying machines, astronauts and pilots that come to life with a touch of a button, a 50-foot-high IMAX movie screen and changing exhibits, it's no wonder people keep coming back for more.

The center's hands-on-exhibits offer a unique experience, as they entertain while they educate. "Among the most popular exhibits are Launch-a-Rocket and Astronaut for a Minute," said Hinson. Visitors can launch a four-foot rocket up a 50-foot glass tube, complete with bright lights and lots of noise. They can also don a spacesuit by just peering into a window. And the daring visitor will step up to the scale and find out what they would weigh on every planet in the Universe.

The center's 300-seat IMAX theater takes you out of this world. *The Dream is Alive* and *Blue Planet* are currently showing on the 50-foot-high, 70-foot-wide screen. The clarity of the picture, size of the screen and state-of-the-art sound system make viewers forget they are in a theater as they become part of the action. Visitors have admitted that emotions stirred from the combination of the beauty, glorious sound and dramatics of spaceflight and views of Earth have caused them to shed a few tears. The IMAX films are "must sees." The only IMAX in Virginia, it has contributed much to the center's success. Over 70 percent of the center's visitors view the films.

A highlight of the year included a camp-in for kids complete with Shuttle astronaut Fred Gregory. Children spent the night under their favorite airplane, next to the Apollo 12 Command Module or next to a moon rock after lessons on living and working in space and designing space structures. "Halloween was also a huge hit," said Hinson. The center sponsored trick-or-treating and storytelling for more than 200 children.

Monthly lectures given by scientists, astronauts and researchers also draw large audiences. When astronaut Pete Conrad came to speak it was the first time he had seen the Apollo 12 capsule since he splashed down in it on his way home from the moon. Other popular topics have been: "17th Century Lead Coffins," "Saving the Chesapeake" and "The Future of the Nation's Wilderness."

"There is always something unique happening," said Hinson. "The changing exhibits and special events give people a reason to come back." Many special events are also held for members of the center.

The VASC boasts a NASA Teacher Resource Center (TRC), which is a model to others for its pioneering use of interactive video laser disks and computer systems. The free service is targeted to pre-college educators who come from around the state. "We have also received requests from as far away as Oklahoma, California and Alaska," said Ray Goodman, the TRC coordinator. "Publications, photos, 600 video titles, computer software and telephone lectures with slides are among our services," said Goodman. Teachers are welcome to duplicate whatever they need. Some of the most popular topics include "Hurricanes," "Living and Working in Space" and "Careers in Aerospace." "Our TRC was set up to be a showplace. And it is," he added. Educators can also tape a Shuttle launch or the latest NASA news from the NASA Select channel. The TRC is responsible for a five state area.

> ***"There is always something unique happening. The changing exhibits and special events give people a reason to come back."***
> *– Kim Hinson*

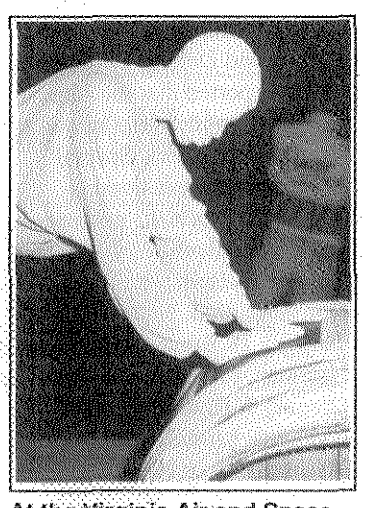
"The local support we have received is phenomenal, especially from Langley retirees," said Hinson. "We rely on more than 100 volunteers to give tours and serve in administrative roles. They are trained to give tours to the busloads of children that visit daily." The center was also visited by "Good Morning America," which taped a feature, scheduled to air April 12.

Langley's former Center Director Richard H. Petersen returned to Hampton in January 1993 to head VASC. While director of Langley, Petersen was a major force in the development of the VASC. "It is great to be back in the Peninsula area. I enjoy being near Langley again and close to so many of my friends." As executive director of the center, Petersen views 1993 as an opportunity to challenge even more visitors to discover new frontiers.

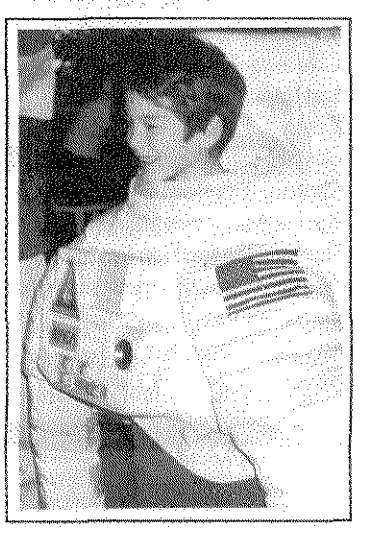
Blue Planet premiered in the IMAX Theater April 1 and will continue through November 31, 1993. *Blue Planet* explores the fragile balance of life on Earth and the forces that affect the planet. The footage was filmed above the Earth from Space Shuttle mission STS-31. These spectacular scenes create a living atlas of Earth and give viewers a renewed appreciation of life on Earth.

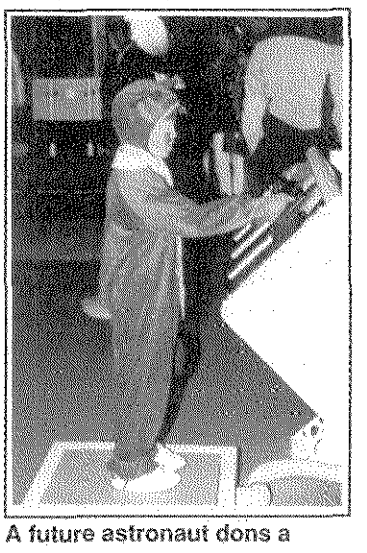
Besides teaching and entertaining folks from around the world, the center has played a role in the revitalization of downtown Hampton's waterfront area, as planned.

"The VASC has surpassed my expectations, both in its success and in its positive effects on the downtown area," said Melvin Butler, Hampton's Vice Mayor and a former NASA Langley employee.

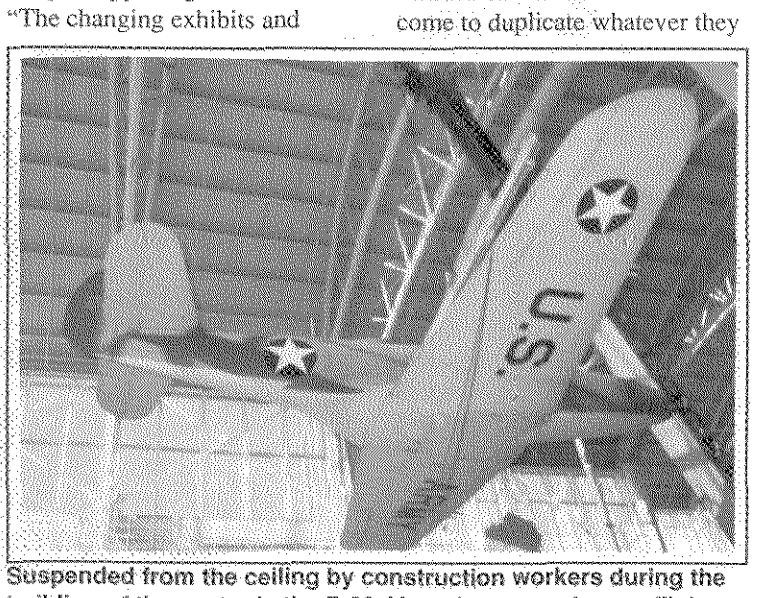


At the Virginia Air and Space Center and Hampton Roads History Center is this figure of a boy rolling a wooden cask (hogshead) filled with tobacco to a scow that will take it on the river to market.

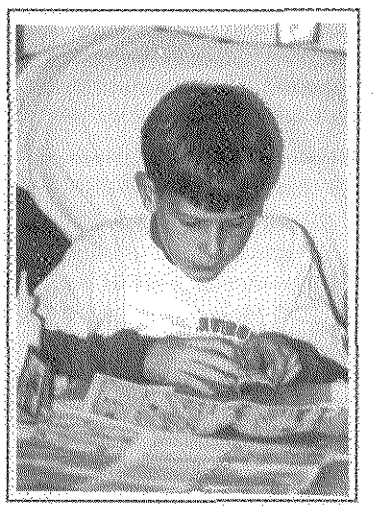




A future astronaut dons a space suit (top photo), while one of the Halloween revelers weighs himself on Mars. Below left, Chris McMillian, who attended the camp-in for Young Astronauts works on a model of a space shuttle. Below right, a boy checks out the exhibit of Mercury/Apollo astronaut Alan Shepard and a Langley researcher, next to the vehicle Shepard used to practice lunar landings.



Suspended from the ceiling by construction workers during the building of the center is the P-39 Airacobra, one of many flight vehicles on display.



Happenings

BLOODMOBILE REPORT
Blood drive coordinators Karen E. Ridlon and Peter J. Edgette, NASA, and Debbie Turner, Red Cross, reported that the March 17 Bloodmobile visit drew a total of 301 donors. Special honors go to these donors: Robert A. Bruce, 12 gallons; Wayne E. Silver Sr., 10 gallons; Rodney Russell, 9 gallons; Doron Kishoni, 7 gallons; Timothy D. Bryant, John R. Huffman, Philip H. Gaudé, Gregory J. Brauckmann, 6 gallons; Linda S. Devol, Thomas J. Skalski, Felecia C. Berry, 5 gallons; Michael J. Hemsch, Timothy G. Wood, Bobby A. Kessler, Augustus D. Scott, James K. Adams, 4 gallons; Kenneth S. Brentner, John J. Warhol Jr., Peter A. Hoge, Kenneth A. Deyerle, Ronald S. George, Henry H. Chambers, Thomas M. Walker, 3 gallons; Michael P. Moore, Kevin J. Laferriere, Fred M. Denn, 2 gallons; and Michael D. Chattin, 1 gallon; and first-time donors Mary Heaps, Joanna Staton, George Haugen and Wayne Haugen. Upcoming dates for the Bloodmobile are May 19, July 28, September 22 and November 24, 1993.

FREE AEROBICS: New Step Aerobics have been added to both the 6:15 and 11 a.m. classes held MWF in the Gym. The schedule includes Low-Impact, Step Interval and High Energy Step Combo. Free to NASA employees and contractors. For more info, call ext. 46387.

FOUND: Set of keys in parking lot of Bldg. 1232A South. Call Security at ext. 43420 to identify and claim.

FOR SALE: Nissan, 1987 300 ZX, 2+2, A/T, leather interior, one owner, clean, runs well, $8,150. Call 249-2246 after 5:30 p.m. weekdays.

LANGLEY AMATEUR RADIO CLUB: The first Friday of every month meeting has been moved to a new time, 12:30 p.m. Tables are reserved in the Executive Dining Room.

YARD SALE: April 16 and 17 from 8 a.m. to 2 p.m., 69 Clayton Dr., Hampton. Items are girl's clothing, men's clothing, rugs, dishes, toys, etc.

FOR SALE: Yamaha brass trumpet, carrying case and music stand, $315. Call 838-1797.

NASA GOLF ASSOC.: The 1993 golf season is now underway. Membership applications will be accepted until April 15. Any NASA employee or retiree may join. Contact Earl Knight, ext. 44536, or Gary Bayless, ext. 41219.

LARC TENNIS CLUB SOCIAL: A "get acquainted" member and guest LaRC Tennis Club Social will be held at the Activities Association picnic shelter near the renovated tennis courts. Drinks and light snacks will be provided between 4:30 and 6:30 p.m., Friday, April 16. For info, please call Tom Yager at ext. 41304.

INCOME TAX PREP: Member of the National Association of Tax Practitioners, electronic filing and direct deposit offered. Small business bookkeeping; we will travel, by appointment. Call 874-3121.

FOR SALE: 1981 Toyota Celica, good condition. Call Joan, evenings 838-6000.

FOR RENT: Furnished room, York Co., w/sitting rm, private bath, kitchen & laundry privileges, near NASA. $75 per week. Call Lil, 867-8937.

CHRISTOPHER NEWPORT UNIVERSITY: CNU's Department of Physics and Computers has offered a Master of Science in Applied Physics since 1992. Three concentrations are available: Instrumentation and Advanced Computer Systems; Dynamical Systems; and Solid State Systems. For information call George Webb at (804) 594-7082.

RETIREMENT SOCIAL will be held for Samuel Sokol April 15 from 3:30 til 6 p.m. in the Executive Dining Room of the Cafeteria. The cost is $5 per person. Contact Betty Bailey, extension 41840, M/S 488, or Lloyd Spangler, extension 43714, Mail Stop 488.

MISSING: The Office of Equal Opportunity Programs needs to retrieve two books that were loaned. If you have *To Space and Back* by Sally Ride or *Disabled, Female and Proud*, please contact Patsy Campbell, ext 43291, Mail Stop 178.

FOR RENT: Cottage, 3 BR, Nags Head Cove, club facilities, wkly rates: off-season, $325; summer, $395. Call Ernie Greene, 838-0567.

ANNOUNCEMENT: Construction activities on two nearby sites has limited access to, and parking near, the Activities Association picnic, games and play areas. Modifications are taking place at the Jet Noise Laboratory, Bldg. 1221A and the Water Tower, Bldg. 1252. Some underground utilities are also being replaced.

ROOMMATE NEEDED: SWF seeks person to share 2 BR apt. near LAFB gate, beginning in April, $205/mo.+1/2 utilities. Call Jenny, 851-7049.

GERMAN SHEPHERD PUPS: AKC w/gmtee. bred as companion/protector. Available April 11. Call Keith, 877-2186.

A SALUTE TO SECRETARIES: Hosted by the Federal Women's Program Committee, April 21, 7 to 9 a.m., at the H.J.E. Reid Conference Center. All Center and contractor secretaries will receive an invitation in the mail. FWPC is supported in this event by Center funds, the Exchange Council, and the Office of External Affairs. Contact is Patsy Campbell, ext. 43291.

Researcher News

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Langley Research Center
Hampton, Virginia 23681-0001

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HL-20 PAINTINGS ADDED TO NASA'S ART PROGRAM. Internationally-known artist Stan Stokes has created five acrylic paintings that depict various stages of Langley's proposed personnel launch system, the HL-20, for inclusion in NASA's Art Program. The paintings are on display for the first time at the Virginia Air and Space Center. A ribbon-cutting ceremony was held March 23 dedicating the paintings. Participating in the ceremony were Edwin Kilgore, VASC president; William Piland, chief, Space Systems Division; Stokes; and Richard H. Petersen, VASC executive director. The HL-20, one of several designs being considered by NASA, may be used one day to transport astronauts and cargo to and from low-Earth orbit.

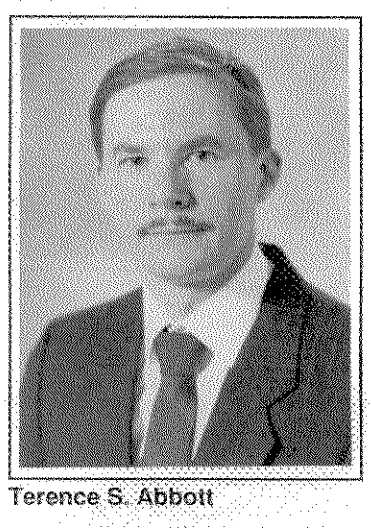
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 8 ❖ APRIL 23, 1993

The 1993 H.J.E. Reid Award Given to Terence S. Abbott



Terence S. Abbott

This year the H.J.E. Reid Award has been presented to Terence S. Abbott, Flight Management Division, Vehicle Operations Research Branch, "for the outstanding paper entitled 'A Simulation Evaluation of the Engine Monitoring and Control System Display'."

The H.J.E. Reid Award, Langley's highest honor, recognizes the outstanding scientific or engineering paper first-authored by a Langley Research Center employee or group of employees.

May 11 Colloquium Will Feature "Mission to Planet Earth"

A global change expert from NASA Headquarters will discuss "Mission to Planet Earth," 2 p.m. May 11, at the next colloquium. Dr. James G. Lawless, deputy director for Global Change Research, will speak about how human activity is producing global changes. The talk will be at the H.J.E. Reid Conference Center.

Throughout geologic history, the atmosphere, oceans and land have interacted to produce global environmental change to which life has contributed and adapted. Today, the human species, through increasing population and quest for improved quality of life, has developed the capability to change our global environment in ways that we are only beginning to perceive.

Some of these global changes include the chemical destruction of the ozone layer, which protects the Earth from biologically lethal ultraviolet radiation from the Sun; the buildup of atmospheric greenhouse gases, which may lead to global warming; and the burning of the world's tropical rain forests and grasslands, a significant global source of atmospheric greenhouse gases.

To understand global change and the increasing demands of human activity, it is essential that we document and comprehend how Earth works as a system. The international scientific community is organizing research efforts to advance our knowledge of both natural and human-induced global change. The U.S. Global Change Research Program, a consensus interagency plan, defines the U.S. element of these efforts. Mission to Planet Earth is the central NASA contribution to the U.S. Global Change Research Program. Dr. Lawless will talk about NASA's contributions.

Continued on Page 6

To all NASA Employees:

President Clinton has declared April 18 through April 24, 1993, National Volunteer Week. I invite all NASA employees to join the President in recognizing the importance of voluntarism and community participation. The backbone of America's great strength is the willingness of her people to give of themselves to those in need. The NASA team has talented and energetic employees who are serving their communities across America.

I challenge each of you to apply your skills and knowledge to community service to help protect the environment, improve the quality of life of those in need, and motivate young people to stay in school and continue their education. Let us join President Clinton and our colleagues in other federal agencies in demonstrating our commitment to America's well-being by becoming active in community service

Daniel Goldin
NASA Administrator

Langley Design Improves F-14 Fighter Safety and Maneuverability Especially During Combat

Photo by Carol Petrachenko

Researchers Bill Gilbert (in the cockpit) and Luat Nguyen, holding a model of the F-14, are shown in one of the chambers of the Differential Maneuvering Simulator, where their initial research for the F-14 flight control system began.

From inception to fruition has taken more than 20 years, but two Langley researchers will see their design to control deadly spins installed in all of the Navy's F-14 fighters.

Bill Gilbert, NASP Flight Research Office, and Luat Nguyen, Flight Applications Division, began working on the challenge in the early 1970s. By 1972, they had designed a flight control system that would precisely coordinate movement of the plane's rudders and roll controls, especially during combat maneuvers, to prevent a "flat" spin. The flat spin, where the plane plummets belly-first while spinning, is hard to stop because no air is flowing across the plane's wings. Without the lift created by this air flow, the plane can begin a spin that is almost impossible to control.

Gilbert and Nguyen tested their research in Langley's Differential Maneuvering Simulator (DMS). In 1979, the two won the H.J.E. Reid Award for their paper about the flight control design.

In the early 1980s, the Navy teamed up with NASA and Grumman, the company that made the planes, to refine and flight test the control system to fit the updated F-14 (called the F-14B). More work was done in the DMS and extensive flight testing was conducted on a Navy F-14 at NASA Dryden.

The new design was completed in 1984. It uses the control system and computer logic to move the controls optimally, making the plane easier to maneuver and, therefore, safer and more effective during combat. The Langley system connects the roll controls with the rudders, maintaining positive control during extreme maneuvering. Gilbert and Nguyen based their designs and research on the aileron-rudder interconnect concept known to airplane technologists for many years.

Photo by NASA

The Navy F-14 fighter, with spin control and emergency equipment installed, was used to test the flight control system developed by Langley researchers Gilbert and Nguyen.

A similar concept was used by Fred Weick, who had been at Langley until 1936. Weick was an advocate of aircraft safety and used the idea in the design of the Ercoupe, a plane that was spin-resistant, and therefore, safer.

The reduction of uncontrollable spins saves lives and aircraft. The Navy estimates that 25 percent of the F-14s lost during the past 20 years has been due to the "flat" spin. Another consideration is the savings in dollars. About $1 billion has been lost due to F-14 crashes of this kind. The cost of the new control system, installed in the more than 400 F-14s, will be about $78 million over the next seven years.

Nguyen admits the pair has sometimes been frustrated at not seeing their system installed earlier. "Everybody who develops something would like to see it used immediately, of course," he said. "But we recognize that people have to make choices in terms of the resources available to them."

"We are just pleased that the system is finally being used," Gilbert added. "I really think it will pay off."

ON THE INSIDE

- **Dr. James C. Yu has been named Deputy Director for Structures, Page 2.**
- **The annual NASA Honor Awards for outstanding contributions made by Langley individuals and groups are on Pages 3-6.**
- **First-time Langley Contractors Excellence Awards are reported on Page 6.**
- **NASA Fellowships are announced on Page 6.**

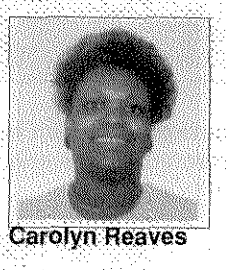
On Center

AROUND THE AGENCY

SPACECRAFT CONDUCT THREE-WEEK GRAVITATIONAL WAVE SEARCH – Three interplanetary spacecraft, heading toward Mars, Jupiter and over the poles of the sun, may prove the existence of elusive waves in the universe's gravitational field by bobbing on ripples in space like corks bobbing on ripples in a pond. Such waves of gravity have never been directly detected, although their existence was predicted decades ago in Einstein's theory of relativity. There is indirect evidence that they do exist. The waves are believed to be produced by supernova explosions, collapsing black holes and other catastrophic events. Past searches using ground-based equipment and single spacecraft have failed to discover them. Astrophysicists have spent the past few weeks "listening" for passing gravitational waves with three "borrowed" spacecraft at the same time using the most sensitive detection system yet assembled to search for very low frequency gravitational waves. The spacecraft, each headed for a separate destinations are NASA's Mars Observer, Galileo and the European Space Agency (ESA) Ulysses spacecraft. The joint NASA-ESA experiment ran from March 21 to April 11, and marked the first time three spacecraft made simultaneous observations.

NASA AND CENTRAL AMERICA WILL EXPAND RAIN FOREST STUDIES – NASA and seven Central American nations have begun a program to study, preserve and protect the region's rain forests by expanding the use of satellite data by Central American scientists. Under an agreement with the Central American Commission for Environment and Development, NASA will train and provide equipment to scientists from Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. Using data from the Advanced Very High-Resolution Radiometers flying aboard several U.S. weather satellites, the scientists will be able to estimate the amount and type of vegetation cover and forest cover in the region and to conduct coastal studies. The tropical rain forests have become an international concern because of their role in the global environment. Using the satellite data, the scientists will be able to better understand the state of the ecosystem and estimate the area's biological productivity. The commission will also promote international cooperation among scientists.

NASA Golf Association Sponsors Fund Raiser


Carolyn Reaves

The NASA Golf Association is sponsoring a tournament at the Langley Air Force Base Eaglewood Golf Course, Monday, May 17. The proceeds will go to the Carolyn Reaves Cancer Recovery Fund. The entry fee is $40. Format is four-person Captain's Choice and tee-off is at 1 p.m. The day ends with burgers, beverages and prizes. Deadline for entry is May 10.
For entry forms and information, call Mike Taylor, ext. 43223; Dick Everett, ext. 43459; or Diane Weiting, ext. 46052.

Health Concerns Addressed at Langley

• Breast cancer is the focus of a presentation by Dr. Thomas Sale at the H.J.E. Reid Conference Center on Wednesday, May 5, from 2 to 3 p.m. He will speak about breast cancer prevention, screening, detection and treatment, as well as current research. Employees, spouses and contractors are invited to attend.

• The Office of Occupational Health Services and Riverside Health System are bringing the Prostatic Specific Antigen Test (PSA) to LaRC. Prostate cancer is the most common cancer among American men and the second most fatal. Of the 122,000 men diagnosed with the disease this year, 32,000 will die from it. This doesn't have to be–early detection can help. A simple blood test will be available in the Health Clinic on May 11. The cost is $42. For more information or to schedule an appointment, call ext. 43191.

AIAA Annual Awards Banquet To Be Held at Langley

Two "Futures in Aerospace" Scholarships will be awarded and new Fellows, Associate Fellows and officers will be introduced at the AIAA annual awards banquet. The Hampton Roads Section Awards and Allen H. Taylor Memorial Award will also be presented and others will be recognized for their service to the AIAA. The banquet will be on Tuesday, May 11, at the H.J.E. Reid Conference Center at 6 p.m. Don Emmick, an aerospace engineer, will be the featured speaker. His topic, "The Common Housefly as a Powerplant for the World's Smallest Aircraft," will include slides and a video. Reservations are required; deadline is noon, Thursday, May 6. Call Stan Lamkin, at work 865-7093, or at home 640-0415.

Speakers Bureau Reports Activities

The following Langley personnel participated in the Speakers Bureau during the first quarter of 1993:

Dr. George Helfrich spoke at the VASC on "Creations – How They Are Made and How They Are Protected."

Sharon Tanner, Lance Bush, Shelley Canright and **Veloria Martinson** spoke at the NASA Women in Space Workshop. They also made team presentations to elementary school children. **Tanner** spoke to the Virginia Beach Girls Science Conference on "Careers in Science" and to the Poquoson Elementary Festival of Arts & Sciences about "Spacecraft Controls."

Irwin Schauer spoke to the Virginia Peninsula Total Quality Institute Partnership on "TQM at Langley" and on "Organizational Structure and the Changing Culture."

Wesley R. Cofer III spoke at the James Blair Intermediate School CHROME Program on "Atmospheric Sciences in the 1990s."

Dr. Victor Delnore spoke at James Monroe Elementary School, Norfolk, on "How the Space Shuttle Blasts Off."

LETTERS

Thanks for Extra Leave

Harriet Berkley writes: "I wish personally to express my sincere appreciation to each and every one who donated their leave hours (in the Voluntary Leave Transfer Program) to cover the six weeks I was out of work last year. Thank you so much for being there for me, and being supportive. May God bless you."

ANNOUNCEMENT

Evelyn D. Harris Retirement Dinner

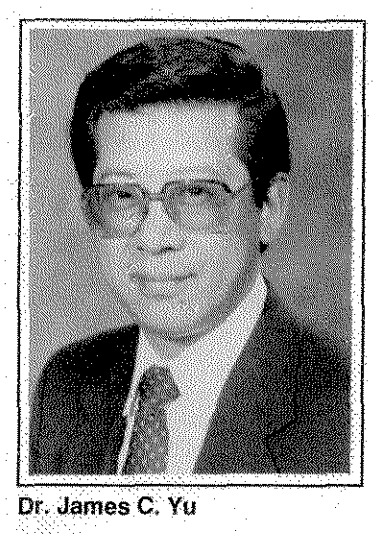
A retirement dinner will be held for Evelyn D. Harris on May 18. Cash bar/social starts at 6 p.m. and dinner will be served at 7 p.m. in the H.J.E. Reid Conference Center. The cost is $15 per person. Please contact E. Rose Mustain, ext. 42586, Mail Stop 309, by May 10. Gift only contributions are also welcomed.

SCPD's Cooper Will Attend Conference

Larry Cooper, Fabrication Division (FD), and member of the Satellite Committee for Persons with Disabilities (SCPD), will represent the Center at the President's Committee on Employment of People with Disabilities Conference. The conference will be held in St. Louis, MO. May 12 to 14.

Cooper is past chairman of the SCPD at Langley. One of the SCPD's aims is to promote awareness at Langley of the committee's work and what is happening on a national level for persons with disabilities, particularly in the workplace. Chairman Bill Vance and his committee welcome your suggestions and inquiries. Vance can be reached at ext. 45441.

Yu Named Deputy for Structures


Dr. James C. Yu

Dr. James C. Yu has been named Deputy Director for Structures. He will assist in planning, implementing, coordinating, directing and managing all materials and structures research programs at the Center. Prior to this appointment, he had been assistant chief of the Acoustics Division since October 1988.

Yu began his NASA career in 1977 in the Acoustics Division. He was promoted within the division, first serving as group leader and then assistant branch head. From 1986 to 1987, he was the program manager, Materials and Structures Division at NASA Headquarters. Upon his return to Langley, he served as technical assistant to the Director for Structures.

A native of China, Yu received a bachelor of science degree in mechanical engineering from National Taiwan University in 1962. He received a master of science degree in aerospace engineering and a doctorate in mechanical engineering from Syracuse University in 1968 and 1971, respectively. Since September 1991, he has been attending the Stanford University Graduate School of Business on a Sloan Fellowship.

The author or co-author of 62 publications and 40 technical conference presentations, Yu received a NASA Exceptional Service Medal in March 1992 "for outstanding leadership and contributions in the field of rotorcraft technology." He has also received two achievement awards for his research in materials and structures. He is an associate fellow of the American Institute of Aeronautics and Astronautics and a member of the Acoustics Society of America and the American Helicopter Society.

Yu specializes in aeroacoustics, turbulence flow, measurement techniques, fluid dynamics and gas dynamics.

Researcher News Names New Editor

Ann C. Gaudreaux

Ann C. Gaudreaux has been selected editor of the *Researcher News*.

Gaudreaux, who began in late March, comes to Langley from National Westminster Bancorp in New Jersey, where she was editor of employee publications. A former special education teacher, she worked in the Branch Operations and Administration Department and the Training Department before joining the bank's Corporate Affairs staff four years ago.

"I look forward to delivering a quality publication to NASA Langley employees and retirees. Additionally, I am very happy to be in Virginia, surrounded by the water, the countryside and many very fine people."

Gaudreaux replaces Michael Finneran, who accepted a position as public affairs officer at NASA Goddard Space Flight Center.

Please send news items and story ideas to the *Researcher News* at its new location in Building 1153, Room 112, 1 West Reid Street, Mail Stop 146, NASA Langley Research Center, Hampton, Virginia 23681-0001. The phone number is (804) 864-6126.

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 ..... Marny Skora

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

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

Photojournalist ..... Carol Petrachenko, The Bionetics Corp

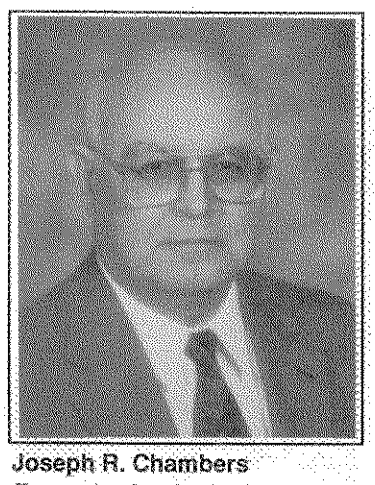
Photographer ..... Fred Jones

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.

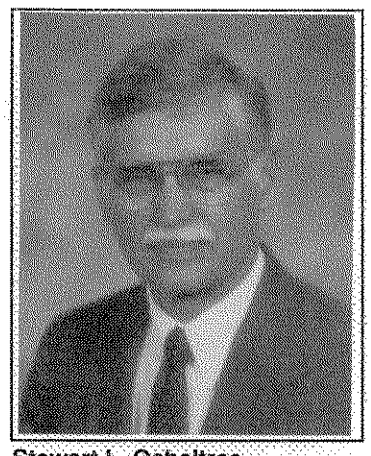
All materials are subject to editing.

Annual Honor Awards

Outstanding Leadership Medals

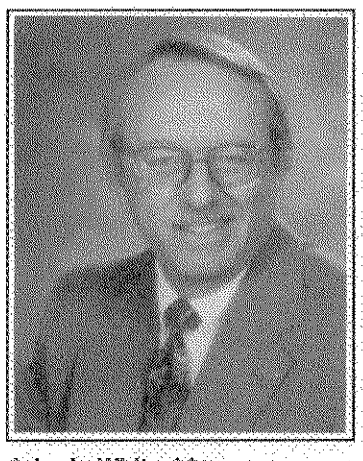


Joseph R. Chambers
For outstanding leadership and management of research in the high-angle-of-attack technology and laminar flow control, producing extremely significant advances in technology for military and civil aircraft.



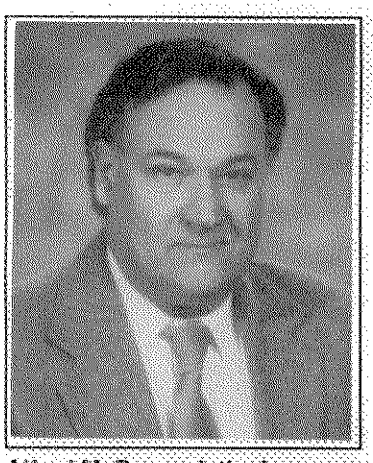
Stewart L. Ocheltree
For outstanding leadership in establishing and advocating an Agency and Center aerospace measurement technology program that advances the state of the art with focused research, development and application tasks.

Distinguished Public Service Medal

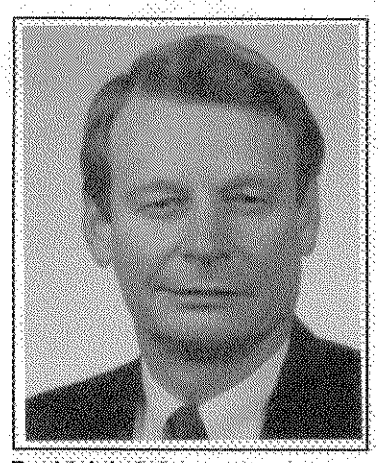


John L. Whitesides
For developing the Joint Institute for the Advancement of Flight Sciences Program which provides continuing and outstanding contributions to the on-site graduate research and education opportunities at Langley.

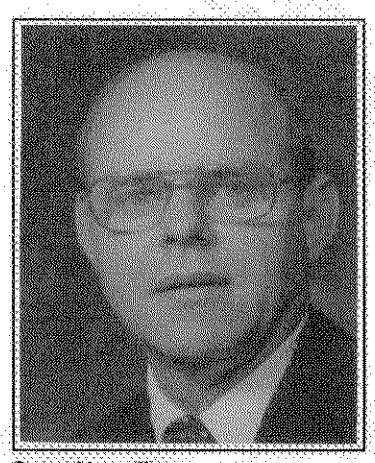
Public Service Medal



Alfred M. Buoncristiani
Christopher Newport University, *for significant contributions to NASA's Advanced Laser Systems Development Programs for use in spaceborne remote sensing.*

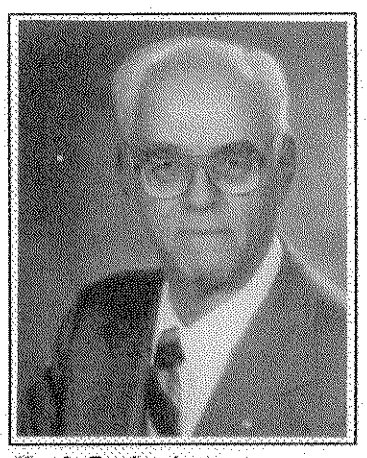


David J. Lahti
General Electric Aircraft Engines, *for outstanding leadership and technical direction of the development of laminar flow control drag reduction techniques applied to modern turbofan engine nacelles.*



Gene Haertling
Clemson University, *for contributions of national significance in new high-technology ceramics, including piezo-electric materials matrices and high-temperature super-conductive materials concepts.*

Oktay Baysal
Old Dominion University, *for exceptional contributions to NASA's basic research and technology program through personal research and the direction of graduate research.*



Jim A. Penland
Distinguished Research Associate, *for major contributions to the advancement of hypersonic aerodynamics technology through voluntary personal commitment.*

NASA Honor Awards: Employees Honored for Their Outstanding Achievements

Langley employees who have made outstanding contributions in aeronautics and aerospace research during the past year were recognized for their efforts at the Annual Honor Awards Ceremony on Friday, April 16, at the H.J.E. Reid Conference Center. Presenting the awards were Acting Director Dr. H. Lee Beach Jr. and Wesley L. Harris, associate administrator, Office of Aeronautics, NASA Headquarters.

Public Service Group Achievement Awards

Mississippi State University Grid Generation Research Team, accepted by C. Wayne Mastin, "for development and analysis of elliptic grid-generation techniques enabling computational fluid dynamics to simulate fluid motion about complex aerodynamic configurations."

National Aero-Space Plane Program On-Site Support Group for the National Program Office, accepted by Paul L. Moses, "for exceptional efforts in providing direct on-site support to the Engine Design, Vehicle Reassessment and Vehicle Enhancement Teams during a critical period of the National Aero-Space Plane Program design evolution."

SPECTRON LITE Laser Development Team, accepted by John C. Chang, "for development of the space-qualified LITE laser transmitter module under extreme adverse conditions."

Group Achievement Awards

Wind Shear Radar Real-Time Processor Development and Flight Integration Team, accepted by Philip R. Schaffner, "for development and successful operation of a real-time signal processor and its integration with the airborne radar sensor for detecting and displaying hazardous wind shear ahead of the aircraft."

Wind Shear Airborne Systems Research Team, accepted by David A. Hinton, "for exceptional service over a sustained period that has contributed significantly to the success of the airborne wind shear detection and avoidance program."

Wind Shear Aircraft Support and Flight Operations Team, accepted by John J. White II, "for exceptional service in meeting objectives of the wind shear sensor systems flight tests aboard the Transport Systems Research Vehicle."

Coherent Lidar Airborne Shear Sensor Integration and Test Team, accepted by Raymond S. Calloway, "for aircraft integration and successful flight test of the Coherent Lidar Airborne Shear Sensor for detecting and displaying hazardous wind shear ahead of the aircraft."

ERBE Data Management Team, accepted by James F. Kibler, "for outstanding contributions to the processing and archival of Earth Radiation Budget Experiment data, including over five years of science products from three different satellites."

UARS Infrared Balloon Experiment (IBEX/FIREX) Team, accepted by Charles W. Stump, "for outstanding scientific and engineering contributions of the IBEX/FIREX project team in support of the Upper Atmosphere Satellite Correlative Measurements Program."

Variable Day Schedule Implementation Team, accepted by John J. Cox, "for outstanding contributions toward implementation of the Variable Day Schedule at the Langley Research Center."

HL-20 Personnel Launch System Technical Definition Team, accepted by Howard W. Stone Jr., "for excellence in establishing the Langley HL-20 lifting body as a technically and economically viable personnel launch system concept."

Hybrid Laminar Flow Nacelle Flight Validation Team, accepted by Fayette S. Collier Jr., "for outstanding contributions to the design, fabrication, installation and flight validation of the hybrid laminar flow drag reduction technique on a modern turbofan engine nacelle."

Materials Division Advanced Aircraft Program Team, accepted by Anne K. St. Clair, "for exceptional contributions to the development of advanced polymeric materials for aerospace use."

National Aero-Space Plane Aerodynamic/ Aerothermodynamic Assessment Team, accepted by Thomas J. Horvath, "for exceptional dedication and innovation in the fast-paced aerodynamic/aerothermodynamic assessment of National Aero-Space Plane Consortium Configuration 201."

National Aero-Space Plane Nonintrusive Diagnostics Team, accepted by Reginald J. Exton, "for exceptional contributions to the National Aero-Space Plane Program by applying newly developed nonintrusive flow field diagnostic techniques to obtain critical hypersonic flow field measurements."

Strategic Culture Assessment for the Nineties Team, accepted by Richard R. Antcliff, "for positively impacting the quality of life at Langley Research Center by providing a focus for employee recommendations."

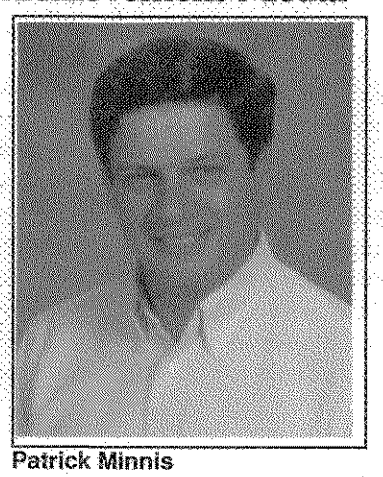
GTE Atmospheric Boundary Layer Experiment Science and Project Team, accepted by James M. Hoell Jr., "for outstanding contributions to the understanding of the arctic and subarctic biosphere as a source and sink for atmospheric greenhouse gases."

High-Angle-of-Attack Pitch Control Design Criteria Team, accepted by Marilyn E. Ogburn, "for exceptional accomplishments in developing high-angle-of-attack pitch control design guidelines vital to the effective development of advanced combat aircraft."

Awards

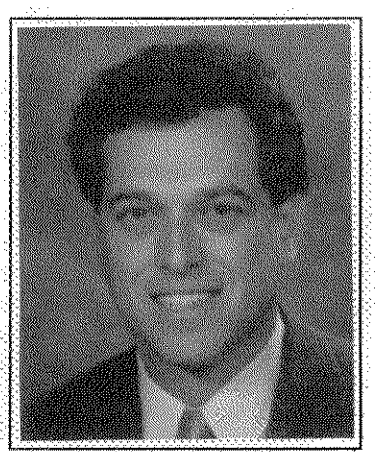
Exceptional Scientific Achievement Medal

Anne K. St. Clair
For exceptional contributions to the development of polymer films and coatings for aerospace use.

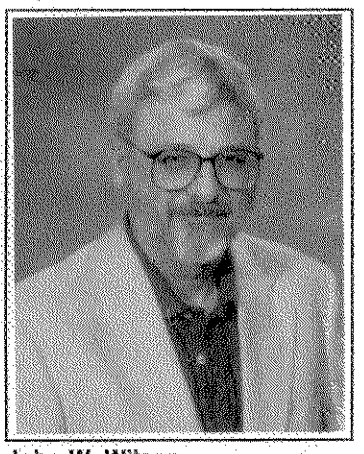


Patrick Minnis
For outstanding contributions to advancing the understanding of clouds and their effect on the Earth's radiation budget and climate.

Lawrence W. Townsend
For outstanding contributions to the nuclear interactions of cosmic radiation with matter and its implications for space-radiation exposure and shielding.

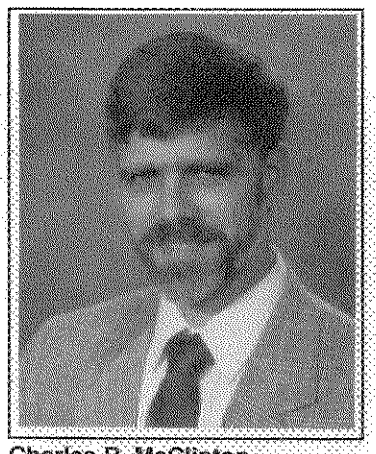


Jack Fishman
For outstanding contributions to the understanding of the photochemistry of the Earth's lower atmosphere.

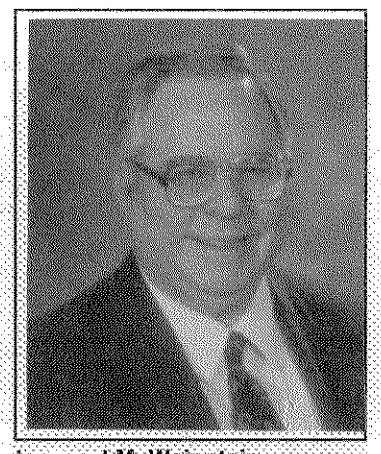


John W. Wilson
For outstanding contributions to ionizing-radiation transport theory and leadership in refining this discipline.

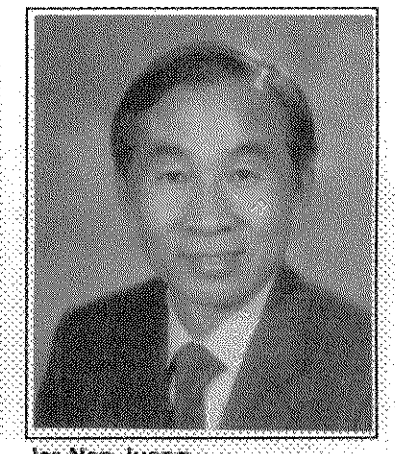
Exceptional Engineering Achievement Medal



Charles R. McClinton
For exceptional engineering achievement in advancing the practical application and experimental validation of computational fluid dynamics analyses for hypersonic propulsion systems.



Leonard M. Weinstein
For the development of advanced high-speed fluid dynamics measurement technology.

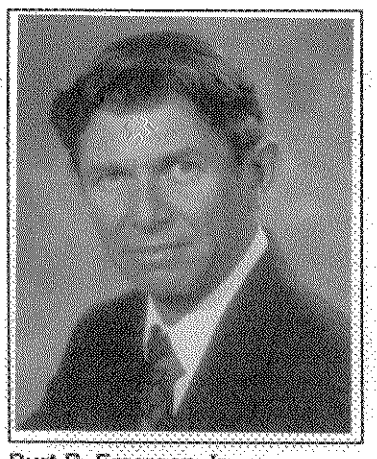


Jer-Nan Juang
For exceptional and sustained contributions to the development of system identification methods for the control of aerospace vehicles.

Equal Employment Opportunity Medal

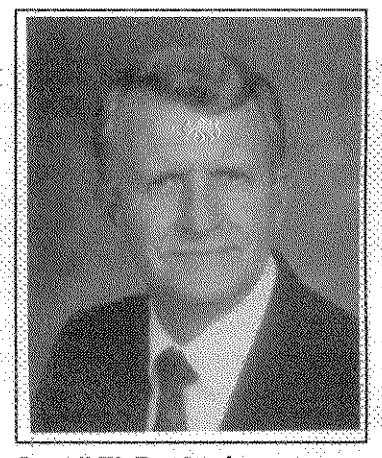
Donna M. Speller
For outstanding leadership and significant personal contributions in advancing equal opportunity at the Langley Research Center and in the local community.

Exceptional Achievement Medal

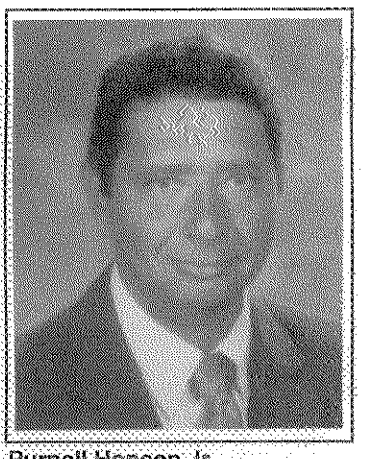


Burt R. Emerson Jr.
For outstanding achievement in the design of new test methods for Langley's Advanced Aircraft Program.

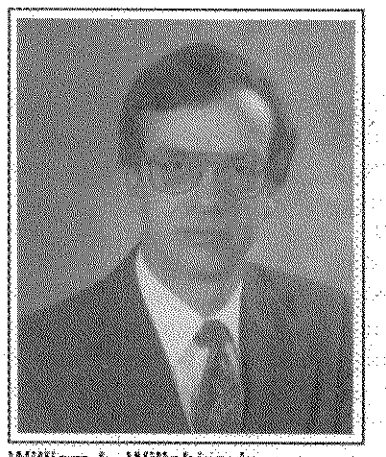
Vivian B. Merritt
For outstanding management of Langley's Discrimination Complaints Program.



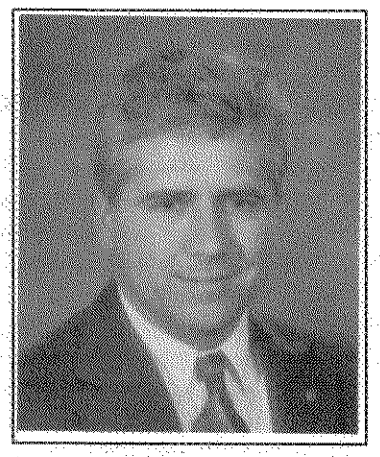
Carroll W. Rowland
For significant contributions to the development, testing and integration of the Lidar In-space Technology Experiment.



Purnell Hopson Jr.
For outstanding contributions in the design, development and application of direct-deposit thin-film sensor fabrication technology.

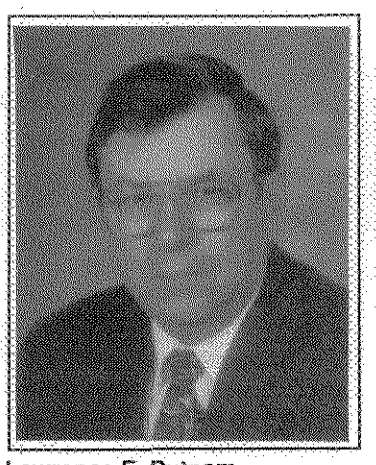


William L. Willshire Jr.
For outstanding contributions to acoustics flight research involving the high-speed civil transport climb-to-cruise noise and effect of atmospheric turbulence on sonic boom.

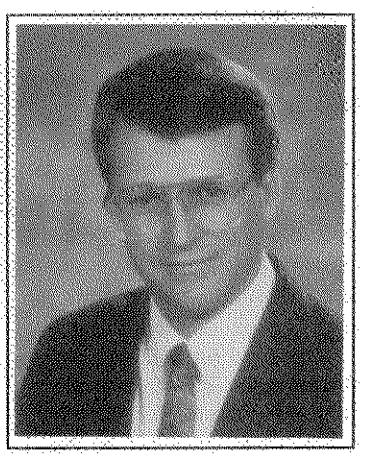


Gary P. Stergin
For outstanding contributions toward increasing the reliability of National Transonic Facility operations.

Mark W. Wynkoop
For outstanding achievement in the design, development, fabrication and testing of the Wind Shear electronic systems.

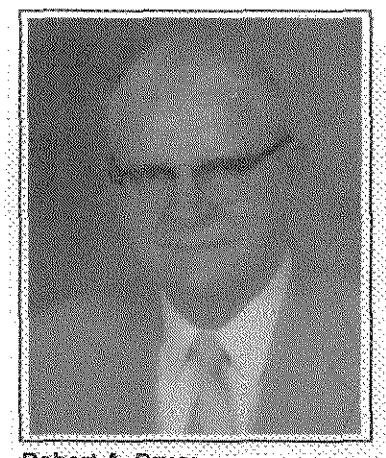


Lawrence E. Putnam
For exceptional achievement in developing the National Transonic Facility into a viable research tool.

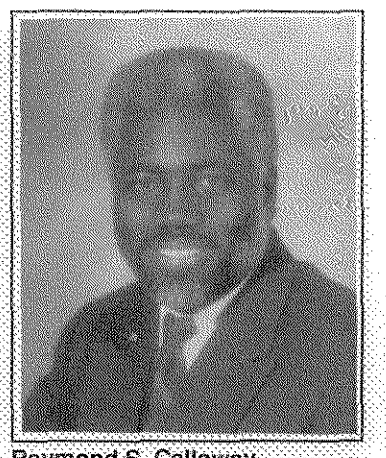


James R. Rooker
For exceptional engineering service in resolving the 8-Foot High-Temperature Tunnel Combustor Deflagration/DDT issues that allowed timely and safe checkout of this nationally important facility.

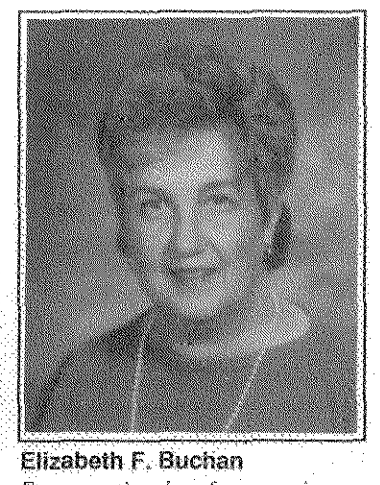
Exceptional Service Medal



Robert A. Bruce
For exceptional service as chief engineer of the Facilities Engineering Division in the design and development of facilities in support of Langley's aeronautics and space missions.

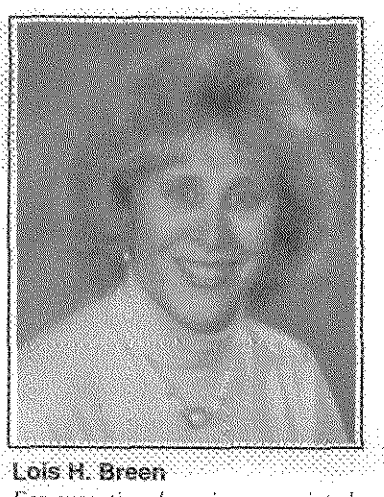


Raymond S. Calloway
For outstanding achievement in flight instrumentation project management which contributed significantly to multidisciplinary advancements in aircraft technology.



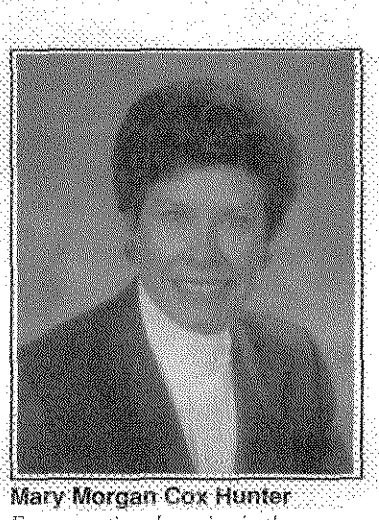
Elizabeth F. Buchan
For exceptional performance in support of the Aeronautics Directorate.

Peggy W. Harmon
For outstanding achievement in the development and evolution of Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technology in Printed Circuit Board fabrication.

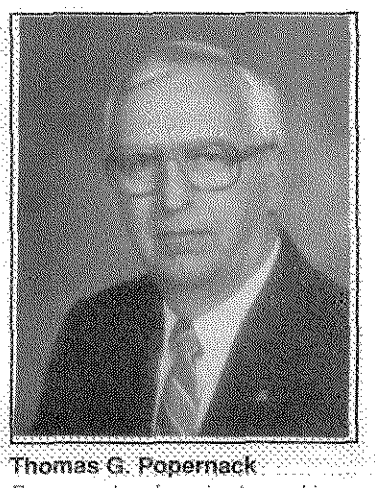


Lois H. Breen
For exceptional services associated with Langley's Computerized Facilities Preventive Maintenance Program and safety-related environmental tasks.

Sandra S. Ray
For exceptional leadership and service in the acquisition of Federal Information Processing resources and in the development and improvement of processes in support of the research mission of Langley.

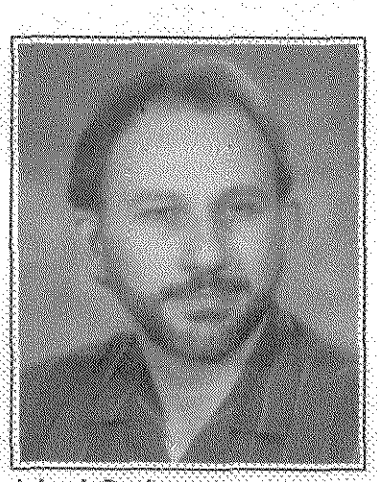


Mary Morgan Cox Hunter
For exceptional service in the development and execution of the Construction of Facilities Program, resulting in the required facilities and systems to support Langley's mission and goals.

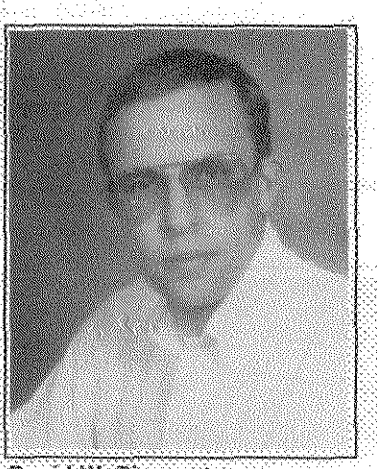


Thomas G. Popernack
For exceptional service in combining technical expertise and managerial skills in providing NASA with safe and reliable fluid systems and cryogenic capability in National Facilities.

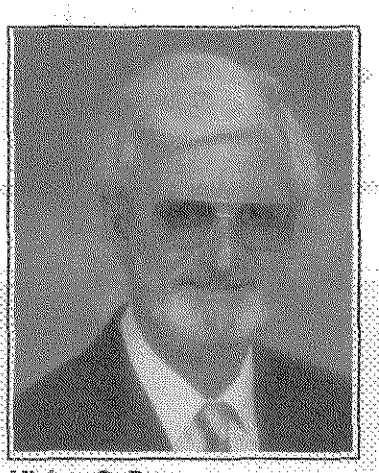
Elizabeth G. Fedors
For technical leadership in elevating the quality of graphics at Langley and for the creation of the digital studio.



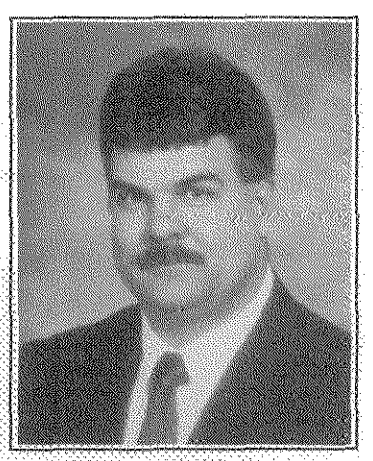
John J. Snoha
For contributions to the development of advanced composite materials.



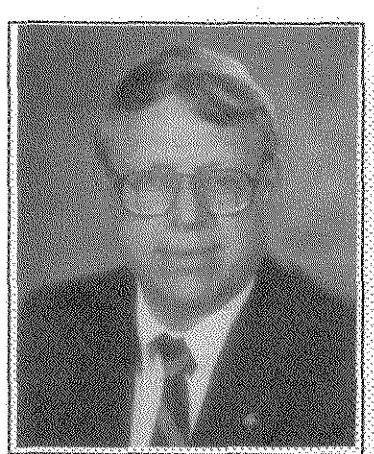
David W. Pierpont
For outstanding efforts and contributions in sustaining the reliability of unique research facilities at Langley.



Mickey G. Rowe
For outstanding leadership in the development and management of the Central Scientific Computing Center at Langley.

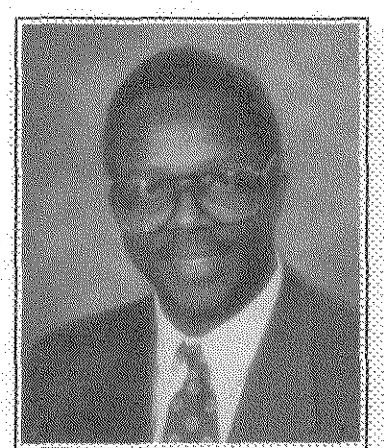


Charles A. Poupard
For significant contributions in support of research conducted in the 16-Foot Transonic Tunnel Complex.



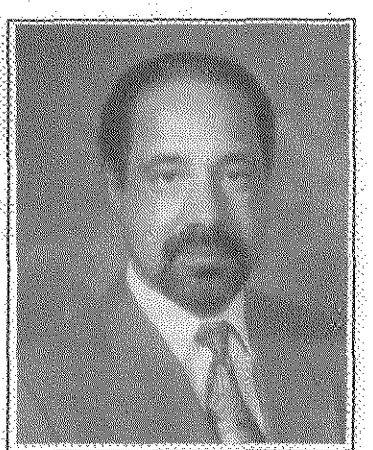
Norman J. Johnston
For outstanding contributions in advancing structural composites technology.

Velma L. Clark
For outstanding contributions and excellence in administrative support of research and development and Construction of Facilities projects at Langley.



Clarence E. Stanfield
For exceptional service in composite research and development for NASA aerospace programs.

Janice R. Wunder
For outstanding contributions and individual excellence in support of NASA personnel programs.

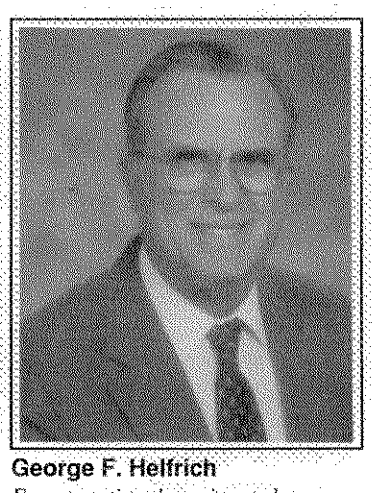


Jeffrey A. Parker
For lasting technical and management contributions to NASA.

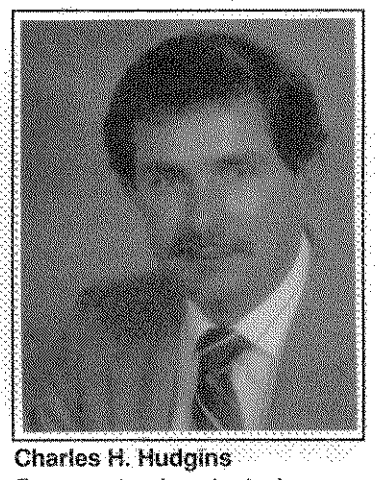
Awards

Exceptional Service Medal

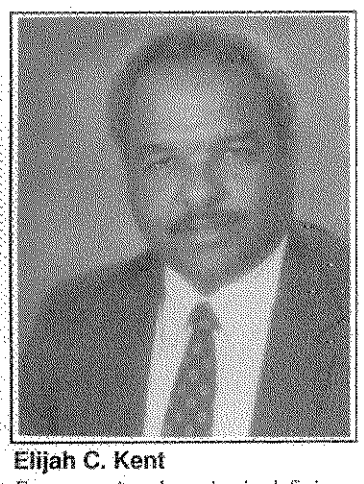
Cassandra G. Favor
For exceptional service and professionalism as the Financial Chairman of the Combined Federal Campaign for Langley.



George F. Helfrich
For exceptional service and leadership in protecting NASA's intellectual property rights and in the prosecution of patents covering Langley's researchers' inventions.



Charles H. Hudgins
For exceptional service in the development of the Langley In-Situ Ozone System and support to the NASA Global Tropospheric Experiment.



Elijah C. Kent
For exceptional service in defining and implementing program assurance provisions on spaceflight projects.

Langley Gives First Contractor Excellence Awards

Acting Director Dr. H. Lee Beach Jr. announced the recipients of the 1993 LaRC Contractors Excellence Award for Quality and Productivity. This is the first year that Langley is bestowing the awards.

The purpose of this award is to recognize model Langley contractors that practice continuous improvement, constantly strive to exceed customer expectations, and are willing to share their methods of achievement with other United States industries. Those that have demonstrated sustained excellence and outstanding achievements in quality and productivity as well as commitment and communication for three or more years become eligible for the award.

The 1993 award was presented to two contractors: Computer Sciences Corporation and Kelsey-Seybold Clinic during the Center's Annual Award ceremony held April 16 at the H.J.E. Reid Conference Center.

The awards were accepted by Madell Reynolds for Computer Sciences Corporation and Dr. Richard D. Hansen for Kelsey-Seybold Clinic.

In addition, Langley had two local contractors who were finalists for this prestigious award. They were Advex Corporation and Technology Applications, Inc. (TAI). These contractors also demonstrated a true dedication to excellence and are eagerly pursuing broad-based continuous improvement initiatives.

Accepting the Finalists awards were Bennie E. Barnett for Advex Corporation and C. Anderson King for Technology Applications, Inc.

Quotable

"Do what you can with what you have, where you are."

— Theodore Roosevelt

NASA Fellowships Awarded to Eight Langley Employees

This year, eight Langley employees have been selected by NASA to receive fellowships to study various aspects of management or engineering at colleges and universities around the United States.

Chosen for the fellowships are:

William M. Berrios, head, Experiments Systems Section, to Syracuse–Maxwell Mid-Career Program.

Wayne H. Bryant, supervisory electronics engineer, Information Systems Division, Senior Executive Fellow, Harvard University.

Sharon K. Crockett, aerospace engineer, Experiments Systems Section, to the Management Program for Women, Smith College.

Christine Darden, Ph.D., aerospace technologist, group leader, Aerospace Vehicle Design and Mission Analysis, to Program for Developing Executives, Simmons College.

Sally C. Johnson, computer engineer, Flight Systems, to Program for Developing Managers, Simmons College.

Joe W. Posey, Ph.D., assistant head, Applied Acoustics Branch, to Scientists/Engineers as Managers Program, Penn State University.

Stephen Robinson, Ph.D., head, Experimental Flow Physics Branch, to Dryden Science Center, sponsored by the National Space Club.

John H. Stadler, aerospace engineer, Mechanical Systems Section, to the Advanced Engineering Program, Massachusetts Institute of Technology.

Alice C. Massey, chief of the Human Resources Management Division, is a member of the Langley committee that recommends candidates and the intercenter panel that provides Headquarters with a slate of nominees. "As the LaRC representative on the Executive Development Education Panel that recommended the candidates for selection for the Agency fellowships this year," Massey said, "I was very impressed with the caliber of the Langley applicants. This year was extremely competitive, with budget cuts forcing the Agency to defer participation in six of the programs and to reduce the usual number of participants in the remaining programs. However, eight of Langley's employees, and two others as alternates, were selected for 18 fellowships awarded. This year the Center should be very proud of our selectees as well as others who participated in the competition."

The NASA management fellowships are varied in focus and duration. Time periods for participation range from one week to one year and requirements vary from GS-12 to Senior-Executive-Service level. Programs differ as well. They range in focus from the public sector viewpoint to management in a business context. For more information, contact Louise Hamilton, Employee Development Branch, ext. 42571.

COLLOQUIUM

Continued from Page 1

Photo by Brian J. Stocks, NASA

The burning of the world's forests is a major source of carbon dioxide and other greenhouse gases in the atmosphere which may lead to global change. This Canadian forest fire was studied by LaRC scientists in 1990.

Lawless is currently on leave from NASA Ames Research Center, where he is Chief of the Earth Systems Science Division. He earned a bachelor's degree in chemistry from Lafayette College and a doctorate in chemistry from Kansas State University. As a research scientist at Ames, Lawless is internationally known for his research dealing with the origin or evolution of life on our planet and the possibility of life elsewhere.

Since joining NASA in 1969, Lawless has authored more that 75 scientific and technical papers. He has been associated with NASA's Mission to Planet Earth since 1982 in both scientific and managerial roles. Lawless has received the NASA Medal for Exceptional Scientific Achievement and is a Fellow of the International Academy of Astronautics.

Lawless will give the same talk at the Virginia Air and Space Center, in Hampton, Tuesday, May 11, at 7:30 p.m., as part of the Sigma Series. The lecture is open to the public.

Take Stock in America
U.S. SAVINGS BONDS

OUT OF AFRICA: Langley Scientists on SAFARI Capture Data

BY CAROL PETRACHENKO

When atmospheric scientists Dr. Joel S. Levine, Wesley R. Cofer III, Edward L. Winstead and personnel from Science Application International Corporation/G and A Technical Software, were in South Africa during September 1992, they had to be accompanied by sharpshooters with high-powered rifles whenever they left the 12-foot-high fenced camp where they stayed.

"Ahead of us were nine lions at a water hole," says Levine. "Our bodyguard assured us the lions were not dangerous. He said he could tell by the way they acted that they had just eaten their kill and so would not be interested in us.

"This was reassuring to know. Especially since we knew the lions were not impartial to humans. Neighboring Mozambique was in the middle of a civil war. Occasionally people from Mozambique would flee at night into Kruger National Park, where we were doing our research. The remains of their bodies would be found the next day — after lions had gotten to them."

Levine says there was always this uneasy feeling of having to watch your back — even with the sharpshooters surrounding the site.

"If you moved even 25 feet from the main group, you'd have to have a bodyguard accompany you."

More than 200 researchers from 13 countries were involved in the South African Fire-Atmosphere Research Initiative (SAFARI). They worked at Kruger National Park, in northeastern South Africa, to study the effect of biomass burning on the atmosphere. The Langley researchers made important discoveries concerning the impact of African burning on the global atmosphere. The scientific results are being prepared for publication in scientific journals. Kruger National Park is about 100 by 500 miles — roughly an area from here to the tip of New Jersey and from the coast to Charlottesville. And it's all wild!

Cofer found out just how wild one evening. He said that they were especially warned of the rhinoceros and the hyena — rhinos, because they will charge a car; hyenas, because they're aggressive and relatively unafraid of humans.

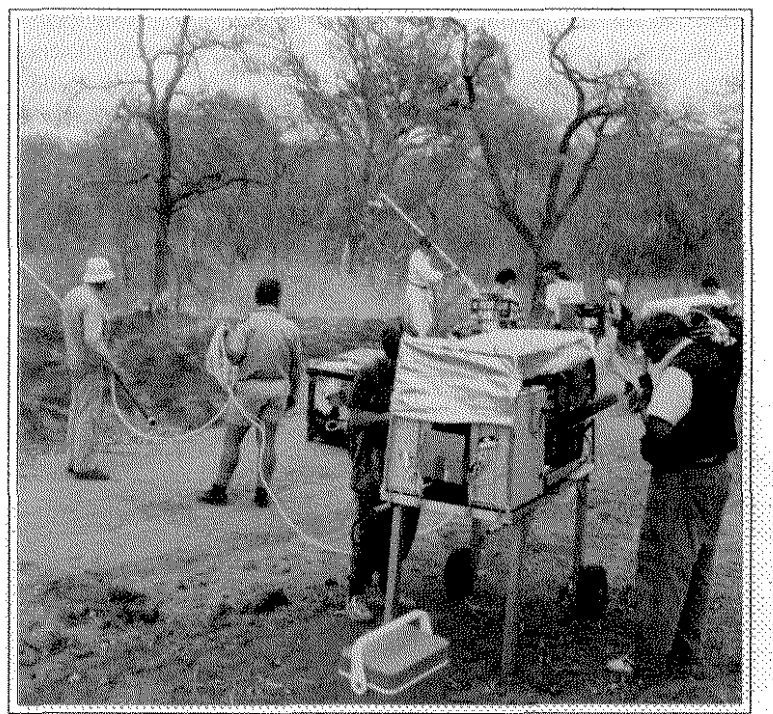
The camping areas at Kruger are similar to camps in our national forests. But at Kruger, they're enclosed by 12-foot fences. In addition, the camp gates are closed from 6 p.m. to 6 a.m. to protect the inhabitants — both tourists and scientists. Although the Langley researchers saw many wild animals during the day, it became apparent that the animals were even more mobile at night when the temperature dropped.

"One evening," said Cofer, "I got a pass to leave camp after the nightly debriefing to drive the owner of the helicopter company with whom we worked back to a nearby camp. It was only about a kilometer away."

Just as Cofer and his passenger reached the locked gate of the camp, their vehicle was swamped by hyenas.

"It was one of my most terrifying moments," says Cofer. "There were at least a dozen of them. I could see them licking their chops, grinning and rubbing their tummies. I went into a warp-drive panic."

Fortunately, by blowing the vehicle's horn, the two were able to disperse the hyenas.



French scientists walk along the fire, analyzing the composition of the smoke with ground-based instruments. Langley scientists, on the other hand, took data from overhead by flying in a helicopter.

Cofer wasn't the only one who came face-to-face with danger at Kruger. Winstead's analytical lab was close to the park's biological lab. One night when Winstead was working late, the park people brought in a seven-foot black mamba — one of the most deadly snakes in the world. It was dead — shot by one of the sharpshooters. It had been found in a tree overhanging the park's nursery school playground.

Not all the animal-related encounters were dangerous, however. "We ran into unusual problems," says Winstead. "For example, we usually inserted a half-inch plastic tube filled with water into the ground to take nutrient samples. To keep the water clean, we covered the tube with a yellow plastic cap.

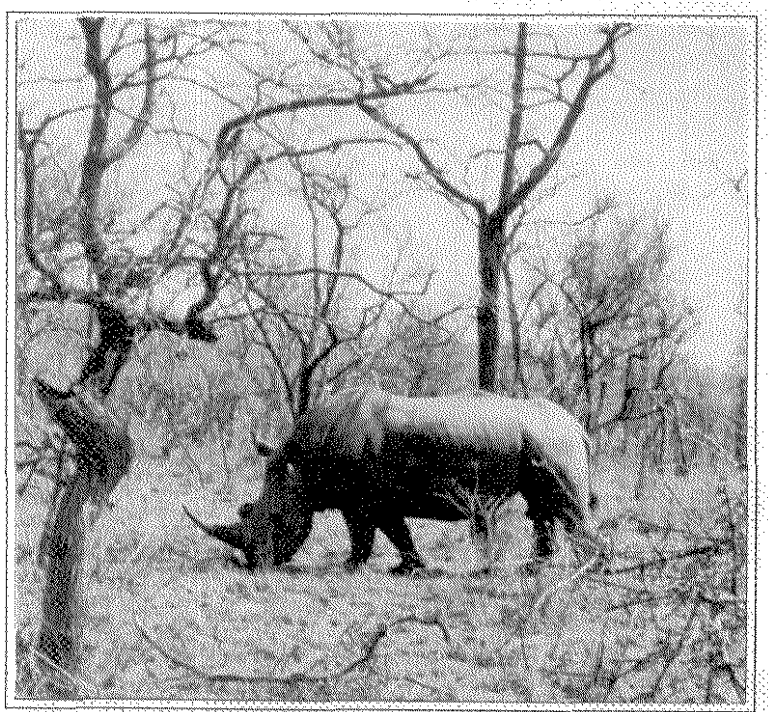
"When we'd arrive in the morning to check the tubes, the plastic caps would be missing. Fortunately, the South African graduate students working with us had the answer and the solution to our problem," he said.

"Evidently baboons are especially fond of the color yellow. They would raid the sites for the yellow plastic caps. When we changed the color of the caps, the raids ended."

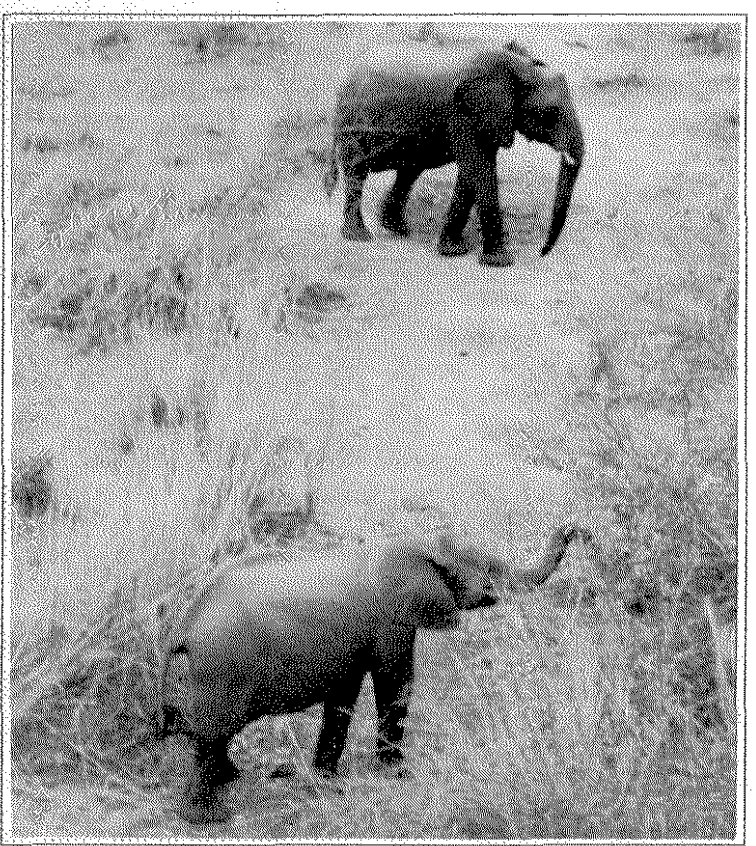
Although working in Kruger was a challenge, it was also an adventure in more ways than one. The evening meal at the camp restaurant featured exotic fruits and vegetables. In addition, a certain percentage of the wild game had to be killed to prevent overpopulation. Thus, the menu included meats such as impala and antelope.

Levine and Cofer agreed: their favorite was buffalo steak.

Winstead's tastes turned toward the more exotic: he loved wart-hog stroganoff.



Because savannah grass is only tender and nutrient-rich when it is under 18 inches in height, the mature six-foot-tall grass is burned by park rangers. Grass begins growing again in two days. The controlled fires do not affect the trees because the fires pass quickly through the fast-burning dry grasses. Levine shot this photo with a normal lens.



Elephants feed on land that has been previously burned.

Foundation Invites Levine to Speak in South Africa

Atmospheric scientist Dr. Joel S. Levine has been invited to speak on "A Planet at Risk" in South Africa at the Foundation for Research Development's (FRD) prestige lecture series in June. The program is designed to bring science and technology developments to South Africa.

This year's theme is "Science and Technology for Life." Levine's lecture will cover the impact of biomass burning on global atmospheric change. Burning of the savanna is a widespread practice throughout Africa.

"I am particularly pleased to speak in South Africa because of the savanna burning's significant impact on the global atmosphere. My goal is to make the government and the public more aware of these global issues," Levine said.

South Africa is a major burn center of the planet. The grasslands are burned every few months, causing detrimental effects on the atmosphere by increasing greenhouse gases, in particular, carbon dioxide.

The FRD, the South African equivalent of the U. S. National Science Foundation, brings students, teachers, professors, scientists and government officials together annually to discuss issues in the world of science and technology.

The FRD is an independent statutory body whose main objective is to develop South Africa's human resource potential in science and technology to ensure a better quality of life for all its citizens and make the public more aware of science and technology.

Levine is a senior research scientist in the Theoretical Studies Branch of the Atmospheric Sciences Division.

During the past 18 months, he has presented seminars on biomass burning and global change in Beijing, Stockholm, Helsinki, Lisbon, Paris and Tokyo.

Happenings

CHANGE TO PHYSICAL EXAM: Effective immediately, the annual physical exam will be conducted minus the spirometry (breathing) test. The Occupational and Safety Health Act (OSHA) has changed the requirements for spirometry, increasing the cost to a prohibitive level. Some employees, like respirator and chemical personnel, because of their jobs, will still receive this test. Clinic physicians may, based on an employee's past history, request a spirometry test, even though the employee may not work with chemicals, etc. The physical offered to NASA employees, even without this test, is a valuable benefit. For further information, call ext. 43189.

HOUSE FOR SALE: 3-year-old ranch, 3 BR, 2 bath, 1-1/2 car garage, deck, fence, cathedral ceilings, great room w/gas fireplace, skylights, dining room, eat-in kitchen, laundry, master BR w/walk-in closet, jacuzzi tub. $118,000. Call 826-5069.

CLARIFICATION: April 9's *Researcher News* contained an article about the ICASE/Langley Theodorsen Lectureship. There is no monetary award associated with this honor.

MOBILE HOME FOR SALE: '86 Oakwood, 2 BR, 1 bath w/garden tub, central air & heat, appliances, ceiling fan, carpet, skirted, custom awnings, storm windows & doors, 8-by 8-foot deck, shed. $13,000. Call evenings 249-2993.

THE PENINSULA WOMEN'S NETWORK holds its annual Awards and Election Gala Dinner May 6 at the Radisson Hotel Hampton. Awards will be presented and new officers and board members will be introduced. The featured speaker will be Mary Bicouvaris, a former Teacher of the Year, and currently a professor at Hampton Roads Academy. Her topic is "Reading, Righting and Reaching Out." For information, call Pat Overton at 244-3729.

FOR SALE: Giant lifecycle, $1,500 new at Conte's, asking $900 OBO. Also **FREE** to good home, orange/white male tabby cat, 9 mos. old, neutered, all shots, good mouser! Call 867-7868.

FOR SALE: One-of-a-kind, mermaid-style wedding gown, heart-shaped back, never worn. Paid $650, asking $500 OBO. Call Keisha, ext. 42764.

AIAA LECTURE
"Living Off the Land In Outer Space" will be the topic of the Jet Propulsion Laboratory's Dr. Jerry W. Suitor. He will present his talk at a joint meeting of the Eastern Virginia Section of the ASME and the Old Dominion Chapter of SAMPE Tuesday, April 27, from 6 to 8 p.m. at the Airport Hilton, 1550 N. Military Highway, Norfolk. For reservations and information, call Stan Lamkin, days 865-7093, evenings 640-0415.

LOOKING FOR PAINTBALL PLAYERS! Paintball is a game using CO_2-powered guns that shoot balls of paint. Join us Saturday, May 1, at the Paintball Battlefields in Suffolk. Everything from camouflage to paintball guns is provided. Let's set up some teams! Call Chuck or Brian, ext. 46899, for more information.

MODEL RAILROAD OPEN HOUSE: Chesapeake Bay Railroaders HO scale model railroad is open to the public, Saturday, May 1, from 10 a.m.–5 p.m., and Sunday, May 2, 1–5 p.m. Located at 110-F Dare Rd., Grafton, behind Grafton Hobby Center. Free admission. Call Joe, ext. 43730, for more information.

HOUSE FOR RENT: 3 BR cottage in Old Nags Head Cove, use of club facilities, weekly rates, May, Sept., Oct./$325; June, July, Aug./$395. Call Ernie Greene, 838-0567.

PROM DRESSES: New, size 7/8, teal taffeta, bouffant off-shoulder sleeves w/rhinestone clip, tea-length, V-back w/bow, must see. Dress also available in size 13/14. Paid $160 each, asking $100 each. Call Jennifer, 838-8422.

HOUSE FOR SALE: Hampton, 5 BR house, wood floors, carpet, 4 baths, formal LR & DR, den w/fireplace, large kitchen w/ new dishwasher, counter tops and water heater, ceiling fans, patio, etc. Asking $129,000. Call 826-6994.

TO SHARE: Townhouse near I-64 and Oyster Point Rd., master suite w/private phone line, washer & dryer, cable, non-smoker only, $295+1/2 utilities. Leave message at 591-0712.

LOST: Silver bracelet, 4-5mm. thick. Possibly lost near cafeteria on April 2. Please call A. Kelkar, ext. 47725.

FOUND: Partial dental plate found in parking lot, Building 1219. Call Velma, ext. 43761, or go to Building 1218, Room 104.

ASTRONOMY NIGHT: The Skywatchers Astronomy Club presents telescopic viewing of the sky on Friday, April 30, from 8 p.m. until midnight at the observatory, 10 Lindbergh Road, Building 1231. The event is free and open to the public, including children. No registration/reservation is required. A variety of telescopes will be set up. If the sky is overcast, the event will take place the following night. For more information, call Marilyn Ogburn, ext. 41175.

NATIONAL SPACE SOCIETY: The Langley Chapter will hold a dinner meeting at 5:30 p.m., Monday, April 26, Warwick Restaurant, 12306 Warwick Blvd., Newport News. Speaker Stephan Cooper, Director of Technology Transfer, Thomas Nelson Community College, will discuss channeling defense-related technologies to civilian and space-related uses. Call Doug Stanley, 864-4518, for information about the meeting or the society.

LAND FOR SALE: 5.68 wooded acres in Gloucester, perk approved. $19,000. Call 473-9321 between 10 a.m.-2 p.m. or 5-10 p.m.

BOAT: 1979 Sears Gamefisher, 12' fiberglass. $300 OBO. Call 850-1273, leave message.

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Researcher News

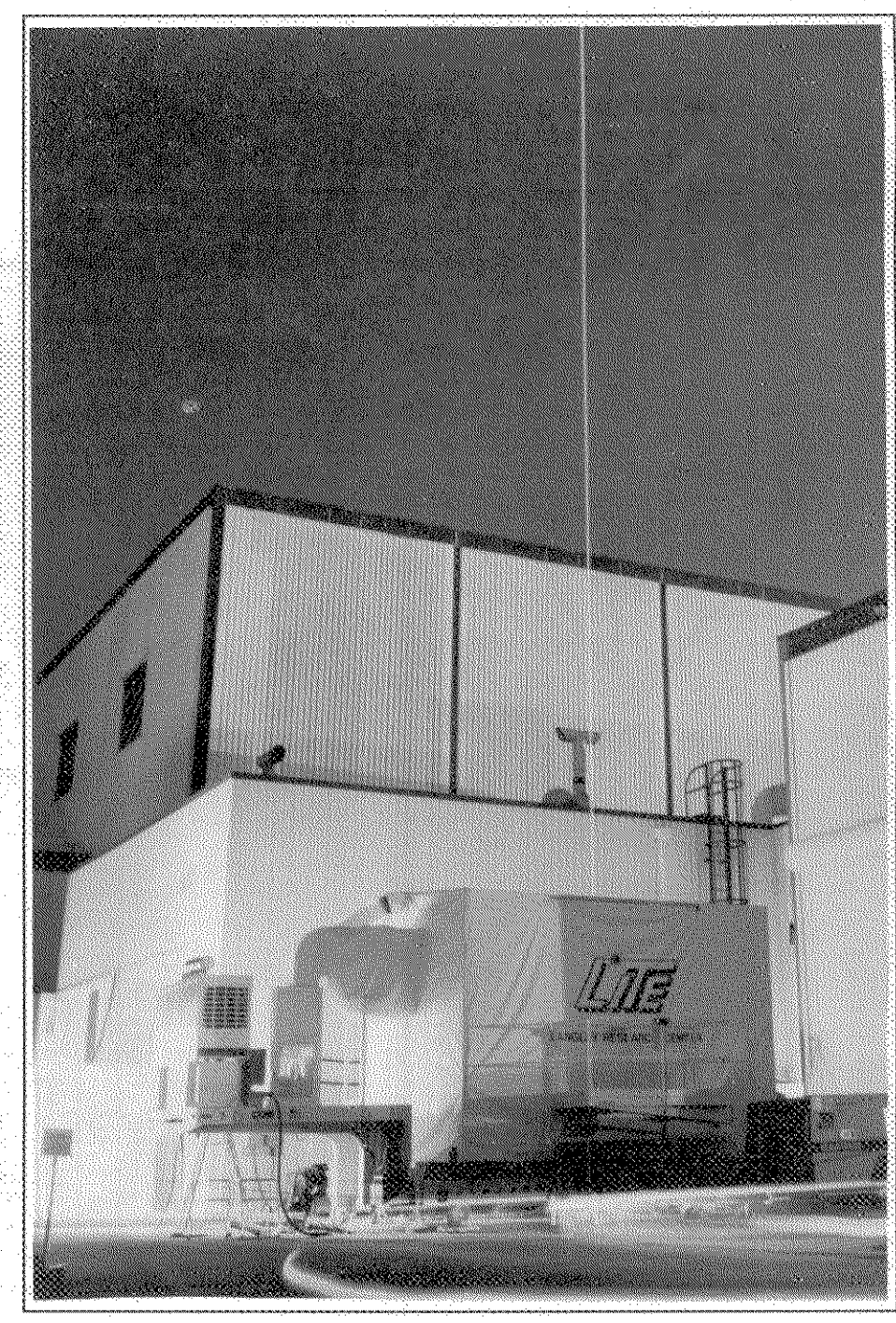


Photo by Clemens Meyers

The Lidar In-space Technology Experiment (LITE) is being developed by Langley for a series of flights on the space shuttle starting in 1994. It employs a high-energy, three-wavelength laser and a one-meter diameter telescope and is a test-bed for future spaceborne lidars. The LITE instrument is housed in its transportation container, outside building 1250. The laser's one visible wavelength can be seen exiting the top of the testing container during initial nighttime testing. Designed to observe clouds, tropospheric and stratospheric density and temperature variations with greater resolution than is available from orbiting sensors, results of testing to date show excellent system-level performance.

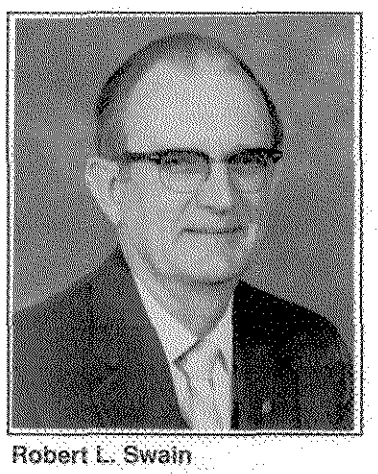
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 9 ❖ May 7, 1993

Six Receive Presidential Awards



Robert L. Swain

Robert L. Swain, director for Systems Engineering and Operations (SEO), was presented the Distinguished Presidential Rank Award on April 13 in Washington, D.C.

Swain received the distinguished executive award "for sustained extraordinary accomplishment" in the Senior Executive Service(SES). Each year, fewer than one percent of SES executives receive this award.

An expert in solid rocket/propulsion technology, atmospheric sciences, and systems and facilities engineering, Swain serves as advisor and consultant within the Federal Government and to industry.

His 36-year NASA career has involved many state-of-the-art advancements. He directed the design, construction, testing and activation of the National Transonic Facility, a unique high-Reynolds-number cryogenic wind tunnel. In addition, he directed the development of third- and fourth-stage solid rocket motors for the Scout launch vehicle; developed new/improved solid rockets and pyrotechnic devices; led efforts for advances in solid liquid rocket technology, and directed arc-heated airtest facilities development.

Swain serves on several councils and boards Agency-wide and in the local community, including the Peninsula Industry Task Force, organized to address the technical and multi-cultural work forces of the future. He chairs the committee that oversees Langley's engineering technician apprentice program, He has lead efforts resulting in increased safety awareness and environmental compliance agreements and he started computer-aided productivity improvements.

Meritorious Awards

Meritorious Presidential Rank Awards "for sustained accomplishment" were given to Dr. H. Lee Beach Jr., acting director of Langley; Lana M. Couch, director of the National Aero-Space Plane (NASP) Office; Darrell Branscome, chief engineer at Langley; Dr. Darrel R. Tenney, chief of the Materials Division; and John Stokes, director for Management Operations. This award is granted to only five percent of the career SES executives government-wide.

Dr. H. Lee Beach Jr., acting director, is responsible for directing research and technology programs and for institutional management of all facilities and equipment.

Beach began his career here in 1970 as a research engineer in hypersonic propulsion.

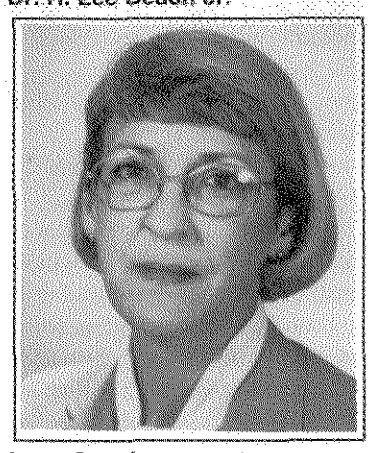
In 1985, Beach joined NASA Headquarters as acting deputy director for Aeronautics in the Office of Aeronautics and Space Technology. He returned to Langley in 1986 as deputy director for Aeronautics.

In 1989, Beach was named director for the NASP Directorate at NASA Headquarters. As director, he was responsible for NASP coordination, advocacy, resources management, technology oversight and program reporting activities. He was named to his present position in 1992.

Lana M. Couch, director of the NASP Office, is responsible for overseeing hypersonic technology programs and NASA's activity in the National Aero-Space Plane Program.

She began her career at Langley in 1963 conducting

Dr. H. Lee Beach Jr.



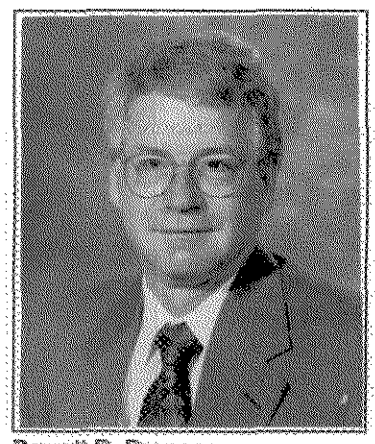
Lana Couch

research in fluid flow phenomena on subsonics through hypersonic aircraft and launch vehicles. She has managed aerothermal loads research programs and the operation of a complex of hypersonic wind tunnels.

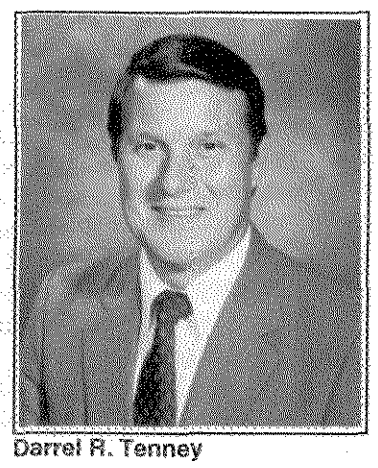
In 1985, Couch was NASA head of the DOD/NASA National Aero-Space Plane Program and was responsible for the program through its advocacy, approval and initiation. At NASA Headquarters, she directed the NASA Space Research and Technology Program focusing particularly on its overall advocacy, management and budget allocation. She returned to Langley in 1990 and assumed her present position.

Darrell R. Branscome has been chief engineer at Langley since 1992. In this position, Branscome conducts special studies for the Center director, including investigating the best approaches to project implementation and space technology transfer to flight centers. He also provides a Center focus for

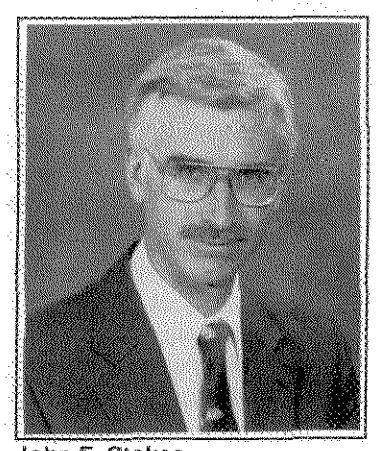
Continued on Page 3



Darrell R. Branscome



Darrel R. Tenney



John F. Stokes

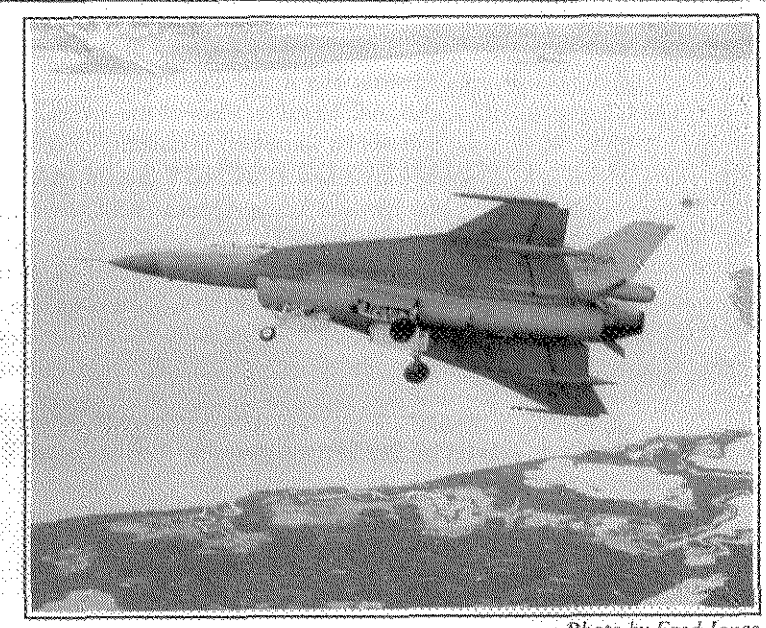


Photo by Fred Jones

The F-16XL experimental aircraft banks for a landing at Langley. It will be used for research flight testing in the High-Speed Civil Transport Program.

F-16XL Arrives for Testing

BY H. KEITH HENRY

The high-performance and very unique-looking F-16XL experimental aircraft arrived at Langley on Thursday, April 15. Its arrival signals the beginning of flight testing at Langley in support of the High-Speed Civil Transport (HSCT) Program. Scheduled tests will probably begin in September after maintenance and modifications to the aircraft.

The General Dynamics F-16XL is on loan to NASA from the Air Force for HSCT-related studies. It has been at NASA Dryden Flight Research Facility in Edwards, California, for the past few years, as part of the Langley-Dryden Supersonic Laminar Flow Control Program. The F-16XL is at Langley for the High-Lift Project, one element of the NASA High-Speed Research (HSR) Program. Even though this is a fighter-type aircraft, the sweep and general arrangement of the uniquely- designed cranked arrow wing resemble those planned for the next generation of high-speed civil transport.

The wing shape of the F-16XL resulted from collaborations between General Dynamics and Langley in the late 1970s. At that time, in view of Langley's experience in designing efficient supersonic wings, General Dynamics requested Langley's assistance in the design of a supersonic cruise wing for the F-16 family. A team, under the leadership of Charlie Jackson, former chief of the High-Speed Aerodynamics Division, worked with General Dynamics to evolve the wing shape.

The F-16XL is basically a modified version of the Air Force's F-16 fighter. "It doesn't look like anything else," said Bruce Fisher, of the Flight Research Branch, and manager of the flight program. "It's very distinctive."

The joint Langley-Dryden high-lift flight test program is aimed at improving performance, reducing engine noise and limiting noise exposure by using specially-designed high-lift devices on or in the wing. Analyses indicate that a supersonic wing with a high-lift device can take off and land with reduced thrust, and, therefore, reduced engine noise. A high-lift HSCT also should be able to climb faster, shrinking the noise "footprint" over the surrounding community. The flight tests will allow engineers at Langley to determine the accuracy of their ground-generated information and predictive methods. The engineers then will be able to fine tune their predictions about a larger HSCT configuration. These validation tests will provide significant risk reduction in the high-lift element of the HSR Program.

Wind tunnel tests, computer simulations and piloted simulations will determine which one of several promising high-lift concepts will be tested. Two concepts involve adding Langley-designed and fabricated flaps on the leading edge of each of the wings. A third concept involves sucking a thin layer of air off the wing's leading edge.

Continued on Page 5

ON THE INSIDE

- **"Cool suit" and patient monitoring device inducted into Hall of Fame, Page 3.**
- **Career Field Development Program seeks applicants, see Page 4.**
- **Time to "Take Stock in America" and buy U.S. Savings Bonds, Page 5.**

News Briefs

AROUND THE AGENCY

COMPUTER PROGRAM WILL CATALOG ASTRONOMICAL SKY SURVEY- Scientists at NASA's Jet Propulsion Laboratory (JPL) and the California Institute of Technology (Caltech) announced that they have developed a computer software system to catalog and analyze the estimated half billion sky objects in the second Palomar Observatory sky survey. The survey of the northern sky includes more than 3,000 digitized photographic plates produced by Palomar of San Francisco. Drs. Usama Fayyad and Richard Doyle of JPL said the system, Sky Image Cataloging and Analysis Tool (SKICAT), was delivered to Caltech in April. The SKICAT, based on state-of-the-art machine learning, high performance and image processing techniques, will not be surpassed in quantity or scope for the next decade.

NASA AND THE RUSSIAN SPACE AGENCY SIGN MARS '94 CONTRACT - NASA Administrator Daniel Goldin and Russian Space Agency (RSA) Director Yuri Koptev announced that they have signed a contract potentially valued at $1.5 million to fly two U.S. Mars Oxident Experiment (MOX) instruments on the Russian Mars '94 Mission. This mission will deploy small landing stations and penetrators and carry a complement of instruments to study the surface and atmosphere of the planet Mars. The MOX instruments will conduct soil reactivity/composition experiments to provide chemical information about the volatile components in Martian soil. These experiments will enable scientists to characterize the Martian physical and chemical surface environment.

Fitness Fest Coming to the Langley Fitness Center May 19

The Langley Fitness Center will be celebrating Federal Employee Fitness Day May 19 with a Fitness Fest and Open House for all NASA employees and contractors. Beginning at 6 a.m., visitors can take part in various fitness and fun tests. Included are strength, flexibility and endurance tests, and cardiovascular capability tests. There will also be free blood pressure checks and body fat analysis. For those really wanting to test their muscles, there will be pull-up, push-up, broad jump and dip contests.

Throughout the day, there will be lectures and demonstrations on "Low Back Pain," "Prevention and Treatment of Running Injuries," "Yoga," "Improving your Golf Game" and "The Value of Massage." At 12:30 p.m., there will be a lecture in the Hampton Room of the H.J.E. Reid Conference Center on "Running Injuries and Prevention" by Bob DiPasquale, director of Physical Therapy for Riverside Regional Medical Center. At 1 p.m. in the Langley Gym, Patricia Stone, yoga instructor, will offer basic instruction and a mini-class in the Kriya Yoga style for stress reduction and relaxation. At 4:30 p.m., a "Low Back Pain" lecture by Mary Beaton is scheduled in the Hampton Room. She will talk about some common causes of back pain and show some exercises to help relax and strengthen the back. For golf enthusiasts, a local pro will give pointers at 5 p.m. in the Langley Fitness Center. Massage therapist David Marker will give neck and shoulder massage demonstrations at 5:30 in the Conference Center.

Everyone who participates in any of the day's activities will be entered into a sweepstakes for prizes: The more activities you do, the greater your chances of winning. The drawing will be at 6 p.m.

Don't miss out on the activities from 6 a.m. to 7 p.m. Join in the fun and food on May 19 and bring a friend. Call ext. 46387 for more information.

Speakers Bureau Reports Activities

In addition to those reported in the last issue, the following Langley personnel participated in the Speakers Bureau during the first quarter of 1993:

Ray Whipple spoke at the Virginia Tech Space Seminar on "NASA Spin Research," and to the AAIA Chapter at Virginia Tech on "NASA Research Facilities" and "Out-of-Control Flight Conditions."

Dr. Joe Heyman spoke at ASTN Chapter, Newport News, on "New Horizons for Non-Destructive Evaluation."

Dr. Christine Darden spoke at James Monroe Elementary School, Norfolk, on "Striving to Achieve" and to four classes at Sims Middle School on "Mathematics in Engineering." **Dr. Darden** and **Michael Chapman** also spoke to the Fellowship of Minority Engineers at Old Dominion University on "Engineering at NASA."

Brian Pritchard spoke to the Adult MENSA Group of Chamberlin, on "Future of Space Exploration;" and to the Richmond Joint Engineers Council on "Space Station and Beyond."

Cary Spitzer spoke to the Math Counts Program on "Application of Mathematics in Aerospace Careers."

Bruce Fisher spoke to the Peninsula Amateur Radio Club on "NASA Storm Hazards Research."

Leroy Spearman spoke twice to students on "Engineering;" to St. Andrew's Kindergarten on "How We Fly;" and to the Men's Group, First Methodist Church, Newport News, on the "History of Civil Air Transportation."

Ian MacConochie spoke to York High School on "Rockets and Robots/Mathematical Things."

Dr. Joel Levine spoke at Temple Beth El, Williamsburg, on "Colonial Air and the Future of the Environment;" to the Environmental Conference North Carolina A&T, at Virginia Commonwealth University, and Tau Beta Pi Engineering Association, the Engineers Club, Richmond, and at the Awards Banquet, Peninsula Engineers Council on "A Planet at Risk."

Dr. John Buckley spoke at Millersville University, Millersville, PA, on "Advanced Materials and Composites in Aerospace."

Dr. Vickie Connors spoke at the "Expanding Your Horizons in Math and Science" meeting about "The Earth's Atmospheric Environment" and at Palm Beach Community College, Florida, about "Earth Observations from Space."

Dr. Bruce Holmes spoke to 99s – Women Pilots on "A Vision for General Aviation Transportation."

LETTERS

A Note of Thanks

From Francine Guthrie, co-op clerk stenographer: " 'Thank you' just seems so inadequate, but it comes from my heart. Without the wonderful people who donated leave and prayed for me, I don't know what I would have done. I wish that I could hug each person individually who helped me. No bills went unpaid and I was able to afford the medications I needed, thanks to each of you. I pray that some day I can do for you what has been done for me. My prayer is for God to bless and protect each of you."

Thanks for the Luncheon

From Harold D. Burks, Polymeric Materials Branch: "I would like to thank most sincerely all of my good friends who made my 31 years at Langley a very pleasant and memorable experience. The retirement luncheon and most generous gift are deeply appreciated. Words simply cannot express my feelings on this occasion. Thank you again."

Retirement Social Thanks

Sam Sokol, Spaceflight Electron Branch writes: "Thanks to all of my friends/co-workers for the wonderful retirement social and well-wishes. It was a great experience working with such talented people."

Watson Selected Chief of PRD

Debra E. Watson

Debra E. Watson has been named as chief of the Programs and Resources Division. In this position, she is responsible for the resources management of the total Langley budget. She will also assist Center management in planning and implementing research and development through the analysis of funding, manpower and facilities.

Watson began her Langley career in June 1974 as a management intern. In June 1975, she joined the Acquisition Division as a contract specialist. During the next nine years, Watson held positions on both the line and staff sides of the acquisition organization. They included: head of the Research and Technical Contracting Section, head of the Operations Analysis Section and as the Center's Small/Minority Business specialist.

In May 1984, Watson joined the Programs and Resources Division as the program support analyst. In May 1986, she was made lead analyst for the Office of Aeronautics and Space Technology funding and, in November 1988, she was selected head of the Research and Development Programs Branch. In that position, she was responsible for the management, oversight, analysis, formulation and implementation of the Center's research and development budget.

Watson received her bachelor's degree in economics and her master's degree in business administration from the College of William and Mary.

She was selected NASA's sole recipient of the Education for Public Management Program Fellowship at Cornell University for 1980-81. Watson has received several NASA Outstanding Leadership Awards and Special Achievement Awards.

She and her husband, Billy, reside in Hampton.

LCDC Rummage Sale Needs Donations

Have you been spring cleaning and looking for a place for those things you no longer need? The Langley Child Development Center's PTA is gearing up for its second annual rummage sale sometime in June. From now, until the end of May, they will gladly accept your "saleable" items. Please box up your donations, label them "LCDC Rummage Sale," and deliver them to the Child Development Center, Building 1231, 8 Lindbergh Way, by May 31. If you are unable to make the delivery, have unusually large items or have any questions, please call Yvonne Beyer, ext. 41205, or Laura Eure, ext. 45261.

Low-Impact, Bench and Cardio-Circuit Are Here!

Get the benefit of fat-burning, bench and low-impact, lower body toning, upper body weighted workout, and abdominals in one workout session! Benches (different sizes) and free weights provided. There are different types of workouts scheduled, set to several kinds of music, such as country, big band, oldies, etc. Free body composition analysis is given 30 minutes before class. Classes are held on Tuesday/Thursday, 5-6 p.m. (LAA gym) and Saturday, 9:30-10:30 a.m. Open to all employees and families. Cost for Tuesday/Thursday classes is $12 per month; $6 per half-month; 3 months/$2 per class; Saturday, $6/month; $15/3 months; $2 per class. Call ext. 42295 for more information.

IN MEMORIAM

G. Calvin Broome III

G. Calvin Broome III, 54, a Peninsula resident for 31 years, died Thursday, April 15.

Broome was employed in the Projects Division for 31 years. He received his bachelor's and master's degrees in physics from Mississippi State University.

John Thomson

John Thomson died on April 19. He retired from Langley on March 11, 1977.

News 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 ..... Marny Skora

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

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

Photojournalist ..... Carol Petrachenko, 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.

NASA Spinoffs Inducted into Hall of Fame

Two NASA technologies developed for astronauts working in space and now used in medicine and industry were inducted into the Space Technology Hall of Fame on April 15. The two have made significant social and economic impacts for society.

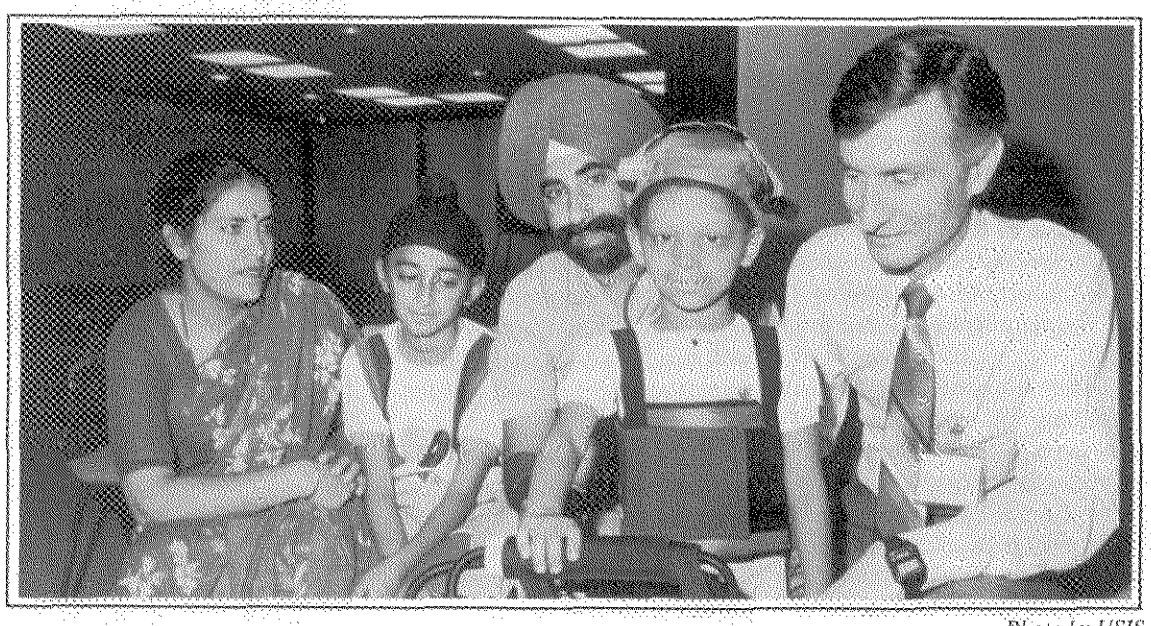


Photo by USIS

In this 1989 photo, Public Affairs Officer Keith Henry (right), helps Tarunpreet Arora try out his "cool suit," as his family looks on. The use of the suit will allow the child, who has a rare glandular disorder, to lead a more normal life.

A NASA technology developed for astronauts to keep cool on the lunar surface evolved, through the efforts of Langley and a charitable organization, into liquid-cooled garments used for medical applications. This "cool suit" technology and NASA's patient monitoring device have been selected for induction into the U.S. Space Foundation's Technology Hall of Fame.

John Samos, Lockheed Engineering and Sciences Corp., and Thayer Sheets, RIAD, Technical Utilization and Applications Office, accepted the honors for Langley at the Hall of Fame in Colorado Springs, Colorado, April 15. Since 1988, the U.S. Space Foundation has selected space technologies that have made significant social and economic impact on society. There are currently 14 other technologies listed in the Hall of Fame.

The liquid-cooled garments that were worn inside the astronaut's space suits maintained their temperatures at comfortable levels by circulating chilled water through a series of tubes. Work on the garments was originally done at NASA's Ames Research Center and Johnson Space Center. A battery-powered pump circulated the water. The technology was adapted by Langley to meet medical needs and is now used for patients suffering from multiple sclerosis (MS) and related neurologic disorders, cystic fibrosis, and hypohidrotic ectodermal dysplasia (HED).

The cool suit technology has been successfully transferred to the medical and industrial fields. Through the efforts of the HED Foundation, its founder Sarah Moody, and Langley personnel, 108 cooling garments have been donated to children with HED as a method for dissipating their body heat.

Since 1991, approximately 300 suits were sold to MS patients. In 1991, 400 liquid-cooled garments were used by the Army in the Persian Gulf. The cool suits are also used by race car drivers, hazardous materials handlers, nuclear reactor workers, and paper mill and shipyard personnel.

A second technology developed for NASA during the Mercury and Gemini space programs was also inducted into this year's Hall of Fame. A patient monitoring device—first developed by the Sierra Research Corp., sponsored by the U.S. Air Force and U.S. Army—was adopted and improved for the space program by NASA's Ames Research and Johnson Space Centers. It transmitted astronaut physiological data to Earth for monitoring and analysis.

The system, still used to monitor astronauts, employs technology to monitor patients around the world. It enables a patient to be monitored wirelessly from one site to a central station, where several patients can be monitored simultaneously. This enables heart patients to return home, for instance, and still receive constant medical attention.

For more than 30 years, NASA's Technology Utilization Program has actively encouraged the secondary application of aerospace technology. During that time, more than 30,000 aerospace-originated innovations have found their way into everyday use. Collectively, these spinoffs represent a substantial return on the aerospace investment in terms of economic gain, lifestyle enchancement and solutions to problems of public concern.

All Invited to Easter Seals Weekend Warm-ups to Hear Country Music

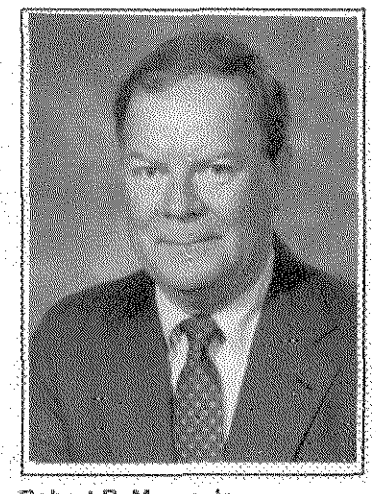
The Easter Seal Society of Virginia, Inc. is sponsoring a "Weekend Warm-up" country concert series at Langley Raceway, Hampton. The concerts are on Wednesdays, starting May 12 to July 28, 5-8 p.m. featuring regional country artists. Admission is $2 and NASA employees can get in free May 12, 19 and 26 by showing an employee identification. Funds will be used to complete the new dormitory and infirmary at Camp Easter Seals East, that serves children and adults with disabilities. For more information, call Easter Seals at 468-3140. The schedule is: May 12– Southern Blend; May 19– Blackwater; May 26– Cimmaron; June 2– Clinton Gregory; June 9– Jim Devinney & Ironbridge; June 16– Graham Bland & The Shades of Blue; June 23– TBA; June 30- Wampus Hawgs; July 7– TBA; July 14– The Brother Phelps; July 21 – Santa Fe; and July 28 – Thunder Road.

McCormick Addresses Electrochemical Society

Dr. M. Patrick McCormick, head of the Aerosol Research Branch, has been selected to deliver The Electrochemical Society Lecture at the Plenary Session of the 183rd International Meeting of the Electrochemical Society. His lecture, entitled "Global Environmental Impact of Volcanic Eruptions," will be presented Monday, May 17, in Honolulu, Hawaii.

McCormick has been performing research on the development of sensors for the measurement of the Earth's atmosphere for 25 years.

Robert R. Moore Jr. Has Retired



Robert R. Moore Jr.

Robert R. Moore Jr. retired from Langley in April. Moore served as assistant director for Management Operations since 1987, where he assisted the director in Langley institutional management operations.

Moore joined the Langley staff in 1962 as a procurement agent and was named assistant head of the Research and Development Contracting Branch in 1973; assistant chief of the Procurement Division (now Acquisition Division) in 1975, associate chief in 1978 and chief in 1981. As chief, he managed the Center's procurement program and advised Center management on acquisition-related matters.

"As procurement officer, Bob's contributions over the years have been numerous," said John Stokes, director for Management Operations. " He was a key player in the successful completion of the Aircraft Landing Dynamics Facility and the 8-Foot High-Temperature Tunnel nozzle procurement. Most recently, as assistant director for Management Operations, he led the Continuous Improvement Process Team that is changing the way we do procurements. I personally, will miss Bob's sage advice. His contributions to the leadership of the Management Operations Directorate were immeasurable," Stokes said.

Moore received a bachelor's degree in business from Virginia Commonwealth University and completed the program for management development at Harvard's Graduate School of Business Administration.

He received a NASA Exceptional Service Medal in 1984.

Moore and his wife, Sara, live in Virginia Beach. They have four sons and a daughter.

Presidential Rank Awards

continued from Page 1

foreign and defense technology. Branscome began his NASA career at Langley and, in 1975, joined the staff of the Subcommittee on Space Science and Applications, House of Representatives' Committee on Science and Technology. In 1979, he became staff director of the Subcommittee.

He went to NASA Headquarters, in 1985, where he served in several important capacities in the Office of Space Flight, and returned to Langley in 1992.

Dr. Darrel R. Tenney has been chief of the Materials Division since 1987. He heads the division that conducts research on advanced structural materials such as metals, polymers and composites; on structural characteristics of materials; on damage tolerance and integrity of aerospace vehicle structures; and on applying advanced materials to aircraft and space vehicles.

Tenney came to Langley in 1974 as a materials engineer. In 1981, he became head of the Environmental Effects Branch, and, in August, 1983, he was named head of the Applied Materials Branch. In July of 1984, Tenney was selected as assistant chief of the Materials Division.

Prior to coming to Langley, Tenney was an assistant professor of materials engineering at Virginia Polytechnic Institute and State University.

John Stokes, director for Management Operations, plans, directs and coordinates the Center's administrative and management functions.

Stokes began his NASA career at Goddard Space Flight Center as an aerospace engineer. Stints in technology utilization, procurement and project management led him to Langley in 1977 to become chief of the Projects Management Systems Division. Here, Stokes made Agency contributions in the areas of automated business systems and organizational analysis. Due to his leadership on behalf of Langley in the NASA-wide Equipment Management System and the Acquisition Management System, these systems were operational ahead of schedule and at a lower cost. He designed a new organization for the Office of Director for Institutions while serving as acting director of Institutions for the Office of Aeronautics and Space Technology (OAST) at NASA headquarters.

Quotable

"As long as men are free to ask what they must – free to say what they think – free to think what they will – freedom can never be lost and science can never regress."

– J. Robert Oppenheimer

On Center

Langley's Field Development Program Launches Students toward Careers

Langley's Career Field Development Program is ready to launch another batch of students toward college degrees.

The 5-year-old program offers financial assistance to NASA employees who want to earn baccalaureate degrees while they continue to work. The deadline to apply for 1993 is June 2.

Gail McQuigg worked as a technician in the structures and materials lab, then earned an English degree from Old Dominion University in August, 1992 through the program. "The technical experience combined with my new degree has added real depth to my background. I would still be in college and wouldn't have been able to pursue my interest in writing this soon without the program." McQuigg now works in Technical Support doing technical editing.

1992 Christopher Newport University graduate William C. Wilson became an electronics engineer through the program. "It was wonderful! It really sped things up for me. I just hope the program will continue so other students can benefit." Wilson works in the new Controls and Electronics Branch and is enrolled in a master's course at Christopher Newport University. He received his bachelor's degree in Applied Physics.

"The Career Field Development Program is, in my opinion, one of the best things that Langley has ever done for its technical and administrative work force. . . It provides that extra support often needed for employees to realize long-held dreams. "

– Robert L. Swain, director for Systems Engineering and Operations

Keith Davis has worked at Langley for 14 years, but on May 8 he will begin to receive "more responsibility, harder work, and more money." Davis receives his bachelor of science degree in mechanical engineering from Old Dominion University that day. "I had been working slowly on my degree and it was a great help that I could go to classes either during the day or at night," said Davis. "I'd like to encourage anyone who is trying to finish a four-year degree to apply for this program."

"The Career Field Development Program is, in my opinion, one of the best things that Langley has ever done for its technical and administrative work force," said Robert L. Swain, director for Systems Engineering and Operations and chairman of the Undergraduate Training Committee. "It provides that extra support often needed for employees to realize long-held dreams. Although there is no guarantee of a promotion or career change upon completing the program and attaining a degree, many participants have gone on to positions of increased responsibility and higher career potential. At the very least, employees gain a feeling of tremendous personal satisfaction upon reaching their goal of higher education, and Langley benefits in two ways: having a better satisfied workforce, and having a better educated work force."

The program intends for its students to attend classes on a part-time basis during about a three-year time period, so candidates already should have successfully completed about two years of undergraduate work. It is structured in two tiers. Participants in Tier I may attend up to nine hours of class time each week during duty status. Tier II participants attend courses during off-duty hours.

Among eligibility requirements participants must:

- Be a permanent civil service employee with at least one year of current continuous service at Langley Research Center;
- Have demonstrated a commitment and potential for success in pursuing higher education;
- Have approval of the immediate supervisor and division/directorate management
- Be able to complete the requirements for an undergraduate degree within approximately three years on a part-time basis.

Current program participants are: Keith W. Davis, Systems Engineering and Operations (SE &O); Cathy L. Jenkins, Management Operations; Michael D. Uenking, SE & O; Laura J. Smith, Flight Systems; Janice L. McCollum, SE & O; Stephanie A. Vay, Electronics; Kevin G. Vipavetz, Electronics; Sheri E. K. Bias, Management Operations; Pamela J. Verniel, Office of External Affairs; Patsy L. Campbell, Office of Equal Opportunity Programs; Simone S. Foretich, Management Operations; Glen C. King, SE & O, and Rebecca W. Bales, Management Operations.

For more information contact Dr. Mary H. Lewis, Employee Development and Services Branch, at ext. 42596. She coordinates the Career Field Development Program.

Two Agency Fellows Leave for Programs

Two Langley employees will leave the Center this month to fulfill their Fellowship awards. Sally C. Johnson, computer engineer, Systems Validation Methods Branch, will participate in the Simmons College Program for Developing Managers in Boston. Dr. Stephen K. Robinson, head of Experimental Flow Physics Branch, was selected for the National Space Club's George M. Low Memorial Engineering Fellowship at MIT.

Johnson's program will run from May 9 through May 28 and is based on the college's master of business administration curriculum. It involves participants from the public and private sector from the United States and around the world. The program will cover the financial and marketing aspects of management as well as team building and problem solving skills.

"I am particularly interested in the strategic marketing segment of this program, Johnson said. "The team building and leadership instruction will also be very relevant to me in my current position at Langley and will provide valuable training and a good foundation for future management positions."

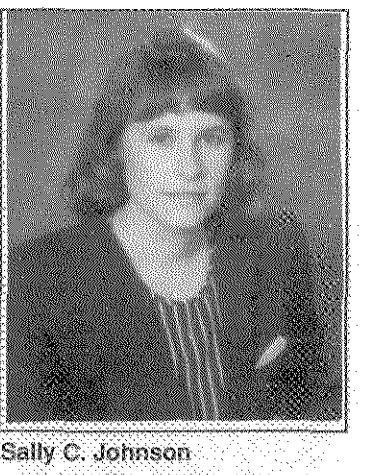
Johnson currently works as a fault-tolerant systems research engineer. Among the tasks she performs in this position are research in reliability analysis and ultrareliable systems, directing the development of a prototype fault-tolerant parallel processor architecture, and directing research contracts and university grants in the areas of formal methods, design and analysis of fault-tolerant systems, and validation of knowledge-based systems.

Johnson has been at Langley since 1983. Since that time, she has been Langley's representative to NASA's Artificial Intelligence Intercenter Working Group; was session chairman at the Computers in Aerospace Conference; organized and chaired two in-house workshops to instruct participants from industry, universities and other government agencies on how to use SURE and ASSIST reliability analysis computer programs; and initiated and directed a new research program in Validation of Knowledge-based Systems.

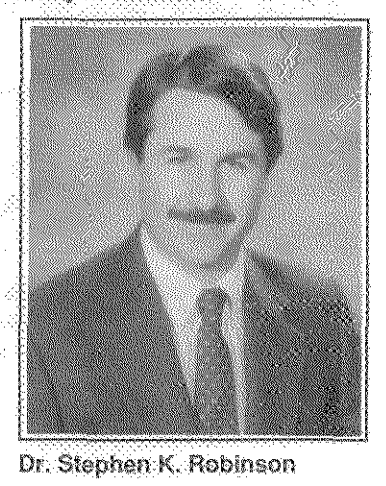
Some of Johnson's awards include a Tech Brief Award for "ASSIST– The Abstract Semi-Markov Specification Interface to the SURE Tool Program," as well as a NASA Group Achievement Award and a Special Achievement Award.

Robinson will spend 8 to 10 months in the Aero/Astro Engineering department at Massachusetts Institute of Technology pursuing transition physics study and research; development of micro-mechanical fluid probes in the MIT MicroFab Lab; and vestibular/ocular research in the MIT Man-Vehicle Lab for Spacelab Life Sciences 2, to be launched in Fall 1993.

"I plan to use this time to enhance my effectiveness in technical leadership, especially as branch head," Robinson said. The fellowship will allow me time to gain a background in transition physics, test new technologies for advanced fluid measurements at NASA and become technically 'refreshed' through exposure to other scientific fields." As head of the Experimental Flow Physics Branch, Robinson is responsible for leading experimental research in high-lift flow physics, laminar flow control, propulsion mixing and advanced instrumentation.



Sally C. Johnson



Dr. Stephen K. Robinson

Among Robinson's previous awards is the 1989 NASA Ames Honor Award for Scientists.

Langley Apiculture Club Announces Meeting

The NASA Langley Apiculture Club (Honeybunch) will meet at 5 p.m., May 17, at the club apiary adjacent to the south end of the gardens near Building 1244. Weather permitting, club colonies will be inspected. All interested persons are welcome. Only a limited number of veils will be available, so bring your own if you have one. In the event of sustained rain, the meeting will be in the Cafeteria, Building 1213 at 7 p.m., to view a video about beekeeping. For information, call Ronnie Henk, ext. 47226.

Attention All Conference Planners:

Effective April 1, 1993, all conference planners/chairpersons should start using the Conference Center bank account for collection of all registration fees, payment of conference expenses, or any other financial transactions associated with the operation of conferences held at, or sponsored by, the Langley Research Center. The account is managed by the LaRC Conference Center Manager, Pam Verniel. This procedure will allow a central control for all non-appropriated fund activity associated with conferences, and will assure that these funds are being handled within Federal Government guidelines.

Ms. Verniel should also be the first point of contact when planning a conference. She can direct conference planners/chairpersons in the most efficient ways to use a contractor/facilitator or any other process available for conference assistance.

Sidney F. Pauls
Associate Director

Use of Conference Facilities Continues to Increase

The major conference facilities here at Langley continue to be heavily used. The number of conferences and groups that schedule and use the H.J.E. Reid Conference Center, the Executive Conference Center and the 7' x 10' Facility continues to grow. By 1992, the number of events jumped to 832 with 49,489 people in attendance. In 1987, the number of events totaled 491 with 32,697 people in attendance. These figures reflect only official, Center-sponsored events such as conferences, workshops, seminars, award ceremonies, colloquia, lectures, briefings, luncheons, socials, dinners and catered events. In addition to these official events, the Langley Activities Association sponsored more than 100 activities after working hours and on weekends involving several thousand employees, families and friends.

If you are interested in making a reservation for an official event, call Pam Verniel at ext. 46362. If you would like to make a reservation for a retirement social, dinner or office picnic, or to use the gym, softball fields or tennis courts, call Andrea Lewis at ext. 46369.

Reminder: Always try to schedule your conference or event well in advance.

"Take Stock in America" – Buy U.S. Savings Bonds Now

BY BARBARA REED

Take Stock in America — U.S. SAVINGS BONDS

The Langley Research Center 1993 Federal U.S. Savings Bond Campaign is being conducted from May 3 through May 23. This year's theme is "Take Stock in America."

The purchase of U.S. Savings Bonds can be an investment in the future that will benefit you and your family by providing an easy, safe and profitable investment opportunity. It also helps your employer by providing a stable, financially secure work force. And, of course, it benefits the country.

The U.S. Savings Bond Payroll Savings Plan boosts our personal savings rate, one that is needed for future economic growth, while it helps reduce the cost of financing the public debt. For every $1 billion invested in Savings Bonds, the government saves $70 million in debt financing.

The U.S. Savings Bond program can promote thrift, increase personal savings, help in saving toward your children's education and reduce the cost of government financing.

U.S. Savings Bonds appeal everyone. Some buyers save for the short term, others are looking for a long term investment. Whatever your wants or needs, U.S. Savings Bonds can fit into your financial profile.

At the end of the campaign, there will be a drawing for two $100 bonds; one to a new participant and one to someone who increases their bond deduction. Complete the Savings Bond form that has been mailed to you and send it to the Payroll Section, Mail Stop 133, and you will automatically be entered in the drawing. Winners will be announced in the *Researcher News*.

Some call it patriotism, others call it building a financial future for themselves and their families. Whatever you call it, join your co-workers in buying U.S. Savings Bonds. You will be counted among the 1.5 million Federal employees and members of the Armed Services who were a part of the millions of Americans who invested a record $17.7 billion in U.S. Savings Bonds in 1992.

75th Anniversary and Center Accomplishments Recognized

Langley Research Center programs and people have recently been honored by communications awards of excellence.

"Pictures in the Mind," Langley's 75th anniversary film, won a first place award in the Aviation/Space Writers Association (AWA) annual national competition. NASA Langley and WHRO producer David Ferraro were selected in the Industry Communications—Video category. AWA recognizes excellence in corporate communications that contribute insightful commentary on the aviation and aerospace industries. In addition, "Pictures" won an award that showcases outstanding non-network and cable TV productions—the Telly award.

AWA awards were also won for achievement and high standards in communications. Langley's 75th Anniversary won first place in the AWA Government Public Affairs—Special Events category. This award was given to honor the Center for the media coverage of Langley's anniversary year.

Langley's Wind Shear Airborne Sensors Program won first place in the Government Public Affairs—Programs category. This award was given to recognize the Langley team for making the story of wind shear known to the general and technical public.

Langley's Video Section received a silver Telly for the "Overview of Robotic Assembly," produced by Brian Igelman, Mason and Hangar Services lead video production specialist.

"Dreams," a video that supports Langley's middle school education initiative, won a bronze Telly. "Dreams" was produced by Mike O'Hara, Video Section audio-visual production specialist.

On the state scene, Langley's Office of Public Services and Catherine G. Schauer, earned two first place awards from the Virginia Press Women. Schauer won in the Institutional Relations—Government category for her role in leading the Center's 75th Anniversary. Her second award was granted for a brochure.

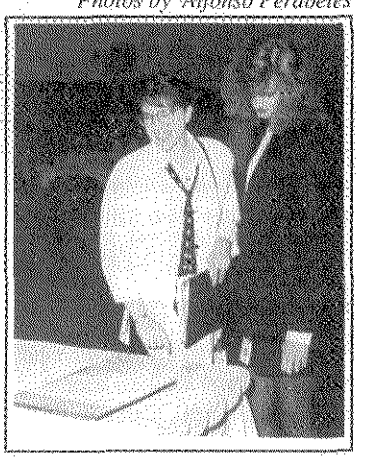
The Center Salutes Its Secretaries

More than 200 civil servant and contractor secretaries attended the annual Center Salute to Secretaries April 21 hosted by the Federal Women's Program Committee (FWPC). Secretaries enjoyed breakfast while networking with their peers. Each person received a Langley telephone book cover with the FWPC logo as a memento of the occasion. The gift idea came from a secretary last year who suggested it as a way to protect the recycled paper covers from wear and tear. The FWPC received support for the event from Center funds, the Exchange Council, the Office of External Affairs, RIAD and the Conference Center staff, and wishes to thank everyone for making this year's salute even grander than last year's. Anyone who would like a copy of his/her photo, if taken by the photographer, call Patsy Campbell, ext. 43291.

Photos by Alfonso Perabeles

In the photo above, Paula Rawles and Marva Mabry (left to right) receive their mementos from E. Marie Ashe, FWPC representative, Aeronautics Directorate.

Photo right, E. Scottie Girouard and Krissy Mason pick up their mementos from the contractor table staffed by Peggy Howard and Patsy Campbell.



Co-Op Photo

There will be a group photograph taken Tuesday, May 11, of everyone who has worked for Evelyn Harris as a co-op student. Everyone should meet in the park area next to the H.J.E. Reid Conference Center at 11a.m.

This photo will be presented to Evelyn at her retirement party. If you are unable to attend the dinner, this would be a great way to show your support for Evelyn. Please spread the word. Rain date is May 12. Call Kelly Murphy, ext. 47541 for more information.

Bus/Walking Tour

A one-hour bus/walking tour of NASA Langley's historical landmarks is being sponsored by the Office of Public Services and the Hampton Roads Section of Women in Aerospace. The tour will be narrated by Dr. Franklin Farmer, the Center's Archeologist, Wednesday, May 19, at 11:30 a.m. The bus pick-up point will be in front of the H.J.E. Reid Conference Center. Seating is limited, so call Gaudy Bezos-O'Connor, ext. 45083, by May 17.

Reynolds Retirement Luncheon Planned

A retirement luncheon will be held for Madell Reynolds, contract manager, Computer Sciences Corporation, at the Kiln Creek Recreation Center, Wednesday, May 26, at 11:30 a.m. The cost of the luncheon is $8.50 and a gift contribution is optional. Please call Corinne Jones at 865-1725 before May 16 to make a reservation.

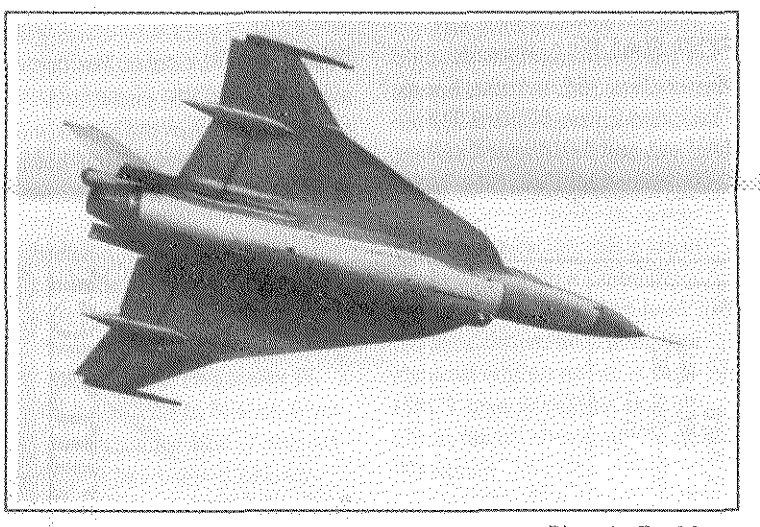


Photo by Fred Jones

The F-16XL's unusual wing shape can be seen in this aerial photo as the craft prepares to land in Hampton.

F-16XL

continued from page 1

The flight program, that will last several years, will begin by documenting flight characteristics of the unmodified aircraft. During this first phase of the flight work, the aircraft will fly from Langley for aerodynamic studies. In addition, test flights will be made at NASA Goddard-Wallops Flight Facility to measure airport-area noise levels at takeoff, approach and landing in order to assess ground-based tools such as analytical models, simulations and wind tunnel tests. The plane will first undergo several months of maintenance before beginning research flights in September.

The NASA High-Speed Research Program is a joint project of Langley, Ames, Ames-Dryden and Lewis. Langley is technical manager for the program.

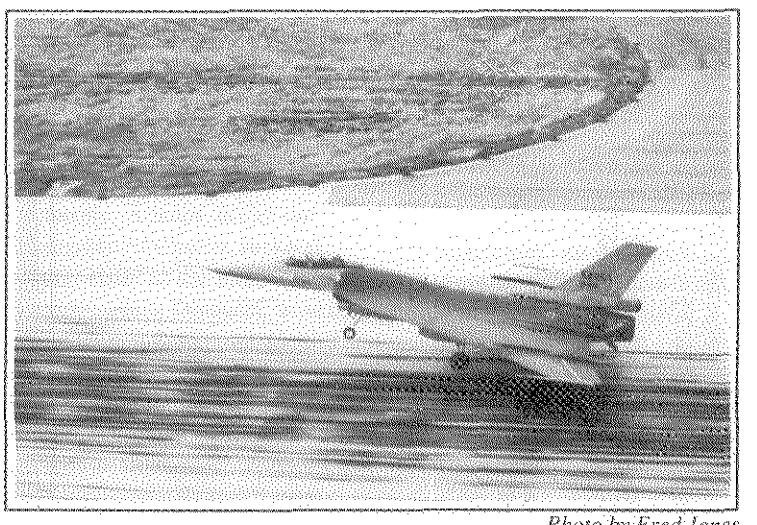


Photo by Fred Jones

Winding up its Eastern voyage, pilot Jim Smolka brings the F-16XL aircraft down on the airstrip at Langley Air Force Base.

Happenings

HEALTH NOTICE: The National Institutes of Health has declared May as National Hypertension Awareness Month. Blood pressure screenings will be offered in the cafeteria from 11 a.m. to 1 p.m. on Thursdays, May 20 and 27. Blood pressure screenings are available in work areas upon request where there are at least 15 participants. Call ext. 43196.

FEDERAL WOMEN'S PROGRAM: A Gender Differences and Communication seminar will be conducted at the H.J.E. Reid Conference Center, May 13, 1-3 p.m. It will be directed by Jane Parker and Joyce Robbins of Robbins, Parker and Associates, a professional services firm specializing in training, development and communications. Contact Tom Mitchell, 864-4530, for more information.

ROOM FOR RENT: York Co. room in private home; 1 BR w/laundry and kitchen access, near NASA, $60. Call Lil, 867-8937.

FOR SALE: Sailboard, Master class 355, w/mast, boom, 2 sails and 2 fins, $280. 6.2M RAF sail and 5.0M speed sail, $100. each. Call Pete, 874-7454.

TOWNHOME FOR SALE: York Crossing , 2 BR, 1.5 baths, eat-in kitchen, fence near shops, Langley, etc. Assume FHA loan, no down payment, owner assists closing. Call 898-7667.

LOST: Reading glasses in or near Building 1230, week of April 1. If found, contact Bob Pretlow, ext. 44805.

CONDO FOR RENT: Gulf-front, Sanibel Island, FL, 1 BR, living room, full kitchen, tennis, pool, cable, etc. $540/week, May through Nov. Call 565-1849 til 8 p.m.

SCPD NOTICE: Langley Air Force Base Program for People with Disabilities Awards luncheon at the NCO Club, LAFB, May 13, from 11:30 a.m. to 1 p.m. The speaker is Carl Amos, outreach specialist, Virginia Department for the Deaf and Hard of Hearing. There are 20 tickets available for LaRC personnel at $6.50 each. Call Becky Williams, ext. 44534.

WANTED: Global Positioning System (GPS) portable receiver. Call Kevin Dutton, ext. 46622, if you have a hand-held receiver you are willing to loan.

FOR SALE: One dozen poster-size photos of Galileo/Jupiter and Magellan/Venus spacecraft over the Bahamas, India, Africa and Venus. Galileo hi-gain antenna fully-deployed and jammed positions; the only existing photos on Earth. Call Joe Denn, 851-5250.

SPRING TOUR: A Spring Tour of Homes at Ft. Monroe, featuring 14 homes and buildings is coming May 8. Funds will go to the OCWC Welfare Fund and will be given to several charities. Call Maria Girdwood, 728-9086, or Kristie Thomas, 723-3286, for tickets and information.

CNU GOLF CLASSIC: There will be a golf outing at the Kiln Creek Golf & Country Club, Wednesday, June 9, to benefit the Christopher Newport University Alumni Society. The money raised will be used by the society for scholarships, furnishings for the new residence hall and improved signage, etc. Call Betty Gooch at 594-7712.

BOAT FOR SALE: 1988 Baretta, Open Bow, 18.5 ft., 165 hp I/O 4-cy. Mercury engine. Trailer, bilge pump, halon extinguisher system and covers included, $6,000. Call 723-1005.

RETIREMENT LUNCHEON: For Lillian Wentz will be held Thursday, May 20 at 11:30 a.m. in the Langley Air Force Base Officers' Club Commanders' Room. Pay as you go through the line. Contact Eloise Johnson, ext. 42498, or Edna Cox, ext. 42519, both at Mail Stop 149 by May 10, for reservations and gift donations.

TIPS FOR FOREIGN TRAVEL: Learn the best ways to minimize health risks while traveling in foreign countries. A brown bag seminar on Thursday, May 13, at noon in the Cafeteria Executive Dining Room will cover proper immunizations and special tips to make your trip safer and more enjoyable.

CONDO FOR SALE: Waterfront w/boat slip, 1,450 sq. ft. 3 BR, 2 baths, cathedral ceilings, fireplace in great room, large kitchen, clubhouse, pool, security, many extras, $102,000. Call owner, 723-1005.

HOME FOR SALE: Hampton, 4 BR Colonial, 2.5 baths, great room w/fireplace, dining room, eat-in kitchen, attached garage, may rent-to-own, $94,000. Call 868-4463.

FOR SALE: Prom dresses: long; light blue, $75; white, $125; like new, worn once, both size 7. Leather coats: burgundy dress length, size 9/10, $75; burgundy blazer, size 10, $40. Bath ensemble: dual-channel aluminum rod, double swag shower curtain w/ruffle valance, liner; swag window curtain w/attached ruffle valance, both with tie backs, ivory, $40. Call 898-5113 after 6 p.m.

GERMAN SHEPHERD PUPS: AKC bred for companion/protector, price reduced. Call 877-2186.

CONDO FOR RENT: Luxury for a week, near entrance to Disney World, Orlando, FL., week of Sept. 18-25. Two BR, sleeps 6, kitchen, dining and living rooms, utility room, screened porch, 3 TVs and more. Pool, tennis, etc., all for $600/wk. Call 868-9709.

82ND AIRBORNE: The Hampton Roads Chapter of the 82nd Airborne Division Association will sponsor a cookout for all Veterans Administration Hospital patients in Hampton, Saturday, May 15. Call 898-4381 or 583-9088 for more information.

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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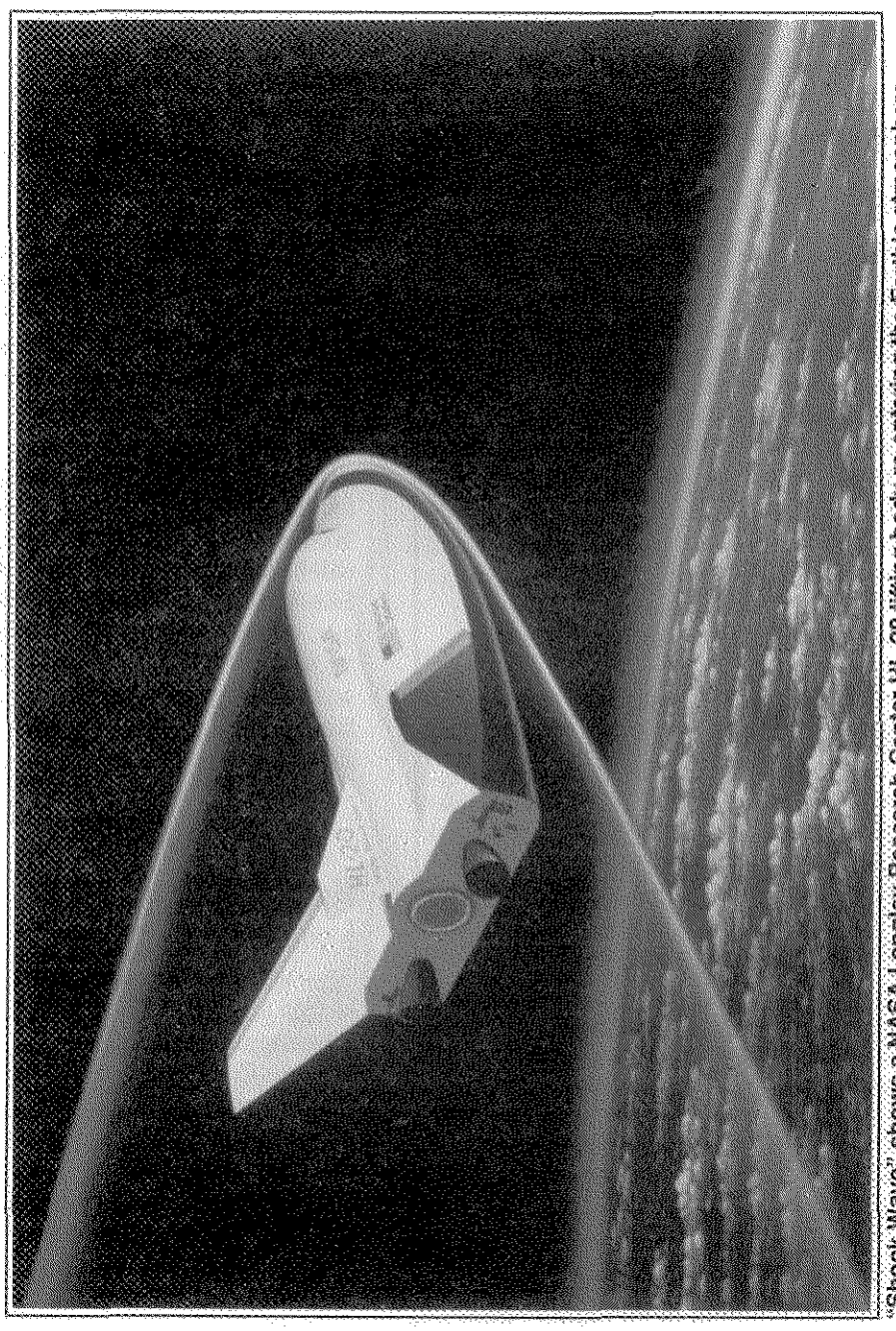
Researcher News



"Shock Wave" shows a NASA Langley Research Center HL-20 lifting body re-entering the Earth's atmosphere following a trip to Space Station Freedom. As the HL-20 re-enters the Earth's atmosphere, a shock wave is formed due to the compression of air by the vehicle traveling at very high velocities. The friction of the air on the HL-20 surface requires a thermal protection system to keep the occupants and vehicle subsystems cool as it slows to a runway landing. The artwork by Stan Stokes depicts the distinguishing geometric characteristics. The small rocket engines mounted at the base would allow for spacecraft maneuvers in space.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication
Volume 7 ❖ Issue 10 ❖ May 21, 1993

Photo by Carol Petrachenko

Cafeteria staff members pose with Richard Weeks and Richard Layman in the new annex with some of the food they will serve.

Cafeteria Annex Will Open for the Summer Season on May 24

With the arrival of Summer, nearly 500 extra people per day want to use the cafeteria facilities. This poses a logistical problem, especially at lunch hours when cafeteria traffic is high. To relieve congestion, a cafeteria annex has been in the works for some time. Since the Visitor Center closed in late 1991, Building 1202A has been targeted as a new food service facility. Senior management approval was granted and the development and installation of equipment in the annex began.

The annex is intended to serve the New Campus portion of the Center, that is, the buildings bordering North and South Dryden Street and the Center's growth area. "Due to space constraints and funding limitations," said Richard Layman, Management Support Division, "the annex will be larger than a snack bar, but smaller than the full service cafeteria." Layman and cafeteria manager Richard Weeks have been instrumental in guiding the entire project from planning, design and funding right through the opening of the facility, scheduled for May 24.

Planning and design of the facility was provided by the Plant Contract Section (PCS) using their support contractor EG&G of Florida, Inc. Mike Moore, PCS, was technical project manager for site development work.

Weeks said that the annex will serve soups, salads and sandwiches, a variety of what he calls "reach-in and take out" foods. "There will be two deli lines," he said, "with food preparedfor take-out. We will provide salads, barbecue, chili, beverages and desserts in disposable packaging for 'fast-food-style' eating." There will be seating provided for about 80 people, but seating expansion for 100 is being planned.

Weeks said, "We hope to attract about 400 people per day to the annex. About 1,500 people are served daily by the main cafeteria now, but with the summer infusion of extra personnel, we hope that the annex will alleviate the crunch." If necessary, the annex will remain open year round.

The cafeterias are operated by the Langley Exchange Council, the NASA body empowered to operate non-appropriated fund activities for the benefit of NASA personnel. Cafeteria staff members are employees of the Exchange, as are those of other exchange branches, for example, the Langley Child Development Center, the Langley Activities Association and the Employee Store.

Annex hours are: Monday-Friday, 6:15-8:15 for breakfast, 10:30-1:15 for lunch.

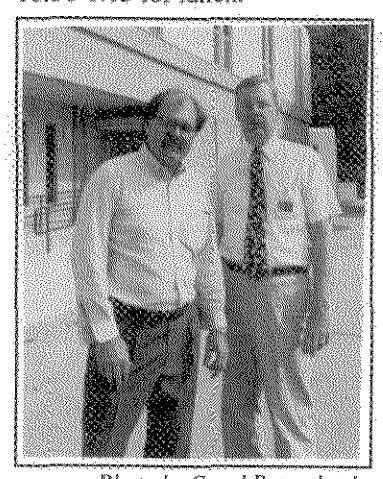


Photo by Carol Petrachenko

Cafeteria Manager Richard Weeks (left), and Richard Layman, Management Support Division, stand in front of the site of the new annex.

NAME THE ANNEX

Langley personnel are invited to submit a name for the new satellite cafeteria. A name that suggests Langley's moving through the 1990s and into the 21st century or of some of its activities, like High-Speed Civil Transport , NASP or wind shear would be appropriate. Please send your suggestions to Richard Layman at Mail Stop 123.

"DREAMS" Can Come True for Local Students

Middle School Program Highlights Aerospace Careers for 5,000 Students

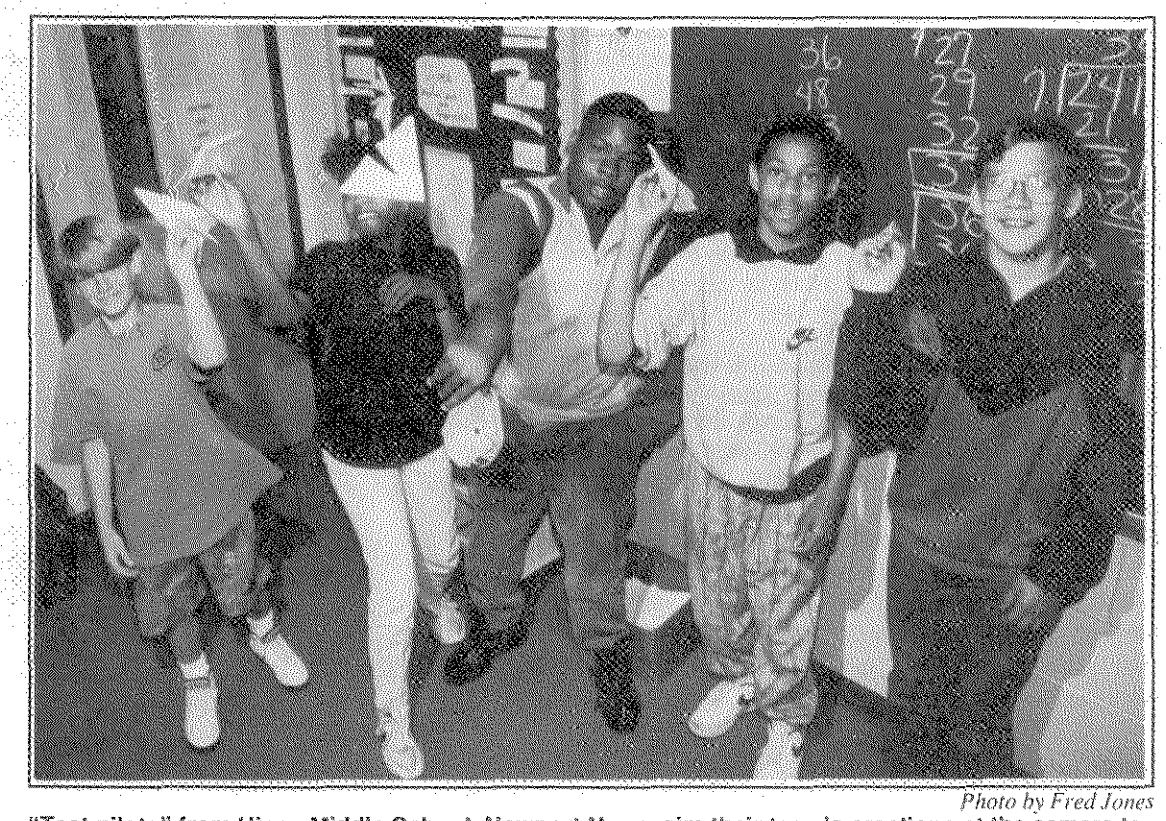


Photo by Fred Jones

"Test pilots" from Hines Middle School, Newport News, aim their team's creations at the camera to test each group's aircraft. Groups of four students designed, built and tested their own aircraft.

This year, 5,000 middle school children will participate in Langley's Middle School Education Initiative three-year pilot program.

The Middle School Education Initiative was formulated by a "tiger team" using ideas from five school systems – Hampton, Poquoson, Newport News, York County and Williamsburg-James City County. The program is the first project of the NASA Langley Contractor Steering Council. It was developed to capture student interest in aerospace careers at an early age. The team consisted of Scott Wagner, Office of the Director for Space; Shelley Canright, Education Programs Office; the now retired Bob Moore, Management Operations, and Lee Stewart of Wyle Laboratories, also retired.

The career information program is being offered to all of the 19 middle schools on the Peninsula and it consists of four parts that are presented by about 60 NASA employees and contractors from the Center. Nineteen triads have been formed to deliver the program to classrooms and each one is composed of members from different professions.

At each classroom session, the students are introduced to the Center personnel, who are usually in teams of three, and hear about what each one does as part of his/her job. Said George Allison, from the Employee Development Branch, "The program has given me the chance to work with lots of students to let them know what opportunities are open to them." Allison shares with the young people what his job entails, what his educational and work background is, and how he got to Langley. "It is important for them to know how to get from point A to point B, via the educational route."

Next, a tabloid called "Aerospace Careers" is distributed to the students. The newspaper explains the NACA – NASA background and gives career profiles for NASA jobs in business administration, clerical, secretarial, science, engineering, technician and craftperson careers. The profile explains typical job duties, preparation needed to enter the field and then gives basic entry level skills that are required. It features the nine employees who are depicted in the career videotape "Dreams." The tabloid creates a connection between the video and "hands-on" activities that serve to involve students in thinking about required job skills. The tabloid includes a personal inventory and activity sheet to get students thinking about their own future possibilities and what it will take to reach their personal goals. This is a "hands-on" activity – a key element of the program. The "Aerospace Careers" information was developed by members of the Contractor Steering Council people and the tabloid was designed and executed by Brian Harrell of Graphics Section.

> ***"If we only reach a handful of students, it was worth it. But we are aiming a lot higher than that."***
>
> *Michelle Calloway, Resource Analysis Office*

Dwayne Hinton, Laser Project Office, and Dave Gianettino, Technology Applications, Inc., led their group through an exercise in problem-solving and teamwork in one classroom while Mark Carpenter, Theoretical Flow Physics Branch; Ken Wright, Acoustics and Anemometry Instrumentation Section, and Allison do the same thing, simultaneously, in another. The challenge for each class: Design, build and test a plane that will fly using one piece of 8 1/2" by 11" paper. They divide the class into groups of four, and each group designates career roles – one design engineer, one model builder, one research pilot and one project manager. The brainstorming begins, then the building and testing. A winner is declared during the test flights. The plane that flies farthest and fastest, without crashing, is the winner.

Next, the video "Dreams" is shown. The "Dreams" video was produced specifically for the middle school program by Mike O'Hara of the Video Section. It highlights nine different individuals on Center, what they do here, and the part of their education that qualified them for a job with NASA or one of its contractors.

Continued on Page 3

News Briefs

AROUND THE AGENCY

NASA, LEARJET JOIN TO CREATE NEW BUSINESS JET TECHNOLOGIES - NASA and Learjet, Wichita, Kansas, will work together on new technologies and design methods for the development and testing of a new high-performance business jet. Engineers from both entities will study aircraft size and aerodynamics to create a sleek, economical plane using state-of-the-art supercomputers and wind tunnels at NASA's Ames Research Center, Mountain View, California. "We have been encouraged to develop research and technology programs with the aerospace industry to contribute to the advancement of commercial aviation," said John Gallman, Ames project manager. This project is part of NASA's basic research program in subsonic aircraft technology. The program's goal is to develop and prove better design methods for swept-wing transport aircraft like Learjet's proposed new business jet.

CLEMENTINE MISSION SCIENCE TEAM SELECTED - NASA has announced the selection of the science team for the Clementine mission to orbit the moon and to visit an asteroid. The team will be headed by Dr. Eugene Shoemaker of the U.S. Geologic Survey, active many years in both lunar and asteroid research. Clementine will launch a small spacecraft in January 1994 to orbit the moon for several months. It will de-orbit in May 1994. Then the spacecraft will fly by the near-Earth asteroid 1620 Geographos, August 31, 1994, when the asteroid is several million miles away, its closest distance to the Earth. The goals are to test lightweight sensors, spacecraft components, star trackers, reaction wheels, nickel hydrogen batteries and solar panels, among other things.

Step Out to Stamp Out Cancer Activities Planned

The Langley Activities Association and the Langley chapter of Federally Employed Women will host a walk-a-thon, bake sale and rummage/craft sale to benefit the Carolyn Reaves Cancer Recovery Fund, Friday, June 4, from 4-8 p.m. at the H.J.E. Reid Conference Center picnic grounds. Refreshments will also be sold. Anyone who wishes to donate items or participate in the events, please contact the following people: Walk-a-thon, Steve Devan, ext. 42562; rummage/craft sale, Sherry Sullivan, ext. 42556; bake sale, Beverly Thomas-Burse, ext. 42420; and refreshments, Vernet Boone, ext. 43645.

Speakers Bureau Presenters For April

The following staff members have recently participated in the Speakers Bureau program:

Dr. Mary Ann Smith and **Sharon Tanner** spoke at the Virginia Air and Space Center about "Measuring Up." Tanner also spoke at Grafton Bethel Elementary School and twice at Hampton University about "Careers in Engineering."

Fred Jones spoke to the James River Camera Club about "Photography at NASA."

Dr. Christine Darden spoke to several groups: at the AKA Symposium, Hampton Public Library, on "Careers in Engineering;" to the CHROME Club of Kecoughtan High School and at Norfolk State University's Conference on Research about "Engineering at NASA;" to the Hampton University Mathematics Club about "Engineering and Mathematics at NASA;" at the National Air and Space Museum on the topic "Faster Than the Speed of Sound;" at the Portsmouth City Schools Honors Luncheon about the "Path to Achieving;" at the College of William and Mary on "Striving to Achieve;" and at the NAT Mathematics Contest on "Aeronautics."

Dr. Belinda Adams was part of the Virginia Peninsula Chamber of Commerce panel that discussed "The Peninsula's Economic Base."

Dr. Joel Levine spoke on "Historic Air and the Future of the Environment" at the Science Museum of Virginia in Richmond; and to the Rotary Club of Williamsburg and at the College of William and Mary about "A Planet at Risk."

Bruce Fisher spoke to the 325th Fighter Wing Quarterly Flight Safety meeting at Tyndall Air Force Base, Florida, on "Aircraft In-flight Lightning Hazards."

Vivian Merritt spoke to the Langley Chapter of Federally Employed Women, Inc., about "New Discrimination Complaint Regulations."

Dr. Steve Robinson spoke to the Hampton Roads Chapter of the Institute of Electrical and of Electronics Engineers on "What's New in Aeronautics."

Doreen Neil spoke about the "STS-56 Mission" on TV Channel 51, Gloucester.

Martin Waszak spoke at Arizona State University about "Flutter Suppression Systems Design and Experimental Validation."

Delma Freeman spoke to the Southeastern Virginia American Association of Retired Persons about the "Space Shuttle."

Irwin Schauer spoke to the Gloucester County School Board about "Total Quality Management and the School System."

Danny Barrows and **Terry Clark** spoke at Poquoson Intermediate School on "General Physics, Math and Science."

Kenny Jones spoke about "Computers" at Merrimack Elementary School.

Prasun Desai spoke at Magruder Elementary School about the "Space Program."

Brian Pritchard was the speaker at the Magnolia Methodist Men's Club. His topic was "Space Station and Beyond."

Brad Crawford and **Danny Barrows** spoke to Greenbrier Intermediate School students about the "Space Shuttle and Science."

LETTERS

Continuing Thanks

From Sonny and Belle Wood: "We have good news to share with you. The last two years have been a great challenge for us, but 1993 has been a good year. Everyday living has been made easier because of an implant Sonny received. We have re-modelled our new home for wheelchair accessibility; please come see it and share our happiness. In March, we went to Boston University Medical Center for Sonny's evaluation for experimental spinal cord surgery and he was accepted as a candidate. Surgery is scheduled for November 1994. His prior 12 surgeries have gotten back some feeling or function and we are excited about the possibilities. We appreciate your prayers, calls, cards, donated leave and encouragement. You will be forever in our hearts."

From Flight Dynamics

"The Flight Dynamics Branch, Flight Applications Division, would like to express our gratitude to the NASA Langley staff for the sympathy expressed on the recent loss of our co-workers, Krista Bullock and Dr. Paul Coe. We are indeed a NASA family and the acts and words of kindness shared with individuals in the branch have strengthened us all. Sincerely, thank you."

Dr. Bowles Receives Langley's Largest Space Act Award

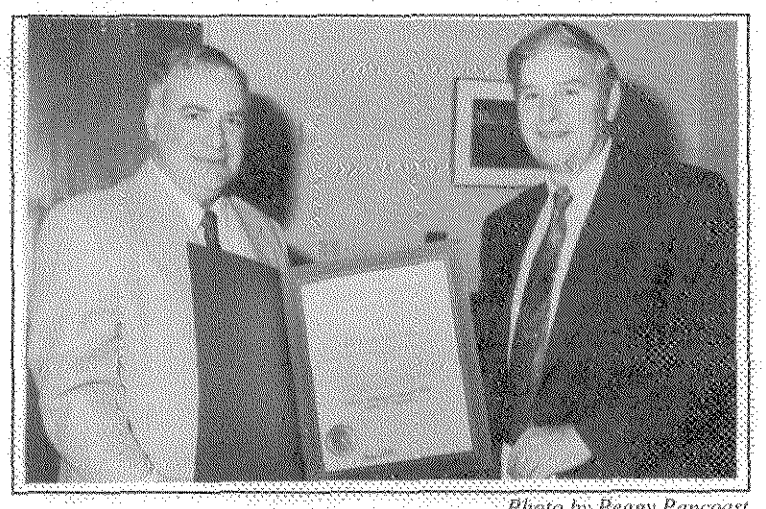


Photo by Peggy Pancoast

Center Director Paul Holloway presents Dr. Roland L. Bowles with a certificate of recognition and his Space Act Award.

On April 12, Center Director Paul Holloway presented Dr. Roland L. Bowles of the Wind Shear Program Office, with a $15,000 Space Act Award for his work in developing the Airborne Wind Shear Hazard-Risk Factor (F-Factor).

Bowles conceived, developed and validated the F-Factor, an index that assesses the degree of hazard imposed on an aircraft by a detected microburst. The F-Factor has received unprecedented acceptance by the aviation industry and is currently applied in both airborne and ground-based wind shear system development programs as the universal standard for wind shear risk measurement.

The Agency bestows Space Act Awards for scientific and technical contributions, whether they are patentable or not, that are determined by the NASA Administrator and the Inventions and Contributions Board to have significant value in the field of aeronautical and space activities. Bowles was awarded Langley's largest Space Act Award and the third largest award ever given by the Agency in this category.

Technology Policy and Information Transfer Is the Focus of Conference in Williamsburg

Langley is hosting NASA's annual Scientific and Technical Information Conference May 24-28 at the Fort Magruder Conference Center in Williamsburg. The keynote speaker will be Dr. Gideon Frieder from George Washington University who will discuss the importance of technology and its transfer. NASA employees must pay a small registration fee. To register for the conference or obtain a copy of the agenda, call the Research Information and Applications Division (RIAD) at ext. 42491.

Langley Runners Club Announces Results

The NASA Intercenter Running Competition is held twice a year among the NASA Centers. In the Spring 1993 races, 28 Langley employees and contractors took part in the 10K race, and 50 people ran in the 2-mile race.

The top Langley runners in the 10K race and their times were: Men – Bill Rogers, 33:28; John Batina, 39:48; and Steve Sudik, 39:51; Women – Valerie Plyler, 38:40; Kathy Powell, 41:31; and Jan Spangler, 52:17. In the 2-mile race, top runners were: Men – Bill Rogers, 10:29; Chris Slominski, 11:08; and Mark Hervig, 11:36; Women – Valerie Plyler, 11:53; Kathy Powell, 12:47; and Dianne Creek, 15:28.

Federal Communications Contract to U.S. Sprint Will Help the Hearing Impaired

The General Services Administration awarded a contract to U.S. Sprint to provide a communications relay service for communications with and within the federal government for the the speech- and hearing-impaired community. This contract, called the Federal Information Relay Service (FIRS), is effective from April 1, 1993, through March 31, 1997.

FIRS serves as an intermediary for conversations between hearing individuals, using standard telephone handsets, and speech- and hearing-impaired individuals using Telecommunications Devices for the Deaf (TDD). A TDD consists of a keyboard, display screen and a modem for a telephone.

FIRS also encourages direct telecommunications by maintaining an on-line bulletin board and by publishing an annual directory of federal TDD telephone numbers.

To use FIRS, call 1-800-877-8339 (VOICE or TDD). For more information on FIRS, contact GSA's Office of Regional Liaison and IRM Management at (202) 501-0308 (VOICE) or (202) 501-2860 (TDD).

News 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.

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Photojournalist ..... Carol Petrachenko, 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.

Dreams

Continued from Page 1

From electrical engineer to courier, from carpenter to mechanical engineer, all share what they like about their jobs, what course in school they thought best prepared them for their Center career and what they like best about the Center.

Angela Mason of the High-Reynolds-Number Aerodynamics Branch and triad member, said, "My greatest pleasure is answering students' questions and sharing personal tips with them about education and careers. I enjoy being a positive role model." Mason tells students about herself and her job at Langley and is glad she became involved in the Middle School program. "It is interesting to watch their faces light up when they watch the video or complete some activity from the tabloid. Everything reinforces the concept that education is important no matter what a person pursues as a career."

Wagner, the coordinator for the middle school program, said, "It is great to see the students realize that there are many different types of careers available here on Center. They become aware that not everyone is doing the same things and that we run the gamut from aeronautical engineers to lawyers, nurses, teachers and all kinds of scientists, researchers and support people. It is exciting to hear about their ambitions and dreams."

Finally, each student is given an "Aero and Space" comic book that presents aerospace careers in a super-hero format. Teacher guides are provided for all the activities in the aerospace careers information program so that teachers can continue the discussions in the classrooms. The comic book was implemented by a team led by Larry Merrill of the Graphics Section.

Evaluations are solicited from the Langley volunteers and teachers in the participating classrooms. "So far the reviews have been great," Canright said, "We have been seeking teachers' critiques during the pilot period so that we can improve the program before we carry it to middle-schoolers next year. Teachers are eager to have us return and students are eager to know more and receive more information."

Resource analyst Michelle Calloway of the Resource Analysis Office, who has been involved with the program since it began, summed up the feelings of many of the triad members when she said, "The program is a great way to reach students in the middle school. It stresses to the students the importance of staying in school, studying hard and believing in themselves. If we only reach a handful of students, it was worth it. But we are aiming a lot higher than that."

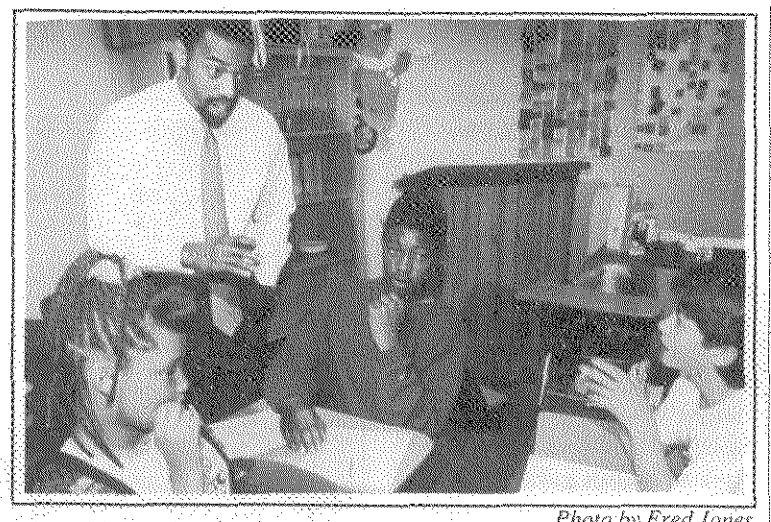


Photo by Fred Jones

Ken Wright discusses with this group how they will design and build their aircraft at Hines Middle School, Newport News.

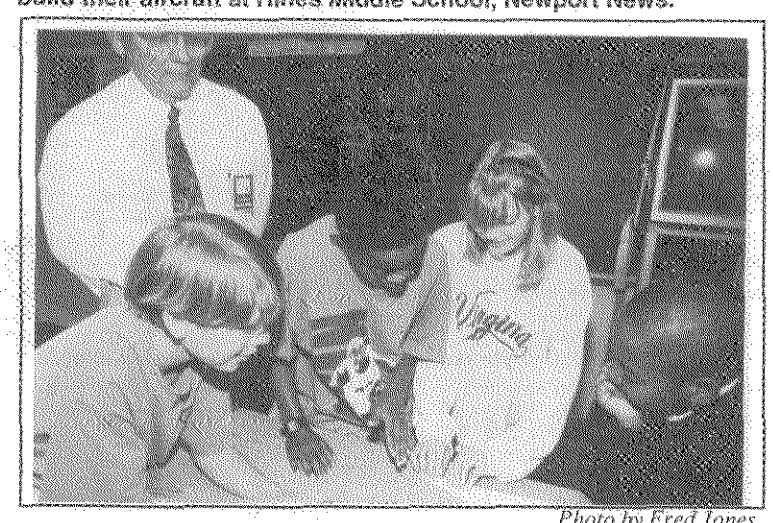


Photo by Fred Jones

Dwayne Hinton observes aerospace history in the making as these sixth-graders consult with each other during the construction of their aircraft.

Photo by Fred Jones

Michelle Calloway shows students what is in the "Aero and Space" comic book that they received from the team.

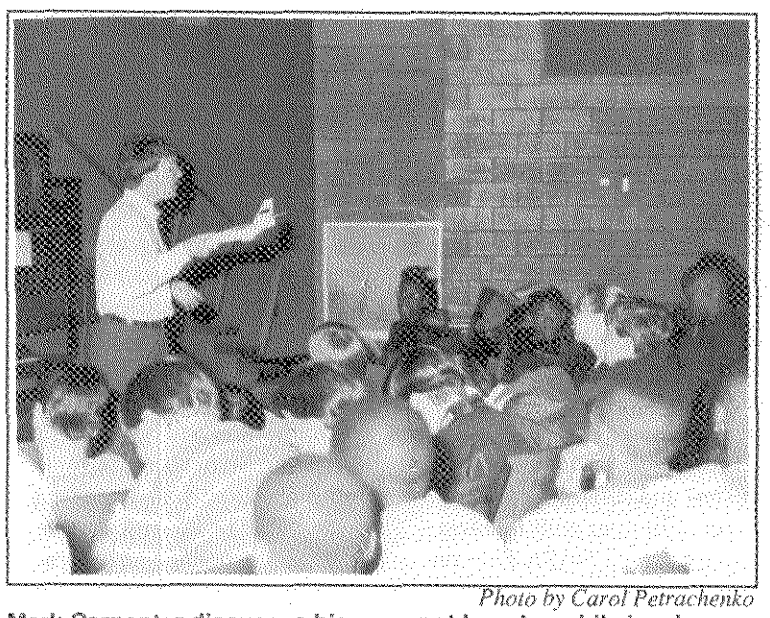


Photo by Carol Petrachenko

Mark Carpenter discusses his career at Langley while he shows a model of an aircraft to eighth-grade students from Spratley Middle School in Hampton.

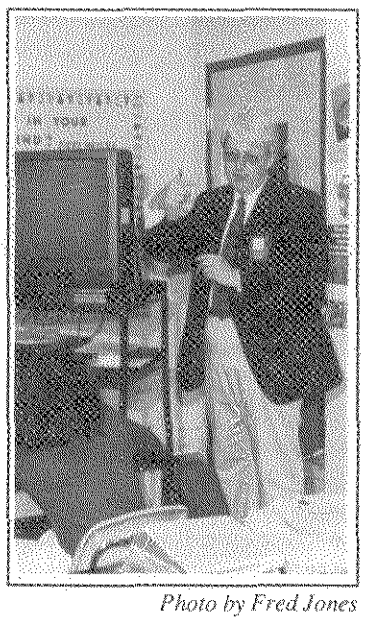


Photo by Fred Jones

Scott Wagner leads a discussion with a sixth-grade class at the end of the "Dreams" video.

KSC Hosts Manned Flight Awareness Event

Photo by NASA

Michael Tall, Fabrication Division, with Astronaut Eileen Collins, displays his Manned Flight Awareness Honoree Award following its presentation. Tall, Sherwin M. Beck, Space Station Freedom Office, and John C. Gustafson, Systems Engineering Division, were selected as honorees for the Manned Flight Awareness Award in recognition of their work on numerous manned flight projects. The honors event took place at the Kennedy Space Center to coincide with the launch of STS-56. The award is one of the most prestigious awards given to members of the NASA/ Industry Shuttle payload team. Honorees saw the Shuttle launch, toured Kennedy facilities and attended a reception in their honor.

VASC Plans Father's Day Camp-In

Instead of buying another necktie for Father's Day, why not attend a Camp-In with Dad at the Virginia Air and Space Center (VASC)? In honor of Father's Day, children ages seven through 14 and their parents can enjoy a Parent and Child Camp-In at the center beginning at 6 p.m. June 19 and ending at 10 a.m. June 20.

The program includes model airplane construction, a paper airplane design contest, an IMAX film, a presentation by a pilot and dinner, a snack and breakfast. Deadline for registration is June 4. Please call 727-0900, extension 756, to register.

The fees are: $60 for member parent and one child, $35 each additional member child or parent, $35 for member child not accompanied by parent or guardian. $90 for non-member parent and child, $50 each additional non-member child or parent, $50 for non-member child not accompanied by parent or guardian.

The Virginia Air and Space Center is located in Hampton off Interstate 64, exit 267. Follow Settlers Landing Road to downtown Hampton and the center is on the left.

Take Courses Through GWU

The George Washington University (GWU) School of Engineering and Applied Science at Langley will offer a new set of courses leading to the Master of Engineering Management degree beginning with the fall semester. Interviews at Langley will beWednesday, June 30 , and Thursday, July 1. If you are interested in entering the program or would like more information on the GWU programs, call the GWU-NASA Office at 864-1982.

Langley and VASC Begin Tours in June

Beginning June 1, a behind-the scenes "windshield" tour of Langley will be conducted in a cooperative effort between Langley and the Virginia Air and Space Center (VASC). The scripted tour will be given by VASC volunteers and staff from a 12-passenger van. The van will run twice daily from Hampton center at 11 a.m. and 1:30 p.m. The tour will last about one and one-half hours later. The fee for the tour will be $3 and tickets may be purchased at VASC.

Orbital Begins Space Experiments Service

Orbital Sciences Corporation announced its plan to offer an all-inclusive, frequent, inexpensive on-orbit service called the Microlab Orbital Experiments Service. Designed to support small, space-based science missions developed by universities and laboratories, Microlab will use ultra-light, low-cost satellites and instrument technology to provide data to experimenters worldwide. It will also offer extensive research and training opportunities for the next generation of space scientists and engineers.

Launch services will be provided using Orbital's Pegasus space booster. The Pegasus is capable of carrying two or three Microlab satellites per launch.

More Than 200 Attend Open House at Technical Library

BY SUSAN ADKINS

Cindy Church of the Technical Library demonstrates the full text IEEE/IEE CD-ROM database to Rajendra Dubey, Old Dominion University, at the library's open house.

More than 200 people attended the open house at the Technical Library April 22. Attendees participated in hands-on demonstrations of a variety of electronic information systems.

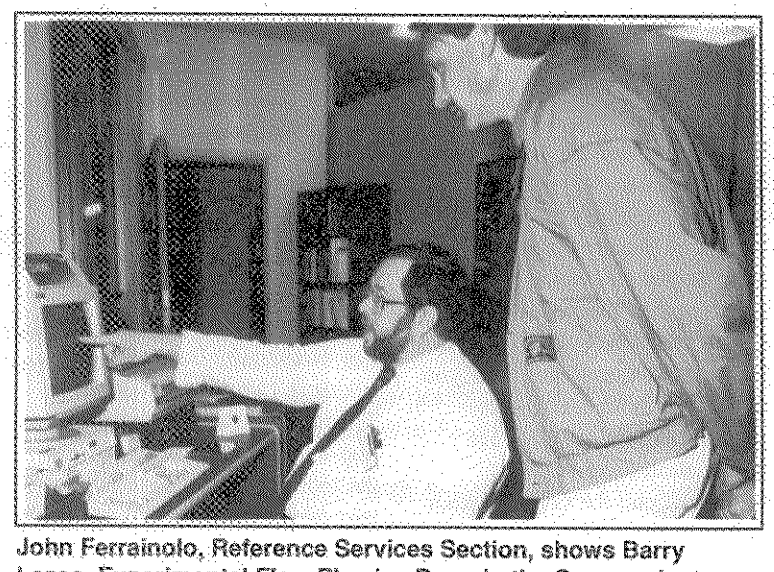
Members of the library staff guided researchers, managers and support staff through searches of the STILAS (Scientific and Technical Library Automated System) Online Catalog, Current Contents on disk, the prototype full text NACA CD-ROM, IEEE/IEE full text of all publications on CD-ROM, as well as other scientific and business databases on compact disk.

Library staff also provided access to the Internet and demonstrated easy access to the online catalogs of more than 350 university libraries throughout North America, South America, Australia and Europe. Instructions were also given on how to access the text of recent NASA Langley formal reports in the Analysis and Computation Division's mass storage.

Those who attended the open house commented on the value of the new electronic services. Many expressed the need for more desktop access to the Technical Library's collection and other special resources.

Dr. Mike Hudson, Facilities Engineering Division, and Chuck Bullock, Mason and Hanger, were winners in the prize drawings, held at the end of the open house. They each received special T-shirts with the International Special Librarians Day logo. Dr. Joe Heyman, Instrument Research Division, won the grand prize, two passes to the Virginia Air and Space Center.

Those who missed the open house may visit the Technical Library any time, Monday through Friday, 8 a.m. to 4:30 p.m. Ask at the third floor reference desk or call ext. 42356, to arrange a special demonstration of any of the electronic services.



John Ferrainolo, Reference Services Section, shows Barry Lazos, Experimental Flow Physics Branch, the Compendex/ Engineering Index CD-ROM database.

York Lions Club Collects Used Eyeglasses

The York Lions Club will put your old eyeglasses to good use for sight-impaired people.

Here is a list of places where receptacles are located for the Lions Medical Eye Bank and Hearing Research Center of Eastern Virginia:

- Farm Fresh, Heritage Shopping Center
- Roses Department Store, Washington Square Shopping Center
- Food Lion, Patriot Square Shopping Center
- The office of Dr. Peter Guhl, 4102 George Washington Memorial Highway, Grafton.

Donations of all discarded eyeglasses and frames will be welcomed by the Lions Medical Eye Bank.

CAN DO Will See the Earth from Kids' Eyes

BY SUSAN A. SMIGIELSKI

With the help of Langley Research Center, students from the Charleston County School District and Poquoson Schools will have a chance to see how the Earth has changed in the past two decades.

The project is presented by the South Carolina school district's CAN DO Get Away Special (GAS) Space Shuttle Payload Project and is sponsored by Langley. A payload, designed mostly by students, is set to go in STS-57, scheduled for launch June 3.

The objective of the payload is to see how the view of Earth from space has changed since Skylab first took pictures 20 years ago.

With the help of atmospheric scientists, students will look for environmental changes.

The primary payload is GEOCAM which contains four Nikon 35mm cameras. Each camera will be equipped with 250 exposure film backs. The GEOCAM system will match closely the larger Skylab film format in both coverage and quality allowing direct examination and comparison of the changes that have occurred to Earth.

The four cameras will take 1,000 pictures during the seven-day shuttle mission. Photographic targets will be chosen by teachers and students based on weather, sun angle, orbiter orientation and crew activities. Poquoson students and teachers are participating in the payload's student experiment. A team from Poquoson High School will travel to Charleston to operate the weather desk at the student mission control. Langley atmospheric research scientists will provide training to the Poquoson students for their weather desk assignments.

Targets selected will be sent to the shuttle as crew notes twice a day.

The projected target areas are Walvis Bay, Namib Desert, Kalahari Desert and Okavango Swamp, Dijibouti and the Rift Valley System in Africa; Homestead, Florida, and the Bahamas in North America;Persian Gulf, Zagros Mountains, Strait of Hormuz in Asia; Andea and Manaus in South America and Shark Bay in Australia.

Students will be able to examine the major effects of deforestation, urbanization, river sediment loads, desertification, coastal erosion, lake levels, wetlands and pollution.

The payload, housed in a five-cubic-foot canister, will use GAS hardware. It is placed in the cargo bay and sealed with a .92 inch fused silica window, which is optically flat and ground to a quarter wave tolerance, permitting photography in visible light, infrared and ultraviolet wavelengths to penetrate the canister. It is equipped with a motorized door assembly. The door is set to open shortly after the launch and will close before the shuttle leaves its orbit for landing.

Photos by Fred Jones

Above, Poquoson Primary School children work with "ooblek" (cornstarch and water) as part of the CAN DO program. Below, a teacher explains what will happen during the Shuttle launch.

The payload structure has a heavy face plate constructed of 6061-T6 aluminum at the top from which the cameras are hung. Power will be supplied by electric circuit boards mounted above components holding the alkaline batteries. The batteries have been tested for cold tolerance, safety and leakage. Photos will be taken when the astronauts trigger the remote controls.

The efforts will be managed through a student-run mission control room at the Medical University of South Carolina. Student-teacher teams will operate four desks monitoring crew activities and mission timeline, weather data, targeting geological or environmental interest and communicating the target objectives with Johnson Space Center's NASA Environmental Remote Sensing Analysis Facility and the Shuttle Small Payload Customer Support Room.

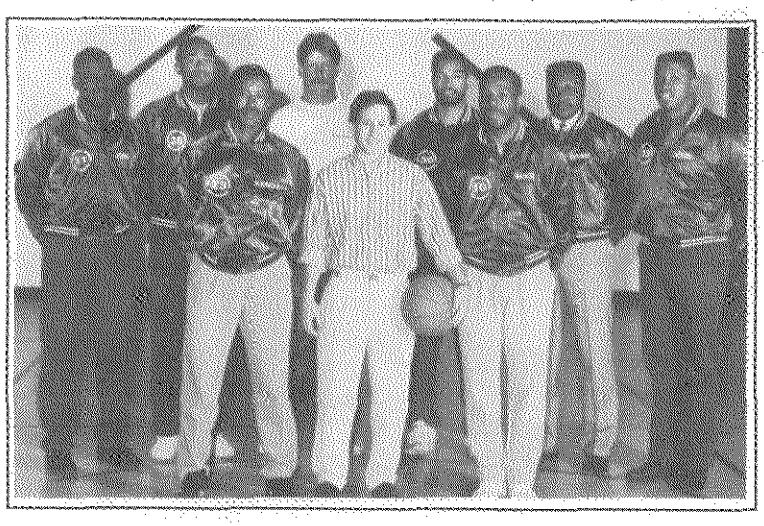
The activities and reports of the control room will be televised to students throughout South Carolina Educational Television Network. University personnel will provide technical and production assistance.

In addition to the GEOCAM experiment, the canister will also contain 350 small passive student experiments from all grade levels. These experiments have been taken from more than 60 Charleston County classrooms and invited school districts in other states, including schools from Poquoson, Virginia. The idea is to have students test the effect space has on various materials.

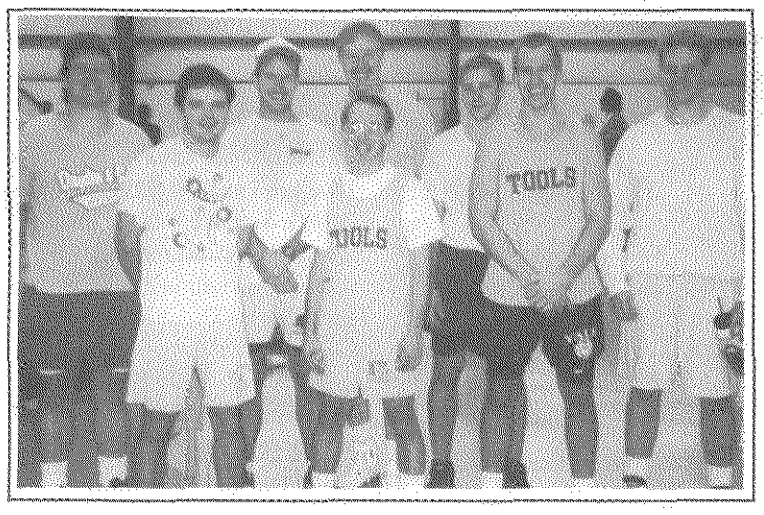
Each student team will have five samples of their materials in small two-milllimeter cryovials: one in space, one to serve as passive control, and one each to be exposed to high doses of radiation, extreme cold and placed in a centrifuge. The control portion will be at the university. Students are testing everything from yeast to collard seeds. Skills being emphasized are proper experimental design and executions of scientific experiments.

People & Places

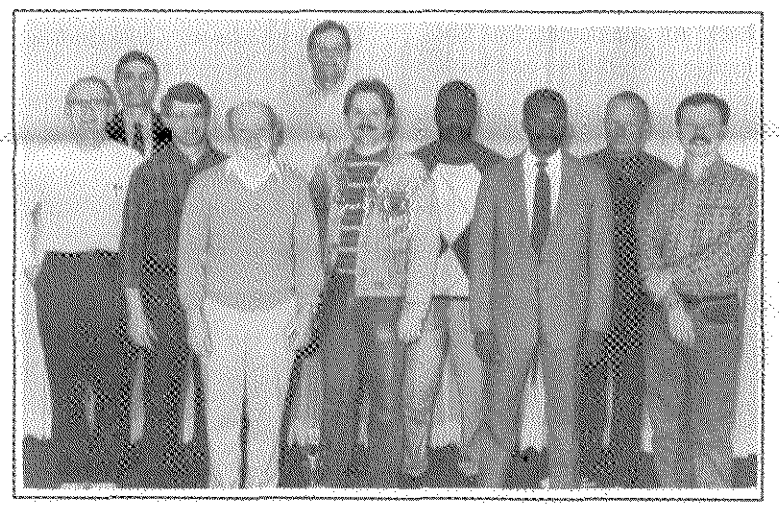
Basketball Teams Win Langley League Tournaments



The undefeated "TNT" won the 1993 Langley Basketball Association A-League championship. It was a 16-0 season for "TNT," and a repeat performance for the team. Back row, left to right are John Simmons, Clyde Medley, Paul Daspit, Sam James, Stuart Cooke and John Lawson. In the front row are Kendall Freeman, Bert Cano and Mike Powers. Not pictured is Coach Ricky Clark.

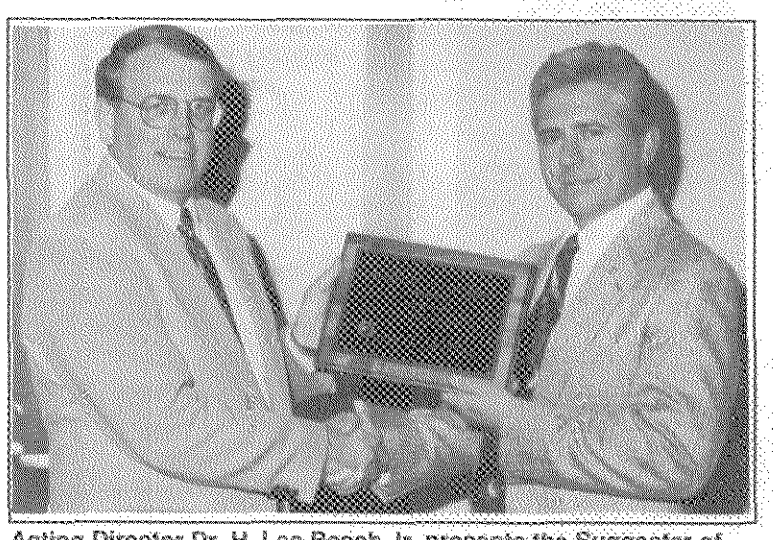


The "Tools" won the Langley Basketball Association B-League Championship this year with a 15-2 record that included a 12-0 record against B-League opponents. Pictured from left to right are Mark Frye, Steve Young, Kevin Laferriere, Jim Leiffer (back), Kevin Dutton, Paul Derrick, Bill Tomek and Brian Cheshire. Not pictured are Carl Elks and Kurt Detweiler.



The "Gougers" are Langley's D-League basketball champions. They are, left to right, Donald Humes, Larry Dement, David Throckmorton, Coach Dale Bess, Greg Nowicki, Creig Humes, Raymond Haynes, Woodrow Whitlow, Drew Wallio and Bobby Fox. Not pictured are Jeff Seaton, Matt Hooker and Larry Hoffman.

Stergin Wins Suggester of the Year Award



Acting Director Dr. H. Lee Beach Jr. presents the Suggester of the Year Award to Gary Stergin, Electrical Support Branch.

Gary P. Stergin of the Electrical Support Branch is the most recent recipient of Langley's Suggester of the Year Award for his suggestion entitled "National Transonic Facility Drive Gear Shift Controller." Dr. H. Lee Beach Jr., acting director, presented the award to Stergin April 27.

Stergin devised an on-site, 16-step sequence that gives flexible control to the Automated Shift Change Sequencer in Building 1241's Drive Control, eliminating gear shift "balks." This sequence originally involved a 70-step procedure. Frequent "balks" necessitated a four-to-eight-hour delay in tunnel test operations. As a result of Stergin's suggestion, significant improvements in productivity and flexibility in test programs, as well as monetary savings, have been realized.

Ogiba Receives NASA Special Act Award

James H. Ogiba, Financial Management Division, was part of a team of financial managers from the NASA Field Centers that studied organization, staffing, succession planning and performance measurement throughout the Agency. The team made recommendations to Administrator Daniel Goldin and Comptroller Thomas Campbell. As a result, Ogiba received a Special Act Award for "serving as a member of the Agency Financial Management Blue Team which made significant recommendations to improve the financial management of the Agency."

Hefner Honored at ODU

Jerry Hefner, Fluid Mechanics Division, was honored at Old Dominion University. He was inducted into Phi Kappa Phi National Honor Society as an alumni member at awards ceremonies held April 28 at Old Dominion's Webb Student Center.

Langley Program Targets Expanded Community Service

"A small group of thoughtful, concerned citizens can change the world. Indeed, it is the only thing that ever has." – *Margaret Mead*

Many just complain about what's wrong in the world today — hunger, homelessness, illiteracy, etc., etc., etc. Many more help solve these problems.

Being willing to get involved — to be part of the solution — is what community service is all about. And significant numbers of Langley employees are involved in volunteer activities in the communities where they live and work.

Starting in June, Langley's Community Services Program will spotlight some of your co-workers who are doing interesting and significant volunteer work. Through their experiences, we hope to raise awareness about some of the needs in the Tidewater area that can be filled by volunteers with the talents, experience and commitment characteristic of Langley employees.

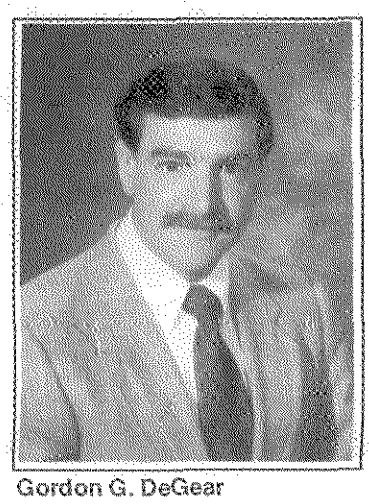
Researcher News articles are planned monthly. These features will be written by Community Service field reporters, Gordy DeGear, Donna Roper and Allan Hanrahan, who are volunteering their writing skills to help tell these interesting stories.

DeGear, Industry Relations Office, is a former *Researcher News* sports reporter. Roper, Technical Editing Branch, is the newsletter editor for the Langley chapter of Women In Aerospace. *Researcher* veteran Hanrahan, Resources Control Section, is well known for his many years of personnel profiles.

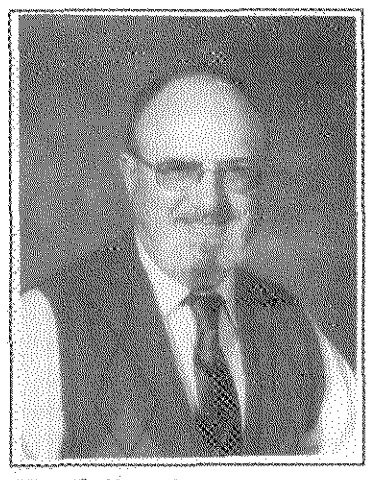
The volunteer subjects will be chosen from among the variety of responses received from the Community Services survey conducted at the beginning of the year. We found that nearly 500 of you are already volunteering and others are interested in knowing more about volunteer opportunities.

To match your interests with the growing need, we will continue to highlight specific community requirements in our *Community Corner*. Response to the two calls for help already published have been very encouraging. We want to continue to offer the community the unique resources embodied at NASA Langley.

Donna G. Roper



Gordon G. DeGear



Allan C. Hanrahan

IN THE NEXT ISSUE:
Two Langley employees trade their aerospace identities for auxiliary police uniforms to ensure their community is a better place to live.

Help us help your neighbors:
If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services Officer, at ext. 43315.

Happenings

SAILING LESSONS: Lessons are available through the Langley Yacht Club (LYC). Adult classes begin June 8, July 6 and Aug. 3 and run every Tuesday and Thursday for four weeks, 5:30-8:30 p.m. Cost: $90 for LYC members; non-members –$110. Junior classes for ages 10-16, all levels, for four weeks, Monday-Friday, 8 a.m.-noon. Cost: members –$140; non-members –$160. Windsurfing classes are also available. Sign up soon; some classes are limited. For more information or registration forms, call Cliff Obara, 865-6659.

SHOPPING TRIP: A one-day shopping trip to Potomac Mills Mall, Dale City, VA, is planned for Saturday, August 21. Cost is $25 per person, due July 10 and transportation is via ACE Charter Bus Service. For information, call 245-3915 or 365-0511, leave message.

REUNION VI: Former NACA personnel who have not received information for the reunion scheduled for 1994, please send your name, address and phone number to: Robert G. Mungall, 3725 Harlock Rd., Melbourne, FL 32934 to receive a detailed package.

LCDC RUMMAGE SALE: The Langley Child Development Center (LCDC) needs donations for their rummage sale in June. Donations are welcome until May 31. Please bring them to Building 1231, 8 Lindbergh Way. If you can't deliver, have very large items or questions, call Yvonne Beyer, ext. 41205, or Laura Eure, ext. 45261.

WORKOUT SESSIONS: Benefit from bench, low-impact, lower body toning, upper body weighted or abdominal workouts. Free body composition analysis. Classes are Tuesdays/Thursdays, 5-6 p.m. and Saturdays, 9:30-10:30 a.m. in LAA gym. Open to all employees and families at a low cost. Call ext. 42295 for more information.

NASA SKI WEEK 1994: The NASA Centers ski week for 1994 has been scheduled for January 8-16 at Aspen-Snowmass. Call Michael Schooley, ext. 48524 or 874-2736, for more information.

PUPS FOR SALE: Border Collie puppies, black w/white markings, available May 31, $150. Call Chris, 898-2916, after 6 p.m.

CONDO FOR RENT: Near entrance to Disney World, Orlando, FL, week of Sept. 18-25, 2 BR, sleeps 6, kitchen, dining and living rooms, utility room, screened porch, TVs, etc., all for $600/wk. Call 868-9709.

HOUSE FOR SALE: Hampton, Sanlun Lakes, 2-story 4 BR colonial, 2-1/2 baths, great room, fireplace, dining room, eat-in kitchen, attached garage, rent-to-own. Owner anxious! Asking $94,000. Call 868-4463.

FLORIDA'S FLORIDA: Sanibel Island, elegant ground floor condo on Gulf, pool, tennis, 1 BR, full kitchen, on-site management, $540/week, June-December. Call 565-1849, before 8 p.m.

CONDO FOR SALE: Newport News, 2-story, 2.5 baths, 2 BR, living room w/fireplace, skylight, spiral staircase, wall-to-wall carpet, near Ft. Eustis, I-64. Asking $66,900. Call 887-2597 after 6 p.m..

NASA SOFTBALL TOURNAMENT: June 5, to benefit Carolyn Reaves Trust Fund. Team fee is $70. Anyone interested in forming a team may do so. For information, call Craig Neal, ext. 43654.

FUEL INJECTION ASSEMBLY: Sequential electronic fuel injection from a 1989 SHO Saleen Mustang. Intake manifold is ALCAN A5 for aluminum heads, includes air intake assembly, throttle body, injectors, EGR adapter and high pressure steel tubing. Value $1,700; asking $500. Call Matt, 827-4991.

HOUSE FOR SALE: Hampton Woods, 3 BR, 2 bath, 1-1/2-car garage ranch on cul-de-sac. Great room has fireplace, skylights, dining room, eat-in kitchen, laundry, deck, fence, cathedral ceilings, master BR w/walk-in closet, jacuzzi. Asking $118,000. Call 826-5069.

WEDDING GOWN: Size 14 altered to fit, 34/28/36, 5'1". Off-the-shoulder, sleeveless, straight-fit, pearl sequins, detachable train w/fan bow, must see. Was $800, asking $400. Call 838-5899.

WATERFRONT HOME FOR SALE: Hampton, 3 BR, 2 baths on Salt Ponds, navigable, large decks front and back. All appliances, first floor garage w/workshop and laundry area, very nice. Asking $95,000. Call 851-8466.

BRITAIN, SCOTLAND, WALES, IRELAND TOUR: 16 days, Sept. 16 to Oct. 1. Call Ernie Greene, 838-0567 (home), or Dan Crawford, ext. 42024, for information and brochure.

TRAINING NOTICE: If you will complete the requirements for your graduate degree program during **Fiscal Year 1993**, and **HAVE NOT** notified the Employee Development Branch, please call George Allison, ext. **42594**.

VOLLEYBALL: Co-Ed Summer Outdoor Grass Volleyball Season begins June 14. Registration June 1-11, $30 per team. Tuesday/advanced; Wednesday/intermediate; Thursday/beginners. Rosters and waivers can be obtained from the gym bulletin board. Please return rosters and signed waiver forms to your league representative. For questions, call ext. 44100, leave message.

RETIREMENT LUNCHEON: For Roy W. Mason, May 27 at 11 a.m. at the Langley Officers' Club. Select your "pay as you go" menu at the Club. Contact Gloria Evans, ext. 44570, Mail Stop 387, by May 21 for reservations and gift donations.

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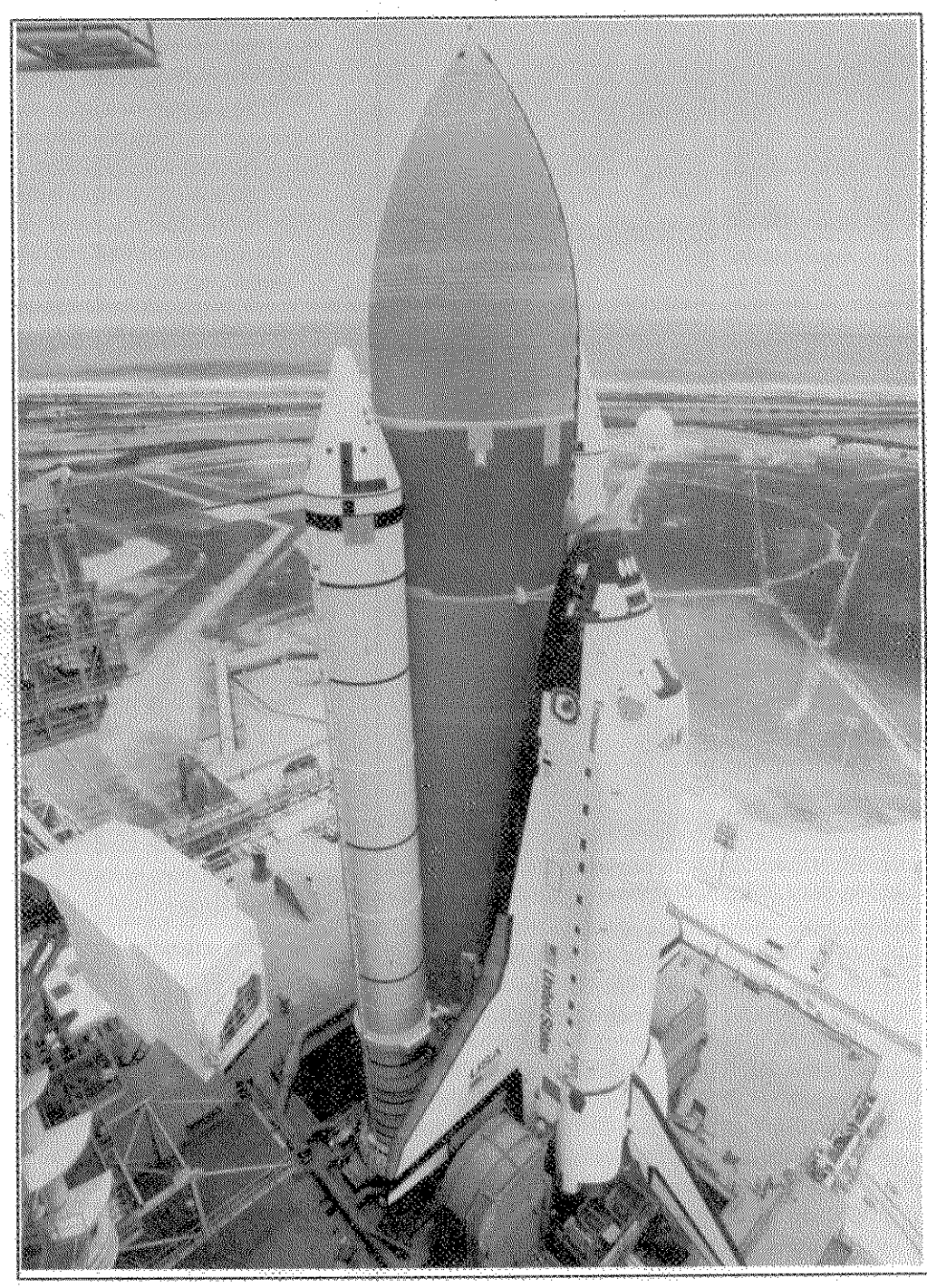
News Researcher



NASA Photo

The Space Shuttle Endeavour rolls out to Launch Pad 39B. Launch of the Endeavour on Mission STS-57 is targeted for early June. The Shuttle will be carrying two payloads from Langley: the Gas Permeable Polymeric Materials payload or GPPM, and the CAN DO payload. (See story Page 4)

National Aeronautics and Space Administration
Langley Research Center

Researcher News

The Weekly Employee and Contractor Publication

Volume 7 ❖ Issue 11 ❖ June 4, 1993

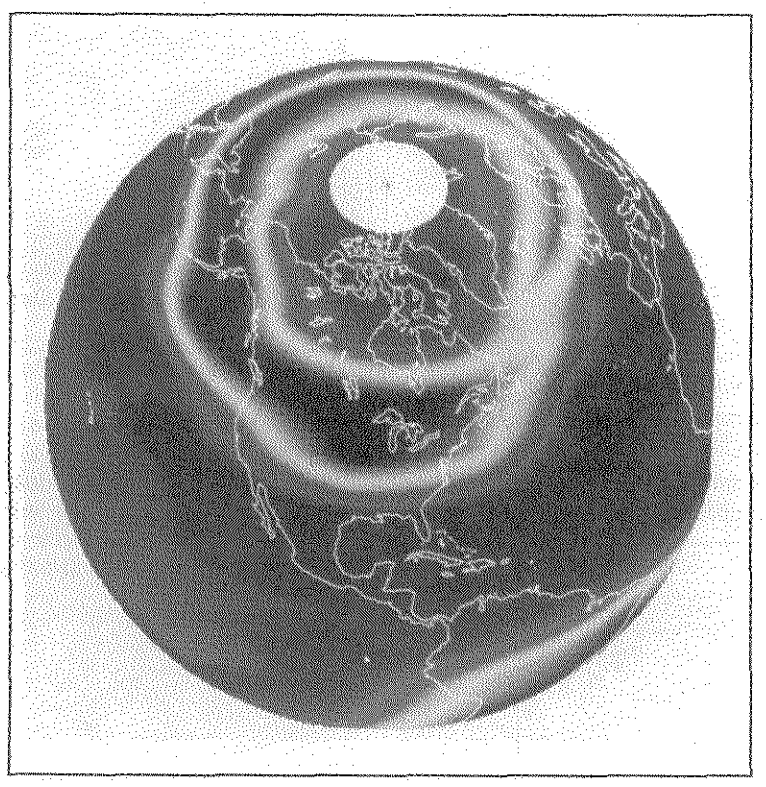
Satellite Focuses on Sun's Role in Ozone Chemistry

BY CRAIG MURDEN

Data from a new NASA satellite will help scientists pin down one of the complex ways the Sun influences the chemical makeup of Earth's atmosphere, including the processes of ozone creation and destruction.

"We now have growing evidence that high-energy electrons bombard the upper atmosphere, triggering chemical reactions which may significantly influence global ozone levels," said Linwood Callis, an atmospheric scientist in the Theoretical Studies Branch, Atmospheric Sciences Division.

The new data – from NASA's Solar, Anomalous and Magnetospheric Particle Explorer (SAMPEX) – will be used by scientists together with computer models to help assess how these electrons affect levels of ozone and other trace chemicals in the atmosphere. The electrons appear in sporadic bursts, most often when sunspots are at their minimum. At that time, solar wind variations lead to enhanced numbers of these electrons.



This image from data from the Proton/Electron Telescope aboard NASA's SAMPEX satellite shows, in the irregular collar in the Northern Hemisphere, where electrons penetrate the atmosphere and may form nitrogen compounds that influence global ozone levels.

The Atmospheric Process

The atmospheric process is thought to work like this: The clash of incoming electrons with the atmosphere, among other effects, produce nitrogen compounds that can diminish stratospheric ozone. The number of electrons, and their relationship to the Sun's 11-year cycle, are now being examined with the new satellite measurements.

However, the nature of the nitrogen compounds complicates the issue. While the nitrogen compounds attack ozone, they also moderate the destructive effect that chlorine has on ozone. It is the chlorine, which occurs naturally and has been increasing as a result of human activities, that has received the most attention as the major nemesis of ozone.

"Now we're seeing a whole new set of variables," said Dr. Daniel N. Baker, SAMPEX project scientist at NASA's Goddard Space Flight Center, Greenbelt, Maryland. "We now have to look seriously at this atmospheric influence and try to verify the effect on atmospheric chemistry, including ozone, by comparing SAMPEX data with other satellite measurements of these atmospheric constituents."

In addition to the electron's effect on chemistry, Callis added, they may also influence global stratospheric temperatures, although these effects are far from determined.

SAMPEX is a First

SAMPEX is the first satellite in NASA's emerging stable of small, quickly mounted Explorer missions. The vehicle's Proton/Electron Telescope, built at the California Institute of Technology, has been measuring the energy and intensity of ultra-high-speed electrons as they arrive from interplanetary space. Launched in 1992 after only three years in development, the satellite is a collaborative effort between NASA and Germany.

SAMPEX also represents another step in what has been an outer space scientific detective story. Beginning in the early 1970s, atmospheric scientists have compiled a growing body of evidence to explain the effects of the Sun on the atmosphere by using a series of small satellites. NASA's atmospheric exploration has used progressively sophisticated satellite instruments – such as the Stratospheric Aerosol and Gas Experiments, the Solar Backscatter Ultraviolet Experiment, the Total Ozone Mapping Spectrometer and the Upper Atmosphere Research Satellite – to measure ozone, related chemicals and solar energy. Now SAMPEX, by systematically measuring electrons reaching the atmosphere, will allow scientists to observe simultaneously the electron input and the response of the atmosphere.

Linking Sunspots to Earth

Since the mid-1800s, when the sunspot cycle was discovered, scientists have looked for links between the Sun's changing face and what was happening on Earth. From observing the relation of sunspots to magnetic "storms" to validating the 11-year solar energy cycle, this cosmic correlation has been relentlessly pursued. "Now," Callis said, "we are exploring a new connection that appears to affect global ozone, and with it comes a whole new series of questions for us to examine."

These findings and 12 other SAMPEX-related reports were among the presentations given at the American Geophysical Union meeting May 25 in Baltimore, Maryland. Callis, Baker and their SAMPEX colleagues delivered the high-energy electron and ozone report.

Langley Tests Polymers on Shuttle

BY MARNY SKORA

An experiment aboard the current Shuttle mission will determine if certain plastics made on orbit in microgravity are very different from the same materials made on Earth.

Langley's Gas Permeable Polymeric Materials (GPPM) experiment aboard Endeavour is sponsored by the Instrument Research Division, with Dr. George M. Wood Jr. and Dr. Billy T. Upchurch as principal investigators and, as project manager, Fred O. Allamby. The materials being studied are useful to the contact lens and industrial gas industries.

What is a polymer?

Plastics, which are made of very large molecules called "polymers," have become an important part of our everyday life. Some polymers prevent gases, such as oxygen, from passing through. These are used in keeping foods fresh for long periods of time in refrigerators or freezers.

Other polymers allow one or more gases to pass through. These, called *gas permeable*, have many applications. They are being used for special contact lenses for long-term wear and for use by pilots and astronauts. They will are also important for medical applications such as dialysis and blood gas monitoring, to control fermentation and other industrial processes and for the commercial production of pure gases.

Another promising use for these polymers is the development of sensors that will measure very small amounts of gas. Such sensors will be useful to monitor indoor air quality and to detect dangerous gases, such as carbon monoxide.

Why on Shuttle?

Gravity may affect many properties of the polymer as it is formed. As early as 1984, it was suggested that these effects might be eliminated or reduced if the material were made in the low gravity of space flight. In addition, a better understanding of just how these polymers are formed can be gained on orbit. If the polymers made on Endeavour are as different as expected, many new and improved products will result from them.

How will the experiment be carried out?

The GPPM flight experiment is carried out in a sealed aluminum container called the Polymerization Module, developed by the Systems Engineering Division. The flight Polymerization Module is installed in a Commercial Refrigerator/Incubator Module (CRIM), developed by Space Industries Inc., Webster, Texas. The CRIM, which is a small refrigerator and an oven in a single unit, can maintain temperatures over a range of four degrees Centigrade to 40 degrees Centigrade for indefinite periods.

Twenty-eight polymer materials have been placed into the flight Polymerization Module and CRIM. Identical materials are contained in another Polymerization Module and laboratory CRIM. This will allow simultaneous study of the same materials with gravity as the variable. Results of this study will be announced in an upcoming issue of the ***Researcher News***.

See the GPPM illustration on Page 2.

Remotely-piloted Aircraft Feature of June 14 Colloquium

Dr. James Anderson, the Philip S. Weld Professor of Atmospheric Chemistry at Harvard University, will discuss "The Role of Unmanned Aircraft in Global Change Research" at the next colloquium. His talk will focus on his role in the development of the Perseus, an unpiloted aircraft, named for the Greek demi-god, son of Zeus and Danae, and slayer of the Medusa. The Perseus is designed to support stratospheric ozone research and conduct environmental impact studies for atmospheric studies and high-speed commercial transport aircraft. The talk will be at the H.J.E. Reid Conference Center, 2 p.m. June 14.

Continued on Page 6

Photo by Aurora Flight Sciences Corporation

Perseus A is parked behind its creators, John Langford of Aurora Flight Sciences (left), and Dr. James Anderson of Harvard University, at its December 1992 rollout.

News Briefs

AROUND THE AGENCY

COLUMBIA'S RETURN MARKS SIGNIFICANT SPACE SHUTTLE MILESTONES - With the return of the Space Shuttle Columbia May 6 from its fourteenth successful mission, more than one full year of flight time in space has been documented by the Space Shuttle fleet. Total cumulative flight time of the Shuttle stands at 365 days, 23 hours, 28 minutes. The Space Shuttle flight era began with STS-1 and the launch of Columbia on April 12 , 1981. Since then, Space Shuttles have carried to orbit 670 major, fixed and deployable payloads and experiments totaling 822 tons and returned 636 weighing 425 tons. Fifty-one satellites have been deployed, five of which were recovered and returned on the same flight. Three of the 51 were interplanetary probes to Venus (Magellan), Jupiter (Galileo) and the Sun (Ulysses). Three were orbiting observatories – the Hubble Space Telescope, the Gamma Ray Observatory and the Upper Atmosphere Research Satellite. Including 16 non-U.S. flyers representing 10 different countries, 161 individuals have flown in space at least once on the Shuttle. Astronauts have conducted 16 rendezvous operations, the retrieval and repair of three satellites and 20 spacewalks totaling more than 223 hours. Six of them were untethered free-flights using the manned maneuvering unit.

TECHNOLOGY TRANSFER CENTER TO WORK WITH SDIO TO AID INDUSTRY- The National Technology Transfer Center (NTTC), Wheeling, West Virginia, under an agreement with the Strategic Defense Initiative Organization (SDIO), will assist SDIO in the operation of its Technology Applications Information System and help identify items that should be included in the technology applications database. The agreement calls for the NTTC, funded by NASA and working in cooperation with other federal agencies, to help SDIO Technology Applications Program coordinate the transfer of SDIO-developed technology into the commercial sector. NTTC director Lee Rivers said, "SDIO has produced cutting edge technologies that are ready to be developed into other products for the market place. The NTTC can help make those technologies available to U.S. companies."

IN MEMORIAM

Paul L. Coe Jr.

Dr. Paul L. Coe Jr. died Saturday, May 1, following an automobile accident.

Coe was assistant head of the Flight Dynamics Branch. He was recently the focal point for a team of NASA, industry and university researchers conducting research on low-speed characteristics of high-speed civil transport configurations to provide technology that will assure the United States retains world leadership in the aviation industry.

Coe began his NASA career in 1974 in the Dynamic Stability Branch. He earned a bachelor's degree from Hofstra University, and his master's and doctoral degrees from New York University. Coe was internationally recognized as a pioneer in research on supersonic configurations, and he developed concepts and design approaches which have become the key elements for designers of the next-generation supersonic civil transport.

Dr. Paul L. Coe Jr.

Krista F. Bullock

Krista F. Bullock

Krista Franklin Bullock, secretary of the Flight Dynamics Branch (FDB), Flight Applications Division, died unexpectedly on April 23, 1993.

She began her NASA career in 1986 as a secretarial co-op in the Subsonic Aerodynamics Branch and, in 1989, became the branch secretary of FDB. She was a graduate of Kecoughtan High School, earned an associate degree in Office Systems Technology from Thomas Nelson Community College and was a member of Phi Theta Kappa national honor fraternity.

"Krista provided outstanding secretarial support to the Flight Dynamics Branch and kept the branch office functioning smoothly. Her judgment, approach to problem-solving, and dedication to her job were of the highest professional standards. Krista will most be remembered for her positive attitude and the enthusiasm she brought to her job," said Dana Dunham, head of the Flight Dynamics Branch.

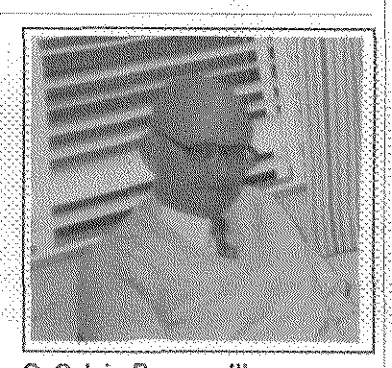
G. Calvin Broome III

G. Calvin Broome III , chief engineer of the Projects Division, died unexpectedly Thursday, April 15.

Broome started his NASA career as an aerospace engineer in the Instrument Research Division where he worked on CO_2 gas lasers and heterodyne detection. Broome was recognized as a leader in space instruments and program management. He became involved with space flight project work and will be most remembered for his contributions to the Lunar Orbiter, Viking Mission to Mars and Earth Radiation Budget Experiment (ERBE).

Broome received his bachelor's and master's degrees in physics from Mississippi State University.

Jack Harris, who had worked with Broome since Lunar Orbiter days said, "He imparted a sense of dedication, spirit and integrity to his fellow workers that will long continue to be part of the Langley tradition. All of us who knew Cal have the highest regard for his contributions to the success of the Langley mission and are fortunate to have worked with him."

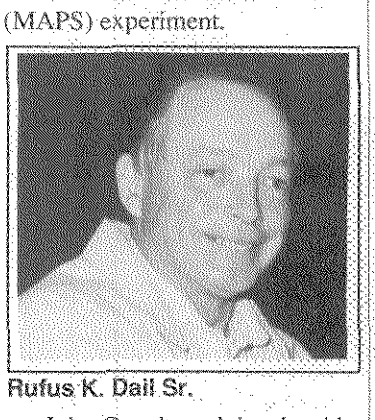


G. Calvin Broome III

Rufus K. Dail Sr.

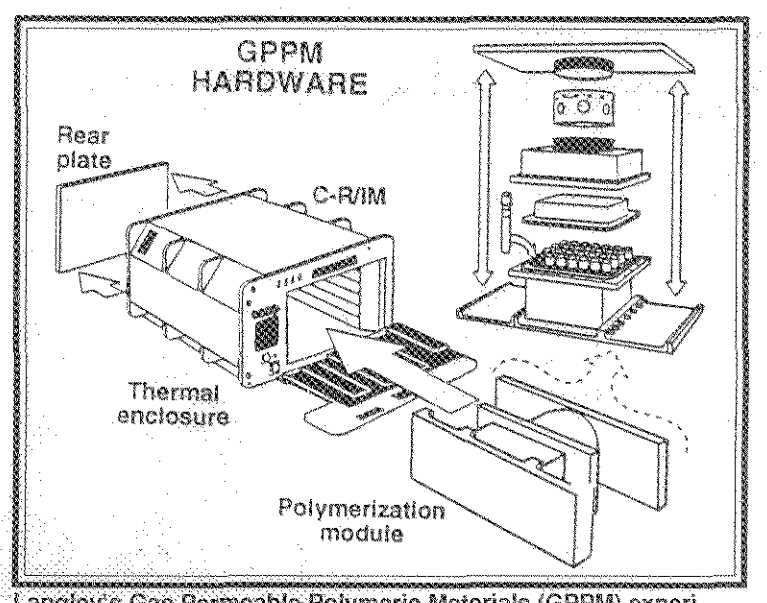
Rufus Kenneth Dail Sr., a Langley employee for 34 years, died Saturday, May 1.

Dail was an aeronautical engineer designer in the Spacecraft Systems Section. He served as the technical project engineer for the Measurement of Air Pollution from Satellites (MAPS) experiment.



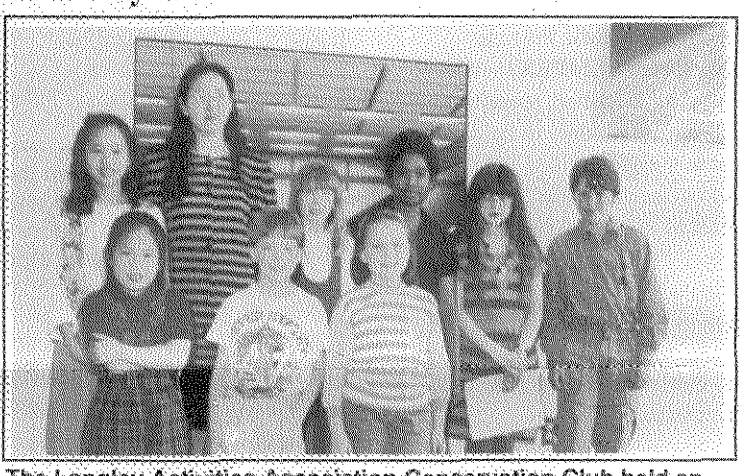
Rufus K. Dail Sr.

John Cox, branch head, said, "Rufus was one of those rare individuals who never said a bad word about anyone. His quiet demeanor and enthusiasm for his job were constant inspirations to the younger employees." MAPS Project manager John Fedors added, "He brought to his work not only technical expertise and experience, but a homespun approach that enabled him to resolve differences in a way that maintained friendships in trying times and made better engineers of all of us. We will always remember Rufus' response to the assignment of a difficult task: 'No problem!'"



Langley's Gas Permeable Polymeric Materials (GPPM) experiment will determine if certain types of polymers– similar to contact lens plastics– made aboard the Shuttle are different from the same plastics made on Earth. The flight experiment is carried out in the Polymerization Module, a sealed aluminumcontainer shown above. The module is installed in the CRIM, which is both a refrigerator and an oven in a single unit. Twenty-eight polymer materials will be tested simultaneously in space and on Earth.

Earth Day Art Contest Winners Announced



The Langley Activities Association Conservation Club held an Earth Day art contest for students from grades K-12 using the slogan, "Influence kids to better protect the Earth and its environment." Co-sponsored by the Langley Exchange Shop and the Virginia Air and Space Center, the contest winners are, front row, left to right, Diana Wu, Jason Mickle and Heather Tanner. In the back row are Joyce Yu, Lara Anderson, Jenna Rowe, Willie Brandon III, Cheyenne Loft and Cameron Vaught.

LETTERS

Correction to the Wood's Letter

The letter from Sonny and Belle Wood in the May 21 issue of **Researcher News** implied that Sonny had undergone successful spinal cord surgery. Twelve other candidates who have had similar spinal cord surgery have been very successful. Sonny's surgery is scheduled for November 1994. We wish him the very best and regret any misunderstanding that may have occurred.

Thanks for the Memories

From Charlie Pruitt: "I want to thank all of you who participated in my retirement party. The meal was delicious and all the wonderful gifts made the evening a most memorable one. I appreciate it very much."

From the Coe Family

From Deborah A. Coe, Richard C. Coe and Paul L. Coe III: "We would like to thank the many friends and acquaintances of our Dad, Paul L. Coe Jr., who came by to express condolences during our time of need."

IN MEMORIAM

J.H. Carmines

James Harold Carmines, age 63, and a lifelong resident of Poquoson, died Tuesday, May 4.

Carmines was an engineering technician in the Unitary Tunnel for 40 years when he retired from Langley. He was a Korean War Navy veteran and a member of the board of deacons of the Emmaus Baptist Church.

News 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 ..... Marny Skora

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

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

Photojournalist ..... Carol Petrachenko, 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.

Juang and Smith Receive Thompson Fellowship

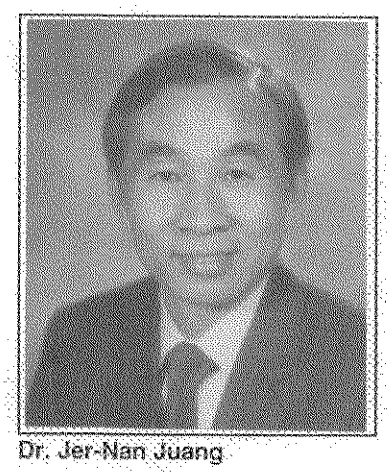
The winners of the 1993-94 Floyd L. Thompson Fellowship are Dr. Jer-Nan Juang, Spacecraft Dynamics Branch, and Dr. Robert E. Smith, Computer Applications Branch.

Dr. Michael F. Card, chief scientist, said, "I am delighted that the Center can recognize two outstanding researchers. I am sure they will take advantage of this unique opportunity to pursue new directions and ideas."

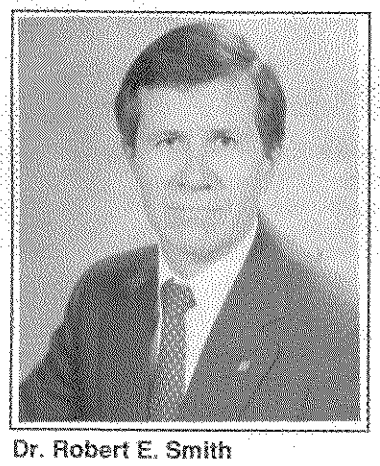
Juang will spend six months at National Cheng Kung University in Taiwan conducting research with Professor C.K. Chen on Fuzzy Logic and Neural Networks and their applications. After that, Juang will go to the Tokyo Institute of Technology to work with Professor Y. Ohkami for three months on dynamics and control of flexible spacecraft, emphasizing sensor and actuator hardware. Finally, he will spend three months at the Hong Kong University of Science and Technology working with Professor J.C. Chen on laboratory facilities for structural dynamics and model testing.

Smith will travel to Arizona State University from January to March, 1994. There, he will work on developing techniques that map engineering design parameters into geometric variables that specify the surface locus of airplane components for multidisciplinary analysis and optimization. Smith will divide his fellowship time between Arizona State and Langley.

"Since fellows have the option of pursuing internal or external research, we hope that the number of applicants for the Thompson Fellowship will increase during the next year," said George Allison, Employee Development Branch. "That way researchers can choose to do all or part of their research here at Langley or spend the time at other facilities, either full or part time."



Dr. Jer-Nan Juang



Dr. Robert E. Smith

The Thompson Fellowship Program, established in 1977, is named in memory of Dr. Floyd L. Thompson, Langley director from 1960 to 1968. The fellowship's purpose is to foster the development of research capability among the Langley Research Center's professional staff. For more information about the Thompson Fellowship, call Card at ext. 46113 or Allison at ext. 42594.

New Technology Transfer Teams NASA and Industry

BY CATHARINE G. SCHAUER

The NASA Industry Fellowship Program encourages American industry to send researchers to Langley to develop new, non-aerospace applications of Langley-developed technologies.

Under the fellowship program, Supra Medical Systems (formerly TOPOX, Inc.), of Chadds Ford, Pennsylvania, has two employees working at Langley to develop a method for early detection of breast tumors, a method that will use Langley-developed and patented high-frequency ultrasonic technology instead of radiation.

A cooperative agreement with Supra Medical Systems provides laboratory space, equipment and technical consulting services from NASA for the Supra Medical Systems' employees working at Langley in the Nondestructive Evaluation Laboratory.

Traditionally, patent licensees develop technology applications in their corporate laboratories, without direct interaction with NASA scientists and engineers. This new program should speed the transfer of Langley's technology to the commercial sector.

According to Joe Mathis, head of the Technology Utilization Office, "NASA welcomes collaborative and cooperative partnerships between American industry and NASA researchers to help provide an additional return on the American taxpayer's investment in NASA."

IBEX/FIREX Set to Launch in New Mexico

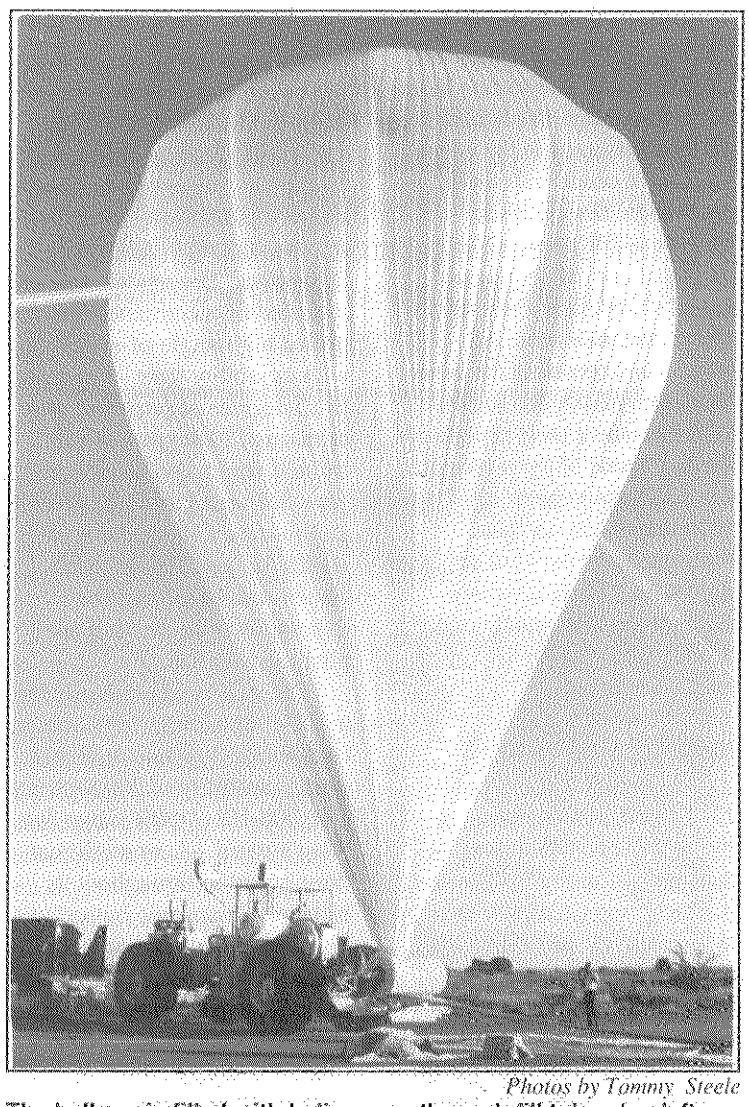
BY CATHARINE G. SCHAUER

At press time, Langley's Far Infrared Balloon Experiment (IBEX/FIREX) was preparing for launch to validate of ozone-related data measurements. IBEX is part of the Upper Atmospheric Research Satellite's (UARS) Correlative Measurements Program. The IBEX launch is timed to coincide with satellite overpass measurements by the UARS Halogen Occultation Experiment (HALOE). This will allow the cross-check of measurements by two instruments at the same location and time. This cross-check is an important part of the UARS data validation process.

Another goal of the flight is an engineering test of an advanced sensor, developed jointly by Langley, the University of Oregon and Queen Mary and Westfield College (UK), to measure the effect of industrial bromine-induced ozone depletion that could result from agricultural and industrial use of methyl bromide. The chemical is used as a fumigant in soils to kill pests that attack vegetables and fruits, to fumigate imported fresh fruits and vegetables and to protect commodities like grain while they are being held in storage.

There will also be a complementary UARS science study of the hydrogen chemistry in the stratosphere as well as an intercomparison with a European-sponsored balloon payload for the measurement of hydrogen chloride.

The IBEX helium-filled balloon, when fully inflated at float altitude, is the size of one-and-a-half football fields (400 feet in diameter or 122 meters), and weighs 3,000 pounds (approximately 1,400 kilograms). The balloon material is similar to sandwich bag plastic. The IBEX is a unique instrument in terms of its sensitivity and accuracy for detecting many gases. Because it is unaffected by volcanic aerosols, its features assumed critical importance in assessing the Mount Pinatubo aerosol effects on the HALOE data.

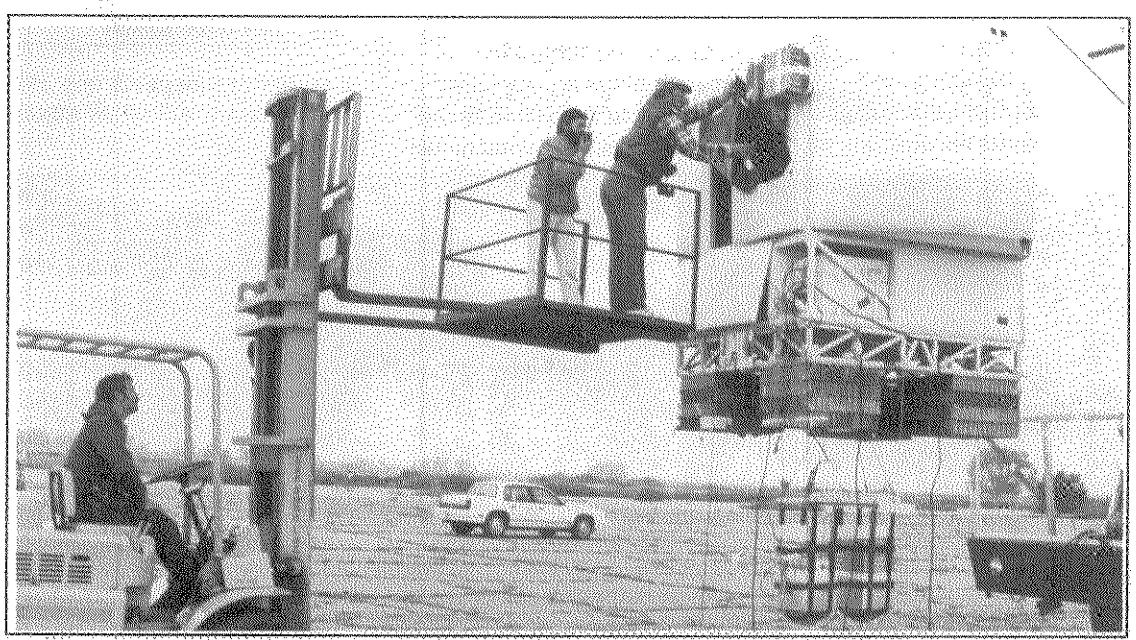


Photos by Tommy Steele

The balloon is filled with helium gas through fill tubes (on left and right) in preparation for the late May launch. This gas expands at high altitude to fully fill the balloon volume to 30 million cubic feet.

The balloon was scheduled to be launched from the NASA-operated National Scientific Balloon Facility in Fort Sumner, New Mexico in late May, depending on weather conditions. According to Joe Howell, Sensor Systems Branch, "The weather is everything. We have to make sure conditions are right for the launch for it to be successful." The expected float altitude of 24 miles (38 kilometers or 127,000 feet) should be reached about two hours after launch. Flights can last up to 30 hours, depending on float winds.

The instrument payload that weighs 2,800 pounds (1,300 kilograms) includes the IBEX instrument and two instruments developed by the Jet Propulsion Laboratory, Pasadena, California. The project is an international effort between the United States, Italy and Britain. The Langley principal investigators are Dr. Ira G. Nolt, Sensor Systems Branch, and Dr. Jae H. Park, Chemistry and Dynamics Branch.



Langley engineer Ira Nolt (right) removes the black protective cover from the IBEX instrument as Italian scientist Massimo Carlotti communicates the status of the instrument to the control tower. The instrument is suspended below the balloon. The buckets at the bottom contain steel powder used as ballast that can be dropped to maintain constant altitude. The boxes underneath the IBEX instrument are crushable pads used during landing. Technician Scott Hadley of the National Scientific Balloon Facility operates the forklift that enables the researchers to work on the IBEX instrument.

The 7x10 Wind Tunnel Shuts Down

Langley's High-Speed 7- x10-Foot Tunnel ran its last test May 7. Currently there are no plans to resume testing in the facility and it will be kept in a mothballed status in the event that future needs warrant its restoration. It was closed because of the present and projected critical shortage of tunnel technicians and a diminishing customer base. All technicians operating the tunnel have been reassigned to other facilities where their expertise is needed. Some of the testing that has traditionally been done in the 7x10 tunnel has not been reassigned and may not get done right now. "There are more things to do than people to do them," said Charles H. Fox Jr., facility manager.

History of the 7x10

The tunnel was built in 1944-1945 and began operating in November of 1945. It was designed primarily by Thomas A. Harris and Charles J. Donald in an era when war-time Germany had several more facilities for testing and building important aircraft than the United States. The tunnel was built to investigate general aerodynamic effects at high speed (500 mph), especially stability and control problems experienced at these speeds. Various types of data-gathering methods were used in the tunnel to collect information necessary for both static and dynamic stability research. Force data, pressure data and flow visualization using a variety of techniques were employed to gather the information that increased research knowledge, making the 7x10 a valuable facility. Originally, the aerodynamic forces and moments acting on the aircraft models in the tunnel were measured by a series of Toledo scales, called "an external balance system," said Fox. These early devices were replaced by electronic wire strain gauge "internal balances" in the late 1950s.

The 7x10 High-Speed Tunnel, located in Building 1212, is under the direction of the Applied Aerodynamics Division. A continuous-flow, subsonic-transonic atmospheric wind tunnel, it operated from extremely low speed to Mach 1.0 (approximately 760 mph). The models were mounted on a variable pitch angle "sting" set to cover the range -4 degrees to 20 degrees. The models were mounted on a computer-controlled high-angle-of-attack sting with capability from -5 degrees to 50 degrees of pitch and plus or minus 180 degrees of roll. Models could also be mounted on a side wall turn-table or on a steady state roll apparatus as well as on small-amplitude forced-oscillation rigs for dynamic stability testing in pitch, yaw or roll.

The 7x10 was originally built as a closed circuit, single return, continuous flow tunnel with a speed capability of 500 mph and a 10,000-HP electric motor fan drive system. Major modifications occurred throughout its history: a "transonic bump" was installed in 1946; a porous-slotted test section in 1953 and an upgrade to 14,000-HP increased maximum speed to Mach 1.0; connection to a 35,000-HP boundary layer removal compressor at the nearby 6-Foot Transonic Tunnel in the mid-1950s gave the 7x10 the capability to test to Mach 1.2. The "transonic bump" modification was very significant. According to Baals and Corliss in their book *Wind Tunnels of NASA*, "the modification, though crude, led to a qualitative exploration of the transonic range that was just opening up after World War II."

The B-52/X-15 Connection

In the late 1950s, the 7x10 was a valuable and frequently used testing place for B-52/X-15 separation tests. The rocket-propelled X-15, considered a true spacecraft because of its high-altitude reach, was launched, or separated, from a B-52 at 45,000 feet. The separation was accomplished safely due to the data from the Langley tests. The wind tunnel tests produced the precise combinations of X-15 control settings and release attitudes that allowed for a clean separation.

The 7x10 wind tunnel was also used to investigate many problems related to configuration aerodynamics. One of the results of this research was the invention of a practical variable-sweep wing concept. This technique exploited aerodynamic features associated with an outboard location for the wing pivot point. This accomplishment contributed to the so-called TFX program which, in turn, led to the development of the F-111 airplane.

NASA LaRC Historical Photo

In this 1946 photo, engineer Richard Kuhn, left, and Billie Walker handle the controls in the original control booth of the 7- x10-Foot Tunnel. Kuhn later became division chief.

Recent History

More recently, the 7x10 tunnel has been used for experimental studies in support of theory verification and application of separated vortex flow phenomena and attached supercritical flow to advanced tactical configurations and research related to both subsonic and supersonic transports.

James Luckring, head of the Transonic Aerodynamics Branch said, "The 7- x10-Foot High-Speed Tunnel has been a very versatile and productive facility. It has made many contributions to both compressible flow and vortex-lift aerodynamics and will be missed."

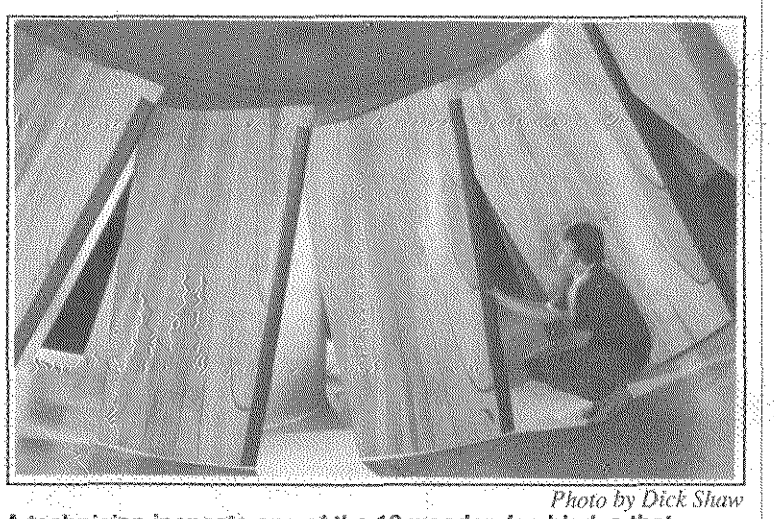


Photo by Dick Shaw

A technician inspects one of the 18 wooden fan blades that continuously pulled air through the 610-foot-long circuit of the tunnel.

Photo by Sandy Horsey

The last group of personnel to operate the 7x10 Wind Tunnel pose for a final photo. They are, left to right, Robert L. Norman, James A. Clark, Charles H. Fox Jr., Patricia Christian, Lloyd W. Nelson, Shirley M. Jones, Charles Bertnette, Curtis Swackhammer and William G. Sewall.

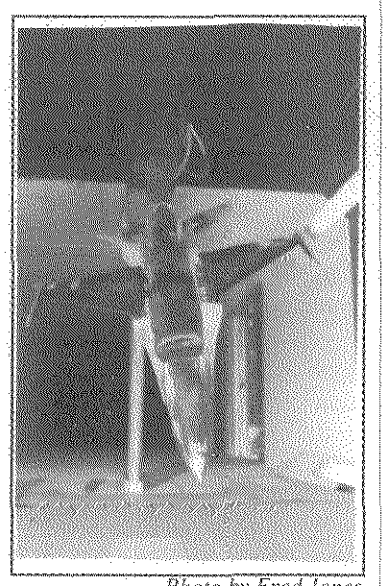


Photo by Fred Jones

Mounted on a mechanism in the tunnel, an F-16C is ready for "sting" testing.

Buying Shampoo: A Hair Raising Proposition

BY RAMKI KRISHNAN

At a recent party I attended, the women gathered around and reminisced about the outlandish antics their spouses and boy-friends did to woo them. I remembered that, at 14, I was sweet on the girl next-door who regarded me as fondly as the dirt under her fingernails. Once, I presented myself at her door, wearing three sweaters under my shirt, my sister's high-heels, and a Omar Sharif mustache, courtesy of my Mom's eye-liner. When the object of my desires rolled around, pounding on the floor and laughing hysterically, I hobbled home and pleaded with my parents for chest-hair implant operation.

A few years later, I was convinced that an aromatic shampoo would make me irresistible. At the drugstore, I found a pink container bearing the label, "Gee, Your Hair Smells Terrific." I used that shampoo regularly, anticipating the day when a beautiful girl would walk up to me, ruffle my hair, and croon the words on the label into my ears. During the next three years of "GYHST" usage, the closest I got to a compliment was when a 3-year-old cousin said she liked me because my hair smelled like cotton candy.

Selecting a shampoo has become as arduous as hooking up a VCR without help from a fourth-grader. I realized this last month, when my wife purchased six bottles of hair-care products. If you said, "Six? That's too many," you are most probably a man, or a woman who's joined the Hare-Krishnas. The list of bottles included a super-conditioner, a lotion to combat conditioner build-up, and a herbal potion known only to Australian aborigines. All these shampoos leave us men scratching our heads and wondering what to use. One morning, I was on the verge of trying a new shampoo when I realized that I was running late. A few minutes later, I broke out in a cold sweat when I realized that the "shampoo" I had almost used was, on closer inspection, a hair-remover lotion.

Recently, I revisited "GYHST," now repackaged in a bright blue bottle, and was amazed when my wife sidled up to me and whispered into my ear most of the words I had been longing to hear. She cooed, "Gee, Ramki, your hair smells terrible."

Ramki Krishnan is a research scientist for Analytical Services & Materials, Inc. He is assigned to the Computational Sciences Branch.

Volunteers "Police" Their Home Communities

BY MARNY SKORA

During the work day, they go their separate ways—one is a security specialist, the other an assistant branch head. But after hours, the two are kindred spirits. Each serves his community as a Newport News auxiliary police officer.

Sam Harvey is the Center program security officer. He coordinates security for Langley's classified testing. "This involves more than just posting a guard at the door," he said. "My training as an auxiliary police officer helped me get this job," he remembers. "And my work at Langley has made me a better officer."

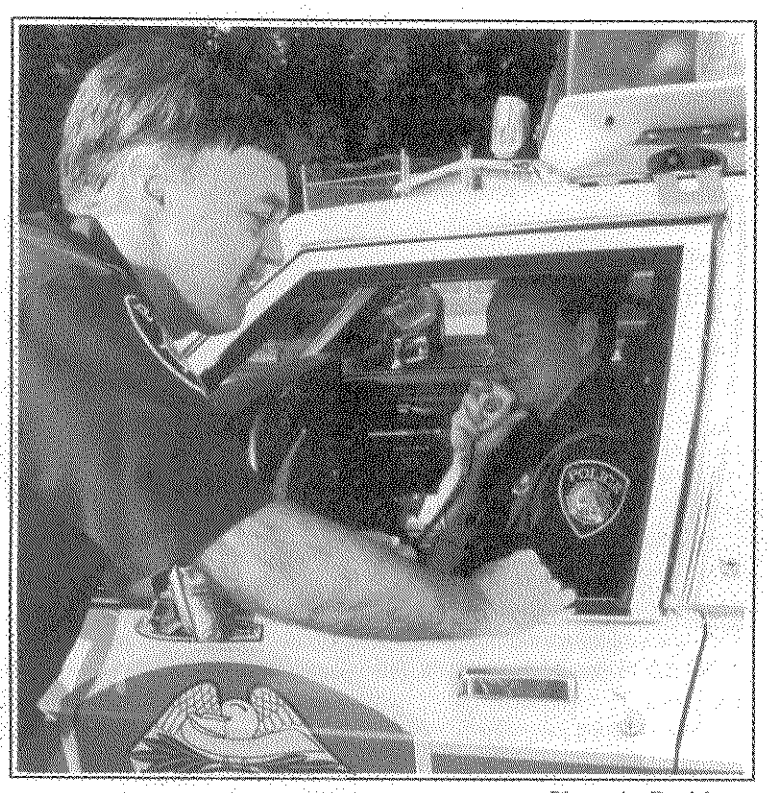
Harvey has always been interested in police work. He shares this interest with Mike Walsh, assistant head of the Experimental Flow Physics Branch. "Instead of reading about problems, my work as an auxiliary police officer gives me a chance to do something about them," said Walsh.

It is sometimes difficult to balance a career, family and volunteer work, Walsh admits. "But, when I can assist a victim of a traffic accident, or, better yet, take a drunk off the road, I know I've done something positive for my community," he said.

Both work about 24 hours a month and each has chosen to serve in the community where he lives. This fits the Newport News neighborhood police concept. "I've worked with Walsh and Harvey for almost a decade," said Sgt. Tom Penny, auxiliary commander. "Both are fine officers. Each has contributed a great deal of time to the department. They do it because they care and you can see their commitment reflected in the job they do and in their attitude."

Rather than part-time cops, both Walsh and Harvey feel fully integrated into the department.

"Auxiliary officers do everything full-time officers do, except canine patrol," said Walsh. "When calls are dispatched, there is no distinction made on whether the car is operated by a regular or auxiliary officer—both have the same power and duties. And, we are required to go through the same training as a regular."



Photos by Fred Jones

Walsh, seated in police car, and Harvey check in with Newport News Communications prior to participating in defensive driving training at Todds Stadium.

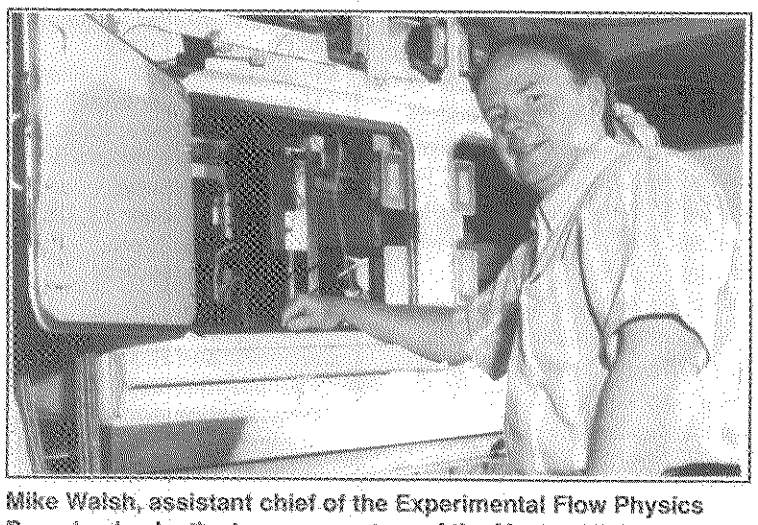
"In the beginning, the training for auxiliaries was even more stringent than that required of paid officers," said Harvey who was in Newport News' first class. "Of the 90-some applicants, only 11 completed the auxiliary police academy that first year. And, it was a big hurdle for the first class of auxiliaries to get accepted—but that was over 10 years ago," he said. "Today, there's no differentiation. In fact, we are regarded as assets."

Both agree, there's no way to tell what each shift will bring. Often, the volunteers are involved in duties ranging from routine traffic enforcement to investigating offense reports like hold-ups or burglaries. They work after dances, rodeos, basketball games and school fairs. They even go to court. It's rarely as action-packed as the TV cop shows which are a compilation of a number of days' events. But all of those events are possible scenarios on any eight-hour shift. "There's definitely more to their work than handing out traffic tickets. "I find I have to be a counsellor," said Walsh.

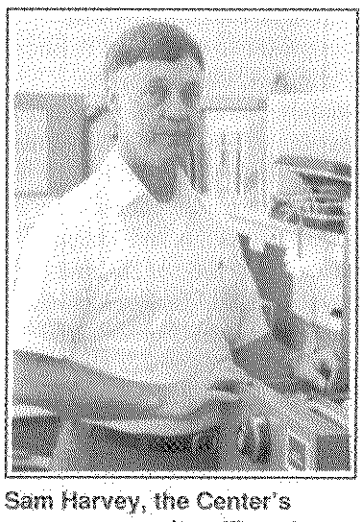
"Often people want you to do something to help a particular situation—especially a domestic problem. But they don't always like what you have to do. I try to advise them what the law is and suggest how they can seek help. In every situation, I just try to be a good listener," he added.

As in most volunteer experiences, the volunteer gets as much—or more—as he or she gives. That's the way Harvey feels. "The camaraderie is the biggest benefit. Police officers are a close knit group of people. When my wife was in the hospital," he said, "it was my fellow officers who cut my grass, split my wood or helped with whatever we needed. I'll never forget that friendship."

The Langley employees have each made a serious commitment to their community. Harvey, after 11 years, and Walsh, involved for nine years, are both glad they did. So is the city of Newport News.



Mike Walsh, assistant chief of the Experimental Flow Physics Branch, checks the traverse system of the Mach 6 High-Reynolds-Number Tunnel.



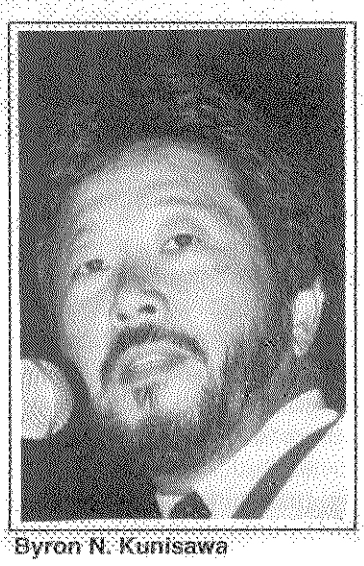
Sam Harvey, the Center's program security officer, has worked here for four years.

Help us help your neighbors:

If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services Officer, at ext. 43315.

Kunisawa to Conduct Diversity Training at the Center

Byron N. Kunisawa will present "Diversity 2000: The Challenge of Successfully Managing Our Human Resources" June 10 and 11 at the H.J.E. Reid Conference Center auditorium. The four two-hour workshops, at 9 a.m. and 1 p.m. each day, are sponsored by the Inter-Center Leadership Committee. These workshops will provide an orientation on general work force diversity issues and specific concerns about the organization growth process, management philosophy. They will also address organizational barriers to the full participation of all employees in the work place.



Byron N. Kunisawa

Kunisawa was born in a Japanese internment camp in Utah. He holds a master's degree in Educational Administration and is a nationally recognized lecturer on mulitculturalism.

The following is an attendance schedule that will allow for maximum participation.

June 10, 9-11 a.m.: Office of the Director, Aeronautics Directorate, Office of Education Programs, Fabrication Division and High-Speed Research Project Office

June 10, 1-3 p.m.: Space Directorate, Flight Systems Directorate and Operations Support Division

June 11, 9-11 a.m.: Management Operations Directorate, Electronics Directorate, Comptroller and National Aero-Space Plane Office

June 11, 1-3 p.m.: Systems Engineering and Operations Directorate (except OSD and Fab), and Structures Directorate

All employees are encouraged to attend and should charge their time to Job Order A-1619.

AIAA Presents — "Congress Connection III: Clinton, Congress and NASA"

The American Institute of Aeronautics and Astronautics, Hampton Roads Section is sponsoring a briefing by Richard N. Malow, staff director, Subcommittee on the Veterans Administration, Housing and Urban Development and Independent Agencies. The briefing will be at the H.J.E. Reid Conference Center, Monday, June 7 from 3-4 p.m. A question-and-answer session will follow.

Malow is one of thirteen Subcommittee chairpersons who met the week of May 10 to discuss the fiscal year 1994 discretionary fund which totals $538.8 billion.

Malow has for 20 years participated in the appropriations process and is very knowledgable about NASA's programs and funding levels.

Malow will speak to attendees about some of the issues he is considering on behalf of Subcommittee chairman Representative Louis Stokes (Democrat-Ohio). These issues include increased funding for aeronautics research as requested by the Clinton Administration.

All Langley personnel are invited to attend the briefing. Time may be charged to Job Order A-1980. Reservations are not required.

AIAA Honors Langley Employees

Several Langley employees were honored at the 30th Anniversary Awards Banquet of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) held May 11.

Dr. Jag Singh, chief scientist of the Instrumental Research Division, was recognized as a new Fellow of the AIAA. Selection of AIAA Fellows is limited to those who have distinguished themselves in the field of aerospace. Singh was cited for "his exceptional contributions to the advancement and application of aerospace measurement science and technology to present day aerospace problems." Singh has been a member of AIAA since 1972.

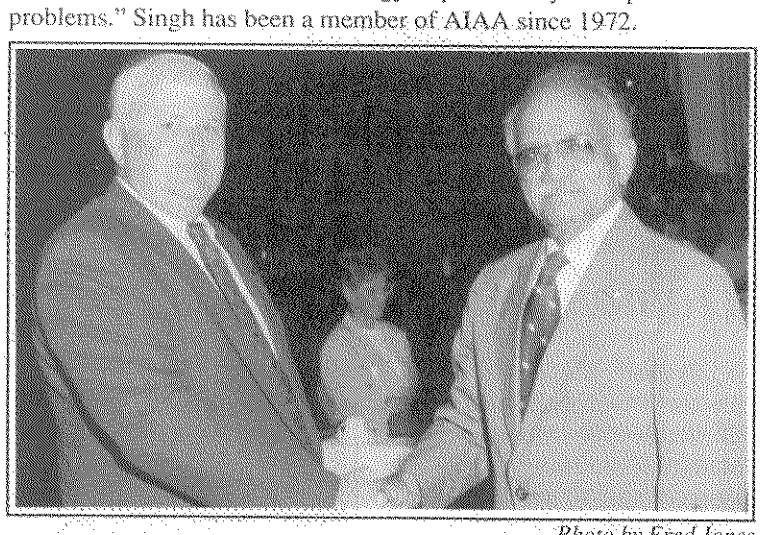


Photo by Fred Jones

Dr. Jag Singh receives congratulations from Del Freeman who welcomed him as a Fellow of the American Institute of Aeronautics and Astronautics.

New Associate Fellows Announced

New Hampton Roads Section Associate Fellows were named at the gathering as well. They are Dr. John T. Batina, Unsteady Aerodynamics Branch; James R. Branstetter, FAA–Engineer Field Office; Harold Bush, Space Structures Branch; Joseph Chambers, Flight Applications Division; Dr. Simha S. Dodbele, Vigyan, Inc.; Dr. Nabil El-Hady, Analytical Services and Materials, Inc.; Dr. Debasish Ghosh, Lockheed Engineering and Sciences Corp.; James F. Kibler, Data Management Office; N. Duane Melson, Computational Aerodynamics Branch; William A. Ragsdale, Unisys Corp.; Kenneth J. Weilmuenster, Aerothermodynamics Branch; and Dr. Thomas A. Zang Jr., Computational Science Branch. Also named were Dr. Mark Nataupsky and Dr. Wing-Fai Ng.

Honored with a 50-year membership pin was M. Leroy Spearman of the Mission Analysis Branch. Twenty-five-year membership pins were given to Langley's Jerry M. Allen, Supersonic/Hypersonic Aerodynamics Branch, and Ralph D. Watson, Experimental Flow Physics Branch.

The 1993 Allan H. Taylor Memorial Award went to A. Gary Price, head of the Office of External Affairs. The award is given to the member who volunteered both local and national contributions in high professional standing to the AIAA over the last decade.

Three from Langley were given 1993 Hampton Roads Section Awards: Elizabeth Lee-Rausch, Unsteady Aerodynamics Branch, for her activities with young professionals; Lee Rich, Office of External Affairs, for her activities in the interest of public policy; and Marilyn Ogburn, Flight Dynamics Branch, for her work in career enhancement.

Young Professional Paper Competition

The 1993 Young Professionals Paper Competition saw two winners from Langley. In first place was Dr. W. Keith Belvin of the Spacecraft Dynamics Branch, for his paper titled "Second-Order State Estimation Experiments Using Acceleration Measurements." Third place winner was David A. Dress of the Supersonic/Hypersonic Aerodynamics Branch, for his paper titled "Drag Measurements on a Modified Prolate Spheroid Using a Magnetic Suspension and Balance System."

Other awards for Langley personnel were National AIAA Awards given at the AIAA Annual meeting in Crystal City, Virginia. They are the 1991-1992 AIAA Section Awards (Very Large Section Category) as follows: "Outstanding Section," first place winner was Linda Bangert of the Propulsion Aerodynamics Branch, and section chairman; first place for the "Newsletter Award" went to Dr. Steve Rizzi of the Structural Acoustics Branch, newsletter editor; and the "Young Member Activity Award," first place to Elizabeth Lee-Rausch, Young Professionals Committee Chairman. The Section also saw two second place winners: Lee Rich received the "Public Policy Award" and Kathy Needleman, Lockheed Engineering and Sciences Corp., was given the "Membership Award."

Finally, outgoing chairman Del Freeman, Space Systems Division, presented the incoming officers, Dr. Steve Rizzi, chairman; Stanley Lamkin, Analytical Services and Materials, Inc., vice-chairman; Dan D. Vicroy, Vehicle Operations Research Branch, secretary; and Elizabeth Lee-Rausch, treasurer.

Summer Programs Begin Soon at Langley

BY J.J. MILLER

In the next few weeks you may find yourself wondering, "Who are all these new faces at NASA?" The answer: they are probably participants in one of the summer research programs offered at Langley, either the Langley Aerospace Research Summer Scholars (LARSS) program or the American Society for Engineering Education (ASEE) program.

Every summer students and professors chosen to participate in these two programs come to Langley from across the United States. Imported from as far as California and Puerto Rico, this year there are a total of 136 students and educators working at NASA in one of these programs.

The LARSS program is designed for rising junior or senior college students or first-year graduate students. The program is a 10-week intensive study under the supervision of a designated mentor. With the help of the mentor and the weekly lectures the students attend, the participants complete a research project in their chosen field by summer's end.

The program, established in 1986, is designed to stimulate student interest in aerospace research and to encourage students to pursue advanced degrees in the fields in which they work. Participants this year were chosen from more than 300 applicants and represent 55 colleges and universities and 25 states.

"This year was extremely competitive," said Dr. Samuel E. Massenberg, director for Education Programs. "The selections are made from a group of highly qualified students. This year the mean grade point average (G.P.A.) for LARSS students is 3.4."

The ASEE program is also a 10-week summer program. Forty fellows were chosen from more than 160 applicants representing 30 colleges and universities. The program, established in 1964, is a coordinated effort between Old Dominion University and NASA.

The ASEE program was designed to gather faculty members from across the country to exchange ideas with NASA employees and contribute to the research ongoing at Langley. "ASEE has been very effective in changing and molding people's lives," said Dr. Surendra N. Tiwari, director of the program. One of ASEE's present goals is to involve young professors in the 'active and progressive' program, according to Tiwari.

"They're the cream of the crop," said Edwin J. Prior, deputy director for Education Programs, about the educators selected to participate in the program. According to Prior, only about 25 percent of the applicants are chosen, and the majority of those hold doctorates in their fields.

All of the new faces will arrive June 7 to begin the 10-week sessions.

J.J. Miller is a rising senior at the University of North Carolina at Chapel Hill. She is participating in the LARSS program this summer in the Research Information and Applications Division–Photographic Section.

Colloquium

Continued from Page 1

As concerns mounted over environmental issues like "the greenhouse effect" and ozone depletion, the scientific community began to explore ways to bring aerial platforms carrying instruments into the atmosphere. Scientists wanted unpiloted aircraft to accomplish atmospheric research goals because of their cost reductions and lower risks to humans. Perseus was born as a result of these needs.

"Perseus is a low-cost vehicle," said Anderson, "that can supply flight opportunities for a community profoundly starved for access to the most crucial regions of the Earth's atmosphere." In the summer of 1988, and recently back from the Antarctic ozone expedition, Anderson teamed up with John Langford, then of the Massachusetts Institute of Technology (MIT), to form Aurora Flight Sciences, the company that designed two models of Perseus. Perseus A, used for ozone studies, carries a tank of liquid oxygen to fuel the engine in the stratosphere's thin air. It is capable of maximum altitudes of 29-31 kilometers and a maximum flying time of six hours. Perseus B, still in development, designed to study greenhouse effects, will reach altitudes of only 20 kilometers, since it is not dependent on the liquid oxygen, but can stay aloft for up to 72 hours. The cost of each is about $1.5 million.

In 1991, NASA became involved with Aurora and Anderson, when the High-Speed Research Division was able to fund the cost of two of the "drones," as unpiloted aircraft are called. The NASA aircraft will be used for global change research and may also be employed to study the environmental impact of future supersonic transports. New funding requests in 1993 by NASA Administrator Daniel Goldin could possibly support the purchase and operation of a fleet of Perseus drones and fund development of instrumentation, or sensors. These sensors would be installed in the drones and should produce data that is complementary to space and ground-based measurements on a wide range of things from the catalytic processes that destroy ozone and the microphysics of clouds to the temperature and circulation of the stratosphere.

Anderson's research on environmental issues has focused on global changes to the Earth's ozone layer. In the past several years reconnaissance aircraft flights into the Arctic and Antarctic stratosphere have established the case linking CFC release to ozone loss in the polar regions. He is involved now with the development of instrumentation to fly on these high-altitude, long duration unpiloted aircraft that will extend natural observations from equator to pole at altitudes exceeding those of previous studies.

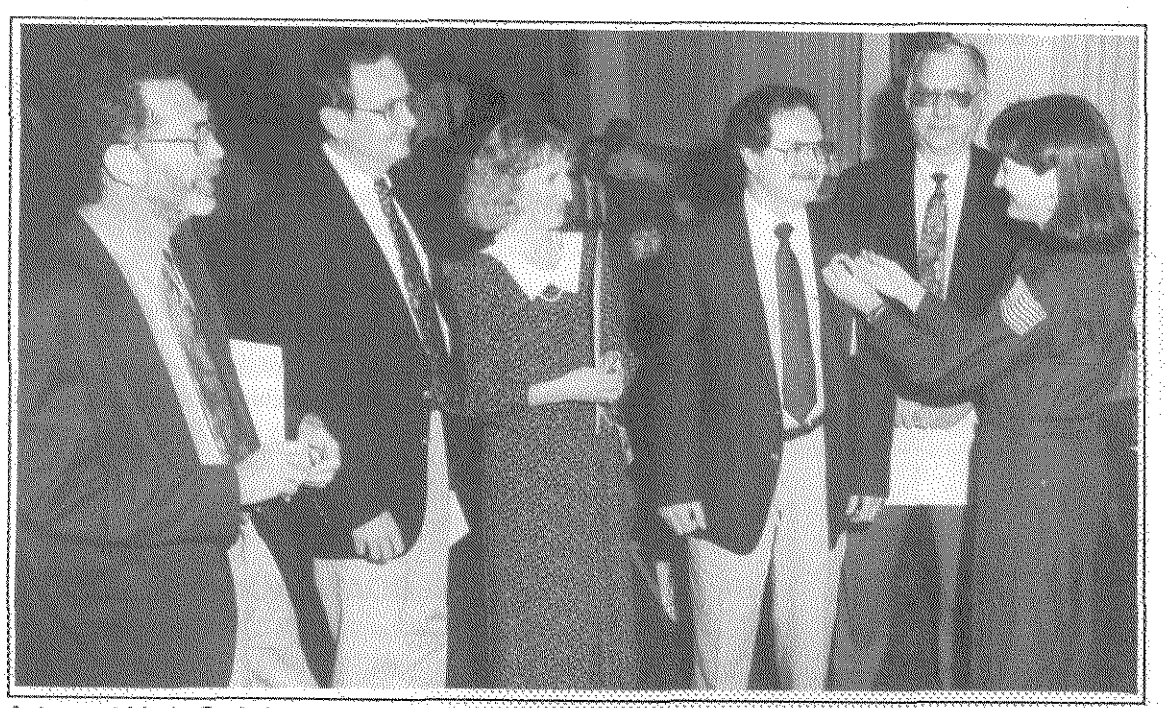
Anderson received his bachelor of science degree from the University of Washington and his doctorate from the University of Colorado. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. He is a fellow of the American Association of the Advancement of Science and the American Geophysical Union. Anderson has received numerous awards. Among them are the 1993 Gustavius John Esselen Award for Chemistry in the Public Interest and the 1992 United Nations Earth Day International Award. He was also the mission scientist for the NASA Airborne Arctic Stratospheric Experiment.

Colloquium Schedule 1993

The following is the colloquium schedule for the remainder of 1993:

- **Tuesday, July 6, Duane McRuer; topic, "Pilot Aircraft Control Coupling"**
- **Monday, August 9, Lotfi Zadeh; topic, "Fuzzy Logic"**
- **Monday, September 13, Dr. Roald Sagdeev; topic, "Russian Space Program in the 20th Century"**
- **Tuesday, October 12, Dr. Frank Nichols; topic, "Science and Medical Ethics"**
- **Monday, November 8, R. Carpenter and R. Minnix; topic, a lecture and demonstration on the Principles of Physics**
- **Monday, December 13, Jeffrey Hecht; topic, "What's New in Lasers."**

People & Places



Astronaut Linda Godwin presents the Silver Snoopy Award to (left to right) Paul M. Siemers, Michael E. Tall, Carolyn Simerly-Houck of Lockheed, Gordon Owsley and Harold Bush.

Silver Snoopy Given to Five at Langley

Recently, The Silver Snoopy Award was presented to five people from Langley. They are Harold Bush, Spacecraft Structures Branch; Gordon Owsley, Mechanical Systems Section; Paul M. Siemers, Space Systems Division; Carolyn Simerly-Houck, Lockheed Engineering and Sciences Corp.; and Michael Tall, Advanced Machining Development Section.

The Silver Snoopy Award and certificate is presented personally by the astronauts in special recognition of those in both Government and industry who give an outstanding performance in support of manned space flight activities. This award is one of the most coveted among those presented for either a single effort or for long-term, continuous performance in support of Shuttle/payload programs. Emphasis for qualification for the Silver Snoopy is placed on efforts that enhance mission success, for example, design improvements, production techniques or prevention of errors to further flight or system safety.

Health Corner

Cancer Screening – A Huge Success

The Office of Occupational Health Services in conjunction with Riverside Health Services brought Prostatic Specific Antigen (PSA) testing to Langley on Tuesday, May 11. Two-hundred and fifteen NASA employees, contractors, family members and retirees took advantage of this modern blood test that helps in the early detection of prostate cancer. The cost for the test was a tremendous savings for the participants. The usual charge for the same test is about $70 plus an office visit fee, if the test is conducted in a doctor's office. According to Peter J. Edgette, head of the Occupational Health Services Office, "Besides the monetary savings, inconvenience for our customers was minimal and time away from work, negligible." This is the second year the test has been offered on-site and will be an annual event.

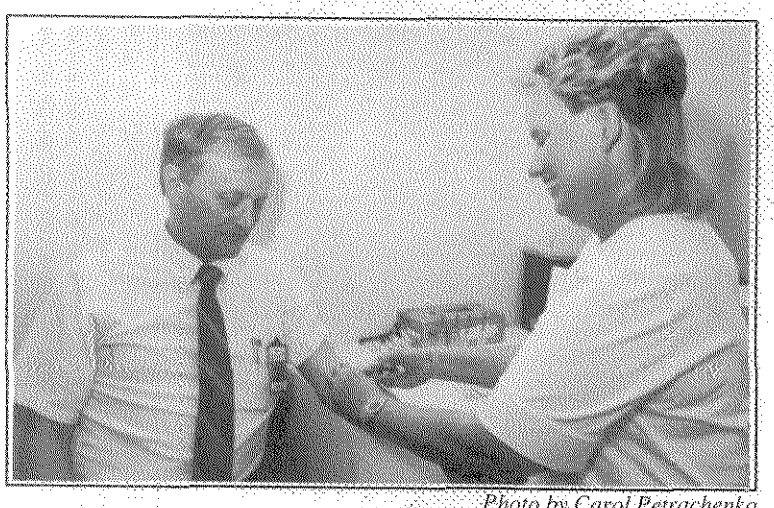


Photo by Carol Petrachenko

Claude R. Keckler, Guidance and Control Division, receives the PSA blood test.

Alzheimer's Disease

As many as four million Americans are affected by Alzheimer's disease, a progressive, degenerative disorder that impedes the functioning of brain cells and synapses, resulting in impaired memory, thinking and behavior. It is an incurable illness that causes nerve cell destruction, leading to mental and physical deterioration and, eventually, death.

This country's elderly population is rapidly increasing and, since age is the primary risk factor, it is expected that Alzheimer's and other dementias of the aged will increase as much as five times by the year 2040, unless significant progress is made in treatment.

The health seminar for June will be about Alzheimer's disease and other dementias. The session will be in the executive dining room, Thursday, June 17, from 12-1 p.m.

Bloodmobile Report From the Red Cross

A total of 336 people donated blood at the May blood drive, eight of them were first-time donors, according to NASA coordinators Karen E. Ridlon and Peter J. Edgette. Red Cross coordinator Barbara Thomas extends special thanks to the following donors: 14 gallons, Michael Holt; 13 gallons, Roger Arnick and Nelson Seabolt; 12 gallons, Harvey Murray and Pendleton M. Jackson; 9 gallons, Charles Sweet; 8 gallons, Hugh Gentry III; 7 gallons, Robert Miserentino; 5 gallons, Michael Walker, Aaron Ostroff and Christopher Cagle; 4 gallons, Wayne Davis; 3 gallons, James Berry, Thomas Toll, Brian Chesture, William Chambers and Roscoe Nicholas; 2 gallons, Ralph Will, Jon Sweet, Harry Stotler, Keith Sobczak, Ronald Hare, Sherilyn Brown and Robert Bless; 1 gallon, James High and Gregory Draughon. First time donors were Carlos Castillo, Travis Compton, Valerie Thomas, John Long, Boyce Lavender, Jack Futrell, Ian Clark, Thelma Washington and Lisa Burg. "We hope you will continue to donate and welcome everyone else to participate in the next blood drive," said Edgette.

Future bloodmobile visits are scheduled for the third Wednesdays of July, September and November. The bloodmobile will be at held the H.J.E. Reid Conference Center from 9 a.m. to 3 p.m. on those days.

Legislative Update

BY PAM VERNIEL

Langley Research Center
FWP
Federal Women's Program

- On July 12, at 1 p.m., a briefing by Jeanne Evans from Congressman Owen Pickett's (D-VA 2nd District) office on legislation, passed or pending, affecting family leave, health care reform, and other issues, will be sponsored by the Federal Women's Program.
- Update on Motor-Voter Bill - The bill to provide voter registration forms at offices providing public assistance and at vehicle registration and drivers' license offices has been given final approval by the House and Senate and has been signed by President Clinton.
- "A landmark decision issued by Defense Secretary Les Aspin to allow women in combat will dramatically redefine the role and the future of women in the U.S. military. On April 28, Secretary Aspin ordered the armed services to lift restrictions on women serving in aerial and naval combat. According to Secretary Aspin's directive, women will be eligible to fly all aircraft in combat." (Update, April 30, 1993)

Bills Introduced:

H.R. 1897 - Rep. William Jefferson/Ways and Means (4/28/93): To amend the Social Security Act to eliminate reductions in benefits received by spouses and surviving spouses who are also receiving certain government pensions.

H.R. 1743 - Rep. Patsy Mink/Education and Labor (4/20/93): A provision of the Gender Equity in Education Act to establish an Office of Women's Equity within the Department of Education to promote and coordinate women's equity policies, programs, activities and initiatives in federal education programs and offices and amends the Elementary and Secondary Education Act of 1964 to provide grants to encourage gender equity throughout the U.S. education system.

H.R. 1862 - Rep. Robert Torricelli/Ways and Means (4/26/93): To amend the 1986 Internal Revenue Code to provide tax relief to families with young children.

Ft. Monroe Begins Summer Outdoor Concert Series

The U.S. Continental Army Band will begin its "Music Under the Stars" Concert series at Continental Park, Ft. Monroe, throughout the summer. Performances begin at 7:30 p.m. and are free and open to the public. Bring lawn chairs or blankets for seating. The schedule is as follows: June 10, brass band; June 17, concert band; June 24, TRADOC rock; July 3, TRADOC rock/concert band; July 8, TBA; July 15, TBA; July 22, TRADOC rock; July 29, concert band; August 5, concert band; August 12, jazz band; August 19, Dixieland band; August 26, concert band. The July Fourth observance will be held at Walker Field, beginning at 7 p.m. For information, call the band at 727-3888; after 5 p.m. or on weekends, 727-4052.

Quotable

"I am an idealist. I don't know where I'm going but I'm on my way."

–Carl Sandburg

Kindergarten Registration Opens

The NASA Langley Child Development Center is registering children for the 1993-1994 kindergarten program. A full-day program will be provided by a certified kindergarten teacher. Applicants musts be five-years-old by October 31, 1993. Call ext. 44827 for more information.

The Langley Karate Club Introduces Martial Arts

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 -7 p.m. NASA employees, co-ops, contractors and their immediate families, ages 12 and over, are welcome. A beginner class will start June 7, and new students will be accepted until June 30. For more information, stop by the gym during class time or contact Roy Albang, ext. 46160 or at 596-7736 between 7 and 10 p.m.

Happenings

ROOM FOR RENT: Hampton/Armistead Hts., furnished room, utilities included, in private home, all privileges. Sixty-five dollar deposit and $65/week or $100 deposit and $270/month. Near Langley and Hampton University. Call 988-3162, leave message.

START YOUR SUMMER FUN WITH FITNESS: Join LAA's Bench and Low-Impact classes. Free body composition analysis 30 minutes before class. Classes are Tuesday and Thursday, 5-6 p.m., Saturday, 9:30-10:30 a.m., LAA gym. Call ext. 42295 for more information.

COMPUTER HARDWARE/SOFTWARE SYSTEM FOR SALE: IBM-AT clone by Dell, 1MW on board/20MB hard disk, mouse, internal modem, 12" monochrome display by AMDEK, Epson FX86e printer, all LNC. Lots of software for Word, science and engineering, graphics, telecom, data base, presentations. All for $500 or b/o. Call 851-8690 after hours.

SHOPPING TRIP: A one-day trip to Potomac Mills Mall, Dale City, Va. is planned for Saturday, August 21. Cost is $25 per person (non-refundable), due July 10. Transportation is via ACE Charter Bus Service. For information, call 245-3915 or 365-0511, leave message.

LAND FOR SALE: In Gloucester, 5.68-acre wooded lot, perk approved, $19,000. Call 473-9321.

NASA SKI WEEK: The NASA centers ski week has been scheduled for January 8-16, 1994 at Aspen -Snowmass. Call Michael Schooley, ext. 48524 or 874-2736 for more information.

TOUR CORRECTION: The drive-through tour of Langley, sponsored by the Virginia Air and Space Center, mentioned in the last issue has been delayed. Complete details will be published as they become available.

SCPD AND DPAC ANNOUNCE TRAINING SESSIONS: The Satellite Committee for People with Disabilities (SCPD) in conjunction with the Disability Program Advisory Committee (DPAC) is sponsoring two training sessions on the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1983. The training will be June 8 in the H.J.E. Reid Conference Center auditorium. The first session is from 8:30-11:30 a.m.; the second is from 1-4 p.m. Each session covers both topics. No registration is required; you may attend either session. Come find out how these laws relate to each other and how they affect you. For more information, call Laurie Andrews, ext. 41757.

BRITAIN, SCOTLAND, IRELAND AND WALES: Join your co-workers, retirees and friends on a 16-day tour, Sept. 16-Oct. 1, from Norfolk and return, to kiss the Blarney Stone. Reunite with many of your past traveling companions. Tour only accommodates 49 people. A similar tour was made by LAA in 1985 and many have requested that it be repeated. Call for an itinerary: Ernie Greene, 838-0567 (home), or Dan Crawford, 247-5815.

VOLUNTEERS NEEDED: Hampton Bay Days, Inc. is currently recruiting volunteers for the 11th Annual Bay Days Festival, September 10, 11 and 12. 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 kick-off and thank you parties. For more information or to volunteer your help, call Harry Hundley at 851-5708.

BLUEGRASS FESTIVAL & ARTS AND CRAFTS SHOW: This third annual U.S. Coast Guard festival will be held Saturday, June 5. It is free and open to the public and features 10 bluegrass bands, beginning at noon and going until 10 p.m. at the Reserve Training Center on Route 238, Yorktown. For more information about the Bluegrass Festival, call Lt. Jim Armstrong, 898-2348. For Arts and Crafts Show information, call Jim Brinn, 898-2100.

INTERNATIONAL SAILBOAT RACING COMING TO HAMPTON: The Tidewater Sailing Club will be hosting the International J/24 Class Association 1993 North American Championship. The regatta will run from Monday, June 28, through Saturday, July 3, at 10 a.m., with races held on the Hampton Flats area of Hampton Roads harbor. The J/24 is a 24-foot racing sloop with a five-person crew. Entries are limited to 100 boats and about one-third of them will include Olympic and America's Cup veterans as well as national and international champions. Spectator boats will be available daily at 9:15 a.m. For more information, call Raymond Nugent, 461-4900 or 245-4900.

FOURTEENTH ANNUAL AIAA SPRING PICNIC: The American Institute of Aeronautics and Astronautics announces the annual picnic following their golf outing, Thursday, June 10, from 4:30-6:30 p.m. at the picnic grounds at the H.J.E. Reid Conference Center. The menu is hamburgers, hot dogs, barbecue, potato salad, baked beans, chips and beverages. Cost for members, guests and golfers is $5; non-members, $7; student members, $3; children (6-12), $2; and children under 6 are free. Reservations are required by noon, Monday, June 7. Call Stan Lamkin, at work, 865-7093 or home, 640-0415.

National Aeronautics and Space Administration

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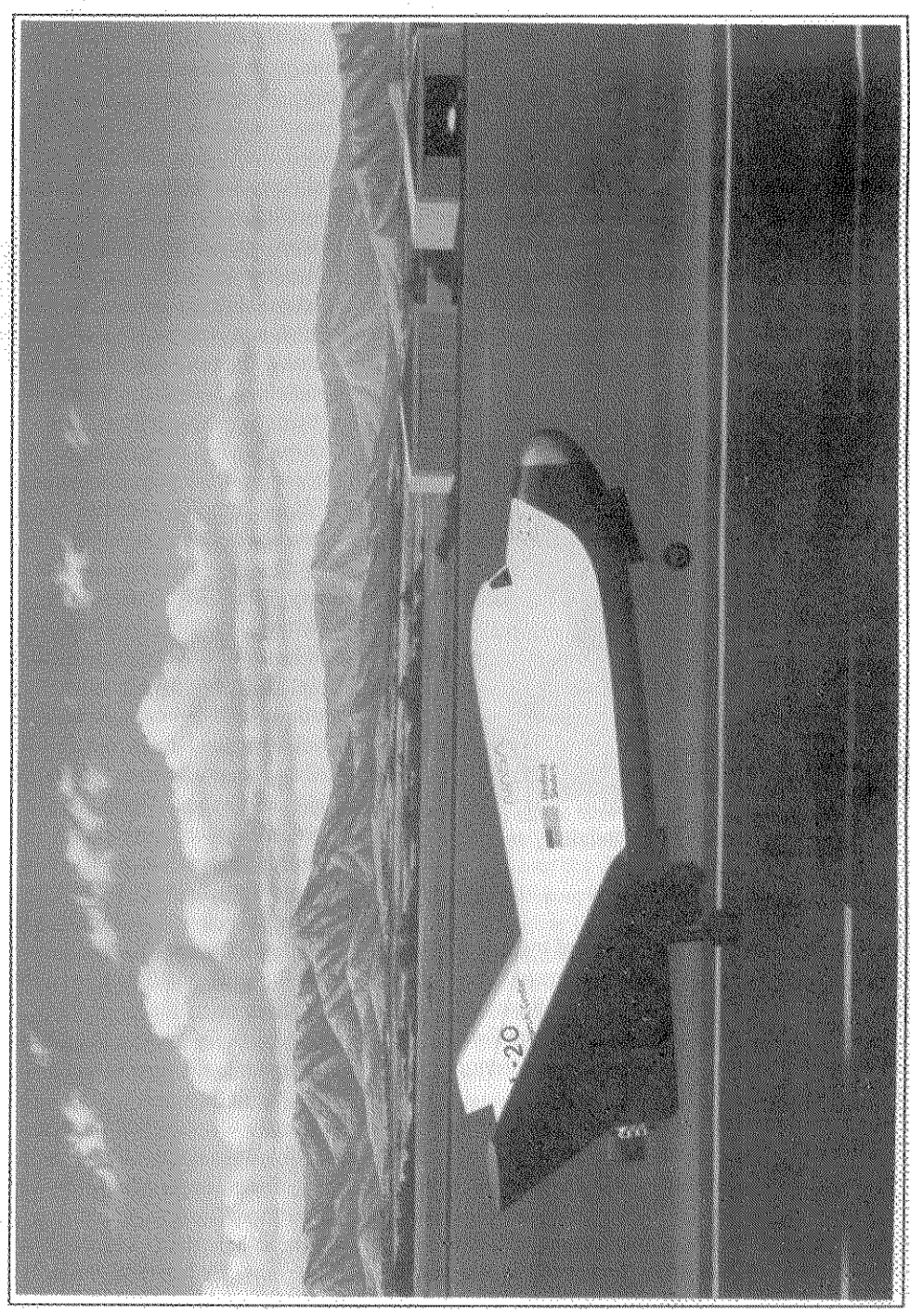
News Researcher



"Landing of the HL-20," shows Langley's candidate for a personnel launch system landing on a conventional 10,000-foot runway following a trip to a space station. The lifting body concept has the ability to land several times each day at the Kennedy Space Center, the expected launch site, or land at one of five landing sites around the world. The HL-20 would be launched into a low-Earth orbit by an expendable rocket and then use its own propulsion system to boost itself to the space station where it would deliver small amounts of cargo or allow the exchange of crews.

National Aeronautics and Space Administration
Langley Research Center

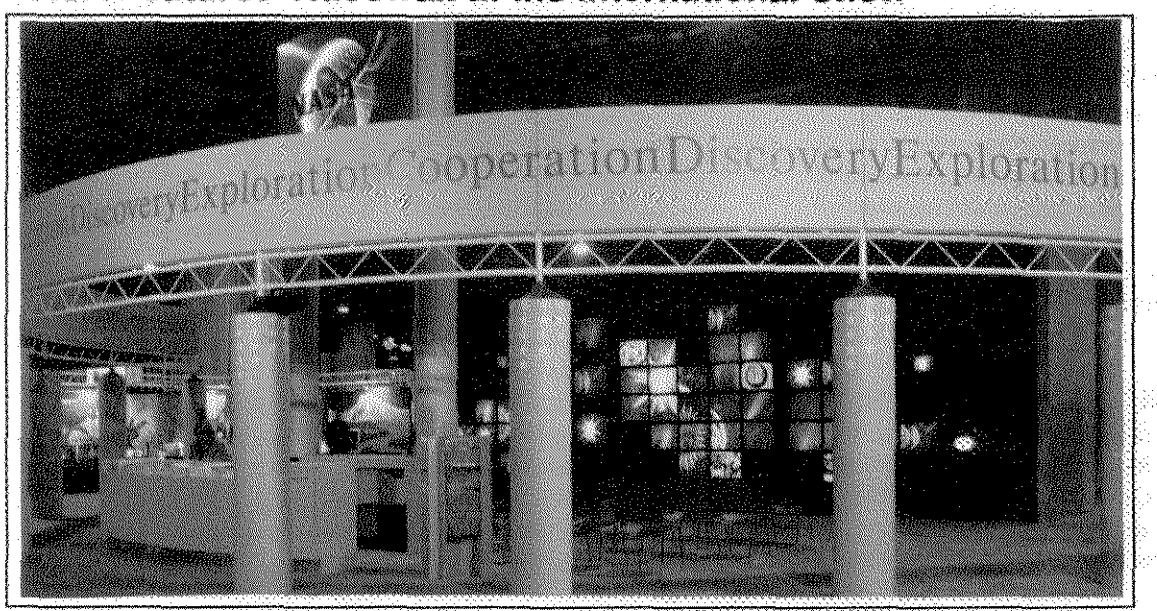
News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 12 ❖ June 18, 1993

HSR Highlighted at Paris Air Show

NASA Features Videowall at the International Show



NASA Photo

The NASA exhibit as it appeared at the Paris Air Show and the World Space Congress. The exhibit features the large NASA logo above the booth, a 50-monitor "videowall" behind the exhibit area and, in Paris, models of a prototype High-Speed Civil Transport aircraft.

A videowall is the highlight of the NASA exhibit at the 40th Paris Air Show in Le Bourget, France, which opened June 10 and runs through the 20th. NASA's diverse and energetic aeronautics and space programs are portrayed in a French language version of the videowall. The videowall presentation features interviews with Carl Sagan, James Michener, Roald Sagdeev, Norman Augustine and Kathy Sullivan, discussing space station, space technology, space science, space exploration and a new segment on aeronautics.

NASA has been a major participant at Le Bourget since the mid-1960s, and beginning with its exhibit in 1979, has, each subsequent year, developed the public access portion of the U.S. Department of Commerce National Pavilion that has now become known as the NASA Exhibit.

This year's exhibit consists of a modified and enhanced production of the 50-monitor videowall production exhibited earlier at the World Space Congress. It is surrounded by supporting exhibits and an aeronautics display.

Sharing the Vision

This year's exhibit theme, "A New Age of Exploration – Expanding the Frontiers of Air and Space for the Benefit of All," incorporates a large panoramic mural at the entrance acknowledging the many contributions of NASA's international partners in human and robotic spaceflight. The mural also stresses the importance of international cooperation necessary to meet the challenges of the 1990s and those of the 21st century.

NASA Technology

To show that NASA, in partnership with U.S. industry, provides the cutting edge aeronautics technology that maintains the dependability and excellence long associated with American aircraft, a new 10-foot model of a high-speed civil transport (HSCT) concept aircraft, a Pratt and Whitney mixer-ejector nozzle, and a high altitude Perseus model with video, photos, graphics and text were on display. The display also highlights NASA's work to develop technology for the next generation supersonic airliner, which focuses on exhaust emissions, airport noise and sonic boom research.

Press Briefings Held

The show included several press briefings in the USA Pavilion at Le Bourget. On June 11, Dr. Wesley Harris, associate administrator in NASA's Office of Aeronautics, delivered an aeronautics overview to the international group. Prior to his departure for France, Harris said, "Top on NASA's agenda in Paris will be to interact with our peers to advance aeronautics in response to aviation needs. NASA will continue to be a world leader in aviation technology and looks forward to a very stimulating exchange of views on pre-competitive aviation technology." In Paris, Harris spoke on the two-fold nature of developing a successful second-generation supersonic transport: environmental compatibility and economic viability. He stated that NASA's goal is to provide the technology base that will enable U.S. industry to successfully build and market a high-speed civil transport aircraft that is economically competitive with long-range subsonic aircraft. He emphasized that NASA's high-speed research focuses on developing the technology, not on developing a new supersonic transport (SST).

On June 15, Louis Williams, director of the High-Speed Research Division, updated the press on the current status of the High Speed program. Williams detailed SST research since the early stages of the British/French entry into the market, including much of what is being done by NASA programs. Williams said, "The actual timing of the product development commitment will depend on market, financial and other business considerations and will be up to the industry, not NASA. We are planning our research efforts so that certification around the year 2005 could be technically feasible." He predicted that within a generation or two, "the future HSCT will a valuable complement to the new, large subsonic wide-body aircraft and a respected and productive member of the future long-haul air transportation fleet."

Guy Gardner, deputy associate administrator for Russian Programs in the Office of Space Flight, spoke about U.S./Russian cooperation and astronaut Pierre Thuot gave an overview of the Hubble Space Telescope Servicing Mission at other press briefings.

Langley: Anchor for HSR

Williams, in his remarks, named Langley Research Center as the major player in the high-speed research arena. Research on propulsion emphasizing noise-reduction and cleaner burning fuel, synthetic vision using sensors and computer screens, and airflow turbulence reduction are just some of the items on the Langley agenda.

"We are all very pleased with our lead role in high-speed research. It is a major responsibility for Langley and is directly connected to our growth and the maintenance of a premier aircraft industry in the United States," said Ray Hook, director of the High-Speed Research Program Office.

Hess Wins NASA Scholarship

Jason Richard Hess, son of Richard W. Hess of Langley's Office of the Inspector General, was awarded a scholarships by the 1993 NASA College Scholarship Fund, Inc.

Only dependents of NASA employees who plan to major in science or engineering fields may apply. There were three other winners; Michelle Povinelli, Lewis Research Center; Samuel Sun, Dryden Flight Research Facility; and Michael Montemerlo, NASA Headquarters.

Hess graduated from Denbigh High School in Newport News on June 16 as valedictorian. First in his class of 512 students, Hess maintained straight As throughout his high school career. Many of his courses were advanced placement math and science courses including calculus, physics and chemistry. His SAT (Scholastic Achievement Test) score was 1560.

Hess is also a National Merit Scholarship finalist, captain of the Academic Challenge team and vice president of the Denbigh High School National Honor Society. He lettered on the varsity tennis team, was parliamentarian of the Social Studies Club and a member of the Model United Nations team as well as a member of several other clubs. He was a three-time first-place winner of the National Geography Olympiad, a two-time first-place winner of the State Geographical Society contest, first-place winner in the National Earth Science Olympiad, a semi-finalist in the Presidential Scholar contest and winner of the Princeton Book Award. He has been selected for the Governor's School for Science, the NASA Mentorship Program, the American Legion's Boys/Girls State and has been offered several scholarships. The Peninsula Council of Mathematics of Virginia recently awarded him the American High School Math Exam honor and an award for achieving a perfect math score of 800 on the SAT. Hess has also been active in community soccer and baseball leagues, his church youth group and served as an umpire for a youth baseball league.

Hess will attend Virginia Tech this fall, where he has received the President's Scholarship. He intends to study electrical, chemical or nuclear engineering and hopes to work in some aspect of space exploration.

Richard Hess said of his son, "Although Jason has won a couple of scholarships, I am proudest of his winning the NASA scholarship because the competition is really first rate."

The NASA College Scholarship Fund, Inc., established in 1982, was endowed by Pulitzer Prize-winning author James A. Michener and again endowed in 1991 by a substantial gift from Mr. and Mrs. Michener. The fund also receives contributions from agency employees through the Combined Federal Campaign. This year's four recipients brings the total to 29, 13 of whom have already graduated. Four more scholarships will be awarded in 1994.

Photo by Fred Jones

Jason R. Hess, center, son of Richard W. Hess, at right, displays the NASA College Scholarship citation that he received from Dr. H. Lee Beach Jr., deputy director.

News Briefs

AROUND THE AGENCY

NASA JOINS FORCES WITH INDUSTRY IN AIDS RESEARCH – NASA and American Bio-Technologies Inc., of Cambridge, Massachusetts, have teamed together in an attempt to contribute to a better understanding of Acquired Immune Deficiency Syndrome (AIDS). In a signed agreement, each organization committed to bring its own unique capabilities to a comprehensive research effort. The goal is to use advanced X-ray crystallography technology and expertise developed at NASA's Marshall Space Flight Center, Huntsville, Alabama, to advance fundamental knowledge of Human Immunodeficiency Virus (HIV) and AIDS. The partnership also hopes to develop new therapeutic approaches for HIV and AIDS and superior biological materials for vaccine development and HIV detection.

METABOLIC SPACEWALK STUDIES SUBJECT OF AMES RESEARCH – Scientists at Ames Research Center, Mountain View, California, are measuring how the human body reacts to exercise here on Earth that is similar to astronauts working in the microgravity environment of spaceflight. Astronauts have routinely used spacewalks to rescue and repair satellites and perform other important tasks outside the Space Shuttle. Assembly, maintenance and repair of the Space Station will require spacewalks to become an everyday part of working in space. Ames researchers hope that an advanced heat balance control system could determine an astronaut's metabolic rate by analyzing the air exhaled by the astronaut. The system would then automatically change its cooling function. Ames co-investigator Rebecca Williamson said, "This would lead to greater comfort for the astronaut, resulting in less fatigue and greater productivity."

WORLD'S LARGEST WIND TUNNEL WILL BE THE WORLD'S QUIETEST – The world's largest wind tunnel will be the world's quietest, thanks to a $25 million NASA sound insulation project. NASA will design and install an acoustic lining in the 40 by 80-foot test section of the National Full-scale Aerodynamics Complex (NFAC) at NASA's Ames Research Center, Mountain View, California. The improved wind tunnel ultimately will help U.S. industry design quieter engines for a future high-speed civil transport and for new, advanced helicopters. Background noise and echoes in the wind tunnel test section create problems for measuring sound during engine tests. The deeper the acoustic liner, the lower the sound frequency engineers can measure accurately. It will provide the United States with a world-class capability that will help us greatly during the next generation of aeronautical research.

Update on the Presidential Sports Award Challenge

Langley is now midway through the Presidential Sports Award Challenge. The challenge involves every NASA site, and is a competition to show who has the highest percentage of active employees. "Whether you play golf, tennis or softball, jog, walk or work out, join the challenge," said Rose White, Langley Fitness Center.

By using log sheets, participants record their activities from any one or more of 66 categories. The challenge has been running since March 1, and ends on August 31, but it's not too late to start! Activities can be recorded retroactively from March 1, as long as the stated requirements are completed within a four-month period.

"For us to show that we have the greatest number of active employees everyone's participation is crucial," said White. Participants can compete in more than one category. To get a log, or for more information about the Presidential Sports Award Challenge, call ext. 46387. Completed logs can be sent to Mail Stop 498.

Speakers Bureau Report

The May Speakers Bureau reports the following:

Pamela Davis spoke to Magruder and Aberdeen Elementary School students about Newton's Third Law of Motion and Bernoulli's Law; at Poquoson High School about "Engineering as a Career;" at Poquoson Elementary School at the Arts & Science Fair; and at Simms Middle School about "Careers in Aerospace."

Dr. M. Patrick McCormick spoke at the 29th Annual Symposium of the American Vacuum Society in Santa Fe, New Mexico, about "Ozone Depletion, Global Warming and Volcanic Effects;" and at the Junior Science and Humanities Symposium, Hampton, about "Science and Technology from the Sea to the Stars."

Sharon Crockett spoke to Western Branch Intermediate School students about "Careers in Aerospace Engineering."

Nancy Kruse spoke at Bethel High School about "Technical Careers." Kruse joined **Greg Draughton** and **James Smith** at Lindsay Middle School to talk about technical careers. Kruse and Draughton spoke on the same subject at Dozier Middle School.

John Malone gave an overview of structural mechanics research at Langley at Penn State University.

Dr. Mary Ann Smith was a math judge at the Academy of Applied Science Junior Science and Humanities Symposium.

Dr. Karen Jackson spoke at the Olive Branch Elementary School about "Engineering and Science Careers." Jackson, **Dr. Henry Jones, Gretchen Murri and Dr. Edwin Fasanella** were engineering and science judges at the National Junior Science and Humanities Symposium.

Dr. William Grant spoke at Hampton University about "Optical/Laser Remote Sensing."

Frank Quinto spoke about "NASA Projects" at Tabb Elementary School.

Jane Hogge spoke at Fairview Elementary School, Roanoke, about "Aeronautics and Astronautics."

Bruce Outlaw spoke to the CHROME Club of Bethel High School about "Career Implications of Math."

Bruce Fisher addressed the Aerospace Industries Association at the Virginia Air and Space Center about "NASA's Storm Hazards Lightning Research."

Prasun Desai spoke to the Leisure Time Group of the Hidenwood Presbyterian Church about NASA's Space Program.

LETTERS

Retirement Thank You

From **Evelyn D. Harris:**

"I wish to thank all those who attended and had a part in making my retirement party a memorable evening which I shall always treasure."

Thank You for Your Kindness

From **Linda Cunningham:** "In honor of John R. (Randy) Cunningham, I wish to thank you all for your kind expressions of sympathy."

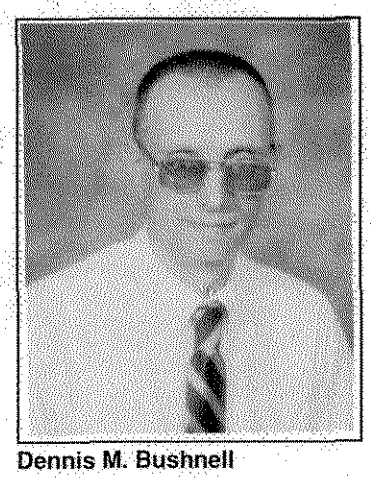
"Thanks" Seems So Inadequate . . .

From **Connie A. Smith** and **Yvonne M. Dellapenta:**

"The recent death of our sister, Kim, has made us realize what genuinely sensitive and caring people we are associated with here at Langley. Thank you to everyone who called us and those who sent cards, donations, and flowers.

Thank you also for praying for us during this traumatic time. It truly is a pleasure and a comfort to work with such a wonderful and understanding group."

Bushnell Elected ASME Fellow



Dennis M. Bushnell

Dennis M. Bushnell, associate chief of the Fluid Mechanics Division since 1989, has been elected to the grade of Fellow in the American Society of Mechanical Engineers (ASME). Professor Demetri P. Telionis of the Department of Engineering Science and Mechanics at Virginia Polytechnic Institute and State University nominated Bushnell .

He began his NASA career at Langley in 1963 and since that time has conducted and managed extensive work in the areas of boundary layer control and drag reduction. He has made important discoveries in subsonic, supersonic and hypersonic internal and external flows, documented in more than 190 publications and seven patents.

"The extraordinary contribution of Mr. Bushnell to technology and the nation is a successful guidance of basic research to problems of practical importance and the attainment of the transfer of new technology to industry," said Telionis. " He has also contributed generously to the engineering community by participating in numerous panels committees and meetings of organization activities." Bushnell has served as associate editor of the *Journal of Fluids Engineering* since 1991 as well as on the editorial board of the *Annual Review of Fluid Mechanics*.

A member of ASME since 1963, Bushnell was also made a Fellow in the American Institute of Aeronautics and Astronautics (AIAA) in 1988. Bushnell received a bachelor's degree from the University of Connecticut with highest honors and distinction and a master's degree from the University of Virginia, both in mechanical engineering. His awards include the USAF–NASP Gene Zara Award, the AIAA Lawrence Sperry and Fluid and Plasma Dynamics awards, The Royal Aeronautical Society Lanchester Lectureship and many NASA awards including the NASA Exceptional Scientific Achievement Award in 1981.

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. The following employees have been approved as leave recipients: Theresa M. Bederka; Monica L. Cooper; Bette L. (Jeanie) Duncan; Cynthia L. Lach; Terry L. Shephard; John P. Stack; Belle L. Wood; and Darrell A. Wood. If you wish to donate annual leave to these employees, or need more information about the program, please call Linda Park of the Employee Relations Office at ext. 42610.

FWP and AIAA Co-host Congressional Speaker

Jeanne Evans, administrative assistant to Congressman Owen Pickett (D-Va. 2nd District), will speak at the H.J.E. Reid Conference Center July 12, from 1-2 p.m. about bills signed by the President or pending in Congress. She will explain the provisions on several issues including family and medical leave, health and child care and education. The program is sponsored by the Legislative Subcommittee of the Federal Women's Program Committee and the Hampton Roads Section of the American Institute of Aeronautics and Astronautics.

IN MEMORIAM

John R. Cunningham

John Randolph Cunningham of Hampton died May 24. "Randy" retired from the Photographics Section after 31 years.

Jenny Lou Kurtz

Jenny Lou Kurtz, 56, a resident of Gloucester, died May 26. She worked at Langley from 1958 to 1971 and is survived by her husband Richard, who retired from Langley after 35 1/2 years in Systems Engineering.

Norman S. Land

Norman S. Land, 81, of Nelson County, died on May 29. He was an aeronautical engineer at Langley for 34 years and retired in 1972 .

News 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.

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Photojournalist ..... Carol Petrachenko, 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.

People & Places

Crockett Leaves for Fellowship Program

Sharon Crockett, an aerospace engineer in the Flight Systems Engineering Section, has been selected to attend the Smith College Management Program for Women.

The program includes two three-week summer sessions at Smith College in Northampton, Massachusetts, in consecutive years, linked by an integrated management project in the intervening months. She will be at Smith July 10-30, 1993, and July 9-29, 1994. The program emphasizes management and analytical skills as well as organizational structures and perspectives. Participants study support networks, leadership, decision making, performance evaluation and team situations.

Crockett started her Langley career in 1973 as an engineering technician and is currently a mechanical systems manager for the Orbital Meteoroid and Debris Counter experiment. Her responsibilities include oversight of the experiment baseline and integration activities with other government agencies. Formerly, she was the receiver system manager for the Lidar In-space Technology Experiment (LITE) project. As manager, she was responsible for assembly, integration and testing of the system, as well as for the planning, control and resource management of its support functions. As LITE contamination control officer, Crockett managed all aspects of the cleaning of the large flight hardware, including logistical support, quality assurance and scheduling.

Sharon Crockett

"My career interests lie in the management of projects and in organizations involved in technical activities," Crockett said. "I recognize the need to be flexible to meet the challenges of managing in a dynamic environment and with a diverse workforce. I believe that this program will provide me with the tools necessary to meet those challenges."

Crockett graduated from the Langley Engineering Technician Apprentice Program and holds two associate's degrees from Thomas Nelson Community College, one in mechanical technology and the other in drafting and design. She also holds a bachelor of science degree in mechanical engineering.

"Sharon played the lead and critical role for the completion of the LITE receiver work. She has excellent potential for future higher managerial positions with other Agency projects that will only be enhanced by her participation in the Smith program," said John W. Cox, head of the Space Systems Engineering Branch.

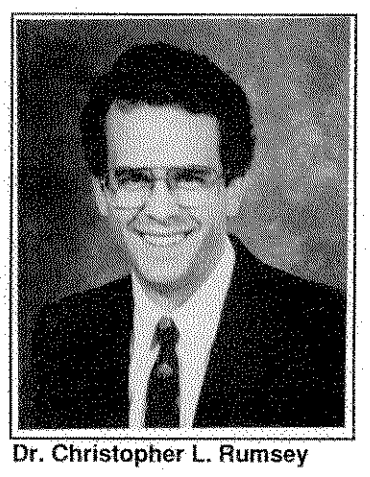
Rumsey Addresses Brazilian Officials at NASA Headquarters

Dr. Christopher L. Rumsey of the Computational Aerodynamics Branch, and a Total Quality Management (TQM) facilitator, spoke recently to a visiting delegation of Brazilian government officials at NASA Headquarters. His subject was the implementation of TQM at Langley.

The visitors represented a variety of Brazilian governmental institutions including the National Technology Institute, the Ministry of Education, the Technological Institute of the Parana State, and the Ministry of Science and Technology. They attended a two-week course relating to TQM through the auspices of the George Washington University in Washington, D.C. Following that, they visited several U.S. government organizations in the process of implementing TQM including NASA.

The Brazilians learned about the TQM roll-out process from Dr. Laurie A. Broedling, the associate administrator for Continual Improvement, as well as from Lynne Stewart, Gary Steinberg and Joe McElwee, all of NASA Headquarters. Rumsey gave the visitors a perspective of the TQM process from the Langley point of view. He also described specific examples of TQM within the Fluid Mechanics Division (FldMD). FldMD has used TQM principles to streamline the process by which technical papers are written and reviewed within the division.

"It was encouraging to learn that many other governmental institutions that perform research are also wrestling with how to effectively apply the principles of TQM to the research process within a governmental bureaucracy. Clearly, it is not easy," Rumsey said.



Dr. Christopher L. Rumsey

Postal Service Launches Space Stamp

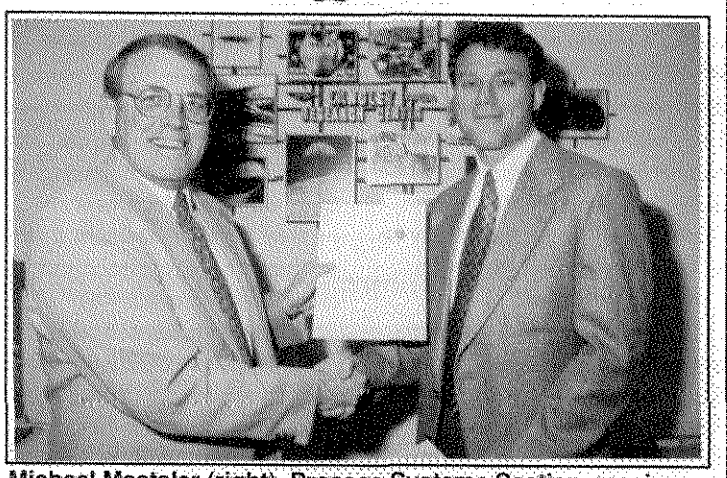
The U.S. Postal Service unveiled its latest space-theme stamp at Spaceport USA, Kennedy Space Center's visitor complex, Titusville, Florida. The $2.90 stamp, expected to be used mainly for priority mail, features the image of a futuristic space plane soaring through space, leaving Earth and other interstellar objects in its wake.

Deputy Postmaster General Michael S. Coughlin and Kennedy Director Bob Crippen dedicated the stamp in a ceremony inside the Spaceport Central annex. The Titusville Postmaster set up a mini-post office at Spaceport USA to allow for the purchase and first-day cancellation of the new stamp.

Stamps with space themes have historically been favorites among both philatelists and collectors of space memorabilia. The most popular first-day cancellation ever was the 1969 issue commemorating the manned lunar landing. Other favorites include a 1992 joint venture with Russia that culminated in the release of four stamps depicting international cooperation in space exploration.

Courtesy of the United States Postal Service

Mastaler Gets Suggester Award

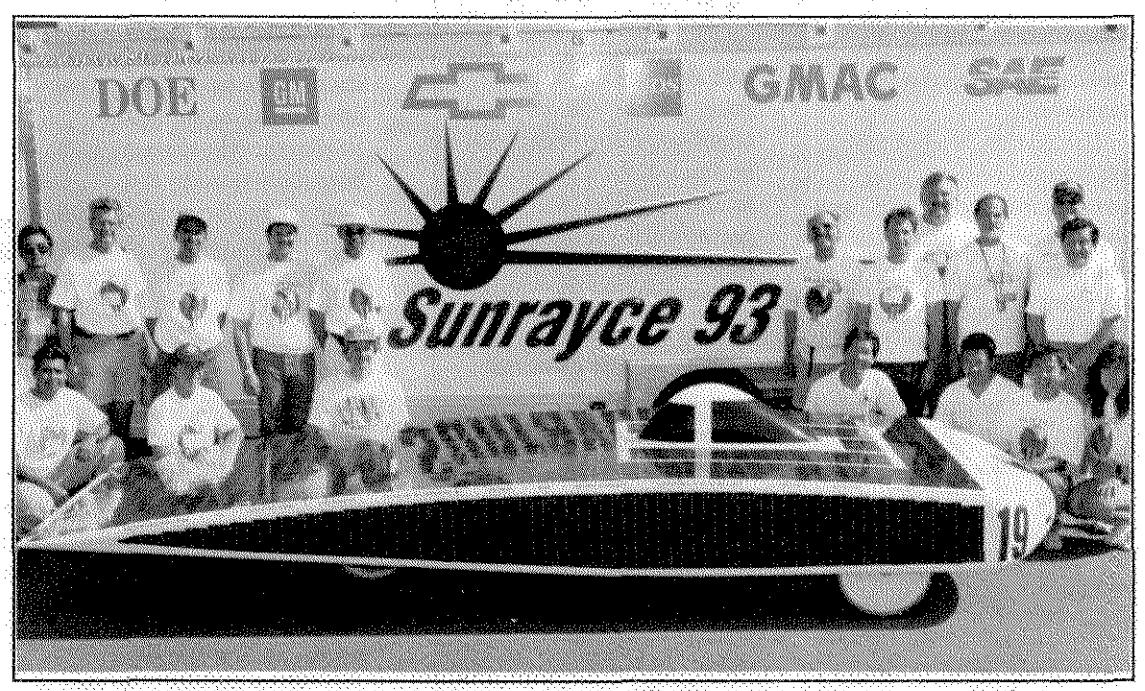


Michael Mastaler (right), Process Systems Section, receives his award from Dr. H. Lee Beach Jr., deputy director.

Michael D. Mastaler of the Facilities Engineering Division's Process Systems Section was given an award for his idea: "High Pressure Air System Modifications Project — Air Storage Optimization." He developed a unique and cost effective approach affecting the construction of a new high pressure air storage field.

Vessels (bottles) at the compressor station are used to store high pressure air that is diverted to Langley's tunnels upon request. The vessels that had been purchased were of specified length; they cost more and held less. After his own investigation and research, Mastaler suggested that Langley buy random length storage bottles. The results: Storage goals were achieved with fewer vessels and they saved the attendant costs related to fabrication, foundation support, pipe manifolding, corrosion control and vessel erection. The money saved will be used to purchase bottles to increase storage volume.

Solar Eagle II Rolled Out as Solar-Powered Dynamo



The California State University Los Angeles (CSLA) community was on hand as their official entry in the U.S. Department of Energy-sponsored solar car competition, SUNRAYCE 93, made its grand entrance. The Solar Eagle II, like its predecessor Solar Eagle I, was built by engineering and technology students working with faculty advisors and technical staff.

This was the first public appearance of the futuristic solar-powered electric car and its new 20-member team of student designers, builders, technicians and drivers. The team worked for more than a year planning and preparing for the SUNRAYCE competition.

For seven days, beginning June 20, the CSLA Solar Eagle II will compete in the second national, transcontinental race. Student drivers will travel a 1,600 km (1,000-mile) course from Dallas/Ft. Worth, Texas, to Minneapolis/St. Paul, Minnesota, pitting their car and racing strategies against student-built cars from 35 other universities, all vying for the national championship. They will race again in November in the World Solar Challenge across Australia.

The Solar Eagle II weighs about 300 pounds without its batteries and driver. It uses no fossil fuel and is essentially an electric car that draws its power from the sun. Nearly 1,600 single crystal silicon solar cells, mounted by hand on 108 square feet of the car's surface, collect the sun's energy and pass it directly to the motor and to rechargeable lead-acid batteries. The vehicle and its builders worked hard to alert the public to the need for environmentally clean transportation systems.

Print Shop Stops the Presses

BY DONNA ROPER

After more than 30 years of churning out NASA technical reports for the entire agency, the large Miehle presses have been dismantled and their pieces are scattered about the printing plant floor. The printing equipment must be removed by June 30 so that Langley will be in compliance with the Joint Committee on Printing (JCP) directive that downgrades the Center's printing plant to a duplicating facility.

As mandated by the Printing Act, Title 44 of the U.S. Code, the JCP establishes the policies and guidelines for printing, binding and distributing federal publications. The JCP, which is composed of five senators and five congressional representatives, also oversees and controls the authorization of all government agency printing plants.

JCP Makes Change

To minimize cost to the Federal Government, the JCP has decided to rescind Langley's printing authorization. Therefore, the printing equipment is being removed and the work that has been previously printed on the large presses at Langley will be contracted out through the Government Printing Office (GPO).

In addition to the three large presses (two Miehle and one Heidelberg), two folders and a saddle bookbinder will also be removed to comply with JCP regulations. These changes mean that the masking and plate-making departments in the Publications Section will disappear.

Harold Orr, head of the Publications Section, who started at the plant in 1962 as a press operator, is supervising the disassembly and shipping of the equipment.

"I have worked with a great group of people through the years. They were talented and really knew printing, so this hurts." Orr said, as he looked around the plant and reflected on the changes.

Although two of the three presses are old, Orr maintains that they are in fair condition and that all three have played an important role in NASA's publications history. Last year alone, the presses printed more than 29 million pages of NASA technical publications.

However, Orr admits that replacement parts are becoming scarce. In the past, Langley's Machine Shop has fabricated many parts for the equipment. As of June 30, obtaining spare parts will become someone else's responsibility.

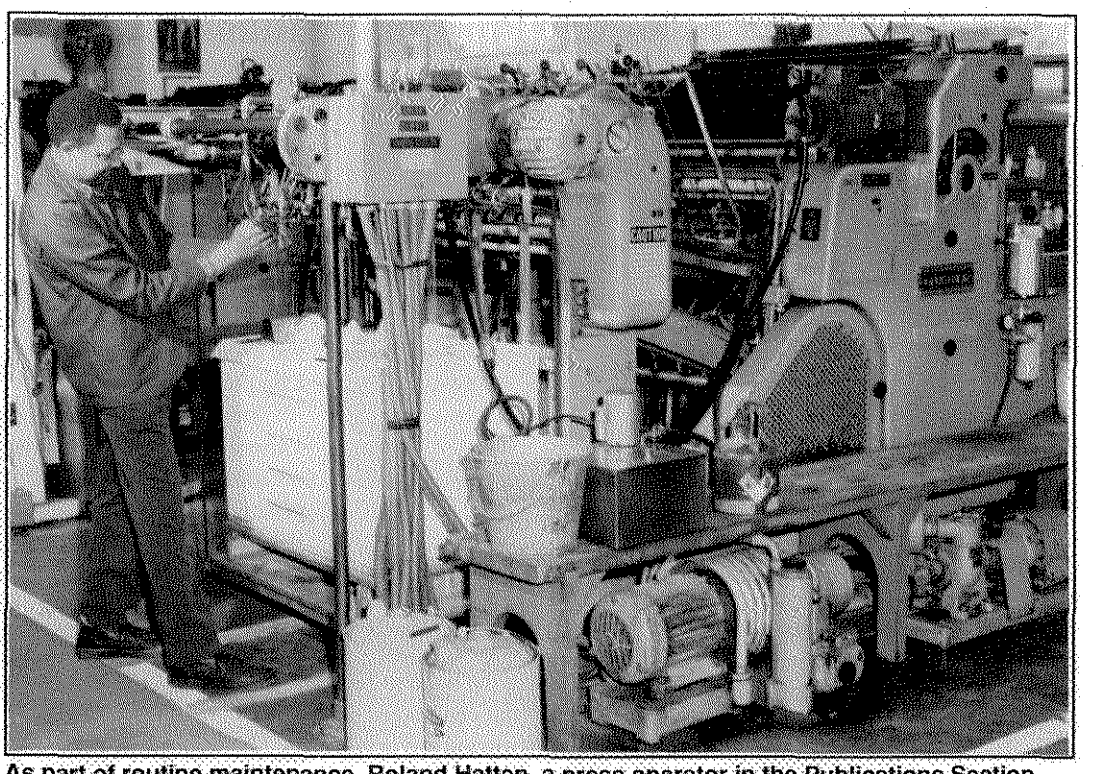
GPO Has First Rights

The GPO has first rights to the equipment and has requested both the Heidelberg press and the new folder, purchased by Langley in 1989. The remaining equipment will be offered first to Federal and State agencies and educational institutions before being auctioned to the general public.

Some of the equipment will remain on Center. For example, a 37 1/2-inch paper cutter was on the excess list but Langley obtained a waiver to keep it. The shop was also able to transfer the large graphic arts camera to the Photo Lab. This camera is used to produce both line and halftone PMT (photo-mechanical transfer) prints.

The two high-speed copiers and three small offset presses will also remain, however, these small presses will only print single-page documents that can be stapled. As a duplicating facility, Langley will not perform any saddlebinding or large-volume 11- x 17-inch copying. These jobs will be sent outside for printing.

One advantage of the changes is that the Publications Section can move their copiers into the main section of the building. The small area in which they are currently located makes it difficult for repair technicians to maneuver, so the larger quarters are a real plus. Orr said, "We will be able to spread out the present copiers and still have room for additional copiers purchased in the future."



As part of routine maintenance, Roland Hatten, a press operator in the Publications Section, cleaned the feeder on the 36-inch Miehle offset press.

Lots of Changes

The changes at the printing plant have affected more than just the printing equipment. According to Barbara Pasternak, head of the Printing and Graphics Branch and the printing management officer for the Center, seven employees have also been affected. Pasternak stated, "We have tried to find other positions for those employees whose positions have been eliminated by the downsizing. Some have already been moved into the Printing Control Office and other areas at NASA."

For example, Earl Williams, who has worked in the printing plant for 16 years, operating the large graphic arts camera, has been transferred to the Photo Lab. Jeffrey Gragg, a press operator, has been placed in the growth opportunity program leading to placement in Langley's Engineering Technical Apprentice Program.

The downgrading of the printing plant also affects other NASA centers that were accustomed to sending their reports to Langley for printing. For now, Langley has offered to contract out and distribute their reports until the end of September. The other centers can use this time to establish their own procedures and GPO contracts.

According to Pasternak, Langley now contracts out some jobs that cannot be printed with its equipment. "The new regulations will mean more of the same work for the employees in the Printing Control Office. They will have to be extremely careful in writing the specifications for a print contract job since the GPO contractor may be across the country rather than next door," she said.

Currently, if press operators question the printing instructions, they can contact the Printing Control Office for clarification. Also, the employees in the plant have a lot of experience working with printing the reports and can often catch a mistake in the specification before the document is printed. GPO contractors will not have this experience and thus will print exactly as directed, mistakes and all.

"It will be a challenge to maintain the same quality and timeliness that the in-house capability provided the Center in the past," Pasternak added.

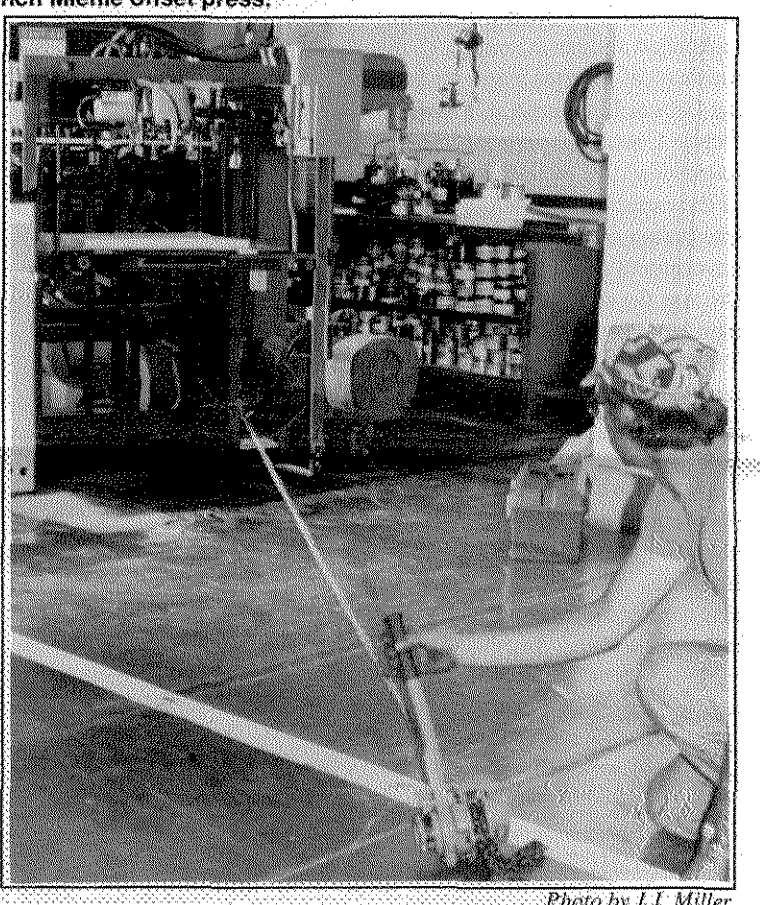


Photo by J.J. Miller

Using a winch and chain, a worker moves the press that was taken to the GPO in Washington, D.C.

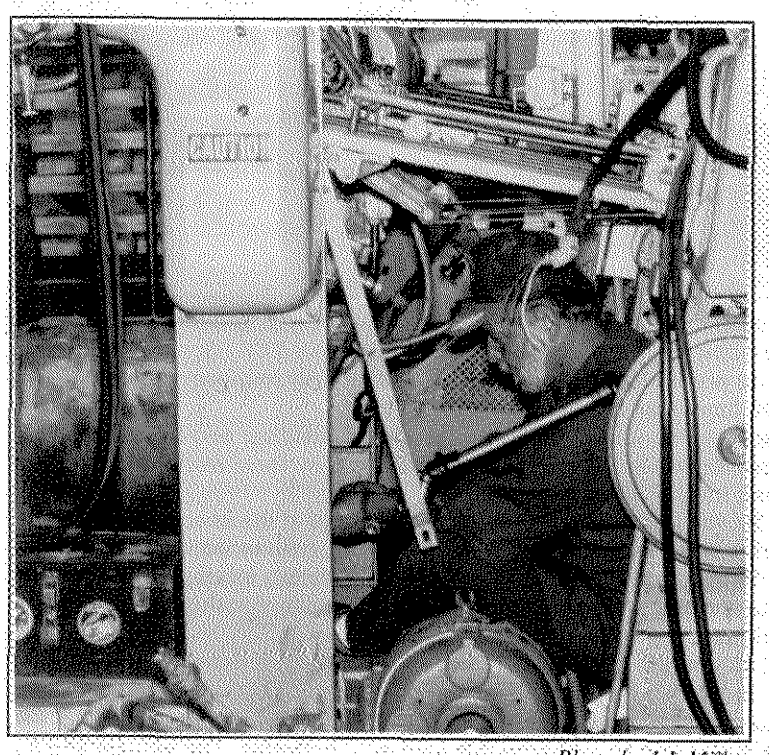
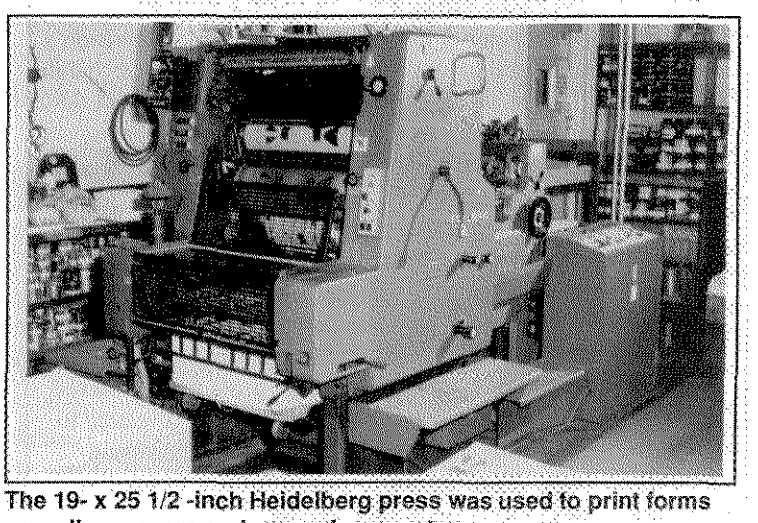


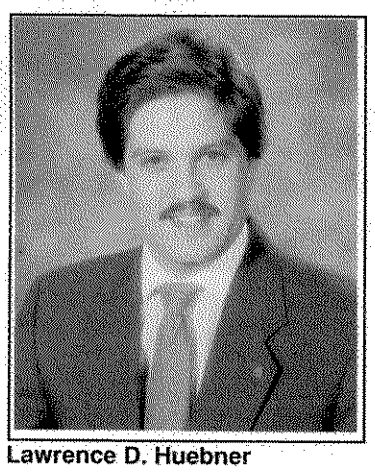
Photo by J.J. Miller

A workman from Tidewater Crane of Virginia Beach dismantles the Miehle press for crating and storage.



The 19- x 25 1/2 -inch Heidelberg press was used to print forms as well as covers and pages for reports.

Huebner Receives Gene Zara Memorial Award for NASP Works


Lawrence D. Huebner

Lawrence D. Huebner, leader of the Hypersonics Group in the Supersonic/Hypersonic Aerodynamics Branch, received the Gene Zara Memorial Award from the National Aero-Space Plane (NASP) Joint Program Office.

Huebner was honored at NASP's Annual Technical Review, in Monterey, California, for his research in advancing the experimental and computational assessment of the high-speed performance of scramjet-powered configurations. He also led experiments for the refinement of methods for cold gas simulation of hot scramjet engine exhaust flows and pioneered comparative force resolution studies for flow-through balances, metric components and integrated pressures. Huebner has also used tip-to-tail computational fluid dynamics solutions to illustrate and understand several factors necessary in hypersonic experimental evaluation of NASP-like configurations.

He is currently at work on several facets of NASP research including assessing the hypersonic performance of the X-30 and developing gas simulation test techniques for scramjet exhaust flows. He is an internationally recognized authority on powered configuration assessment under hypersonic conditions.

Huebner began his Langley career as a graduate research scholar assistant at the Joint Institute for Advancement of Flight Sciences from 1983-1985. After two years in industry, he returned to Langley and NASP hypersonic technology research.

For the past two years, he has served as co-chair of the engine/airframe integration sessions at the NASP Mid-Term Technology Review.

The Gene Zara Memorial award is given at every NASP Mid-Term Technology Review for outstanding national team contributions to the NASP Joint Program. The award is named after a Wright Research and Development Center researcher whose dedication to the NASP program fostered a continuing spirit of enthusiasm. Zara died of cancer in 1988, cutting short a promising research career. Since 1988, more than 60 persons have been honored with the Zara award for their NASP-related work.

The NASP program is looked upon as the next major step in flight evolution. The program aims to develop technologies for hypersonic flight for vehicles that will be able to take off like conventional aircraft, fly directly into Earth orbit under their own power, perform work in space and reenter via a normal runway landing.

So You Want To Be An Astronaut?

Biennial Astronaut Recruiting Has Begun

NASA is accepting applications for mission specialist and pilot astronaut positions effective immediately. Interested individuals may apply until July 1, 1993. Any applications received after that date will be considered in the next selection cycle.

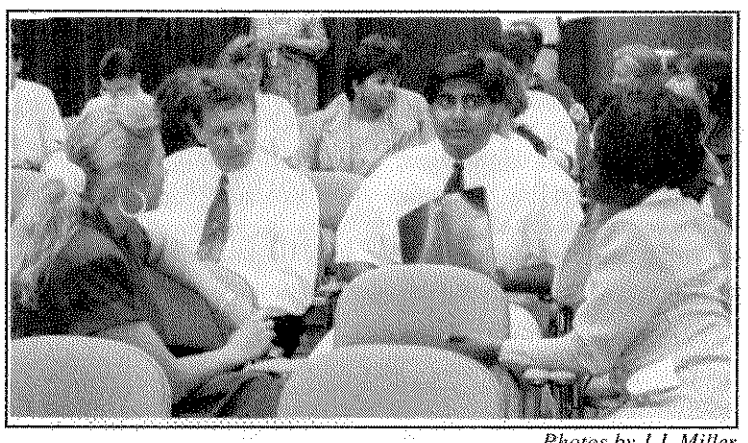
Successful pilot applicants typically have extensive piloting experience in high-performance jet aircraft and flight test experience. Successful applicants for the mission specialists positions typically have a significant background in the sciences (material science, Earth science, medical science and space science) or in engineering.

After a six-month process including screening applications and conducting interviews and medical evaluations, selections will be announced in spring, 1994, with the new astronaut candidates reporting to the Johnson Space Center, Houston, in July, 1994.

"We are looking for multi-faceted individuals who are not only outstanding in their chosen disciplines but who will be able to handle various technical assignments, maintain spacecraft systems and experiments, work well with others and have excellent communications skills. We also like to have a balanced skill mix and a culturally diverse group in the astronaut corps," David C. Leestma, director of Flight Crew Operations, said.

LARSS Program Challenges and Teaches

BY J.J. MILLER


Photos by J.J. Miller

LARSS students, from left to right, Kim Reese, Steve Hagerott, Manoj Bhardwaj and Alenda Williams, talk at orientation June 7.

Langley's mission, by definition, is to "perform innovative aerospace research," and NASA is an institution based on knowledge and education. However, in recent memory, NASA has reached even higher levels as a center for learning. With the expansion of programs designed for students and the building of the new Office of Education Programs, NASA has demonstrated again that one of its major focuses is education.

The Langley Aerospace Research Summer Scholars (LARSS) program, founded by Dr. Samuel Massenberg, director for Education Programs, is indicative of this interest. Now eager students can be found at NASA soaking up as much learning as possible in the short time they are here.

On June 7 they arrived from all parts of the country. Some had spent summers here before, others had come a few weeks early this year and still others had never even seen Langley before. Still, they are all here to learn from the experts.

A case in point is Mark Schaffer, a graduate of North Carolina State University. Schaffer, who works with Joan Funk in the Applied Materials Branch, worked as a LARSS student last year, in the Polymeric Materials Branch. According to Schaffer, his experience at Langley has taught him more than how to use the equations he learned in college.

"The program gives you a look at how things are going to get done, or not going to get done, in the real world," said Schaffer. "It is practical application of the knowledge you learn in college." He is currently creating a database under Funk's supervision.

Researchers working in Applied Materials have independently gathered thermal expansion data for a wide variety of composite materials exposed to the simulated space environment. But this information resides in each researcher's personal files, in different forms. Schaffer's job is to compile the data into a working, accessible resource.

"If anything happens to Joan, you may as well bulldoze her office, because you'll never figure it out," said Schaffer. "I determine what Joan wants and I try to make it work. Once it works, the data file will be a great resource not only for her but for people in her branch, NASA as a whole and the general public."

"We get lots of calls for this property test measurement," Funk said. "Now we just try to remember what we have done, or we try to remember what someone else has done." Funk considers LARSS students a valuable resource. Schaffer's contribution is important and it is something she does not have time to create herself. "I know when I leave it for Mark to do, it will get done," she said.

Schaffer has gained as much from NASA as he has given. Because of his work at Langley, Schaffer was inspired to pursue a doctorate in his field. "It is important for engineers to have done some graduate work," he said, "and NASA has reinforced my desire to pursue my degree."

Karen Harrington, also a returning LARSS student this summer, echoes Schaffer's sentiments. Harrington did not aspire to pursue an advanced degree until she worked at NASA last summer. Encouraged by her mentor and other researchers at Langley, Harrington has decided to pursue an advanced degree at the College of William and Mary next fall.

"As a direct result of my work at NASA, I'm going to graduate school," she said. Last year she worked with Phil Young in the Structures Directorate.

Harrington said that the people she worked with last summer encouraged her to make the decision to continue with school, and she characterizes Young as "unbelievably supportive." She maintained contact with him throughout the year, a practice common for LARRS students. Schaffer also kept in touch with his former mentor, Brian Jensen, while in school in North Carolina.

This summer, Harrington will be working in the Electronics Branch and is excited about her upcoming experience. She learned about the branch's work last year through the weekly lecture series that is a part of the LARSS program.

Schaffer is also working in a different branch. It is a pattern that LARSS students return to work at NASA, whether they work in the same branch or a different one. Schaffer says that he will consider working at NASA after graduation from graduate school. In fact, about half of former LARSS students currently work for the government.

Langley sponsors the LARSS program to encourage the kind of interest exemplified by Mark Schaffer and Karen Harrington. "The program is excellent. It really is. It couldn't be better," Harrington said. "Last year I was busy and challenged. More is expected of you and it's more like a real job."

LARSS student Mark Schaffer talks with his mentor Joan Funk of the Applied Materials Branch.

Karen Harrington looks at material after orientation.

Happenings

ART EXHIBIT AT THE VASC: Aerospace and aviation art, an exhibit sponsored by the American Society of Aviation Artists, will be on display at the Virginia Air and Space Center June 12 through August 1. For more information, call 727-0800.

START YOUR SUMMER FUN WITH FITNESS: Join LAA's Bench and Low-Impact classes. Free body composition analysis 30 minutes before class. Classes are Tuesday and Thursday, 5-6 p.m., Saturday, 9:30-10:30 a.m., LAA gym. Call ext. 42295 for more information.

NASA BASKETBALL TOURNAMENT: Three-on-three, four-person team basketball tournament will be held the weekend of July 10 at the NASA gym to benefit the Carolyn Reaves Cancer Recovery Fund. Team fees are $20 for NASA, $25 for non-NASA teams. Registration deadline is July 2. For registration form and more information, call Everitt Brown, ext. 43160, or Craig Neal, ext. 43645.

SHOPPING TRIP: A one-day trip to Potomac Mills Mall, Dale City, Va., is planned for Saturday, August 21. Cost is $25 per person (non-refundable), due July 10. Transportation is via ACE Charter Bus Service. For information, call 245-3915 or 365-0511, leave message.

LAND FOR SALE: In Gloucester, 5.68-acre wooded lot, perk approved, $19,000. Call 473-9321.

CONDO FOR RENT: Orlando, Fla., near Disney, Sept. 18-25. Sleeps 6, kitchen, dining and living rooms, utility, screened porch, jacuzzi and TVs. Pools, tennis, bikes and boats available, $600/week. Call 868-9709.

BRITAIN, SCOTLAND, IRELAND AND WALES: Join in a 16-day tour, Sept. 16-Oct. 1, from Norfolk and back. Call for an itinerary or information: Ernie Greene, 838-0567, or Dan Crawford, 247-5815.

FOR RENT: Room w/ kitchen, washer and dryer privileges, near LAFB and NASA, $250/month, includes utilities. Call Joan Crepps, 838-6000.

LCDC INVITATION: The NASA Langley Exchange Council invites all interested parties to the rededication of the Langley Child Development Center (LCDC) Monday, June 21, at 11 a.m. A luncheon follows at noon in the private dining room of the cafeteria. To respond, call Buena E. Crawford at ext. 46082.

NASA SKI WEEK: The NASA centers ski week has been scheduled for January 15-23, 1994, at Aspen-Snowmass. Call Michael Schooley, ext. 48524 or 874-2736, for more information.

HOUSE FOR SALE: Ranch in Hampton Woods, 3 BR, 2 bath, 1 1/2 car garage. Has greatroom w/fireplace, skylights, eat-in kitchen, laundry, master bedroom w/jacuzzi, and much more. Asking $118,000. Call 826-5069.

FOR RENT: Willoughby Spit, view of Bay from living and master bedroom of this waterfront condo. Two BR, 1 1/2 baths and eat-in kitchen, all appliances and central air and heat, near Rt. 64, $750 per month. Call 583-2043.

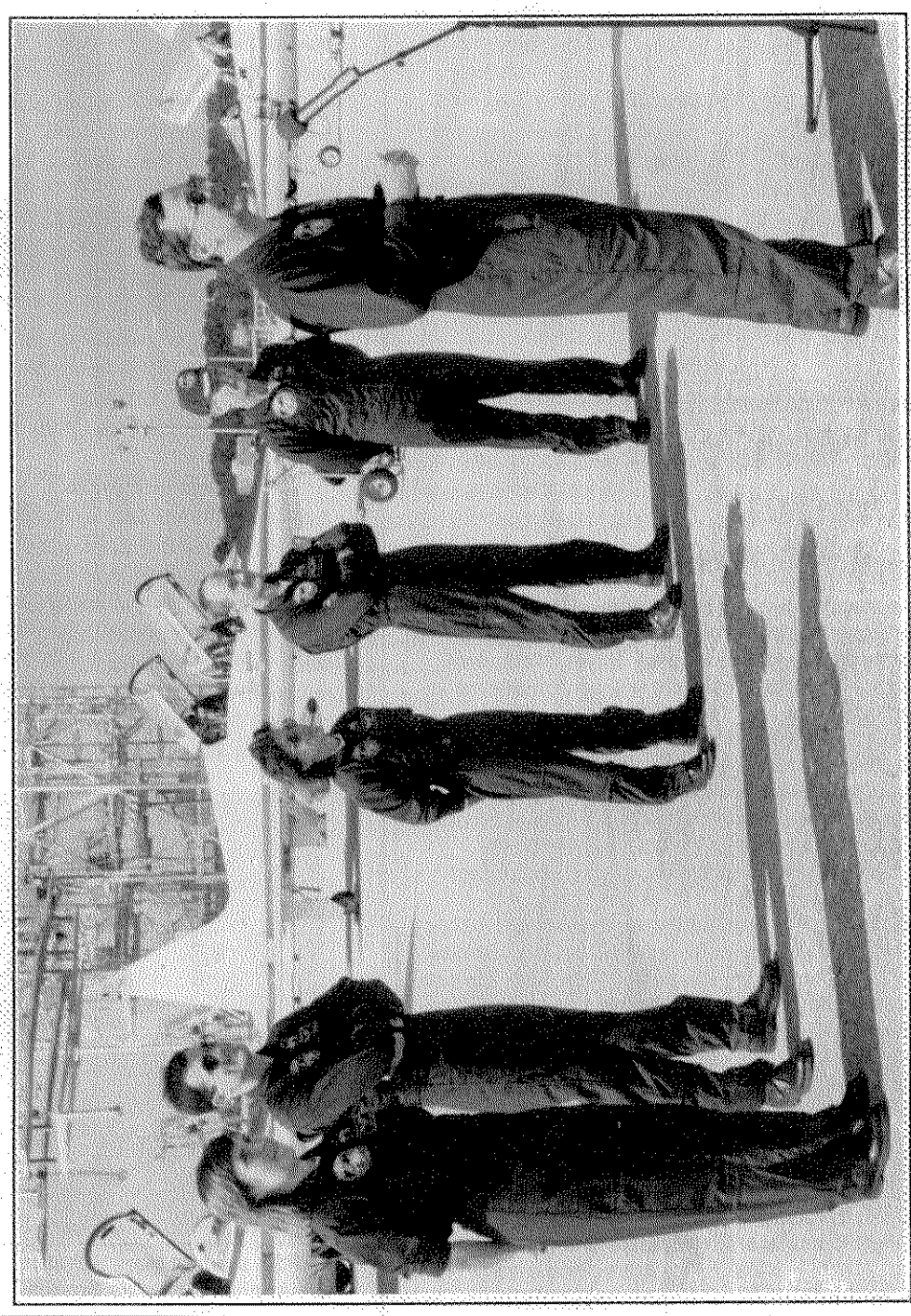
TECHNICAL WORKSHOP: "Potential Impacts of Advanced Aerodynamic Technology on Air Transportation System Productivity" at the H.J.E. Reid Conference Center, June 29-July 1. Registration at 7:30 a.m.; workshop begins at 8:15 a.m. More than 30 technical presentations are scheduled on a variety of topics. Cost is $6 per person for refreshments. For information, call ext. 45705.

"WEEKEND WARM-UP" REMINDER: The Easter Seals Society of Virginia is sponsoring a series of concerts on Wednesdays through July 28, 6-8:30 p.m. at Langley Raceway in Hampton. Gates open at 5 p.m. and admission is $2 with all proceeds benefiting Easter Seals. The 1993 Concert Series schedule is: June 23, Straight Shooter; June 30, Wampus Hawgs; July 7, Horizon; July 15, The Brother Phelps; July 21, Santa Fe; and July 28, Thunder Road. For information, call 468-3140.

HONEYBUNCH MEETING: The NASA Langley Apicultural Club (Honeybunch) will meet at 7 p.m., June 21, in the Executive Dining Room of Building 1213. A demonstration of framed wiring and a video on beekeeping will be shown. An open forum discussion on summer honey bee colony management will also be conducted. All are welcome. Call Henk, ext. 47226, or Harvey, ext. 46742, for more information.

Langley and VASC Tours to Begin Soon

A behind-the-scenes "windshield" tour of NASA Langley, a cooperative effort with the Virginia Air and Space Center and Hampton Roads History Center and Langley, will be conducted beginning the week of June 21. The scripted tour will be given at 10:30 a.m., and at 1 and 3 p.m, Monday through Saturday; at 1 and 3 p.m. on Sunday. The tour leaves from the Virginia Air and Space Center in Hampton and will last for about one-and-one-half hours. The fees will be $4 for members and those buying combination tickets for the tour, exhibits and IMAX film; and $5 for the bus tour only.



NASA Photo

STS-57 Mission Commander Ron Grabe addresses the news media at Kennedy Space Center's Shuttle Landing Facility. Behind him are (from left) Mission Specialists Janice Voss, Peter "Jeff" Wisoff and Nancy Jane Sherlock; Payload Commander David Low and Pilot Brian Duffy. The astronauts are at Kennedy for the Terminal Countdown Demonstration Test, a dress rehearsal for launch. STS-57 is now targeted for lift-off in late June.

Researcher News

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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NASA Washington, DC
Permit No. G-27

National Aeronautics and Space Administration
Langley Research Center

Researcher News

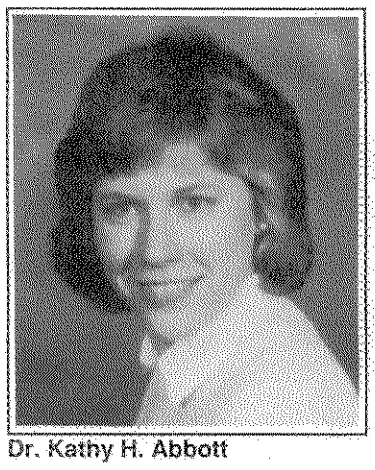
Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 13 ❖ July 2, 1993

NASA Selects 58 Candidates for SES Training Program – Five Selected From Langley

NASA's Senior Executive Service (SES) Candidate Development Program has recently selected 58 candidates for its first class. The program is designed to help NASA prepare to fill the SES vacancies, especially in the scientific and technical fields, beginning in fiscal year 1994.

Five of the candidates chosen are from Langley. They are Dr. Kathy H. Abbott, head of the Human/Automation Integration Branch; P. Douglas Arbuckle, head of the Vehicle Operations Research Branch; Ronald L. Baker, assistant chief of the Facilities Engineering Division for Special Projects; Dr. James R. Rooker, head of the Facilities Systems Branch; and Dr. Woodrow Whitlow Jr., head of the Unsteady Aerodynamics Branch. Sid Pauls, Langley's associate director said, "We are very pleased to have five of the Senior Executive Service training candidates chosen from the Center."



Dr. Kathy H. Abbott

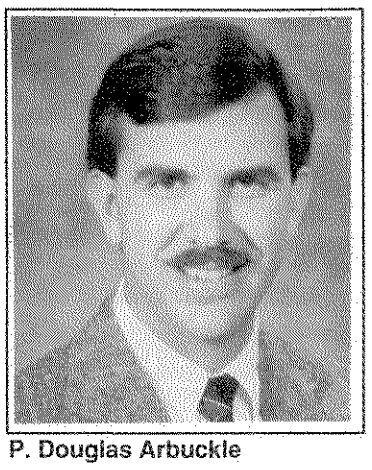
Abbott leads Langley's portion of NASA's Aviation Safety/Automation Program that explores safety issues associated with advanced automation in civil aviation. She also leads the Flight Deck Design and Integration Element and the Flight Deck Decision Aids Element for the High-Speed Research Program.

She began her NASA career in 1980 and, from 1985 to 1991, was the technical leader for the Faultfinder, a concept for aiding flight crews in managing aircraft systems faults.

Arbuckle leads the Reduced Spacing Element of the Terminal Area Productivity program and, during the year, served as a Langley member of the NASA Vision Team.

Arbuckle started at Langley in 1979 as a cooperative education student.

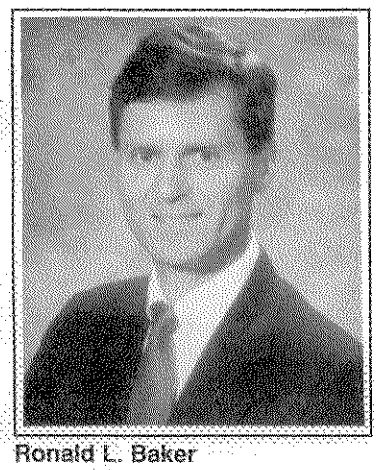
Baker is responsible for the development of project plans and objectives for Facilities Engineering Division-level issues. He also serves as Langley's energy manager, helping the Center comply with



P. Douglas Arbuckle

the National Energy Conservation Laws and Presidential Executive Orders. A member of the Langley Institutional Red Team, he joined NASA in 1969 specializing in automated controls for space flight systems. "The feature of the program that is most attractive to me is the developmental work assignments that have me working more closely with experienced NASA senior executives in their daily work environment," Baker said.

Rooker directed the design, analysis, testing and checkout of the high-speed carriage for Langley's unique Aircraft Landing Dynamics Facility (ALDF), which tests both airplane and Space Shuttle tire

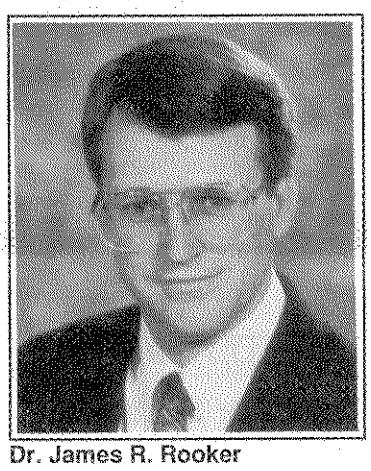


Ronald L. Baker

performance. He also led an effort to resolve technical difficulties encountered during heavy rain simulation testing of airfoils, enabling an increased research capability for the ALDF. He directed structural analysis and wind tunnel testing of a novel repair to the 16-Foot Wind Tunnel blades that permitted continued wind tunnel operation during the fabrication of new blades. "I am looking forward to interacting with my mentor and other Center managers, " he said, "and to participating in a training program that is specifically tailored to improving my management competencies."

Whitlow's specialized fields are in the areas of computational and theoretical fluid dynamics, aerodynamics, unsteady flows and aeroelasticity. He began his Langley career in 1979 as a research scientist, and has served as senior research scientist and program manager at NASA Headquarters, Washington, D.C. "I am looking forward to chances for developmental opportunities during my training, whether inside or outside the Agency," Whitlow said.

"NASA is fortunate to have such a highly motivated, bright and talented cor. of people," said Samuel Armstrong, NASA's associate administrator for Human Resources and Education. "Depending on the success of this class, we look forward to offering the opportunity again next year."

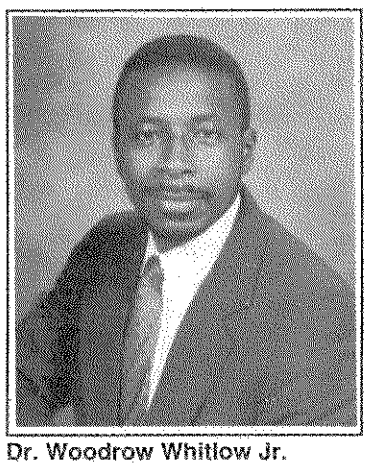


Dr. James R. Rooker

Of the 58 candidates, 49 have an engineering or technical background and nine are experienced in administration. Forty-six are from NASA Centers and 12 are from NASA Headquarters.

Selection for this training does not guarantee appointment to the SES. NASA will continue to foster multiple paths of entry into the SES and all career SES entry positions will continue to be competed for through the SES vacancy announcement process.

"There are numerous individuals here, at Headquarters and at the other Centers, who, as a result of their education and experience, are already qualified for selection in the SES. We see this as a way to expand this pool of highly qualified candidates," said Pauls.



Dr. Woodrow Whitlow Jr.

Langley Environmental Cleanup Efforts Previewed for Media

BY CRAIG MURDEN

The Environmental Engineering Branch took the next step in the Center's ongoing environmental community relations effort on June 11 when local media representatives were given background briefings and a tour of six locations currently being considered for the Environmental Protection Agency's National Priorities List.

Reporters View Sites

Environmental reporters Mark DiVincenzo from the *Daily Press* and the *Virginian-Pilot's* Joe Coccaro received background information from John Lee, head of the branch, Greg Sullivan, environmental engineer in Lee's organization, and Bob Brown, senior industrial hygienist, also with the branch. Those presentations focused on the history of the federal government's "Superfund" program, highlighted NASA Langley's long-standing concerns, discussed each of six sites in detail and outlined a pollution prevention initiative designed to prevent recurrence of such conditions. Branch members then accompanied the reporters on a field tour of each site.

Part of the "Superfund"

"Superfund" is the name commonly used for the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA, a federal law enacted in 1980 which requires the investigation and cleanup of sites throughout the country. National Priorities List sites, more commonly referred to as "Superfund" sites, are contaminated sites nationwide which require more immediate cleanup attention. The Center will be co-listed with Langley Air Force Base as one National Priorities List site, while serving as a pilot for the EPA's new accelerated cleanup program.The EPA accelerated program is designed to quickly reduce risks to human health and the environment by channeling funds into cleanup and enforcement rather than exhaustive studies.

The Center's overall cleanup effort, said Lee, is designed to identify and characterize each site, assess potential risks to human health and the environment, and then eliminate those risks once they are identified. During the study and cleanup processes, the Center intends to keep employees and the public fully informed and involved. The main objective of the community relations effort is to actively involve citizens in the solution process, assuring that all issues and concerns are fully aired, he added.

Open Communications

To date, the Center community relations effort has included interviews with community members, **Researcher News** coverage for Center employees, distribution of fact sheets to Center employees and local residents, while maintaining close liaison with EPA and the State of Virginia. Most recently, the branch sponsored a series of six focus groups which included Center government and contractor personnel, local residents and a group of Poquoson watermen. Susan Santos, a risk communication specialist with Columbia University, facilitated the groups. The focus groups were

Continued on Page 5

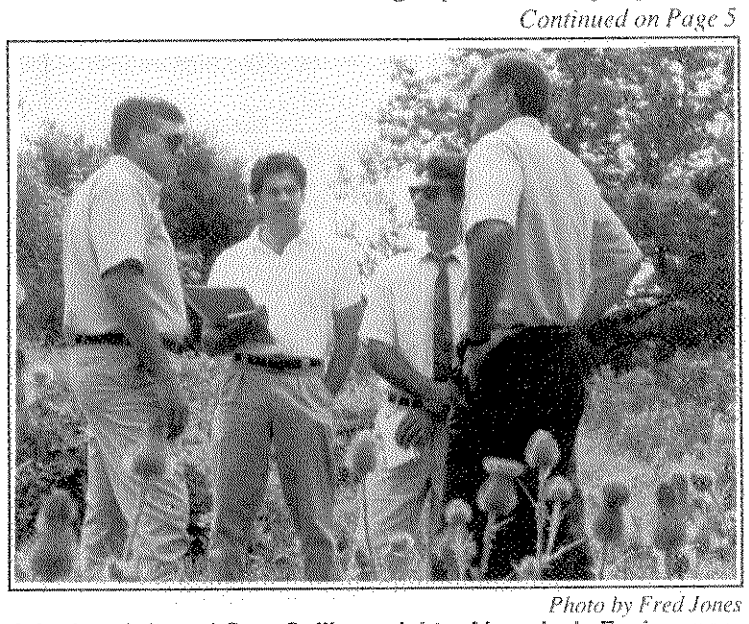


Photo by Fred Jones

John Lee, left, and Greg Sullivan, right, of Langley's Environmental Engineering Branch, flank environmental reporters Mark DiVincenzo from the *Daily Press,* center left, and Joe Coccaro from the *Virginian-Pilot,* at one of the Center's hazardous waste locations included on the recently conducted media tour of six cleanup sites.

News Briefs

AROUND THE AGENCY

NASA AND NATIONAL INDUSTRY RESEARCH GROUP SIGN AGREEMENT – NASA and the National Center for Manufacturing Sciences (NCMS) have signed an agreement which will allow the two organizations to propose joint research projects. The national center is a non-profit research consortium created by U.S. industries to conduct, sponsor, fund and promote scientific research, development and demonstrations of technologies or scientific applications which will improve manufacturing processes and materials in the United States and Canada. "One of NASA's responsibilities is to help transfer our skills and knowledge to the industrial base of this nation," said Daniel Goldin, NASA administrator. "This agreement will help us carry out that responsibility."

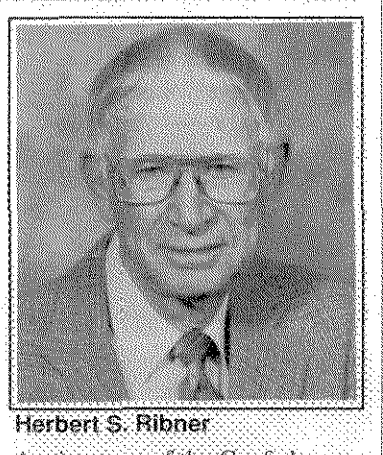
SHUTTLE TILE MATERIAL MAY HELP IN BONE TRANSPLANTS – The same material that keeps the Space Shuttle from burning up when it returns from space may be useful in treating medical problems on Earth. Researchers at Ames Research Center, Mountain View, California, are working with physicians from BioMedical Enterprises, Inc. and the University of Texas Health Science Center, both of San Antonio, to determine whether the Space Shuttle's ceramic surface insulation materials can be used as an implant for human skeletal reconstruction. "We're still a long way from having a bone implant that's ready for human use," said Howard Goldstein, senior staff scientist in Ames Thermosciences Division. "We have data that show the tile material has excellent promise for use as a bone implant." Goldstein led the research, development and evaluation of the ceramic, known as Reusable Surface Insulation (RSI), in the 1970s and 1980s. He will lead the Ames' RSI research team on the new project.

Ribner Honored on 80th Birthday

Surrounded by a number of former students, Langley retiree Herbert S. Ribner celebrated a "birthday celebration and student reunion" in Ottawa, Canada. Ribner is Professor Emeritus at the University of Toronto Institute for Aerospace Studies and a Distinguished Research Associate at Langley. The setting, thanks to Canada's Minister of Indian Affairs, and a former student of Ribner's, Tom Siddon, was in the Parliament building.

Langley was represented by Dr. Lucio Maestrello of the Structural Acoustics Branch, bearing a card signed by colleagues in the Acoustics Division. The birthday dinner culminated with a large birthday cake inscribed with Ribner's jet noise generation equation, for which he is widely known.

Following roasts and reminiscences, Ribner was presented with a framed parchment listing theses earned under his direction through the years and the names of their authors. Siddon presented him with the Governor General's Commemorative Medal for the 125th Anniversary of the Confederation of Canada, "in recognition of significant contribution to compatriots, community and to Canada."



Herbert S. Ribner

Volunteer 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. The following employees are approved leave recipients: Therese M. Bederka, Monica L. Cooper, Bette L. (Jeanie) Duncan, Cynthia L. Lach, Janice B. Mongesku, Terry L. Shephard, John P. Stack, Belle L. Wood and Darrell A. Wood. If you wish to donate annual leave or want more information, please contact Linda Park, ext. 42610.

Nominations Sought for Seminars, Conferences and Fellowships

Langley is seeking nominees for Office of Personnel Management (OPM) Management Development Seminars, Brookings Management Programs, and NASA-sponsored fellowships. All directorate 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 about a program.

Management education programs at the OPM Management Development Seminar centers in Oak Ridge, Tennessee, Lancaster, Pennsylvania, and Denver, Colorado, are two-week seminars covering a variety of topics. These seminars are open to employees GS/GM-13 and above who have not attended an OPM seminar in the previous five years.

Brookings Institution conferences are for senior-level managers, GS/GM-15 and Senior Executive Service (SES). Many of these one-week conferences are offered in Williamsburg and cover broad policy issues.

NASA-sponsored fellowships are available for both managers and non-managers from GS-12 to SES. The management fellowships offer an opportunity to study at Harvard, Massachusetts Institute of Technology, Stanford, Carnegie Mellon, Penn State, Syracuse, or Simmons for periods from two weeks to one year. NASA also offers, in conjunction with the National Space Club, three fellowships which are open to non-management employees. These three allow recipients to pursue research or course work at any institution in the United States or abroad, where a faculty sponsor is found. Competition for NASA fellowships begins at the Center. Center nominees then enter the Agency-level competition, which ends in December.

Applications for all of these programs may be initiated by the individual and must be passed on to the directorate level. All nominations must have directorate endorsement. Competition for these programs is limited to Langley civil servants. Directorate nomination deadline is mid-July. For additional information about seminars, conferences and fellowships, contact Louise C. Hamilton, ext. 42571.

LETTERS

Thanks for Donated Leave

From Renee Lake: "I would like to express my sincere appreciation and gratitude to everyone who donated leave to me during the period of my father's illness last fall. Thank you so much for your kindness and support."

Retirement Banquet for Charles E. Scott

A retirement banquet honoring Charles E. Scott of the Instrument Research Division, will be held on Tuesday, July 27, at 6 p.m., at Ryan's Family Steak House on Jefferson Avenue, Newport News. The cost, including gift, is $11 per person, $22 per couple. Please respond by July 20 to Ray Rhew, ext. 44705, or Paul Roberts, ext. 44704, Mail Stop 238.

Retirement Dinner for Sandy Stubbs

A retirement dinner for Sandy Stubbs will be held on Saturday, July 17, at 7 p.m. in the Rooftop Garden at the Chamberlin Hotel. Cash bar/social will begin at 6 p.m. Cost is $20 per person and includes a gift. Gift contributions are also welcome. For reservations or contributions, please call Tina Hawks, ext. 43955, Mail Stop 266, or Veloria Martinson, ext. 47688, Mail Stop 497, by July 9.

AIAA Hosts Malow Talk on Funding

Richard N. Malow, staff director for the Appropriations Subcommittee on Veterans Administration (VA), Housing and Urban Development (HUD), and Independent Agencies, spoke at an American Institute of Aeronautics and Astronautics-sponsored (AIAA) briefing attended by several hundred Langley employees June 7, at the H.J.E. Reid Conference Center.

His message, about funding allocations for NASA and the civil space program in particular, was one of stark realism. Malow spoke about the deficit in 1993, expected to be $359 billion, and the crushing national debt of $4.4 trillion. He cited these numbers as reasons why support for the space program has diminished and will continue to shrink. "Time is running out for us as a nation and the space program is in trouble," he said. "Discretionary spending will continue to shrink because uncontrollable spending will capture 70 percent of the budget by the year 2000. The longer the nation sweeps the deficit under the rug, the worse the impact will be on the space program."

For the past two years, the subcommittee has voted to terminate Space Station Freedom. Each time the position was reversed when the bill reached the House floor. The subcommittee's vote for termination, although unsuccessful, was based on the conviction that even if costs are controlled or lessened, the station and shuttle would probably be the only two programs that could be fully funded with the amount of dollars available in the next few years. "We need to take the scarce dollars available and put them more quickly and effectively into areas that may be more competitive in the marketplace, such as aeronautics," Malow said, specifically citing High-Speed Civil Transport research. He then questioned the possibilities for funding for the national launch system, the National Aero-Space Plane (NASP), Mars exploration and other NASA projects. Malow warned, "We cannot finance a first-class space program on borrowed dollars."

According to AIAA Section chairman Dr. Stephen Rizzi, the Hampton Roads Section continues to be pleased with the interest shown in the Congress Connection public policy lecture series that the section has been sponsoring in recent years. The section has plans for several other policy lectures during the next year. Rizzi expresses his thanks for the broad base of support from both AIAA members and others.

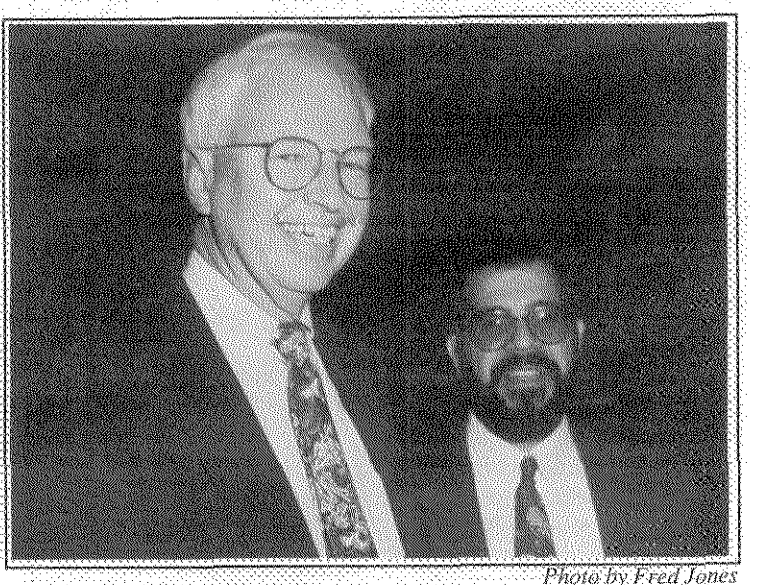


Photo by Fred Jones

Richard N. Malow, left, staff director, Subcommittee on the VA, HUD and Independent Agencies, stands with Dr. Stephen Rizzi, AIAA Hampton Roads Section chairman, following Malow's talk at Langley.

IN MEMORIAM

H. Page Hoggard Jr.

H. Page Hoggard Jr., 81, a Peninsula resident for 52 years, died Sunday, March 21. A native of Norfolk, Hoggard retired as an operations engineer in the Dynamics Laboratory after 35 years at Langley. He was a member of the Peninsula Engineers Club.

Iris R. Martens

Iris Robertson Martens, 85, a Peninsula resident for 83 years, died Wednesday, June 9. A native of Jesterville, Maryland, she retired in 1972 from Langley after 28 years of service.

News 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.

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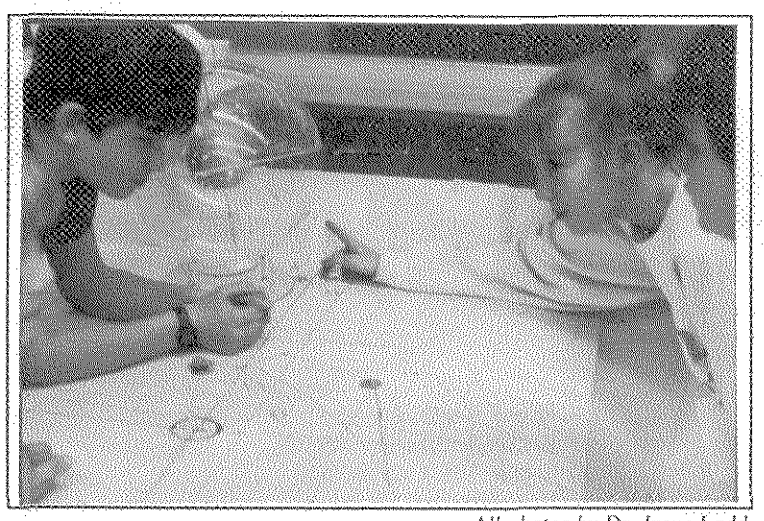
All materials are subject to editing.

AstroKids Simulate Space Mission

BY KIRSTEN WILLIAMS

Although the children from Carpenter Elementary School, Wolfeboro, N.H., appear to be average students, once they board their space plane and man mission control, they magically metamorphose into AstroKids. On June 25, the AstroKids arrived on Center to take spectators on a simulated space odyssey.

The students, aged nine through 13, have created the Kids Aerospace Simulation Activities (KASA), a project consisting of a space plane, a half-size school bus that serves as mission control, and computer and video simulations. During the forty-minute mission, the AstroKids depart a base on Mars in search of a solar flare.



All photos by Dr. Irene Ladd

AstroKids Mike Reckmeyer, left, and Molly Badger create a scale model for celestial navigation. The Kids used this model as an astronomy teaching aid.

Jessica Mankis, clothed in a flight suit, poses before one of the many KASA displays presented at Langley.

KASA IS FORMED

The idea for KASA was conceived two years ago, when Carpenter teacher, Dr. Irene Ladd, took students to Space Camp at the University of Alabama. The following year, Ladd attended the NASA Educational Workshop for Elementary School Teachers (NEWEST) at Langley, providing her with a better background in the space-related sciences. The NEWEST program also furnished Ladd, whose multi-aged class consists of fourth, fifth, and sixth-graders, with "excellent resource materials" that encouraged the problem-based, hands-on study method she uses in her classroom.

While working on KASA, students learned from each other. "My main function was as a facilitator," Ladd said. "I start with the older children and they become the teachers for the younger children." By becoming "mini-experts" in their fields, students experienced a form of empowerment that generated enthusiasm for the material, she said. The six displays about astronomy and life on Mars presented at last week's program, initially functioned as teaching aids for the students, as they shared their learning.

TECHNOLOGY FOR SIMULATION

The students worked with complex computer and laser disk technology to complete the simulation. "I don't know how to run the computers," Ladd said. "The students had to read the manuals" to run them. The students videotaped scale models and used computers to animate the images that appeared in the space plane during the mission. They combined these images with NASA film clips and transferred them onto a laser disk that runs the simulation. Parents and other volunteers aided the children, donating time, supplies and expertise.

Because Wolfeboro has a booming tourist industry, parents had ample time during the off-season to help with the project. "The bus was totally taken over by one of the fathers," who donated the vehicle and transformed it into mission control, Ladd said.

The enthusiasm of the Wolfeboro community mirrored the enthusiasm of the children. When the parents saw the frame for the space plane, their imaginations were sparked. "They were like little kids," Ladd said.

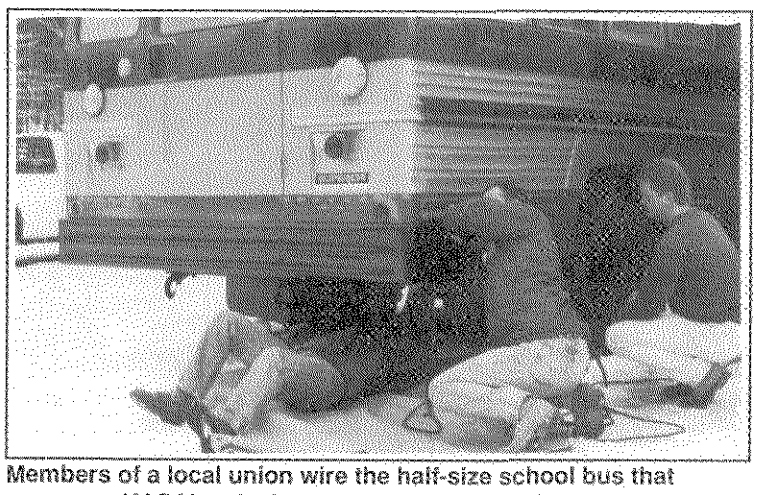
NEVER UNDERESTIMATE ASTROKID POWER

Ladd insists that students are capable of handling advanced projects like KASA. "We need to stop underestimating children [and] what they're capable of doing," she said. However, the students occasionally became mentally exhausted. "They would ask me if they could have a brain rest," she added.

Ladd and her AstroKids hope to spark the imaginations of others throughout the state of New Hampshire by transforming KASA into the focal point for a summer camp. Other plans for expansion include upgrading the plane's cockpit so it looks "more futuristic," building a habitat for 24-hour missions, and connecting the cockpit and mission control through computer hook-ups. "We are now in phase one," Ladd said. "My next goal is to get the technology we need to do more sophisticated programming."

Meanwhile, Ladd and the AstroKids hope to expand KASA's radius of involvement by keeping the show on the road.

Kirsten Williams is a LARSS student from the University of Virginia.



Members of a local union wire the half-size school bus that serves as KASA's mission control. Parents and community members volunteered time and expertise for KASA.

NEWEST Program Boosts Math and Science

BY KIRSTEN WILLIAMS

Dwindling student interest in math and science poses a unique problem in an age of rapid technological advancement. NASA, in turn, has proposed a unique solution: engaging elementary school teachers in an honors workshop that fosters creativity and enthusiasm for science and technology.

From June 20 to July 2, NASA Langley hosted 23 teachers from several states in the NASA Educational Workshop for Elementary School Teachers (NEWEST) program. The fun, yet demanding ten-day workshop was conducted by Shelley Canright, NASA Langley NEWEST program manager, Holly Smith, NASA NEWEST coordinator, and Ellen Vaughn, National Science Teachers Association NEWEST coordinator.

The multifaceted agenda included tours of Center facilities, seminars by Center researchers, and hands-on activities. During NEWEST Sharing, teachers discussed ideas and methods for translating their experiences into classroom material across the curriculum. NEWEST emphasizes the visual and "learning by doing," Canright said. "It's a model for teachers of what can be done in a classroom."

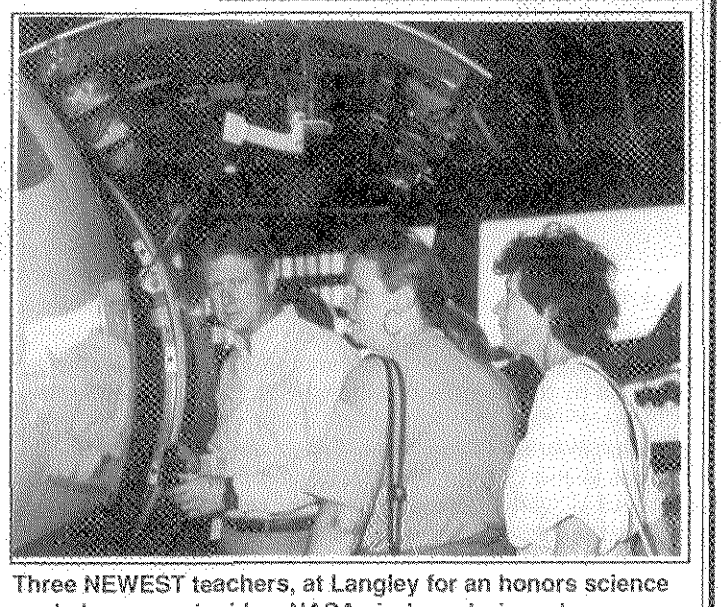
NEWEST concluded today with an Aerospace Olympiad. According to Canright, "The purpose of the Olympiad will be to provide the NEWEST participants an opportunity to demonstrate the translation of aeronautics and space science to the elementary and middle school curricula." The teachers, competing in squadrons, had seven total activities to complete in the Olympiad. In one event, called "Under the Hood," the teachers donned grocery bags covering their faces and navigated a course using only a compass, a stop watch, and a guide. This event simulated a plane pilot attempting to land in foul weather using only his instruments.

Each year, 115 outstanding elementary teachers from across the nation spend ten days at one of five Agency centers as participants in the NEWEST program. Any elementary teacher with five years teaching experience may apply for the highly competitive program. The NEWEST program, along with a similar program for seven through twelfth grade teachers, has constructed a base of over 1,750 enthusiastic teachers across the nation.

NEWEST is one of several NASA outreach programs whose aim is to focus students' attention on math, science and technology at the elementary through high school levels. During fiscal year 1991, NASA spent over $96 million on its 272 outreach programs. NEWEST, now in its sixth year, is, as its name suggests, one of NASA's most recent developments.

Photos by Carol Petrachenko

Betty Tomlinson, left, and Michele Bouchard, who teach children of American military in Germany, examine propeller blades while on a tour of the hangar.



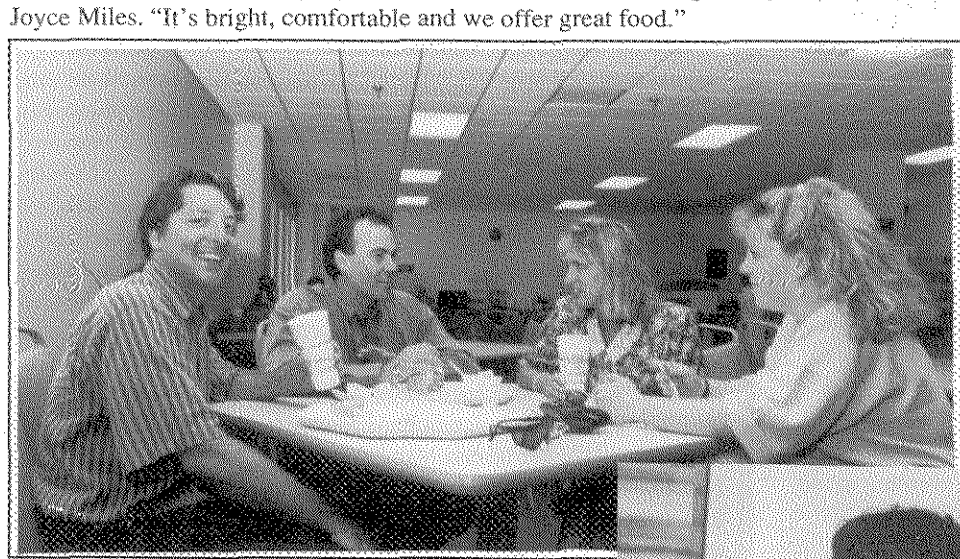
Three NEWEST teachers, at Langley for an honors science workshop, peer inside a NASA airplane during a hangar tour.

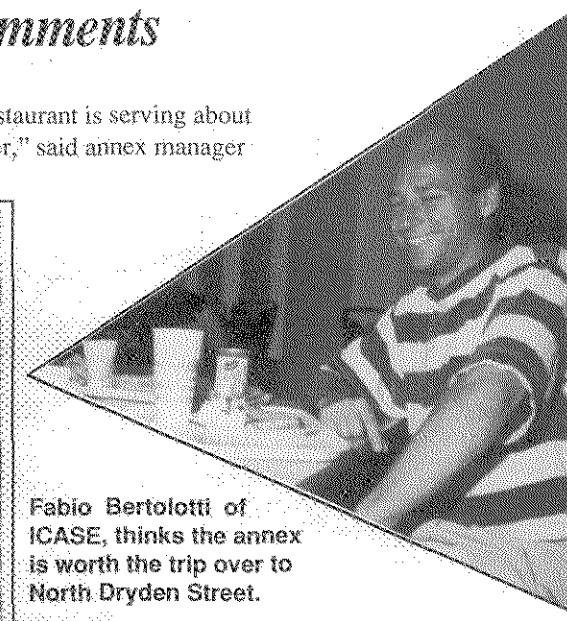
Roving Reporter

Roving Reporter Taps Annex Patrons for Comments

BY KRISTINA MURDEN

Langley's new cafeteria annex is "mmmm good." The two-month old "fast food" restaurant is serving about 280 people a day. And the people love it. "We'd like to encourage everyone to come over," said annex manager Joyce Miles. "It's bright, comfortable and we offer great food."





Fabio Bertolotti of ICASE, thinks the annex is worth the trip over to North Dryden Street.

Above, from left to right, Greg Herman, Waldo Rodriguez, Tracy Jones and Lisa Jordan enjoy the camaraderie of each other's company in the quiet annex atmosphere. At right, Zia Rahman of Science and Technology Corp. talks with his wife, Katherine and son, Haroun, following their lunch.

"Everyone has been extremely complimentary. We're real happy with everything," said Dick Layman of the Management Support Division, who has been instrumental in guiding the entire project from planning, design and funding, through opening. "We'd like to encourage everyone to come by."

Annex hours are 6:15-8:15 for breakfast, 10:30-1:15 for lunch. A new name for the Cafeteria Annex will be announced shortly Layman said, as soon as the Exchange Council has voted on the suggested names.

Comments from Annex patrons were upbeat and positive. Here's what our on-the-spot reporter was told:

Tracy Jones: "I love it here. It's so convenient."

Lisa Jordan: "What a great atmosphere. And it's quiet."

Dan Henningson: "It's great. I'm looking forward to more variety."

Fabio Bertolotti, who cycles over from ICASE for lunch said: "It's worth the bike ride for great sandwiches. Marvelous!"

Satish Reddy: "I'll keep on coming. How about a salad bar?"

Peter Schmid: "I definitely recommend it."

Greg Herman: "It's the place to be and the place to be seen at Langley."

Waldo Rodriguez: "I like the healthy food, the atmosphere and the clientele."

Katherine Rahman, visitor: "I came for the ice cream."

Zia Rahman: "It's great to work in the same building. Now I eat breakfast more often." His son, Haroun Rahman was very happy with the wide open spaces of the Cafeteria Annex, plenty of room for exploration.

All photos by Carol Petrachenko

National Space Week Activities Announced

Since 1981, National Space Week has been celebrated to honor the historic first moon walk by Neil Armstrong on July 20, 1969. The Virginia Air and Space Center celebrates the week with a look at the past, present and future of space exploration.

July 18 is NASA Day, at the VASC. There is free basic admission for Langley personnel displaying their employee badges. Also, from 11a.m. until dark, a picnic is planned at Langley with refreshments for sale. There will be games, volleyball, horseshoes, playground equipment and displays at the H.J.E. Reid Conference Center, plus a guest speaker at 2 p.m. and a model rocket launch. You can bring your own rocket or purchase one to build and launch at the event. Call Doug Stanley at 864-4518 to reserve a model rocket kit. Admission to Langley is free.

July 19, at 2 and 4 p.m., the HL-20 model personnel launch vehicle will be displayed at the VASC. Lisa Simonson will discuss Langley's HL-20 spacecraft design and human factors testing.

Activities are planned through July 25 and will be announced in the next issue.

Top Apprentice Graduates Cited

Dressed in their apprentice jackets, the 1992 top graduates were recognized by the Langley Exchange Council. They were presented to the graduates by Robert L. Swain, chairman of the Apprentice Advisory Committee. Front row, left to right, are graduates Glenn C. King, Heather L. Layne, Gregory S. Hogge and Steven W. Gayle. Present for the ceremony were, from left, Charles M. Southall III, chief of the Operations Support Division; John A. Greco, Systems Assurance Branch; Swain, Systems Engineering and Operations; Roy Mason, retired; Douglas W. Whipple, chief of the Fabrications Division; and Fred Thompson, former Apprentice Program coordinator.

Wythe Creek Improvements Near Completion

BY KRISTINA MURDEN

Soon it will be safer to get to work. Many of the planned improvements to Langley's Wythe Creek gate entrance and the nearby Semple Farm Road intersection should be complete next week, weather permitting. The project, a combined effort of Langley and the City of Hampton, is intended to improve safety and traffic flow to and from the Center.

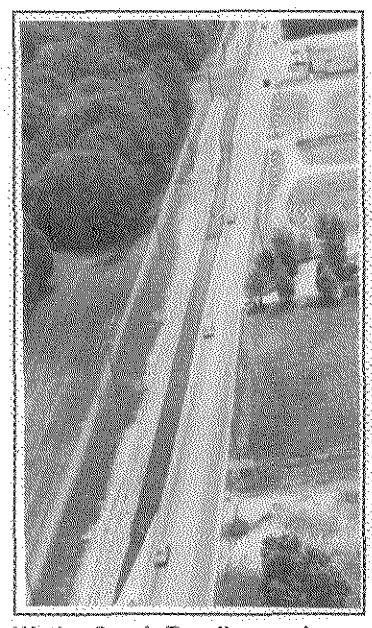
"These areas have been of great concern because of accidents and the many, many near misses," said O.J. Cole, chief of Security. "It's just dangerous."

"What we are trying to accomplish is 'positive traffic control,'" said John Mouring, Langley's Master Planner and project coordinator. "The changes will, most importantly improve safety and, secondly, improve traffic flow."

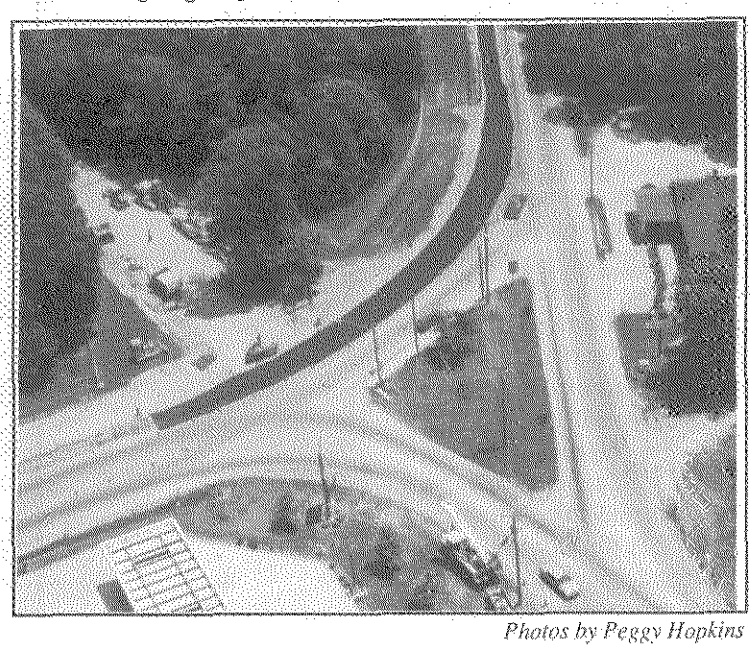
So far, Wythe Creek Road has been expanded to four lanes. The widening extends north toward the steam plant, and south to Semple Farm Road. Also, the triangle at Semple Farm Road has become an intersection with a traffic signal, and a traffic signal has been installed at our Wythe Creek gate. It will be activated during the next few weeks, and a traffic light will be installed at the steam plant, north of the rear gate.

"From a planning standpoint, the work is going very well," said Mouring. "The work was originally supposed to be complete late this summer. But we progressed at a good pace despite detrimental weather. And there have been no exceptional complaints from or inconveniences for motorists."

More improvements are coming, including widening Langley Boulevard at the gate house so the traffic flows on both sides of it. The present gate house, originally designed and built with this in mind, will remain in a new island, with one-way lanes on either side. A median with street lighting will divide the road, with two openings allowing cars to turn around or park.



Wythe Creek Road's new lane (left), outside Langley's rear entrance.



Photos by Peggy Hopkins

This is the once dangerous Semple Farm Road intersection. The triangle is now an intersection with a traffic signal.

People & Places

National Federal Fitness Day Celebrated

BY ROSE WHITE

Hundreds of Langley personnel visited the Langley Fitness Center in late May to participate in Fitness Fest '93. The fest, sponsored by Langley Federal Credit Union, was a celebration of National Federal Fitness Day. The day was set aside to promote wellness in the workplace which keeps health care costs down.

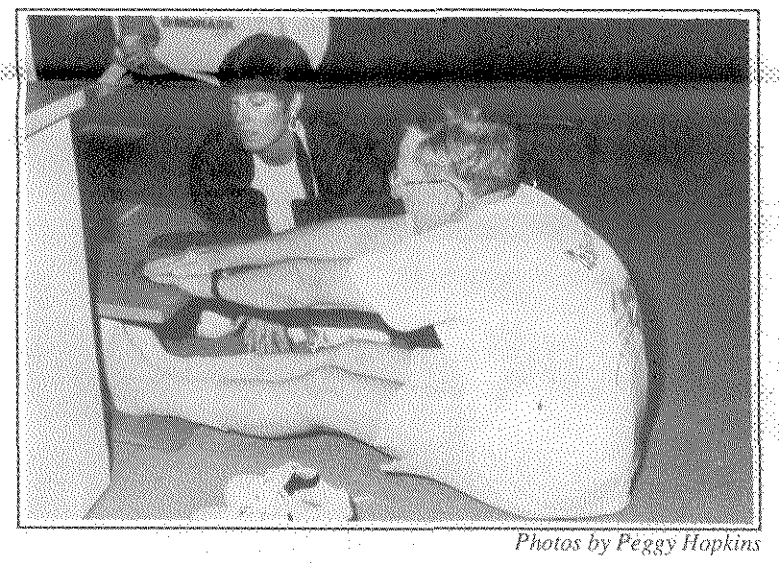
Fitness Center staffer Paul Derrick monitors blood pressure during Dr. Ed Long's, Applied Materials Branch, cardiovascular endurance test.

The open house offered visitors an opportunity to determine their fitness level by participating in simple tests and challenges.

Lectures and demonstrations throughout the day covered such topics as lower back pain and yoga for stress reduction. A Spinal Analysis Machine (SAM) was set up to weigh and measure the pelvic girdle and shoulders bilaterally. SAM helps determine the cause of lower back pain. The final presenter of the day treated participants to an upper body massage.

Jan McCollum of the Technical Support Section, won a drawing for a bicycle and Tim Schott, Dynamic Systems Instrumentation Section, and Kathryn Smith, Systems Architecture Branch, each won gift certificates to an athletic equipment store.

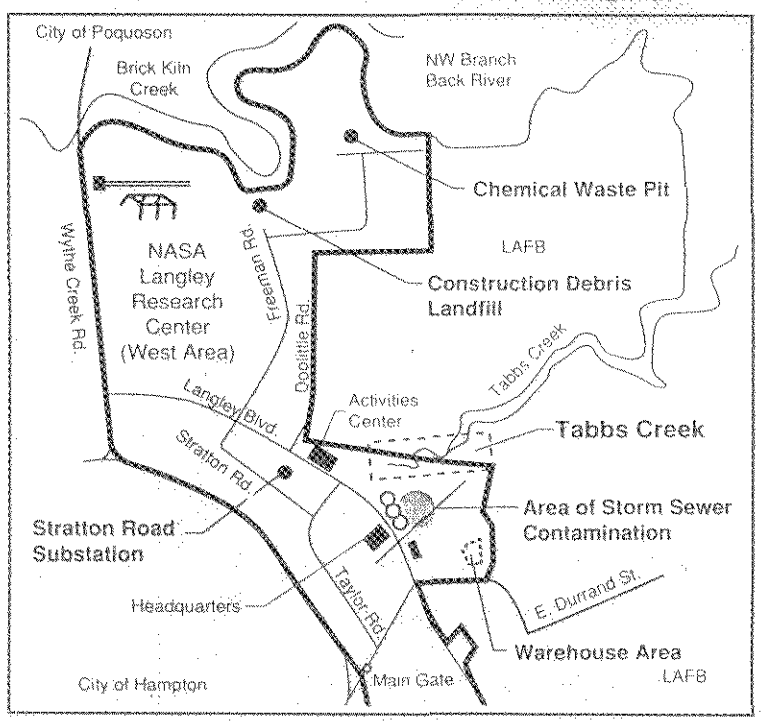
"This was the first year for the Fitness Fest and it was quite a success," said Paul Derrick of the Fitness Center. "Plans are underway for next year."



Photos by Peggy Hopkins

Fitness Center coordinator Mary Beaton monitors Richard Hansen, M.D., director of the Occupational Health Clinic, as he takes the sit-and-reach flexibility test during the Fitness Fest.

Cleanup Sites Under Study at Langley



Six contaminated or potentially contaminated sites are Tabb Creek, Stormwater System, Warehouse Area, Chemical Waste Pit, Construction Debris landfill and Stratton Road Substation. They were visited by media environmental reporters during a June 11 tour hosted by the Environmental Engineering Branch.

Volunteer Aims Her Kindness Toward Seniors

BY ALLAN C. HANRAHAN

Kindness. This is a key word in Natalie Shrader's vocabulary. She speaks a lot about the kindness she has received but she has to be coaxed to talk about the kindness she shows to others, like the residents of the York Convalescent Center in the Grafton section of York County.

Natalie has been visiting the center a couple of hours every week for three years, befriending the residents, talking with them, sitting and praying with them, reading to them and, just showing them some attention.

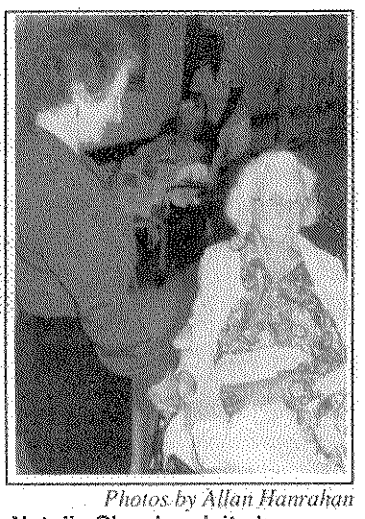
"Attention, I guess that is what they need the most," said Shrader, secretary for the Acoustic and Mechanical Measurements Branch. She has been at Langley since 1980, this time around. She also worked here from 1965 to 1971 as a secretary in the Office of Public Affairs.

"There are a lot of little things you can do for people," she continued. "For example, there was a woman on oxygen who was somewhat isolated. She loved to read, so just loaning her a book from time to time seemed to mean a lot to her." And it gave Shrader joy to bring tapes of music and a video of *Swan Lake* to one male resident because of his love for classical music.

Asked how she began her volunteer "career," Shrader explained that her mother moved to Virginia with her some years back, and needed her care. After her mother passed away five years later, Shrader wanted to be able to continue to help and care for others.

Shrader's children are both grown. Her daughter is a police officer in Durham, North Carolina, and her son is an Air Force musician, stationed in Japan. "I was looking for something I could do to help others when I was introduced to a lady at what was then called Patrick Henry Hospital," she said. "She became a friend. When she died, I realized that many people in nursing homes had no one to visit them. I went to the home closest to where I live, York Convalescent Center, and asked Patsy Hardman, head of volunteers, if I could come visit. She said 'yes.'"

"I noticed right away how overworked the nurses are. They just don't have time to visit with the residents and talk to them. Plus, their work is very hard, physically. Many people are stroke victims; for their health, the nurses must get the patients up. We often take just being able to get out of bed and stand on our own for granted. Some of us, someday, will look back and say, 'those were good times, good days.' The volunteers, on the other hand, have time to sit with them and visit, and on nice days, we can wheel them outside," Shrader said.



Photos by Allan Hanrahan

Natalie Shrader visits her friend Elizabeth Hearn at the York Convalescent Center.

Natalie Shrader sits at her desk in the Acoustic and Mechanical Measurement Branch.

"During mealtimes," she continued, "some residents need help cutting their food. Also, if they have company, they'll eat better."

Shrader's husband Jerry is a bit shy about going with her to the convalescent center but he is very supportive of her efforts.

"He loves to cook," she said with a smile, "and very often he'll cook something special and I'll take it to the nursing home."

Natalie and Jerry have been married for four-and a-half years. Her first husband died when their children were very young. Despite that time of sorrow, Shrader looks back on the positive. "We were really blessed because the people down here are so kind. I have been surrounded by kindness."

Shrader is a native of Schenectady, New York, where she says that, although the people are kind as well, "they're more reserved, so you don't often see their kindness."

Shrader has only one lament. She has had to cut her volunteer work in half because she was asked by her church to serve as a deacon. "This is a time-consuming position," she said, "and it's a three-year appointment." Shrader doesn't feel she could turn down her church's request since the Faith Presbyterian Church on Harpersville Road, Newport News, is another place where she has been surrounded by kindness.

If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services officer, ext. 43315.

Media Tour

Continued from Page 1

designed to gauge levels of awareness of general environmental issues as well as specific issues related to the Center cleanup effort. Additionally, the groups are intended to identify concerns and investigate communication avenues to ensure employees and the public are informed and involved throughout the cleanup process. Future community relations efforts include establishing information repositories, public meetings and development of a Community Relations Plan to keep communication channels open.

As a reminder, the Environmental Engineering Branch will readily provide information on the cleanup effort to interested individuals. To be included on a mailing list, call or write the Environmental Engineering Branch at ext. 43500, Mail Stop 429.

Review Calendar

- Facts Sheets Published, October 1992
- *Researcher News* article, January 1993
- Community Interviews, January-March 1993
- Federal Register Proposed Listing, May 10
- Media Briefing, June 11
- Focus Groups, June 14 through 18
- Final Listing, to be decided

Happenings

GRAD STUDENT NEEDS FAMILY: Kemper Lewis, a graduate student at Georgia Tech is looking for a home for July and August. He is studying design with Dr. Jaroslaw Sobieski in the Structural Dynamics Division and was omitted in the housing lottery. A native of Richmond, Texas, he attended the First Baptist Church there. Lewis has excellent references and will pay for all living costs. Can you help? Call Dr. Sobieski at ext. 42799.

HOUSE FOR SALE: Ranch-style w/4 BR in Hampton. Has den, living and dining rooms, master bedroom w/fireplace, eat-in kitchen w/all appliances, utility, deck, and much more. Asking $87,500. Call 838-0706 or Page 888-7353.

I GIVE UP!: '92 Honda Civic LX, standard w/power everything, low miles, NADA priced at $11,500, make me an offer. Call 247-9771.

AEROBICS: Stay in shape for the Summer with Langley Fitness Center's bench, interval and low-impact aerobic classes. Classes are held in the gym from 6:15 -7:15 a.m. and 11:00-11:45 a.m., Monday, Wednesday and Friday. Free to everyone. Everything needed for fun and exercise is provided. Call ext. 46387 for details.

WERE YOU A WITNESS?: Someone witnessed the accident between a white Bronco and a blue Corolla on Wednesday, June 9, outside Gate 2 at 4:15 p.m. If you saw the accident, please call Charlene Dooms, ext 48706, or Bill Shinn, ext. 47273.

KINDERGARTEN PROGRAM: The Langley Child Development Center is registering children for its 1993-1994 kindergarten program. A full-day program will be provided by a certified kindergarten teacher. Applicants must be five-years old by October 31, 1993. Call ext. 44827 for more information.

BRITAIN, SCOTLAND, WALES AND IRELAND: A few spaces left for 16-day tour, September 16-October 1, from Norfolk. Arrangements are being made to tour Buckingham Palace and the Edinburgh "Tattoo." For questions or a complete itinerary, call Ernie Greene, 838-0567, or Dan Crawford, 247-5815.

KEEP YOURSELF SUMMER FIT AND HAVE FUN, TOO: Join LAA's Bench and Low-Impact classes. Free body composition analysis 30 minutes before class. Classes are Tuesday and Thursday, 5-6 p.m., Saturday, 9:30-10:30 a.m., LAA gym. Call ext. 42295 for more information.

BOARD MEETING ANNOUNCEMENT: The Virginia Peninsula Public Service Authority Board will meet Friday, July 9, at 10 a.m., in York County's Human Services Building, 301 Goodwin Neck Road. For information, call 728-2062 or 1-800-683-0922.

FALL IN PARADISE: Gulf-front condo, Sanibel Island, Florida, 1 BR, full kitchen, screened lanai, pool, tennis, $540/week, Oct.-Dec. Call 565-1849.

TOASTMASTERS: Langley Toastmasters Club meets the second and fourth Wednesday of the month. Develop public speaking and leadership skills – please come on July 14 to the H.J.E. Reid Conference Center from 11 a.m.-1 p.m. For more information, call John Lin, ext. 45556.

NASP EXHIBIT: The National Aero-Space Plane (NASP) Technology Transfer Exhibit will be on display in the H.J.E. Reid Conference Center July 2, from 8 a.m. to 2 p.m. James Arrington, NASA principal deputy of the NASP Program Office, will speak at 10 a.m. on the "NASP Technology Transfer Program." All Langley personnel are invited to attend.

FWP AND AIAA CO-HOST CONGRESSIONAL SPEAKER: Jeanne Evans, chief of staff to Congressman Owen Pickett (D-Va. 2nd District), will speak at the H.J.E. Reid Conference Center July 12, from 1-2 p.m. about bills signed by the President or pending in Congress. She will explain the provisions on several issues including family and medical leave, health and child care and education. The program is sponsored by the Legislative Subcommittee of the Federal Women's Program Committee and the Hampton Roads Section of the American Institute of Aeronautics and Astronautics.

NASA BASKETBALL TOURNAMENT: Three-on-three, four-person team basketball tournament will be held the weekend of July 10 at the NASA gym to benefit the Carolyn Reaves Cancer Recovery Fund. Team fees are $20 for NASA, $25 for non-NASA teams. Registration deadline is July 2. For registration form and more information, call Everitt Brown, ext. 43160, or Craig Neal, ext. 43645.

SEEKING BACK ISSUES: Anyone, active or retired, who may have 1977 issues of the *Langley Researcher* are requested to consider donating them to the Langley Historical Program. Their inclusion will complete a full house organ archival collection. The 1977 are the only issues missing from a collection beginning in 1942. Please call Richard Layman, 864-3441.

HEALTH CORNER: Do you know how to tell the difference between illnesses and injuries you can care for and those that should be treated by a doctor? Dr. Richard Hansen, Occupational Health Clinic medical director, will address this subject at a "Brown Bag Medical Seminar" in the Executive Dining Room of the Cafeteria from noon to 12:45 p.m., Thursday, July 8. All Langley personnel are invited to learn how to avoid unnecessary doctor bills.

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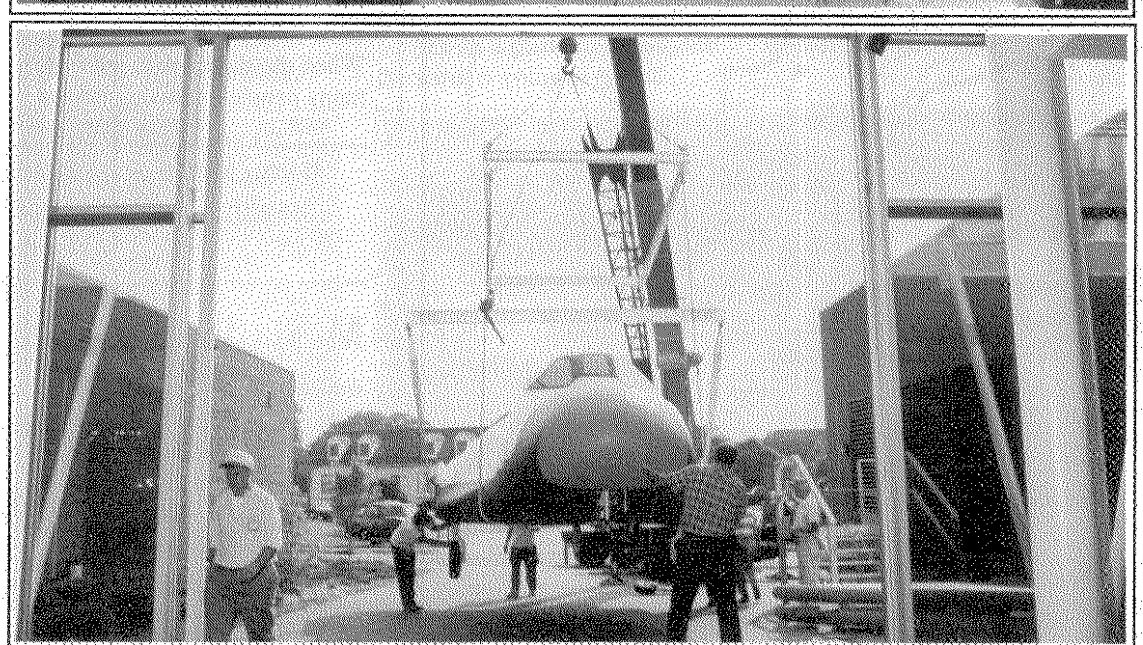
News
Researcher



Photos by Peggy Hopkins

There it goes, here it comes! The HL-20 leaves the hangar, top photo, at Langley via truck as it heads for its new destination, the Virginia Air and Space Center and Hampton Roads History Center, Hampton, Virginia. The mockup is on indefinite loan to the Virginia Air and Space Center where it will be used for educational programs for children and other special programs.

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 14 ❖ July 16, 1993

Satellite Committee Receives Team Excellence Award for Work on Disability Program

BY KRISTINA MURDEN

"From a sketchy, unfocused start, the Satellite Committee for People with Disabilities (SCPD), has become a model program for NASA and local agencies," Disability Program manager Diane Forrest said. The Team Excellence Award was given to SCPD members who gave their time and energy to make Langley a standard of commitment to the disabled for all of NASA and the local community.

The Satellite Committee for People with Disabilities (SCPD) receives the Team Excellence Award for special contributions to the Center's Disability Program.

Langley's Disability Program Advisory Committee (DPAC), which authorized establishment of the SCPD, has existed since 1984. It began in earnest in 1989 when Center management became determined "to establish the Center as premier in the hiring, recruiting and retention of the disabled workforce within NASA and the Tidewater area," said Forrest. "Then Center director Pete Petersen decided that we were not going to be last in disability concerns anymore. He wanted to do it right. And we have."

SCPD Means People Power

That's when the award-winning SCPD also took off. DPAC serves as an advisory committee, headed by Dr. Frank Allario, director for Electronics, who presented the award. The committee provides the people power. "I was delighted to have the opportunity to recognize the diligence, hard work, and dedication demonstrated by the members of the SCPD. Each member compliments the Center workforce and adds value to the accomplishments of the mission and goals of the Center," Allario said.

"We like to call our work making things accessible, rather than 'for the disabled.' Improvements we have made are for everyone: for aging people, for people with arthritis (lever door handles), and for people who will become disabled, whether temporarily or permanently. Something could happen to anyone, and they might need facilities that are accessible," Forrest said.

"We find that attitudes toward the disabled are slowly starting to change, but prejudices are still there. That's one reason we like to stress that our programs are designed to help everyone on Center, not just the disabled," said Larry Cooper, former committee chairperson. "Our programs help to change negative attitudes by helping the disabled do things everybody else can do," he said.

Just a few of the committee's standard-setting accomplishments are: making Langley the only NASA Center to hire a full-time interpreter for the deaf and the only center to have a specially-equipped vehicle accessible to anyone; and creating a strategic plan that has been used as a model for both NASA and the Peninsula.

"Now people outside Langley recognize that we have a strong program and they work with us," said Forrest. "We help the City of Hampton and vice versa."

Langley's Committee

Langley's Satellite Committee has more than 40 volunteers (over half disabled) plus members from Langley Air Force Base, Fort Monroe, the Hampton Mayors Committee for People with Disabilities, and the Virginia State Rehabilitation Program.

"Our work is so effective because we let our disabled employees try out our ideas," Forrest said. "They are a valuable part of Critical Design Reviews by providing information on accessibility guidelines and ensuring that disability concerns are considered on new construction and major modifications on Center.

A few recent improvements, thanks to the committee, include the door handles, special doors, ramps, water fountains, bathrooms and lights. From now on, no alarms on Center will be installed without flashing lights. Captioning film, having braille printers and designating disabled parking at every Center facility are also current initiatives.

"The new University Affairs building is a great example of our work in action," Forrest said. "It goes beyond the basic requirements for an 'accessible building,' thanks to the committee. In the past concerns were not addressed, so little got done–things are different now."

The committee has made many efforts to share their work with the public. "We probably receive the most exposure from our yearly Workplace Accessibility Booth we share with Langley Air Force Base every August," Forrest said.

The committee also participates in Technology Exhibits throughout the Tidewater area using displays to share information about the Center's commitment to the disabled. These exhibits give them the chance to show off new devices, like the special wheelchair, the braille mouse and the flex finger.

Continued on Page 6

Photo by Alfonso Perabeles

Nola Graves, vice chairperson of the Satellite Committee, with therapy dogs. The dogs serve as valuable companions and are trained to open doors and pick things up for people.

Lecture Addresses Laminar Flow and Its Importance to Transport Aeronautics

BY CATHARINE G. SCHAUER

Langley researcher Dr. Fayette Collier will speak on "Advances in Laminar Flow Control Technology for Transport Aircraft" July 19 at 2 p.m. as part of Langley's Colloquium series. The presentation will be held at the H.J.E. Reid Conference Center.

Dr. Fayette Collier

Nearly 60 years of research, aimed at smoothing the flow of air over a wing, may finally pay off for United States airplane manufacturers, airlines, the military and the flying public by allowing aircraft to slip through the air using less fuel with overall improvements in aircraft efficiency. Past concerns, such as manufacturing techniques for smooth and wave-free surfaces, have been addressed in recent NASA cooperative programs with U.S. industry.

Collier's talk will focus on past efforts in laminar flow technology, computational fluid dynamics advances, wind-tunnel investigations and flight research conducted in the United States and Europe.

Collier, who worked for the High Technology Corporation from 1985 to 1990, began working at Langley as an aerospace engineer in early 1990. He is currently the head of the Laminar Flow Control Project Office, in the Flight Applications Division. He earned his bachelor's, master's and doctoral degrees from Virginia Polytechnic Institute and State University.

Aviation Artists' Works on Display

The Seventh Annual Juried Art Exhibition, depicting aviation and aerospace subjects, is currently on display at the Virginia Air and Space Center and Hampton Roads History Center in Hampton. The exhibit, presented by the American Society of Aviation Artists (ASAA), will run through August 1, 1993.

ASAA is an organization that brings together artists who share a love of art and aviation and an interest in documenting aviation and aerospace history for the education and enjoyment of the public. Many of its members have produced some of the most famous and award-winning aviation and aerospace paintings in the world. Among the artists' goals is to affirm standards of professionalism, authenticity and artistic quality in aviation art. The art exhibition is included in the basic admission at the downtown Hampton center. Basic admission is $3 for adults, $2.50 for seniors/military and $1.50 for children.

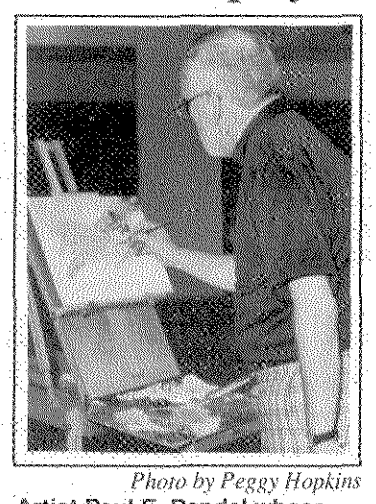
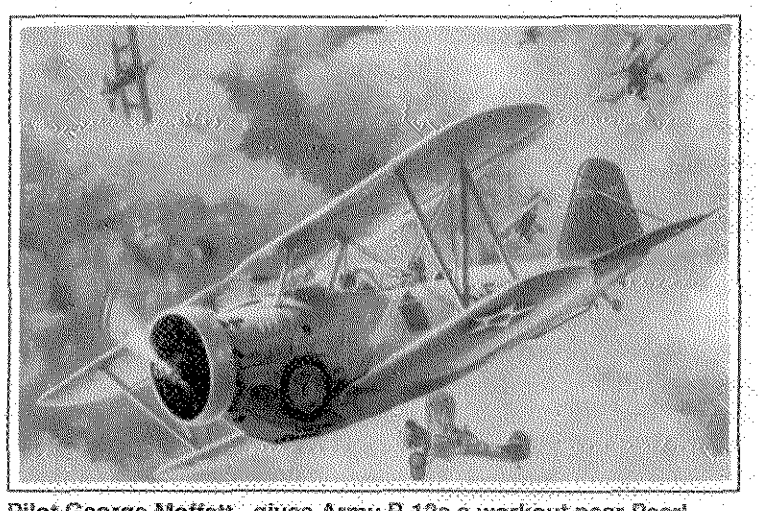


Photo by Peggy Hopkins

Artist Paul E. Rendel whose painting "Birthday Ride" is on display at the exhibit, works on a painting recently in one of the center's galleries.



Pilot George Moffett, gives Army P-12s a workout near Pearl Harbor in "FiFi, The Beginning," by artist Keith Ferris. FiFi, Grumman's FF-1 was the first Navy fighter with retractable landing gear and a 200 mph speed.

News Briefs

AROUND THE AGENCY

NASA USES NEW METHOD TO DETECT NEW STARS AND PLANETS – NASA astronomers investigating how stars are born have used a new approach to observe the motion of multiple clumps of interstellar gas that are on the verge of becoming new stars and planetary systems. This experiment was performed with the new instruments developed for NASA's High Resolution Microwave Survey (HRMS), which is searching for radio signals that may be coming from technological civilizations on planets orbiting distant stars. HRMS is part of NASA's Toward Other Planetary Systems (TOPS) program, which is designed to find and study planets forming around other stars. "We hope that by finding and characterizing these small, dense clumps of gas we can understand the star formation process and why different types of stars evolve," said Dr. Thangasamy Velusamy, part of the research team at the Jet Propulsion Laboratory, Pasadena, California.

NEW DISCOVERIES BY NASA'S EUV EXPLORER PRESENTED – Recent discoveries from NASA's Extreme Ultraviolet Explorer (EUVE) were presented in June at the 182nd National Meeting of the American Astrological Society, University of California at Berkeley following the one-year anniversary of the EUVE launch. Results include discovery of elements that blanket the light from white dwarf stars, the detection of ionized helium in the local interstellar gas, the detection of an extreme ultraviolet shadow in the local interstellar medium and new findings on the mysteries of rare extragalactic objects. EUVE data reveal that unexpected elements–mostly iron–may work as a blanket which blocks the EUV radiation and prevents it from escaping into space.

Photo by Fred Jones

Future astronauts, from left to right, Kate Hooper, Nicky Gauvreau and Molly Badger, all students at Carpenter Elementary School, Wolfeboro, New Hampshire, talk to teachers in the NEWEST Program about Mission Control and their flight suits. The three were part of a group of 28 students who brought their "Space Bus," used as Mission Control, as well as a space plane, the S.P. Urania, to Langley. They simulated space flight, explained celestial navigation, the life cycle of the stars and the Sun and talked about the Peridier Settlement design and flight center that they and their classmates created as part of the Kids Aerospace Simulation Activities (KASA). Photo of the Space Plane is on Page 8.

28th Aerospace Mechanisms Symposium Solicits Papers for 1994 Meeting

The 28th Aerospace Mechanisms Symposium will be held at Lewis Research Center, Cleveland, Ohio, May 18-20, 1994. The symposium is co-sponsored by eight NASA centers and Lockheed Missiles & Space Company, Inc.

The symposium is devoted to the interchange of information related to aerospace mechanisms hardware development. The 1993 symposium, attended by 160 people from around the world and held at Ames Research Center, Mountain View, California, included representatives from academia, the NASA centers and more than 45 aerospace companies.

Papers pertaining to aerospace mechanisms are being solicited for the 1994 meeting. Papers should describe test-qualified or flight-experienced mechanisms. They should include not only design detail, but also requirements, unique criteria, problems of fabrication, test and flight performance and other factors of interest to engineers developing flight hardware. Mechanisms that are used on related test and support equipment are also welcomed. Also sought are papers on space tribology, bearings, gears or mechanism lubrication that contain test data. Authors are encouraged to discuss anomalies that have occurred during design, development and operation of mechanisms and thus help avoid similar future problems.

Papers for presentation and publication are selected on the basis of abstracts of about 750 words. Abstracts should include the description and principal results of the investigation, the status and extent of the work and two figures that contain test data and photographs to illustrate the maturity of the work. Two copies of the abstract should be submitted no later than September 3, 1993 to: Dr. Charles W. Coale, P.O. Box 3504, Orgn. 74-11, Bldg. 551, Lockheed Missiles & Space Company, Sunnyvale, CA. 94088-3504. For further information, contact Stuart Loewenthal, LMSC, P.O. Box 3504, O/74-12, B/551, Sunnnyvale, CA. 94088-3504, (408) 743-2491, FAX (408) 742-2461, or Douglas Rohn, NASA LeRC, Mail Stop 23-3, 21000 Brookpark Road, Cleveland, Ohio 44135, (216) 433-3325.

Key Personnel Change

Colonel Fred Gregory has completed his one-year assignment as the associate administrator for Safety and Mission Assurance at NASA Headquarters. During that time, he was responsible for safety, reliability and quality assurance for all NASA programs. Gregory also streamlined the Office of Safety and Mission Assurance to meet NASA's evolving demands. He consolidated similar functions and created a new initiative, Payload Quality Management, to meet the demands of non-crew-tended missions. Previously, Gregory flew three missions in the space shuttle.

Charles W. Mertz was appointed to replace him in the position. Mertz has served as the acting deputy associate administrator for the six months prior to his appointment. He has more than 25 years of program management experience and is well versed in the assurance, engineering and management requirements of NASA and the aerospace industry. He has extensive experience with aircraft systems, manned/unmanned space systems, hardware/software development, safety policy development and integration as well as human factors.

LETTERS

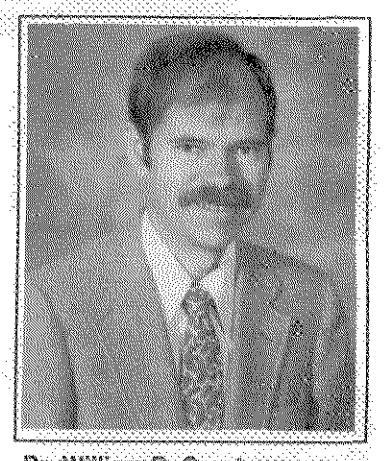
Reception Thanks

From Bill Derby, Models and Materials Technology Branch: "I thank all of my co-workers/friends for the wonderful retirement social and gifts. It was a great 37 years working with such talented people. I wish each of you a rewarding career at Langley."

Retirement Party Thanks

From Lillian M. Wentz: "I wish to extend my heartfelt thanks to all of my friends who participated in giving me such a great send-off into retirement! I was deeply moved by all of the speeches, cards, gifts and well-wishes. You people are SUPER!"

Grant Made Fellow of OSA



Dr. William B. Grant

The Board of Directors of the Optical Society of America has elected Dr. William B. Grant of the Lidar Applications Group, Atmospheric Sciences Division, as a fellow of the society for his "distinguished service in the advancement of optics, particularly for contributions to the application of optical techniques for measurement of atmospheric trace species."

Grant began his Langley career in 1989 with his current position as a senior research scientist in the Chemistry and Dynamics Branch. He has flown with the UV DIAL (ultraviolet differential absorption lidar) system on several NASA missions to study tropospheric and stratospheric ozone and aerosols. Lidar, which stands for Light Detection and Ranging, is a laser remote sensing technique used in atmospheric investigations. Recently, Grant was the lead author on several papers on the effect of aerosols from the Mt. Pinatubo eruption on tropical stratospheric ozone.

Prior to coming to Langley, Grant spent 10 years at the Jet Propulsion Laboratory developing laser systems for the long-path or remote measurement of toxic gases. He participated in pioneering experiments on developing lidar systems for remote sensing of atmospheric constituents using the DIAL technique for six years at SRI International.

Grant holds a doctorate in physics from the University of California at Berkeley and did two years post-doctoral work at Freie Universitat Berlin. His activities with the Optical Society of America (OSA) include chair of the Atmospheric Optics Technical Group, program co-chair of the 1990 OSA Topical Meeting on Optical Remote Sensing of the Atmosphere and conference co-chair of the meeting in 1991. He edited the book *Ozone Measuring Instruments for the Stratospheres*, Vol. 1 of Collected Works in Optics (OSA, 1989), and delivered a tutorial on optical/laser remote sensing at the Conference on Lasers and Electro Optics (CLEO) recently held in Baltimore.

Grant joins his group leader Dr. Edward Browell as the second fellow of the OSA from Langley. The Optical Society of America is the principal professional organization for the optical sciences community. The research conducted by members of the organization ranges across the optical sciences from basic research in optical processes and in optical properties of materials and the atmosphere to applied research in laser and lidar development and in active and passive remote sensing of the atmosphere.

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. The following employees are approved leave recipients: Monica L. Cooper, Bette L (Jeanie) Duncan, Cynthia L. Lach, Janice B. Mongesku, Terry L. Shephard, John P. Stack, Belle L. Wood and Darrell A. Wood. If you wish to donate annual leave to these recipients, or want more information about the Voluntary Leave Transfer Program, please call Linda Park, Employee Relations Office, ext. 42610.

Apiculturists to Meet

The NASA Langley Apicultural Club will meet at 7 p.m. July 19 in the executive dining room of Building 1213. A video, "In Search of the Africanized Bee," will be shown following a short report and discussion of the VSBA meeting. All are welcome. For more information, call Henk, ext. 47226 or Harvey, ext. 46742.

IN MEMORIAM

Mary C. Johnson

Mary C. Johnson died Monday, May 31. She worked at Langley for 20 years and retired from the Instrument Research Division in 1976.

News 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.

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All materials are subject to editing.

Three Honored by AIAA

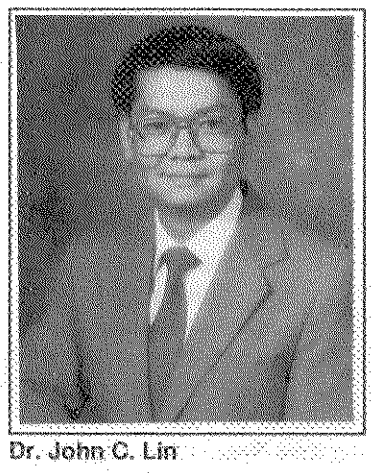
Three Langley employees are being honored with Certificates of Merit, for technical and scientific excellence, from the American Institute of Aeronautics and Astronautics (AIAA) for their paper titled "Separation Control on High Reynolds Number Multi-Element Airfoils."

The paper has been named Outstanding Best Paper of 1992 by the Applied Aerodynamics Technical Committee of the AIAA. Its authors are Dr. John C. Lin, of the Experimental Flow Physics Branch, Dr. Stephen K. Robinson, head of the Experimental Flow Physics Branch, and Robert J. McGhee, head of the Low-Turbulence Pressure Tunnel Section. Another co-author, Walter O. Valarezo, of the Subsonics and High Lift Team of McDonnell Douglas Aerospace Company, Long Beach, California, will also be honored.

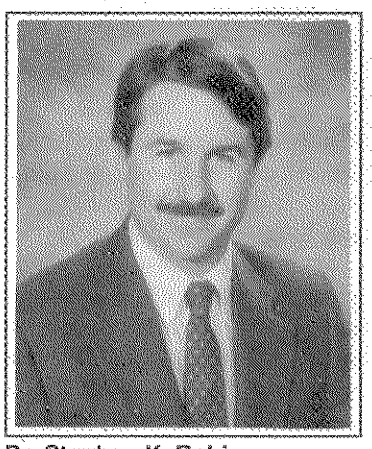
The paper details the experimental investigation conducted to evaluate boundary-layer separation control on a two-dimensional single-flap, high-lift system at near-flight Reynolds numbers, using small surface-mounted vortex generators. Wind tunnel testing took place in Langley's Low-Turbulence Pressure Tunnel (LTPT) as part of a cooperative program between Langley and the McDonnell Douglas Aerospace Company to improve understanding of multi-element airfoil flows. The results of the testing, published in the paper, revealed that small vortex generators, called "micro-vortex generators," can effectively reduce or eliminate boundary-layer separation on the flap for landing configurations. Alleviation of flap separation significantly improves performance of the high-lift system by reducing drag and increasing lift for a given approach angle. The micro-vortex generators are hidden inside the flap well when the flap is retracted, therefore, they create no device drag penalty in cruise.

Lin, the first author of this paper and principal investigator of the research project, is an expert in flow separation control. He joined Langley in the co-op program in 1978 and has more than 13 years of research experience in viscous-flow fluid dynamics, especially in the area of high-lift flow physics, turbulent flow separation control and turbulent drag reduction. He received his bachelor's, master's and doctorate in mechanical engineering from Old Dominion University and has to his credit 28 formal publications resulting from his research projects. The "micro-vortex generators" technology is a direct result of his many years of basic research toward his doctoral dissertation. "I am very pleased that this work is being recognized nationally by experts in the aerospace industry," Lin said. " This project is an example of cooperation between NASA and industry that led to successful results. We provided industry with our research expertise and the LTPT facility and its supporting personnel. The support people performed an outstanding job during this investigation."

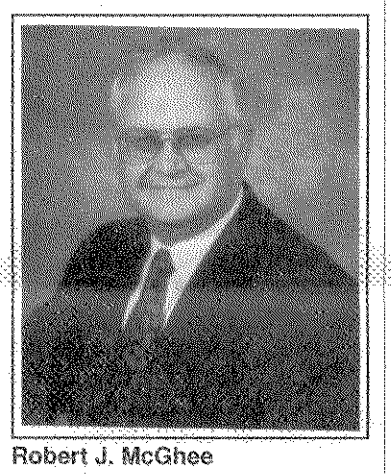
McGhee began at Langley in 1963 and has developed and verified advanced airfoils contributing to the design, development and operation of advanced aircraft including low-speed general aviation airfoils currently being used by Beech, Piper and Gulfstream Aircraft Companies and advanced airfoils used on one of the Teledyne Ryan aircraft, to name a few. McGhee's research has been critical to the operation and safety of the LTPT, which has unique low-disturbance, low-speed, high Reynolds number testing capabilities essential to industry development of advanced high-lift systems. He has authored or co-authored more than 60 technical papers and holds a bachelor of science in mechanical engineering from Virginia Technological Institute and State University.



Dr. John C. Lin



Dr. Stephen K. Robinson

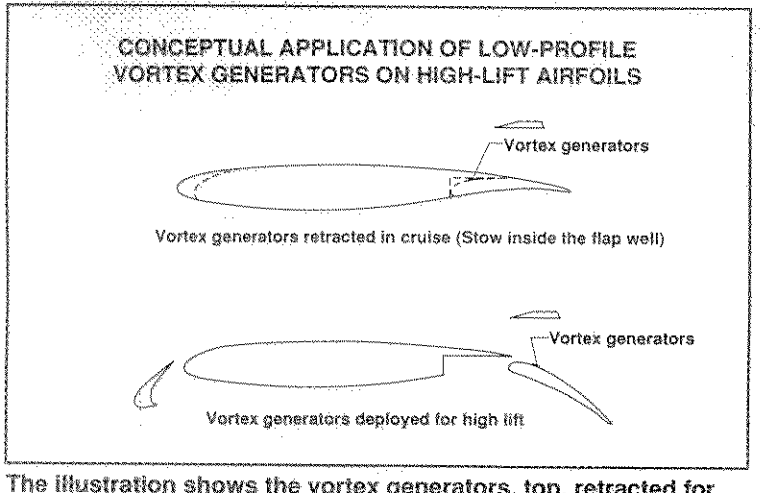


Robert J. McGhee

Robinson is responsible for leading experimental research in high-lift flow physics, laminar flow control, propulsion mixing and advanced instrumentation. He oversees the use, upgrade and maintenance of four wind tunnel facilities: the LTPT, Mach 6 High Reynolds, Mach 3.5 Quiet Tunnel and the Mach 18 Helium Tunnel. Robinson recently left for the Massachusetts Institute of Technology where he will spend eight to ten months for his George M. Low Memorial Fellowship, awarded to him by the National Space Club. He holds a bachelor's degree from the University of California, Davis, and a master's degree and doctorate in Aero/mechanical engineering from Stanford University and has authored or co-authored more than 30 papers and abstracts.

The three are to be presented with their certificates August 10 at the 11th Applied Aerodynamics Conference in Monterey, California.

The photo shows the micro-vortex generators attached to a high-lift wind-tunnel model in LTPT that eliminates separation on the flap for landing configurations.



The illustration shows the vortex generators, top, retracted for cruise and eliminating any device drag penalty, and bottom, deployed for high lift.

The Chance of a Lifetime

BY KIRSTEN WILLIAMS

Approximately 16,000 Americans contract potentially fatal blood diseases each year. Frequently, these patients depend upon a generous stranger to donate the bone marrow necessary for a life-preserving transplant. However, the United States still experiences a donor shortage, despite the overwhelming need.

Just as blood types must match for a blood transfusion, marrow must match for a transplant. Finding a match is like finding a needle in a haystack. "Only 12-percent of the patients who start a search actually receive a transplant," said Jennifer Ash, National Marrow Donor Program (NMDP) coordinator. A patient's chances of finding a match range from one in a 100 to one in a million, depending upon the rarity of his antigen combination. There really are no specific marrow types because, unlike blood types, there are millions of possible variations of marrow.

Finding A Match

To boost the probability of finding a match, NMDP is recruiting donors for its registry. "In the beginning, they thought a registry with 200,000 people in the United States would be enough to meet the needs of anybody who needed a transplant. We're at 900,000 now," Ash said. In addition, the NMDP is creating an international network of donors by signing reciprocal agreements with other countries. The NMDP aims for a donor bank of one million of each race by 1995. To reach such an optimistic goal, NMDP needs your help.

White blood cells, produced in the marrow, are a body's "fighting army" against disease, Ash said. Many fatal blood diseases, such as leukemias or anemias, are malfunctions or malformations of the white cells or the marrow itself. In these cases, a marrow transplant is often the only viable cure.

Marrow matches are determined by proteins, called Human Leukocyte Antigens (HLA), carried on the white blood cells. Every person receives one of each antigen from each parent, just like genes. Therefore, a patient has a 25% chance of finding a "matched sibling" with the same HLA type. The 75% who do not have a matched sibling depend upon donors for "the living gift of life."

Join the Registry

These patients resort to the national donor registry maintained by the NMDP. Initiated in 1987, it contains a list of everyone who has been HLA-typed. To join the registry, the potential marrow donors undergo a simple blood test that classifies their antigens. When a patient's antigens match those of a registered donor, the donor undergoes a second round of testing that classifies his or her next antigen. If the test results are positive, confirmatory DNA testing ensures that the match is close enough to prevent rejection. A complete physical is also required.

The operation itself is a relatively short procedure, with an overnight hospital stay. Under general or spinal anesthesia, the marrow is removed from the back of the pelvis via a needle. The procedure usually lasts between one and two hours depending upon the amount of marrow required by the patient. The marrow is then rushed to the patient and transfused into the bloodstream where it finds the marrow cavity. "The success rate of transplants is running about 80-percent for some diseases," Ash said.

A Success Story

A local program participant, Doug Baker of CEBAF, joined the NMDP in 1991 when a William and Mary College professor was stricken with cancer. Although Baker, a student, was not a match for the professor, he was the miracle match for another patient. "I didn't see donating as a sacrifice, but as something to do because I could do it," Baker said. The woman he donated marrow for is now 100-percent cancer-free, he said.

An ideal donor is between the ages of 18 and 55, in good health, and not taking medication. A donor may be deferred for several reasons, such as chronic asthma, rheumatoid arthritis or diabetes, as well as cancer, stroke or heart problems.

You Can Learn and Help

*** To aid the NMDP in its quest to broaden both the size and the diversity of its registry, the Occupational Health Services Office is hosting a brown bag seminar presented by NMDP Coordinator Jennifer Ash from 12 to 1 p.m. on July 29, in the executive dining room. Find out more about the program.**

*** Joining the NMDP registry requires a simple blood test. Although a fee exists to cover the expense of the test, the Langley Activities Association has volunteered to sponsor ten people for antigen screening. The American Red Cross has also agreed to cover a portion of the cost for others who wish to join the registry. Antigen screening for interested individuals will occur at 9 a.m. on August 3, in the Reid Conference Center, Bldg. 1222. Call Kirsten Williams at 43316 for more information.**

American Legion Resolution

Whereas, the United States has been the world leader in aeronautics for 75 years, since the creation of the Nation's first aeronautical research laboratories, and
Whereas, the Unites States has become the global pacesetter in military and commercial aircraft and space technology through long-range research and development, and
Whereas, U.S. progress in aviation and space research has had a profound impact on our Nation's quality of life and its economic, social and political institutions, and
Whereas, for every dollar increase in shipments of U.S. aircraft internationally, the U.S. economy output increases by an estimated $2.30, and
Whereas, for every dollar invested in technology to put man on the moon, more than $7 is returned to the U.S. economy, and
Whereas, U.S. advancements in aeronautics and space technology have made all areas of our Earth more accessible and made possible communication on a global scale, and
Whereas, in this century, American men and women of courage, vision and know-how have brought the peoples of the world closer through flight and space exploration, and
Whereas, the U.S. aerospace program has inspired generations of Americans, especially the young, and
Whereas, the American Legion has committed itself to the advancement of aeronautics and space exploration and the necessary research, engineering and development to propagate these technologies by creating within the National Security Commission and Aerospace Committee,
Now, Therefore, Be It Resolved by the Department of Virginia's constitution that the more than three million members of the American Legion deem it imperative that the United States, in face of increasing competition, maintain its hard won status as the world leader in aeronautics and aircraft production and in space exploration and research. To realize this goal, we, the American Legion, call for:

1. A 20-percent increase in funding for each of the next five years for the Nation's civilian aerospace research and development programs.
2. A 50-percent increase in funding for each of the next five years to build, upgrade and enhance the Nation's civilian aerospace research facilities.
3. A renewed national commitment to math, science and engineering education.

As we move into the 21st century, we must continue to venture beyond our earthly home and into the mystery and promise of space. We have been called to this quest as surely as our ancestors were driven to the discoveries of fire and the wheel. We must not fail ourselves or our future generations.

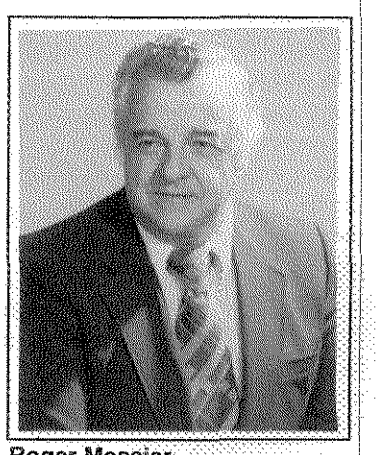
The Man Behind the Resolution

Roger Messier, retired head of the Systems Development Support Section of the Systems Engineering Division, was the impetus behind an American Legion Resolution supporting the U.S. space program and NASA's role in that program.

Messier, who worked for NASA for 38 years, serves on the Aero-Space Committee for the American Legion. He worked at Langley from 1955 to 1962 and again from 1979 to 1989. He spent 17 years in Houston and was on the original Space Task Force managing the Mercury and Gemini missions, among others.

Messier wanted to do something that would support aerospace research and development, so he initiated the writing of the American Legion's Resolution. "I am proud of the American Legion Resolution and my part in making it a voice to speak on behalf of NASA's efforts in the U.S. aerospace programs and its commitment to education," Messier said.

The resolution (see sidebar) was supported by the 53,000 members of Virginia's American Legion, who put their full weight behind it, and Messier, when he spoke to the Commonwealth's legislators. It went to a vote in the Virginia state legislature where it was adopted.


Roger Messier

Messier then promoted the resolution at the American Legion's National Convention in Chicago, representing the Legion's 3.3 million members. The resolution received the approval of the membership and then went on for approval by the United States Congress.

Messier acknowledges the help he received in the drafting and preparing of the resolution from Marny Skora of the Office of Public Services (OPS). "Mrs. Skora and OPS worked untiringly on our behalf to make the American Resolution one that the Aero-Space Committee could endorse with pride."

Fireworks Safety Prevents Blindness

Sparklers, considered safe by many parents, will injure hundreds of preschool-age children this Summer, warns the Virginia Affiliate of the National Society to Prevent Blindness.

Sparklers are fireworks that emit white or colored sparks when lit. The chemicals in sparklers are pasted on needle-thin wire. Unlike other fireworks devices, sparklers don't explode, splatter or fly up like rockets. These "silent" devices sizzle at temperatures of 1800 degrees Fahrenheit (hot enough to melt gold), and injure more than 800 preschoolers each year across the United States.

Too Hot to Handle

"Many parents give sparklers to children as alternatives to other fireworks, because they think sparklers are safer," said Tim Gresham, executive director of the Virginia Affiliate. "When you consider how hot these devices get, parents are actually giving children miniature fireballs."

Sparklers are common causes of eye burns and burns to the hands and fingers. People also tend to swing burning sparklers, risking penetrating eye injuries to young bystanders.

"Fireworks are better left in the hands of professionals," said Gresham.

Fireworks Facts

- Sparklers are the second highest cause of fireworks injuries requiring hospitalization.
- Most fireworks contain gunpowder, which causes them to explode. Class C fireworks (firecrackers) are legal in many states, including Virginia, and contain up to 50 mg. of gunpowder.
- Because fireworks are unpredictable, injuries can occur even if the person is careful or under supervision.
- With fireworks, no one is totally safe. The society estimates that 40-percent of fireworks injuries are to bystanders.
- Four out of five fireworks injuries happen to males, the most frequent users of fireworks. Men, ages 22-44, and boys, 12-14, are the most common victims.
- Homemade fireworks are often more hazardous than the store-bought variety. Those who make their own fireworks tend to combine the chemicals from other devices to create a bigger, and more dangerous, explosion.
- The cost of treating a fireworks injury far outweighs the cost of a single fireworks package, which is $2. An average hospital emergency room charge is about $80 and does not include the cost of possible surgery or unnecessary blindness.

Summer Activities at the Virginia Air and Space Center

Since 1981, National Space Week has been celebrated to honor the historic first moon walk by Neil Armstrong on July 20, 1968. The Virginia Air and Space Center and Hampton Roads History Center celebrates the week with a look at the past, present and future of space exploration. Activities follow:

July 18, 11 a.m. until dark

Picnic and rocket launch at the NASA Langley H.J.E. Reid Conference Center with hamburgers, hot dogs and other items for sale. There will be games, such as volleyball, horseshoes, playground equipment and displays with special guest speakers at 2 p.m. Also planned is a model rocket launch. You can bring your own or purchase one to build and launch at the event. Call Doug Stanley at 864-4518 to reserve a model rocket kit.

July 19, 2 and 4 p.m.

HL-20 mockup is on display at the center. Lisa Simonsen of the Vehicle Analysis Branch, will discuss Langley's HL-20 spacecraft design and human factors testing.

July 20, 2 and 7:30 p.m

At 2 p.m., an Apollo and Viking Anniversary panel discussion, titled "Apollo & Viking: Langley's Role," will be moderated by Langley Director Paul Holloway. Panelists for Apollo are John Houbolt and Jim Hansen; for Viking, Carey Spitzer and Ed Cortright. At 7:30 p.m., Russia's Secret Moon Program features Peter Gorin, a Russian citizen and space historian, who will discuss the Soviet Union's secret manned moon program with slides and stories.

July 21, 2 and 4 p.m.

Chauncey Wu, Spacecraft Structures Branch, will present a program titled "Building Structures in Space." He will show designs of large space structures to be used on future space stations, as well as space telescopes and satellites.

July 22, 2 and 4 p.m.

Doreen Neil of Langley will discuss NASA's plans to use satellites to monitor the Earth's atmosphere to measure ozone depletion and global climate change, and discover possible warning signs in a presentation called, "Mission to Planet Earth."

July 23, 2 and 4 p.m.

Jeff Seaton of Langley will discuss NASA's current advancements in using robotics to further space sciences and provide down-to- earth applications.

July 24, 10 a.m. to 7 p.m.

A SPARK HAM Radio Demonstration will show children how to write and send their names in Morse Code. There will also be demonstrations on the capabilities of the Amateur Radio Satellite Station.

July 25, Noon to 7 p.m.

Children are invited to draw their ideas of what life is like on Mars during the "Create a Space Mural" activity.

For more information, call the Virginia Air and Space Center and Hampton Roads History Center at (804) 727-0900.

Space Food Essay Winners

Space Food "The Earthlings who go to outer space eat orbiter oranges and space shuttle crisps and drink Jupiter juice and Mercury milk for breakfast. For dinner they have Neptune noodles, Venus vegetables and Saturn and star soup. They drink Sun tea. And for dessert they gobble up Moon pies, Mars candy bars and Pluto pops."

With these words, 7-year-old Kevin Curran swept away the competition and won first place in the grade K-2 category in the Virginia Air and Space Center's Space Food Essay contest. Co-sponsored by the center and several local companies, the competition gave students in grades K through 8 an opportunity to write creatively about space food.

Judged on the basis of creativity and content, the winners won two season passes to Busch Gardens and a membership to the Virginia Air and Space Center. Winners were: Kevin Curran of Hampton, Clara Odell of Norfolk in the grades 3-5 category, and Danni Terry of Virginia Beach in the grades 6-8 category.

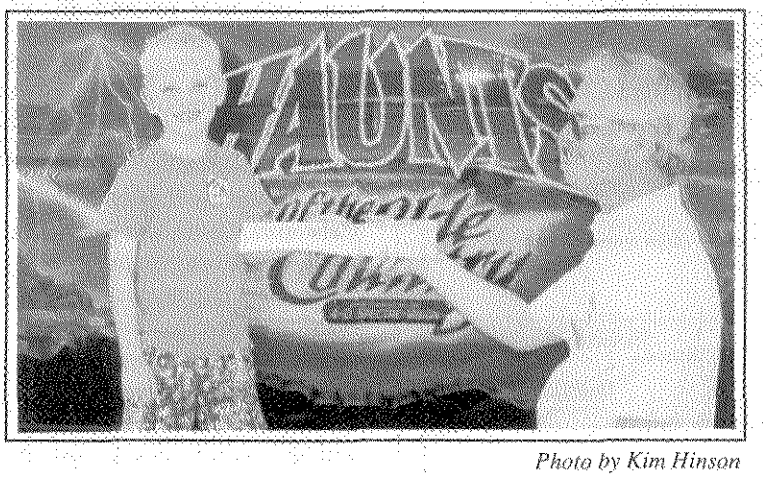


Photo by Kim Hinson

Kevin Curran, one of the winners of the Space Food Essay Contest accepts his prize from Thurman Worthington of 2WD Radio at the Virginia Air and Space Center.

Better, Faster, Cheaper, Thanks to Shuttle

BY KRISTINA MURDEN

"Better, faster, cheaper," future space ships could result from a program that has used the space shuttle as an X-Plane.

Since the first flight of the Orbiter Columbia, in 1981, NASA's Orbiter Experiments (OEX) Program has used this shuttle as a test bed to measure orbiter aerothermodynamics performance during flight. Aerothermodynamic refers to both the aerodynamics and the and aeroheating environment of a vehicle in hypersonic flight. A group of researchers met recently to share results of the OEX Program.

"The most important result of the program is that the OEX flight data have enabled us to validate our aerothermodynamic design methods for shuttle-class hypersonic vehicles," said Dave Throckmorton, assistant head of the Aerothermodynamics Branch. These methods include new, hypersonic wind tunnel testing techniques and state-of-the-art Computational Fluid Dynamics (CFD)."

Measuring the performance of the space shuttle orbiter is crucial for evolutionary development of advanced space transportation systems, such as heavy-lift launch vehicles, orbital transfer vehicles, or vehicles such as the proposed HL-20.

"The OEX Program was created in the mid-1970s because significant uncertainties existed about our ability to accurately predict the aeroheating environment and hypersonic aerodynamics of the shuttle orbiter," Throckmorton said. "Langley engineers conceived, implemented and flew six experiments on the Shuttle Orbiter Columbia to collect flight data to improve understanding of these characteristics, he added." Performance data were measured during launch, orbit, atmospheric entry and landing. "We are now able to confirm the adequacy of state-of-the-art capabilities for predicting the aerothermodynamic flight characteristics of future vehicles," he said. "OEX has provided the benchmarks."

One of those capabilities is Computational Fluid Dynamics (CFD). "Some 20 years after the beginning of the shuttle orbiter design process, and the birth of the OEX Program, we have CFD capabilities which were not dreamed of during the time of shuttle orbiter development," Throckmorton said. "But now we have superior computer power and mathematical approaches. The OEX flight data have proven that our state-of-the-art CFD techniques can accurately predict both the flight aerodynamics and the aerodynamic heating of a shuttle-class hypersonic vehicle."

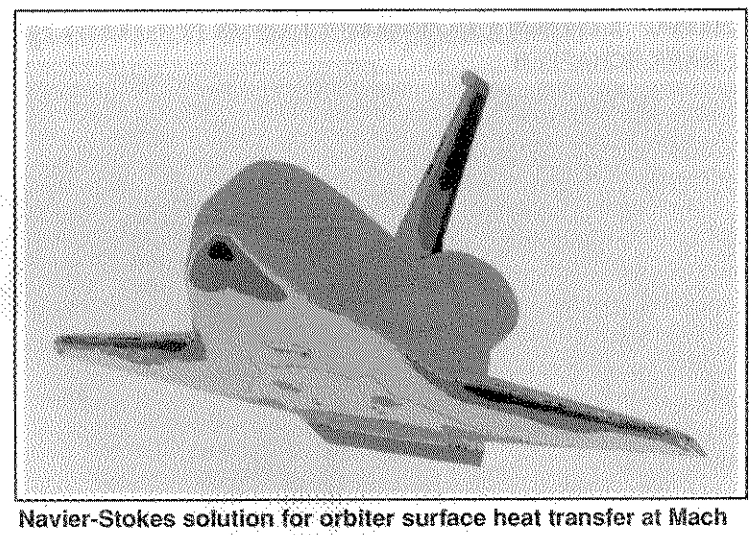
New hypersonic wind tunnel testing techniques have also been proven, using the OEX flight data as a measuring stick. When the shuttle enters the atmosphere going 17,500 mph, chemical changes occur in the flowfield around the vehicle. These changes affect the vehicle's aerodynamic performance. "By testing in 'heavy gas' wind tunnels, such as Langley's Mach CF4 Tunnel, you can simulate aspects of the 'real-gas' flight environment which enable accurate predictions of the vehicle's flight aerodynamics characteristics," Throckmorton said.

The aerothermodynamic design process for the shuttle orbiter required more than 100,000 hours of wind tunnel hours in facilities nationwide. "Being able to use both computers and wind tunnels will save hours of testing – and money – as we design new vehicles." Now that we have confirmed that our CFD can predict those environments accurately, and replicate flight data, the next hypersonic vehicle won't require such extensive, and expensive testing," Throckmorton said.

The OEX Program has enabled us to better understand which flight parameters really require accurate simulation in our ground-test facilities, and how to more accurately compare wind tunnel test results to the flight environment. "Therefore, 'better, faster, cheaper' development of space transportation vehicles should be achieved in the future," Throckmorton said.

The OEX Program was managed by NASA's Office of Aeronautics, Exploration and Technology at Headquarters. Thirteen experiments were developed for flight, the last of these, Langley's Orbital Acceleration Research Experiment (OARE), will fly on Shuttle flight STS-58, scheduled for August.

The OEX Symposium was held in Williamsburg for a broad technical audience including people from NASA, industry, universities and the Department of Defense.



Navier-Stokes solution for orbiter surface heat transfer at Mach 24 entry condition.

Langley OEX Projects

Shuttle Entry Air Data System (SEADS)
Principal Investigator (PI): Paul M. Siemers III
- Measured distribution of air pressure around orbiter's nosecap during entry.
- Provided accurate measurement of air data from about 300,000 feet (56 miles) through landing.

Shuttle Upper Atmosphere Mass Spectrometer (SUMS)
PI: Robert C. Blanchard
- Designed to complement SEADS by gathering atmospheric density information above 300,000 feet.
- Aerodynamic flight at these altitudes cannot be simulated in ground facilities.
- Mounted on foreward bulkhead of Columbia's nose wheel wall.

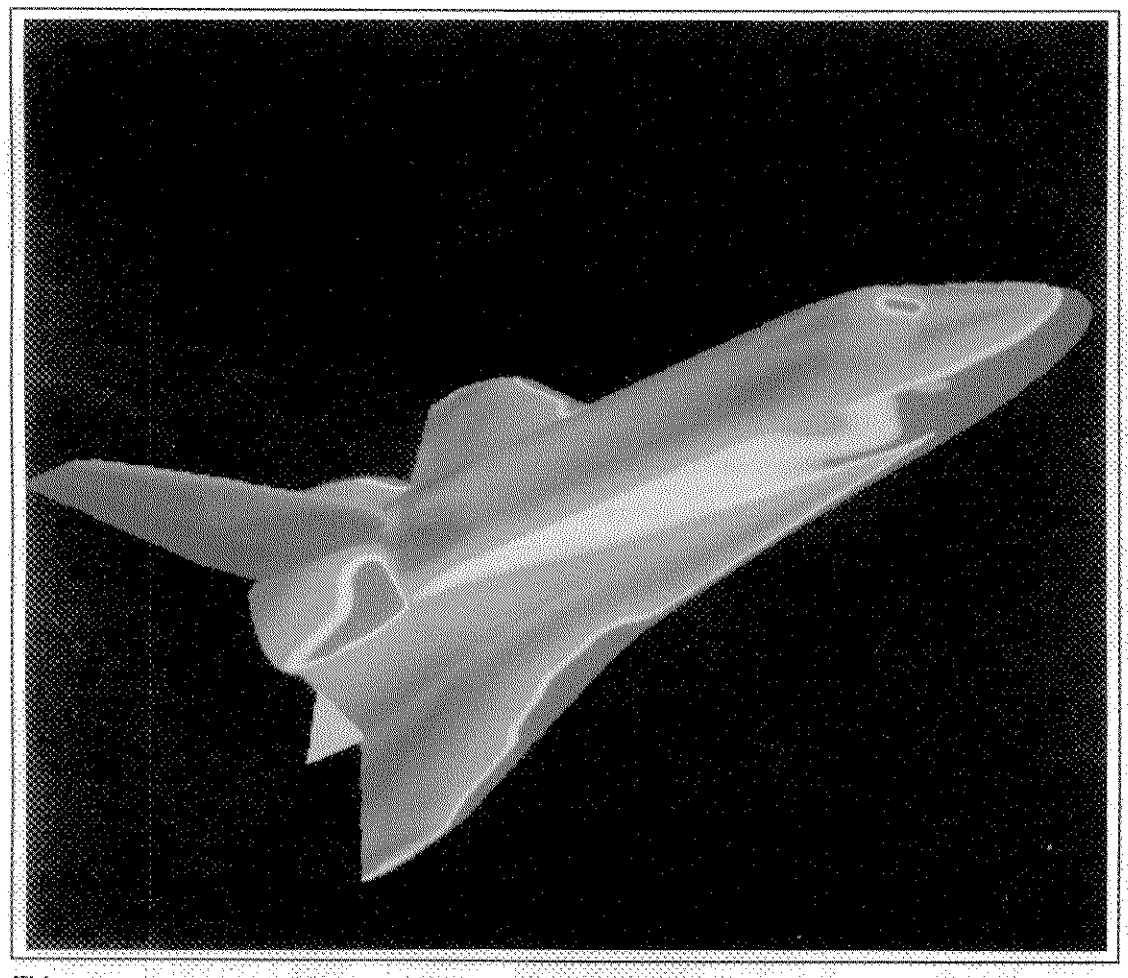
Aerodynamic Coefficient Identification Package (ACIP) (JSC experiment)
High Resolution Accelerometer Package (HiRAP)
PI: Robert C. Blanchard
- Both used in conjunction with SEADS and SUMS to provide vehicle motion data.
- ACIP determined vehicle motion data below about 300,000 feet altitude. Data used with SEADS results.
- HiRAP measured vehicle motion during high altitude portion of entry (above 300,000 feet). Data used with SUMS results.
- HiRAP was installed on the ACIP mounting plate, which rode piggyback on the orbiter.
- Determined orbiter aerodynamics characteristics.

Orbital Acceleration Research Experiment (OARE)
PI: Robert C. Blanchard
- Complemented ACIP and HiRAP by extending altitude range over which vehicle acceleration data could be obtained to orbital altitudes.
- Sensors much more sensitive than HiRAP.
- Capable of measuring vehicle acceleration levels as small as one part per billion in terms of local gravity.
- Sensors cannot be calibrated on the ground.
- Installed in payload bay.

Shuttle Infrared Leeside Temperature Sensing (SILTS)
PI: David A. Throckmorton, E. Vincent Zoby
- Provided detailed "maps" of surface temperatures of leeside thermal protection materials.
- This environment cannot be adequately simulated in ground facilities.
- Mounted on vertical tail of Orbiter.

Aerothermal Instrumentation Package (AIP)
PI: David A. Throckmorton
- Comprised some 125 measurements of aerodynamic surface temperature and pressure on the orbiter's left wing, fuselage and vertical tail.
- Sensors provided measurements of both "ground-truth" and corollary information for the SILTS experiment.
- Both AIP and SILTS data was used as benchmark flight results for validation of the predictive capabilities of state-of-the-art Computational Fluid Dynamic techniques that will be used for aerodynamic and thermal protection design of advanced entry vehicles.

Langley OEX Experiments	# Shuttle flights
SEADS	5
SUMS	2
HiRAP	15
OARE	2
SILTS	5
AIP	4



This computer-generated image, using computational fluid dynamics (CFD), was created by theoretical computations used to predict heating of the space shuttle orbiter during entry into the Earth's atmosphere.

Lake Talks

Lake Talks About Work With Space Structures

BY MARK SCHAFFER

Since the beginning, Dr. Mark Lake has had great experiences at NASA.

Lake began at Langley in 1981 as a student from the University of Illinois in the cooperative education program. He worked in four different branches as a co-op and when he began full-time work in June 1984, he joined a different branch, the Structural Concepts Branch, now the Spacecraft Structures Branch.

"I thoroughly enjoyed the co-op program. The work periods are short enough so that the newness of the job doesn't wear off but long enough to get good things accomplished. I worked with a lot of great people and had great experiences," Lake said.

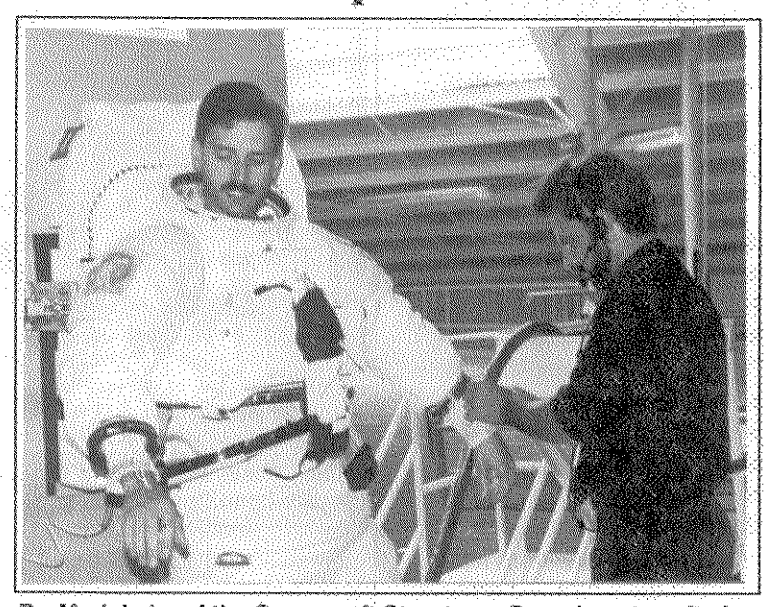
His great experiences continued into his work in structural and assembly testing. Until recently, his work concentrated on finding ways to make efficient use of astronaut Extra Vehicular Activity time (EVA time is time spent outside the orbiter during a mission) during the construction of large space structures.

"We developed hardware and procedures to allow astronauts to build large structures, and perform tests to get an idea of how long the construction takes and how the structures will behave on orbit," Lake said. "We looked at the problems of building structures in space and tried out our solutions in Marshall Space Flight Center's Neutral Buoyancy Simulator (NBS) in Huntsville, Alabama."

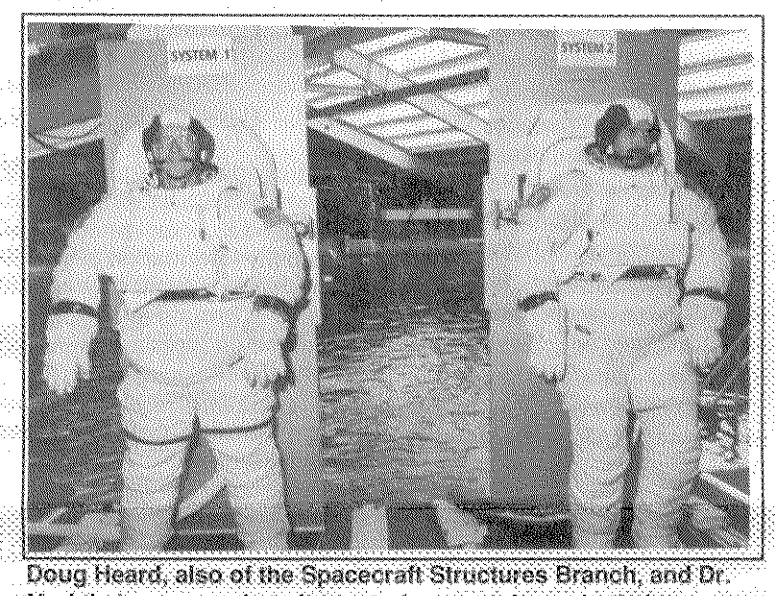
His work on building these large structures has not just been work behind a desk or on a computer, but a hands-on project.

"More than 15 years ago, the branch was given the problem of figuring out how to build large structures in space. The first ideas that were tried in the NBS were not very efficient. As a result, the philosophy of the branch began to change. The branch personnel decided that if they were going to develop hardware and procedures that allow efficient EVA assembly of structures, they must understand how to work efficiently in pressure suits. They wanted to combine their knowledge of structures with a knowledge of working in suits. They recognized that the astronauts didn't know the details of the structures like the engineers did," Lake said.

"Therefore, five or six people in the branch have gotten experience in working in the pressure suits. I came to the branch with my scuba certificate and was lucky enough to be the right size and had a desire to work in the NBS. Doug Heard, also of the Spacecraft Structures Branch, has the most experience in the branch and he is chiefly responsible for most of the assembly tests that have been done. We have a mindset in this branch to combine our knowledge of structures with a drive to do the job quickly and efficiently. I've been very fortunate to work with Doug on several projects because of that shared mindset," Lake said. Now, though, Lake is working more on mechanically deployed structures. This follows NASA's direction toward a world of smaller satellites, looking beyond the space station mission.



Dr. Mark Lake of the Spacecraft Structures Branch, gets suited up for tests in the Neutral Buoyancy Simulator in Huntsville, Alabama.



Doug Heard, also of the Spacecraft Structures Branch, and Dr. Mark Lake, are ready to be part of an experiment in their pressure suits.

"Future spacecraft are going to be smaller and have very focused missions. We are currently trying to determine what are the challenging structures problems that need to be answered for these smaller craft and we are still trying to identify the common structural features of the different small crafts. One of the first things we are doing is focusing on precise deployable hard surface reflectors. Their development will include work in unmined areas of research — the fabrication of precision components and reliable deployment mechanisms," he said.

"There have been a lot of problems with deployable structures in the past so we hope to develop very simple deployable components and prove their reliability. If we can do this, we will greatly enhance the capabilities of the small spacecraft. Today, we're still getting our feet wet. Currently, we don't understand all the subtleties of the problems but shortly, we hope to not only understand the problems but to have hardware that solves the problems," Lake said.

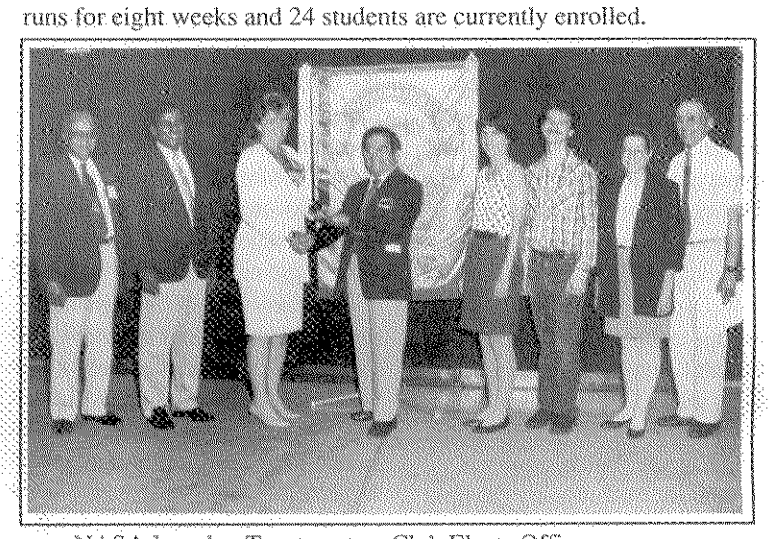
Lake received his doctorate in aerospace engineering from North Carolina State University in 1992.

Mark Schaffer, a LARSS student, is a recent graduate of the North Carolina State University with a bachelor's degree in materials science and engineering. He will be a doctoral student in the Materials Science Program at the University of Delaware this Fall.

News from the Langley Toastmasters Club

• Robert Miserentino of the Spacecraft Dynamics Branch, and a founder and member of the NASA Langley Toastmasters Club, was recently honored in New Orleans at the Regional Conference of Toastmasters International. He received the Leadership Award "in recognition of his countless contributions to Toastmasters International at all levels." On the local level, Miserentino also received a certificate of recognition as Toastmaster of the Year 1992, from the Langley Toastmasters Club for his work as a mentor to the club.

• A Youth Leadership Program, a joint effort of the Langley Toastmasters Club, Cavaliers Toastmasters Club and the City of Hampton, began on June 29 at the Hampton City Court House. Assistant coordinators are Robert Miserentino, Spacecraft Dynamics Branch, Dr. Marco A. Egoavil of the Structural Engineering Section, Richard Booth, Data Systems Development Section, and Langley retirees Sadie Boyer and Greg McCarthy, who have worked with teacher Jeannel McKissick from the Hampton City Summer Youth Enrichment Program. The objectives of the program are for Hampton Roads students to learn speech communication and develop leadership skills. Students develop impromptu speaking skills, deliver prepared speeches and learn to evaluate effectively. The program runs for eight weeks and 24 students are currently enrolled.



• NASA Langley Toastmasters Club Elects Officers

Nancy Callahan, EG & G, was elected president of the Langley Toastmasters Club during the June 9 meeting. She and the other elected officers were installed by the Toastmasters International Club Division Governor Ali Zaidi. Zaidi was a special guest speaker at the June 23 meeting.

Pictured above are, left to right, Ali Zaidi, Dr. Chit Puram, secretary; new president Nancy Callahan receiving the gavel from Dr. Marco Egoavil, past president; Dr. Robin Cravey, vice president of Education; Greg Humphreys, sergeant-at-arms; Regina Spellman, treasurer; and Robert Miserentino, vice president of membership. Not pictured was newly-elected vice president of Public Relations, Dr. John Lin.

Satellite Committee...

Continued from Page 1

Disability Employment Awareness Month is recognized every October with activities. A Deaf Awareness Week was held last September that included a silent picnic and charades, a sensory art exhibit one year, and sessions with therapy dogs are also held.

The Equal Opportunities Office at Headquarters is also an innovative supporter of the disabled. They are asking us to see how people with disabilities feel about space travel, and to identify accommodations that could be made in space. For example, a paraplegic engineer who designs an electrical function of a satellite in need of repair could go up and fix it, rather than spending six months teaching someone else how to do it. Once he or she was up in space, the disability would disappear, making the designer the best person for the job.

Forrest is responsible for giving the committee a focus, which ultimately got things going. But she likes to give the credit to her volunteers and to senior management for their tremendous support. "The SCPD has done great things because of immense interest from our members and cooperation from senior management," said Burnie Peters, head of the Equal Opportunities Program Office. "This commitment is making the Center a better place for us all."

Karen Bibb, at left, head of the Satellite Committee's Accessibility Subcommittee, leaves NASA's van that is outfitted for accessibility to anyone.

Photo by Carol Petrachenko

People & Places

LCDC Rededicated in June Ceremonies

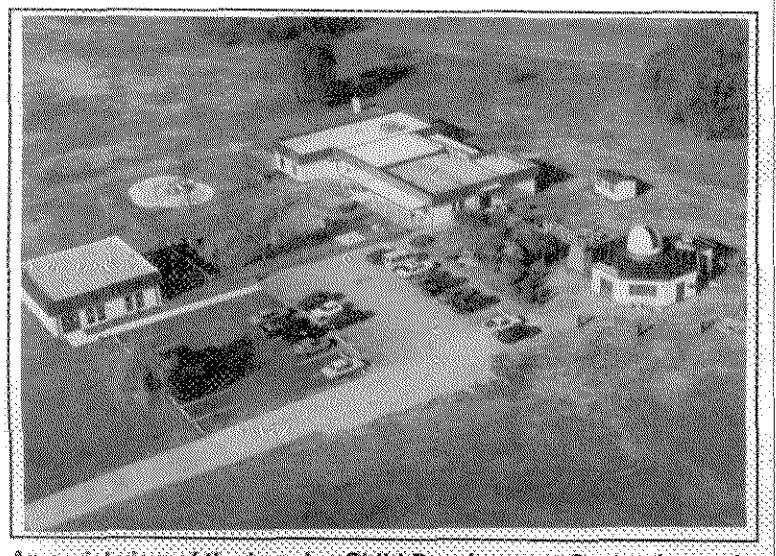
The Langley Child Development Center (LCDC) was the site of rededication ceremonies recently. The rededication celebrated the completion of an approved grand plan for the child development center as its final phase was completed.

The LCDC which became an established branch of the Langley Exchange Council in 1985, was originally formed in 1973 but the actual reviewing, evaluation and planning began in earnest in 1983. Its original implementation provided for the enrollment of 38 children. Its current enrollment capacity is 123 and the enrollment for the summer programs is 133 children.

The children are overseen and educated by a staff of qualified and trained professionals and the child-to-caregiver ratio meets or exceeds industry standards. To serve and care for these children, the staff provides a number of services. LCDC programs are broken down into four categories: infants– six-weeks to 24-months; toddlers– two-year olds; preschool– three, four and five-year olds; kindergarten– five and six-year olds; and a summer program for five to nine-year olds. Children of NASA civil service employees, contractors and university affiliates participate in the center's child care and educational programs. On a space available basis, children of Langley Air Force Base employees are eligible for enrollment at LCDC.

Buena E. Crawford, LCDC manager, has been with the LCDC since its inception. "It has been very rewarding to be a part of the growth and development of Langley's on-site child development center," Crawford said. "I never forget, however, that the senior management support and approval, which provided for this accomplishment, exemplified all elements of Total Quality Management (TQM) before it became an official term here at Langley."

The infant facility, not included with the original proposals, was an augmentation to the plan, due, as Crawford said, "to the baby boom at Langley." The facility accommodates 24 infants. The LCDC is currently seeking accreditation from the National Association for the Education of Young Children by meeting their criteria and setting formal standards, policies and procedures in conjunction with other agencies that participate in the Clearinghouse on Elementary and Early Childhood Education.



An aerial view of the Langley Child Development Center, located on Lindbergh Way.

TOPS Pilot Exhibit to Be Displayed

Preview of TOPS

Several exhibits that will be shown during Langley's Technology Opportunities Showcase (TOPS), to be held in October, will be on display July 19 in the Cafeteria's Private Dining Room. The display will be open from 11 a.m. to 2:30 p.m. Its purpose is to provide TOPS presenters the opportunity to view representative exhibits prior to October. Personnel from the TOPS Organizing Committee will be on hand to answer questions about the exhibit design and set-up. All potential TOPS exhibitors are encouraged to attend. For more information, contact Carrie Walker, ext. 41704. For details, see *LaRC This Week* for July 5-11.

Private Dining Room To Be Closed

Due to the viewing of the Technology Opportunities Showcase, the Private Dining Room will be closed to diners Monday, July 19. All personnel are invited to view the TOPS exhibits.

Quotable

"I'm a great believer in luck, and I find the harder I work the more I have of it."

–Thomas Jefferson (1743-1826)

NASP Exhibit: A Model for Tech Transfer Applications

An 80-foot-long exhibit of technical transfer products for the National Aero-Space Plane (NASP) Program was on display at the H.J.E. Reid Conference Center, Friday, July 2.

The traveling exhibit made its way to Langley after a stint in Washington, D.C., where Congressional legislators got to see how the research and development of materials and ideas for NASP have been transferred into multiple uses for U.S. industry, in both aerospace and non-aerospace applications. The exhibit was highlighted by a talk by Jim Arrington, NASA deputy of the NASP Joint Program Office, who gave an outline of the exhibit in terms of achievements and methods.

The NASP program was established in 1986 to demonstrate technology for an aerospace vehicle that would take off from a conventional runway, fly through the atmosphere with "air-breathing" engines and achieve low Earth orbit. Upon completion of its mission the craft, half airplane and half spaceplane, would land on a horizontal runway.

The NASP exhibit displayed examples of test hardware and spinoff hardware that have resulted from the NASP Joint Program Office's consortium with industry. In previous tech transfer attempts, it has taken up to 15 years to spinoff space program research into products for private industry, according to John Bass, deputy program director for Program Development in NASP's National Program Office. In the NASP program, where industries are free to use materials developed for the program in other applications, many spinoff products have been developed in less than three years. Major topics of the exhibit included actively cooled structures, passive thermal protection, titanium metal-matrix composites, computational fluid dynamics and aerothermodynamics. "There are three reasons why the NASP tech transfer program has been so successful," Bass said. "We have been given tough problems to solve; we have been given the opportunity to develop a subcontractor network to help solve those problems; and we have been given a mechanism to free those solving the problems to implement their solutions and manage the projects once a solution has been found."

One of the NASP challenges was to develop titanium matrix composite materials that would be as strong as steel, weigh half as much and have more than twice the resistance to extremely high temperature (up to 1500 degrees Fahrenheit). The challenge has been met with a new ultra-strong, lightweight, high temperature material that consists of layers of continuous silicon carbide fibers and thin titanium alloy foils that are bonded together under extreme heat and pressure to form the composite material. The material can be used for the load bearing structure of NASP.

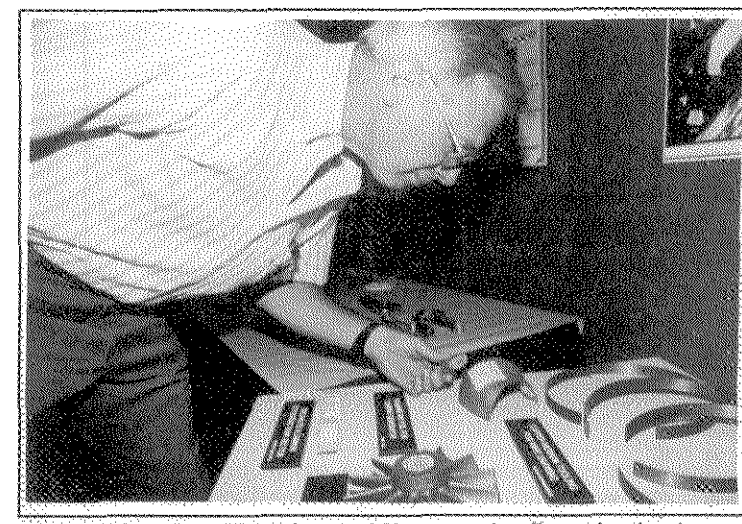
Photos by Fred Jones

Jim Arrington, NASA deputy of the NASP Joint Program Office, stands with a model of the aero-space plane at the NASP exhibit.

Spinoff opportunities from this material have been plentiful. For example, an anti-corrosive bolt has been manufactured for off-shore drilling platforms. It increases safety, reduces labor costs over the platform lifetime and has a huge market potential. In the North Sea platforms alone, there is a multi-billion dollar market potential for these bolts and there are only about 400 offshore drilling platforms. A titanium hip implant has also been made from the composite. It could result in up to 50-percent fewer surgeries because the implant has an elasticity closer to human bones. More medical uses for the composite under study are for other prosthetic joints, pacemaker components and orthopedic wire. Tech transfer of this composite alone has also taken place in the aerospace, automotive and water purification industries.

Arrington covered the tech transfer effort between NASA, the Department of Defense and industry, elaborating a number of solutions to NASP challenges that have been used by U. S. industry to develop hundreds of other spinoff products. "This is a proactive process to get solutions to our problems at NASP and allow commercial applications as well," he said. "The NASP program has produced near-term benefits with multiple uses for the military, for industry and aerospace. It has also enhanced the U.S. position for leadership in industry for the future by investing in a 21st century infrastructure of promoting education and training and progress in technology."

The major partners in the NASP program form a true national team. NASA and the Department of Defense manage the effort through a Joint Program Office located at Wright-Patterson Air Force Base, Ohio. Contributing their technical expertise are members of the National Contractor Team: General Dynamics, McDonnell Douglas, Rockwell International, Pratt & Whitney and Rocketdyne. Government research laboratories round out the nationwide team that contributes the emerging technologies for NASP.



Bill Woods, of the Experimental Hypersonics Branch, checks out some of the spinoff products on display at the NASP exhibit.

Happenings

HOUSE FOR SALE: Four BR ranch in Hampton, 2 baths, den, formal living and dining rooms, eat-in kitchen, master BR has fireplace and deck. Large yard, on cul de sac, priced to sell, $87,500. Call home, 838-0706 or pager, 888-7353.

HOUSE FOR SALE: Must sell in Hampton, 2 BR, 1 bath, eat-in kitchen, remodeled attic, new front porch, 15,000 sq. feet of land. Market analysis says $63,000, make offer. Call home, 247-9771 or pager, 888-7353.

FREE AEROBICS: Don't let the lazy, hazy days of summer take all your energy. Go to the air conditioned gym for aerobics, at 6:15-7:15 a.m. and 11-11:45 a.m., Monday, Wednesday and Friday. Complete workouts, set to a variety of music, include bench, interval and low-impact classes by certified instructors. All accessories are provided. Call the Fitness Center, ext. 46387 for details.

LOT FOR SALE: Tabb/York County area, one acre, 100-feet wide, $41,000. Call 868-7422.

NASA LANGLEY TOASTMASTERS CLUB: The Toastmasters Club meets the second and fourth Wednesday of the month. Whether you are speaking to one person or 1,000, the club can help you learn to speak clearly and confidently. Come to the next meeting, July 28, at the H.J.E. Reid Center, from 11:30 a.m. to 1 p.m. For more information, call John Lin, ext. 45556.

TOWNHOUSE FOR SALE: near NASA, two BR, 1 1/2 bath, family room w/ fireplace, living room, eat-in kitchen, all appliances. Owner pays closing fees and up to two points for your mortgage loan. Asking $66,000. Call 693-5053.

FOUND: Key ring with one key in parking lot near Building 1195C, directly across from fire station. To claim, call S. Harper, ext. 42474 and identify.

LOST: Ladies watch, narrow gold colored band and casing, numeric face. Probably lost near cafeteria or clinic. Contact S. Harper, ext. 42474.

OPEN HOUSE AT THE VIRGINIA AIR AND SPACE CENTER

In celebration of National Space Week and to show appreciation to the NASA family, the Virginia Air and Space Center and Hampton Roads History Center is hosting an Open House on July 18 for NASA employees and contractors. By presenting a NASA identification badge, employees and their immediate families will receive free basic admission. See one of the IMAX films for only $4 for adults and $3.50 for children. For information, call 727-0800.

RAFT RACES AT HAMPTON BAY DAYS: Design a raft and participate in the Hampton Bay Days Raft Race. The race will be in the Hampton River, September 11, noon to 2 p.m. Register to race in these categories: two-person, four-person and open/unlimited. Fee is $15 and includes a T-shirt. Registration deadline is August 31. Trophies awarded for first and second place as well as for most unique craft, most creative crew and first to sink. For an application or to register, call Dan Wilkerson, 727-6210.

AEROBICS: A 12-ton air conditioner now makes it possible to exercise without heat and humidity! Cardiovascular fitness assessments and body composition analyses are available before class. Classes are Tuesday and Thursday, 5-6 p.m., Saturday, 9:30 to 10:30 a.m. at the LAA Gym. For information, call ext. 42295.

SEEKING BACK ISSUES: Anyone, active or retired, who may have 1977 issues of the *Langley Researcher* are requested to consider donating them to the Langley Historical Program. They will complete a full house organ archival collection. The 1977 are the only issues missing from a collection beginning in 1942. Please call Richard Layman, 864-3441.

KINDERGARTEN PROGRAM: The Langley Child Development Center is registering children for its 1993-1994 kindergarten program. A full-day program will be provided by a certified kindergarten teacher. Applicants must be five-years old by October 31, 1993. Call ext. 44827 for more information.

WERE YOU A WITNESS?: Someone witnessed the accident between a white Bronco and a blue Corolla on Wednesday, June 9, outside Gate 2 at 4:15 p.m. If you saw the accident, please call Charlene Dooms, ext 48706, or Bill Shinn, ext. 47273.

NASA LANGLEY MOTOR TOUR FROM THE VIRGINIA AIR AND SPACE CENTER

The Virginia Air and Space Center and Hampton Roads History Center in cooperation with Langley is offering motor tours of Langley through September 6.

Tours are available Monday through Saturday at 10:30 a.m., 1 and 3 p.m. and on Sunday at 1 and 3 p.m. Visitors can explore the birthplace of our nation's aerospace history, see five national historic landmarks and get a glimpse of wind tunnels that can operate up 17,500 m.p.h.

The fee is $5, $4 for members and combination ticket holders. The tour begins at the center and runs for about one hour and 30 minutes. Children ages four to 12 must be accompanied by an adult. For information, call 727-0800.

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News
Researcher

Photo by Fred Jones

Brian Bourque, age 13 at left, and Charlie Garnsey, 12, were the commanders of the S.P. Urania, during a visit to Langley. The two students were part of a group of 28 children in the Kids Aerospace Simulation Program, started by Dr. Irene Ladd, a former Langley NEWEST teacher. They are all from Carpenter Elementary School in Wolfeboro, New Hampshire. The students spent a week on the road visiting Langley and Washington, D.C.

National Aeronautics and Space Administration
Langley Research Center

Langley News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 15 ❖ July 30, 1993

Fred Weick, a Great American Aviation Pioneer, Takes His Final Flight

Headed Langley NACA Cowling Research

BY CRAIG MURDEN

One of the nation's earliest aviation pioneers – airmail pilot, research engineer, aircraft designer – is dead. Fred E. Weick, whose genius touched virtually every aeronautical discipline in a career which spanned a half-century, died July 8 in Vero Beach, Florida.

A True Pioneer

In advancing aeronautical technology, he helped design the first wind tunnel devoted to full-scale propeller research and wrote a textbook on propeller design now held as a classic. In that period, 1925 to 1929, Weick worked for NASA's predecessor organization, the National Advisory Committee for Aeronautics (NACA) at the Langley Aeronautical Laboratory. This, too, was a pioneering endeavor as the Langley facility was the very first of its kind in the world.

It was also at Langley that Weick reached another pioneering plateau. He headed the development of streamlined, low-drag engine cowling technology which advanced aircraft performance dramatically. The NACA cowling first revolutionized civil air transport by making aircraft faster and more profitable. It also found application on the bombers and fighters which played such a prominent role in the air battles over Europe and the Pacific in World War II.

For this breakthrough in engineering, he won for NACA the prestigious Collier Trophy in 1929. Another effect of his engineering versatility was the increasing reputation for excellence in aeronautical research which NACA earned among its supporters in Congress. Modest funding for NACA's Langley Aeronautical Laboratory was sustained through the lean Depression years thanks, in part, to his work from 1930 to 1936. "He was really in the league of the Wright Brothers," said James Hansen, associate professor of history at Auburn University and Langley's official historian. "He was the last of the great Langley engineers of that first generation."

Weick, a contemporary of aviation legends Charles Lindbergh and Amelia Earhart, did not receive the same attention as his more glamorous colleagues, yet the contributions he brought to the country's struggling aircraft industry arguably outstripped any of his peers.

A 1922 graduate of the University of Illinois, he was one of the first university graduates to apply his degree to a career in aeronautics. Weick was also one of the first engineers hired by the original United States Mail Service and he received half of his pay in flying lessons. His efforts in the early 1920s, to establish emergency fields for night-flying mail pilots, was a pioneering challenge of the first order.

Invents Landing Gear

Weick's passion for safety was evident when he built an experimental airplane in the early 1930s aimed at making the process of flying as easy and safe as driving the family automobile. In addition to the integrated controls for ease of flying, he incorporated the tricycle landing gear arrangement which is now the standard for virtually all the world's aircraft and the space shuttle.

Later in the decade, he would go on to improve on the landing design with the now famous Ercoupe, the two-seat, all metal, low-wing aircraft that was so easy and safe to fly that many students mastered it in five hours or less. That half of the 6,000 Ercoupes built are still flying today is a tribute to Weick's engineering foresight.

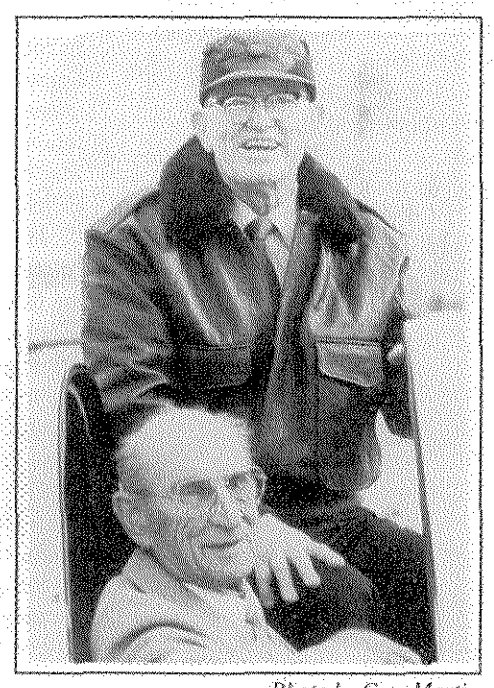


Photo by Cam Martin

Charles Drummond, Langley retired design engineer, and Fred E. Weick, sit in the cockpit of Weick's 1946 Ercoupe.

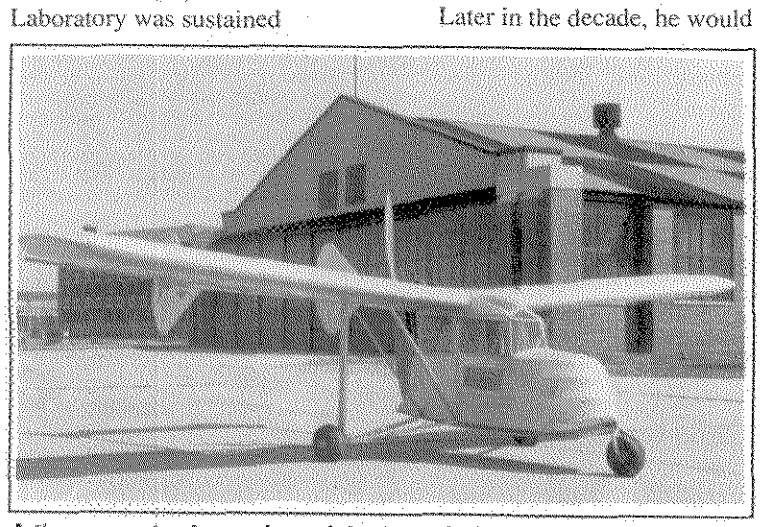
From 1948 to 1957, Weick was a professor of aeronautical engineering at Texas A&M University. There he designed planes and equipment for agricultural applications (crop dusters).

Later, his work with Piper and Cessna set safety standards of lasting benefit to both the crop duster and general aviation industries. From 1957 to 1969, he was employed by the Piper Aircraft Corporation.

Weick's Goals

Weick's prevailing goal was to make aviation directly accessible to middle-class Americans. His own words characterize this remarkable aviation pioneer's dedication to that pursuit, "I feel very fortunate to have been alive throughout the early ventures of atmospheric flight and to have been one of the multitude working to further them. My activities in aeronautics have enriched my life greatly. It gives me satisfaction to find that many of the improvements that we worked on more than half a century ago are still in general use."

Weick had requested that any memorial donations be sent to the Fred E. Weick Scholarship Fund, Embry Riddle Aeronautical University, Daytona Beach, Florida, 32114-3900.



A three-quarter front-view of the homebuilt experimental W-1A airplane Weick designed is equipped with a coordinated control system and unconventional undercarriage containing the now-famous tricycle landing gear. It was a precursor of the Ercoupe.

Langley Previews Upcoming Technology Showcase

BY MARNY SKORA

Examining aging aircraft structures for evidence of disbonding and manufacturing composites quickly with little environmental impact are just two of the technologies NASA Langley will share with industry during a business expo planned for October.

An advance look at the Technology Opportunities Showcase (TOPS), slated for October 19-21, was held July 19. TOPS will highlight past successes and aggressively pursue new technology investment partnerships with American industry.

"Our goal is to invite the private sector—aerospace and non-aerospace industry, large and small firms, minority business and universities—to profit from the government's aeronautics and space research," said Paul F. Holloway, Center director.

NASA and its predecessor the National Advisory Committee for Aeronautics (NACA) have been part of the technology transfer process since World War I. "Now, under the Administration's new direction to place government in a pivotal role to benefit industry, the Agency is redoubling its efforts to share critical research results," Holloway continued. "With 76 years of experience, it is appropriate that Langley lead NASA in this effort."

"The Langley showcase will focus on the dual-use intrinsic to much of the Center's research," said Darrell Branscome, TOPS executive coordinator. Nondestructive evaluation and composite material processing are areas that have exhibited both aerospace and non-aerospace applications of great value, he added. That is why they were chosen as samples of what the fall event will offer.

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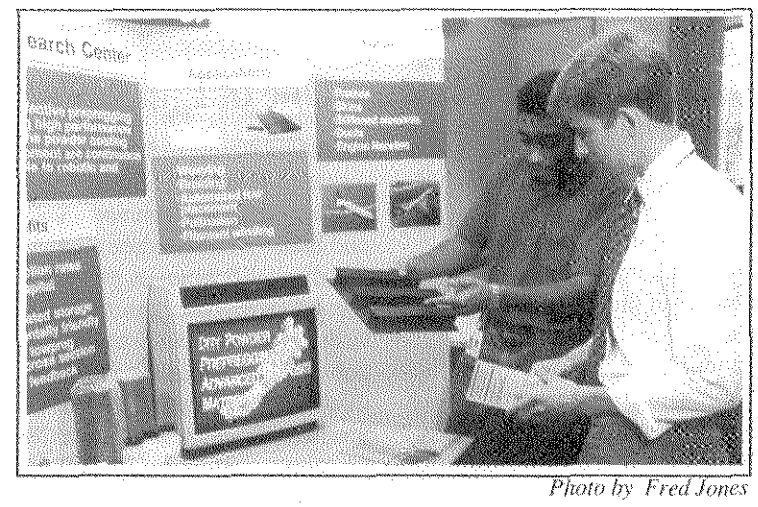


Photo by Fred Jones

Kenneth Porter, Fluid Mechanics Division, left, and Henri Fuhrmann, Mission Analysis Branch, examine composite materials produced by Langley's dry powder method. This technology, in the process of being licensed by private industry, was displayed at the TOPS preview held earlier this month.

August Colloquium Addresses Fuzzy Logic and Its Applications

Professor Lotfi A. Zadeh will speak on "Fuzzy Logic and Its Applications" August 9 at 2 p.m. at the H.J.E. Reid Conference Center, 14 Langley Blvd., as part of Langley's Colloquium series.

Fuzzy logic has been and continues to be controversial. It offers a much better model for human reasoning than the traditional logical systems which are intolerant of imprecision and partial truth. The concept of a linguistic variable provides a computational framework for describing the relation between two or more variables in qualitative, linguistic terms. For example, a linguistic variable of its values might be to compare young, very young, quite young, not very old, etc.

The findings of fuzzy logic have applications in many fields ranging from medical expert systems and image analysis to the control of cement kilns and subway trains. Such logic is employed with success to enhance the IQ of cameras, washing machines, vacuum cleaners and camcorders in everyday use.

Zadeh is professor of computer science in the electrical engineering and computer science department at the University of California at Berkeley. He is currently doing research on inferences from data bases that are incomplete or not totally reliable.

News Briefs

AROUND THE AGENCY

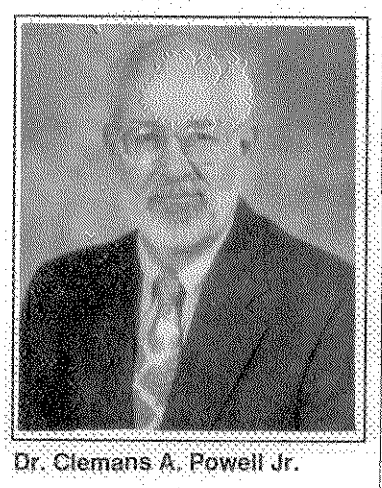
MAGELLAN STATUS REPORT – The Magellan spacecraft continues to successfully circularize its orbit around Venus. The Transition Experiment to lower the orbit by dragging it through the top of the Venusian atmosphere has gone well since its first "drag pass" May 25, project officials said. As of July 6, the apoapsis, or furthest point in the elliptical orbit, has been reduced from 8,460 to 3,850 kilometers (5,245 to 2,387 miles). The periapsis, or lowest point in the orbit, has gone from 180 to 137 kilometers (112 to 85 miles). The last trim maneuver was July 14. By the end of the experiment in early August, the spacecraft's orbit will be between 500 and 700 kilometers (310 to 434 miles) at apoapsis and between 134 and 200 kilometers (83 to 124 miles) at periapsis. The spacecraft has also gone from 7.3 orbits per day to 11.2 orbits and by the end of the experiment will be making 15 orbits of the planet each Earth day. Magellan has been performing gravity mapping studies and the new orbit will permit higher resolution mapping at the poles and the higher and lower latitudes. This is the first time a spacecraft's orbit has been changed at another planet by "aerobraking," or using the planet's atmosphere to create drag.

Powell Named Assistant Chief

Dr. Clemans A. Powell Jr., formerly head of the Structural Acoustics Branch, has been appointed assistant chief of the Acoustics Division. In this new role, he will manage research and technology programs to reduce the noise of subsonic, supersonic and hypersonic aircraft as well as to predict the effects of aircraft noise on people and structures.

Powell began his NASA career in 1964 as an aerospace technologist in the Dynamic Loads Division. From 1973 to 1974, he was a visiting Research Fellow at the Institute of Sound and Vibration Research at the University of Southampton, England. In 1978, he earned a doctorate in science in acoustics from George Washington University. In 1981, he was named assistant head of the Structural Acoustics Branch, and selected as branch head in 1983. There he lead research to quantify human response to noise and was responsible for technology used in the certification of rotary wing and fixed wing aircraft. He also led technology programs in structural acoustics to reduce the interior noise and sonic fatigue of aircraft. He is the author or co-author of more than 70 technical publications and presentations.

Powell earned the NASA Exceptional Scientific Achievement Medal in 1980 for human response studies used in developing helicopter noise certification standards and was elected a Fellow in the Acoustical Society of America in 1990 for contributions to aerospace acoustics.

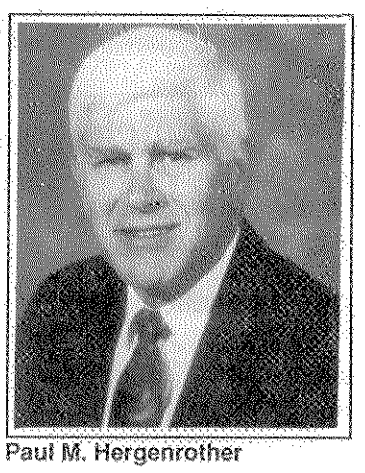


Dr. Clemans A. Powell Jr.

Following Powell's appointment as assistant chief, Dr. Kevin P. Shepherd has been named head of the Structural Acoustics Branch and Richard J. Silcox has been named assistant head. Both have completed extensive graduate training in acoustics at the Institute of Sound and Vibration Research in Southampton, England.

Hergenrother Elected SAMPE Fellow

Paul M. Hergenrother, senior polymer scientist in the Materials Division, has been elected a fellow of the Society for the Advancement of Material and Process Engineering (SAMPE). Only 51 scientists or engineers have been previously honored as Fellows of the society, composed of more than 9,000 members. Hergenrother is one of four members to be named a Fellow this year.



Paul M. Hergenrother

His selection is based on "distinguished contributions in the field of materials and processes, innovations, professional growth and development of people." His induction as a SAMPE fellow will take place at a formal awards ceremony to be held in October at the 25th International SAMPE Technical Conference in Philadelphia, Pa.

Hergenrother came to Langley in 1980 after holding several technical and management positions at the Mellon Institute and Koppers Co. in Pittsburgh, Pa., Whittaker Corporation, San Diego, Calif., and the Boeing Company, Seattle, Wash. He is internationally known for his work in high performance polymers. He has more than 100 refereed journal publications, 90 other reference publications, 35 patents, one book and more than 250 oral presentations to his credit. He is currently on the boards of five journals.

Hergenrother has received numerous awards, including a NASA Medal for Exceptional Scientific Achievement, the Distinguished Lecture Award presented by the Society of Polymer Science, three best paper awards from SAMPE and the Distinguished Service Award from the Division of Polymer Chemistry of the American Chemical Society.

In his present position, Hergenrother is closely involved in the development of high-performance/high-temperature polymers for structural use on aerospace vehicles, particularly the future high-speed civil transport.

Donald "Deke" Slayton, One of Langley's "Original 7" Mercury Astronauts, Dies at 69

BY KRISTINA MURDEN

Donald "Deke" Slayton, one of Langley's "Original 7" Project Mercury astronauts, is being remembered as a true pioneer of the space age. "He was an American original, a true national hero, and we will miss him," said Daniel Goldin, NASA administrator. "The entire NASA family has been saddened to learn of his passing."

Slayton died June 13 at his home in League City, Texas. He was 69.

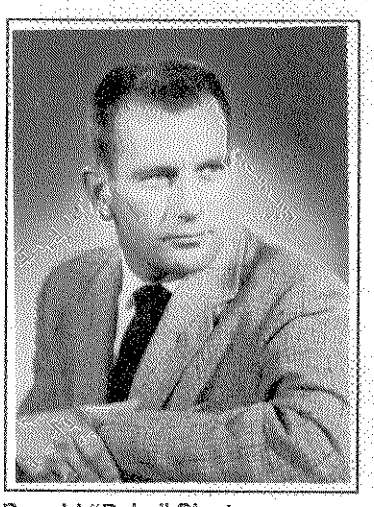
"Deke" was named one of America's first seven astronauts in April 1959. Within days, the seven were known across the country, and in the next few years they would acquire the status of space-age folk heroes. These "supermen" trained at Langley for their future space voyages.

Slayton was one of the most experienced of the original seven astronauts. He had flown combat missions in Europe and the Pacific in World War II and had been a test pilot assigned to fighter operations at the Air Force Flight Test Center at Edwards Air Force Base when he was selected as one of the "Mercury 7" astronauts. His personal commitment to the manned space program was unwavering. He had vigorously defended the cause of humans in space before the Society of Experimental Test Pilots when most test pilots, unfamiliar with the actual course that the project was taking, considered that Mercury offered them no future and little valuable experience. His disqualification on physical grounds was a shock to everyone in the project as well as to the public. NASA physicians discovered that he had a heart murmur. Slayton campaigned for 13 years to get himself reinstated as an active astronaut and finally made it into outer space as docking module pilot in the 1975 Apollo-Soyuz Test Program.

In September 1962, Slayton was appointed Coordinator of Astronaut Activities reporting to Robert Gilruth, head of the Space Task Group. The most important responsibility he assumed, one that he shared with no one else, was that of assigning astronauts to specific missions. Although he had plenty of help in assessing spacecraft systems and mission plans, Slayton made the final decision. His decisions stuck: in the entire manned program, from later Mercury flights through the Skylab missions, he could later recall only one instance in which higher authority superseded his.

When the Manned Spacecraft Center in Houston was reorganized in 1963, Slayton's position was redesignated assistant director for Flight Crew Operations.

Slayton understood well the position manned space flight occupied in the national space program as a consequence of its prominence in the public eye: any failure, especially one that endangered or killed an astronaut, could set back the lunar landing for years, and might even end the manned space flight program. His contribution to avoiding failure was to pick the best people for the crews. As long as manned space flight entailed any hazardous uncertainties, to him, the best people would be experienced test pilots.



Donald "Deke" Slayton

Slayton held several other important positions with the Agency which involved managing the Space Shuttle Approach and Landing Test Project, including five landings by the test Orbiter Enterprise, and directing preparations for and overseeing operations of the first two shuttle missions.

Slayton retired from NASA in February of 1982. At the time of his death, he served as president of Space Services Inc., Houston, and as consultant to several aerospace corporations, among other positions.

Throughout his career, Slayton received numerous prestigious awards recognizing his contributions to aerospace.

Slayton was born March 1, 1924 in Sparta, Wis. He received a B.A. in aeronautical engineering from the University of Minnesota in 1949, worked as an aeronautical engineer with Boeing in Seattle, Wash., and retired as a major in the U.S. Air Force.

IN MEMORIAM

Paul B. Gooderum

Paul B. Gooderum, 73, a native of Wisconsin and a Peninsula resident for 47 years, died on July 4. He retired from Langley in 1981, after 35 years as an aeronautical engineer. His research contributions included techniques to improve spacecraft communications, advanced fuel combustion technology and work with air flowfields at high Mach numbers in wind tunnel models testing.

Eddie Roberts

Eddie Roberts, 64, a resident of Hampton for 42 years, died Friday, May 7. Roberts, who retired in June 1988 after 30 years at Langley, was a member of the Fox Hill Road Baptist Church.

LETTERS

Letter of Appreciation

From Powell D. Mitchell, Structures and Materials Lab: "I wish to thank each one who participated in the wonderful retirement party, with special thanks to those who organized it. Also, to all those who attended, thanks from my family as well as myself."

Thanks for the Luncheon

From Roy W. "Pat" Mason, Operations Support Division: "Many thanks for a truly outstanding retirement luncheon. Your highlighting of career, 'special occasions,' kind words and many gifts will be remembered and treasured by Joanne and me."

News 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 ..... Marny Skora

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

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

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All materials are subject to editing.

NASA Adapts X-ray Technology for Aerospace Applications

BY KIRSTEN WILLIAMS

Adapting an existing cutting-edge X-ray system, Center researchers hope to improve methods of evaluating aging aircraft, while saving U.S. industries money.

Although the reverse geometry X-ray system was originally devised for medical, dental and industrial uses, researchers have devised unique applications spanning several aerospace disciplines.

"We want to take advantage of a novel system, slightly modify it and use it for aircraft, for measuring composite materials, for assessing damage growth in materials and for supporting tests to assess how structures behave under stress," said Dr. Joseph Heyman, head of the Nondestructive Evaluation Sciences Branch (NESB).

To promote safe air travel, Center researchers will adapt the system to survey complex regions of aircraft—like wings, turbines and propeller blades—for corrosion, cracks and disbonding.

Before the Center can employ the machine, developed and marketed by Digiray X-Ray Systems, San Ramon, Calif., researchers must miniaturize the system's sensors. They can then be inserted into internal aircraft structures to inspect the entire aircraft, including hard-to-reach corners and crevices. Under contract with NASA Langley, the corporation has boosted the system's power so thicker parts can be imaged.

Researchers must also devise methods to ensure the accuracy of the data and to enhance interpretation of the X-ray image. "We need to develop computational models that can take the data that we obtain using the Digiray system and essentially map it into something that is quantitatively interpreted," said Dr. William Winfree, a NESB senior research scientist.

The computerized system patented by the company "is a marriage of television-like scanning of the X-ray beam and digital data acquisition. Other evaluation methods like ultrasonics and thermography exist, but are used for different purposes. We believe that these types of technologies, which improve image quality, permit airframe inspection at high reliability and reduced cost," Winfree said.

Because the system yields depth information, this X-ray technique may also be used by the Structures Directorate to view how fibers mesh in three-dimensional composites and to monitor them for internal damage. Other potential uses include monitoring changes in solid rocket fuel over time.

"It's such a broad applications area," Heyman said. "I see it as a general purpose tool for NASA and for industry."

Center researchers hope to sign a memorandum of agreement with Digiray that approves Langley's applications and adaptations. Spear-headed by the NASA Technology Transfer Office, the Agency has a rigorous technology transfer program to allow aerospace technology to permeate the private sector.

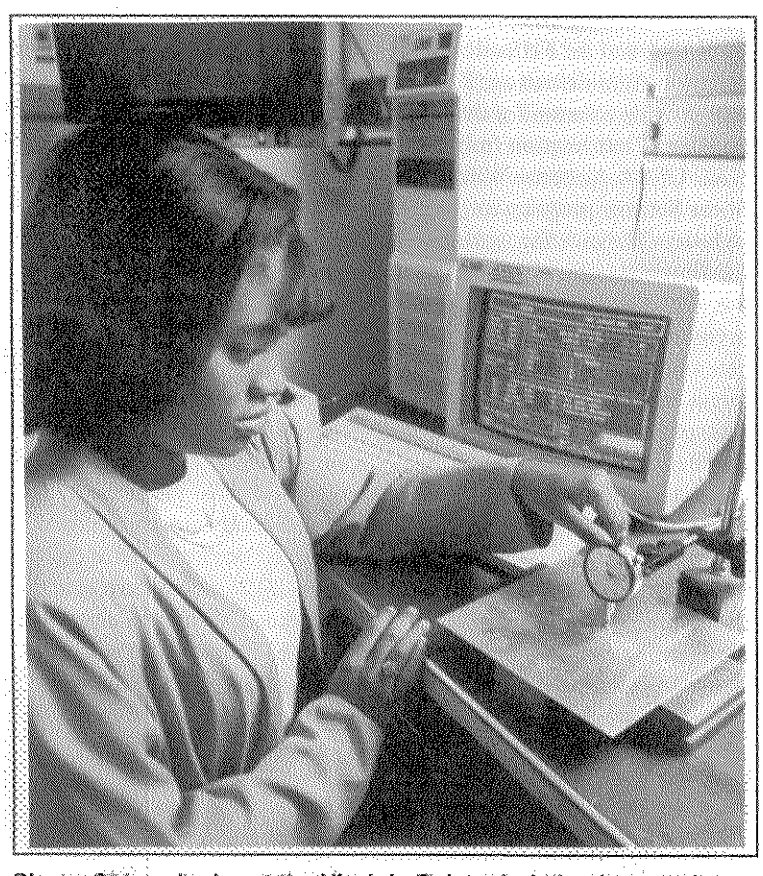
Researchers will share their unique uses of the X-ray technology with commercial airline companies, as well as other industries. "We have a parallel mandate with the Federal Aviation Administration to work with them to improve safety and reliability," Heyman said.

Potential spin-off uses include improved medical X-rays and assembly-line part scanning to control production quality.

"This technology cooperation will expand the use for this product and will help U.S. industries maintain product quality," Heyman said. "We as a national lab should be a resource for U.S. industry, helping them become more competitive."

Photos by Fred Jones

Ray Parker, left, of the Nondestructive Evaluation Sciences Branch, and LARSS student Shana Olds use the Digiray X-ray system to examine a piece of aluminum that has been milled out to simulate material lost due to corrosion. Center researchers will adapt the machine to examine more complex regions of aircraft like turbines and wings.



Shana Olds, a junior at the Virginia Polytechnic Institute and State University, measures material loss using a mechanical dial indicator. She has been conducting research this summer using the Digiray machine to produce stereographic images.

Hedgepeth Cited for Safety Team Work

Kenneth D. Hedgepeth of the Systems Engineering Division was cited in a Marshall Space Flight Center (MSFC) Group Achievement Award for his work on a multi-center team in 1992.

The team, the NASA Unified Factor of Safety and Verification Processes Working Group, consisted of eight people from NASA centers throughout the country. They were charged with finding uniform factors of safety for structures throughout the Agency. They designed "factors of safety and acceptable test requirements for verifying structural design adequacy for NASA space flight structures," according to the citation. MSFC in Huntsville, Ala., was the lead center for the team. Team members were recognized for "exceptional team performance, dedication and exemplary technical contributions to the development of an Agency-wide uniform standard for structural factors of safety and verification processes utilized in the design of space flight hardware."

Air Force Celebrates Community Appreciation Day

The annual Community Appreciation Day will be held at Langley Air Force Base on Saturday, August 7, from 9 a.m. until 4 p.m. There will be booths and displays representing local businesses and an aircraft industry pavilion. Also featured will be NASA Langley's F-16XL. The day will conclude with a concert by Roy Clark and his band at 4 p.m. All events are free and open to the public. For more information, call Janet Gaines at 764-2018.

Health Corner

Be Part of the Solution: Join the NMDP Registry

Joining the National Marrow Donor Program (NMDP) registry requires a simple blood test (see the bone marrow story in the July 16 issue of the *Researcher News*). Although a fee exists to cover the expense of the test, the Langley Activities Association has volunteered to sponsor ten people for antigen screening. The American Red Cross has also agreed to cover a portion of the cost for others who wish to join the registry. Antigen screening for interested individuals will occur at 9 a.m. August 3, in the H.J.E. Reid Conference Center, 14 Langley Blvd. Call Kirsten Williams, ext. 43316, for more information.

New Technologies for Prostate Cancer Discussed

Learn more about new treatment options and their effectiveness for prostate cancer, which replaces lung cancer as the most frequently diagnosed cancer in men. Dr. Wayne Heggan, a physician in the Clinic, will discuss the often controversial topic August 4 at 2 p.m. in the H.J.E. Reid Conference Center.

Two OSHA Nurses Certified

In June, Sharon Hartsell, family nurse practitioner, and Donna Freet, staff nurse, both of the Health Services Center, were recently certified as Occupational Health Nurses.

The American Board for Occupation Health Nurses (ABOHN) conducts the certification program for qualified occupational health nurses. Nurses must be profi-cient in OSHA laws, safety, industrial hygiene, toxicology, management, research, occupational health counseling and direct nursing care. They must also complete 75 hours of continuing education in occupational nursing, implement programs relating to occupational nursing and have five years of full-time practice working as practical nurses.

With the certification of Freet and Hartsell, Langley now has two certified Occupational Health nurses of the four nurses on Center. Only 14-percent of all practicing occupational health nurses are certified, according to ABOHN. "We are very pleased to have professionals of that caliber and skill level here at Langley to work with our personnel," said Pete Edgette, head of Occupational Health Services.

Nurses Sharon Hartsell and Donna Freet of the Health Services Center pose with their certificates from the American Board for Occupational Health Nurses.

Langley Installing Environmentally Safe Fuel Tanks

BY CRAIG MURDEN

As part of its on-going initiative to prevent environmental contamination, Langley is installing upgraded fuel storage tanks designed to exacting standards of longevity and serviceability.

Because of the Center's compliance and pollution prevention efforts, the Environmental Engineering Branch has developed and implemented an Underground Storage Tank (UST) Program, designed to evaluate the condition of all USTs at the Center. An evaluation of four 25,000-gallon fuel oil tanks servicing the steam plant revealed two of the four tanks were structurally defective. The finding resulted in the removal of the four tanks and replacement with three new 50,000-gallon tanks.

"We continue to be concerned about any potential threats to groundwater supplies here at the Center and in the surrounding communities," said John Lee, head of the branch. These new tanks will help ensure the Center's compliance with federal and state laws while contributing to our overall effort to prevent future pollution, he added.

To eliminate threats to the environment, the new tanks have been designed with a number of pollution preventive features:

- double-wall steel hulls with fiberglass reinforced coating
- spill containment devices
- sophisticated vapor venting systems
- elaborate leak detection equipment for tank walls and pipes

Recognizing that EPA studies show that about 70 percent of UST leakage problems nationwide are associated with piping and fittings, buried portions of the new tank piping will be double-walled and nonmetallic to resist corrosion.

The new tanks were designed under the guidance of the Facilities Engineering Division. Skip Schroeder served as the project construction manager, ensuring that the tanks were built to the detailed specifications developed within the division. He said that this project is part of a series of tank replacement efforts, all intended to consider both environmental and functional requirements of Center operations.

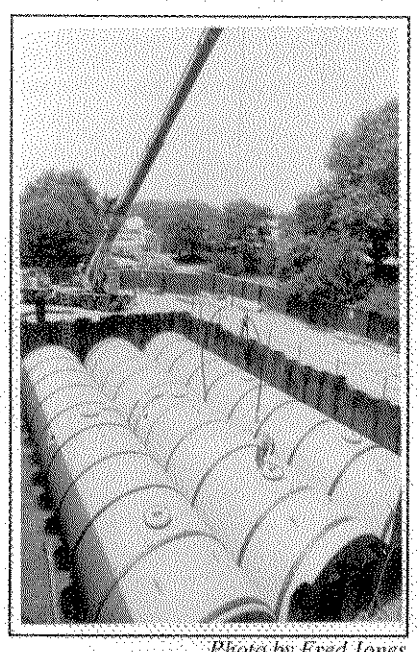


Photo by Fred Jones

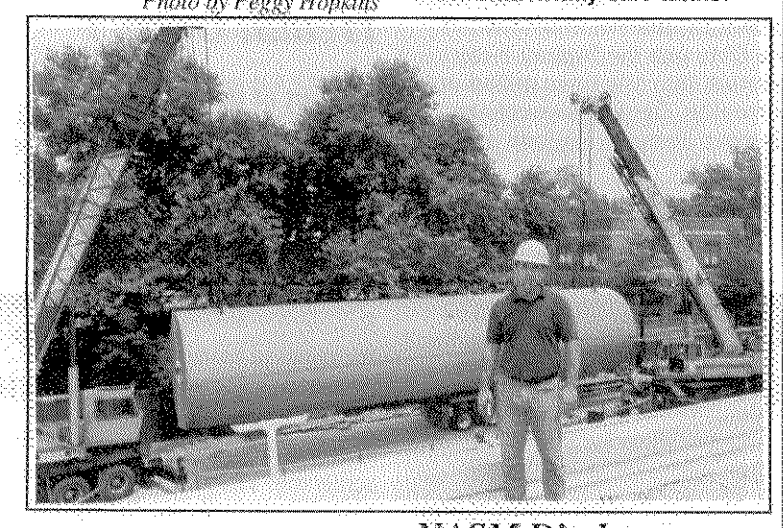


Photo by Peggy Hopkins

Above, the three new tanks rest in the ground, replacing the older tanks. Skip Schroeder, below, of the Facilities Engineering Division, who was the construction manager for the project, oversees installation of the environmentally safe tanks.

The DPAC and SCPD Logos Represent Everyone

This logo for the Disability Program Advisory Committee (DPAC) was designed to represent a wide range of disabled persons. The universal symbol for the disabled with the inset planet Earth conveys a world-wide recognition of disabled persons and their contributions to NASA Langley Research Center. The three stars symbolize specific disabilities that are the most prevalent at Langley, the visually impaired, the hearing impaired and the physically impaired.

The Award-Winning Team

Members of the Satellite Committee for People with Disabilities, who were recognized by the Team Excellence Award (see story in the July 16 issue), were Lawrence B. Cooper III, William M. Vance, Nola K. Graves, Carol R. Williams, Merven N. Pfeiffer, Steven K. Bene, John W. Kirtley, Marilou S. Phillips, Carol H. Satterwhite, Randy A. Manning, John C. Covington, Ronald R. Krodel, Laura C. Campbell, Geraldine M. Rankin, Annette A. Bene, Karen L. Bibb, Patsy L. Campbell, Gary B. Willis, Harry M. Webb Jr., Weldon L. Staton, Geraldine N. Pardue, Richard A. Land, Peggy S. Overbey, John Paul Phillips, William A. Wood, Susan J. Lemon, Karen A. Ault, Joseph D. Nolan, Walter W. Hankins, Karen E. Ridlon, Peter J. Edgette, Burnett W. Peters Jr., Laurie W. Andrews, Richard L. Chase, Phil Everhart, Charles Lesko, Kathy Pendowski, Carol Hoegerman, Lisa Lottes, Annette Pope, Cynthia Morrison, Fred Barnes, Shirley Confino-Rehder, Carl Amos and Diane E. Forrest.

Speakers Bureau Report

The Speakers Bureau reports the following activities:

Dr. Stephanie Wise spoke at the University of Arizona's Center for Optical Sciences about "Laser-induced Optical Sciences."

Drs. George F. Helfrich and **Kevin B. Osborne** spoke at the University of Virginia on "Intellectual Property Patents, Trade Secrets, Copyrights and Trademarks." Helfrich also spoke at the Air Force Engineering and Technical Services annual banquet about "Ideas – What to Do with Them Once We Have Them."

Leonard McMaster spoke at the University of Rochester's Laboratory for Laser Energetics on "Solid-State Laser Development in NASA for Atmospheric Observations."

Veloria Martinson and **Scott Martinson** spoke about "NASA and Space" to students at Chambliss Elementary School, Wakefield, Va.

John Meyer and **Robert Gate** spoke at the Regional Articulation Conference at Thomas Nelson Community College about "Advanced Interfaces."

Dr. Mary Ann Smith spoke at Trinity Lutheran School in Newport News, about "Mission to Planet Earth." Smith, **Raymond Bowker, Chadna Singer** and **Bart Singer** spoke about the Science by Mail Program at the Science Museum of Virginia.

Mike Logan spoke to students at Tabb Elementary about "Computers and Science."

Dr. Christine Darden spoke on "The Role of Mentors in Motivating Students in Math and Science" for the Governor's School of Science and Technology at the New Horizons Technical Center.

Lynn Curtis spoke about NASA careers to students at Barron Fundamental School, Hampton.

David Dress talked on "Careers in Aerospace Engineering," to students at South Morrison Elementary School, Newport News.

Eric Everton talked to the York Ruritan Club about the Analysis and Computation Division's Grid Geometry Laboratory (Geo Lab).

Thayer Sheets spoke to the Virginia Space Grant Consortium about "NASA's Small Business Innovative Research Program As It Relates to Small Business."

Charles Russell talked about "NASA Communications" to the Armed Forces Communications Electronics Association.

NASM Displays "Blueprint for Space"

The most radical space station design in Washington, D.C., these days might be the "baby space station," an unpiloted craft that puts three monkeys in orbit for two months. It's not found in any redesign team's proposals; it's already in the National Air and Space Museum (NASM) in Washington, D.C.

The space station is just one of about 60 paintings and drawings in the museum's latest exhibition, "A Blueprint for Space from **Collier's** Magazine, 1952 to 1954." The exhibit, on display until April 1994, shows space exploration from the viewpoint of the 1950s.

Then, scientists like Werner von Braun were looking for ways to excite Americans about space travel. They launched a series of eight articles in **Collier's**, one of the era's most popular magazines, to convince people space travel was both possible and desirable.

Their articles included descriptions of orbiting laboratories, multi-stage rockets, lunar landing expeditions and missions to Mars.

The exhibit includes excerpts from the films and copies of the original articles. NASM is open daily from 10 a.m. to 6:30 p.m.

Call for Presentations: Airborne Wind Shear Review Meeting

The fifth and final Combined Manufacturers and Technologists Airborne Wind Shear Review Meeting, co-sponsored by NASA and the Federal Aviation Administration (FAA), will provide a forum for the transfer of information from the NASA/FAA Airborne Wind Shear Sensors program to industry. The meeting, scheduled for September 28-30 in Hampton, will also provide an opportunity for all participants to pose questions and discuss developments and problems of current interest. The gathering will be the final such meeting, marking the conclusion of the NASA/FAA Airborne Wind Shear Sensors Program.

Advancements in product development and certification methodologies have occurred since the last meeting and this year's session will cover these and other efforts in wind shear technology. Sessions will include topics relating to wind shear flight test overview, wind shear modeling, flight management and ground-based systems, airborne wind shear detection systems, certification of predictive wind shear detection and avoidance systems, development and applications of sensors for aircraft wake vortex detection and avoidance, and synthetic and enhanced vision systems.

To be considered by the review committee for inclusion on the agenda, presenters must submit title of presentation, author(s) with affiliation, complete mailing address, telephone and fax numbers and an abstract, not to exceed one page. Authors whose papers are accepted for presentation will receive guidelines for preparation of their viewgraphs, 35mm slides and other visual aids. Camera-ready copies of visual aids must be submitted at the check-in desk upon arrival at the conference. Conference proceedings will be mailed to participants following the conference. The meetings are unclassified and open to all interested parties.

Send two copies of the abstract to Dr. Victor E. Delnore, Mail Stop 490. For more information, contact Delnore at 864-1812 or fax 864-7975.

NASA Oshkosh Exhibit Highlights U.S. Leadership in Aeronautics

BY H. KEITH HENRY

NASA returns to the annual Experimental Aircraft Association Fly-In Convention and Sport Aviation Exhibition at Oshkosh, Wis., July 29-Aug. 6, with a different look to NASA's exhibit and a special focus on general aviation technology.

The modular "NASA and American Leadership in Aeronautics" exhibit explains how NASA is addressing the challenges of aircraft in every speed regime and in every size from tiny homebuilts to giant airliners. The exhibit also stresses how NASA's customers in government, industry, universities – and ultimately, the American taxpayer – benefit from the Agency's advances in aeronautics.

The NASA Pavilion

In front of the NASA pavilion, visitors may examine the world's first lightning-protected, composite-built aircraft, the Glasair III LP. Stoddard-Hamilton Aircraft, Inc. developed the plane under a highly successful NASA effort to increase the role of small business in federal high-technology research.

Inside the exhibit hall, "High Speed for World Travelers" shows what NASA is doing to make a next-generation supersonic airliner possible. Colorful photos and graphics explain how the agency is tackling the three environmental issues of exhaust emissions, airport noise and sonic boom that, when solved, will make it easier for U.S. industry to design and build such an aircraft.

Highlights of the display are a striking 10-foot model of a future high-speed civil transport concept and an actual mixer-ejector nozzle design. Advanced noise suppressors like the nozzle could reduce takeoff and landing loudness of a future supersonic airliner to one-quarter that of today's Concorde.

"Toward Safer Skies" showcases NASA's role in making air travel safer for thousands of pilots and millions of passengers. It highlights the agency's research on weather-related hazards such as windshear and icing and on new technology to combat them. The displays also explain NASA's research on aging aircraft, more efficient air traffic control, cockpit automation and human factors.

In "New and Better Aircraft," guests will learn about NASA's efforts to revitalize subsonic airplanes and the nation's airspace system. The displays emphasize NASA's research on advanced composite materials, more efficient, less noisy engines and new control systems that use fiberoptics and electric actuators. A special feature details NASA's new initiatives in short-haul aircraft, including the important general aviation market.

"New Worlds of Flight" is a look at how NASA is paving the way for the aircraft and aviation systems of tomorrow. There is a special update on the progress of the National Aero-Space Plane Program, which is generating the technical foundation for operational, single-stage-to-orbit spaceplanes in the early decades of the 21st century.

NASA Aviation Research

Visitors will find out how the products of NASA research travel from the lab to the runway in "Putting Technology to Work," a recap of the payoffs of NASA's aviation research. The displays explain how NASA technology winds up in products from new engines and nacelles for the Boeing 777 to small aircraft, automobiles and sailboards.

A special exhibit focuses on NASA's Small Business Innovation Research Program, which has produced success stories such as the Glasair III LP and the Pilot Weather Advisory cockpit display for general aviation aircraft demonstrated at the exhibit. The firms involved will be available to talk about their products.

NASA experts also will be available to give forum talks on topics ranging from general aviation aircraft to the agency's SR-71 "Blackbirds."

The presentations by craft personnel from NASA's research centers are traditionally a popular feature of the exhibit. This year, NASA's skilled technicians will again discuss and demonstrate how they make wind tunnel models and test instruments and other devices that make NASA's advanced aeronautics research possible.

Although NASA's Oshkosh exhibit is geared toward aviation, there also are exciting displays of the agency's space programs, including the latest on the space shuttle, Earth and space science studies, space technology and the space station.

NASA Photo

Thousands of aviation enthusiasts travel to Oshkosh, Wis. every year for the International Experimental Aircraft Association Fly-in Convention. The 1993 event is being held this year from July 29 through August 6.

Osteoporosis: Diagnosis and Prevention

Dr. Anne Leddy and Dr. Alexander Wilson, specialists in osteoporosis, will visit Langley and present a brown bag seminar on osteoporosis. The seminar will be on Thursday, August 12, at noon in the Cafeteria Executive Dining Room. The session will last about 30-45 minutes and cover the role of bone density measurement in the diagnosis of this debilitating disease. The use of estrogen and other alternative treatments will also be addressed. For more information, call ext. 46387.

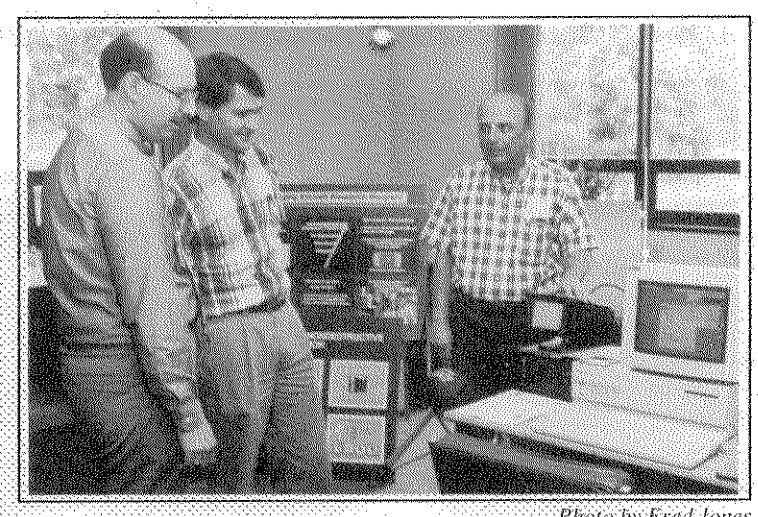


Photo by Fred Jones

Elliot Cramer, Nondestructive Evaluation Sciences Branch, left, describes the role of thermal energy and infrared imaging in inspecting bonded structures to Noel Talcott, Advanced Aircraft Branch, and Otto Youngbluth, Aerosol Research Branch.

TOPS Preview . . .

Continued from Page 1

Thermal Bond Inspection

Elliott Cramer, group leader of thermal NDE in the Nondestructive Evaluation Sciences Branch, explained how thermal energy and infrared imaging have been combined to examine composite and bonded structures for evidence of cracks, corrosion or disbonding. "Data analysis transforms the temperature images into pictures clearly depicting the integrity of the structure—all without disturbing the object under inspection," said Cramer.

The Thermal Bond Inspection System (TBIS) illustrates the thrust of technology transfer. Both Boeing and Lockheed have used the Center's software to evaluate the effectiveness of the thermal inspection method. Both acknowledge the improvement in flaw detection the new method offers over existing technology.

However, neither of the large commercial aircraft builders intends to develop the process for themselves. Instead, they will look to another source from which they can purchase a complete package for use in their inspection departments. The Langley initiative, validated by the user, will be turned over to the private sector for marketing.

This is where the commercially valuable technology transfer comes into play. At least two companies are interested in marketing the TBIS and Langley engineers and Technology Utilization Office officials are currently examining the transfer process for them. In addition, the benefits of the thermal imaging system is not limited to aircraft applications alone, but can be invaluable in inspecting any type of laminated materials or bonded joints from furniture to pressure vessels.

Composite Materials

A second area with unlimited dual-use opportunities is advanced composites. Composite technology is proposed to be the key to aircraft manufacturing for the 21st century, especially for the construction of a high-speed civil transport. A major barrier to the widespread use of these advanced materials is the high cost of fabrication. Langley's research into a dry powder method of impregnating fiber is another initiative under the Center's Commercial Opportunity Program. This program establishes working partnerships between NASA and industry to transfer advanced and valuable technology to the private sector for commercial product applications. Currently, Electrostatic Technologies, Branford, Conn., and Polymer Composites, Inc., Winona, Minn., are pursuing the licensing of this process.

"The dry powder method is versatile, faster, cheaper and, because it uses no solvents, is environmentally friendly," said Bob Baucom, group leader of composites processing in the Polymeric Materials Branch.

The dry powder process can be directly integrated into a variety of composite processing procedures. "In addition to composite aircraft and spacecraft hardware, the Langley process can be used in the fabrication of automotive products, biomedical devices, and sporting goods," said Maylene Hugh, Old Dominion University research associate. Specific examples include drive shafts, wheelchairs, leg braces, snow skis and even tennis rackets.

Preview of What's to Come

"The preview gave would-be participants and interested Center personnel an idea of what the fall event will include," said Carrie Walker," TOPS Program co-chair. Over 150 Langley groups have expressed interest in participating in the event.

"Our job is to tailor those technology offerings and group them to benefit the customer," said Joe Heyman, TOPS Program co-chair. "Our customers for this event will be industry CEOs and top management of both aerospace and non-aerospace firms."

"I'm convinced Langley has much to offer industry in this joint effort to bolster the economy and create job opportunities," Branscome added.

Physics Olympiad Helps Carry the Torch Worldwide

BY KRISTINA MURDEN

Langley's people and facilities impressed the next generation of engineers and physicists this month when more than 200 of the world's top high school physics students took a break from the International Physics Olympiad in Williamsburg to tour Langley July 14 and 15.

The students arrived from the College of William and Mary where they participated in two five-hour theoretical and laboratory examinations of the International Physics Olympiad. Held for the first time in the United States, this annual event features the top five high school physics seniors from more than 40 countries. The five-member United States team won a gold medal, a silver, two bronze and an honorable mention. Only the top 17 students received gold medals.

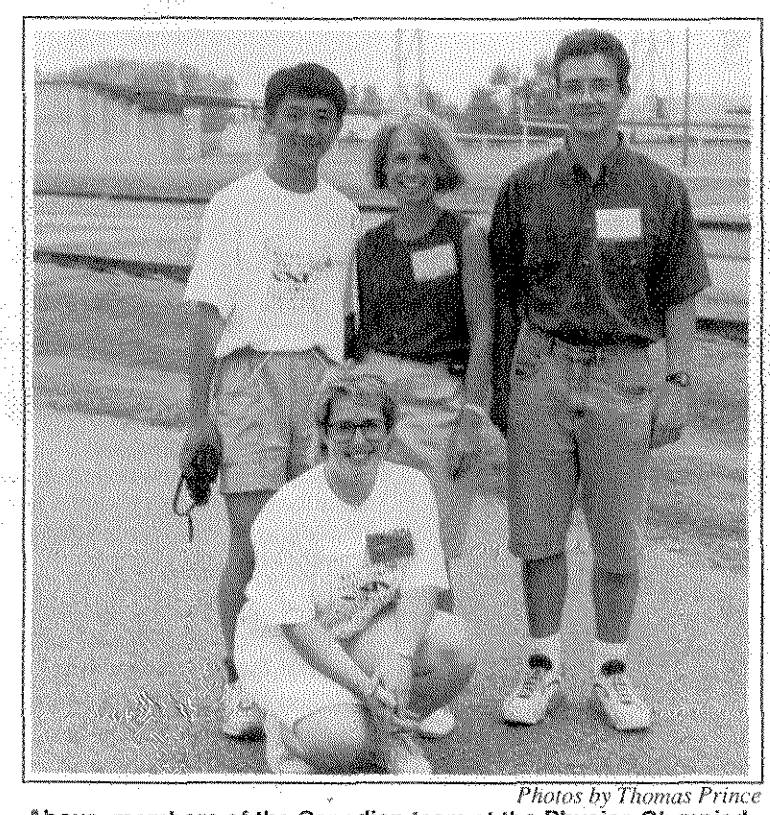
"This was a great opportunity to show Langley to the next generation of engineers and physicists–it was good for us and good for them," said Bill Prosser, aerospace technologist, Nondestructive Evaluation Sciences Branch (NESB), who helped to organize and coordinate the tours.

Langley employees and their family members provided interpreters for more than 10 languages for the visitors. Among them were Russian, Indian, Chinese and Italian. Through Langley's Russian interpreter, Victor Voloshin, student Valerii Alerseyev of Estonia, said, "I was very impressed with NASA, especially the test run at the Aircraft Landing Dynamics Facility (ALDF)."

The students certainly enjoyed NASA, despite the sweltering temperatures that week. The flight simulators were a big hit, especially for the students who sat in the cockpits. The ALDF provoked many "oohs" and "ahhs," and the students want to come back to work here. "I want to work here. The most exciting thing for me was that I got to sit in the flight simulator!" Xiaodong Yang of Canada said. Students also toured the hangar, model and machine shops, Variable Density Tunnel; the 16-Foot TDT Tunnel, and the 30- by 60-Foot Tunnel. "I was so impressed by the flight simulators. NASA is a lot of fun," commented Jurgen Hissen, also on the Canadian team.

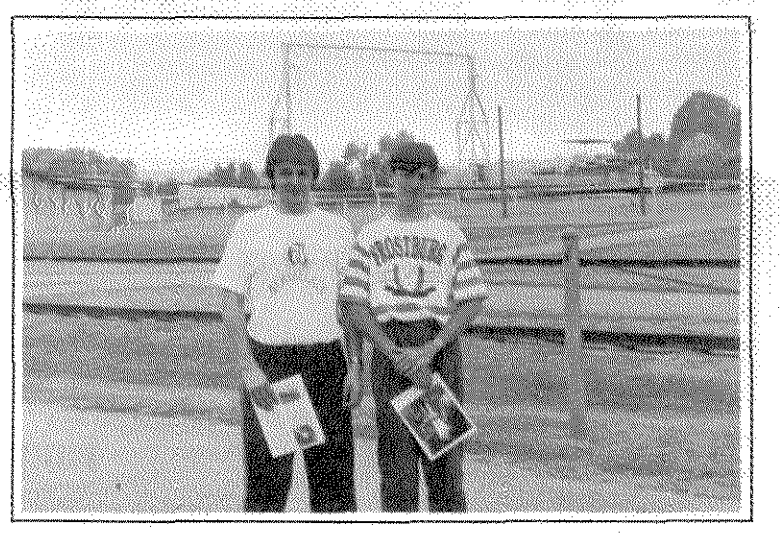
Lynn Carlson, Head Guide, Conn.: "This is a wonderful, amazing experience for me and all of these kids."

Besides Prosser, Shelley Canright, Office of Education; Mike Rammel, Security; and Joe Heyman, head of NESB, played major roles in making the tours possible.



Photos by Thomas Prince

Above, members of the Canadian team at the Physics Olympiad, students Xiaodong Yang, left, Deonna Johnson, in front, and Jurgen Hissen, right, pose for a picture with Lynn Carlson of Connecticut, who acted as head guide, organizer and director of this years competition.
Below, Vassili Larkin of Russia, and Valerii Alekseyev of Estonia, stand by the ALDF following a test run that the students saw.



Virginia Air and Space Center Seeks Volunteers: Training Is Provided

The Virginia Air and Space Center and Hampton Roads History Center is recruiting for its next docent class which begins August 30.

The training offers docents a way to expand and share their knowledge with the public. Weekday docents will attend a three-week training program from August 30 through September 17, from 9:30 a.m. to 3 p.m. Training for weekend docents will be held September 4, 18 and 25, from 9:30 a.m. to 3 p.m. All training will be held at the center.

What does it mean to be a docent for the center? The word docent comes from the Latin "docents" meaning "to teach." In medieval times, "docent" was applied to an unpaid teacher or lecturer. A Virginia Air and Space Center docent acts as a tour guide promoting a greater understanding and appreciation of the center's artifacts by teaching, interpreting and guiding visitors. Training is extensive and requires study and practice, in preparation for interpreting history and technology for center visitors. Weekday docents must agree to work 100 hours per year; weekend docents donate 50 hours per year.

Virginia Air and Space Center
Hampton Roads History Center

Docents will conduct focused tours and special children's programs for the general public, school groups and unscheduled tours for daily visitors. They may also be trained to work in NASA's Teacher Resource Center and to help the center's educators deliver special programs. Docents can earn a bronze membership and will receive a 10-percent discount on purchases in the gift shop, free parking and invitations to center special events and volunteer functions.

For more information or to obtain an application, call the Public Programs Department at 727-0900, ext. 735. Deadline to register for training is August 20.

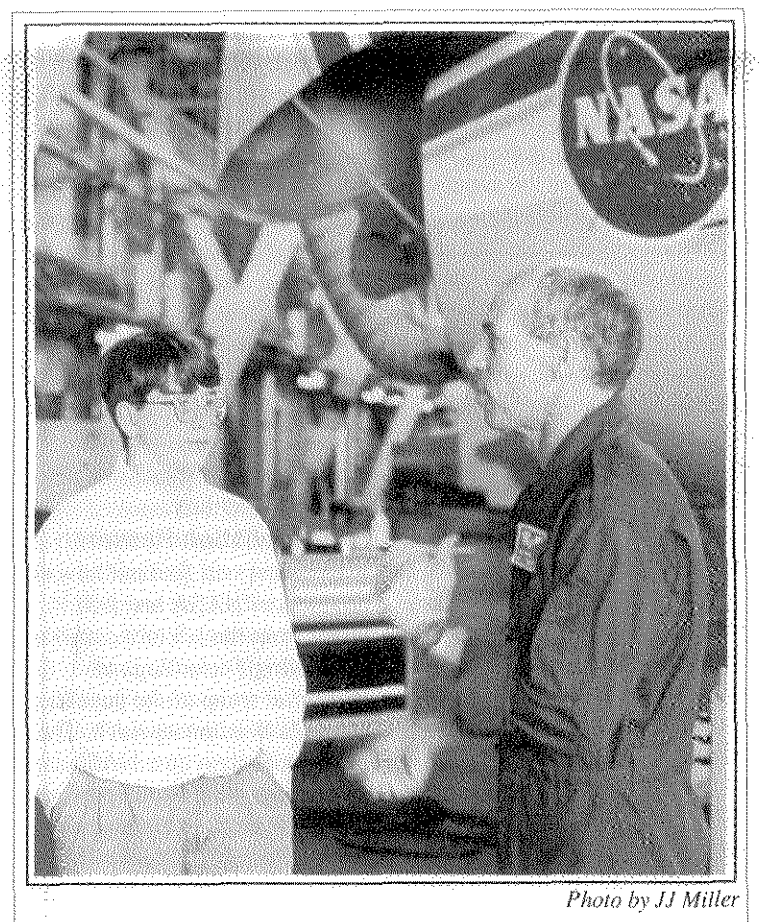


Photo by JJ Miller

Pilot Phil Brown of the Aircraft Operations Branch, talks with Peter Schwartz of Arlington, Va., during a tour of Langley's hangar. Schwartz was one of the 21 regional 1993 NASA Science Fair winners invited to tour Langley and the Virginia Air and Space Center as an invited guest of NASA. Accompanying him were other winners, their families and several teachers.

NASA Videoconferences Will Help Middle School Teachers

The Virginia Space Grant Consortium was recently awarded a grant of $46,455 from NASA for the production of a series of professional development teleconferences for teachers in grades four through eight. The series, called "Mission: EarthBound," will be produced by the Consortium, NASA and Old Dominion University's Academic Television Services.

"Mission: EarthBound" will introduce teachers to the concept of problem-based instruction and assessment. Problem-based instruction investigates a "real-life" situation to determine whether a problem exists, creates an exact statement of the problem, generating and evaluating possible solutions in as many ways as the problem allows. "The intent is to involve participants and to enhance their understanding of the role science plays within our society to provide needed solutions to natural or man-made problems," said Shelley Canright, an education specialist in the Office of Education. Canright conceived the idea for "Mission: EarthBound."

The five-part series, scheduled for broadcast during the winter and spring of 1994, will use the perspective of space to investigate the global problem of ozone pollution. "Mission: EarthBound" will examine the Earth as an integrated, interdependent and interrelated system," Canright said. "This approach is the focus of NASA's on-going 'Mission to Planet Earth' which uses space platforms to monitor Earth's resources and environment." Participants in this series will learn how they can use space data resources in their classes.

In addition to the interactive programs, two introductory videotapes will be created to be viewed by teachers prior to the live broadcasts. They will introduce the program's theme of Earth-system science and the concept of problem-based instruction.

Public Service Announcements

The Virginia Peninsula's Public Service Authority (VPPSA) Board will meet Friday, August 6, 10 a.m., in the Middle Peninsula Planning District Commission office at Woodleaf Commons, Business Rt. 17, Saluda.

The Citizens Advisory Board for the VPPSA welcomes comments and questions about solid waste management from residents all over the region. The next advisory board meeting is Monday, August 2, at 4 p.m., in the Gloucester County Public Library, Gloucester Courthouse.

For information, call 728-2062 or 1-800-683-0922.

Time to Listen– Creating a "Safehaven"

BY GORDY DEGEAR

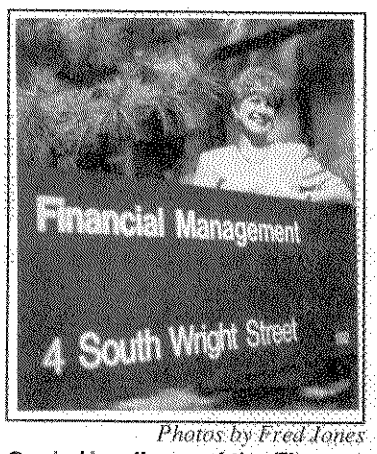
Without people like Susie Henriksen, places like Safehaven wouldn't exist. A nonprofit organization run by everyday caring people, Safehaven provides a temporary shelter to abused and neglected children, ages four to 17. Henriksen, an accountant in the Financial Management Division, loves children. This is a partnership with immeasurable benefits to everyone involved.

Safehaven was in the planning stages for years before becoming a reality in November, 1992. Before Safehaven began, there wasn't any shelter on the Peninsula for children living in abusive homes to be placed before they could be relocated in foster homes or permanent shelters.

Henriksen has gotten involved in many ways, beginning in 1991 with "reminder" calls to Safehaven board members to increase meeting attendance while the shelter was being planned. She has since acted as the volunteer coordinator, setting up a data base with the assistance of her daughter, Melissa. She also suggested that a volunteer training program be set up, which began this year. Currently on the Board of Directors, she serves as chairman of finance. Mary Murray, program director for Safehaven said of Henriksen, "I've never met anyone as committed as Susie."

Her favorite activity, however, is spending time with the children. "The kids are like family to me," Henriksen said. The kids refer to her as "Mom." She most enjoys accompanying the children on outings such as going to movies, to the beach or roller skating. Though she says it's a lot of fun to get out with the children, this is one area where Safehaven has difficulty securing volunteers. Asked why, Henriksen said, "It's difficult for people to commit their time to something. The key is to commit only the time you're able to give, even if it's only a couple of hours a month."

So, why do she and other volunteers put in their time and effort at the shelter? "Because of the feeling of doing something constructive," is the response from Henriksen. People seem to do it as much for themselves as for the children...satisfying needs that we have within ourselves."



Photos by Fred Jones

Susie Henriksen of the Financial Management Division stands outside her office.

Henriksen admits to being a little intimidated when working with the children at first, saying, "You expect to be working with sweet little children and find that you're often dealing with teenagers instead." Often asked if she finds it too upsetting to work at the shelter, she responds, "I think of times when the younger teenagers have told me some of the traumatic details of their lives. It is difficult to hear these things, but I was thankful to be there when they felt the need to talk and trusted me enough to talk. They are often in 'denial' about their earlier lives and it is real progress when they can acknowledge what happened. My own daughters taught me long ago that when they want to tell me something that bothers them, they don't expect me to solve their problems, only to listen."

If you would like to help Safehaven and make a difference in the lives of children, there are many ways to help. One way is to work as a volunteer within the shelter, providing services such as clerical or maintenance duties. Another way is to help the counseling staff by tutoring children or going with them on outings. Donations are always welcome: items needed range from laundry detergent and food to a microwave oven or cash donations. Training classes will begin in October for anyone interested in working in the shelter. For more information, call Susie Henriksen at. ext. 42133, Gordy Degear at ext. 46075 or Safehaven at 930-9409.

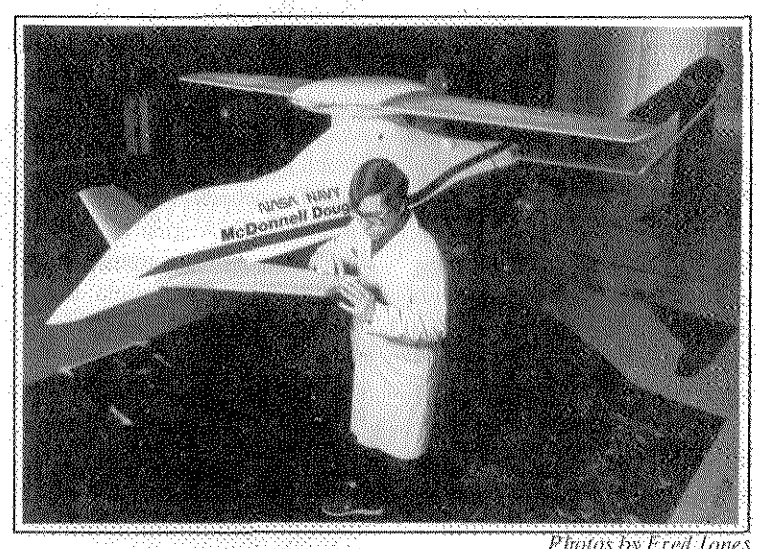
Here, Susie Henriksen, volunteer at Safehaven, loads her car with games and books to take to the shelter.

CRW Completes Fixed Wing Tunnel Testing

Canard/rotor/wing (CRW) testing has been completed in the 14- x 22-Foot Wind Tunnel, in an unpowered, fixed wing mode, according to Todd Hodges, a member of the Rotorcraft Aerodynamics Group of the Subsonic Aerodynamics Branch, and head of CRW testing at Langley.

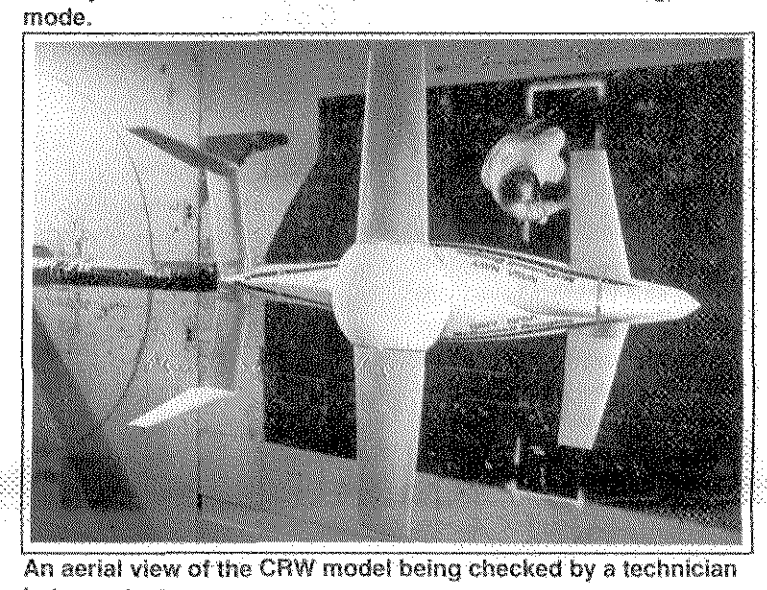
The CRW is a vehicle designed to land and take off like a helicopter and fly like an airplane. Potential commercial usage for such a vehicle would be short- and medium-range flights from city center to city center, for example, the heart of New York City to downtown Boston or the center of Chicago to downtown Detroit. Military uses for the CRW are also envisioned: A small, unpiloted, scout version could be built for front line troops. A larger, piloted version could fly side-by-side with larger cargo aircraft, and could be fitted with gun and bomb capabilities.

The present CRW design is a product of the McDonnell Douglas Corporation but is not the only design for a half airplane/half helicopter vehicle to be put forth, or even to fly. In the early 1920s, Juan de la Cierva designed, built and, finally, flew the Autogiro, an airplane with unpowered rotor blades that gave it some vertical movement capabilities. Cierva teamed up with Harold Pitcairn to mass-produce the aircraft but, by 1936, the Autogiro was put on the back burner in favor of newer helicopter developments. In July 1937, a man named Herrick tested his HV-2A Convertaplane, a fixed wing aircraft used as a rotating wing gyroplane-type that "converted" in flight from fixed wing mode to an unpowered rotating wing aircraft. Ames Research Center, Mountain View, Calif., did a number of paper studies of similar aircraft, and examples of tilt rotor aircraft, such as the XV-22 and the XV-15, are presently in development. These are mechanically complex and heavy vehicles and the CRW may be a simpler way to accomplish the helicopter/airplane goal than a number of previous concepts.



Photos by Fred Jones

Todd Hodges of the Rotorcraft Aerodynamics Group, examines canard/rotor/wing (CRW) concept model prior to testing in the 14- x 22-Foot Subsonic Tunnel. The tests were a study of the aerodynamic characteristics of the CRW in the fixed wing, cruise mode.



An aerial view of the CRW model being checked by a technician between tests.

The "magic" of the CRW is that it ducts air out of the compressor stage of the engine, sending that air out the wings to tip jets for rotation, so it can take off like a helicopter. Once the aircraft has reached a speed of about 100 mph, flaps come down from the front and rear wings and the rotor is then off-loaded. When the rotor is off-loaded, it can be stopped and locked in place across the top of the craft and fly like a fixed wing airplane. This transition phase is the trickiest part; converting from the rotation mode to the fixed wing mode has been the most challenging part of the design and testing of the CRW.

The unpowered wind tunnel tests were a preliminary exploration of aerodynamics of the fixed wing mode and have been completed at Langley for McDonnell Douglas. "One of the test configurations had some parts that didn't fit," said Hodges. "It is a tribute to the skill level and ingenuity of our technician workforce that they were able to completely rework and refit a number of parts to the CRW and still conduct the entire test in the originally allotted time frame." The next phase of testing for the aircraft will be rotation testing in a test location yet to be announced.

The CRW is a Navy-sponsored program with McDonnell Douglas Helicopter Corporation. It was cooperatively tested in the Langley 14- x 22-Foot Wind Tunnel by Hodges, Art Phelps and Nettie Orie, representatives of the U.S. Army, and a group of NASA technicians, including tunnel engineer P. Frank Quinto. CRW is a unique design cooperatively being brought to completion in a unique way.

If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services officer, at ext. 43315.

NASA Langley Motor Tours Conducted By the Virginia Air and Space Center

The Virginia Air and Space Center and Hampton Roads History Center, in cooperation with Langley, is offering motor tours of Langley through September 6. Tours are available Monday through Saturday at 10:30 a.m., 1 and 3 p.m. and on Sunday at 1 and 3 p.m. Visitors can explore the beginnings of our nation's aerospace history, see five national historic landmarks and get a glimpse of wind tunnels that can operate up to 17,500 m.p.h.

The fee is $5, $4 for members and combination ticket holders. The tour begins at the center and runs for about one hour and 30 minutes. Children ages four to 12 must be accompanied by an adult. For information, call 727-0800.

Happenings

PENINSULA CONCERT BAND: Interested in joining the Peninsula Concert Band? Rehearsals are Tuesday nights, 7:30-9:30 p.m. at the Ferguson High School band room. For more information, call Bob Arledge at 380-6215.

CAR FOR SALE: Moving, must sell black 1973 MGB convertible, includes many extra parts, $2,500. Call 642-9722 after 5 p.m.

NASA SKI TRIP: The third annual NASA Ski Week will be held from January 15 through January 22 at Aspen/Snowmass. Cost per person from Norfolk is $1,020. Call Michael Schooley at 874-2736 for details.

TOWNHOUSE FOR RENT: Bernard Village/Oyster Point, 3 BR, 2 baths, 1,500 sq. ft., $625/month plus security deposit, available September 1. Call Kelly Topp at 595-0514.

WW II AVIATION BUFFS: Coming to Norfolk Airport (Piedmont area), the Confederate Air Force's B-29, LB-30/B-24, C-46, C-60, FM-2 Wildcat and a T-6/SNJ, from August 2-9. Gates open from 10 a.m-6 p.m., daily and admission is $5.

A LITTLE TWILIGHT MUSIC: The Air Combat Command Heritage Band of America presents free concerts called "A Little Twilight Music," at Hampton's Buckroe Beach Park, Tuesdays at 7:00 p.m. The schedule is : August 3, concert band; August 10, concert band; August 17, concert band; August 24, jazz ensemble; and August 31, concert band. For more information, call ACC Heritage of America Band Publicity at 764-2931.

EASTER SEALS RELAY: Beginning Saturday, August 21, at 10 a.m., teams of 20 people will gather at Princess Anne High School, Virginia Beach, for the Second Annual 24-Hour Relay to raise money for The Easter Seal Society of Virginia, Inc. Participants on each team take turns walking, running or rolling wheelchairs in continuous relay on the track with each person completing four laps (1 mile) between eight to 12 times during the 24 hours. Team sports and musical entertainment will also be provided and there are prizes for the winning teams. Space is at a premium, sign a team up today. Call Julia Mardis, Easter Seal special events coordinator, at 468-3140.

HOUSE FOR SALE: Four BR ranch, 2 baths, den, formal living and dining rooms, eat-in kitchen, master BR w/ fireplace and deck. Large yard, priced to sell, $87,500. Call home, 838-0706 or pager, 888-7353.

DRUMS ALONG THE BAY: The Drums Along the Bay national drum corps competition will be held at Hampton's Darling Stadium, August 8 during the 1993 Summer Music Games. Hosted by the Kecoughtan High School Warrior Band, the groups will perform at 7:30 p.m. Gates open at 5 p.m. with pre-show activities at 6:30 p.m. VIP reserved tickets are $15. General admission tickets are $10 ($12 at the gate), and are available fromKecoughtan High School Band Boosters. To order tickets or for information, call Jill Vaden at 723-6430 or City of Hampton Special Events at 728-3200.

FOR SALE: Apple IIC computer, $400; Apple Imagewriter printer, $275; GE compact refrigerator, $70; JVC cassette deck, $55; Technics stereo am/fm receiver, $60; Pioneer speakers, $100; NEC video player/recorder, $85; Sony radio cassette recorder, $35; many more items. Call Jafar, 827-1178.

BRITAIN AND IRELAND TOUR: This is the last call to join friends and co-workers on the tour of Britain, Scotland, Wales and Ireland, September 16-October 1, from Norfolk and return. Call Ernie Greene at 838-0567 or Dan Crawford at 247-5815 for an itinerary.

KINDERGARTEN PROGRAM: The Langley Child Development Center is registering children for its 1993-1994 kindergarten program. A full-day program will be provided by a certified kindergarten teacher. Applicants must be five years old by October 31, 1993. Call ext. 44827 for more information.

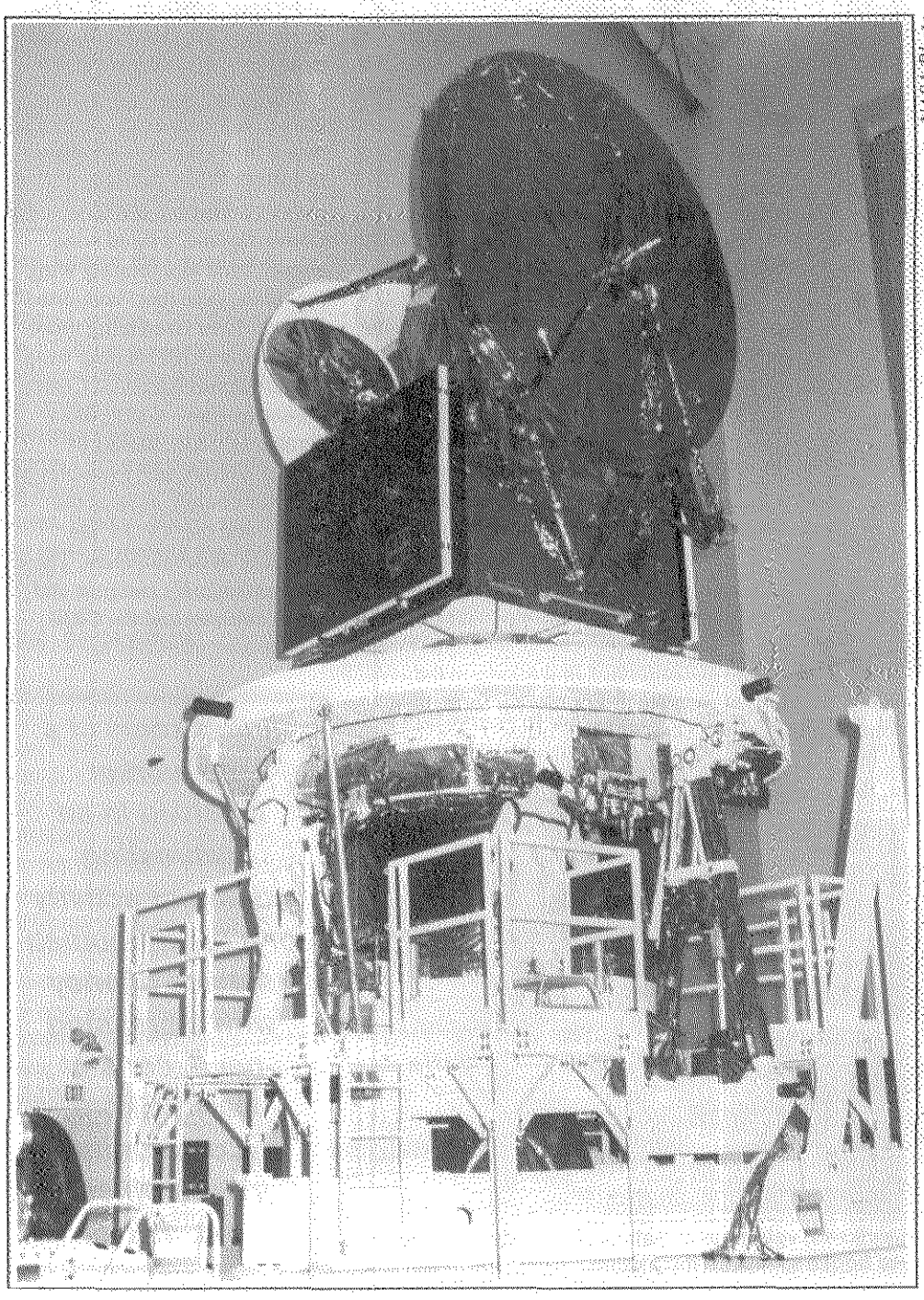
HOUSE FOR SALE: Three BR ranch, 1 bath, living room w/new carpet, eat-in kitchen, 2-car garage, large yard, floored and lighted attic. Asking $63,000, will pay closing costs. Call Dave Thomson at 723-7404.

45TH REUNION: Newport News High School's February and June 1948 classes will hold a 45th reunion Oct. 2. Please call 874-4117 if interested.

BODY-SCULPTING & CIRCUIT-TRAINING AEROBICS: Improve your fitness level, reduce body fat and stress! Free cardiovascular fitness assessments and body composition analyses before class and information on diet and nutrition. Classes are Tuesday and Thursday, 5-6 p.m., Saturday, 9:30 to 10:30 a.m. at the LAA Gym. For information, call ext. 42295.

TOWN HOUSE FOR SALE: Near NASA, 2 BR, 1-1/2 bath, eat-in kitchen, all appliances, living room, family room w/fireplace. Owner will pay you $4,000 to buy it, closing fees and up to two points for your mortgage loan, $66,900. Call 693-5053.

FREE AEROBICS: Go to the air-conditioned gym for class, at 6:15-7:15 a.m. and 11-11:45 a.m., Monday, Wednesday and Friday. Complete workouts, set to music, include bench, interval and low-impact classes by certified instructors. All accessories are provided. Call the Fitness Center, ext. 46387, for details.



NASA Photo

Shuttle Mission STS-51, scheduled for take off in late July, is prepared to deploy the Advanced Communications Technology Satellite (ACTS) and the Transfer Orbit Stage (TOS). ACTS and TOS are shown being moved from the Payload Hazardous Servicing Facility to the Vertical Processing Facility for testing to ensure their deployment sequence on-orbit. The mission is now scheduled to land in August.

National Aeronautics and Space Administration

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Langley Research Center

Researcher News

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Volume 7 ❖ Issue 16 ❖ August 13, 1993

Massenberg Heads New Office of Education

BY CATHARINE G. SCHAUER

Dr. Samuel E. Massenberg has been selected for the newly created post of Director for Education at Langley.

The Office of Education coordinates all education-related efforts at Langley.

"We're concentrating on using new electronic technology, such as interactive television, to reach pre-college institutions in our five-state area," Massenberg explained.

"This will enable us to reach students in remote areas through satellite television and to complement what they are learning in the classroom. We will encourage an understanding of aerospace, its importance to industry and its relationship to the math and science areas."

Other education goals are to work with university research and training grants, to provide scholarships and fellowships to students and educators and also support research centers, and to support research institutes and provide program evaluation.

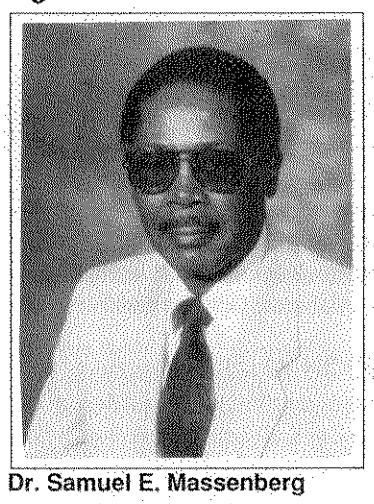
The new Directorate is divided into four offices: Education Technology and Distance Learning, University Affairs Programs, Pre-College Programs, and Institutes and Evaluation.

"All of our efforts are tied together by our CARES — Coordinate Academic Research Enhancement and Support — philosophy," Massenberg states. "This provides linkage between the components in our office and our culturally-diverse customers to ensure we keep the best students in education, and especially in the math and science areas. We hope to broaden our scholarship program to include undergraduate students.

"NASA supports national efforts to re-emphasize the importance of all American students becoming literate in science and mathematics," Massenberg said. "As a nation, we must be technologically focused if we are to remain competitive in the world economy. My new position allows me to assist the NASA effort to inspire the students and teachers of the country—pre-school through graduate level education—and allows the Agency to make a difference. We are dedicated to providing support and leadership for all of our customers in the educational community."

Massenberg joined the Langley staff as an employee development specialist in 1980, after a career as a pilot and engineering officer in the United States Air Force and as dean of men at Hampton University.

In 1981, he was named coordinator of the Career Development Center and, a year later, assumed the University Affairs Officer position, where he handled research grants between Langley and more than 100 universities, and he managed all university-related programs involving professors and graduate and undergraduate students.



Dr. Samuel E. Massenberg

In 1991, Massenberg relocated to NASA Headquarters in Washington, D.C., to serve as director of the Minority University Research and Education Programs Division, a Senior Executive Service position.

Massenberg earned a bachelor's degree in management from Ohio State University and a master's degree in counseling and guidance from North Carolina A & T State University.

He earned his doctorate in higher education administration from Virginia Polytechnic Institute and State University.

Photo by Fred Jones

Center Redesign Team Begins Its Task

As outlined in a recent announcement to all employees from Center Director Paul F. Holloway, NASA is facing greater challenges today than ever before. In the face of these challenges, Holloway has formed a Center Redesign Team (CRT) to reassess the organizational structure of Langley and its related processes. He has asked the team to provide their recommendations to him by September 3. The CRT appreciates the input it has received to date and looks forward to future interactions with employees. Team members are, left to right, Dr. Ralph J. Muraca, Luat T. Nguyen, Debra L. Carraway, facilitator, Belinda H. Adams, team leader, Dr. John B. Malone, Dr. Jeremiah F. Creedon and Vivian B. Merritt, executive secretary.

Technology Opportunities Showcase (TOPS)

WHAT: Business expo highlighting NASA's dual-use technology as a cornerstone in strengthening U.S. competitiveness in the world marketplace
WHO: Aerospace and non-aerospace industry, large and small firms, minority business, universities
WHEN: October 19-21, 1993
WHERE: Over 175 exhibits displayed in the Langley hangar and various satellite locations
WHY: * To showcase critical Langley aerospace technology
* To cultivate and strengthen Langley-industry partnerships
* To expand dual-use technology opportunities
* To enhance the technology transfer process

George Washington University Begins Second Quarter-Century at Langley

The George Washington University-NASA Langley Graduate Program completes 25 years of successful operation this summer, and begins its second quarter-century as an internationally recognized research and education program in engineering.

The graduate program was formulated in 1968 to provide resident credit, on-site master of science study for NASA employees and local residents. The program was designed to have George Washington University (GWU) faculty and Langley employees teach their research specialties in the graduate program and allow students to use the research facilities at Langley to conduct research for their theses. In addition, the program allows individuals to take classes as non-degree students to become current in particular areas of research. Dr. John Duberg, then associate director of Langley (retired) and Dr. Harold Liebowitz, then dean of engineering and applied science at GWU, led the review of Langley interests and needs in education which resulted in the GWU-NASA program. First classes were held at Langley in the fall of 1968. Initially, the program consisted of one full-time GWU faculty member, 12 courses and 95 students. "The founders of the program saw that offering education at Langley was an opportunity to allow Langley researchers to continue working while earning an advanced degree or passing on their knowledge to another generation," said Dr. John Whitesides, associate director of the program at Langley. "They realized this would be a valuable option to people leaving the Center to continue their education and perhaps never returning to continue their research."

A graduate research and educational program in acoustics was established in January 1970 as a pilot project for resident graduate training at Langley. As part of this project, a group consisting of one full-time research professor and five graduate research scholar assistants was formed. They were recruited nationwide to participate in acoustics research supporting national programs to alleviate noise and to provide a technical bases for acceptable acoustics design of noise resistant structures, aircraft, space vehicles, power-generating machinery and grand transportation systems.

The following year, a similar program in aeronautics was established, offering the doctorate of science in the program. The Joint Institute for Advancement of Flight Sciences (JIAFS) was established to formalize the joint programs between Langley and GWU the same year.

From 1972 to 1983, additional programs were established: computer-aided structural design, environmental modeling and materials science. Each of these added faculty and additional Graduate Research Scholar Assistants (GRSA) to the Institute. The research and education programs have changed over the years to reflect the needs of Langley and GWU, and recently the Institute's activities have been classified as aeronautics and astronautics to reflect the two major divisions of flight sciences.

"We have offered special topics continuously throughout the years with programs that reflect the needs of the country and NASA itself," Whitesides said. "This year, new courses such as 'High-Speed Civil Transport (HSCT) Design Problems,' will be conducted. With Langley as the lead center for HSCT research, we see this as a very appropriate course for this time and place."

The JIAFS has developed into one of the largest and most selective graduate aerospace engineering degree programs for U.S. citizens.

Continued on page 5

JIAFS
Joint Institute for Advancement of Flight Sciences

An ASEE Summer

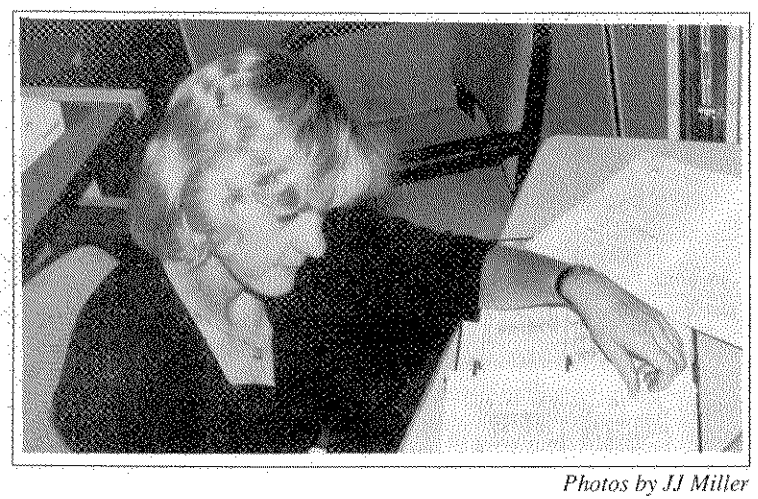
BY JJ MILLER

To teach, according to Webster's Dictionary, is "to instruct by precept, example or experience." Dr. Elaine P. Scott and Dr. Stephen Gray are teachers in the truest sense of the word, and they are two of the American Society for Engineering Education (ASEE) fellows working at Langley this summer.

ASEE is a coordinated effort between Old Dominion University and NASA Langley to host college or university faculty members who are appointed as fellows. They spend 10 weeks doing cooperative research with Langley employees. In the cases of Scott and Gray, they work with some of their students as well.

Scott, a professor of Mechanical Engineering at Virginia Polytechnic Institute and State University (VPI), is researching two directorates at Langley, Systems Engineering and Operations and also Structures. Working with her are three students, all of whom she has had in classes at VPI.

While most fellows only explore one problem during their 10-week stay, Scott is working on two. Her first project is to design a space to evaluate the use of high-temperature superconductors as electronic leads to infrared sensors. The infrared sensors on the satellites need to remain cool as the nearby data acquisitions systems get relatively warmer. A problem arises when liquid helium, used to cool the sensors, boils away and leaves the sensors open to heat gain. Boiling of the helium needs to be minimized to keep the sensors cool. Scott is faced with a thermal modeling problem and is designing experimental solutions.



Photos by JJ Miller

Dr. Elaine Scott takes a break from Virginia Polytechnic Institute and State University for the summer to do research.

Her second challenge is being undertaken with scientists from the Structures Directorate. She is determining thermal properties of both advanced and composite materials. Scott says she enjoys her research work here but enjoys her teaching career at VPI no less. Her days in the classroom, according to Scott, are "exhausting and intense," but incredibly rewarding because of the interaction she has with her students.

Gray, a professor of electrical engineering at Drexel University in Philadelphia, also has students from the university with him. He and his students have been working with Don Soloway researching a new method of levitating objects in wind tunnels magnetically, that is, with no visible means of support and, therefore, no resistance that would cause inaccuracies in wind tunnel data.

The new method would deal better with uncertainty because it is modeled after the human brain. Just as the brain doesn't need to know the exact weight of an object before the hand lifts it, scientists wouldn't need to specify the exact weight of a model before it was levitated in a tunnel.

Like professors at most universities, Scott and Gray are faced with the problem of balancing research and instruction. "It would be great if there were about 20 more hours in every day," said Scott. "Trying to juggle research and teaching is tiring, but it's great when you have a student and you can see the light bulbs come on. This is a nice situation here because I have the opportunity to work directly with my students and NASA researchers."

Gray reiterates, "Nine months out of the year I'm on campus with my students and it's good to come to Langley and work with specialists."

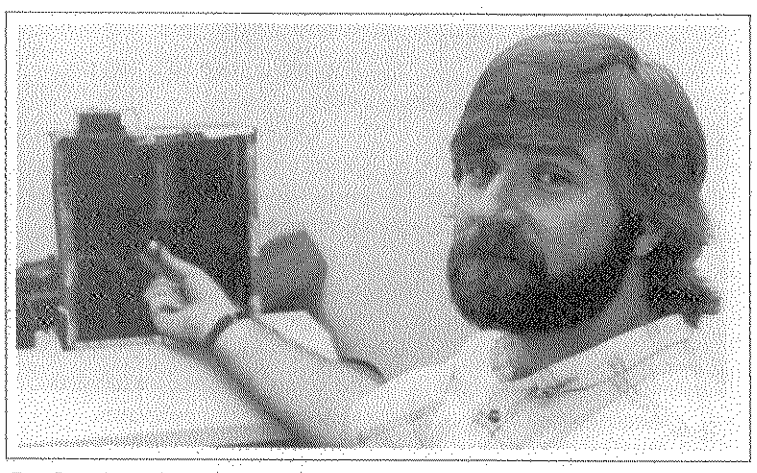
Every ASEE professor on Center this summer has been interviewed by a visiting science and math high school teacher from Edison, N.J., Jeffrey Bellinger. He is working to find solutions that will better prepare students for college in the science and math fields.

"Dr. Tiwari, head of the ASEE program, and I agreed that there's a gap between what you are taught in high school and what you are expected to know when you enter college," Bellinger said.

He works with the ASEE professors like Gray and Scott to define the gap and generate some solutions.

"I tend to be outspoken on this subject," Gray said. "We need to make teaching attractive, financially and professionally."

Bellinger hopes to be able to write the professors' ideas into some workable solutions for curriculum changes that will benefit all students.



Dr. Stephen Gray from Drexel University works on magnetic levitation experiments.

Health Corner

Effective immediately, Prostatic Specific Antigen (PSA) screening will be available to NASA employees in conjunction with the annual health maintenance examination. This simple blood test is considered by the medical community to be a valuable tool in the early detection of prostate cancer.

Since the PSA test is not considered a normal part of the annual examination, appropriated funds cannot be used to pay for laboratory analysis. The Office of Occupational Health Services has negotiated with National Health Laboratories to provide PSA testing for NASA employees at a cost of $15. The normal charge in the local area is $60 and up.

The PSA exam is optional and, if elected, will be reported along with the current blood test results. Physicians at the clinic will interpret results for the NASA patients and a copy of laboratory reports will be available for patients' private physicians.

National Health Laboratories requires a check made out directly to them. Please advise the lab technician if a PSA test is desired and provide a check for $15 at the time of your annual examination.

SHARP Students Return for Eight Weeks

BY JJ MILLER

High school students look forward to summer all year long. Awaiting the rest, relaxation and respite from schoolwork is what gets many a 16-year-old through the long days of spring fever. But for 25 talented local high schoolers, eight weeks of this summer have been filled with science and math. Langley has played host to yet another educational program, this one for minority high school students.

The Summer High School Apprenticeship Program (SHARP) selects 25 students, age 16 and above, for an intensive science and engineering apprenticeship that runs from June 21 through August 13. Selected students must display an aptitude for science and math at the high school level.

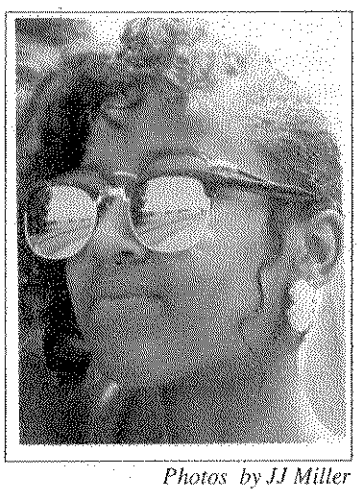
Each student is assigned a mentor, with whom they complete designated assignments, prepare reports, make oral presentations and participate in a variety of enrichment activities. SHARP is designed specifically to encourage underrepresented minorities to pursue career opportunities in engineering.

According to Roger Hathaway, Education Programs officer, SHARP students must maintain a high grade point average to be considered for the program.

After preliminary applications are reviewed, final candidates are selected by a panel of Langley employees, including representatives from the Human Resources Managment Office, the Equal Opportunity Office and the Office of Education as well as an engineer from one of the branches.

Aviance Dyke, a student in the program, is not new to the science and math scene. She is a Cooperating Hampton Roads Organization for Minorities in Engineering (CHROME) student at Tallwood High School in Virginia Beach. Dyke heard about the SHARP program when Hathaway spoke to CHROME students during the school year.

Dyke and her mentor, Julie Williams-Byrd, have worked closely on a project which involves building customized lasers for atmospheric studies. Williams-Byrd installed an aperture in an oscillator for better beam profile. However, the aperture resulted in a loss of energy. Dyke's project is to design an efficient amplifier by utilzing a computer mode.



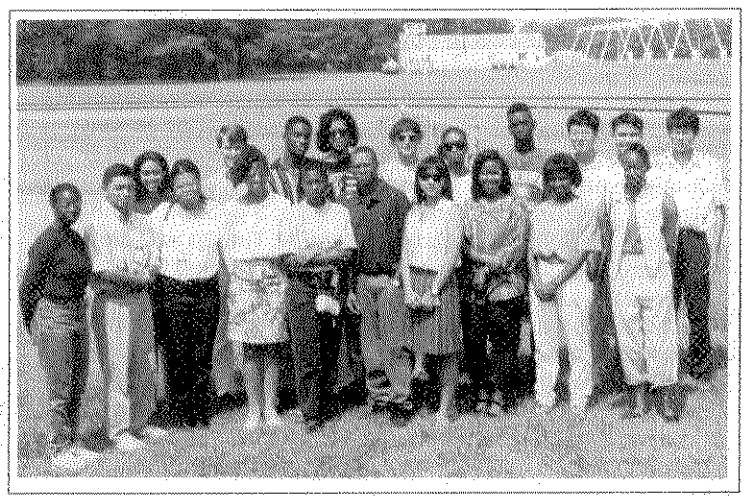
Photos by JJ Miller

A SHARP student reflects her view of Langley's landing loads facility.

"Aviance is a very hard worker," said Williams-Byrd. "At first she was a bit intimidated but she's caught on very quickly. She's had to learn new concepts in a short period of time."

Dyke's success is due in part to Williams-Byrd herself. She said that because she was given opportunities when she was Dyke's age, from her parents and teachers, she feels a strong obligation to give back as much as she can. "She gives me inspiration and she's a great role model," said Dyke of her mentor. "She is out here in a male-dominated field and she is making a name for herself. The SHARP program will also give me a jump on my classmates and I'll understand things much better because of this experience."

Walt Darden, coordinator for SHARP for 14 years, hopes that all of his students will gain as much from the program as Dyke did. "This is the best program for pre-college students I've ever heard of," Darden said, "because it gives them a hands-on look at a natural work environment and, more specifically, the natural environment of an engineering area."



SHARP students have spent eight weeks at Langley this summer in the program's 14th year.

Russian Scientist Peter Gorin Talks About Soviet Moon Program

BY KIM HINSON and RAY GOODMAN

Virginia Air and Space Center
Hampton Roads History Center

When America put astronauts on the moon 24 years ago, the achievement was an example of cooperation between the government and industry. Imagine what would have happened to Project Apollo if that cooperation had not occurred. What if two or three major aerospace contractors had refused to take part in the Apollo Project? Further suppose that key technology and hardware provided by those contractors had been held back.

This scenario is what happened in the Soviet Union in the 1960s, according to Peter Gorin, a Russian space historian. Gorin came to the United States in 1990 and lives in Williamsburg. He spent 10 years working as a political analyst for the Soviet government. Today he is an international trade consultant and is writing a book on the Soviet Moon Program. Gorin presented a lecture July 20 at the Virginia Air and Space Center, entitled " The Secret Soviet Space Program."

The effort to land a cosmonaut on the moon started in 1964 and ended in 1974. The existence of the program remained a secret inside the Soviet Union until 1989. "It was completely forbidden to discuss it," Gorin said.

Gorin stated that the Soviet technology was not available to their lunar program due to political infighting. For example, a large booster, comparable to the Saturn V, was developed to lift the lunar landing craft. The technology for large rocket motors could not be used, primarily because engineer Valentin Glushko felt slighted since his design team was not chosen to direct the project. Gorin said that because of this a sort of "civil war" broke out. For this reason, the N-1 booster's first stage had to use thirty smaller motors. This made engineering extremely difficult; engine failures eventually doomed the huge rocket.

The N-1 booster, developed by the Soviet's "Chief Designer" Sergei Korolev, was similar to the Saturn V. It stood 338-feet tall and would have carried about 220,000 pounds into low-Earth orbit. The first stage measured 57 feet in diameter at the base and produced more than 10 million pounds of thrust. Gorin said that six N-1s were built from 1969 to 1972; four were destroyed in launch attempts. With each failure, engineers learned more about the vehicle. The last flight made it almost to first-stage separation. Gorin states his belief that, "program would not have ended, if the fifth launch had been successful." The Soviets lost interest in the program when the United States landed a man on the moon in 1969. By 1974, the project was canceled and the remaining N-1 rockets were destroyed. A team of nearly 20 cosmonauts, plus thousands of engineers and scientists, were ordered to never talk about the program.

In addition to the lunar landing program, a man-around-the-moon project designated "L-1" was begun. A smaller launcher known as Proton would have sent a spacecraft, at first an original design but later a modified Soyuz craft, on a looping trajectory around the moon. Orbiting around the moon was not possible. On a least two occasions, successful unmanned test flights designated "Zond" were made. However, once Apollo 8 orbited the moon in December 1968, the L-1 project was canceled.

The Soyuz spacecraft, first flown with a crew in 1967, was designed for the lunar mission. Due to launch vehicle limitations and political pressures rather than design problems, the spacecraft never went into Earth orbit. Like the Apollo spacecraft, a separate lander vehicle was provided. Once in orbit around the moon, a cosmonaut would have walked in space from Soyuz to the lander. The fifth and final stage of the N-1 would have been used both to place the combined vehicle into lunar orbit, and to slow the lander for descent to the moon.

As with much of the Soviet space program in the 1960s, accomplishing scientific or even technological milestones was strictly secondary to making political points. The record of Soviet space "firsts" during this time was remarkable, but was seen by political leadership only in the context of beating the Americans. The Soviet accomplishments were not stepping stones to other goals. Thus, space efforts would be supported only when they delivered "firsts." The space programs would not be supported, indeed -- as the Soviet lunar program demonstrates -- their very existence was to be denied if those "firsts" were not achieved.

Bloodmobile Report

July's blood drive brought in a total of 340 pints of blood, according to coordinators Karen E. Ridlon, Employee Development Branch, Peter Edgette, Occupational Health Services Office, and Kitti Schatz of the Red Cross.

Thank yous are in order for the 22 first-time donors: Johnny Mau, Sheri Sullivan, Donna Dixon, Todd Wetzel, Robert Kyle, Jeff Gragg, Steven Stem, Josiah Lindsay, Natiki Mahmood, Tracy Jones, Rod Natividad, Jessica Ledbetter, Robin Edwards, Alicia Tarrant, Kedzie J. Davis, Margie Whitehurst, Amy Reeb, Timothy D. Wright, Tracey E. Miller, Vicki J. Slemp, Toni Y. Jones and Gary L. Hataway.

Special thanks go to multiple donors: 18 gallons, Richard Holt; 15 gallons, William G. Chapin; 11 gallons, William W. Fernald; 10 gallons, William F. Adkins; 8 gallons, James M. Shipp and James M. Brown; 7 gallons, Lawrence D. Huebner; 6 gallons, Michael Mitchell; 5 gallons, Kevin B. Johnson and Barry K. Lawhorne; 4 gallons, James A. Phillip, Vincent B. Cruz and David K. Burnette; 3 gallons, Gene S. Monroe, Jonathan E. Leaman, Diane N. Tingen and James M. Lacasse; 2 gallons, Michael S. Warner, Dominic R. Trombetta, Larry C. Dickinson, William M. Kimmel and Marla R. Jackson; 1 gallon, Laura E. Hall, Edward B. Jackson, Robert Dillman and Kelly J. Murphy.

Thank to all 340 people who donated their life-giving blood. The next blood drive is scheduled for Wednesday, September 22, 9 a.m. to 3 p.m. at the H.J.E. Reid Conference Center. Call ext. 43195 for an appointment or more information.

Fall Volleyball Season Begins

Registration for the Volleyball Club's fall season will be from August 23 to September 3. Cost is $90 per team. Get teams ready early, first come, first served. The season begins Monday, September 13. Teams play as follows: Tuesday, co-ed BB/C; Wednesday, men/women; Thursday, co-ed B/D. Team rosters and waivers, for those who didn't play in the spring, can be obtained from the bulletin board in the gym. The season runs for 10 weeks and includes play-offs. Special notice: Co-ed teams will be limited to, at most, eight teams, with a maximum of six teams for the men's/women's leagues. For information, call David Rosenbaum, Volleyball Club president, at ext. 41800.

Future Visions: Computer Animation Festival

"Future Visions," a collection of the best computer animation from around the world, will be shown at the Virginia Air and Space Center this month.

The 60-minute festival, compiled by producer Steven Churchill, features scenes from "Beyond the Mind's Eye," "The Lawnmower Man," "Locomotion," "Knick Knack" and other national pieces that take the viewer to the cutting edge of art and technology. The images and scenes are generated by machines and the operator's imagination, ranging from a realistic three-dimensional forest to a real fantasy land of exploding colors. The film offers viewers a chance to see firsthand how science and art can work together to create something interesting and unique.

"Future Visions: Computer Animation Festival" will be shown at the center August 13-15, 20-22 and 27-29. The Friday and Saturday show times are 6:30, 7:45 and 9 p.m. The Sunday show times are 6:30 and 7:45 p.m.

Admission to the festival is $6 for the general public and $5.50 for members. This fee does not include admission to the center. For information or to purchase advance tickets, call (804) 727-0900, ext. 717.

Call for Docents at Virginia Air and Space Center

The Virginia Air and Space Center is seeking docents.

Chauncey Wu, is an excellent example of what it means to be a docent. Wu, an aerospace engineer in the Spacecraft Structures Branch, enjoys explaining his work to visitors through his volunteer work. Since the beginning of the center's volunteer program in April 1992, Wu has been a dedicated member. Like many of the center's docents, Wu finds that his biggest reward as a docent is the joy of educating people of all ages. He has been a tour guide and has helped children build model rockets during the center's Space Camp-Ins. During National Space Week, he presented two demonstration programs. "I want to encourage young people to study math and science and stimulate an interest in the U.S. civil space program," Wu said.

Chauncey Wu, Spacecraft Structures Branch, discusses building structures in space at the Virginia Air and Space Center

According to John Mannarino, public programs manager, "On many occasions Chauncey has brought hardware out here to demonstrate to young people what it takes to build large structures in space. He presents information on a level understandable to everyone. He is an example of a volunteer who goes beyond his normal requirements to demonstrate what he does in his branch at Langley."

What does it mean to be a docent for the center? A center docent acts as a tour guide promoting a greater understanding and appreciation of the center's artifacts by teaching, interpreting and guiding visitors. Weekday docents must agree to work 100 hours per year; weekend docents donate 50 hours per year.

Docents will conduct tours and special children's programs for the general public, school groups and unscheduled tours for daily visitors. They may also be trained to work in NASA's Teacher Resource Center and to help the center's educators deliver special programs. Docents can earn a bronze membership and will receive a 10-percent discount on purchases in the gift shop, free parking and invitations to center special events and volunteer functions.

The center is now recruiting for its next docent class which begins August 30. Weekday docents will attend a three-week training program from August 30 through September 17, from 9:30 a.m. to 3 p.m. Training for weekend docents will be held September 4, 18 and 25, from 9:30 a.m. to 3 p.m. All training will be at the center.

For more information or to obtain an application, call the Public Programs Department at 727-0900, ext. 735. Deadline to register for training is August 20.

News Briefs

AROUND THE AGENCY

TOPEX POSEIDON MAPS PRECISE GLOBAL SEA LEVEL – During the first six months of their mission, scientists using the United States–French TOPEX/Poseidon oceanographic satellite have recorded the most accurate measurements to date of global sea level changes. Data will be used by oceanographers to calibrate the computer models that help forecast future climate changes. "The changes in sea level we have observed during the first six months from October 1992 to March 1993 are a combination of the effects of seasonal warming and cooling as well as wind forcing," said Lee-Lueng Fu, TOPEX/Poseidon project scientist at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

ARKANSAS, NASA SIGN TECHNOLOGY TRANSFER ACCORD – In a July 28 ceremony at the State Capitol in Little Rock, Ark., Gov. Jim Guy and Thomas J. Lee, Director of NASA's Marshall Space Flight Center in Huntsville, Ala., signed a memorandum of understanding to conduct a joint effort to transfer NASA-derived and NASA-contractor-derived technologies to businesses, industries, academic institutions, research facilities and individuals in the state. Following the ceremony, Lee said he was pleased to represent NASA in launching this cooperative effort to increase NASA technology transfer activities in Arkansas. Arkansas becomes the seventh state with which the Marshall center has technology transfer understandings. The others are Louisiana, Tennessee, Mississippi, Alabama, Georgia and West Virginia.

EVIDENCE FOR SOLID WATER FOUND ON JUPITER'S MOON IO – Scientists have found water molecules frozen in the surface ices of Jupiter's moon Io. "This is the first strong evidence of solid water on the surface of this satellite," said Dr. Farid Salama, University of California, Berkeley, who led the project at Ames Research Center, Mountain View, California. The absorption lines for water were found in the infrared spectrum of Io by scientists onboard NASA's Kuiper Airborne Observatory (KAO). The KAO has the ability to conduct infrared astronomy while flying above 99-percent of Earth's atmospheric water vapor. "We have finally seen the spectral structure of something for which we've been looking for years – water on Io," said Dr. Jesse Bregman of Ames, who developed the spectrograph with the KAO telescope.

Aerospace Companies to Study Market for Future Commercial Space Transportation

Five leading aerospace companies have joined with NASA to evaluate the potential for new markets that might be created if a low-cost commercial space transportation system were available. Langley is the NASA center responsible for the venture.

In an informal alliance, Boeing Defense and Space Group, Seattle, Wash., General Dynamics Space Systems Division, San Diego, Calif., Lockheed Missiles and Space Company, Sunnyvale, Calif., Martin Marietta Space Group, Denver, Colo., and Rockwell Space Systems Division, Downey, Calif. will conduct a commercial space transportation study (CSTS) to identify and characterize traditional and non-traditional markets – a unique approach to understanding space launch needs that parallels the process used in the aeronautics industry for High-Speed Civil Transport.

Focus Set On Space Enterprises

By focusing on the development of new and expanded space enterprises, the CSTS will address the opportunity to significantly increase the use of space and, thereby, dramatically lower the cost of space access. Potential non-traditional customers could range from energy companies using space power, to film companies using zero-gravity studios for special effects.

The CSTS alliance will be funded for the market study through individual existing Langley contracts, and member companies will provide additional support to complement the study. Tasks will include the identification of prospective new markets and potential users for a new system, performance of a survey of the potential market, analyses of the market, preliminary characterization of candidate launch systems and user validation. The combined NASA and alliance effort is valued at $3 million, and is expected to be completed in November of this year.

Should the study indicate an encouraging market outlook, the next step would be to identify enabling technologies necessary to fulfill market needs and enhance international competitiveness. Specific areas for development will be defined with requirements established by the results of the market study.

The third step would be a technology development and demonstration effort. During this phase, concepts would be refined and driving technologies verified and demonstrated to ensure that cost goals could be achieved. Only then would full-scale system development begin.

Goldin In Favor

NASA Administrator Daniel Goldin said the contractor group has proposed the type of innovative industry and government partnership that will be critical for successful future technology programs.

"By sharing the investment and the risk, NASA could become the catalyst for a commercially viable project such as a new low-cost space transportation system," Goldin said. "A focus on economic returns rather than vehicle performance could create new space markets, stimulate economic growth and help revive the nation's aerospace industry."

Training Session Planned

"Acquiring Savvy. . .Beyond Hard Work and Talent" will be presented by Billi Lee of Billi Lee and Company on Thursday, August 26, from 10-11:30 a.m. at the H.J.E. Reid Conference Center. The session is designed to highlight the key aspects of practical political awareness and systems skills necessary for individuals to be more effective in working toward the success of the organization.

This will be a hands-on training session where audience participation will be encouraged. It is sponsored by the Federal Women's Program. Refreshments will be served at the conclusion. For more information, contact Patsy Campbell, ext. 43291.

LETTERS

Retirement Thank You

From Sandy M. Stubbs: "This is a sincere thank you to all of my co-workers and friends who have made my work at Langley so enjoyable over the years. Your support and patience have been appreciated. A special thanks to all those who attended and worked so hard to make my retirement party truly special. It was special! Thanks for the great gifts. It has been great working with you all and I wish all of you success in the future."

Sympathy Thanks

From Renaldo V. Jenkins: "Thanks to each of you who expressed sympathy in regards to the death of my mother. She would have been especially pleased by all of those who have given donations to the Carolyn Reaves Cancer Recovery Fund in her memory."

Community Corner

Help Pass On A Little Bit of History

Budget cuts are threatening another area landmark. Hampton's Air Power Park and Museum attracted 100,000 visitors annually when it was open seven days a week. Currently open Wednesday through Sunday, the facility is serving just 60-65,000 visitors. Most recently, the park is struggling to keep the doors open.

The museum is looking for volunteers to act as welcomers, tour guides, speakers, or to work on the artifacts and exhibits. Individuals are desperately needed to staff the facility and to tell the unique story.

Background

The Air Power Park, located on Mercury Boulevard, has gathered one of the most impressive private collections of missiles, rockets and authentic vintage planes held outside the military or government domain.

In addition, the displays inside the information center attest to the area's place in America's history and the vital part Hampton Roads has played in early space exploration and aircraft testing.

Here's How to Help

How about adopting a plane or rocket? Many need a fresh coat of paint or an expert to relive for visitors the glories of former days.

Are you better suited to welcoming visitors to the Hampton Roads area and informing tourists of the many attractions available?

Are you handy and could contribute to the day-to-day maintenance necessary to keep this very visible attraction looking its best?

If you can do any of these or have other ideas how you may help, call Jim Wilson, superintendent of parks, at 825-4478.

The Results Are In For Bone Marrow

Nearly 40 Langley employees crowded into the cafeteria private dining room July 29 for a brown bag seminar entitled "Bone Marrow Donation: Giving the Gift of Life."

The seminar was co-sponsored by the Community Services Program and the Occupational Health Services Office.

Bone marrow donor Doug Baker and Jennifer Ash, coordinator of the American Red Cross program, gave a short presentation and then spent a half-hour fielding questions from the audience.

On August 3, 22 employees were tested and screened for addition to the national registry of potential marrow donors.

By mid-August, Center donors will be listed on the registry and awaiting a call deeming them the "miracle match" for fatally ill patients.

A special thanks to all who volunteered for testing. Thanks also to those who helped with the educational session as well as the screening.

Retirement Party Set

A retirement social will be held for C. Gary Evans on August 31 at 5 p.m. at the H.J.E. Reid Conference Center. The cost is $9.25 per person. For reservations, contact Nellie Freeman, 42056, or Joyce Bartlett, 42063, both at Mail Stop 377, by August 24. Gift contributions are also welcomed.

Voluntary Leave Transfer Program Needs You

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. The following employees are approved leave recipients: Therese M. Bederka, Monica L. Cooper, Bette (Jeanie) L. Duncan, Cynthia L. Lach, Janice B. Mongesku, Terry L. Shepherd, John P. Stack, Belle L. Wood and Darrell A. Wood. If you wish to donate annual leave to these recipients or want more information about the program, call Linda Park, Employee Relations Office, ext. 42610.

IN MEMORIAM

Vernon C. Grubbs

Vernon C. Grubbs, 74, died Friday, July 16. He was a native of Clifton Forge and a Peninsula resident for 68 years. Grubbs retired from Langley as an electrical contractor in 1981.

News 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.

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All materials are subject to editing.

People & Places

AIAA Hosts Visitors from China

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) hosted a delegation from their sister Section in the Peoples Republic of China. The purpose of the visit by the Hunan Astronautical Society was to hold discussions with members of the Hampton Roads Section and to visit engineering schools at a number of American universities.

The four members of the delegation were all professors and administrators from the Changsha Institute of Technology in Changsha, Hunan Province. Changsha Institute, one of China's major engineering universities, has more than 4,000 students studying in 17 scientific and engineering departments. The delegation was headed by Professor Chen Qizhi, vice president of Changsha Institute and chairman of the Hunan Astronautical Society. The other members were Professor Shen Yongping, provost of the Institute; Professor Wu Deyin, head of the Foreign Office at the Institute; and Professor Wang Cai Mei, professor of English. Hosting the delegation were Section members Dr. Steve Rizzi, Structural Acoustics Branch; Stan Lamkin, Analytical Services and Materials, Inc.; Richard Wallsom, Lockheed Engineering and Sciences Co.; Del Freeman, assistant chief of the Space Systems Division; and Gary Price, head of the Office of External Affairs.

The Section made arrangements for the delegation to visit Old Dominion University, the University of Virginia, George Washington University, Princeton University and Columbia University. The Princeton Section of the AIAA hosted the group at Princeton and Columbia. At each university, the Chinese delegates were interested in learning more about teaching techniques, curriculum development, university research processes and the use of computer technology in university classrooms. The Hunan Society plans to develop a formal agreement with one or more of the universities visited to exchange both professors and students, especially at the graduate level.

"The visit went very well," said Rizzi, chairman of the Hampton Roads Section. "The professors received a lot of useful information about American teaching techniques. We are extremely pleased that our section had the opportunity to host the group and we hope to continue the partnership begun here." Rizzi also said he thought that the section has played a major role as facilitator by opening doors that will have mutual advantage for both the Changsha Institute and the American universities. In turn the Hunan Astronautical Society has formally invited the Hampton Roads Section to send a delegation to China next year for meetings and lectures.

Photo by Carol Petrachenko

John Tanner, Landing and Impact Dynamics Branch , second from left, stands with Professors Wu Deyin, Chen Qizhi, Wang Cai Mei and Shen Yongping, all of the Changsha Institute, Peoples Republic of China, during their tour of the Aircraft Landing Dynamics Facility (ALDF).

"Guest Scientists" Address CHROME Students

Michael A. Chapman, Data Systems Development Section, and Kenneth Wright, Acoustic and Anemometry Instrumentation Section, were invited "guest scientists" of the Old Dominion University (ODU)/CHROME (Cooperating Hampton Roads Organization for Minorities in Engineering) Summer Prep program held at ODU on July 9. Wright spoke to the CHROME eighth and ninth graders about electrical engineering and its use in instrumentation applications and data acquisition systems development. Chapman described his work in making high-speed measurements in Langley wind tunnels and Wright discussed his work measuring aircraft acoustics in the desert. They emphasized the practical application of math and science in their work and the need for adequate career preparation for students. A video presentation, overhead slides and pass-around hardware electronics provided visual effects for the students.

Quotable

A hopeful man sees success where others see failure, sunshine where others see shadows and storm.

—O.S. Marden

George Washington University

Continued from Page 1

There are currently six full-time GWU faculty, 50 part-time Langley faculty, 50 GRSAs (full-time students), more than 150 part-time students and four staff members in the Institute. About 25 graduate courses are offered each semester.

The GRSA program has become very competitive. More than 300 applications are received each year for the 25 available positions. So far, more than 355 GRSAs, from all parts of the United States, have had the opportunity to be educated at Langley using the expertise of GWU and NASA, and the facilities at Langley. Thirty new research assistants began at Langley in early August, the largest number so far, according to Whitesides.

The Institute currently offers programs of study leading to the master of science and doctor of science in aeroacoustics, aeronautics, astronautics, fluid mechanics and thermal science, structural engineering and structural dynamics, and master of engineering management.

During the past 25 years, 1,024 NASA employees and 1,367 other students have taken courses in the program. NASA employees have received 204 advanced degrees from GWU while an additional 195 GRSA and 255 local residents have graduated from the program.

Research is a vital part of the graduate educational program in the institute. GWU faculty members and GRSAs work on projects of interest to the Center with their NASA colleagues in current areas such as aeroacoustics, experimental and computational fluid dynamics, stability and control of aircraft and spacecraft, design of aerospace vehicles, mechanics of spaceflight and related areas. Members of the institute have contributed more than 900 publications, not including theses and dissertations, in these and other areas of research, More than 250 technical seminars, symposia and conferences have been sponsored by the Institute.

Special celebrations for the 25th anniversary are being planned for the fall, said Whitesides. Details are being formalized now and will include a "reunion" of program graduates and, perhaps, special lectures and as JIAFS and GWU look forward to the next 25 plus years here at Langley. "We plan to continue and grow the Institute into the next century and beyond," said Whitesides.

"We want this program to be in operation for future researchers so that we can continue to keep this country on the cutting edge of flight science research," he concluded.

Flight Safety Foundation Call for Seminar Papers

The Flight Safety Foundation announces the 39th Corporate Aviation Safety Seminar, "Safe Application of Technologies in Corporate Aviation," to be held April 13-15, 1994, in St. Louis, Missouri.

Papers are being sought on the following topics: Operations and Training, to include icing and winter operations, fatigue in international operations, wake vortex and altitude; Technology, to include enhanced vision, weather information, integration of the global positioning system/flight management system and traffic alert and collision-avoidance system (TCAS); Maintenance, to include aging aircraft and nondestructive evaluation; Human Factors, to include pilot-controller interface, pilot-maintenance interface with both high-technology and standard-technology aircraft, flight crew pressures in high-technology cockpits and avionics design; and Reduction of Controlled Flight into Terrain Accidents, to include strategies in flight training and procedures, information dissemination, ground-based equipment, airborne equipment and air traffic control procedures and training.

Abstracts of 200-400 words must arrive at the Flight Safety Foundation no later than October 8, 1993. For application forms and information, contact Robert H. Vandel, director, Technical Projects, Flight Safety Foundation, 2200 Wilson Blvd., Suite 500, Arlington, Va. 22201-3306, Phone: (703) 522-8300, Fax: (703) 525-6047, Telex: 901176 FSF AGTN.

NASA Team Wins PTPA Corporate League Tennis Crown

Langley's winning tennis team members are, left to right, Charles Bryant, captain, Maynard Sandford, Ramki Krishnan, Leonard Credeur, John Wilson, Roger Bailey, Joe Zalameda and Venkit Iyer. Not pictured are Chris Currey, George Lawrence and Tony Vesay.

The first ever Peninsula Tennis Patrons Association (PTPA) Corporate League competition was won by NASA Langley's tennis team. The team had a perfect 8-0 record. The PTPA Corporate League was formed around teams representing Peninsula corporations and included two teams each from Newport News Shipbuilding and the Riverside Wellness and Fitness Center. The others teams included Siemens, Hampton Tennis Center, Canon, Ft. Monroe and NASA.

For more information about the Corporate League team, please contact Charles Bryant, ext. 44674.

Winds of Change Now Available from GPO

Winds of Change: Expanding the Frontiers of Flight; Langley Research Center's 75 Years of Accomplishments 1917-1992 by James Schultz has recently been published. This commemorative volume highlights in pictures and text 75 years of achievements of the Langley Research Center. The introduction features wind tunnels and their contribution to the development of aeronautics. A chronological survey details four different periods in Langley's history. The first period, 1917-1939, is subtitled "Perfecting the Plane," details Langley's contributions to early aeronautics, with examples from specific aircraft. The second period, 1940-1957, focuses on the development of military aircraft during and after World War II. The third period, from 1958-1969, tells the story of Langley's involvement with NASA and the satellite and Apollo era. The fourth period, entitled "Charting New Courses: 1970-1992 and Beyond," treats various new topics such as the space shuttle and research spin-offs. NASA community members will want to add this fine volume to their collections, according to Ronald L. Buchan of the NASA Scientific and Technical Information Program.

Winds of Change is published by NASA, # NASA-NP-130, and is available for $17 through the Government Printing Office (ISBN-0-16-037924-5).

Happenings

CONDO FOR SALE: Waterfront, boat slip, 1,450 sq. ft., 3 BR, 2 baths, great room w/ fireplace, large kitchen, pool, security, many extras, $99,900. Call owner, 723-1005.

KINDERGARTEN PROGRAM: The Langley Child Development Center is registering children for the 1993-1994 full-day kindergarten program. Applicants must be five years old by October 31, 1993. Call ext. 44827.

FOR RENT: Tabb, 2-story brick condo in Yorkshire Downs, 2 master BR, 2-1/2 baths, living room w/fireplace, dining room, fenced patio w/ storage shed, 1,300 sq. ft. near Langley, $550/mo. Call 865-6365.

FOR RENT/LEASE: Mallard Point townhouse, near Langley and Ft. Monroe, 2 BR, 1-1/2 baths, living/dining room combination, all appliances, central air and heat, carpeted, fireplace, yard and patio. Available August 31, $525/ month, no pets. Call 727-9187.

FOR RENT: Room w/ kitchen, washer/dryer privileges, near Langley, $250/month includes utilities. Call 838-6000.

FREE AEROBICS: Summer is not over yet, so don't lose that slim bathing suit look. Aerobicize in the air-conditioned gym with low impact, interval and bench aerobics, Monday, Wednesday and Friday, 6:15-7:15 a.m. or 11-11:30 a.m. All equipment is provided at no charge. Call the Fitness Center for details, ext. 46387.

NASA SKI WEEK: Sign up for the NASA Ski Week, January 15-22, 1994, at Aspen/ Snowmass. Cost per person from Norfolk is $1,020. Contact Michael Schooley, ext. 48524 or 874-2736, for more information.

NNHS REUNION: Newport News High School's February and June 1948 classes are planning their 45th Reunion October 2. All interested parties please call 874-4117.

FOR SALE: Apple IIC computer w/manuals and software, $400; Apple Image-writer, $275; GE compact refrigerator, $70; JVC cassette deck, $55; Technics am/fm receiver, $60; Pioneer speakers, $100/pair; NEC video player/ recorder, $85, Sony radio cassette recorder, $35; miscellaneous. Call Jafar, 827-1178.

GWU OFFERS FALL COURSES: The George Washington University's (GWU) School of Engineering and Applied Science will offer a new set of courses leading to the master of engineering management degree beginning in the fall semester 1993. Interviews will be arranged on Thursday and Friday, August 26 and 27. If you are interested in entering the program, or for more information on the GWU programs, call the GWU Office at ext. 41982.

MILL POINT AFTER HOURS: The Easter Seal Society of Virginia is sponsoring this concert series every Thursday evening at Mill Point Park in downtown Hampton. Admission is $2, free for children under 12 with an adult. The schedule is as follows: August 18, Fat Ammon's Band; August 25, Bill Deal and Ammon Tharp "The Sheiks of Shag;" September 1, Slap Water; September 8, The Embers. All proceeds benefit the Easter Seal Society.

ROOM FOR RENT: Room for a family-oriented person, $300/month, $200 deposit, includes utilities and house privileges, available mid-to end of August. Call Debbie at 838-9745.

NASA Langley Motor Tours Conducted By the Virginia Air and Space Center

The Virginia Air and Space Center, in cooperation with Langley, is offering motor tours of Langley through September 6. Tours are available Monday through Saturday at 10:30 a.m., 1 and 3 p.m. and on Sunday at 1 and 3 p.m. Visitors can explore the beginnings of our nation's aerospace history, see five national historic landmarks and get a glimpse of wind tunnels that can operate up to 17,500 mph.

The fee is $5, $4 for members and combination ticket holders. The tour begins at the center and runs for about one hour and 30 minutes. Children ages four to 12 must be accompanied by an adult. For information, call 727-0800.

TOPS VIDEO: A video is available of the Technology Opportunities Showcase (TOPS) Pilot Exhibits that were on display in the Cafeteria on July 19. The video shows representative TOPS exhibits and explains the focus of TOPS. To borrow a copy of the video, contact Carrie Walker, ext. 41704.

BEACH COTTAGE FOR RENT: Kill Devil Hills summer, Milepost 9.5, sleeps 9, 2 baths, air-conditioned, cable, fully-furnished, beach rights. Call Anne at 868-6427.

TOWNHOUSE, RENT TO OWN: Denbrook Station, 3 BR, 1-1/2 baths, fireplace, all appliances, upgraded unit, 15-min. to NASA, Dozier Middle, Denbigh High Schools. Call Bill, 868-6427.

LIBRARY RESTRUCTURES CUSTOMER SERVICE: Beginning August 1, the Technical Library closed the first floor circulation desk. All reference and circulation services were consolidated on the third floor to provide efficient one-stop access for library users. For customer convenience, a book drop for returning books and unclassified technical reports is now available in the first floor lobby during library hours: Monday-Friday, 8 a.m.-4:30 p.m.

TOASTMASTERS CLUB: The Langley Toastmasters Club meets Wednesday, August 25, at the H.J.E. Reid Center, from 11:30 a.m. to 1 p.m. For more information, Call John Lim, ext. 45556.

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News Researcher

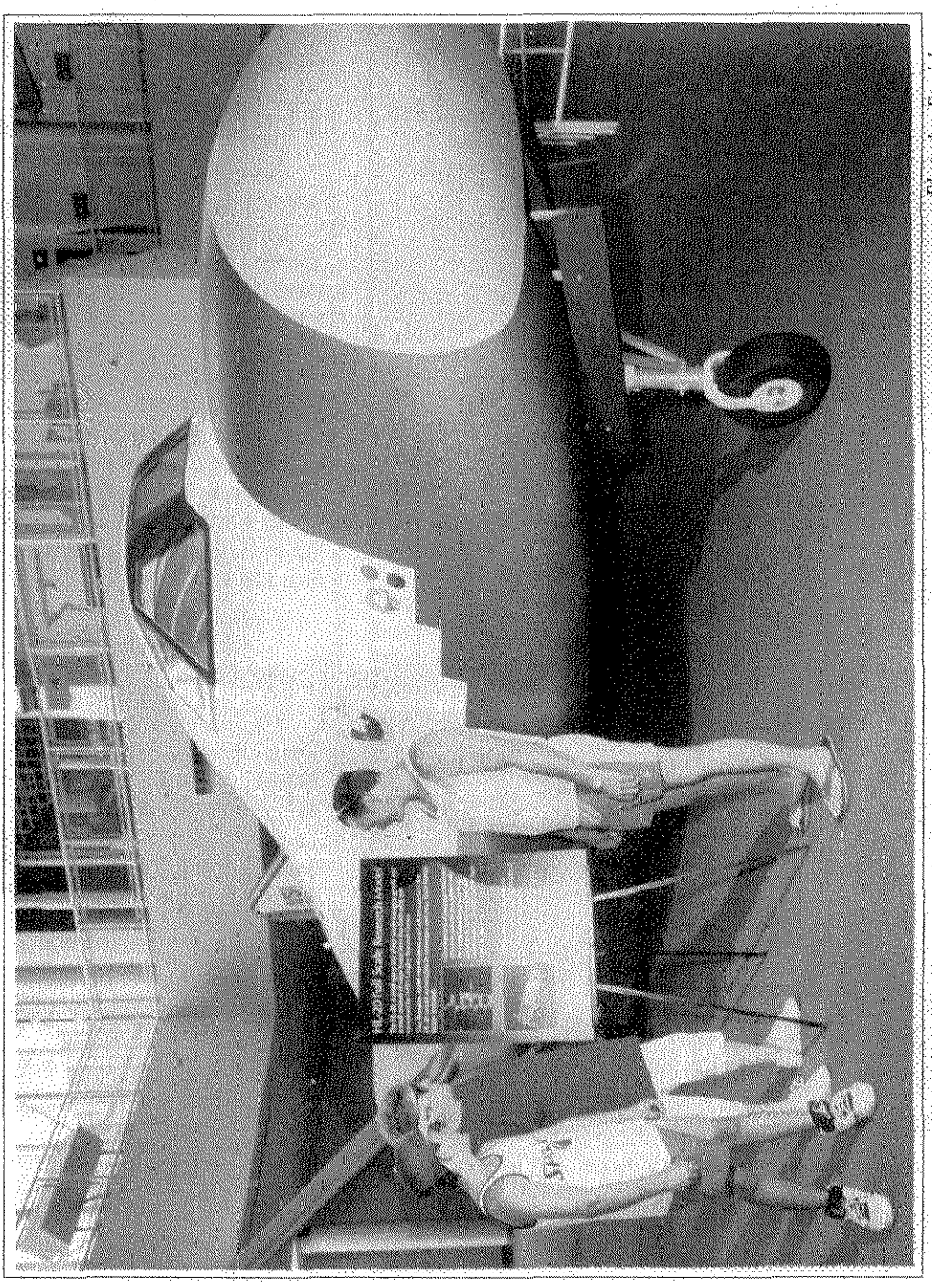

Photo by Fred Jones

The Bosley family, left to right, Ken, Jan and John, from Cincinnati, Ohio, visited the Virginia Air and Space Center and Hampton Roads History Center while on vacation in July. There they were able to see the HL-20 Full-Scale Research Model, Langley's mock-up of a personnel carrier that has been on display there this summer.

National Aeronautics and Space Administration
Langley Research Center

Langley News Researcher

Bi-weekly Employee and Contractor Publication

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Langley Nets Two R&D 100 Awards

BY JJ MILLER

The R&D 100 Awards for the 100 most significant new technical products of 1993 have been announced, and Langley scientists can boast not one, but two, of the awards.

Selected were an improved method for detection of potentially hazardous wind shears and an oxygen atom generator that will help study the effects of space on advanced aerospace materials. The R&D 100 awards are presented annually by *Research and Development* magazine to 100 scientists or engineers who have contributed the most significant products for advancing science and technology throughout the year. Selections are made by a panel of scientists and engineers after studying new technology from around the world.

The first award is for a method developed to accurately measure wind shear while aircraft are not only climbing or descending, but also while turning. Dr. Roland L. Bowles, Rosa M. Oseguera and Dr. Paul A. Robinson, all engineers in the Flight Systems Directorate, developed the process for in situ (at the location of the aircraft) measurement of wind shear using conventional aircraft sensors.

A method that can accurately measure wind shear while aircraft were climbing or descending already exists; however, measurements taken while aircraft were turning were inaccurate. The new method implements three-dimensional equations of motion, rather than simplified two-dimensional equations, to perform accurate wind shear measurement during maneuvering flight. By carefully filtering out the effects of turbulence, the method is able to prevent false measurements that have plagued other systems.

The second award is for a high-tech oxygen atom generator. The generator was developed by Dr. Roland A. Outlaw, senior research scientist in the Space Systems Division, along with Dr. Mark R. Robinson of Daco Technologies, Inc., in Florahome, Fla.

The instrument provides a beam of pure, energetic, ground-state atoms. It is not only much smaller and less expensive than all its predecessors, but produces a higher purity of oxygen atoms.

Most importantly, the small generator is ultra-high vacuum compatible, which means that it can be attached to any other ultra-high vacuum compatible system, including systems that test, grow and analyze materials.

Photo by Fred Jones

Above, top to bottom, are Dr. Paul A. Robinson, Dr. Roland L. Bowles and Rosa Oseguera, 1993 R & D 100 Award recipients for the method developed to measure wind shear.
Below, Dr. Ronald Outlaw, Space Systems Division, won a prestigious R & D 100 Award for his work on the high-tech oxygen atom generator.

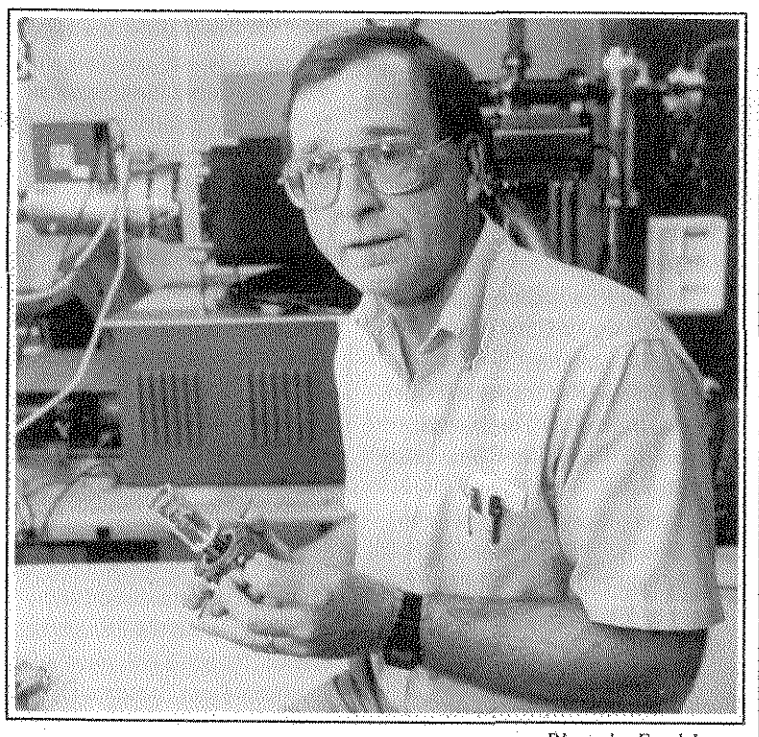


Photo by Fred Jones

Previously, if one wanted to subject samples to such a beam, the samples had to be transported to the oxygen atom generator and tested independently. The new oxygen atom generator can be attached to any existing system and configured to its unique geometry.

In the 24 years of NASA's participation in the R&D 100 competition, 96 NASA developments have been selected, contributing significantly to the recognition of NASA as a source of technical excellence. Langley has earned 25 of NASA's 96 awards.

The R&D 100 winners will be honored at an awards banquet at the Museum of Science and Industry in Chicago on September 9. There is a month-long exhibit of products displayed at the museum which opened on August 21 and will continue through September 12.

Colloquium Announcement

On Monday, September 20, Dr. Roald Sagdeev will present the "Russian Space Program in the 20th Century," as part of the Colloquium series.

Combined Federal Campaign Urges, "The Power of Caring"

Langley Sets Challenging Goal of $315,000

BY JEAN CLOUGH

Hurricane Andrew and ravaging Midwest floods are examples of fierce powers of nature that create devastating and life threatening situations. To experience them is shocking, but to survive them is a story in itself. Those who survived these tragic ordeals saw another power demonstrated— the power of caring — Americans who answered the cries of help from the homeless and injured.

What does the surge of power that has been evidenced among our neighbors show? It shows how powerful caring for one another can be. As Federal employees, we create that power every day. It's what the Combined Federal Campaign (CFC) is all about. Next month, you will have a chance to demonstrate your power to care for others by contributing to the CFC.

Langley is looking forward to another successful year, and Director Paul F. Holloway has appointed a committee headed by Dr. Douglas L. Dwoyer, chief of the Fluid Mechanics Division, to help the Center meet its most challenging goal of $315,000.

Most disasters do not make the nightly news; yet, we know there are some that can be just as devastating. Disasters happen right here on the Peninsula, and they need our immediate attention. To answer the call to demonstrate our caring power, Langley will conduct a one-day centerwide solicitation Thursday, September 30. This will be preceded by a kickoff meeting for division chairmen, key solicitors and new employees Thursday, September 23, at 2 p.m. in the H.J.E. Reid Conference Center.

This is the one time during the year that government employees are asked to consider the needs of others by contributing to the many worthy health, welfare and community service organizations. The CFC is an opportunity for the Langley family to improve the way of life on the Virginia Peninsula. Most of the CFC gifts are used directly to make the Peninsula a better place to live.

Langley has always exceeded the goal set by the director. Let's continue that tradition and support this year's campaign. When your key person contacts you on September 30, please remember to designate your pledge to your favorite organization. By designating your gift, you can be sure that your favorite agency will receive your contribution.

The winds may have stopped blowing and the waters may have receded, but the needs of many still remain. Together, through the CFC, you create the power to make a difference. Please be a part of **"The Power of Caring;"** give generously to the Combined Federal Campaign.

CFC Committee Named

photo by Paul Bagby

Langley's Combined Federal Campaign committee for 1993-94 has been chosen by Director Paul F. Holloway. Dr. Douglas L. Dwoyer (standing center) is chairman. Assisting him are Jean W. Clough, publicity chairman; Gayle L. Johnson, secretary; Marie C. Storms, financial chairman; Sammie D. Joplin, co-chairman; and Ben J. Schlichenmayer, American Federation of Government Employees Union. Not pictured are Thomas L. Vranas, International Association of Machinists; Roscoe C. Edge, NASA-Union Liaison; and Dr. Karen R. Credeur, Langley representative to the Peninsula Federal Coordinating Committee.

September 30 – A Day to Show "The Power of Caring"

News Briefs

AROUND THE AGENCY

NASA AMES TO DRIVE RUSSIAN ROBOT VIA SATELLITE – Scientists at Ames Research Center, Mountain View, Calif., will use a satellite video link, provided by Brown University, to try to maneuver a Russian robotic "rover" in a Moscow laboratory. This test is being conducted at the request of McDonnell Douglas Space Systems. "We will be steering the rover around remotely," said Project Leader Dr. Butler Hine, an Ames electrical engineer. "We will be able to see through the rover's cameras and also through cameras looking at the rover," Hine said. He will use a "telepresence interface" developed at Ames to control the prototype of a rover which Russian scientists hope to land on Mars in 1996. Hine will wear a video headset and use head movements to point the rover's camera. He will use joysticks to steer the rover. The objective of this test is to verify that this technology could be used in future missions such as Mars 96.

HUBBLE FINDS EVIDENCE OF STELLAR CLOSE ENCOUNTERS – NASA's Hubble Space Telescope (HST) has discovered a group of stars that apparently have been cannibalized of their cooler outer gas layers by other passing stars, resulting in stellar "naked cores" with surface temperatures five times hotter than Earth's sun. "This is amazing. These objects represent a totally new population of very blue stars," said Guido DeMarchi, of the Space Telescope Science Institute (STScI), Baltimore, Md., and the University of Florence, Italy. "When we started wondering what they could be, we realized that they may be among the first observed stars to have been stripped." The stars are located deep in the core of M15, one of the densest globular clusters known. A globular cluster is a "beehive swarm" of several hundred thousand stars held together by each other's gravity. If the cluster is exceptionally dense, chances are increased for close encounters of stars, in which bodies with strong gravitational attraction could strip other stars of their outer material.

Quality Climate Survey Results Update

Results of the Quality Climate Survey were presented to senior staff members by a 3M Corporation representative during the recent Senior Staff Retreat, according to Anthony J. Maturo Jr. of the Employee Development Branch. The senior staff, upon reviewing the survey results, requested Steve Taylor, a 3M consultant, work with Assistant Director Dr. Belinda H. Adams to develop a plan for communicating the survey results to all employees. Consequently, Adams and Taylor have developed a plan in which an individualized survey report will be produced and distributed to each directorate. The contents of these reports will be discussed during the September 1-2 sessions of the leadership course to be conducted by Taylor for directorate facilitators. These facilitators will then meet with their directorate management to review the reports and assist management in communicating the information to their employees. The employee meetings should occur in mid-September.

IN MEMORIAM

James Stanford Hicks

James Stanford (Stan) Hicks, a former Peninsula resident and Langley employee, died July 27.

Hicks was employed at Langley from 1962 to 1980 as an engineering technician in the Materials Processing and Development Section. During his Langley career, he was considered to be an outstanding engineering technician and was featured in the Personal Profiles section of the *Langley Researcher* in 1972.

Milton O. Thompson

Milton O. Thompson, who joined NASA in 1956, died on August 6. He was chief engineer at Dryden Flight Research Facility in Edwards, Calif.

During his 37-year career with NASA and its predecessor NACA, the National Advisory Committee for Aeronautics, he had been associated with many significant aerospace projects.

He was one of the NASA pilots to fly the X-15 rocket-powered research aircraft. From 1959 to 1968, Thompson flew the aircraft 14 times, reaching a speed of 3,723 mph and a peak altitude of 214,100 feet on separate flights. The X-15 program provided a wealth of data on aerodynamics, thermodynamics, propulsion, flight controls and the physiological aspects of high-speed, high-altitude flight.

Kitty O'Brien Joyner

Kitty O'Brien Joyner, 77, a former Peninsula resident, died Monday, August 16.

Mrs. Joyner attended Sweet Briar College from 1935-1937 and received her bachelor of science degree in electrical engineering from the University of Virginia in 1939 where she received the Algernon Sidney Sullivan Award.

Joyner was one of the first female engineers at Langley. She started her Langley career in September 1939, as a junior civil engineering aide and by the time she left the Center in May 1971, she was a supervisory general engineer and the head of the cost estimating staff of the Office of Engineering and Technical Services, a precursor of Systems Engineering and Operations (SE&O). She was a member of the Institute of Electrical and Electronic Engineers.

Surviving is her husband, Upshur T. Joyner, also a former Langley employee, who worked at the landing loads track.

Speakers Bureau Report for July

The following Langley employees spoke to various groups during the month of July:

Dr. Joel Levine spoke to participants in the LARSS/ASEE Programs about "Ozone, Climate and Global Change;" and to the Governor's School, College of William and Mary, about "A Planet at Risk."

Bob Miserentino spoke about "Langley's Space Research" to the Hampton Mercury Lions Club and to the Yorktown Rotary Club about the "Space Program – Past and Present."

Dr. Jag Singh spoke to the Northampton Civic League about the "Dangers of Magnetic Field Radiation."

Dr. Karen Jackson talked to the American Helicopter Society, Hampton Roads Chapter, about the "History of Crash Research at NASA Langley."

Marilee Roell spoke about "Women in Non-Traditional Roles" at Tidewater Community College.

Leroy Spearman spoke to the Southeastern Virginia Ultralight Flyers of White Marsh, Va. on the topic, "Evolution of Civil Transports."

Lisa Simonsen spoke at the Virginia Air and Space Center about the "HL-20 Spacecraft Design and Human Factors Testing."

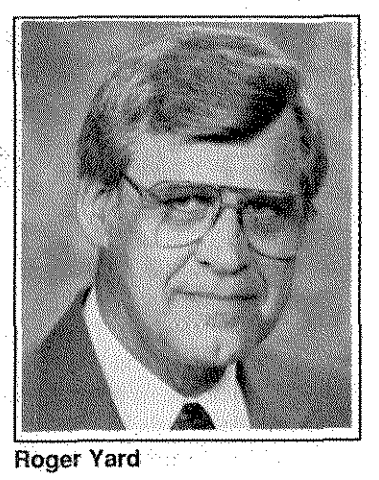
Chauncey Wu spoke at the Virginia Air and Space Center about "Large Space Structures for Space Stations, Space Telescopes and Satellites."

Doreen Neil spoke at the Virginia Air and Space Center on the "Use of Satellites to Monitor Earth's Atmosphere to Measure Ozone."

Debbie Garrett, Leland Melvin and **Keith Norward** spoke to CHROME students at Old Dominion University about "NASA Careers."

Jeff Seaton spoke about "Robotics Advancements" at the Virginia Air and Space Center.

Yard Named Chief Information Officer



Roger Yard

The current emphasis on technology transfer and competitive advantage by NASA and the Center makes the management of information an important function. Providing information services to both internal and external customers is a significant mission of the Office of Management Operations (MO). These information services involve the major areas of both scientific and technical information (STI) as well as business and administrative information. The functions that are involved include the library, technical editing, printing, graphics, video production, technology utilization and transfer, business systems, office systems, management information systems, central files, mail, forms and directives. In the past, the two major information areas have been highly independent of each other but two factors are currently causing the need for greater coordination between the areas.

The first is a growing commonality of the needs of the customer base, which now includes everyone on Center. The second is the use of common information systems technology. In the first case, compatible user-friendly customer interface is desired and systems integration is a must. In the second case, coupled with today's austere environment, both the opportunity and the need for joint exploration of new technology is provided.

As part of the update of the MO's strategic plan, a task team recommended the establishment of an oversight position of Chief Information Officer (CIO) within Management Operations to provide, on a full-time basis, central visibility, coordination and facilitation of information management across MO. In view of the compelling need, John Stokes, director for Management Operations, established the position within the Directorate Office. Roger Yard, chief of the Business Data Systems Division (BDSD), has been assigned to the position and Frederick L. Moore, formerly the assistant chief of BDSD, is now BDSD's acting chief.

As chief information officer, Yard is responsible for advising the director for Management Operations in matters concerning policy, planning and implementation associated with information management within the Directorate. His specific duties involve providing central visibility of and being a central contact point for coordinating, facilitating and integrating various information management activities and initiatives within MO. The focus of the position is to improve the management of information in support of the Center. One MO objective is to develop synergy among the various organizations involved in managing information. Yard is now chairman of the Award Fee Board for the Business, Administrative and Management Information (BAMIS) Support Services Contract and serves as an alternate to Stokes, who is the Langley representative on the Automated Information Management (AIM) Council. The AIM Council advises the deputy AA (Agency Programs) of the Office of Management Systems and Facilities (Code J), concerning the development of Agency standard business and administrative systems. Yard is located in Building 1149, room 212B and can be reached by calling ext. 43238.

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. The following employees are approved leave recipients: Terese M. Bederka, Monica L. Cooper, Bette L. (Jeanie) Duncan, Cynthia L. Lach, Janice B. Mongesku, Terry L. Shephard, John P. Stack, Belle L. Wood and Darrell A. Wood. If you want to donate annual leave to these recipients or want more information about the program, call Linda Park, ext. 42610.

News 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.....Marny Skora

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

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

Photojournalist .....Carol Petrachenko
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.

Langley Honors Space Act Awardees In Special Ceremony

BY MARNY SKORA

If you ever . . .

- travel on an airplane in inclement weather,
- drive an automobile during a heavy rain or snowstorm,
- would like to fly across the globe or into low-Earth orbit,
- wear contact lenses, appreciate good art, or
- admire the novel use of existing technology,

you will be interested in the work of several local innovators who have made each of these areas probable, possible or safer.

Few Virginians — or Americans for that matter — know that safety grooving was introduced into the United States and perfected for runway and highway use right here at NASA Langley.

– That the high-speed propulsion technology for the proposed National Aero-Space Plane had its roots in pioneering work done here for the X-15 rocket plane of the1960s.

– That the highly instrumented F-106 aircraft, now displayed in the Virginia Air and Space Center, was struck by lightning over 700 times to develop new criteria to protect state-of-the-art aircraft systems.

– That high-performance, transparent films developed to coat space structures can be used for applications ranging from solar collectors to coatings for precious art objects.

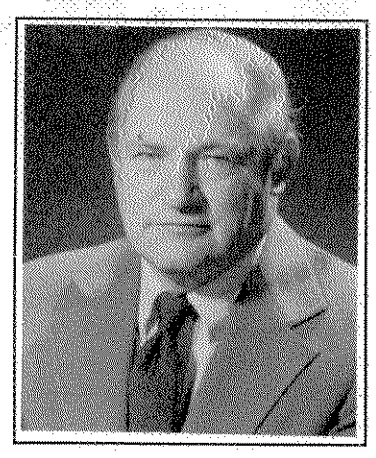
– That video equipment is now teamed with phosphor coatings to map the surface temperature of subscale aircraft and spacecraft without laboriously instrumenting models for testing.

– That NASA Langley flight tests validated an on-board system enabling pilots to assess and avoid the hazard of wind shear, a leading cause of aircraft accidents.

All of these innovations have won for their developers the prestigious Space Act Award. These awards, instituted in 1958 with the founding of NASA, recognize excellence in scientific and technical contributions that have significant impact on aeronautics and space endeavors or their spinoffs.

A special ceremony hosted by Center Deputy Director Dr. H. Lee Beach was held August 17 at the Virginia Air and Space Center to recognize the six Langley employees and two retirees who have won these substantial honors. Following is a brief description of the award-winning research:

HIGH-SPEED PROPULSION



Ernest A. Mackley

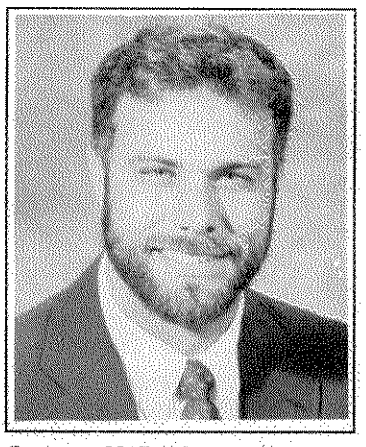
The lifetime efforts of Langley retiree Ernest A. Mackley, an expert in scramjet propulsion and hypersonic flight, provided the impetus for the National Aero-Space Plane (NASP) program. He helped develop a ramjet/scramjet engine for research in wind tunnels and for flight testing on the X-15, the world's fastest X-plane. Mackley's work on the Langley airframe-integrated scramjet engine concept produced good thrust results at Mach 4 and Mach 7, providing justification for the aero-space plane program. His contributions to high-speed air-breathing propulsion technology over a 40-year career netted him a Space Act Award of $10,000.

LIGHTNING RESEARCH

Felix L. Pitts

Standards proposed by Felix L. Pitts, a senior research engineer in the Information Systems Division, have enhanced aircraft safety by providing a more precise understanding of lightning. The program used the highly instrumented F-106 to fly into severe weather to gather data on lightning. The aircraft was outfitted with sensors, video cameras, amplifiers, radar and recorders. It was directed into likely storms by a ground-based research support team. Over 700 lightning strikes were recorded, analyzed and reported. Pitts' findings have resulted in new guidelines, adopted by both the Federal Aviation Administration and the Department of Defense, for protecting aircraft and spacecraft electronic systems. He has been awarded a $5,000 Space Act Award.

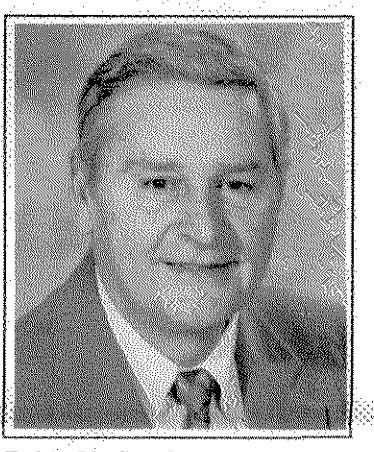
SURFACE TEMPERATURE MEASUREMENT SYSTEM



Gregory M. Buck

A novel method developed by Gregory M. Buck, principal investigator in the Experimental Hypersonics Branch, measures the surface temperature of air and spacecraft models. Buck's method uses phosphor materials, ultraviolet light and video equipment. Rather than laboriously attaching numerous sensors, a model is coated with phosphors sensitive to temperature. The ratio of light emitted indicates the surface temperature. The results, fed into an image processor, reconstruct in a color picture, a thermal footprint of the craft in study. The process, which saves both money and precious wind tunnel testing time, netted Buck a $7,500 Space Act Award.

WIND SHEAR DETECTION

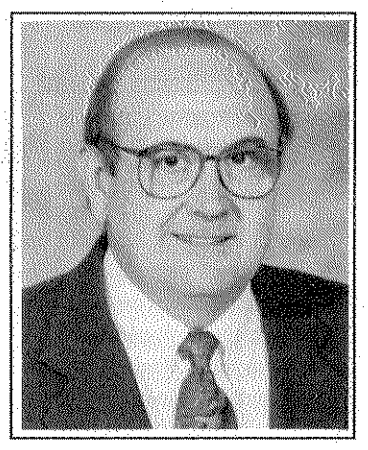


Roland L. Bowles

A hazard measurement index conceived, developed and validated by Dr. Roland L. Bowles, manager of Langley's Wind Shear Program, allows pilots to assess the danger of microbursts, a leading cause of aircraft accidents. NASA has proven the effectiveness of forward-looking sensors that notify the flight crew of the presence of "invisible" wind shear in enough time to avoid the affected area or escape from the encounter. Validated through flight tests with NASA's 737 aircraft during the summers of 1991 and 1992, Bowles' "F-factor" system has received unprecedented acceptance by the aviation industry as the universal risk measurement standard. This effort earned Bowles a Space Act Award of $15,000.

PROTECTIVE TRANSPARENT FILM

Anne K. St. Clair

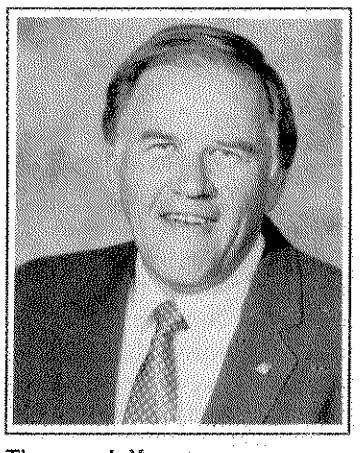


Terry L. St. Clair

Research in Langley's Materials Division has produced transparent coatings that can both protect valuable works of art and transmit solar energy on space structures. Over the past two decades, Anne K. St. Clair, manager of the Advanced Aircraft Program, and Dr. Terry L. St. Clair, head of the Polymeric Materials Branch, have conducted polymer research yielding high-performance, colorless films that can be used and reused to coat and protect a variety of objects. These films, called polyimide films, are highly stable and moisture-resistant compared to similar products. In addition, they can be spray-coated on objects, eliminating the need for adhesive bonding required by most systems. The St. Clair product, which saves both time and money, gained each a $5,000 Space Act Award.

SAFETY GROOVING

Walter B. Horne



Thomas J. Yager

The research of Walter B. Horne and Thomas J. Yager has led to safer runways and highways. Safety grooving drains away surface water and enhances braking and directional control in both aircraft and ground transportation. As a result of this NASA research, over 800 commercial airports around the world and thousands of miles of U.S. highways have been safety grooved. In fact, accidents on slippery highways have been reduced as much as 85 percent on grooved roadways. This technology has also been adapted to wet surfaces on swimming pool patios, playgrounds and work areas, where injuries have been dramatically reduced as well. Their teamwork garnered Horne a $15,000 Space Act Award; Yager was awarded $10,000.

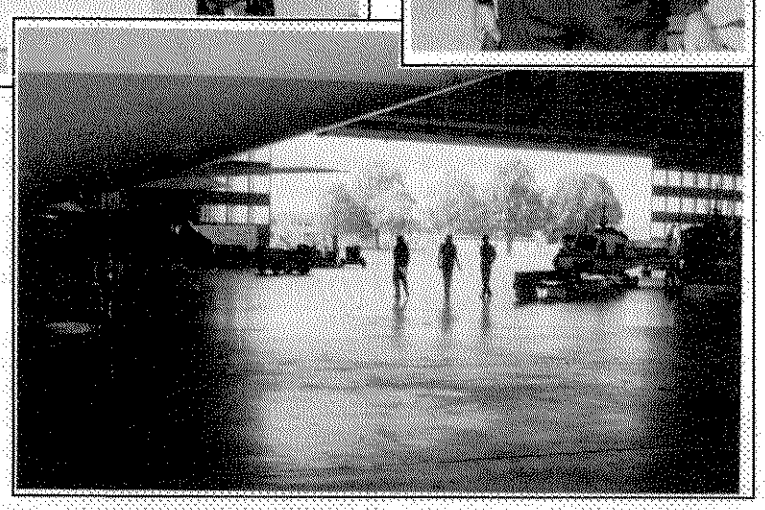
More Awards

The following employees have been granted Space Act Awards of $1,000 to $4,999:

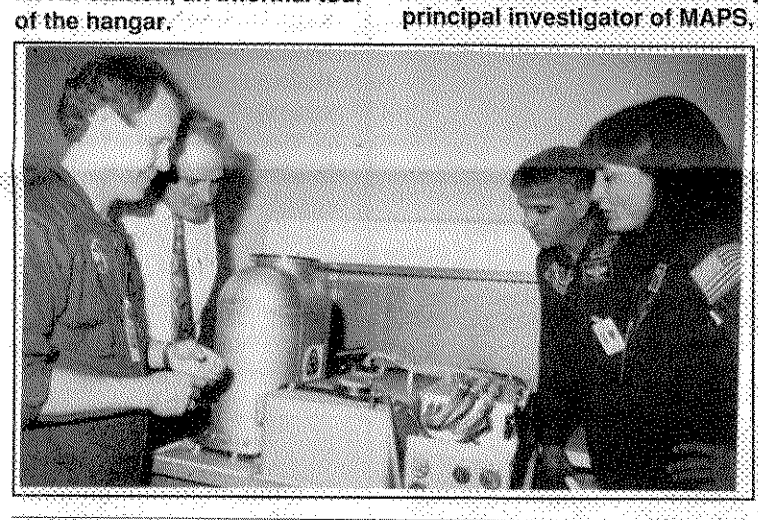
Ruth M. Amundsen
Ernest S. Armstrong
Robert A. Baals
Robert M. Baucom
Alpheus W. Burner Jr.
Harold G. Bush
Ronald K. Clark
John H. Crews Jr.
Wolf Elber
Winifred S. Feldhaus
William K. Goad
Nelson J. Groom
Purnell Hopson Jr.
Steven J. Hughes
Alan D. Little
Michael A. Marcolini
Ruth M. Martin
William T. Miller Jr.
Maria V. Mitchum
Thomas C. Moore Sr.
Daniel G. Murri
James C. Newman Jr.
Ruth H. Pater
Philip O. Ransone
James R. Reeder
Kelly D. Smith
John J. Snoha
Walter L. Snow
Sang Q. Tran

In addition, 203 Langley employees have been honored with Space Act Awards under $1,000. These awards total $65,750.

Astronauts Come Calling: See MAPS Payload, Get Training



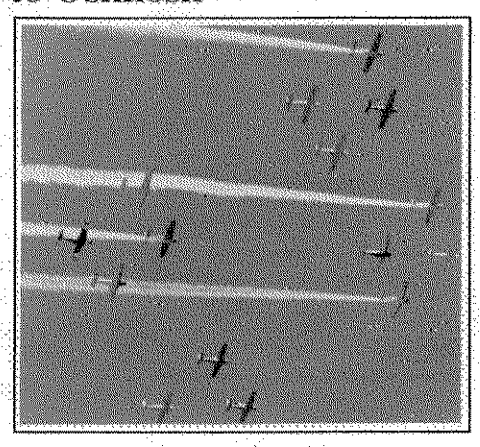
Above, Mission Specialist Dr. Jay Apt shakes hands with Bruce Foster, supervisor of Lock-heed aircraft mechanics, as Col. Sidney Gutierrez, commander of STS-59, looks on. Lockheed's Lou Brown prepares to have the T-38 towed into the hangar. Upper right, Dr. Linda Godwin, payload commander, arrives at Langley. At right, Rob Rivers, center, a test pilot formerly at Houston, now at Langley, and a friend of the astronauts, gives Linda Godwin, left, and Kevin Chitton, an informal tour of the hangar.



Below, left to right, Mission Specialist Dr. Thomas Jones, Dr. Henry G. Reichle, Jr., Chemistry and Dynamics Branch and principal investigator of MAPS, Gutierrez and Godwin discuss the MAPS instrument that will accompany STS-58 astronauts into space. MAPS (Measurement of Air Pollution from Satellites) measures the infrared band in the heat emitted to space by Earth and its atmosphere. According to Reichle, the instrument will be sent to Kennedy Space Center in late August in preparation for the 1994 mission. He and Doreen Neil were on hand to familiarize the astronauts with the MAPS hardware.

Photos by Carol Petrachenko

NASA Returns to Oshkosh



NASA returned to the annual Oshkosh Fly-In this year with a different look to its exhibit and a special focus on general aviation technology. NASA's aeronautics initiative was communicated to industry and the public through forums given jointly by members of the General Aviation Office, the Small Aircraft Manufacturers Association and the Federal Aviation Administration.

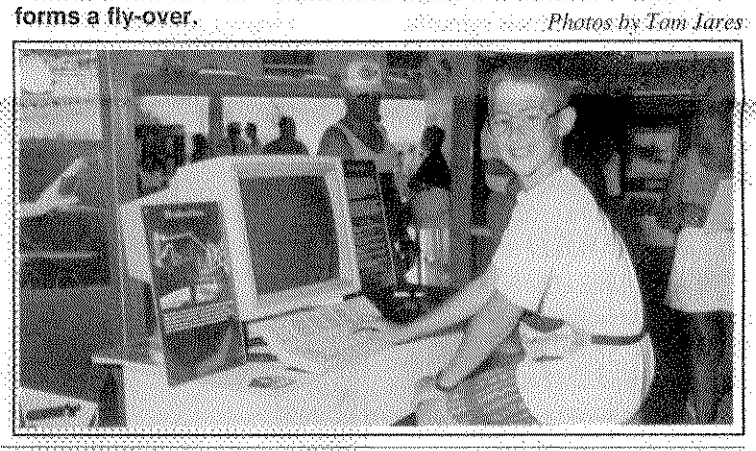
NASA's forums and exhibits drew much public response. The exhibit, "NASA and American Leadership in Aeronautics" showed how the Agency is making sure that its customers in government, industry, universities and the American people will benefit from the Agency's advances in aeronautics and space technology.

Another NASA exhibit, "High-Speed for World Travelers," explained how the Agency is tackling issues that will make it easier for U.S. industry to design and build a high-speed, environmentally sound aircraft. While the exhibits were geared toward aviation, displays on Agency programs on space exploration were highlighted–including the latest on the space shuttle, Earth and space science studies, space technology and the space station.

Langley's Jean Clough, Office of Public Services, had overall responsibility for organizing Langley's role in the event. The week-long Fly-In draws about one million visitors from more than 50 countries to see more than 14,000 aircraft on exhibit.

Below, a young visitor tries out the Robotics display at NASA's Oshkosh exhibit, while above, a formation of "war birds" performs a fly-over.

Photos by Tom Jares



Volunteer Service Program Is a Success

BY KRISTINA MURDEN

More than 45 high school and college students came to Langley this summer to work and learn – for free– in the Volunteer Service Program, designed to give students hands-on work experience to get and keep them interested in science and math.

"Most of the volunteers are interested in engineering and have an aptitude for science and math," said Gael Hawkins, personnel management specialist. Each student is matched with a mentor who plans a project for them. "Mentors like the program too," said Hawkins. "Students benefit by networking at an early age and learning who is preeminent in their field of interest." Three of this year's volunteers have shared their experiences.

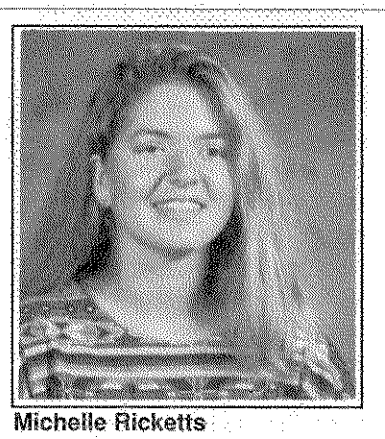
Scott Carron rides his bike four miles every morning to create three-dimensional models on computers in the Computational Mechanics Branch and gives his Langley experience "two thumbs up."

"The resources here are incredible," he said. "Everyone is so supportive and they treat me as an equal." He graduated from Syracuse University with a mechanical engineering degree in May 1992. Lack of a job brought him here from New York to volunteer.

The biker has enjoyed his treks across Hampton, but wants to design a bike that would make life easier for the biking commuter. "I want to create a bike designed to hold everything. It would have come in handy the time I went to the grocery store and forgot that I had my bike. It was quite a challenge to make it home with all of that stuff."

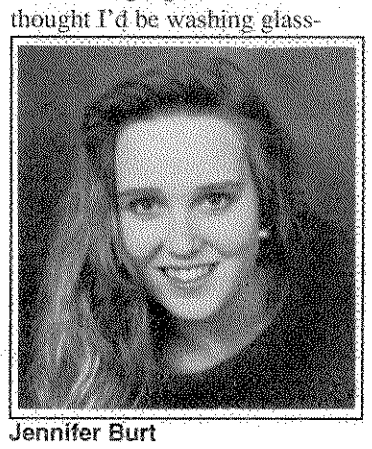
"I feel good about conserving energy, and I haven't polluted the atmosphere," said Carron. He does admit that on some of those sweltering days this summer, if he owned a car, he would have been driving it.

A high school field trip to Langley's composites lab whetted Michelle Rickett's interest. She'll be a senior at Poquoson High School this fall, and she has already helped scientists in the Advanced Aircraft Program Office work with materials to make future satellites. She was the school's most outstanding organic



Michelle Ricketts

chemistry student last year and a three-year honor student. Before coming to Langley this summer, Ricketts spent three weeks at an engineering camp at Notre Dame University. "My experiences this summer have made me want to pursue chemistry," said Ricketts. "I'm having a great time here. I thought I'd be washing glassware, but I'm getting great hands-on experience."



Jennifer Burt

The opportunity has helped her make decisions about her future. She wants to study chemistry at the College of William and Mary. "I want to help make the Volunteer Service Program well known to other students, too."

Hard work is no stranger to Jennifer Burt, a Christopher Newport University rising senior, who has participated in Langley's SHARP program. This summer she is working with the psychologists here, doing human factors studies, and she's found her niche.

Her experiences taught her that mechanical engineering was not her thing, "but I wanted to work with people – so I came back." Burt said. She worked in the Human/Automation Integration Branch. "I was welcomed into the group very quickly. They're teaching me, and I'm helping them."

"I'd like to encourage students to do research if they plan to enter a scientific field," Burt said. "Graduate schools expect it of you." She is returning here in September for the Stay-in-School Program.

She'll have the opportunity to design and conduct her own experiment. "We'll study ways to prevent pilot boredom – to keep them alert and interested." she said.

Some objectives of the Volunteer Service Program are: building relationships between educators and the needs of federal employers and students and providing opportunities of early career exploration and exposure to a work environment. It also encourages interest in new occupations and supports affirmative action programs. For more information, call Gael Hawkins at 864-2527.

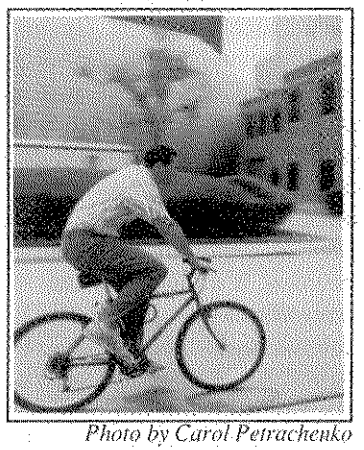


Photo by Carol Petrachenko

Scott Carron biked four miles each way just to volunteer at Langley this summer.

Langley Volunteers Help Build a Better World

BY DONNA G. ROPER

Spending a week repairing someone else's roof or remodeling someone else's bathroom may not be your idea of a great vacation, but Blair Gloss and George Boyles disagree. In fact, they find it extremely rewarding.

For the past two years, Gloss and Boyles have spent a week of their vacation participating in the Appalachia Services Project (ASP), a home repair ministry that helps economically disadvantaged people in 13 Central Appalachian counties in Kentucky, Tennessee, Virginia, West Virginia and North Carolina.

Each summer, about 6,000 adult leaders and teenagers from around the country and from various denominations work for one week to make homes warmer, safer and drier for more than 300 Appalachian families.

ASP has a summer center in each county with staff members who assist the volunteers and coordinate the repair projects in that area. Because repairs can take anywhere from a few weeks to all summer to complete, the volunteers may begin, continue, or finish a project, depending on its status.

What to Expect

When volunteers arrive at the ASP center, teams of four to seven volunteers are assigned tasks such as repairing a leaky roof, hanging sheet rock, digging a drainage ditch or building an outhouse.

Gloss, assistant division chief for the Applied Aerodynamics Division, admitted, "I don't classify it as a fun vacation; it's hard work, but I always come away feeling good. I plan to go again next year."

Boyles, the computer complex manager for the National Transonic Facility, agreed, "The work is hot and dirty and the accommodations are bare, but it sure gives you a good feeling."

Volunteers usually stay at a local school or community center. Gloss and his team try to arrive early Sunday morning because the first people at the center get the best sleeping spots, and that's important. "This year, we stayed in the gym and we got a wall located next to the bleachers, so we had a place to put our stuff," he said. "The last group usually gets stuck in the middle of the floor, and they have people walking over them at night."

You "Get" More Than Give

Gloss, who grew up in West Virginia on the western edge of Appalachia, knows what it is like in some of those depressed areas and enjoys helping the families. He said he feels that all volunteers benefit from the experience.

The week is an important time for team building and fellowship. Volunteers participate in awareness programs and group meetings at night. They also have a chance to talk with other volunteers and participate in fun activities such as swimming or playing basketball.

Gloss explained, "Some emotional ties are formed with the families. You are digging or repairing inside someone's house, and the homes are generally not big. You become a part of the family unit for that week. Before you know it, these people become your family and their house becomes yours."

Boyles, who enjoys working with teenagers, believes that the project is a great experience for everybody but that the teenagers are the ones who benefit most.

"Some of the youth, especially the girls, start out hesitant and unsure of themselves," he said. "They don't even know that they could learn to use tools. The project makes a big difference in their lives. It builds self-confidence and gives them an awareness of another side of life, different from their middle-class upbringing in Yorktown."

How To Prepare

Participating in the ASP requires a lot of preparation and thus, builds organizational and planning skills. For instance, volunteers must apply in October to participate in the program. They must then work to raise the money to pay for their food and transportation as well as about $350 per work team to pay for the materials that they will use to repair the homes.

"When you are preparing to go, you feel the sense of excitement and concern," commented Gloss. "The main concern is 'can I do the job?' A family will be living in the house, so you don't want to mess it up."

To alleviate these concerns, the volunteers, most of whom are considered unskilled laborers, practice carpentry skills and learn safety procedures before they leave. "Our group worked on practice projects throughout the year," Boyle said. "A few of these projects were assistance projects, but most were the kind we received after putting notices around the neighborhood. We would do any project people asked and they would usually give us a donation. The community has been very supportive."

Because ASP focuses on essentials not cosmetics, volunteers do not need to be master carpenters or experienced plumbers. They do, however, need to furnish their own tools, another challenge.

"Part of the excitement is deciding what tools to bring," Gloss explained. "Because you do not know what kind of job you will be assigned, you need to be prepared for anything."

What You Can Accomplish

Boyles feels that his team was experienced and could have handled any job because of their preparation throughout the year. He also feels that they were given their assignment because of their experience. "This house needed everything: plumbing, electrical, foundation and roofing repairs," Boyles said. "The family had lived in the house for more than two years without any indoor plumbing. They didn't even have a drain to pour out the water in their house."

Boyles' team sealed a crack in the cistern and connected it to the hot water heater; the next group will fill the cistern and connect it to the bathroom. His team also dug a trench for the drain system. They wanted to finish the drain system but the company delivering the gravel didn't show, so the next team will fill in the trench with gravel and run a drain to carry off the water.

"You have to adjust yourself to the fact that this is a long-term project and you can't do it all in one week," Boyles said. "You set goals and just try to get a logical stopping point by the end of the week."

"You try to do as much as you can," Gloss agreed. "You push yourself, but you must work within the bounds of the time restrictions and the abilities of the youth in your group. You focus on what was accomplished. For example, our accomplishment was putting a roof on the house." Gloss' team also repaired the foundation and built a temporary support so that they could prepare to replace the whole rear wall of the house. However, they did not get to replace the wall. "I wanted to remove the wall and I had hoped we would be able to do it before we left, but the roof took an extra day and we just ran out of time," Gloss said.

The Real Benefit

"Our team was able to spend a lot of time with the family and some of the volunteers spent time reading to one of the children, a six-year-old boy who had leukemia." Gloss said. "The boy celebrated his birthday while we were there, so the team bought him a birthday cake and took him to the ASP picnic at the end of the week. Needless to say, when we left, there was a lot of hugging and crying."

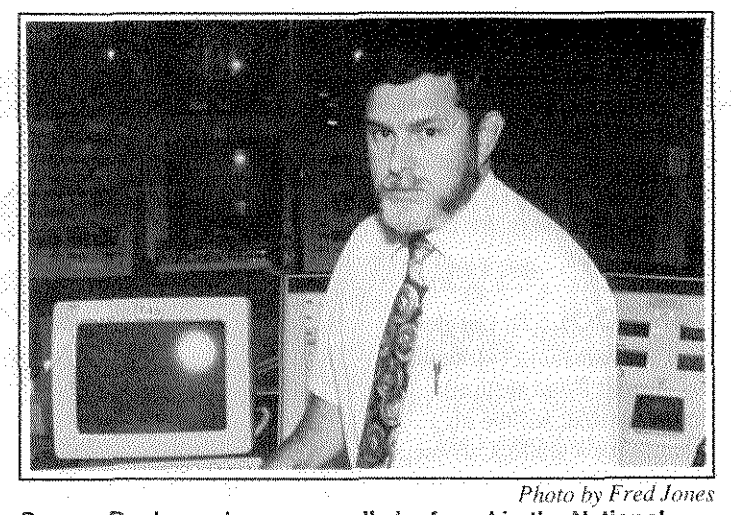
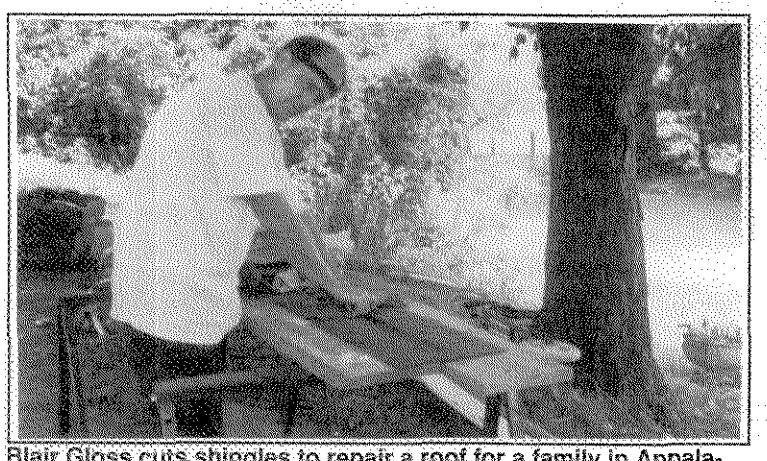
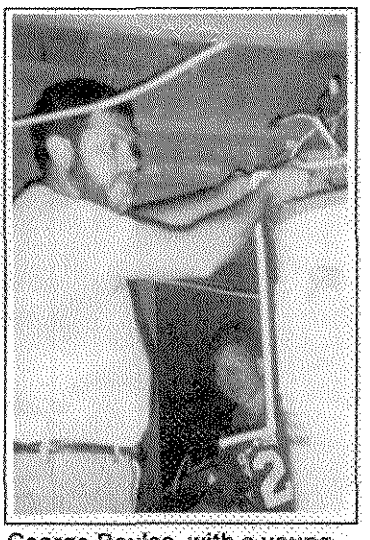


Photo by Fred Jones

George Boyles, who can usually be found in the National Transonic Facility, sits in the NTF control room.



Blair Gloss cuts shingles to repair a roof for a family in Appalachia, as part of his work with the Appalachia Services Project.



George Boyles, with a young volunteer, connects the hot water heater plumbing to the kitchen in one home.

Photo by Fred Jones

Blair Gloss at work in the 14- X 22-Foot Tunnel.

Virginia Air and Space Center Celebrates Bay Days

Virginia Air and Space Center
Hampton Roads History Center

Make plans to celebrate Hampton Bay Days at the Virginia Air and Space Center. The center will offer the following during Bay Days weekend, September 10, 11 and 12:

- Ride the new SRV simulator at the center and experience the thrill of flying in a fighter. The SRV is a 15-passenger capsule designed to move simultaneously with the current feature film. Visitors can enter from the courtyard entrance and pay only $2 per person.
- The center will have an offsite activity in the Chesapeake Bay Exhibit area. Children can make and take environmental crafts and learn about the history of Hampton Roads. *Children who bring their crafts to the center will get in free when accompanied by an adult.*
- Festival-goers can enjoy the sidewalk sale featuring the Virginia Air and Space Center's *Wings Over Hampton* store.
- Be sure to get a two-for-one coupon to see the WVEC-TV 40th Anniversary Exhibition at the center, good through November 13, 1993.
- In celebration of the USS Hampton, which will be highlighted during Bay Days, a 30-minute film, entitled "Today's Submarine Force," will be shown in the Orientation Theater during all three days.

For more information, call 727-0800.

If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services officer, at ext. 43315.

Happenings

FREE AEROBICS: This fall, keep slim and trim with the early or mid-day aerobics. Low-impact, interval and the ever-popular bench aerobics are taught 6:15-7:15 a.m. and 11-11:45 a.m., Mon., Wed. and Fri. All accessories are provided at no charge. Grab your shoes and bring a friend. Call the Fitness Center at ext. 46387 for details.

GEORGE WASHINGTON UNIVERSITY: The School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences 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 for the fall semester is August 23-27. For a course listing and telephone registration procedures, call the GWU Office at ext. 41982.

HOUSE FOR SALE: Grafton, 4 BR, 2 baths, living and dining rooms, den w/ fireplace, attached garage, 1/3 acre lot. Good schools, community pool. Asking $114,900. Call 898-7072.

SKI TRIP: The third annual NASA Ski Week will be held from January 15 through 22 at Aspen/Snowmass. Cost per person is $1,020. Call Michael Schooley at ext. 48524, days, or 874-2736, evenings, for more information.

CAR POOL: To Langley from Williamsburg (Mooretown and Airport Road section). Hours flexible; will be on crutches for a while. Can use all but the smallest vehicles. Will pay gas. Call Bill, 864-4183.

AIAA NATIONAL AWARDS: The American Institute of Aeronautics and Astronautics (AIAA) offers many prestigious national awards covering all areas of aerospace engineering and research. If you would like information regarding specific awards or would like to nominate someone to receive an award, please contact Richard Wallsom, AIAA , Hampton Roads Section Honors and Awards chairman at 766-9465.

FOR SALE: Kitchen set, black trimmed in brass, hexagon-shaped table w/four black cushioned chairs, very good condition, $150. Call Richelle, 826-0016, leave message.

EXCHANGE SHOP NEWS: Film development has arrived! Prices range from $5 to $15 for 24-hour service. Shop hours are Monday through Friday, 7:30 a.m. to 2 p.m. Discount tickets are available to AMC movie theaters, Busch Gardens, Kings Dominion, Water Country, Colonial Williamsburg and James-Yorktown settlements. Call 864-1585, for more details.

FALL VOLLEYBALL SEASON: Registration for Fall Volleyball will be held until Sept. 3. Cost is $90 per team. The 10-week season starts Sept. 13 and includes playoffs: Tues., co-ed-BB/C, Wed. men/women, Thurs., co-ed-B/D. Team rosters and waivers can be gotten from the bulletin board in the Gym. For more information, call David Rosenbaum, ext. 41800.

KINDERGARTEN PROGRAM: The Langley Child Development Center is registering children for the 1993-94 kindergarten program. The full-day program is taught by a certified kindergarten teacher. Applicants must be five-years-old by October 31, 1993. For more information, call ext. 44827.

BODY SCULPTING AEROBICS: Improve your fitness level, reduce stress with low-impact, bench and weight training classes from aerobics instructors. Free body composition analysis, cardiovascular fitness assessments, information on diet and nutrition given before class. Open to civil service, contractors and their families at the LAA Gym, 5-6 p.m. Tuesday and Thursday, 9:30-10:30 a.m. Saturday. For information, call ext. 42295.

35MM SLIDE PROJECTOR: Will the person who borrowed the 35MM slide projector, ECN 529894, from the H.J.E. Reid Conference Center, please contact Ken Dreyer, ext. 46361.

ROOMMATE NEEDED: Mature, responsible person to share 2 BR apt. near Langley, $205/month plus 1/2 utilities. Call Jenny, 722-5851.

1993 LAA EXECUTIVE BOARD ELECTIONS: Nominating forms for the positions of vice president and chairperson of Buildings, Grounds and Activities will be available at the LAA Office on September 13. Information on specific duties will be given when the nominating form is received. Direct questions to Andrea Lewis, ext. 46369, or Robert Huffman, ext. 46083.

NASA'S HEALTH FOR LIFE: The Health for Life weight loss program is ready to help you lose weight the healthy way. The 12-week program will help you practice a lifetime of proper nutrition and exercise with the help of behavior modification and group support. Class starts Sept. 1, with weekly brown bag seminars and exercise twice weekly. NASA employees only. Call ext. 46387 for information or to sign up now.

CALL FOR PAPERS/LANGLEY MEASUREMENT TECHNOLOGY CONFERENCE: Papers are being sought for the 1994 Measurement Technology Conference, "Global Measurement Technology for Aerospace Applications," on current research, development and aerospace applications of large area (global, planar) measurements and instrumentation technology in the areas of deformation and vibration, structural characterization, flowfield diagnostics or surface areal measurements. The conference is April 12-14, 1994. Submit abstracts to L. Gibson, Mail Stop 234, phone (804) 864-4643, fax (804) 864-8673, by September 17, 1993.

Researcher News

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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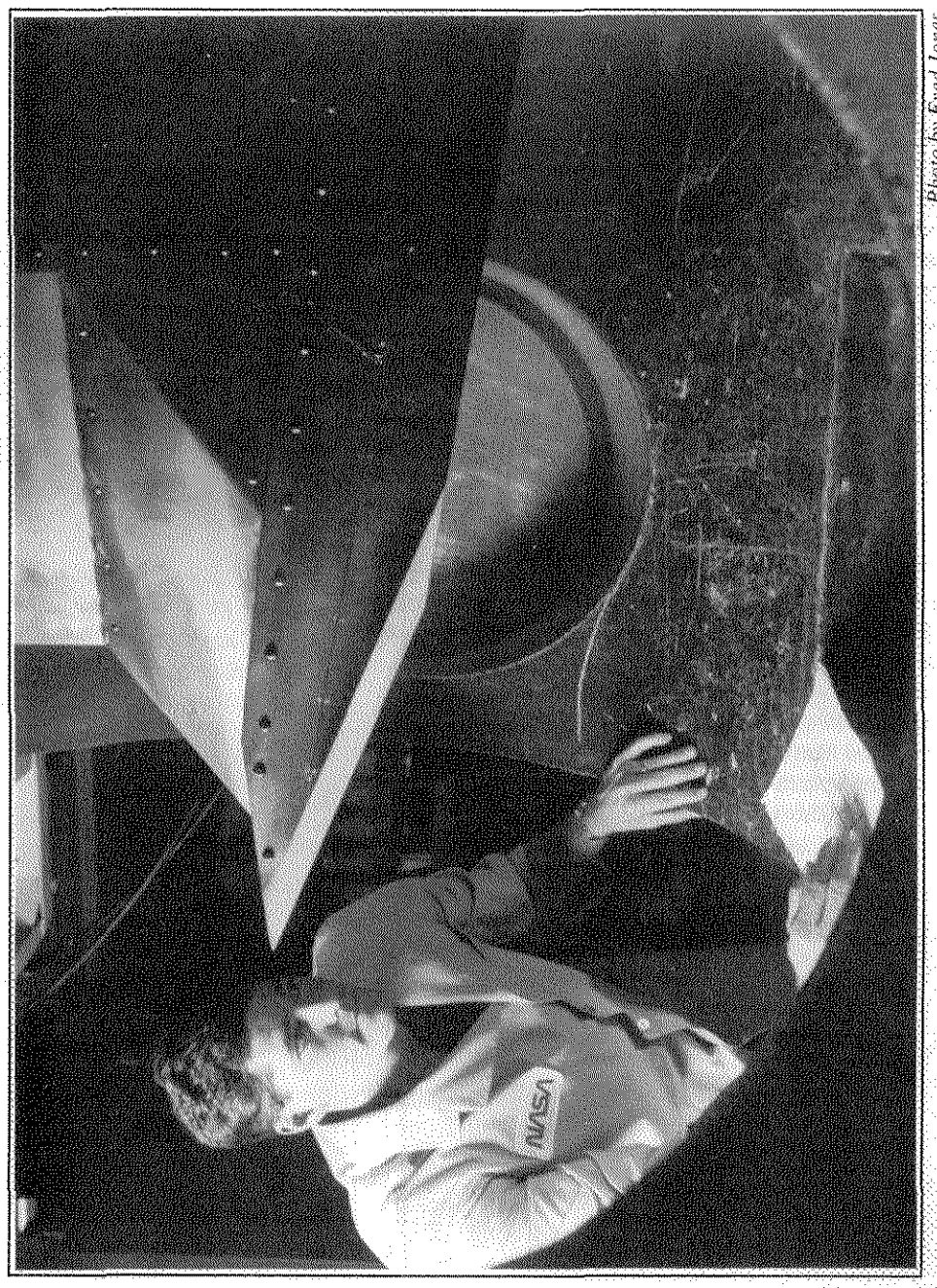


Photo by Fred Jones

Engineer Ken Rock of the Hypersonic Propulsion Branch inspects a supersonic combustion ramjet (scramjet) between test runs in the Arc-Heated Scramjet Test Facility. The Subscale Parametric Engine (SXPE) is part of the National Aero-Space Plane Program. Testing began in April and will continue through the end of the year. It is being tested up to speeds of Mach 8, or about 5,500 mph. The concept is a candidate for an eventual flight demonstration.

National Aeronautics and Space Administration
Langley Research Center

Researcher News

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 18 ❖ September 10, 1993

The Star of Tech Transfer: Glasair III-LP Airplane Showcased at Aviation Convention

The general aviation industry's first lightning-protected kit-airplane, the Glasair III-LP (Lightning Protected), was unveiled at the Experimental Aircraft Association (EAA) Fly-In Convention and Sport Aviation Exhibition '93 in Oshkosh this summer.

It is a NASA-industry success story.

The airplane, a highlight of the NASA Small Business Innovation Research (SBIR) Program, serves as a shining example of government and small business cooperation in developing dual-use technology for commercial applications.

LTI Photo

The Glasair III-LP kit-built airplane undergoes "full-threat" lightning strikes during testing at Lightning Technologies, Pittsfield, Mass.

Building the Team

Stoddard-Hamilton Aircraft, Inc. of Arlington, Wash., teamed with several other small businesses – Lightning Technologies, Inc. of Pittsfield, Mass.; Analytical Services and Materials of Hampton; and Aero-Space Consultants of Newport News – to develop and produce the Glasair III-LP. The work was done under NASA's SBIR program, which is designed to support small companies to develop innovative, commercial products for the aeronautical and aerospace markets.

"Glasair III LP is a classic example of how SBIR works," said Thayer Sheets, manager of Langley's SBIR program. "NASA solicits small R&D (research and development) businesses to submit innovative concepts and ideas which will help to advance the Agency's cutting-edge technology. At the conclusion of the research cycle, the results of this advanced research are applied in commercializing products for the economic benefit of the nation."

Meeting A Challenge

Team initiatives to build a kit-airplane that would be protected from lightning began in 1988 with a conversation at the lunch table in Langley's cafeteria. Gary Price, head of the Office of External Affairs, invited Norm Crabill of Aero-Space Consultants (and former Langley employee), and Shahid Siddiqi of Analytical Services and Materials, Inc., to lunch. Price challenged them to use Langley's extensive lightning protection research to improve the all-weather capability of "plastic" airplanes. Langley researchers and SBIR program manager Sheets encouraged Stoddard-Hamilton's Ted Setzer and Lightning Technologies' Andy Plumer to get together to tackle the issue of lightning protection for kit-built aircraft. The Glasair III-LP was the result – an aviation "first."

This "first" was made possible through the combined efforts of Langley and small business. A Langley technical team oversaw the project. It included Joe Stickle, now retired, Norm Crabill and Bruce Fisher of the Aeronautics Directorate, and Felix Pitts and Mitch Thomas of the Electronics Directorate.

The Glasair III-LP Is Born

The Glasair III-LP was born from a paradox inherent in two state-of-the-art general aviation technologies: composite materials and digital electronics. Composites give aircraft designs higher strength while reducing their weight. Digital systems offer greater efficiency in flight displays and engine control. However, both technologies tend to make aircraft more vulnerable to lightning damage. Langley studied lightning and its effects on airplanes in the Storm Hazards Research Program from 1980 to 1986. The project used a specially-equipped, lightning-protected F-106B aircraft that was purposely flown into thunderstorms and was hit by lightning more than 700 times.

The Goals of Testing

The Glasair III-LP endured 13 "full-threat" laboratory-created lightning strikes, each consisting of 200,000 amperes. The goals of the design were to achieve an FAA Federal Air Reg., part 23, level of protection to:

1. Maintain structural integrity of the airframe.
2. Protect the occupants from hazardous electric shocks.
3. Prevent ignition of fuel vapors due to lightning strike effects.

Continued on Page 5

NASA Langley to Hold CFC Kick-Off

Cantrell to be Keynote Speaker

BY JEAN CLOUGH

Langley will begin its 1993-94 Combined Federal Campaign (CFC) with a special kick-off ceremony Thursday, September 23.

Joseph D. Cantrell, president and publisher of *The Daily Press* and chairman of the 1994 Peninsula United Way campaign, will be the guest speaker for the occasion. The kickoff will be held for division chairmen, key solicitors and new employees at 2 p.m. in the H.J.E. Reid Conference Center. The national CFC film "The Power of Caring" will be shown during the program.

"We are at a crossroads in our efforts to provide local agencies the necessary funding to deal with problems," Cantrell said. "Our combined campaigns help to bind us together as a community." He will discuss the increased commitment from all involved to help meet the growing needs of local agencies.

Cantrell came to the Virginia Peninsula in September 1986, when Tribune Company, a Chicago-based media firm, acquired the Peninsula newspapers. He brought 17 years of experience in the newspaper business to The Daily Press, Inc. He had previously held positions in the Tribune Company's Sentinel Communications Company and was executive vice president and general manager of its Orlando newspaper, *The Orlando Sentinel*. He serves on the Board of Directors of the United Way of the Virginia Peninsula.

The CFC provides an opportunity once a year for civilian and military employees of the government to support and contribute to many worthy health, welfare and community service organizations. The funds provided to these agencies permit them to relieve suffering; to provide care for the young, aged, homeless and hungry; to bring hope to the depressed; and to improve the quality of life for everyone, not only on the Virginia Peninsula but around the world. It is the one campaign which helps people—our families, friends and neighbors—all year long. Remember, you create the power to make a difference in people's lives. Be part of "The Power of Caring."

Langley Director Paul F. Holloway has set a goal of $315,000 for this year's campaign. Langley employees will have the opportunity **September 30** to designate their contributions to any of the 1,106 approved federations/agencies. Each of these federations/agencies is dedicated to helping people, not only in this area but worldwide.

Please show your "power of caring" when your key person gives you a CFC pledge card on **September 30**.

Joseph D. Cantrell, president and publisher of *The Daily Press*, is the keynote speaker for Langley's CFC kick-off.

Former Director of Moscow's Institute for Space Research to Speak at Langley

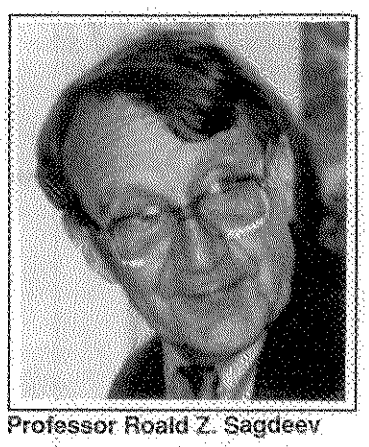
Langley's September 20 colloquium features Professor Roald Z. Sagdeev, speaking on "The Russian Space Program—Past Accomplishments vs. An Uncertain Future."

An eminent plasma physicist, Sagdeev was near the pinnacle of the Soviet space effort. According to him, the cold war framework created a special climate to boost exaggerated efforts in building Soviet rocketry. Space exploration was one of the lucky beneficiaries of that race.

He will address how a new world order left the new Russia with the outstanding assets of space technology—launchers, an experience in long duration manned flights and nuclear and plasma propulsion. "With almost no customers at home, all of this could be gradually lost. It is in the interests of the international space community to find how to use these assets," Sagdeev asserts.

A graduate of Moscow State University, Sagdeev was a key science adviser to President Gorbachev and Director of the Institute for Space Research in Moscow for 15 years. He is one of the world's leaders in research. He was elected to the People's Congress of Deputies of the U.S.S.R. in 1989. He is currently a distinguished professor in the Department of Physics at the University of Maryland in College Park. He is also the founder and director of the East-West Space Science Center at the University of Maryland.

Sagdeev's pioneering work on such physical phenomena as collisionless shocks and weak and strong plasma turbulence laid the foundation for an explanation of observations in both laboratory and space plasmas. He has also been active in the analysis of plasma micro-instabilities, neo-classical transport and many other aspects of nonlinear physics. During the 1960s, he led a Soviet delegation to the Trieste Center for Theoretical Physics, which collaborated with an American team. It was probably the most extensive scientific collaboration between Soviet and American physicists in controlled fusion theory.



Professor Roald Z. Sagdeev

It was under Sagdeev's directorship of the Institute for Space Physics that many of the most dramatic advances in space exploration occurred, including the satellite encounter with Comet Halley, a significant scientific technological achievement.

Sagdeev is well-known to Western scientists and political leaders as one of the principal architects to building bridges of understanding between the superpowers. He is currently NASA's chief point of contact for the Russian Space Program.

The colloquium begins at 2 p.m. at the H.J.E. Reid Conference Center.

Professor Sagdeev will also present the same lecture at 7:30 p.m. at the Virginia Air and Space Center as part ofThe Sigma Series.

News Briefs

AROUND THE AGENCY

MAGELLAN AEROBRAKING AT VENUS A SUCCESS – Magellan project officials at NASA's Jet Propulsion Laboratory, Pasadena, Calif., announced the successful first-of-a-kind experiment to "aerobrake" a spacecraft by dipping it into the atmosphere of a planet. The Magellan spacecraft's orbit was changed from highly elliptical to nearly circular by dragging it through the top of the thick Venusian atmosphere repeatedly over a period of 70 days, ending recently. The purpose was to reduce the orbital high point, apoapsis, using the atmospheric drag to slow the spacecraft rather than the limited fuel available for small rocket thrusters, which was not enough for the desired change. Magellan's orbit was successfully modified from the three-hour, 15-minute elliptical orbit to a nearly circular 94-minute orbit, about the same as orbital periods of space shuttle flights around Earth.

COBE "BIG BANG" DATA MADE AVAILABLE TO SCIENTIFIC COMMUNITY – Researchers from around the world now have access to data from the NASA satellite that provided the scientific community with an unprecedented look at how the universe began. "There are many theories of the early universe that can be tested with our data," said John Mather, project scientist for the Cosmic Background Explorer (COBE) at Goddard Space Flight Center, Greenbelt, Md., which built and manages the Earth-orbiting observatory. The satellite, launched in November 1989, has peered back in time to detect the now faint whispers of the Big Bang that is widely believed to have started the expansion of the universe about 15 billion years ago. COBE's first test of the Big Bang theory verified that the spectrum of the radiation agreed with predictions. The second test discovered the predicted hot and cold spots in the Big Bang radiation, the telltale sign of lumpiness in the primordial universe.

TOPS Workshops Answer Key Questions on Tech Transfer

BY MARNY SKORA

• Can NASA conduct research to help a company improve its products?

• Can industry or individuals use NASA facilities? Is there a charge?

• Must data resulting from a company's tests in a NASA facility be made public?

• What is a Space Act Agreement?

• Who owns patent rights to inventions made under a Space Act Agreement?

All good questions. They will undoubtedly be among the questions that our industry counterparts ask during Langley's three-day Technology Opportunities Showcase (TOPS) slated for October 19-22.

These questions and many more will be addressed during the TOPS training sessions to be held September 20-23 in the H.J.E. Reid Conference Center.

"I have asked for these workshops to assist you in explaining to our customers how to go about doing business with the government and, in particular, with Langley," said Darrell Branscome, TOPS executive coordinator.

"TOPS exhibitors will be assigned to one of three sessions planned. Others who are interested in finding answers to these concerns may register on a space-available basis."

Titled "Doing Business with NASA LaRC," the September training sessions will present a road map for initiating discussions that could lead to partnerships with the Center. Components will include a briefing on how the Technology Utilization Office can help with tech transfer, a summary of Langley's Space Commercialization program, key features of the Small Business Innovation Research (SBIR) program and tips on patent licensing.

In the arena of technology transfer, it is important to know what a patent is — and, perhaps even more important, to understand what is patentable! The TOPS workshops will ensure that NASA's valuable intellectual property is protected while our researchers strengthen and form relationships with all sectors of U.S. Industry. "NASA is in a competitive technology transfer environment," said Branscome, "and we will continue to be measured by our influence on the U.S. economy. TOPS is a critical step in maintaining our competitiveness."

Questions regarding the TOPS workshops should be addressed to George Allison, at ext. 42594.

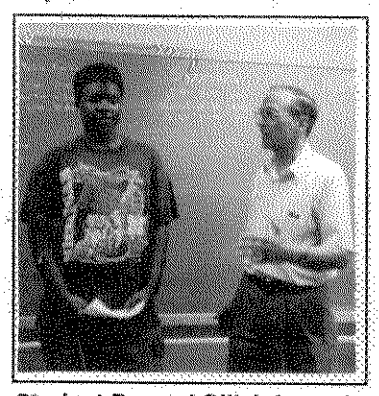
Voluntary Leave Transfer Program

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. The following Langley Research Center employees are approved leave recipients: Monica L. Cooper, Bette L. (Jeanie) Duncan, Cynthia L. Lach, Russell E. McKean, Janice B. Mongesku, Terry L. Shephard, John P. Stack, Belle L. Wood, Darrell A. Wood; and from other Government agencies: Susan P. Burnett, U.S. Government Printing Office, Hampton Regional Printing Procurement Office.

LETTERS

Thanks to Toastmasters

From Jeanine McKissick of the Hampton City Summer Youth Enrichment Program: "Thank you to the Langley Toastmasters Club, particularly Bob Miserentino, Richard Booth and Marco Egoavil, for their work this summer helping 'at-risk' teens learn speech communication and leadership skills. You have all helped these students develop self-confidence and draw upon resources within themselves they didn't know they had."



Student Durand Gill, left, works on a laboratory problem in communications in front of the class, while his mentor, Bob Miserentino, Spacecraft Dynamics Branch, gives him some pointers. The two were part of the Hampton City Summer Youth Enrichment Program where members of Langley's Toastmasters Club worked with 24 students.

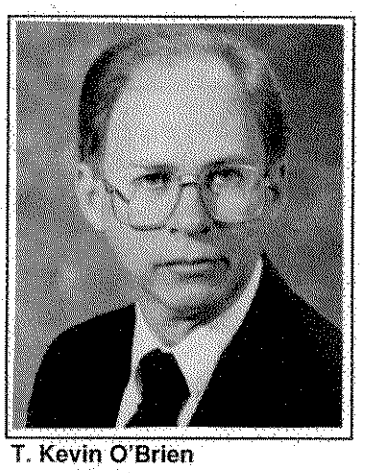
Thanks from NMDP

From Jennifer Ash, Marrow Donor Coordinator, American Red Cross, Mid-Atlantic Region: "On behalf of the National Marrow Donor Program (NMDP), and all patients with fatal blood diseases who need a bone marrow transplant, I would like to thank those employees involved in planning and promoting the marrow donor screening on August 3.

"The testing costs $60 per donor, part of which is presently funded through a federal grant; the balance has to be paid either by the donor or by donation from other sources. We are very grateful to the Langley Activities Association, the Exchange Council and the Langley Federal Credit Union for their financial contributions toward the testing of donors, as well as those donors who made personal contributions. We tested 22 people and their data will remain in the registry, to be scanned daily on behalf of patients needing donors who are not relatives.

"Again, thanks to all who contributed to the success of this drive – the financial sponsors who made it happen, the recruitment coordinators and, most of all, the donors themselves."

O'Brien Elected ARL Fellow



T. Kevin O'Brien

T. Kevin O'Brien, senior research scientist with the Army Vehicle Structures Directorate at Langley, has been named an Army Research Laboratory (ARL) Fellow. O'Brien was inducted in a ceremony held recently in Baltimore, Md.

O'Brien came to Langley in 1978 after completing a Ph.D. in mechanics and materials at Virginia Polytechnic Institute and State University. In his present position, he is involved in the durability and damage tolerance assessment of composite materials for military and commercial aircraft, rotorcraft and ground vehicles. O'Brien is internationally known for his work on delamination of composite materials. He has more than 100 publications and presentations to his credit, including peer-reviewed journal articles, national and international conference proceedings and seminars, symposia and workshop presentations. His research has found widespread use in the aerospace industry and has contributed to the development of new design methods for rotorcraft and to the improvement of advanced composite materials.

O'Brien has served as the principal investigator for a cooperative research program under a memorandum of understanding between the Department of the Army and the Italian Ministry of Defense. He is currently serving as the principal investigator for three Cooperative Research and Development Agreements (CRDAs) with the rotorcraft and ground vehicle industry.

The ARL Fellowship was created last year to act as an advisory body to the ARL director. They are charged with maintaining a high level of technical competence and interchanging with the ARL laboratories. Membership as an ARL Fellow is limited to the top two-percent of ARL scientists and engineers.

IN MEMORIAM

Marvin W. Saunders

Marvin W. Saunders, 77, a life-long Hampton resident, died Sunday, August 22.

Saunders retired after 33 years, from Langley's Photo Lab where he was a motion picture specialist. Saunders held a bachelor's degree in music from Marshall University, Huntington, W.Va., and at one time, directed the Virginia Symphony.

Charles A. Holt Jr.

Charles A. Holt Jr., 66, a native of Brooklyn, N.Y., and a Peninsula resident for 52 years, died Tuesday, August 24.

Holt retired in 1988 after 40 years at Langley as an engineering technician.

Merle F. Anderson

Merle Francis Anderson, 71, a Gary, Ind., native and a Peninsula resident for 34 years, died Wednesday, August 25.

Anderson, who received a bachelor's degree in mathematics at Purdue University, retired in 1988 from Langley after 25 years as a computer specialist.

Langley's Runner-Of-the-Year

Langley's top runner-of-the-year for 1992 is Bill Rogers of Bolt, Beranek and Newman, Inc., and assigned to the Flight Management Division.

Rogers earned 56.64 points by placing first in his age group in all four races of the 1992 Spring and Fall NASA Intercenter Competition. His times were 34:12 and 35:15 in the 10K and 10:34 and 10:35 in the two-mile.

Steve Sudik, UNISYS Corporation, placed second with 53.14 points and Gale Harvey, Chemistry and Dynamics Branch, was third with 49.64 points.

Other top finishers were John Hoppe, 49.14; Wayne Marshall, 33.98; Bob Ferguson, 33.48; John Otto, 31.39; Jim Thomas, 30.64; Royce Snider, 30.39; Bernice Becher, 28.32; Valerie Plyler, 28.32; and Kathy Powell, 28.32.

News 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.....Marny Skora

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The Bionetics Corp.

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Photojournalist .....Carol Petrachenko
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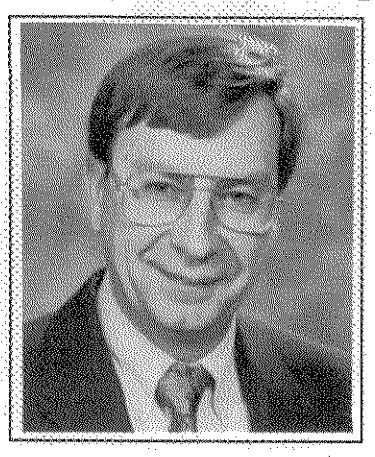
Photographer.....Fred Jones

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.

A Message from the Combined Federal Campaign Chairman and Co-Chairman



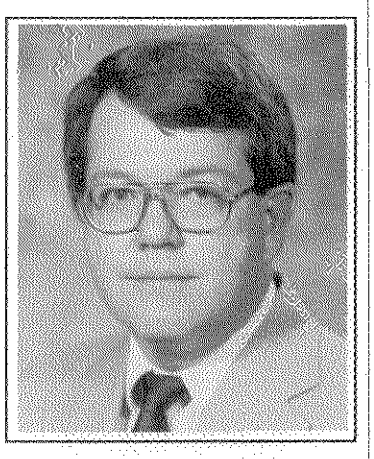
It is once again time for the Combined Federal Campaign (CFC). With Langley's kick-off scheduled for September 23, 1993, I ask each of you to begin thinking about your contribution. This year we, in our own nation, are confronted with the aftermath of a number of natural disasters, as well as a continued economic slow down, which are placing great demands on many of the agencies supported by the CFC.

The great Midwest flooding has dominated the news for most of the summer and, as I write this, I hear of a second round of flooding striking Iowa, just as weary flood victims are returning to their homes to begin the cleanup. Also, we now know the damage rendered by hurricane Emily on the Carolina coast could have some local impact. Thinking about the Midwest flood, recall that most of the losses were uninsured, so the victims are relying heavily on disaster relief agencies such as the Red Cross which is supported by the CFC. But beyond these headline grabbing disasters, remember that CFC agencies are active in helping people worldwide in need of food, medicine, and shelter. CFC-supported agencies are also active in the fight against debilitating disease, drug abuse, homelessness, and many other worthy causes. Joseph D. Cantrell, chairman of the Peninsula United Way, will be joining us at our kick-off to tell us about the vital role the Federal CFC plays in the United Way.

As you are doubtless aware, Langley has a history of setting challenging goals for its campaign. Each year that goal is not only met, but exceeded. Your CFC committee has set another challenging goal this year: $315,000. This goal is approximately three percent higher than last year's goal of $305,000. Last year the Center actually pledged or donated approximately $307,000, $8,000 less than this year's goal. As you plan your contribution to this year's campaign, recall that the agencies the CFC supports are under severe stress both from demands on their services and a declining contributor pool due to high unemployment.

I strongly urge all of you to consider increasing your annual contribution to the CFC if you already support it, or to join the hundreds of your fellow employees in supporting CFC if you have not in the past. Through our combined efforts, we can continue the Langley tradition of exceeding our annual goal, and placing the Center as a leader in caring for those who need our help. The goal is aggressive, but the needs are great. Please contribute generously!

– Doug Dwoyer
CFC Campaign Chairman



What is giving all about?

The Combined Federal Campaign, which is about to begin, provides each of us with that question. We can ask ourselves how will we respond to the campaign this year.

I already know that you are motivated to give. The evidence is found in Langley's record of setting goals and meeting them every year and in your willingness to give in a broad range of community service activities.

For example, a recent article in the *Researcher News* described the work of the Appalachian Service project in repairing and improving homes of low-income families in Tennessee. Another group is involved in providing low-income and disabled children with opportunities to participate in summer camp. Three members of that group are planning to go to Florida in September to help repair homes damaged in hurricane Andrew.

You and your family members are involved in numerous community service activities, including scouting, providing day care services and foster parenting. Many more are volunteers in hospitals, fire departments, nursing care facilities and the school system. It is encouraging to be made aware of the extent of your involvement. Where do you get the energy and motivation to give and to do so over a long period of time?

In trying to understand your motivation for giving, I recall an article about Pulitzer Prize-winning historian Daniel J. Boorstin, the author of highly successful books including a 30-volume "Chicago History of American Civilization." In the article, Boorstin talks about where he thinks the emphasis should be placed to solve the problems that face our nation today. Boorstin said, "I think it's time that we reaffirmed the fact that what has built our country is community and that community is not dependent on government. It's dependent on the willingness of people to build together."

The idea of community is not new. It is the idea of putting emphasis on what brings us together. It is an idea that we have found in successful families, tribes, cultures and nations. It is also the idea of successful organizations. Contributing to the CFC is not just a decision for this year, but a life-long decision that will be a part of building the community at Langley Research Center and in your home town.

Building the community. . . it is part of our heritage. It is what giving is all about.

—Sammie D. Joplin
CFC Co-chairman

September 30 — A Day to Show "The Power of Caring"

Langley CFC Staff Participate in CPR Demonstration

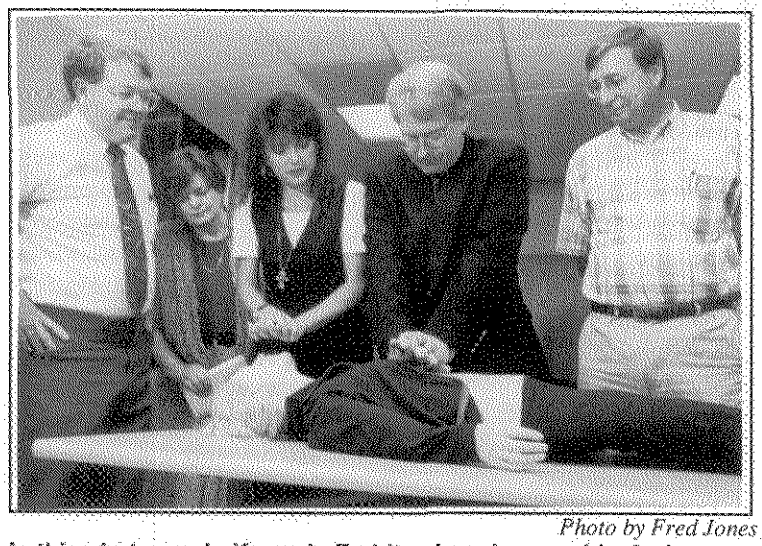


Photo by Fred Jones

In this photograph, Karen L. Freidt, a Langley graphic designer and a volunteer CPR instructor for the American Heart Association, demonstrates to Langley staff members how to perform the basic ABCs. Participating in the exercise are Sammie D. Joplin, CFC co-chairman; Dr. Belinda Adams, last year's CFC chairman; Freidt; Darrell R. Branscome, chief engineer; and Dr. Douglas L. Dwoyer, CFC chairman.

Life saving measures begin with the ABC's of cardiopulmonary resuscitation (CPR): "A" Opening and maintaining an AIRWAY, "B" Providing ventilation through rescue BREATHING, and "C" Providing artificial CIRCULATION with external chest compressions. The American Heart Association, an agency under the Combined Federal Campaign (CFC) umbrella, reports that approximately half a million individuals die each year from coronary heart disease. About two-thirds of these deaths occur outside the hospital, usually within two hours after the onset of symptoms. Many of these lives can be saved. It has been shown that victims having out-of-hospital ventricular fibrillation (a non-productive heart rhythm) can be successfully resuscitated if there is rapid access to life support and CPR is begun promptly. The American Heart Association is a nonprofit voluntary health agency supported solely by private contributors whose mission is "to reduce disability and death from cardiovascular diseases and strokes." You may be able to save a life knowing how to perform CPR. Give to the CFC September 30. Your contribution or pledge will help support research, professional and public education and community service programs.

To Help People
CFC
Virginia Peninsula

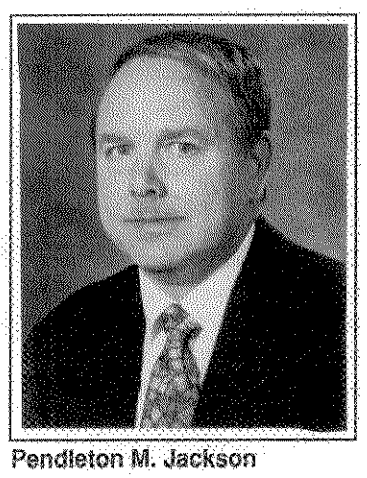
Langley Four Are in NASA's Professional Development Program

BY SUSAN A. SMIGIELSKI

Pendleton "Mac" Jackson, Stephen G. Jurczyk, Dr. Kelli F. Willshire and William L. Willshire, Jr., all Langley employees, are participating in NASA's Professional Development Program at NASA Headquarters. The program began Aug. 1 and lasts one year.

Jackson got a jump start with his assignment several months ago when he began working in the Facilities Study Office to develop the requirements and costs for two new national wind tunnels. The task included conducting non-advocacy reviews, formulating the budget and developing the Program/Project Management Plan. He will work specifically in the latter area in support of the National Facilities Study and will continue efforts for site selections. Jackson, who as been at Langley for 29 years, will also have the study assignment of managing the Construction of Facilities Program for Stennis Space Center and the Advanced Solid Rocket Motor. On Center, Jackson works in the Facilities Program Development Office.

Jurczyk has been at Langley for six years and is assistant branch head for the Sensor Systems Branch. He is working in the Office of Mission to Planet Earth supporting the Earth Probes Program and the Technology Innovations and Advanced Planning Office. Jurczyk is responsible for management of the Tropical Rainfall Measuring Mission (TRMM, an element of the Earth Probes Program. The TRMM spacecraft will carry a payload of four United States instruments and one Japanese instrument that will make extensive precipitation measurements in the tropical regions. Japan will launch TRMM via their H-II launch vehicle in August 1997. He will also be working with the Technology Innovation and Advanced Planning Office to develop an Advanced Technology Program Plan to infuse technology into currently planned and future missions.



Pendleton M. Jackson

Dr. Kelli F. Willshire, a research scientist with 14 years

Continued on Page 4

Three Leave for Management Fellowships

Three Langley employees, William M. Berrios, Wayne H. Bryant and Dr. Christine Darden, will be leaving this month to fulfill their Management Fellowships.

William M. Berrios

Berrios, head of the Experiments Systems Section, will participate in Syracuse University's Maxwell Mid-Career Development Program, a 15-week program at the Graduate School of Citizenship and Public Affairs. The program is designed for experienced government managers who have been identified by their agencies as being high-potential individuals.

There, he will take several graduate level courses in executive action and mid-career development, assess managerial capabilities, develop skills in analysis, communications and an understanding of public organizations and their managerial systems and processes. Berrios will also learn to develop an understanding of the social, economic and political forces influencing various organizations.

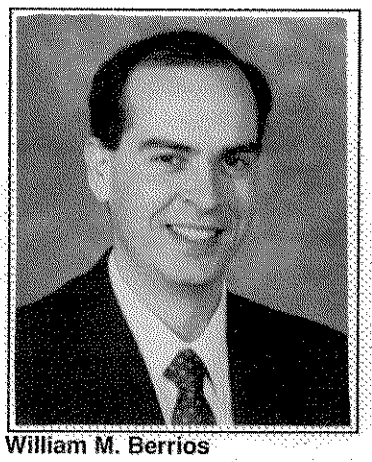
Berrios began his Langley career in 1980 as a aerospace engineer. He has directed all technical engineering coordination, safety analysis reviews and an overview of the thermal operations for the launch, deployment and retrieval of the Long Duration Exposure Facility (LDEF). He led the thermal modeling of the LDEF for the deployment, flight mission and retrieval, completed the data reduction that validated all mission thermal models and showed all temperature design limits for the facility to be nominal for the LDEF mission.

"Participation in the Maxwell program will provide me with an opportunity to improve my understanding of advanced managerial principles," Berrios said. "I expect to be exposed to the tools and options for the solution of situations present in the modern federal work environment. I'll also have a chance to interact with other practicing managers and gain additional insight into the applications of the methodologies and tools presented during this program."

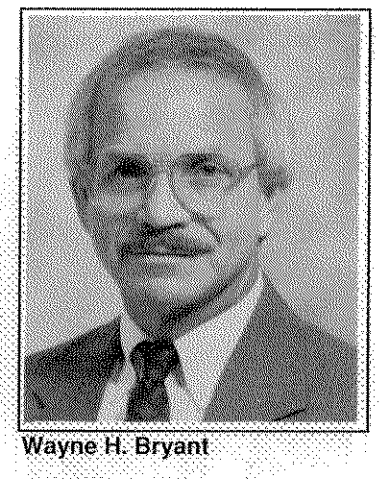
Wayne H. Bryant

Bryant, head of the Systems Architecture Branch in the Information Systems Division, is headed to the John F. Kennedy School of Government at Harvard University's Senior Executive Fellows program this fall. The program focuses on managerial practices, the managerial environment and policy analysis. It helps to strengthen conceptual and analytical skills in policy and program design and build administrative skills in the management and leadership of public organizations.

Bryant's Langley career began in 1967 in Controls and Guidance Systems. He has been



William M. Berrios



Wayne H. Bryant

Dr. Christine Darden

in the Sytems Architecture Branch since 1986 where he leads a research program aimed at creating effective techniques to design, develop and evaluate mission critical computing systems. Key elements of this research include software safety, automated software tools and environments and systems analysis capabilities. Under this program, he directed the development of a system to automatically generate computer codes based on functional requirements represented graphically. The system is being used in a pilot project with the Navy Tomahawk Program and is a central element of a technology transfer effort with Marshall Space Flight Center.

"The single most important product of my research organization is the transfer of new technology to other organizations, both in the government and the private sector," Bryant said. "To efficiently promote this transfer of new ideas, I need a broader perspective of the interrelationships among other organizations. My participation in the Senior Executive Fellows program will address these interrelationships specifically, while providing me with additional management skills which I can use to make my organization function more effectively."

Dr. Christine Darden

Darden, an aerospace technologist and group leader in Aerospace Vehicle Design and Mission Analysis, has been chosen for the Simmons College Program for Developing Executives. This comprehensive general management program features a curriculum containing all the functional areas of business, for example, finance, accounting, quantitative skills and computer resource management, and relies on teamwork and group effort.

Darden began her Langley career in 1967 as a data analyst. She spent several years as a mathematics teacher and was also a mathematics instructor at Virginia State College.

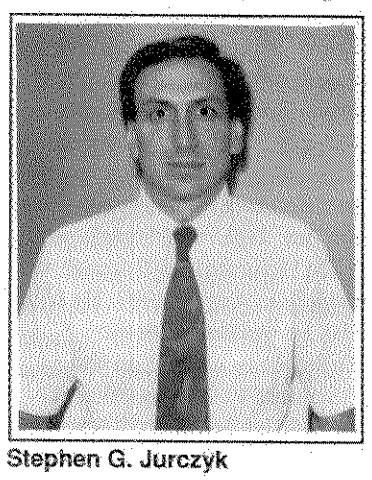
As group leader of the Sonic Boom Group in the Vehicle Integration Branch, she serves as technical leader for the sonic boom element of NASA's High-Speed Research (HSR) Program.

As part of a team from government, industry and academia, she developed improved low-boom design methods targeted toward achieving practical low-boom aircraft concepts. She had the responsibility for the design, construction and fabrication of two wind-tunnel models to help validate the low-boom design methods.

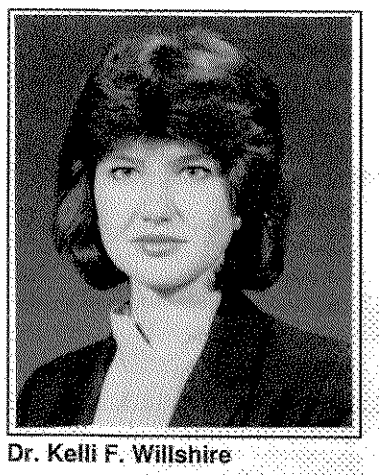
"I believe that the elements of the Simmons Program will enhance and strengthen my business and management skills that I need to help NASA achieve its goals and objectives," Darden said. "Skills obtained from the program will help me to better plan, coordinate and implement those programs of which I am a part. In the immediate future, this would apply to the HSR Program."

Professional Development

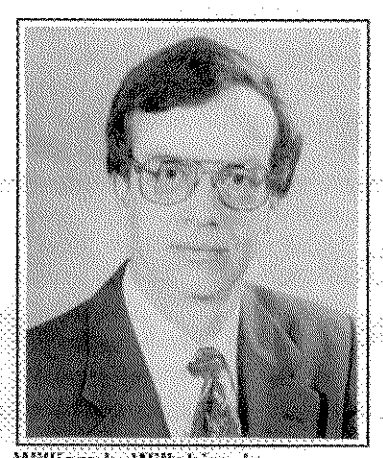
Continued from Page 3



Stephen G. Jurczyk



Dr. Kelli F. Willshire



William L. Willshire Jr.

experience at NASA, is working in the Microgravity Science and Applications Division (MSAD), Advanced Programs Branch. Dr. Willshire is a Program Manager for the Advanced Programs Branch. The branch is set-up to effectively utilize alternate carriers for microgravity investigations, manage Advance Technology Development (ATD) activities along with providing an infrastructure for operational support for MSAD payloads. Among many responsibilities, Willshire is charged with the development and management of the ATD budget at the headquarters level and selecting new projects for ATD. She will act as a liaison between MSAD and the Office of Aeronautics and Space Technology, coordinating activities and providing insight for future planning.

William L. Willshire Jr., a 15-year NASA employee, is the Noise Reduction Program Manager in the Advanced Subsonic Technology Program. The program consists of 11 elements including noise reduction, integrated wing, terminal area productivity, composites, short haul aircraft, propulsion and technology integration. Worldwide all aircraft must meet noise standards in order to be in service. Willshire said there are considerations to make noise limits more stringent and said technology needs to be developed to meet the potential new limits. He is working closely with researchers at Langley, Lewis, and Ames research centers along with the Federal Aviation Administration and commercial industry helping to reduce both external and internal aircraft noise.

An Invitation to Retirees

NASA has served the community for many years and continues to give during the year through the American Red Cross Bloodmobile.

Retirees are a valuable part of NASA's history and the community. You are invited to participate in the upcoming blood drive on September 22, in the H.J.E. Reid Conference Center from 9 a.m. until 3 p.m.

Virginia Air and Space Center News

Connecting Hampton Roads with the World

On September 19, 1953, WVEC Television, founded by Thomas P. Chisman, signed on for the first time in Hampton Roads. After 40 years since that first airing, WVEC Television is still committed to providing Hampton Roads with quality news coverage and programming. The Virginia Air and Space Center will present "WVEC Television 1953 – 1993: Connecting Hampton Roads with the World," an exhibition that will show visitors a unique 40-year overview of the station and the history of Hampton Roads. The exhibit will be on display from September 17 to December 31.

The exhibit will include photographs, artifacts and videotapes that highlight the 40-year history of WVEC Television and Hampton Roads. On display will be a 1956 RCA TK-60 camera which provided a bright, stable, black and white image when television became popular after World War II; a 1950 Philco Predicta black and white television set; and a more recent Color Palmcorder and hand-held Color Watchman that allows people to film almost anywhere. There will also be artifacts from a number of local children's shows including "Bugles the Clown" and "Sandy's Circus." Visitors can also see footage spanning 40-years of WVEC Television's history.

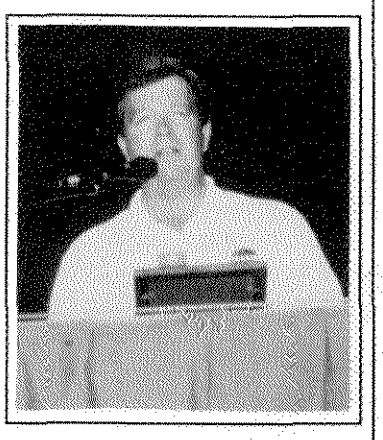
Virginia Air and Space Center
Hampton Roads History Center

The center is open from 10 a.m. to 5 p.m., Monday through Saturday and from noon to 5 p.m. on Sunday. Admission to the exhibit area is $4 for adults and $2.50 for children four through 12 years old.

For more information, call 727-0800.

People & Places

NASA Honored with EAA Awards



The Experimental Aircraft Association (EAA) has instituted annual awards for NASA and the Federal Aviation Administration (FAA), both of which make exceptional contributions to general aviation. This year, the EAA "recognized and acknowledged Dr. Bruce J. Holmes (pictured at right), for his leading role in assembling a coalition including general and sport aviation, NASA, the FAA and universities to support a visionary initiative to guide new technology development to take general aviation into the 21st century."

Holmes currently serves as manager for the short-haul general aviation-commuter element in the Advanced Subsonic Technology Program. In the past, he led a team of researchers in the study of generic hypersonic subscale flight research called Hypersonic Flight and Instrumentation Research (HYFIRE). He spent a year at NASA Headquarters as acting deputy director of the Aerodynamics Division. His efforts were instrumental in focusing national attention on the critical technical needs in the aeronautical community for research on future instrumentation devices and test techniques.

The Stan Dzik Memorial Award, one of EAA's major awards, and was given to "Stoddard-Hamilton/NASA Small Business Innovative Research/Lightning Technologies – Andy Plumer, Norman Crabill, Shahid Siddiqi, for research in the field of light composite airframe lightning protection."

Langley and Hampton Schools Sign Memorandum of Agreement

Hampton City Schools and Langley signed a Memorandum of Agreement (MOA), on August 31, to announce a partnership agreement for the use of technology transfer to facilitate teaching and learning in the school system.

On hand to sign the MOA were Center Director Paul Holloway and Hampton City Schools Superintendent Raymond Washington. Witnessing the signing were several Hampton City Council members. Dr. Samuel Massenberg, head of Langley's Office of Education, and Dr. Billy Cannady, the school system's assistant superintendent for Instruction, offered closing remarks for the event.

The Office of Education has assigned Camille Jennings as the educational technologist who will work with Hampton to create and carry out programs specially designed to advance the abilities of elementary and secondary school students and teachers in Earth and space science, engineering and computational disciplines.

Target projects scheduled for this academic year include the expansion to grades K-12 of High-Performance Computing and Communications, enhancement of the cable channel, "Homework 2000" student assistance show, and an extension of the existing information-on-demand voice network connecting parents and students to Hampton educators.

Spring 1994 will bring national recognition to Hampton elementary and middle schools because of their participation in NASA's "Mission: Earthbound" distance-learning exploration series about atmospheric and environmental changes. Live satellite video feeds and bulletin board messaging between the schools and Langley researchers will continue to verify Hampton City Schools and NASA as leaders in the high-tech reformation of teaching and learning.

Photo by Fred Jones

Hampton City Schools Superintendent Raymond Washington, left, and Center Director Paul Holloway shake hands after signing a Memorandum of Agreement.

Glasair III-LP

Continued from Page 1

4. Provide sufficient protection to flight critical items such as flight controls, propulsion and avionics systems.

Two Langley branches assisted in the Phase II development of Glasair III-LP. Dr. Joe Heyman's Non-Destructive Evaluation Sciences Branch (NDE) provided innovative low-cost NDE technology to evaluate damage below the surface of the aircraft skin. The SBIR team viewed this as a valuable technology transfer item because this technology would allow more reliable maintenance in the field.

George C. Barber III and Melvin C. Gilreath, of the Antenna and Microwave Research Branch, provided a technical assessment of antenna interaction with the LP design.

Lightning Strikes

NASA research showed that lightning can hit almost any spot on an airplane's surface, not just the wings, propeller tips and other extremities as scientists earlier thought. That discovery was important to designers using composite materials, which are less conductive and more vulnerable to lightning damage than the aluminum alloy they replace.

Langley researchers also learned that multiple-burst lightning strikes inject a large number of random electric currents into the airplane that can induce erroneous responses, faulty commands or other upsets in electronic systems. This led the Federal Aviation Administration (FAA) and authorities in other countries to require, starting in 1987, that critical aircraft electronic systems be protected from damage or upset due to the effects of multiple-burst lightning.

The Protection Plan

Lightning protection in the new aircraft is mainly provided by a thin layer of electrically conductive aluminum foil on the surface of the fiberglass composite airframe, just below the paint. Attention to design details were required for enhanced electrical bonding of lightning-resistant fuel-filler caps and the inclusion of a device inside the aircraft to minimize surges and electrical transients to protect the occupants. External devices, such as antennae and lights and their wiring, that are electrically connected to the interior of the aircraft, also required detailed design.

"The lightning protection will offer significant improvements in flight safety, particularly for those who operate under Instrument Flight Rules (IFR)," said Ted Setzer, president of Stoddard-Hamilton. Lightning protection has been an FAA requirement for commercial aircraft, but kit-built aircraft have been free from this requirement.

Lightning Technologies is a small engineering and testing firm that supported the Storm Hazards Research Program.

Stoddard-Hamilton has pioneered the use of composite materials in kit-built airplanes with its Glasair series. Since 1979, almost 1,300 Glasair kits have been sold. The Glasair III is the latest model and has the series' highest performance.

Glasair III-LP Wins Award

Glasair III LP's debut was recognized with an Experimental Aircraft Association (EAA) Stan Dzik Memorial Award for "an innovative design and construction of a light general aviation airplane." The award cites Setzer, of Stoddard-Hamilton Aircraft, Inc., makers of the Glasair line of kit-aircraft, along with the NASA SBIR Program and team members Plumer, Siddiqi and Crabill. The team received the award at the EAA's Fly-In Convention in Oshkosh, Wis., this summer.

In Praise of SBIR

In accepting the award, the team stated: "Our team views the SBIR Program as one of the best avenues for commercial product and technology development by small businesses.The program allows small businesses to lower the risk for developing new products while enhancing NASA's own research objectives. We see the SBIR program as a valuable avenue of NASA technology transfer because it allows small businesses to develop a working relationship with NASA."

Since Congress established the SBIR program in 1982, NASA has awarded more than 3,000 contracts to almost 1,500 small companies. The Agency is committed to stimulating technological innovation in the private sector by strengthening the role of small business in meeting federal research and development needs, increasing the commercial application of federally-supported research results and fostering participation by socially and economically disadvantaged persons and minority-owned small businesses in technological innovation.

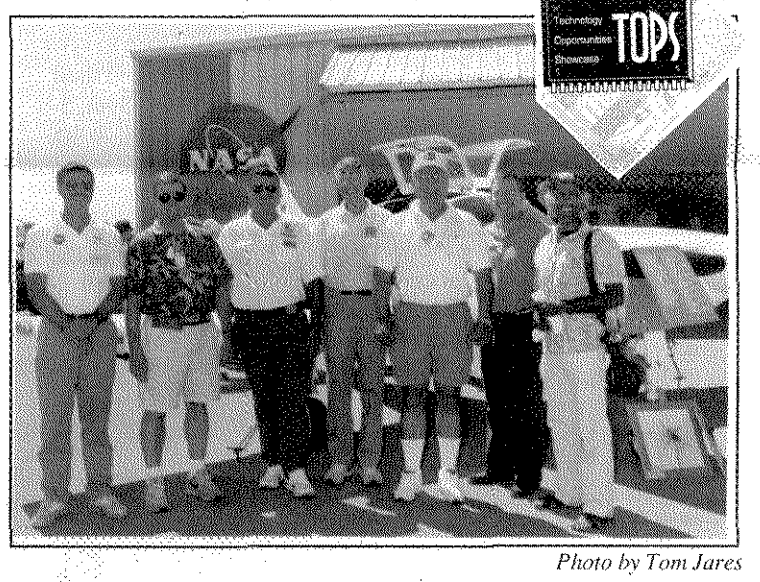


Photo by Tom Jares

At the EAA Fly-In Convention in Oshkosh, Wis., this summer, some of the team members who worked on the Glasair III-LP stand with the aircraft in front of the NASA exhibition building. They are, left to right, Ted Setzer, Stoddard-Hamilton; Dr. Bruce Holmes, manager for the short-haul element in the Advanced Subsonic Technology Program at Langley; Rich Weiss, FAA; Andy Plumer, Lightning Technologies; Thayer Sheets, Langley's SBIR program manager; Ed Rupke, Lightning Technologies; and Shahid Siddiqi, Analytical Services and Materials, Inc.

NASA Tenpin Bowling League Champions

Champions for the 1992-93 NASA Tenpin Bowling League are "The Ballers." They are, from left to right, Don Beasley, Quality Assurance and Inspection Branch; O.J. Cole, Security Services Branch; Larry Harvey, Electronics Fabrication Development Section; Ruth Frizzell and Rodney Russell, Electrical Drives and Systems Operations Section; and Alan Frizzell, Microelectronic and Technical Support Section.

Happenings

CONDO FOR RENT: Tropical paradise, Gulf-front condo, Sanibel Island, Fla., one BR, full kitchen, pool, tennis, etc. Only two weeks left this year in December, $540/week. Call 565-1849.

CAR POOL: To Langley from Williamsburg (Mooretown and Airport Rd. section), hours flexible, on crutches for a while but can drive an automatic. Can transfer to all but the smallest vehicle. Call Bill, ext. 45979.

HORSE SHOE TOURNAMENT: The tournament will begin at 10 a.m. at the Hampton Bay Day's location. The format is doubles ($20 per team), round-robin play, first and second on each pit will advance. Prizes for first and second-place teams. Register by Sept. 10. For information and registration, call Doug Johnson, 723-3134.

MISSING: Will the person who borrowed the Eagle Brand snack tin can on Tues., August 17, from Building 1195-A, M.S. 126, please return it. It has sentimental value and a reward is being offered. Call ext. 47913 for pick-up.

WALKTOBERFEST: The American Diabetes Association, Virginia Affiliate, welcomes walkers/teams for their Walktoberfest, on Sunday, October 3. The Newport News walk begins at Mariner's Museum Park and the course is 16 kilometers long. For pledge and registration forms and information, call the Walktoberfest Hotline: (800) 944-6766 or fax (804) 293-6409.

CONDO FOR SALE: Pine Cone Harbor, waterfront community, 2 BR, 2 baths, all appliances, first floor, pool, security, many extras. Asking $79,000. Call 723-4863.

BENCH AND LOW-IMPACT AEROBICS: Take part in safe and effective classes from aerobics instructors and certified personal trainers. Classes range from traditional low-impact to body sculpting and circuit training instruction. Free body composition analysis and cardiovascular fitness assessments given before class. Saturday features low-fat health food after class. Open to civil service, contractors and their families at the LAA Gym, 5-6 p.m., Tues. and Thurs.; 9:30-10:30 a.m. on Sat. For information, call ext. 42295.

SO LONG SUMMERTIME: The Langley Activities Association is sponsoring a "So Long Summertime" celebration, September 24, from 4 to 8 p.m., at the H.J.E. Reid Conference Center. DJ Dale Ashcom will provide the music. For more information, call Andrea Lewis, ext. 46369.

EXCHANGE SHOP NEWS: Discount tickets are available for the following attractions: Virginia Air and Space Center, Jamestown/Yorktown Settlements and the Virginia State Fair. Call ext. 41585 between 7:30 a.m. and 2 p.m. for details. Need to get film developed? Drop off a roll in the handy drop box by 11 a.m. and pick it up after 1:30 p.m. the next business day.

FREE AEROBICS: Now is the time to get back into the swing of things with a regular exercise program using low-impact aerobics, weight training and bench workouts. All accessories are provided. Classes are offered Monday, Wednesday and Friday, 6:15-7:15 a.m. and 11-11:45 a.m. Bring a friend and join the fun. Call the Fitness Center at ext. 46387 for details.

HISPANIC HERITAGE: September has been designated by President Clinton as National Hispanic Heritage Month. At present, 43 Hispanic-Americans are employed at Langley, contributing their talents to research in aeronautics and space technology. During September, Langley will pay tribute to Hispanic peoples by serving special foods in the Cafeteria. Additionally, informational handouts will be available for interested employees by calling the Equal Opportunity Programs Office at ext. 43290.

THE AUTUMN LEAF SPECIAL: The National Railway Historical Society's Old Dominion Chapter is sponsoring "The Autumn Leaf Special," October 16 and 17. The day-long tours of central Virginia's fall foliage leave Richmond on Norfolk Southern's Norfolk and Western Class-J locomotive #611 and travel through Appomattox and Lynchburg before returning to Richmond in the evening. Tickets are available at the Grafton Hobby Center, 110-C Dare Rd., Yorktown. For more information, call 1-800-451-6316.

SYMPHONY TICKETS: Tickets are on sale at the Exchange Shop for the season-opening performances of the Virginia Symphony, September 10 and 11 at 8 p.m., in Chrysler Hall, Norfolk. Concerts will feature Andre-Michel Schub, performing Rachmaninoff's Piano Concerto No. 2, as well as "Danzas Fantasticas" and Strauss' "Also Sprach Zarathustra." Get tickets at the Exchange Shop at a 20-percent discount, plus $.50 for handling, or by calling the Virginia Symphony Ticket Store at 623-2310, Southside, or 380-0040, Peninsula.

BLOOD DRIVE REMINDER: The next Langley blood drive is on Wednesday, September 22, from 9 a.m. to 3 p.m. at the H.J.E. Reid Conference Center. Please consider donating, whether this is the first or 101st time. If you are unable to attend the September drive, please join us for any or all of the following drives in the H.J.E. Reid Conference Center: November 24, 1993, January 26, March 23, May 25, July 27, September 28 and November 23, 1994. Join your friends and help make Langley's blood drives a big success. Call ext. 43195 for details.

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Researcher News

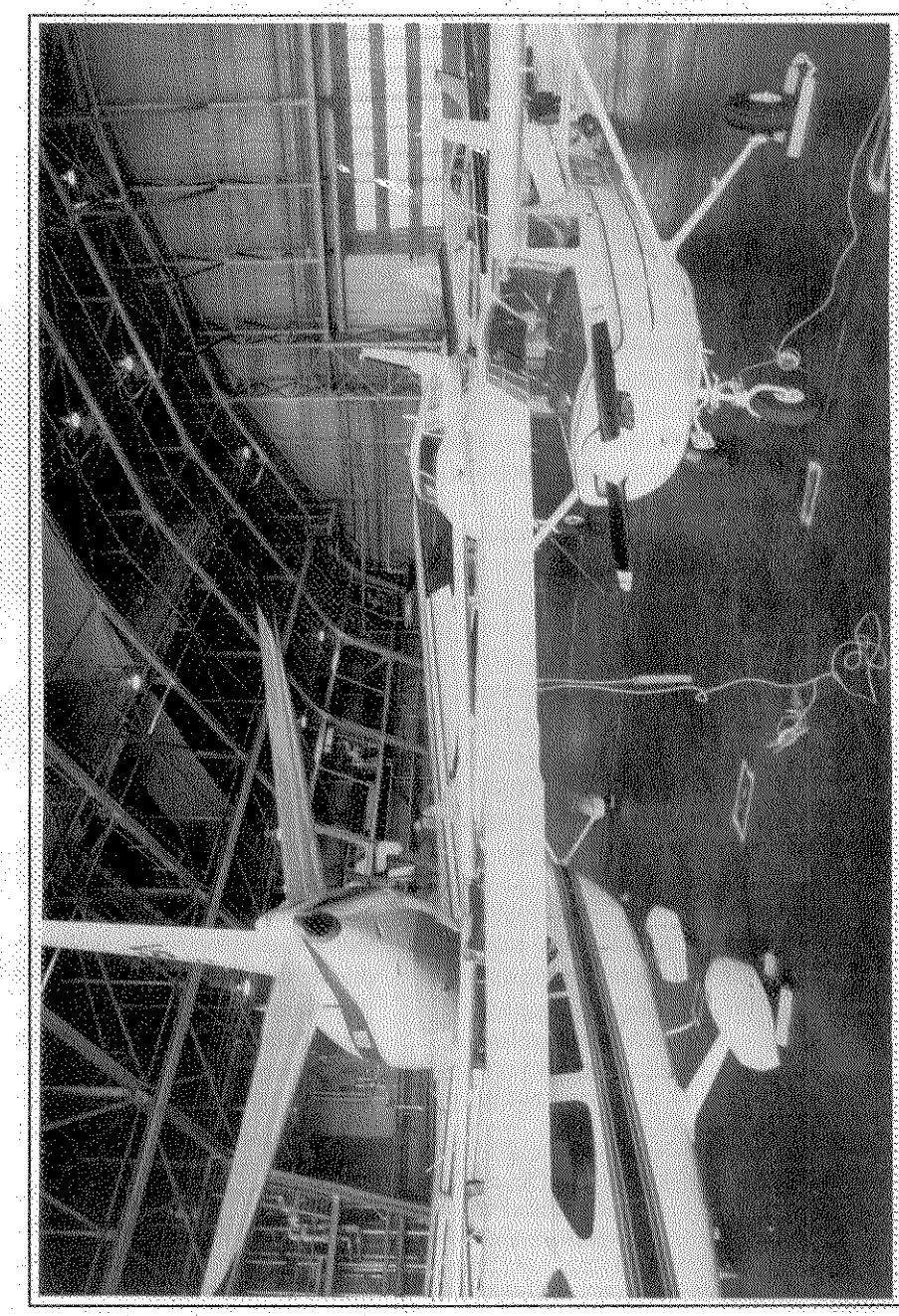


Photo by Carol Petrachenko

ALWAYS ROOM FOR ONE MORE: In preparation for the threatened arrival of hurricane Emily, the cooperation of many Langley people was necessary. The hangar was loaded with all sorts of NASA aircraft and equipment to prevent any damage due to the gale force winds that were expected. Planes from the Langley Aero Club and three huge helicopters from Fort Eustis were also wedged into the space. Fortunately, Emily passed by the Hampton Roads area and turned herself out to sea, with little or no damage reported locally.

National Aeronautics and Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 19 ❖ September 24, 1993

Let Us Show Langley's "Power Of Caring"

Day after day, as we view national and local news or read the papers, we see what havoc the weather has played on our state, on our nation and throughout the world. Crops in the South have been destroyed by drought. Homes, roads and businesses as well as thousands of acres of farmland were washed away by flooding in the Midwest. Typhoons and earthquakes have taken their toll worldwide. Add to that, jobs lost in the United States and recession in many other nations and you will have found a number of excellent reasons to contribute to this year's Combined Federal Campaign (CFC).

I know that your generosity has been a great help to many needy people in the past. As Center Director and long-time supporter of and contributor to the CFC, I urge your continued generosity for the 1993 campaign.

As you are aware, the 1993 campaign goal is $315,000. This is higher than last year's goal and I am certain that we will not only meet, but exceed, this goal, just as we have done in past years.

I mentioned some reasons for contributing to this year's CFC campaign earlier in this letter, but we have all seen many more reasons closer to home. The local economy has suffered from cut-backs and down-sizing, all resulting in loss of jobs. Perhaps someone you know, even a family member, is now unemployed. Some have been without work for a long time. Many who have jobs still could use our help — the working poor, as they are called.

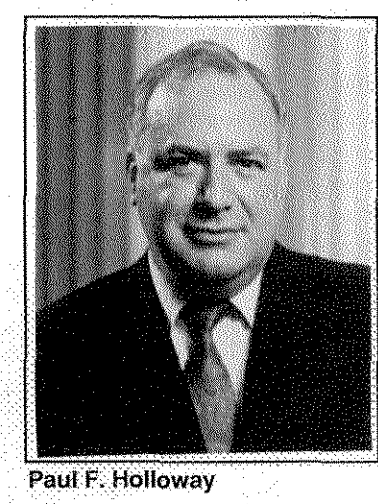
For all of these people, the needs are very basic: food, clothing, shelter, medical care. There are bills to pay for basic conveniences, for example, electricity and clean water. These are things that many of us at Langley take for granted because we have been so fortunate.

Sometimes we are unaware of the suffering of others unless it is placed right in front of us.

The media has brought the sufferings of many people into our living rooms this year – from Bosnia to Bagdhad, from California, Kansas, Florida and South Carolina to South Africa. We have seen the sufferings wrought by Mother Nature and those inflicted by human upon fellow human.

Many service organizations have opened their hearts and treasuries to help the Midwest flood victims re-establish their lives, to help the on-going rebuilding from Hurricane Andrew, to give to those who are suffering throughout the world. They need our help to continue to meet their obligations.

We also need to remember



Paul F. Holloway

our local community's needs. Sometimes the needs of those around us are overlooked by the headline newsmakers. But the need exists nonetheless. Your "power of caring" gift can make a difference; it can make others' lives a lot easier.

Langley has always had one of the highest per-employee donation records of any major organization on the Peninsula. In 1992, each Langley contributor gave an average of $135.34 and our percentage of participation was 76 percent. You may give your gift to the organization of your choice by designating it on your pledge card.

Many excellent service and volunteer agencies need our support. Please be as generous as you possibly can – let's shoot for 100-percent participation on Center this year.

— Paul F. Holloway
Center Director

A Message from Dr. Belinda Adams

As last year's Langley CFC chairperson, I want to remind you of the difference Langley employees made in the lives of individuals in the local community and beyond by the generous contributions made through the CFC in 1992. Because the community needs were especially great last year (Hurricane Andrew, etc.), we set a "stretch" goal of $305,000. The Center exceeded the goal for a total contribution of $308,000.

The CFC Committee has responded to a continuing high level of need by setting a 1993/1994 goal of $315,000. As you plan your response to this year's campaign, please recall that the agencies supported by the CFC continue to be hit by the "double whammy" as the economy languishes. The number of people needing support is increasing, while the number able to contribute to the agencies is decreasing.

I urge each individual who participated in last year's generous response to participate again this year and to increase your contribution if you can. I encourage those of you who did not participate last year to consider joining with your colleagues who realize the difference a CFC donation makes in the lives of those in need of a helping hand. Each new participant and each increase in an annual gift makes a difference. As last year's Campaign chairperson, I had the opportunity to get an especially close view of how the CFC contributions are combined with the efforts of the many who volunteer their time in order to stretch the dollars given into a really significant effort in their community sharing. I urge you to give as much as you can. The need is great and we are, in general, very fortunate members of the community.

—Dr. Belinda H. Adams
Assistant Director

Dr. Belinda H. Adams

— For the ways you can show your "Power of Caring," turn to Pages 4 and 5

Two Langley Women Honored by WIA

BY SUSAN A. SMIGIELSKI

Two Langley employees were honored this month by the Women in Aerospace (WIA) in Washington, D.C. Lana M. Couch and Marchelle "Shelley" Canright accepted their awards at the group's Eighth Annual Awards Reception.

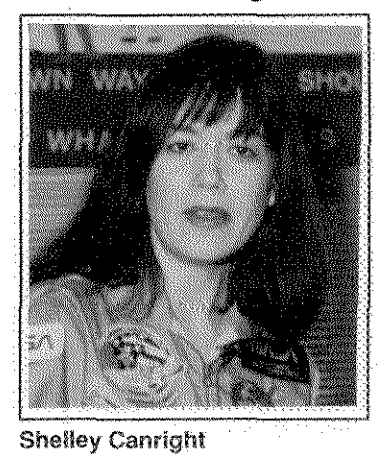
Couch, director of the National Aero-Space Plane Office, received a Lifetime Achievement Award for an aerospace career that spans three decades.

"I am very pleased to receive this award," Couch said. "Women in Aerospace represents the broad aerospace community, both men and women, in industry and in the congressional and executive branches."

Couch's career began at Langley in 1963, when she conducted research in fluid flow phenomena on subsonic through hypersonic aircraft and launch vehicles. She managed aerothermal loads research programs and, from 1975-1980, the operation of a complex of unique hypersonic wind tunnels. After Couch completed a fellowship at Syracuse University, she held several positions at NASA Headquarters from 1980 through 1990, including manager of the Spacecraft Systems Technology Office in the Office of Aeronautics and Space Technology.

In 1985, she became the NASA head of the Department of Defense/NASA National Aero-Space Plane Program. She was responsible for the program through its advocacy, approval and initiation. Couch held a Congressional fellowship and served as a member of the Senate staff of the Commerce, Science and Transportation Committee from 1987-1988. Following the fellowship, she directed the NASA Space Research and Technology Program with responsibility for its overall advocacy, management and budget allocation until 1990 when she returned to Langley and assumed her current position.

Couch has received several other awards including the



Shelley Canright

Lana M. Couch

NASA Exceptional Service and Exceptional Achievement Medals, Presidential Rank Award and WIA's Apollo 20th Anniversary Award. She is a member of the American Institute of Aeronautics and Astronautics and the American Society of Mechanical Engineers. She has authored many NASA technical reports and holds two patents.

Canright, an education and information specialist in the newly-formed Office of Education, received the Aerospace Education Award. At Langley for six years, Canright has made significant contributions to the Center's education outreach efforts. Her responsibilities include planning and developing educator services within Langley's five-state educational service area. She is currently pursuing her doctorate at Pennsylvania State University in the field of Instructional Systems.

"The educator award from the Women in Aerospace is a shared honor with those many individuals who supported me with their talent and resources. Each of us has a role and a responsibility to do our part in ensuring that every American child receives an excellent education," Canright said.

Canright serves as a consultant on aerospace, elementary, science and instructional technology education to colleges and universities, school systems, curriculum resource centers, museums and national educational organizations.

Canright is no stranger to education awards. She has been named Newport News Public Schools Teacher of the Year and is listed in Outstanding Young Women in America. She has received a U.S. Presidential Letter of Commendation.

Hampton Roads Section WIA President Gaudy Bezos-O'Connor said of the pairs' award, "Couch and Canright represent the depth of technical talent and dedication here at NASA Langley, and all of us are very proud of their achievements."

News Briefs

AROUND THE AGENCY

HEADING FOR JUPITER, GALILEO TO ENCOUNTER ITS SECOND ASTEROID– NASA's Galileo spacecraft encountered its second asteroid, called Ida, on Saturday morning, Aug. 28, on its flight to explore Jupiter. Galileo made its first encounter, with Gaspra, in October 1991. Galileo raced through a closest approach distance of 1,500 miles from Ida. Relative speed between Ida and Galileo was about 28,000 mph. Radio signals confirming the encounter reached mission controllers at NASA's Jet Propulsion Laboratory, Pasadena, Calif., 30 minutes later. Galileo's camera and other scientific instruments recorded observations from several hours before to several minutes after the closest point of approach to Ida. Because Galileo must use its low-gain antenna for all communications, the pictures and other data will be played back slowly this month and in the spring of 1994.

NASA TESTS HELICOPTER MODEL IN ICING CONDITIONS– Icing studies, that may result in major improvements in predicting helicopter rotor performance in icing conditions, were recently completed in the Icing Research Tunnel at NASA's Lewis Research Center, Cleveland, Ohio. A one-sixth scale Sikorsky Black Hawk helicopter model was tested for 10 weeks over a wide range of icing conditions and critical forward flight conditions. The tests by NASA, the U.S. Army and Sikorsky Aircraft, Stratford, Conn., were focused to expand the experimental database as well as develop reliable methods to reduce the cost and time required to certify civil helicopters for flight into forecasted icing.

Community Corner

Agency Seeks to Make a Difference – One Family at a Time

Settling in a new country is a huge adjustment but, if the newcomers don't speak the language, even the simplest of survival needs become overwhelming. A local non-profit organization seeks to make the process friendlier by providing one-to-one assistance in breaking the language barrier.

BACKGROUND

Refugee and Immigration Services (RIS) helps families from all over the world settle in the Tidewater area. RIS staff members provide an orientation to the area – U.S. laws and customs, education and school systems, rights and responsibilities – and offer employment help, support services, information and referral assistance.

These refugees and their families, some who have fled persecution, need friendship and moral support during their transition period. But, in addition to a warm welcome, they often need "basic training." Another vital component of the resettlement process is helping the newcomers learn English as a second language.

HERE'S HOW YOU CAN HELP

Volunteers are needed to teach "survival" English: basic terms that enable a newcomer to shop for groceries, to make a bank deposit or withdrawal, to answer the telephone, to use the TV listing. It is not necessary to speak the newcomer's language—in fact, it's often helpful if the volunteer cannot. All are then forced to communicate in English!

Tutoring sessions are held in local libraries, churches or any other mutually agreeable location. Minimal training is required and the program is very flexible.

If you can help, call Sara Hellbaum, at the Resettlement Office, 723-1276, or at her home, 766-0941.

If you know of a co-worker involved in an interesting volunteer activity or a health/ human service agency with a pressing need, contact Marny Skora, Community Services officer, at ext. 43315.

IN MEMORIAM

Patricia Dinwiddie

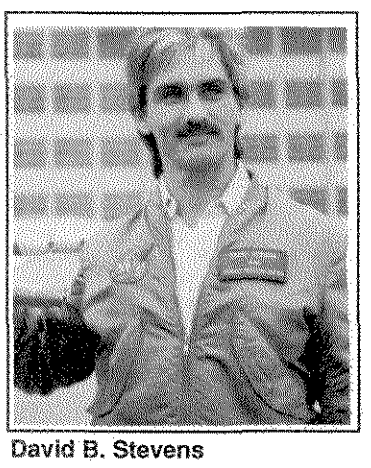
Patricia Dinwiddie, 68, a resident of Hampton and a native of Drexel, Pa., died Saturday, Sept. 11. Dinwiddie worked at Langley as a secretary and retired after 24 years of service.

David B. Stevens

David B. Stevens died Sunday, September 5, following an automobile accident. Stevens was an aerospace engineering technician for the Research Aircraft Support Section in the Aircraft Operations Branch.

Stevens had been assigned to many aircraft and flight projects during his 13-year Langley career. He was a crew member on the Boeing 737 ATOPS aircraft, crew chief of the C-172 Stall Spin aircraft and the C-402 Aircraft Biomass program and assistant crew chief of the C-23 Stall Spin aircraft. At the time of his death, he was assigned to the OV-10A Wake Vortex aircraft as crew chief.

"Dave's enthusiasm toward his job and his willingness to help others will be missed by all who worked with him," said Calvin Chandler, Stevens' supervisor in the Research Aircraft Support Section.



David B. Stevens

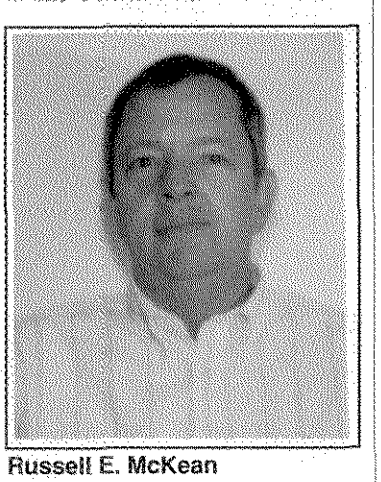
IN MEMORIAM

Russell E. McKean

Russell E. "Ed" McKean died August 28. The Newport News resident had been assigned to the Risk Management Branch, Facility Assurance Section.

McKean worked in many different facilities on Center while performing his safety engineering activities throughout the years. He had been a civil servant for 10 years.

"His work with the National Transonic Facility, the Transonic Dynamics Tunnel, the 0.3M Transonic Cryogenic Tunnel and the 14- x 22-Foot Tunnel was always conducted in an exemplary, professional manner," said Bill Wessel, head of the Risk Management Branch. "Ed was well-like and respected by his peers. He will be sorely missed at this Center."



Russell E. McKean

Fred N. Hales

Fred Norris Hales, 72, died Tuesday, August 31.

Hales retired as a mechanical engineer from Langley. He had also been an apprentice school graduate.

Waverly Whitley

Waverly Leon Whitley, 74, a native of Isle of Wight County and Peninsula resident since 1941, died Friday, Sept. 10. Whitley was a metallurgist and retired from Langley after 30 years of service.

John R. Joyce

John R. Joyce, 81, a native of Roanoke and a Peninsula resident for 77 years, died Sunday, Sept. 12. Joyce retired from Langley as an instrument maker after 45 years of service.

TOPS

TECHNOLOGY OPPORTUNITIES SHOWCASE

TOPS Committee Introduces Logo

The goal of Langley's three-day business expo, slated for October 19-21, is to promote partnerships with U.S. industry. The graphic symbol chosen to designate the upcoming Technology Opportunities Showcase (TOPS) stresses a strong NASA-industry bond.

"The curved arrows that dominate the logo are intended to show NASA Langley's history of transferring technology to private industry," said Brian Harrell, visual information specialist in the Graphics Section, who designed the symbol. "I used two arrows to indicate that the Center also encourages companies to indicate their needs or outline problems that may be solved by the wide array of resources here. I intended the circular motion to instantly portray the cooperation necessary in a successful partnership."

Nearly 180 exhibits will showcase Langley technology as private firms—aerospace and non-aerospace alike—are invited to profit from government research. Advances in the following areas will be displayed: Aeronautics, Advanced Materials, Manufacturing Processes, Instrumentation, Nondestructive Evaluation, Measurement Technology, Structures and Dynamics, Information Sciences, Automation and Robotics, Optics and Lasers, Environmental Science, Advanced Computing, Medical and Education.

Women in Aerospace to Hold Get Acquainted Meeting

The Hampton Roads Section of Women in Aerospace (WIA) will kick-off the 1993-94 chapter year with a get acquainted social starting at 5 p.m. Thursday, October 7, at the home of Diana Freeman, 36 Rens Road, Poquoson.

Prospective members are invited to join HRS-WIA members for an advanced look at what the chapter plans for the coming year.

Members are encouraged to bring a guest—or two! As a special incentive, one current member and his or her guest will be selected in a drawing to receive free invitations to the WIA Holiday Social to be held in December. Please call Marny Skora, 864-3315, by Monday, October 4, to say you will attend.

Speakers Bureau Report

The Speakers Bureau reports the following speakers for August:

Sharon Crockett spoke at Smith College about "NASA Engineer Careers."

Paul McGowan spoke at the Virginia Governor's School at West Point Elementary about "Space Communications."

Charles Trepte spoke at the Poquoson Ruritan Club about "Meteorology."

Walktoberfest with LAA

Join the LAA Aerobics Club walk to support the American Diabetes Association on Sunday, Oct. 3, at 10 a.m. at the Mariners' Museum. For more information, call ext. 42295.

News 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.....Marny Skora

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The Bionetics Corp.

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

Photojournalist .....Carol Petrachenko
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.

Center Mounts Outstanding Response to Community Need

BY KRISTINA MURDEN

"Changing lives, saving lives" is what almost 60 Langley volunteers aimed to do by participating in the Peninsula's Day of Caring September 9. All arrived bright, early and eager to paint, landscape, build, sort clothes, distribute food, install smoke detectors and distribute flyers. Langley folks spent an entire day — from downtown Hampton to Camp Skimino above Williamsburg — helping United Way agencies and joining in the spirit of this community-wide service project.

"Our volunteers were fantastic," said Marny Skora, Center community service officer. "They offered to do whatever needed to be done. That's the mark of a true volunteer."

"It's easy to agree to do what we want to do or like to do," Skora continued, "or to do what is glamorous or heroic. Each of our volunteers took a vacation day to help our local charitable organizations with their most basic needs."

Eli Siman-Tov, Analysis and Computation Division, helped sort clothes at a downtown Clothes Closet. "I decided to participate to meet the people involved and because it is such a great program."

Greg Buck, Space Systems Division, painted from morning to evening at the Boy Scouts. "I was pleasantly surprised that, as an ex-Boy Scout, I spent my day helping them out."

Penny Murphy, Fabrication Division, was also assigned to the Boy Scouts. "My husband started scouts in Matthews County in the early 1960s. Helping here brought back many great memories."

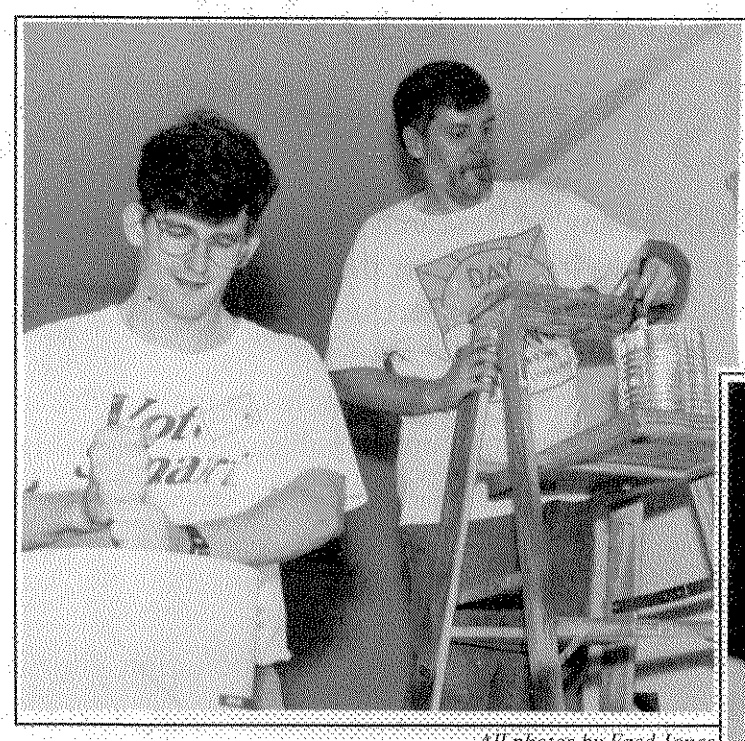
Pete Thomas, Office of Education, volunteered at the Mariners' Museum where he and about 30 others planted over 100 azaleas and mums, raked one-and-a-half miles on the Noland Trail, picked up 18 bags of trash and laid yards and yards of mulch. "When I think of how much it would have cost to have contracted for all this, I realized what a service our project turned out to be—and it's beautiful to look at, too."

Dr. John Lamar did some clean-up, fix-up work at the American Red Cross, York-Poquoson site. "Everyone here has been so pleasant to work with. Yeah, I'd do it again."

The Day of Caring mobilized over 600 citizens from dozens of businesses and federal organizations across the Peninsula. Langley supplied a tenth of the work force.

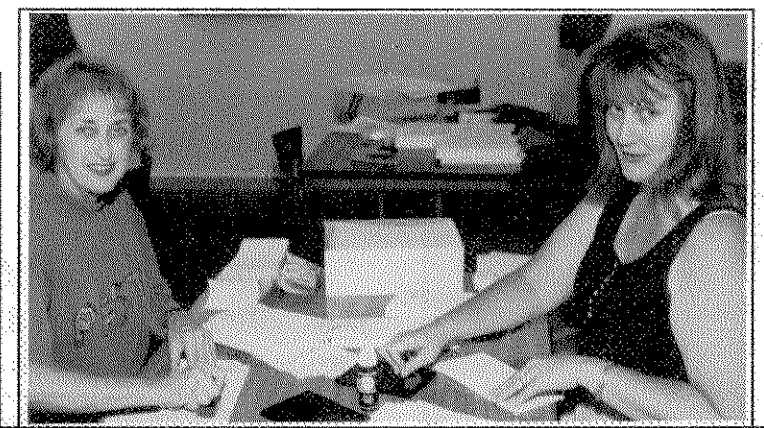
"I'm proud of the Center's response to the call for help," said Center Director Paul Holloway, "but I'm not surprised at the generosity of our people."

Langley volunteers were posted at the Boy and Girl Scouts, the Mariners' Museum, two Red Cross sites, the Downtown Hampton Child Development Center, the Hampton Department of Social Services, Hampton Coliseum, Newport News Office of Human Affairs and CONTACT Peninsula.



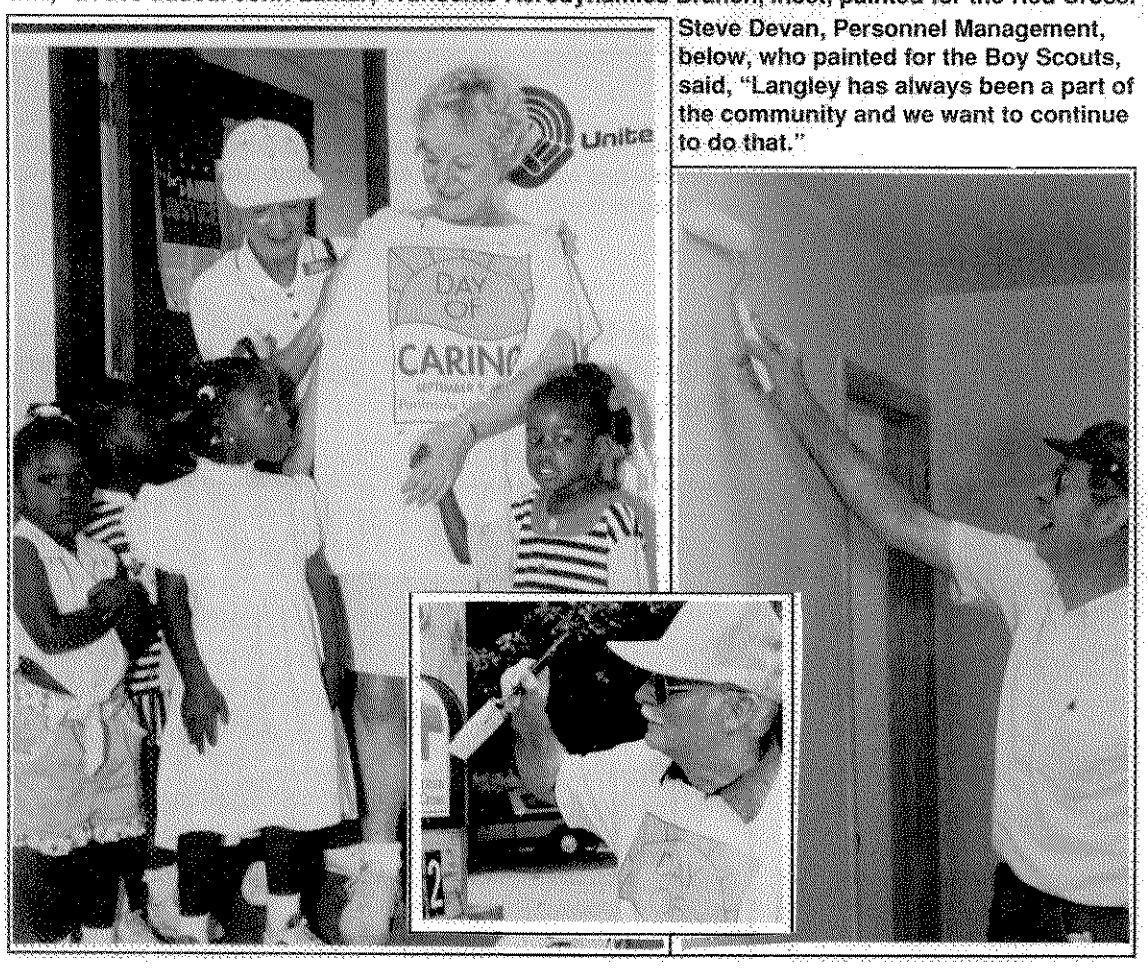
All photos by Fred Jones

Both Clark Smith, left above, and Carl Gerhold, both of Applied Acoustics, agreed that it was good to get out and do some physical work at Girl Scout Camp Skimino, and Gerhold added, "we'll have something to show for it."



Jeannette George, Business Data Systems, top photo, at left, and Laura Smith, Information Systems, said, "We didn't care where we ended up, we just wanted to help." The Boy Scouts were happy to have their help on a major mailing campaign. Audrey Coppedge, Bionetics, above, joined other volunteers to help the Hampton Department of Social Services with their quarterly food distribution.

Helen Bruce (right), Information Resources Management, and Margaret Gieseking, Guidance and Control Division, entertained children all day at the Downtown Hampton Child Development Center. "We got to behave like kids all day," Gieseking said. "And we had been really looking forward to this," Bruce added. John Lamar, Transonic Aerodynamics Branch, inset, painted for the Red Cross.



Steve Devan, Personnel Management, below, who painted for the Boy Scouts, said, "Langley has always been a part of the community and we want to continue to do that."

Day of Caring Volunteers

AMERICAN RED CROSS/YORK-POQUOSON
Terry Morris
Dave Duxbury
Weldon Staton
Tracey Patterson
James Cook
Belle Lynn Wood
Bob Miserentino
James Miller
Scott Martinson
Dean Eklund
Gene Monroe

BOYS SCOUTS OF AMERICA
Jeannette George
Gregory Buck
Marny Skora
Penny Murphy
Steve Devan
Laura Smith

MARINERS' MUSEUM
Debbie Young
David Banks
Carey Buttrill
Scott Bartram
Julia White
Susan Voight
Susan Malloy
Pete Thomas

AMERICAN RED CROSS, YORK-POQUOSON
John Lamar

DOWNTOWN HAMPTON CHILD DEVELOPMENT CENTER
Barry Price
Margaret Gieseking
Helen Bruce

GIRL SCOUT COUNCIL OF COLONIAL COAST
Carl Gerhold
G. Clark Smith
Henri Fuhrman

HAMPTON DEPARTMENT OF SOCIAL SERVICES
Audrey Coppedge

NEWPORT NEWS OFFICE OF HUMAN AFFAIRS
Eli Siman-Tov
June Howell
Brenda Sullivan
Jim Rogers

CONTACT PENINSULA
Geraldine Tucker
Jerry Garcia
Lin Hartung
Ann Gaudreaux
Amanda Fitzgerald
Pamela Schmidt
Erica Mosely
Jacqueline Osborn
Catherine Bulle
Kelly Hayhurst
Yvonne Dellapenta
Roger Hathaway
Tracey Miller
Eric Vinson
Bessie Nicholson
Pete Kelley
Richard Bulle

Your "Power of Caring" Is Needed This Year

You, the employees of NASA Langley Research Center, will be able to make a difference this year. Along with federal employees from all over the country, you are invited to show the "Power of Caring" that has been so evident in past years here on Center by contributing to the 1993 Combined Federal Campaign (CFC).

This once-yearly solicitation will enable many agencies to make a difference in peoples' lives: You will be feeding hungry children, finding cures for diseases, counseling families, comforting the dying, digging wells in the Third World, saving the environment and improving the lives of millions of fellow human beings.

This year, more than 1,100 local, regional, national and international agencies will be the beneficiaries of our generosity.

Langley Research Center will hold its one-day annual solicitation Thursday, September 30, when employees may give their "Power of Caring" gift — a donation or payroll deduction pledge to the worthy cause of their choice.

If you choose, your contributions will be distributed among the 16 federations listed on these pages. 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, a brochure listing the recipients of your gifts, and describing each of their programs, will be available.

American Red Cross

Represents itself

Disaster relief; health and safety courses, including AIDS education; worldwide emergency communications to military personnel and their families; services to federal personnel and veterans; international relief; blood services.

Children's Charities of America

Represents 45 agencies

Children are the future of the world and many of them need help. Reach out and feed, clothe, teach, protect and care for children in the United States and around the world.

Earth Share

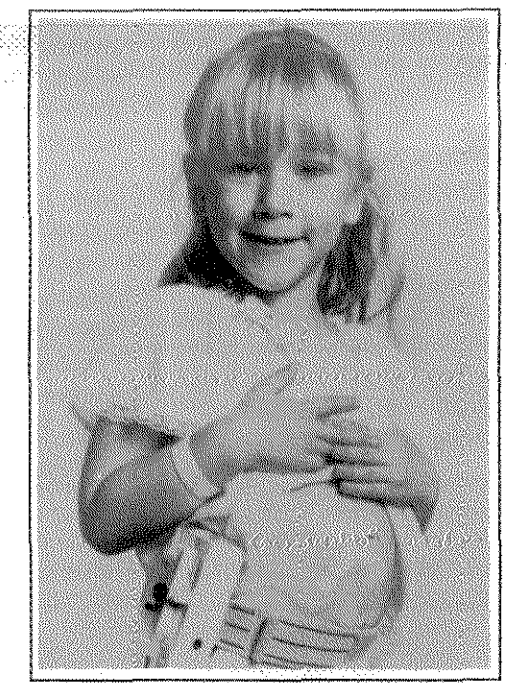
Represents 41 agencies

Your gift helps 41 organizations protect America and the world's natural and health resources, and provides educational programs that teach people how they can help save the planet.

HOW TO MAKE A CONTRIBUTION

There are several ways for you to contribute this year:

- **To specific agencies**
- **To specific federations that represent a broad range of agencies**
- **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 organizations/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.**



CFC offers you an opportunity to help this child who battles a genetic blood disease — and many others, too.

Independent Charities of America

Represents 170 agencies

Protecting the children; feeding the hungry; sheltering the homeless; and healing the sick are the works of America's independent charities. They are working with us to help share — the American way.

International Service Agencies

Represents 43 agencies

These American charities help millions of people worldwide to survive disasters and disease. The agencies aim to end chronic poverty with food, medicine, shelter, safe water, education, tools, seeds and farm animals.

Medical Research Agencies of America

Represents 31 agencies

AIDS, arthritis, cancer, diabetes, heart disease, herpes: Fight back by supporting medical research. Help discover the prevention and cure for these and other diseases.

National Black United Federation of Charities

Represents 16 agencies

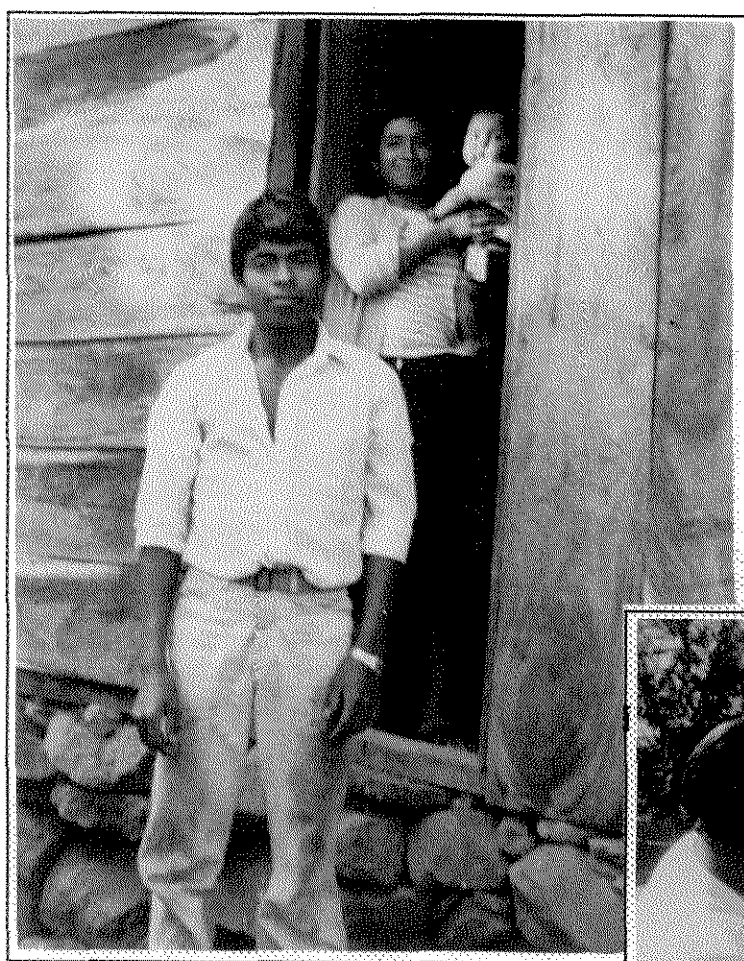
This is the only national black federation of charities organized to help national and local organizations gain resources to provide for the critical needs of African-American communities.

National/United Service Agencies

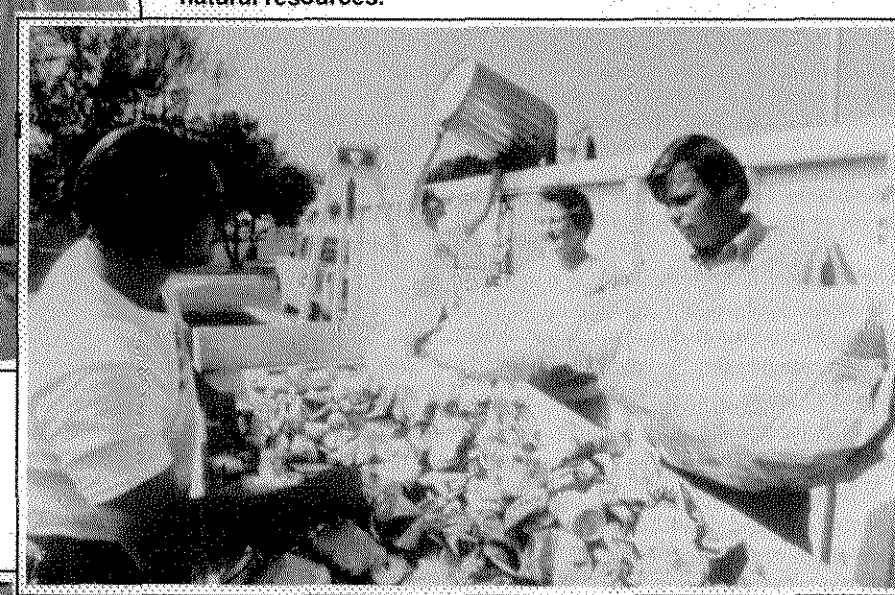
Represents 66 agencies

This is giving in the American tradition. National/United Service Agencies provide human care services and programs that help you, your family and your community.

People Helping People

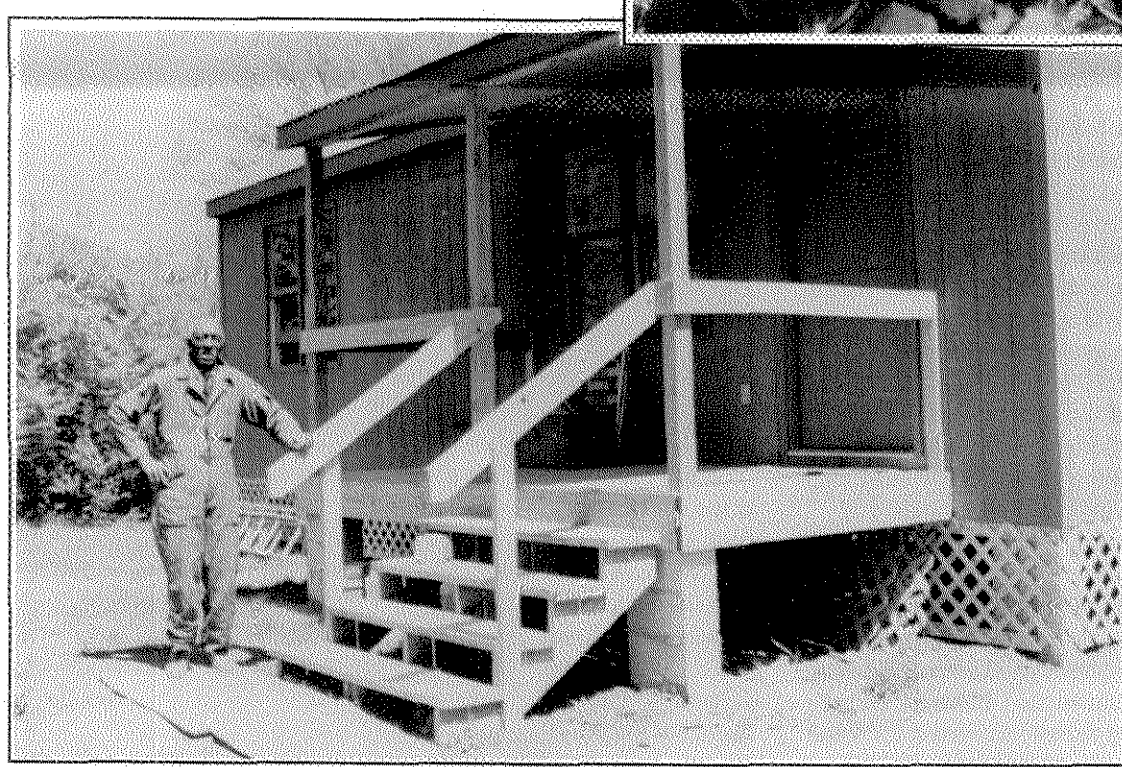


In the aftermath of a tidal wave last year, this Nicaraguan family was helped by CARE to obtain fresh water and rebuild their home.

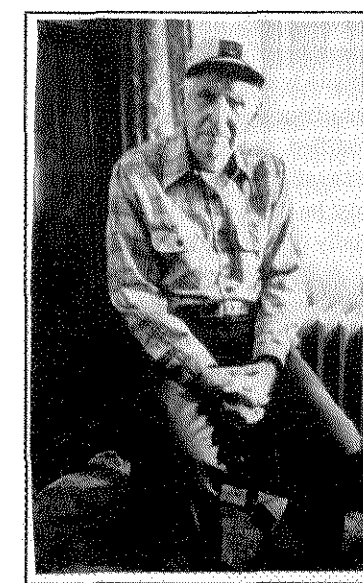


EARTH SHARE helps organize effective recycling programs to ease the strain on landfills and reduce the consumption of natural resources.

Photos provided by CFC agencies



More than 2,400 amateur craftsmen have donated well over 21,000 hours to transform sub-standard dwellings to real homes for local residents whose self-esteem has been raised in the process. Your one gift to the CFC can make neighborly work like this continue.



For the price of a cup of coffee each day for one year, a homeless person could be fed for more than five weeks.

World Service Organizations of America

Represents 31 agencies

World Service needs your help to end poverty and hunger, fight disease, increase economic opportunities without destroying the environment and preserve peace in our global neighborhood.

United Way of the Virginia Peninsula

Represents 43 agencies

One gift supports more than 100 local human service programs on the Peninsula, helping people who really need it. The agencies are local, accountable, efficient and effective.

United Way of South Hampton Roads

Represents 65 agencies

This federation of local charities provides a variety of human services, including day care, family counseling, homeless shelters and programs for at-risk children.

National Voluntary Health Agencies

Represents 66 agencies

Sixty-six respected national voluntary health organizations provide research, patient/community services and public professional education for federal employees and their families worldwide.

National Voluntary Health Agencies of Virginia

Represents 65 agencies

This is a federation of Virginia health agencies focused on improving the quality of life through delivery of health services, provision of health education and sponsorship of research.

U.S.O.

Represents itself

The USO provides programs for the military community that include foreign language classes, libraries, educational workshops, child care, entertainment, scholarship funds, volunteer recruitment and family programs.

United Way of America

Represents 19 agencies

In association with local United Ways, the agency helps people in need and solves community problems such as AIDS, hunger, homelessness, illiteracy, child care and alcoholism/drug abuse.

United Way of Greater Williamsburg

Represents 23 agencies

These are your neighbors helping local people with real needs. There is support for 23 human service agencies and programs, touching the lives of thousands of people. The Helpline provides information and referrals.

William Rogers: "The Poor Potter of Yorktown"

BY KRISTINA MURDEN

A rare opportunity to study the economics of the 17th-century Southeastern Virginia farmer has been discovered in the form of more than 8,000 artifacts, recently unearthed at Langley. The two-acre site was once part of a 50-acre farmstead that existed for more than 100 years.

The thousands of artifacts, from Chinese porcelain to colonial smoking pipes, have taken archaeologists on a journey back to a small farm that was once surrounded by huge plantations, and was just a boat ride away from a tiny village called Hampton. An archaeological survey has deemed it eligible for inclusion on the National Register of Historic Places.

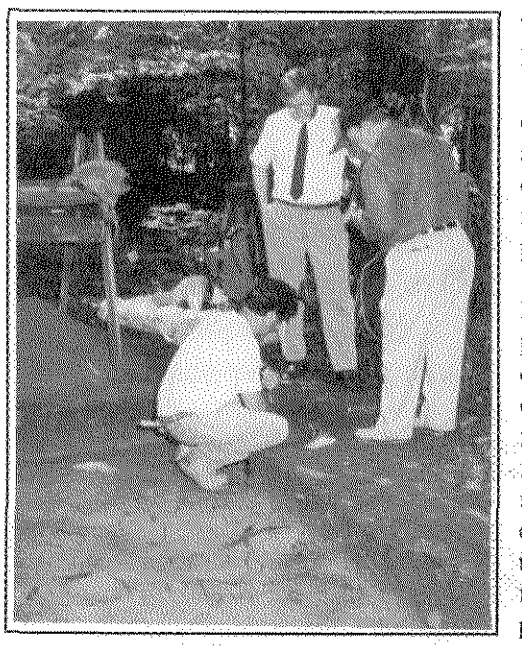
The site is unique because major subsistence farmsites are rarely found. Most archaeological finds on the Peninsula were owned by wealthy plantation owners. This farmstead belonged to the Francis Ross family of Elizabeth City County. "What we have here is an important 'cultural resource,'" said Dr. Frank Farmer, Langley's archaeologist. The materials found are directly related to the Colonial Settlement Period (1630-1750) and the Colony to Nation Period (1750-1789) in Elizabeth City County. "One of the most important revelations is that we have linked pieces of a ceramic milkpan (dated between 1720 and 1745) to William Rogers, known as the "poor potter of Yorktown." The Ross family property was identified fairly quickly with the help of an historical document written in the 1970s by J. Patterson, a retired NASA engineer.

The Answer to Questions

The find has the potential to answer questions about why earlier occupation (17th century) on the land had a more permanent type of architecture than later occupation (18th century). Remains of both types were discovered. The find can also provide useful data in understanding the settlement pattern and layout of a subsistence farmstead; where a farmer earned his living from his land. It has already provided some clues about the low economic status of the Ross family from pieces like ceramics.

The site was discovered during Langley's routine preconstruction survey for significant underground resources. When archaeologists got lucky and struck bricks, bones and ceramics, just to name a few, the plans for a building and a parking lot had to be modified. The complex is now being completed at the corner of Ames and Doolittle Streets.

Langley's involvement in archaeology is not a casual or unrelated activity. The National Historic Preservation Act (NHPA) requires the Center Director to serve as custodian of local historic resources on behalf of the American people.



Left to right, Wyatt Vrooman, John Mouring and Jerome Traver discuss an excavation test pit at the "Ross House" site

When construction project plans call for land disturbance, a discovery survey (Phase I) is performed. Depending on the number and kind of artifacts found, an identification and evaluation survey (Phase II) may be undertaken to identify and assess significance of the site. If the site is significant and if the disturbance project can not be modified, then a Curation Excavation Project (Phase III) must be performed to remove or totally document the resource.

A Phase I survey was conducted by MAAR Associates, Inc., during June and July of 1992. Based on the data, the site was identified as a 17th-century domestic site with significant research potential. The surveyors dug numerous shovel test pits in the wooded project area to determine this.

The Virginia Department of Historic Resources then proposed a Phase II investigation to determine the site's extent and eligibility for the National Register of Historic Places. Phase II was conducted during May and June of 1993, and progressed to the test excavation pits pictured here. This assessment determined site boundaries and significance of the artifacts and features.

Exactly 8,211 artifacts were recovered in the Phase I/II investigations. They were divided into four groups: Kitchen, Bone, Architectural, and Kaolin Pipe. In the same area, prehistoric materials, including projectile points and a scraping tool, were found.

Kitchen Group

"The most significant find was the ceramics, because they provided the benchmarks for effective dating," said Farmer. "The ceramics that helped date the site at 1720-1745 were in excellent condition, and there were enough pieces to identify bowls, plates, etc.

"The almost total lack of Chinese porcelains and delftware (tin glazed earthenware) indicated that the family did not have much money compared to plantation owners. And the fact that there was no pearlware found, which was very common and first made in 1780, meant that there was little activity on the site after 1780 – or pearlware would have been found.

There were also 85 pieces of bottle glass recovered on the site. Most of them were dark green wine bottle glass slivers, and a lip and a base of a pharmaceutical bottle were recovered next to the house.

Bone Group

A total of 2,898 items, including 57 bones, mostly from domestic farm animals, six teeth, and 2,835 oyster shells, were recovered. The oyster shells are considered artifacts because they were removed from their natural environment to serve a purpose on land. Bone preservation was excellent. Cuts of meat and other subsistence items might be reflected from bones and later testing could provide more clues to indicate a low standard of living.

Architectural Group

Most of the architectural materials were brick fragments. Construction materials, including mortar, accounted for 4,862 items. Most of the nails consisted of 154 items in various states of preservation, most showing little indication of being in any kind of fire. Phase II testing also revealed the archaeological remains or features of a brick foundation structure and two post molds and post pits. The posts are associated with a later structure that used brick from the house site as fill.

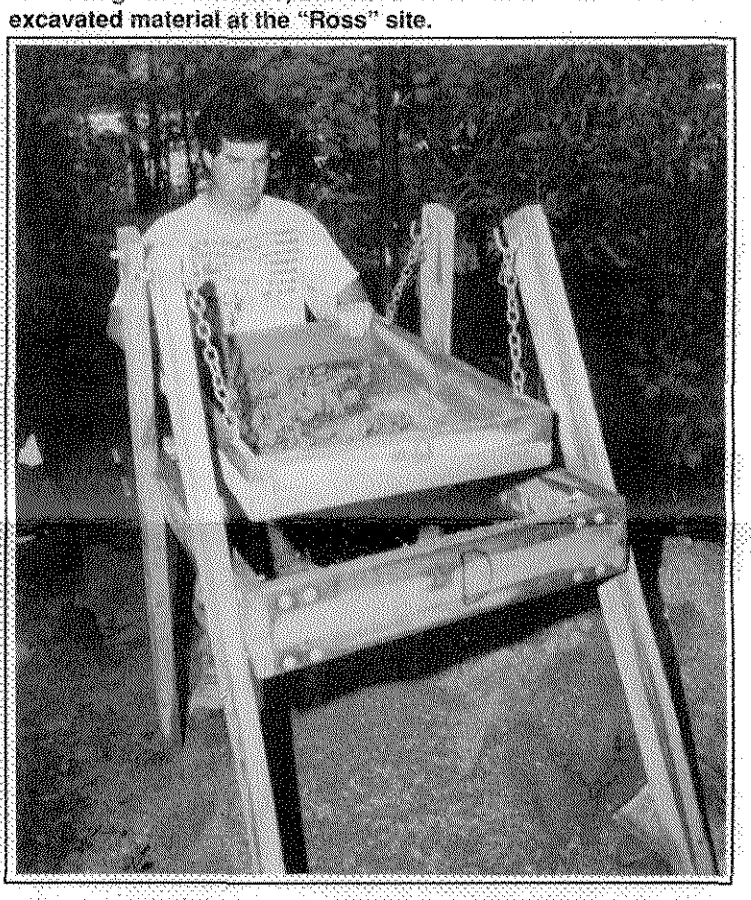
Kaolin Pipe Group

The relatively small number of kaolin pipe pieces–white clay smoking pipes–indicated that the Ross family probably did not smoke, but their visitors did. There were not enough pipe artifacts to precisely date them.

"Our goal is to manage this resource," said John Mouring, Langley's Facility Preservation Officer, "so we want to preserve it rather than enter Phase III, which is total excavation."

All photos by Fred Jones

Jerome Traver, Principal Investigator and Field Supervisor for MAAR Associates, Inc., points to an excavation of half a mold/post hole "feature." The post house foundation rotted, leaving a mold within the larger "hole" of earth and broken brick placed around the post by an 18th century builder. Wyatt Vroom, Archeological Field Aide, searches for artifacts as he screens excavated material at the "Ross" site.



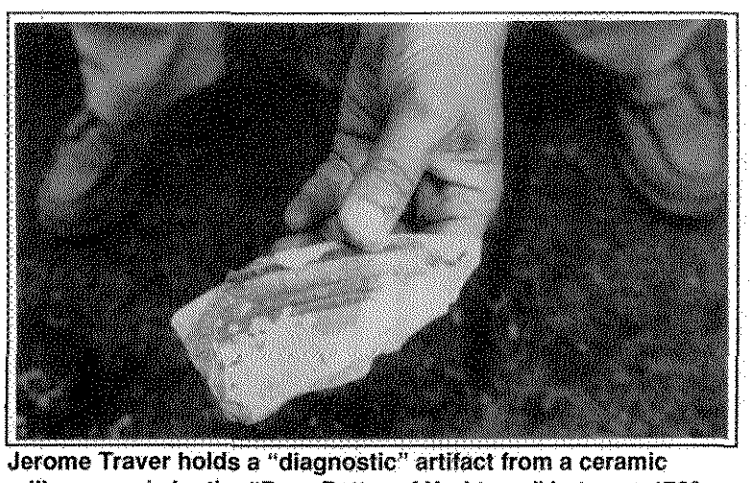
Since the discovery, the pits at the site have been covered back up.

"We have fulfilled our national responsibility by complying with the National Historic Preservation Act in performing Phases I and II. Now, our philosophy is to leave the site alone–there will be smarter people that will come along after us–so we should learn a little from it and leave it alone. Phase III would destroy the future research potential of this important resource," Mouring said. "The artifacts and features that have already been recovered will be curated."

What Does the Future Hold?

The next step is to contract with the U.S. Army Corps of Engineers for a total Langley site survey which will better support the Historic Resource Management plan. This effort will begin next year and be headed by Mouring and Farmer.

A parallel survey is being contracted to the National Park Service for a two-year survey of Langley's above-ground "modern" structures due to our history-making accomplishments. Mouring and Richard T. Layman, Langley's Historian and Real Estate Management Officer, will lead that effort.



Jerome Traver holds a "diagnostic" artifact from a ceramic milkpan made by the "Poor Potter of Yorktown" between 1720 and 1745.

Water Tower Replaced with New Structure

Building 1252, the old water tower, built in 1952 by Pittsburgh Des Moines Co., is being replaced by a new one that has been rapidly rising from the ground since April. The old tower has provided Langley's domestic water supply as well as the passive fire protection required by the Center's unique research facilities.

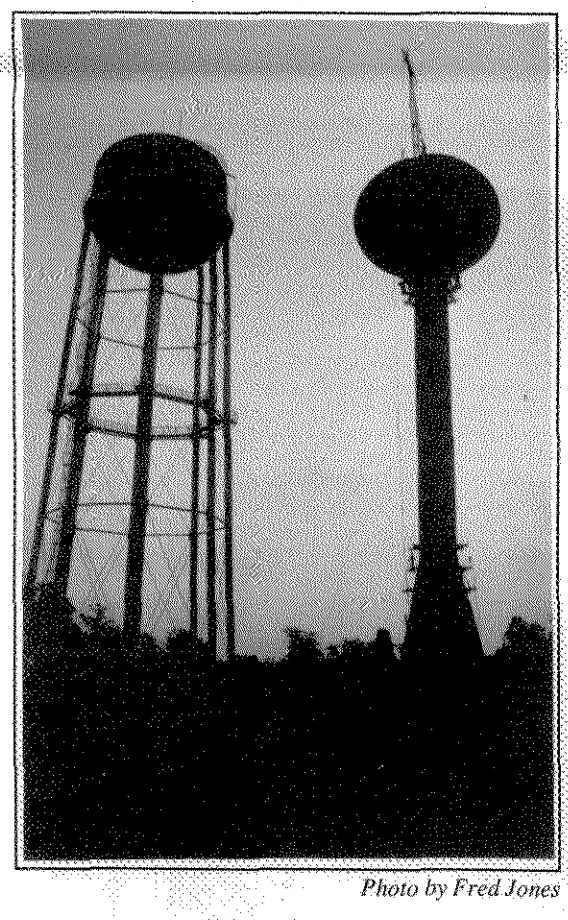
A study in 1989 by Dixon Engineering recorded extensive deterioration of the existing tank that required repair and included the replacement of the tank roof. During the repair process, additional deterioration was discovered in the pile cap foundations supporting the tank. This placed the integrity of the structure in question, so an engineering evaluation of the structure was conducted.

In consultation with the Safety Office, it was determined that maintenance of the tank at half capacity was needed to reduce the burden on the foundation while maintaining the fire protection system. The added cost of the foundation repair made the project's estimated total nearly equal to the estimated cost of building a new tower. The tower repair would have also jeopardized Langley buildings and facilities since the Center would have been without adequate fire protection for about six months.

The new tower, which is being constructed by CBI-NaCon, Inc., has a 500,000-gallon capacity tank and has the same low water level, elevation 154 feet, as the old tower. The water level within the tank itself, at 154 feet above sea level, is high enough to provide the passive water pressure necessary to activate the highest sprinkler head on the field. The sprinkler protection was replaced in kind, providing the same specifications of water pressure needed in each area on Center.

The new tower is supported on 44 70-foot long, 70-ton capacity, pre-stressed concrete piles, with a 30-foot diameter graded wall. The old tower has eight individual pile caps on a 65.5-foot diameter base with 35 12-ton capacity, creosoted piles per cap.

Once the new tower becomes operational, by mid-Fall, the old tower will be demolished and scrapped by the contractor, according to Ronnie Henk, Civil Engineering and Architectural Section, the project manager for the new tower's construction. The current schedule for the demolition is mid-December.



The old and the new: Langley's old water tower stands next to the new waterspheroid during construction.

Photo by Fred Jones

October: Disability Employment Awareness Month

The month of October has been chosen as Disability Employment Awareness Month. Its aim is to make all people aware that people with disabilities are capable of "getting the job done," and that all of us should do what we can to make the workplace accessible to them, according to members of the Satellite Committee for People with Disabilities.

October 14, from 9 to 11 a.m. at the H.J.E. Reid Conference Center, representatives from the Sarah Bonwell Hutchins Center will be at Langley. The training and development center staff members, as well as the center's clients and their families will present videotapes, and hold discussions on various disabilities and how they effect disabled persons and their family members.

October 26, from 1 to 3 p.m., staff members from the Endependence Center will present disabilities awareness training for adults. Disabled persons and their counselors will be on hand for a question and answer session. Please check *LaRC This Week* for other activities and more information.

Mission Fulfills Last Leg of Orbital Environment Tests

by KIRSTEN WILLIAMS

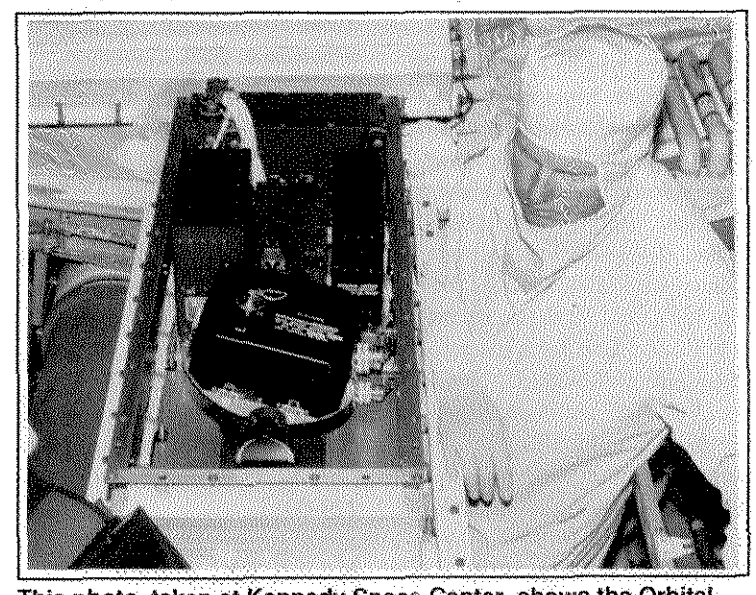
When Space Shuttle Columbia (STS-58) lifts off sometime in October, the payload will include a Langley experiment to characterize orbital environments, impacting both the operation of Space Station Freedom and the interpretation of microgravity experiments.

The Orbital Acceleration Research Experiment (OARE), conceived by Robert Blanchard of the Aerothermodynamics Branch, Space Systems Division, essentially measures the Shuttle's aerodynamical forces (drag) in orbit and during the early stages of reentry. These measurements will be used by researchers both at Langley and around the country to establish models predicting orbital aerodynamic behavior, Blanchard said.

"Our purpose is to measure forces under conditions that are not easily generated in the wind tunnels," Blanchard said. "Drag is difficult to measure here on the ground, particularly for orbital environments that exhibit low pressures or low densities."

Researchers working on the space station have shown a keen interest in the experiment. Although orbital drag forces are minuscule, they are capable of bringing a shuttle, spacelab, or space station out of orbit, given enough time. Additionally, members of the microgravity community plan to use the data to aid the interpretation of microgravity experiments, such as crystal growth.

To measure such tiny forces, OARE is designed to calibrate itself on-orbit, by creating an artificial gravity field. All previous accelerometers on the shuttle depended upon ground calibrations in the Earth's gravity field, rendering the results imprecise for the small levels of acceleration experienced in orbit.



This photo, taken at Kennedy Space Center, shows the Orbital Acceleration Research Experiment (OARE) with its lower cover installed.

OARE will self-calibrate periodically to ensure precision. "Calibration is a function of temperature and subject to other conditions, so we will do it several times during the 13-day mission," he said.

Although crew involvement with the machine will be minimal, crew members will be required to execute several maneuvers to obtain important data. Pitch, yaw and roll maneuvers will be executed on days two, seven and 13. A gravity gradient turn-drag maneuver is also scheduled for day two. These maneuvers will verify the OARE calibrations and unveil important physical properties of the shuttle, like vehicular center of gravity and moments of inertia.

Shuttle Mission STS-58 is neither OARE's first mission, nor its last. OARE's maiden flight was aboard STS-40, June 1991, where it operated continuously for three and a half days. Some equipment problems ensued, however, and although much information was obtained, the flight data was partially compromised. In June 1992, OARE flew again aboard STS-50, operating continuously for 14 days. Still under analysis, the data obtained during STS-50 is excellent, leaving STS-58 to verify the earlier mission's results and expand the breadth of the data.

OARE is one component of the comprehensive Orbiter Experiment (OEX) program, which was instituted in the 1970s to predict orbiter behavior throughout a variety of orbital conditions and speeds. With STS-58, OARE will have completed its OEX objectives.

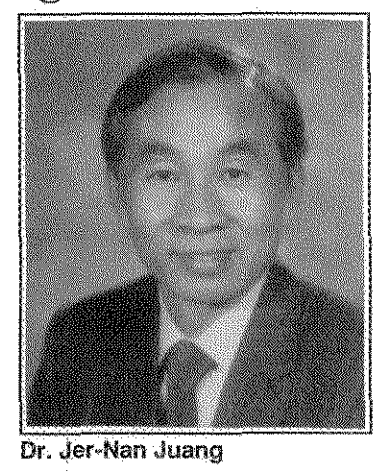
After the October flight, OARE will be turned over to microgravity researchers who plan to adapt the experiment to support microgravity work. Plans are underway to fly OARE aboard STS-62 and STS-65 to support the microgravity community.

AIAA Honors Juang With Control Flight Award

The American Institute of Aeronautics and Astronautics (AIAA) honored Dr. Jer-Nan Juang with the AIAA Mechanics and Control Flight Award at a ceremony during the mid-August AIAA Guidance, Navigation and Control Conference in Monterey, Calif.

The award was given to Juang "for multi-faceted contributions to the mechanical design, controller designs and systems identification for control of flexible structures."

Juang is principal scientist in the Spacecraft Dynamics Branch and an adjunct professor at the George Washington University. He teaches courses on system identification and control of flexible structures for the university's programs at Langley. He coordinates joint technical activities with Langley, and other NASA agencies, other government agencies and industry/universities internationally. At Langley, Juang also led the 12-person Control Structures Interaction (CSI) Test Methods team responsible for guiding multi-faceted base programs in his areas of expertise. The team developed ground test methods for verifying performance of integrated flexible structures-control spacecraft systems.



Dr. Jer-Nan Juang

Juang is an AIAA Fellow and a fellow of the American Astronautical Society. He is the author of a textbook and more than 200 publications as well as the recipient of numerous NASA achievement awards.

Presidential Sports Awards Completed

Congratulations Langley! Langley has successfully completed the sports challenge from NASA Headquarters. We had a total of 220 awards presented and eagerly await the results of how we fared against the other NASA agencies.

Several people won prizes for completing their fitness logs. Grand sweepstakes winner was Susan Mercer. Other winners were Ken Goodrich, Nancy Thompson, Sherri Yokum and Bob Davis. Many thanks to the sponsors and the LAA which provided incentive prizes for all those who completed a log.

Happenings

CELEBRATE HISPANIC HERITAGE MONTH AT LANGLEY AFB: A Fiesta De Colores will be held Sept. 26 at Eagle Park, Mass at 11 a.m., live music and dancers, noon to 6 p.m. Open to the public. For more information, call Robert DeJesus, 764-4509 or Michelle Blake, 764-7844. The Second Annual Run of the Bulls, a 5K run, is on Oct. 10 at Eagle Park at 8:30 a.m. Call John Harper, 764-4509 or 766-2617. "Hispanics: A Diversified Work Force to Change the Future," a commemorative luncheon will be held Oct. 13 at the NCO Club, Langley Air Force Base from 11 a.m. to 1 p.m. The guest speaker will be Celestin Aguigui of the U.S. Census Bureau. For ticket information, call Robert DeJesus, 764-4509.

ROOMMATE WANTED: Roommate to share Concord Lake 2 BR furnished apartment, non-smoker, $215/month, including utilities. Call 599-3928, ask for Glenn.

LOST: Ruby and diamond ring may have been lost in Bldg. 1195 parking lot or on the Reid Center grounds. Lost on or about Sept. 8 and a reward is offered. If found, call ext. 48159.

CONDO FOR SALE: Pine Cone Harbour, 2 BR, 2 baths, all appliances, great room w/fireplace, pool, clubhouse, many extras. Asking $79,000. Call 723-4863.

COSTA RICA ADVENTURE: The beauty of rain forests and active volcanoes will be explored on this 10-day trip with day hikes, horseback trips and whitewater rafting, Nov. 19-28. The cost of $1,649 includes transportation, accommodations, most meals and equipment. Call Gary W. Grew for details at 229-0013.

NASA SKI WEEK: Last chance to sign up for NASA Ski Week, the agency-wide trip to Aspen, Colo., Jan. 15-22, 1994. Cost per person is $1,020. Contact Michael Schooley, ext. 48524 or 874-2736 for additional information.

REUNION: Langley employees and retirees are invited to join the 51st reunion of the Farmville (Va.) School of Aeronautics which will include a tour of the Virginia Air and Space Center, Saturday, Sept. 25. For details and information, call Jesse Kent at 851-0414.

AMATEUR RADIO LICENSE EXAMS: All levels of exams required by the FCC in international Morse Code and rules, regulations, operating practice and radio theory, will be given Sunday, Oct. 3, at 8:30 a.m. Tests will be given at the Radisson Hotel mezzanine near the Virginia Beach Pavilion. Morse code exams start at 8:30 a.m. and written exams 9:30 and are under the supervision of the American Radio Relay League. For details and information, call 898-8031.

BENCH AND LOW-IMPACT AEROBICS: Improve your fitness level, reduce body fat and stress with low-impact, bench and weight training classes from certified personal trainers and certified aerobics instructors. Free body composition analysis, cardiovascular fitness assessments, information on diet and nutrition given before class. Saturday features low-fat health foods for participants after class. Open to civil service, contractors and their families at the LAA Gym, 5 to 6 p.m., Tues. and Thurs., 9:30 to 10:30 a.m. on Sat. For information, call ext. 42295.

SYMPHONY TICKETS: On sale at the Exchange Shop for the Oct. 1 and 2 performances of the Virginia Symphony. Concerts will include Tchaikovsky's Symphony No. 1 and Christopher Constanza performing Elgar's Cello Concerto in E minor. Concerts are at Chrysler Hall at 8 p.m. Get tickets at the Exchange Shop at a 20-percent discount plus $.50 handling fee, or by calling the Virginia Symphony Ticket Store at 623-2310 or 380-0040.

GUITAR SOCIETY CONCERT: The Tidewater Classic Guitar Society starts its 10th anniversary season with the Santa Fe Quartet in concert at 8 p.m., Friday, Sept. 24, at the Virginia Beach Center for the Arts. Tickets are $7-$10 and are available at the door. A "meet the artist" reception will follow the concert. For information or ticket reservations, call 255-2304 or 566-3304.

AMERICAN HELICOPTER SOCIETY: The AHS Hampton Roads Chapter membership drive is open until March 31, 1994. Sponsor a member or become one. Prizes and incentives are offered. Call Sandy Shackelford, Fort Eustis at 878-2208, for information.

NASA INTERCENTER COMPETITION: Fall races are scheduled as follows: 10-K races are on Sept. 27, Oct. 6, 12 and 21. Two-mile races are on Sept. 30, Oct. 14 and 18. Races begin at 5 p.m. on Doolittle Road. A two-mile race will also be held Oct. 5 on the Bethel High School track at noon. All NASA employees, retirees, contractors and co-ops earn extra points for Langley by participating in this NASA-wide competition. Walkers are welcome. For information about the races or the Runners Club, call Richard Shearer at ext. 47036.

PICNIC: The Acquisition Division will have its annual picnic on Oct. 22 at 4:30 p.m., featuring an old-fashioned pig-pickin'. It will be at Shelter #1 on theReid Center grounds. Other assorted food and drinks will be available. All former Acquisitions Division personnel are cordially invited. Please call Steelman Ketchum at ext. 42402 or Jim Taylor at ext. 42406 for information.

ATLANTIC CITY, NJ, TRIP: Oct. 23-24, one-night stay, $80 per person includes hotel and transportation via ACE Charter Bus Service. For more information, call 245-3915, leave message.

Researcher News

National Aeronautics and Space Administration

Langley Research Center
Hampton, Virginia 23681-0001

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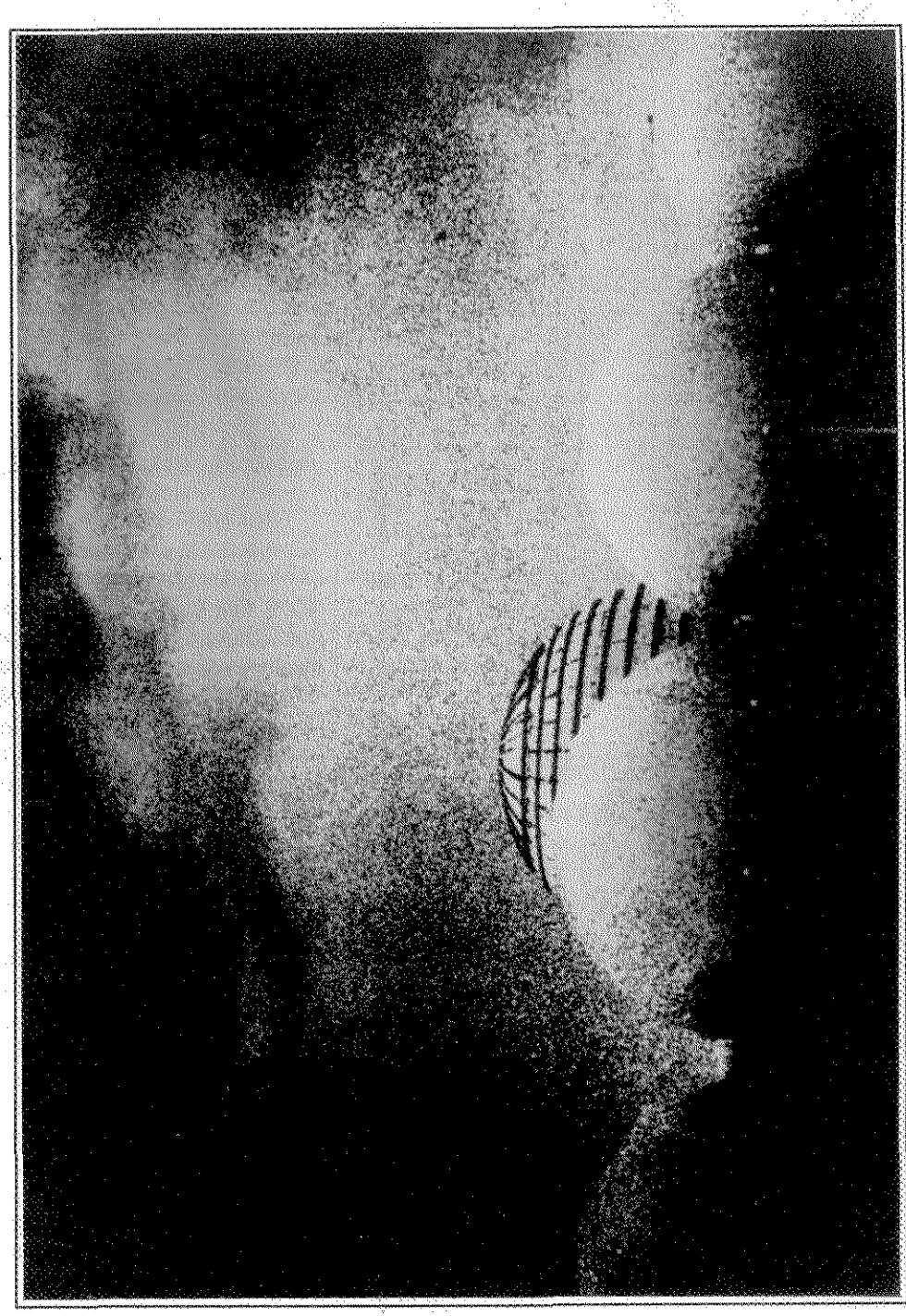


Photo by Thomas Prince

Here is the Langley hypersonic facilities complex, interpreted by photographer Thomas Prince and graphic artist Rod Waid. As a LARSS student in the Office of Public Affairs this summer, Prince photographed the spheres at the corner of Langley and Reid early one morning using high-contrast black and white film. Waid completed the image by highlighting prominent features, adding to the overall mood. Waid also helped produce a color version.

National Aeronautics and
Space Administration
Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 20 ❖ October 8, 1993

A Message from the Director:

Today, the NASA Langley Apprentice Program is graduating 28 engineering technicians. I would like to take this opportunity to publicly congratulate these men and women on their achievements.

Let me say "well done" to the Class of 1993, to the 28 students who have met the challenges of this demanding program. Many of you have distinguished yourselves by graduating with honors – a very impressive 53 percent of the class. More than 41 citations and awards have been given to the members of this class, whose overall grade point average is 3.27 out of a possible 4.0. Special recognition must be paid to four class members who are graduating summa cum laude: James K. Adams, Brian Cheshire, Grace A. Gleason and Stella V. Harrison.

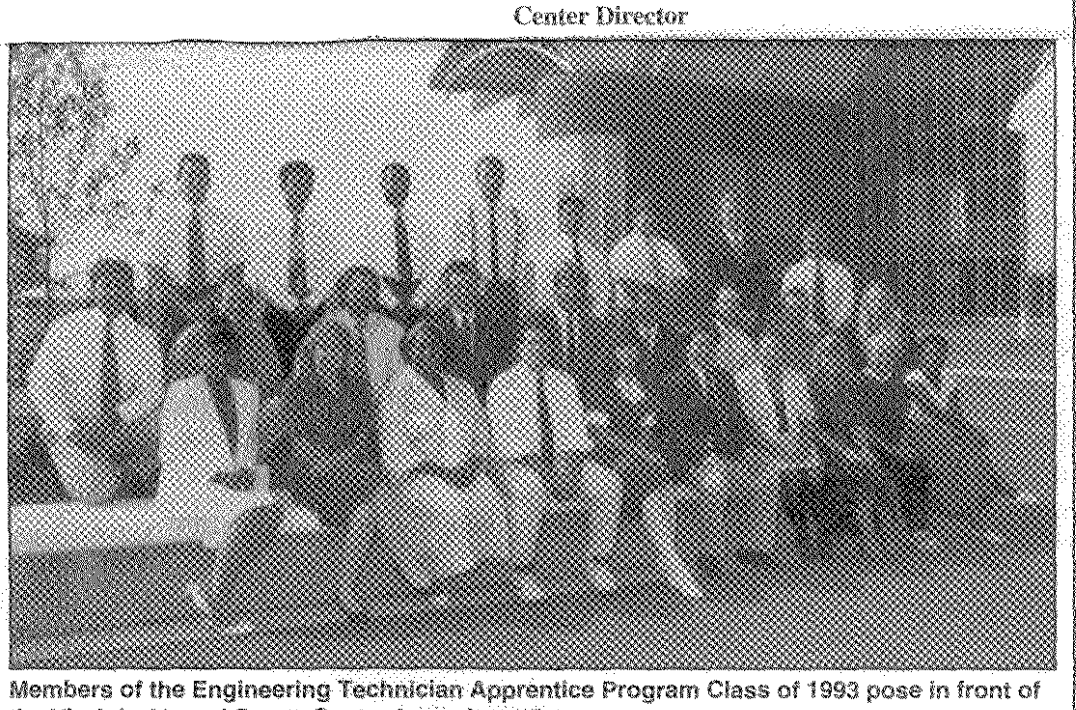
Your class carries on the tradition of excellence that began when the apprenticeship program was founded in 1941. Its aim was to promote aeronautical applications and research, and the program has provided both on-the-job and academic training to accomplish this aim.

The six-year program has, since its establishment, worked to identify talented individuals in cooperation with Thomas Nelson Community College, Elizabeth City State University and Tidewater Community College.

This 51st graduating class brings the total to 1,372 journeyman technicians trained for NASA, many of whom have continued their success stories in several different industries throughout the country and the world.

I want to wish all of you continued success in your future endeavors.

—Paul F. Holloway
Center Director



Members of the Engineering Technician Apprentice Program Class of 1993 pose in front of the Virginia Air and Space Center for a class picture.

Health Care is Topic of NASA's October Colloquium

BY CATHARINE G. SCHAUER

Frank Nichols, M.D.

NASA Langley's October 12 Colloquium features Frank Nichols, M.D., a thoracic and vascular surgeon at the nation's largest non-metropolitan hospital, speaking on "Health Care: Science, Economics, Ethics and People."

The cost of health care as a percentage of the national budget has reached crisis proportions. The conflicting pressures of expectations and cost control are affecting science, research, development and applications, according to Dr. Nichols.

"Science in general and medicine in particular are faced with decisions of priority," according to Nichols, and "scientists and politicians must develop and act upon ethical criteria, considering the needs of individuals and funds to maximize benefits, while protecting the disadvantaged."

He received his bachelor of science degree from the University of Wyoming in 1964 and came to Langley to consider becoming a medical astronaut. Vision restrictions prevented that option, so he went on to medical school at the University of Chicago. Following medical school (1968), he specialized in cardio-vascular thoracic surgery at the University of Rochester and Strong Memorial Hospital in Rochester, NY, through 1975.

Dr. Nichols then joined the staff at the Northern Mississippi Medical Center, Tupelo, MS, where he is currently active in many hospital committees and advisory groups. In 1983 he founded the North Mississippi Vascular Center.

The colloquium begins at 2 p.m. at the H.J.E. Reid Conference Center, 14 Langley Blvd.

Dr. Nichols will present the same lecture at 7:30 p.m. October 12 at the Virginia Air and Space Center's IMAX theatre as part of the Sigma Series. The Sigma Series is a series of free public lectures sponsored by the Virginia Air and Space Center, the *Daily Press* and NASA.

Go to the Colloquium!

There are still three chances left in 1993 for Langley employees to attend a colloquium. Excellent speakers who are tops in their fields of endeavor are brought to Langley where they address various topics. Everyone is invited to attend.
Colloquiua are presented at the H.J.E Reid Conference Center. The last three presentations of the year are: Frank Nichols, M.D., Tuesday, Oct. 12, will talk about "Science and Medical Ethics; Monday, Nov. 8, R. Carpenter and R. Minnix will discuss "Homestyle Physics;" and Jeffrey Hecht will present the program, "What's New in Lasers," Monday, Dec. 13.

Boys' and Girls' Club Visited for CFC

The Boys' and Girls' Club of the Virginia Peninsula is dedicated to serving the cultural, education and recreational needs of youth. The year-round programs, financially supported by the United Way and your contributions to the Combined Federal Campaign, emphasize fun, good character and responsible citizenship. In this photograph, Langley staff members David S. Miller, technical assistant, Office of Director for Aeronautics; Robert L. Swain, director for Systems Engineering and Operations; and Dr. Douglas L. Dwoyer, chairman of the CFC and chief, Fluid Mechanics Division, assist boys and girls with their homework, which is of utmost importance to the organization's staff. The Boys' Club was started in 1946; girls were first accepted in September 1991. About 200 boys and girls go to the club each day after school to participate in programs on drugs, alcohol, teen pregnancies, attitude and behavior, computers, swimming and various in-door and out-door games, all taught by college-degreed staff members. Consider the needs of this organization when you make your pledge to the Combined Federal Campaign.

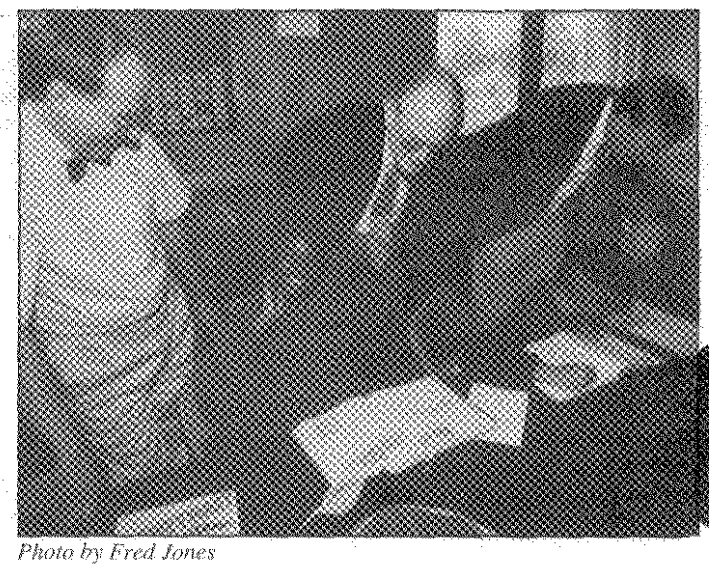


Photo by Fred Jones

To Help People
CFC
Virginia Peninsula

News Briefs

Around the Agency

FROM DANIEL S. GOLDIN, NASA ADMINISTRATOR: National Hispanic Heritage Month, September 15 – October 15, has been designated by President Clinton as a time to recognize the special contributions made by Hispanic Americans to the growth and development of the United States.

As we celebrate Hispanic Heritage Month, we are reminded of the vital involvement of Hispanics in the evolution of our great Nation. Woven into our culture are the seeds of our Hispanic national heritage. Today's Hispanic Americans continue to make significant contributions to the diversity of the American way of life and culture, playing a vital role in America's vision of its future.

The theme for this year's Hispanic Heritage Month has been "Hispanics: Contributing to a Diversified Workforce That Will Change the Future," a theme that NASA considers highly significant and timely.

Note: To celebrate National Hispanic Heritage Month, the Langley Cafeteria has been serving special menu items throughout the month.

NITROGEN ICE DISCOVERED ON PLUTO – Pluto is covered with surface ices that are 98-percent nitrogen, University of Hawaii, NASA and other scientists say. With such abundant nitrogen surface ice, they conclude that Pluto's thin atmosphere must be primarily gaseous nitrogen. This is the first clear detection of nitrogen on Pluto and the first clear indication that the atmosphere is mostly nitrogen gas rather than methane, as previously believed. Carbon monoxide was also detected for the first time. "Rather than methane, as we had thought, it appears that frozen nitrogen dominates the surface," said Dr. Ted Roush who is employed by San Francisco State University and works at Ames Research Center, Mountain View, Calif.

Adams Captures Attention at Division Chiefs Meeting

Armored with a helmet and bullet-proof vest, Dr. Belinda Adams, assistant director, was prepared to face potential objections while reviewing the Center Redesign Team's proposal with Langley's Division Chiefs. The Division Chiefs appreciated the effort to lighten the atmosphere of the discussion and Dr. Adams left the meeting unscathed.

Goldin Announces Chief Scientist

NASA Administrator Daniel Goldin announced that Dr. Frances Anne Cordova, head of the Astronomy and Astrophysics Department at Penn State University, will assume the responsibilities of NASA Chief Scientist effective mid-October.

Cordova will be the administrator's senior scientific advisor. She will also be the principal interface between the administrator and the national and international science communities to ensure that NASA programs are universally regarded as scientifically and technologically well-founded and are appropriate for their intended applications. One of her duties will be to coordinate an integrated strategic plan for all the scientific disciplines across NASA.

Cordova's scientific work has been in the area of observational and experimental astrophysics, multispectral research on X-ray and gamma ray sources and spaceborne instrumentation.

"NASA and the scientific community are indeed fortunate that Dr. Cordova has agreed to assume this important position. She brings to the agency a wealth of professional experience and service," Goldin said.

In Memoriam

Francis S. Wolak

Francis S. Wolak, 77, a Peninsula resident for 54 years, died Thursday, Sept. 16

Wolak retired in 1973 as an engineering technician after 36 years with Langley and NASA's predecessor organization, the National Advisory Committee on Aeronautics (NACA). Wolak was also a 1943 graduate of the NACA Apprentice School.

Walter B. Olstad

Dr. Walter B. Olstad, former chief of Langley's Space Systems Division, died Thursday, Sept. 23. He was 60 years old and had retired one week earlier.

Olstad worked at Langley from 1954 to 1979, serving as Space Systems Division chief from 1976 to 1979. He planned and directed research and development related to space missions and programs, including space shuttle, advanced orbit vehicles and space station concepts.

Olstad left Langley in 1979 to become acting associate administrator for aeronautics and space technology at NASA Headquarters. He served as the associate administrator for management from December 1981 until his retirement from NASA in April 1983.

After 10 years with several Lockheed companies, he retired as a director in the research and development division of Lockheed Missiles and Space Co., Palo Alto, Calif.

Olstad was a Fellow of the American Institute of Aeronautics and Astronautics and a recipient of the NASA Distinguished Service medal. Joseph B. Talbot, acting director for space said, "The Space Directorate lost a great friend and collaborator with the passing of Walt Olstad. He exhibited a combination of technical know-how, strong management skills and a wonderfully pleasing personality; a truly rare blend of skill and talent. His friendship and counsel will be sorely missed. Our condolences and sympathy are extended to his family and many friends. We want them to know how much he was loved and respected by his former co-workers in the Space Directorate."

Posey Selected for Management Fellowship at Penn State

BY KRISTINA MURDEN

Dr. Joe W. Posey

Dr. Joe W. Posey, assistant head, Applied Acoustics Branch, has been selected to participate in the Penn State University Scientist/Engineer as Manager Program.

The fellowship program will explore strategic planning concepts and their impact on the organization and focus on expanding effectiveness in financial planning and control. It will also include participation in a computerized business simulation.

As NASA's technical lead for the new Advanced Subsonic Technology Noise Reduction Program, Posey works with industry, NASA Headquarters and both Lewis and Ames Research Center personnel to develop and monitor NASA/industry research. He works with FAA and Lewis representatives to define an optimal investment strategy for FAA augmentation of the subsonic program. As assistant branch head, Posey provides technical and programmatic guidance and oversight to acoustic research on rotorcraft, commercial transports, and advanced military aircraft.

"I have been engaged in strategic planning of government-sponsored research for the last five years and expect this responsibility to continue and to increase," Posey said. "The skills taught in this course are exactly those needed to enhance my effectiveness in developing and in advocating multi-center, multi-agency, multi-contractor programs. Such coordinated efforts are required to address the national issues with which I am involved."

Posey was selected for the fellowship for his exceptional ability to work with and to lead other scientists, engineers and support personnel in all phases of theoretical, laboratory and field research.

Posey is the winner of several awards and an author of many technical papers. He earned a Ph.D. in mechanical engineering from Massachusetts Institute of Technology. Posey came to Langley in 1973 as a research scientist, served as a research scientist and headed the acoustics branch at Stennis Space Center from 1979-1990, and returned to Langley in 1990 as a senior research scientist.

Langley Fitness Center Events

• **Free Aerobics:** Certified instructors have a variety of classes; all accessories are provided. Exercise 6:15-7:15 a.m. or 11-11:45 a.m., Monday, Wednesday and Friday in the gym.

• **What's in Your Diet?:** Come to the next Brown Bag Seminar Oct. 14 and "Rate Your Diet." with Dr. Babs Carlson, a well-known nutritionist and registered dietitian. It begins at noon in the Cafeteria Executive Dining Room.

• **Stressed Out?:** LFC's newest class, "Stress & Stretch," offers 30-45-minutes of stretching and relaxation at 4:30 p.m., Thursdays in the Cafeteria. Beginners are encouraged to practice proper technique. Loose-fitting clothing preferred; bring two towels. Open to NASA employees and contractors. For more details, call the LFC at ext. 46387.

TOPS

TECHNOLOGY OPPORTUNITIES SHOWCASE

TOPS Open House

Special TOPS Open House for employees Monday, Oct. 18, 1-4 p.m., Hangar, 6 East Taylor St., Building 1244. Refreshments served.

Technology Opportunities Showcase (TOPS)

WHAT: Business expo highlighting NASA's technology as a cornerstone in strengthening U.S. competitiveness in the world marketplace

WHO: Aerospace and non-aerospace industry, large and small firms, minority business, universities

WHEN: October 19-21

WHERE: Over 175 exhibits displayed in the Langley hangar

WHY: • To showcase critical LaRC aerospace technology
• To cultivate and strengthen LaRC-industry partnerships
• To expand shared technology opportunities
• To enhance the technology transfer process

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

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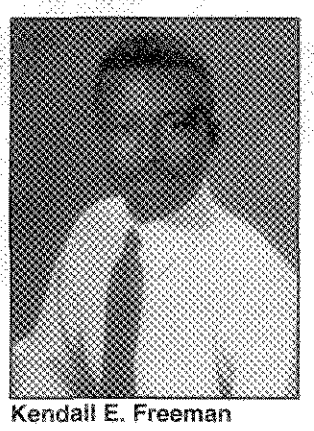
All materials are subject to editing.

Apprentice Class of 1993

Student Speaker Freeman Addresses Graduating Class


Kendall E. Freeman

Kendall E. Freeman, who graduated magna cum laude from the apprentice program, was the Class of 1993 student speaker. His topic, "Overcoming Obstacles" was directed toward everyone. "We all have had to overcome difficulties in our lives to achieve our goals," he said.

Freeman is an electronics technician for the Automation Technology Branch of the Information Systems Division (ISD). He entered Langley through the co-op program at Thomas Nelson Community College (TNCC) and was converted to an apprentice upon completion of his co-op term. He has earned an associate of applied science degree in electronics technology from TNCC.

Freeman began working at Langley in the Electronics Technology Branch and was later transferred to ISD. Currently, he works with the Intro Vehicle Automated Robot Section on the ASAL project. He served in the Air Force for nine years and earned an associate of applied science degree in electronic systems from the Air Force's community college. He is working on his bachelor of science degree in electrical engineering technology at Old Dominion University.

Kilgore Is Keynote Speaker At Apprentice Graduation

Edwin C. Kilgore

Edwin C. Kilgore, president of the Board of Directors of the Virginia Air and Space Center and Hampton Roads History Center and the Old Dominion University Research Foundation, was the speaker for the Engineering Technician Apprentice Program's 1993 graduation ceremony.

He addressed the graduates on what ingredients make Langley the excellent research center it is and what will keep it a great place in the years to come.

Kilgore acts as a consultant for NASA, is a speaker for the NASA Middle Management School at Wallops Flight Facility, Wallops Island, Va., and is senior researcher for the National Academy for Public Administration.

Kilgore is a graduate of Virginia Polytechnic Institute and State University where he received a bachelor of science degree in mechanical engineering. He joined Langley's Engineering Division in 1944 as a developmental design engineer of specialized research equipment and became assistant chief of the Engineering Service Division.

Kilgore served for several years at NASA Headquarters and was appointed deputy associate administrator for Center Operations in 1974, a management office responsible for all NASA field center operations. From 1975 to 1980, he served as director for Management Operations at Langley. Kilgore retired in 1981 as associate administrator for Management Operations at NASA Headquarters.

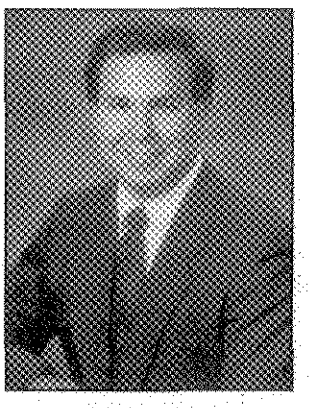
Kilgore played an important role at Langley in the planning, design and resolution of problems for several space projects including Lunar Orbiter, the S-55 Micrometeoroid Satellite, San Macro, Scout, Project FIRE and Echo I and II.

Kilgore received the Roger W. Jones Award for Executive Leadership from American University in 1978. He is a recipient of NASA's Medal of Outstanding Leadership and Distinguished Service Medal and was awarded the Presidential Meritorious Award in 1980. He received the Honorary Group Achievement Award of the Rocket Motor Review Board for his work in helping achieve a record of 97 consecutive successes for solid propellant rocket motors managed by Langley. He was also given a NASA Lunar Orbiter Project Group Achievement Award for Outstanding performance.

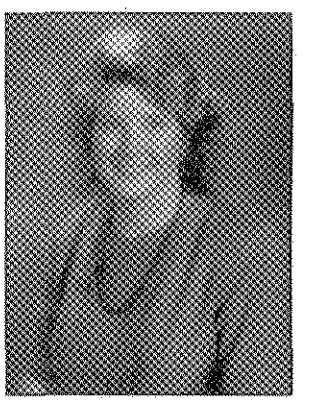
Langley Apprentice Class of 1993

Compiled by Harriett Dismond and Keith L. Woodman

James K. Adams is an electronics technician in the Electronics Packaging and Development Group of the Electronic Technology Branch. He entered Langley through the co-op program at Thomas Nelson Community College where he earned an associate degree in applied science in electronics technology. Adams works to develop printed circuit boards for various flight and ground support projects. Graduating summa cum laude from the apprentice program, he has also received a letter of recognition for his work on miniature LED driver circuitry for the advanced controls test facility. He has served six years in the Naval reserves.

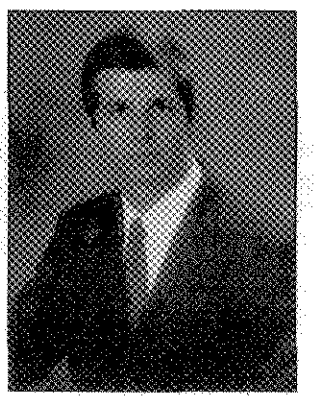


David R. Barnes is a mechanical engineering technician in the Materials Application Branch. He graduated from Thomas Nelson Community College with an associate of applied science degree in mechanical technology. Barnes worked in the Advanced Machine and Development Section throughout his co-op term. He has also worked on the LITE, SUNLITE and CETA projects. Barnes received a Superior Accomplishment Award for his work on the High-Temperature Fiber Optic Microphone and is currently working on a high-temperature fiber optic microphone for the SEMP project.

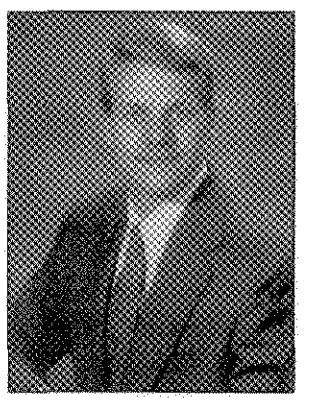


Kimberly L. Benton is an engineering technician in the Laboratory Branch of the Operational Support Division. Benton graduated Tidewater Community College with an associate of applied science degree in drafting and design and is assigned to the Hypersonic Propulsion Branch where she offers support to the Mach 4 and Traverse Jet Tunnels. She was given an award for her exceptional effort in tracing and developing accurate facility drawings and won a Group Achievement Award for work on the GTE Atmospheric Boundary. She graduated from the program magna cum laude. This fall, she will complete an associate of applied science degree in computer science at Thomas Nelson Community College.

Felecia C. Berry is an electrical technician in the Electrical Support Branch. She entered the apprenticeship program as a co-op from Thomas Nelson Community College. Berry is currently a support technician for the Materials Division. She has worked with control systems, rehabilitation, modification and maintenance of tunnels and labs in eight different facilities. Berry has received a Certificate of Outstanding Performance and a group letter for the Electrical Drives and System Operations Section. She has earned as associate of applied science degree in Electronics Technology and is pursuing a bachelor of science degree in Electrical Engineering.

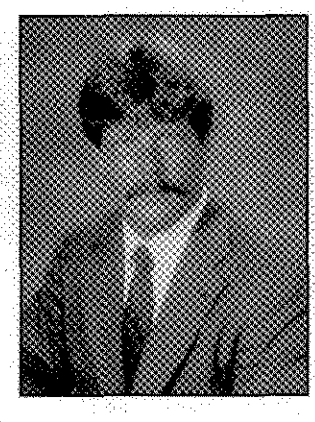


Charles S. Burtnette is a mechanical engineering technician in the Tunnels Operation Branch. Burtnette graduated from Thomas Nelson Community College with an associate in applied science degree in mechanical technology and entered the apprentice program after his co-op term. He has spent most of his Langley career working in the 16-Foot Transonic Tunnel. Burtnette has received several letters of outstanding performance for his work at the 7x10 Hypersonic Transport Tunnel. He served six years in the National Guard.



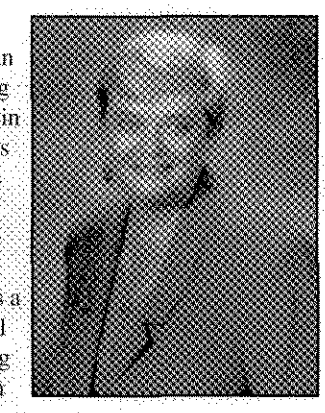
Brian C. Cheshire, who graduated summa cum laude from the apprentice program, entered the program as a co-op from Tidewater Community College. He is currently a mechanical technician with the Laboratories Operation Branch. He has worked at eight facilities during his apprenticeship including testing materials for the National Aero-Space Plane and High-Speed Civil Transport programs. Cheshire is assigned to the structures laboratory performing destructive testing of various metal and composite materials. He has an associate in applied science degree in drafting and design and plans to earn a bachelor's degree in a related field.

Jeffrey J. Conover, an engineering technician in the Tunnels Operation Branch, graduated from Thomas Nelson Community College with an associate degree in mechanical technology and entered the apprentice program after his co-op term. Conover worked on the 8-Foot TPT Tunnel Calibration and several free-flight models. He now works with the 8-Foot High-Temperature Tunnel Shakedown for performance testing of the Conceptual Demonstrator Engine (CDE) for the NASP program. He has received a letter of commendation, Superior Achievement and Suggestion Awards and a Superior Accomplishment Award for work performed on the 8-Foot HTT.

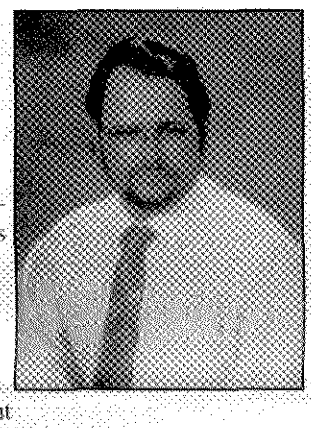


Paul S. Daspit is an engineering technician in the Models and Materials Technology Branch of the Fabrication Division. He entered the program as a co-op, in the Model Shop, from Thomas Nelson Community College. Daspit has worked on several projects including LITE, HALOE and the rehabilitation of all of the 16-foot fan blades. He has received letters of commendation for work performed on a classified model and the LITE project. He has also received a performance award. Daspit earned an associate of applied science degree in Engineering and is graduating from the apprenticeship program magna cum laude.

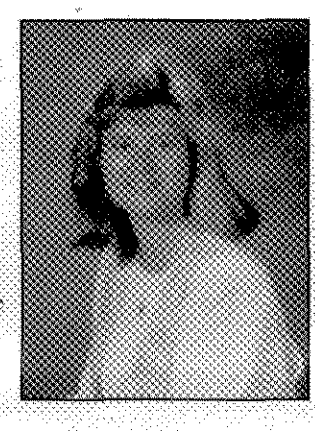
Harriett R. Dismond is an electronic technician who entered the apprenticeship program as a co-op from Thomas Nelson Community College where she earned an associate of applied science degree in electronics technology. She is assigned to the Photo-Optics Instrumentation Section. She has worked on projects in flow visualization, with the retrieval of electronic sensors for LDEF and is the chairperson of the Technician's Advisory Group. Dismond co-authored a NASA Technical Memorandum and has filed a disclosure of invention for the same. She holds a bachelor of science degree in mass communications from Virginia Commonwealth University.



Grace A. Gleason, an engineering technician in the Tunnels Operations Branch, entered the apprentice program as a mechanical engineering co-op from Thomas Nelson Community College (TNCC). Gleason is currently assigned to the Hypersonic Helium Tunnels as an operator in the 3-inch helium tunnel and as an operator-trainee in the 22-inch helium tunnel. She received a Superior Accomplishment Award for exceptional support to research conducted in the 12-foot low speed tunnel. Gleason graduated magna cum laude with an associate of applied science degree in mechanical engineering technology from TNCC and graduates the apprenticeship summa cum laude.

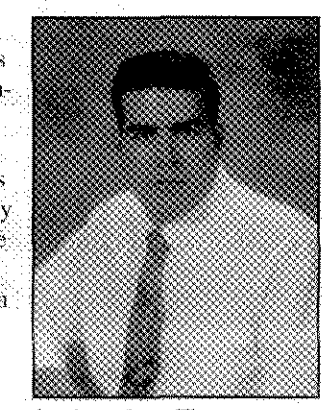


Michael C. Greenwood is an engineering technician designer in the Aeronautical Systems Engineering Branch. He began in the Composites and Models Development Section as a mechanical technology co-op from Thomas Nelson Community College. He now works on the OV-10A wake vortex flight project. Greenwood has received a Superior Accomplishment Award for his work on LITE. Greenwood earned associate degrees in applied science in mechanical technology and in drafting and design, graduating summa cum laude in both, and an applied science degree in Engineering, graduating magna cum laude. He is graduating from the apprentice program with magna cum laude honors.



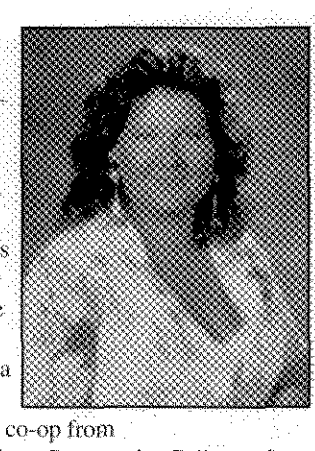
Stella V. Harrison is an aerospace engineering technician in the Aircraft Operation Branch. She entered the program as a co-op from Thomas Nelson Community College and is currently working on the NASA Boeing 737 aircraft for ATOPS. She has worked on several projects including the F-106B Vortex Flap Experiment and the Boeing 737 Wind Shear Airborne Sensors Program for which she has received several awards. Harrison received an associate in applied science in Mechanical Technology, an FAA Airframe and Powerplant Airmans' Certificate, and specialized training on B-737 aircraft and Pratt and Whitney JT8D Engines. She graduates summa cum laude from the program.

George C. Hilton III is a mechanical technician in the Models and Materials Branch. He has supported the RTF Recovery Team, 8-Foot HTT support and the 737 rivet inspection as well as the NDE group and the X-ray lab. He is currently working on the wing instrumentation 737 high-lift project with the polymers group. He holds an associate of applied science degrees in mechanical engineering and drafting and design, and an associate degree in business administration from Thomas Nelson Community College. Hilton has received awards in support of the 8-Foot HTT modification project and from the NTF recovery team and a Suggestion Award for a special tool design. He graduated magna cum laude.

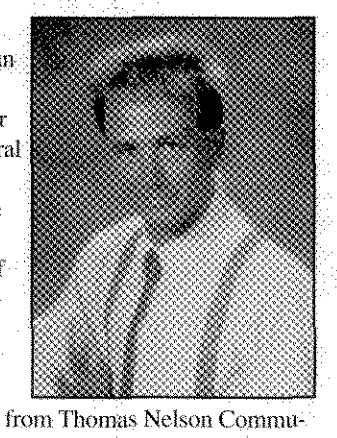


Noel T. Hudgins is an electronics technician in the Electronics Technology Branch. He earned an associate in applied science degree in electronics technology from Thomas Nelson Community College and entered the apprentice program after the completion of his co-op term. He worked on several projects related to NASA's experimental aircraft including Wind Shear Radar Flight Experiment and the High Intensified Radiated Fields project. He is currently working on the fabrication of experimental aircraft equipment. Hudgins has received a Superior Accomplishment award, two Group Achievement Awards and a Team Excellence Award for contributions in support of the Wind Shear Radar Flight Experiment. He graduated from the program cum laude.

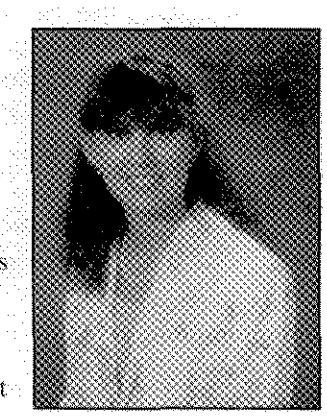
Rhonda Linette James is a mechanical designer technician in the Facility Systems Branch. She entered as a co-op from Elizabeth City State University (ECSU) in North Carolina. James is currently designing systems for several projects. She has received a Superior Accomplishment Award for exceptional technical and operational support to the High Speed Civil Transport Project. She graduated magna cum laude from ECSU with a bachelor of science degree in Industrial Technology.



Catherine S. Jones is an engineering technician in the Metals Applications Technology Branch. She entered the program as a mechanical engineering co-op from Thomas Nelson Community College where she earned an associate of applied science degree. Jones has contributed to many projects including LASE, FFRRV, 8-foot HTT, LITE and ARES. She has worked on the NASA/VSAF ABFM Program, the numeral control engraving and the assembly of components for large space structures. Jones has received letters of commendations for her contributions to the NASA/VSAF- ABFM Program and the Langley 75th Anniversary Celebration.



H. Keith Knight is an electrical designer for the Structural Design Branch. He has an associate of applied science degree in electronics technology from Thomas Nelson Community College. Knight began the apprentice program as a technician in the Operational Support Division and was accepted into the design program and works with facilities engineering. He received a letter of commendation for work done at the 8-Foot HTT, a certificate of outstanding performance and a superior accomplishment award for design and installation of various projects. He graduated from the program magna cum laude. Knight is presently working toward a bachelor's degree in electrical engineering at Old Dominion University.



Lisa J. Massie, is an engineering technician in the Tunnels Operations Branch. She is currently working at the Low Turbulence Pressure Tunnel (TPT). Massie entered the apprentice program through the Growth Opportunity (GO) Program. She is working toward an associate degree in applied science in mechanical technology at Thomas Nelson Community College. Massie has received a Group Achievement Award for the 8-foot TPT shutdown and a Superior Achievement Award for work in the Atmospheric Controlled Combustion Apparatus at the 8-foot High Temperature Tunnel.

Class of 1993

Johnny C. Mau is an electronics technician in the Electronics Technology Branch. He entered Langley through the co-op program at Thomas Nelson Community College (TNCC) and was converted to an apprentice upon completion of his co-op term. He has an associates of applied science degree in electronics technology from TNCC. He is currently supporting several projects including the development of a thin film heat transfer device. Mau is presently attempting to earn his bachelor of science degree in electrical engineering from Old Dominion University.

Paul McClung is an electrical engineering technician in the Electrical Support Branch. McClung graduated from Thomas Nelson Community College with an associate in applied science degree in electronics technology and entered the apprentice program after his coop term. He has assisted in the upgrade and rehabilitation of the 8-Foot High-Temperature Tunnel and the Mach 0.9 wind tunnel. He is currently assigned to the National Transonic Facility where he assists with upgrades and rehabilitation. McClung has received a letter for outstanding performance for work done during the Mach 0.9 rehabilitation. He plans to continue his education in computer programming and graphics.

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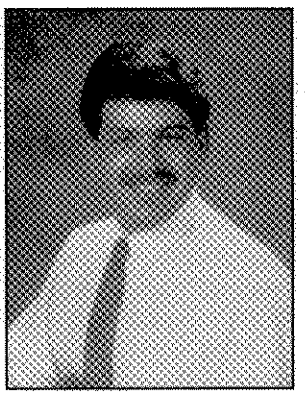
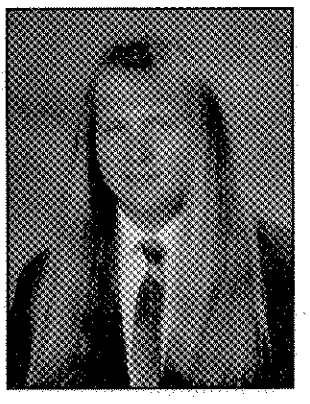
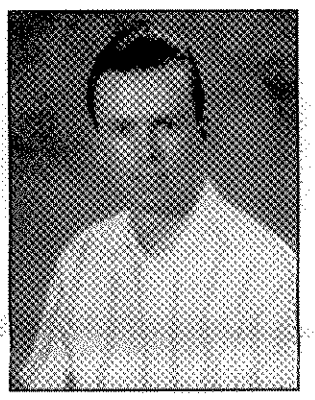


H. Grady McCoy, is a mechanical engineering technician in the Mechanical Support and Utilities Operations Branch. McCoy graduated from Thomas Nelson Community College with an associate in applied science degree in Mechanical Technology and entered the apprentice program after his co-op term. He is currently working in the Fluid Systems Section. McCoy has received a Superior Accomplishment Award for upgrades performed on the 15-inch Mach 6 tunnel and two Group Achievement Awards for mishap recovery at the National Transonic Facility and for aerodynamic/aerothermodynamic assessment of the National Aero-Space Plane.



Shaun B. Reno is a mechanical technician in the Laboratory Operations Branch. He entered the apprenticeship as a co-op from Thomas Nelson Community College (TNCC). Reno has received a Superior Achievement Award in his permanent assignment, the Aircraft Landing Dynamics Facility (ALDF). He has earned an associate of applied science degree in mechanical technology from TNCC.

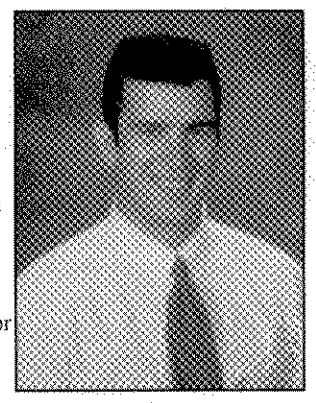


Scott A. Spencer is an electronic technician in the Facility Research Instrumentation Branch. He entered the apprentice program as a co-op student through Thomas Nelson Community College and was converted to an apprentice upon completion of his co-op term. Spencer holds an associate in applied science degree in electronics technology and currently works on various data systems projects. He received a Superior Accomplishment Award for his support of IRD's Open Architecture Data Systems Laboratory.

Harry E. Stotler III is an engineering technician who began at Langley as a mechanical technician co-op from Thomas Nelson Community College. Stotler is currently assigned as a mechanical technician in the High Speed Research Project, Polymeric Materials Branch in the Composite Fabrication Development Laboratory. He rotated through seven facilities in the Laboratories Operation Branch and worked in the work control section of Operations Support Division. Stotler earned an associate of applied science degree in mechanical technology and graduated cum laude from the apprentice program. He is pursuing a bachelor of science degree in computer science at Christopher Newport University.

Jose A. Vega is an electrical engineering technician in the Electrical Support Branch. Vega graduated from Thomas Nelson Community College with an associate in applied science degree in electronics technology and entered the apprentice program after completing his co-op term. He has been involved in many projects including the installation of an ALDF protection system and the preparation of the 8-Foot High Temperature Tunnel for the NASP engine. He is currently involved with the installation of a side wall mount in the NTF tunnel. Vega is now working on his bachelor of science degree in physics at Christopher Newport University.

Richard D. White is a mechanical technician in the Technical Support Section "A." He entered the program as a co-op from Thomas Nelson Community College. White is currently working in the Hypersonic Propulsion Branch supporting projects such as the hypersonic research model and the ethylene model. He worked in the Controls Structures Interaction Program I and received two Certificates of Appreciations for Outstanding Accomplishment for the CSI Evolutionary Model Development Team and for the Space Structures Research Laboratory Development Team. White has earned an associate of applied science in mechanical technology and is graduating cum laude.



Keith L. Woodman graduated magna cum laude from the apprentice program and is an electronic engineering technician for the Spaceflight Electronics Branch. He entered the program through the co-op program at Thomas Nelson Community College where he received an associate of applied science degree in electronics technology from TNCC. Woodman began working at Langley in the Electronics Technology Branch and transferred to the Flight Electronics Division. He has worked on several projects including LITE, Neptune Arrow and SUNLITE and is currently involved with the LASE TI: Sapphire project. Woodman, a Christopher Newport University junior, is working on his bachelor of science degree in microelectric physics.

Kudos to the Members of the Class of 1993

The 1993 Engineering Technician Apprentice Program graduates have received more than 41 awards and citations and they have worked on the following projects:

- **LITE, SUNLITE, CETA, SEMP, Space Structure, NASP, HSCT, HALOE, ASAL**
- **OV-10A Wake Vortex Project ATOPS**
- **F-106B Vortex Flap Experiment**
- **Boeing 737 Wind Shear Airborne Sensors Program**
- **Coherent LIDAR Airborne Wind Shear Sensors Experiment**
- **RTF Recovery Team Wing Instrument 737 High-Lift Project**
- **Wind Shear Radar Flight Experiment**
- **High Intensified Radiated Fields Project**
- **LASE**
- **FFRRV**
- **ARES**
- **NASA/VSAF ABFM Program**
- **Hypersonic Research Model Ethylene Model**
- **ALDF Protection System**
- **Neptune Arrow**

Volunteering Is in Her Blood

BY KIRSTEN WILLIAMS

Whitney Harris has never met the leukemia patient whose life she is preserving. She shuns all recognition of her effort, agreeing to be interviewed only at the insistence of her supervisor, Joe Howell. Just what, then, motivates this Sensor Systems Branch secretary to drive to Richmond every 30 days and donate blood platelets?

"Looking at it like two little needles isn't much compared to someone losing their life," Harris said. "Two little pinches and two hours out of your life is okay if you're saving somebody else's."

Harris, who has been donating platelets since January, is a platelet match for a leukemia patient, meaning their blood type and genetic makeup are similar. Some cancer patients undergoing treatment require transfusions of blood clotting platelets every day, because they cannot manufacture them rapidly enough.

Harris's interest in leukemia and bone marrow treatments led her to platelet donation. "My aunt works with terminally ill children," she said. "She knew I was interested in bone marrow donation, so she sent me an article about a little boy who passed away, that contained addresses and information."

"That's how I physically got involved, just seeing little blurbs on TV," she added. "More people donate blood than do this and I figure that this is worthwhile."

During this advanced form of blood donation called apheresis, blood is removed from one of Harris's arms, and separated in a centrifuge machine. The remaining blood cells are cooled and pumped back into the other arm. The procedure lasts two hours and is repeated every month.

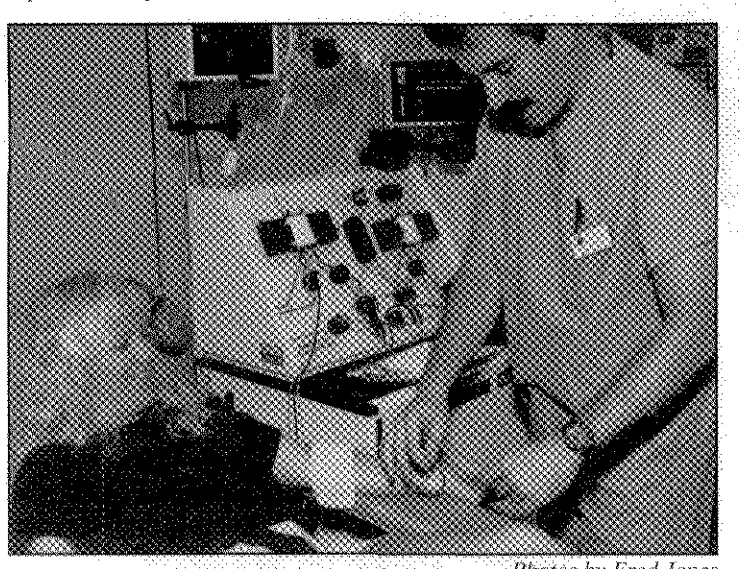
Apheresis guidelines prohibit Harris from meeting or contacting the leukemia patient receiving her platelets. "The only information they can give me, because of policy, is that the person I donate to is female," Harris said. "I don't think I would be able to meet her even if I were to actually go through the bone marrow operation."

Bone marrow donation, which requires a closer genetic match than apheresis, is the next step for Harris. "When I give platelets, I also sign a statement saying that I want to be put in a database for bone marrow testing," she said. "My type is in there, so when it matches a patient, they'll call me." Harris is still waiting for that call.

Harris' volunteer effort has been greeted with a groundswell of support, both at home and at work. Her mother, Anita Harris of York County, drives her to Richmond each time. "I don't like to drive because I might get light-headed after donating," Harris said.

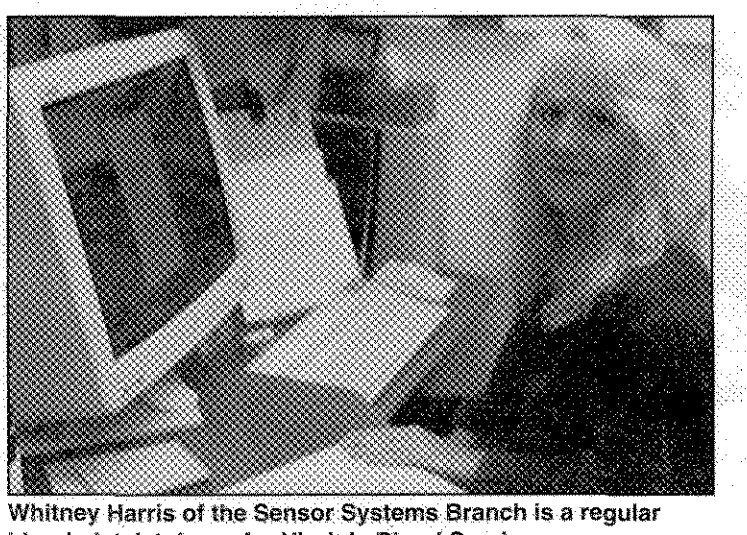
Her supervisor, Joe Howell, head of the Sensor Systems Branch, has created a work environment that allows Harris to take off from work when necessary to donate. "I think it is admirable of her to do this," Howell said. "I don't think a lot of people would have the courage to do this—for her to do this on a volunteer basis is tremendous."

Howell was eager to have Harris recognized for her extraordinary efforts and encouraged her to interview for this article. Harris explained how he finally convinced her, "I didn't want to do it except [Joe] said maybe it would promote business for Virginia Blood Services. " She hopes it will.



Photos by Fred Jones

Each month, Harris is hooked up to machines by an apheresis technician. The machine extracts blood from one arm, separating the blood platelets. The remaining blood cells are cooled and returned to her via a tube in her other arm. The process takes about two hours to complete.



Whitney Harris of the Sensor Systems Branch is a regular blood platelet donor for Virginia Blood Services.

The American Red Cross – People Helping People

To Help People
ARC
Virginia Peninsula

The American Red Cross, part of the International Red Cross movement, is an organization dedicated to improving the quality of human life; to enhancing self-reliance and concern for others; and to helping people avoid, prepare for and cope with emergencies. It does this through services that are governed and directed by volunteers guided by the principles of the International Red Cross: humanity, impartiality, neutrality, independence, voluntary service, unity and universality.

The Largest Volunteer Agency

As the foremost volunteer emergency services organization with 2,800 chapters nationwide, the American Red Cross has 23,000 paid staff members and nearly 1.2-million trained volunteers. These people help others in their communities to prevent and prepare for emergencies as well as deal with them when they arise. In addition, more than four-million American Red Cross volunteer blood donors generously give more than six-million units of blood annually to help others.

Other Red Cross Services

Besides disaster and blood services, the American Red Cross provides Health and Safety Services in the form of blood pressure screening and home health care courses and Transplantation Services through the collection, processing and distribution of tissue products like skin for burn patients and corneas to restore sight. Some of their other programs include AIDS education, military and social services, international services, youth programs and a variety of human service programs like homeless shelters, elder care, food pantries and help for "latchkey" children and their working parents.

The American Red Cross is one of the many human service organizations helped by your donation to the Combined Federal Campaign.

If you know of a co-worker involved in an interesting volunteer activity or a health/human service agency with a pressing need, contact Marny Skora, Community Services officer, at ext. 43315.

Bloodmobile Report

The total number of donors for the September 22 blood drive was 289, three of whom were first-time donors – Robert S. Dembzynski, Emanuel Jones and Vern L. Metcalf. According to the report filed by Langley coordinators Peter J. Edgette and Karen E. Ridlon and Red Cross coordinator Kitti Schatz, the following people are especially recognized for their giving: 15-gallons, David B. Wright Jr.; 12-gallons, P. Gregory McCarthy and Charles G. Marple; 9-gallons, Michael M. Bryan and Warner W. Smith Jr.; 8-gallons, Robert Connell Jr.; 7-gallons, Thomas B. Leffel Jr., Ben Wilson Jr. and Dennis R. Holloway; 6-gallons, Robert L. Myers, Erby C. Harris Jr. and Douglas S. Johnson; 5-gallons, Russell B. Tatum Jr. and Harry L. Harvey; 4-gallons, Charles W. Sibbers and David R. Wilson; 3-gallons, Noel T. Hudgins and Kevin M. Bonilla; and 1-gallon, Thomas A. Slats Jr., Dean R. Eklund Jr. and Stephen F. Harvin. Thank you to all who donated. Please mark your calendars for the next blood drive scheduled for November 24, from 9 a.m. to 3 p.m. at the H.J.E. Reid Conference Center.

High-Tech /Old-Tech

BY RAMKI R. KRISHNAN

My parents, who live in the old country, visited with us last summer. Contrasting the woeful state of our yard with our neighbor's, my Dad decided he would fix our flower beds first. He proposed cutting up sections of timber to define the boundaries of each bed so we went to the hardware store. The manager led us to an exquisite circular-saw. It gleamed seductively and started up with a roar that left me salivating.

I whipped out my credit card but my Dad pulled me aside, asking me if it was prudent to spend the GNP of Sri Lanka on something that I'd use only a handful of times. By the time he was done talking restraint, I stood at the checkout counter holding an inexpensive handsaw that belonged in an Amish museum. I could not figure out who was more crestfallen; me or the manager, who saw his kid's Ivy League college fund materialize and vanish in a short span of time.

The handsaw performed well under my Dad's supervision and we headed back to the store to pick up some paint supplies. The manager gave me a welcoming smile which dimmed noticeably when he spied Dad in tow. He did become animated when he realized I was considering an expensive power painting system. About 20 minutes into his pitch, I realized that Dad had wandered off. We found him contemplating paint brushes that were on sale. Anyway, I paid $3.55 for two paint brushes and ignored the tears that trickled down the manager's cheek as we exited the store.

Weeding was next and Dad pulled weeds while I drove to the store for an armful of high-priced weedkillers. At week's end, Dad's bed was weed-free, while the weed-eaters transmuted my weeds into carnivores. I slunk back into the store, afraid to return bottles of unused weed-killers. The manager's reaction was restrained; I only covered my ears for two miles to drown out his anguished wails.

I was sorry when Dad left, but my reactions were dwarfed by the store manager's who sobbed audibly. To cheer him up, I revealed the major home improvement plans I had for next summer. Looks like I will have to do without Dad's help, though. He told me that an anonymous American benefactor had send him tickets for an all-expense paid summer vacation in Tasmania.

*The **Researcher News** staff invites you to submit stories of interest to all readers. Send them to Mail Stop 146.*

Virginia Air and Space Center News

Three Chisman Memorial Medals Awarded at Hampton Ceremony

Andrew S. Fine, chairman of the Virginia Air and Space Center's Chisman Memorial Committee announced the winners of the Chisman Memorial Medal on Sept. 17 at the preview reception of *WVEC Television 1953-1993 Connecting Hampton Roads with the World.* Three individuals who best characterized Thomas P. Chisman's extraordinary personal, business and community achievements received the center's most prestigious award.

Harroll A. Brauer Jr., former vice president of sales for WVEC Television and first rector of Christopher Newport College, was cited for "his personal, business and community achievements and for his dedication and support of the center and the region's educational institutions."

Head of the Office of External Affairs at NASA Langley Research Center, A. Gary Price, received a medal for "his insight, initiative and professional leadership in the planning, construction and operation of the Virginia Air and Space Center." He was also recognized for his commitment toward regional cooperation in cultural and educational efforts.

The third recipient was the former owner of the *Daily Press*, William R. Van Buren Jr., who received his medal for "his continuing contributions to the center and his lifetime accomplishments as a leader in the region's media industry and arts community."

The Board of Directors of the Virginia Air and Space Center established the Chisman Memorial Medal to honor the center's first president, the late Thomas P. Chisman. Chisman founded WVEC Television and joined with other area leaders to form the Future of Hampton Roads, a group that fosters regional solutions to regional problems. His life was characterized by his outstanding community service and his final years devoted to ensuring that the Virginia Air and Space Center would become one of Hampton Road's premier attractions.

The Chisman Memorial Medal is awarded for contributions in one or more of the following areas: the Virginia Air and Space Center' regional cooperation and development, community culture; education and educational institutions; aerospace history and advancement; and history contributions and development.

October is Archaeology Month

In celebration of Virginia Archaeology Month, the Virginia Air and Space Center will host the following activities during October:

• **Sandbox Archaeology** at 10:30 a.m., Oct. 9 and 16. Sandbox Archaeology is a program for children ages five through 12. It includes a special guided tour, folklore reading, colonial reenactment, an archaeological dig and make-and-take Indian craft. Fee is $4 per child and pre-registration is required.

• **Archaeology Lecture Series**

– October 20: Dina Hill presents "Diving on the Monitor" which will focus on the archaeology done on the Civil War vessel. The presentation is at 7 p.m. and refreshments will be served. Cost is $1.50 for members, $2 for non-members.

– October 27: Tom Higgins and Curt Moyer from the College of William and Mary Center for Archaeological Research present Archaeology of Downtown Hampton at 7 p.m. Refreshments will be served. Cost is $1.50 for members, $2 for non-members.

– October 21 and 28: An Archaeology Cruise from 1 to 4 p. m. Enjoy a lunch and join a special archaeological tour of Fort Wool with professional archaeologists on the Miss Hampton. Fee is $16 per person.

For more information or registration for any of these programs, call the Virginia Air and Space Center at 727-0900, ext. 756.

Virginia Air and Space Center
Hampton Roads History Center

Open House for York County Residents

In celebration of Yorktown Days the Virginia Air and Space Center invites all Yorktown residents to an open house on October 23 and 24.

Yorktown residents must have a Virginia Air and Space Center coupon, good for up to four basic admission tickets to attend the open house. The IMAX film presentations will cost extra. Coupons are available at the Grafton office of Central Fidelity Bank and at the *Daily Press* or *Yorktown Crier.*

For information, call 727-0800 or 1-800-296-0800.

Meet the Crew of the U.S.S. Hampton and See "Hunt for Red October"

October 9 from 1-3 p.m meet the crew of the *U.S.S. Hampton* and see what life is like on a submarine. Visitors can also see a special showing of the film "Hunt for Red October," based on the book written by Tom Clancy, in the small theater at 10:15 a.m., 12:15 p.m. and 3 p.m. Author Tom Clancy will be at the Old Hampton Book Store Oct. 9 for a book signing. Passes, good for Oct. 9 and 10, will be distributed at the signing for free admission to the exhibits with the purchase of an IMAX film ticket. Limited autographed "Hunt for Red October" posters will be on sale in the Wings Over Hampton Gift Store. Visitors to the center can register to win a framed poster on both days. For more information, call the center at 727-0800.

Health Corner

Mammograms To Be Offered

Mammographic exams will be offered on-site October 13, 14, 19, 20, and 21 by Riverside Mammography Services. As in the past, the breast cancer detection van will be located adjacent to the Health Clinic, Building 1149, 10 West Taylor Street.

The cost for the exam is $55. NASA employees, retirees , contractors and family members are eligible. Call 864-3191 for an appointment.

The American Cancer Society recommends annual mammograms for females 50 years of age and older; mammograms every other year for females 40-49 years of age or annually depending on medical findings; and baseline mammograms for females 35-39 years of age. Mammograms for women 34-years old and under may be performed if medical findings are suspicious or if the woman has a strong family history of breast cancer. A family physician's written request is required for those under age 35.

Corrections for SCAN Subscribers

An announcement was recently mailed to all current Selected Current Aerospace Notices (SCAN) subscribers to inform them of upcoming changes in the distribution of these notices. The letter incorrectly states the hardcopy cost to be "$6 per topic per copy." The correct cost is $6 per topic per year. Although there is now a fee for the hardcopy subscription, it is also available in electronic format at no charge. Instructions for electronically accessing the SCAN topics were included in the initial distribution letter.

In order to coordinate the ordering of these subscriptions, your purchase request should be received in Acquisitions no later than October 27. As indicated on the order form, you may order the subscription using a credit card. If you have access to a branch or division credit card, you are encouraged to use it. The subscription deadline was extended to November 1. You must submit a purchase request for hardcopy or it will be discontinued automatically.

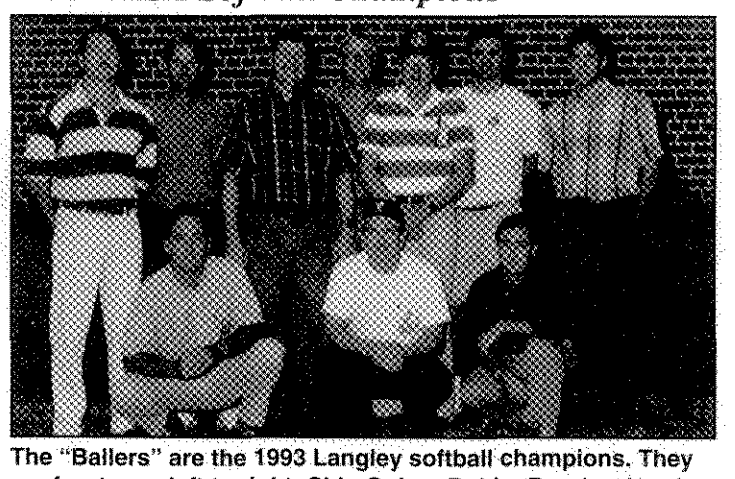
If you have questions in reference to accessing SCAN electronically or if you need further instructions, contact Effie Nicosia, at ext. 42394. For questions regarding the purchase or credit card order, contact Lisa Harvey, at ext. 42444.

Tidewater Classic Guitar Society

The society is celebrating its 10th anniversary with a star-studded five concert Williamsburg season. The season begins at 8 p.m., Saturday, Oct. 16, with the return of David Russell to the Williamsburg regional Library Arts Center, 515 Scotland St., Williamsburg. Russell is considered one of the greatest performers on the classical guitar and should not be missed. A "meet the artist" reception will follow the concert.

Season tickets are available for $27 (student/senior) to $40 (general admission). Individual performance tickets are $7-$10 and are available at the door the evening of the concert or may be purchased at the Theater Connection, Festival Marketplace, 264-J McLaws Circle. For additional information or ticket reservations, call 255-2304 or 566-3304.

1993 NASA Softball Champions



The "Ballers" are the 1993 Langley softball champions. They are front row, left to right, Chip Quinn, Bobby Borchard and Wayne Merson. Back row, left to right, Steve Geissiner, Kevin Laferriere, Lewis Horsley, Frank Herndon, Bob Booth, Rodney Russell and Ken Rock. Not pictured are Paul Derrick, Ray Rhew, Jimmy Adams, scorekeeper Mark Frye and John "Special K" Costulis.

Association of Government Accountants Announces Link as 1993-1994 Chapter President

The Virginia Peninsula Chapter of the Association of Government Accountants is 33-years old and Pat Link of the Commercial Accounting Section is this year's chapter president. She is the third woman to serve as president of the chapter. Langley helped charter the Virginia Peninsula Chapter and other Langley personnel who have served as past presidents include Joseph R. Struhar, chief of the Programs and Resources Division, James H. Ogiba, chief of the Financial Management Division and Jimmy H. Wilson, head of the Accounting Branch.

The Association of Government Accountants, Virginia Peninsula Chapter is proud to welcome Dennis C. Friend as a speaker at the October 14 luncheon. Friend is a certified fraud examiner with the Naval Audit Service, Southeast Region. The area of discussion this meeting will be "The Role of the Certified Fraud Examiner in Strengthening Financial Management." The meeting will be at the Radisson Hotel in downtown Hampton, October 14 at 11:30. Lunch will cost $8. One unit of Continuing Professional Education will be awarded. For information and registration call Pat Link, at ext. 48102.

Happenings

OCTOBERFEST AT THE LAA: Friday, October 22, from 4 to 8 p.m., there will be an Octoberfest sponsored by the Langley Activities Association. Music will be provided by Mark Bradley. For more information, call Andrea Lewis, ext. 46369.

SYMPHONY TICKETS: On sale at the Exchange Shop are tickets for the "Stars of the New York City Ballet," October 13 with the Virginia Symphony at 8 p.m. in Chrysler Hall, Norfolk. Tickets are also on sale for the Masterworks concerts featuring Tzimon Barto performing the Grieg Piano Concerto in A minor, as well as performances of music by Bernstein and Nielsen Symphony No. 5. The concerts are Oct. 16 at 8 p.m. and Oct. 17 at 3 p.m. in Chrysler Hall. Get tickets at the Exchange Shop at a 20-percent discount (plus $.50 for handling), or by calling the Virginia Symphony Ticket Store at 623-2310 or 380-0040. "Anytime" Concert passes are also available at the Virginia Symphony Ticket Store.

CEBAF SCIENCE SERIES: Interactive evening seminars for science-minded students, grades 6-12, are being presented at the CEBAF Center auditorium from 7 to 8 p.m. Dates and topics are: Oct. 19, Differentiation and Cancer; Nov. 16, Finding Subatomic Particles at CEBAF; and Dec. 7, Cloning: The Science Behind Jurassic Park. For more information, call Steve Gagnon, 249-6286.

ATLANTIC CITY, NJ: For a one-night stay Oct. 23-24, $80 per person includes hotel and transportation via ACE Charter Bus Service. For information, call 245-3915, leave a message.

TAMPA BAY FANS: Any fans of the Tampa Bay Buccaneers wanting to get together to talk about the season, please call John Emery at 245-6527.

SHOPPING SPREE: There will be a one-day shopping spree to Reading, Penn., Saturday, Dec. 4; just in time for Christmas. Cost is $35 per person via ACE Charter Bus Service. Call 245-3915, leave message.

LOST: Two books on C Language: "The C Standard," a small book with a white cover and "C Programming," a standard-size paperback textbook (unsure of exact title). Please check your offices and libraries. They should have John McManus' address label on them. If found, contact John McManus, ext. 44037, or Carol Wieseman, 864-2824.

TIDEWATER JAZZ SOCIETY: The society will have a membership meeting Monday, Oct. 18 at 7:30 p.m. at the Silver Dollar Restaurant, 25 Wythe Creek Rd., Hampton. Norfolk State University's Jazz Ensemble will perform and it's free. Space is still available for the TJS "Jazz Jaunt" to Washington, D.C., Nov. 6-7. For more information, call 488-5801 or 890-0959.

FWPM TRAINING DAY: Peninsula's Federal Women's Program Network Training Day will be Oct. 28 from 8 a.m. to 4:30 p.m at the H.J.E. Reid Conference Center. Registration packets will be ready Oct. 15 from your directorate FWPC representative. For information, call Patsy Campbell, ext. 42391.

With This Issue *Researcher News* Has a New Printer and a New Look

With the October 8 issue of the *Researcher News*, the staff is pleased to announce a new printer: Printcraft Press, Inc. Printcraft has been in business in downtown Portsmouth for 153 years. The company is a member of Printing Industries of Virginia and has won numerous awards for their work through the years, according to Printcraft Manager Bruce Golden.

A special thank-you goes to Karen Freidt of the Graphics Section, who made modifications to the *Researcher News* design to conform with the printer's specifications.

FOR SALE: 1975 New Yorker Brougham, 64,000 miles, 440 motor, excellent condition, $800. Call days 878-7881, evenings 851-1549.

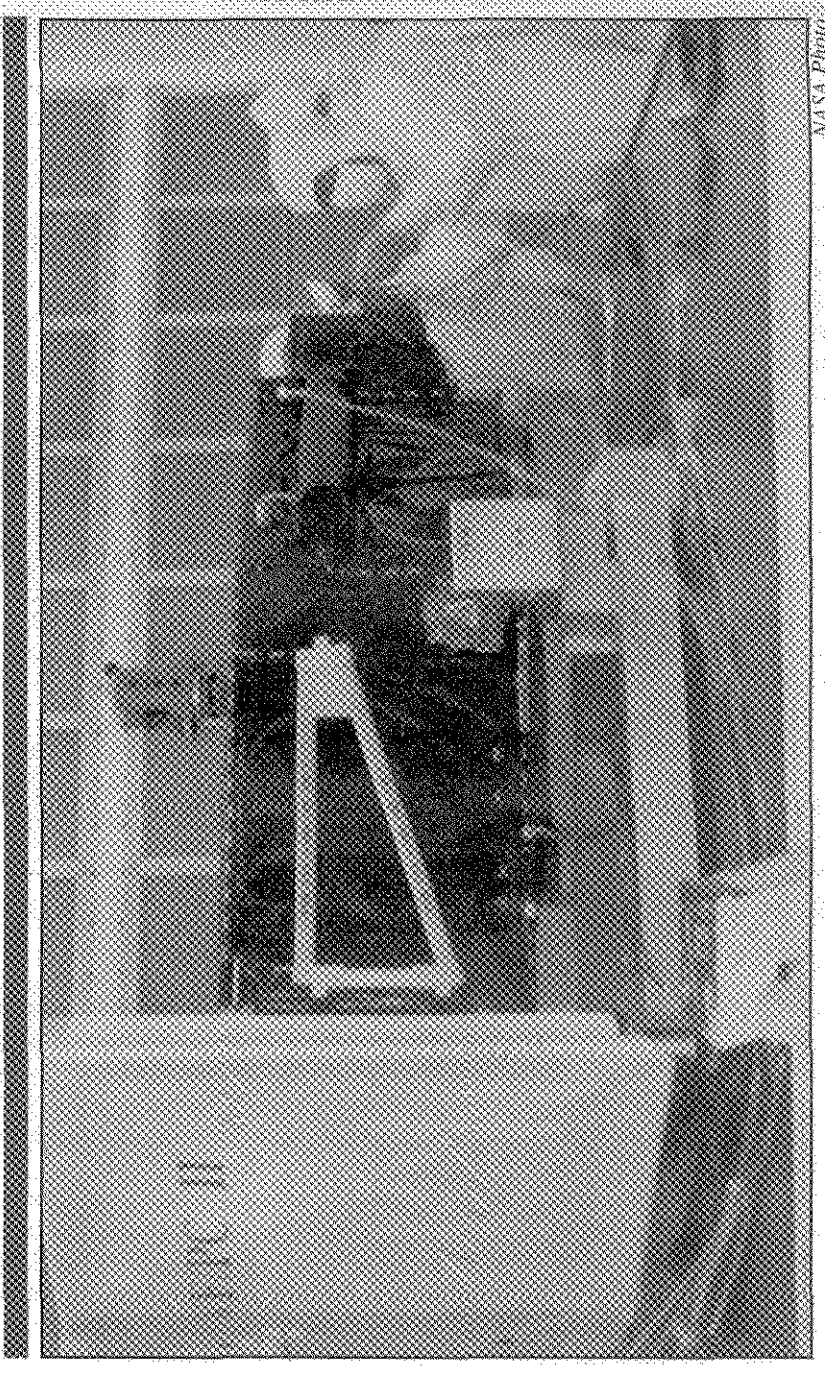
HOUSE FOR SALE: York County, lakefront, 3 BR, 2 bath ranch on 1/2 acre lot, only 13-minutes from NASA. Has greatroom w/cathedral ceilings, skylights, eat-in kitchen, community pool, tennis courts and softball field. Asking $120,000, HOW warranty. Call 867-8223.

KITTENS NEED A HOME: Two eight-week-old male kittens. Both are black with a little white and are litter-trained, examined by vet and are healthy. Call Annette at 930-1070.

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.

The following Langley Research Center employees are approved leave recipients: Monica L. Cooper; Bette L. (Jeanie) Duncan; Cynthia L. Lach; Janice B. Mongesku; Lori Nichols Pennington; Terry L. Shepherd; John P. Stack; Belle L. Wood and Darrell A. Wood; and from other government agencies: Susan B. Burnett, U.S. Government Printing Office, Hampton Regional Printing Procurement Office.



NASA Photo

Workers at Cape Canaveral Air Force Station install a mirror on the Wide Field/Planetary Camera II in preparation for a launch later this year on the first servicing mission of the Hubble Space Telescope (HST). The Wide Field/Planetary Camera II is one of the major replacement components of the HST which was deployed from the Space Shuttle Discovery in 1990. The Space Shuttle Endeavour will carry the replacement components on STS-61, targeted for December.

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Researcher News

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Bi-weekly Employee and Contractor Publication

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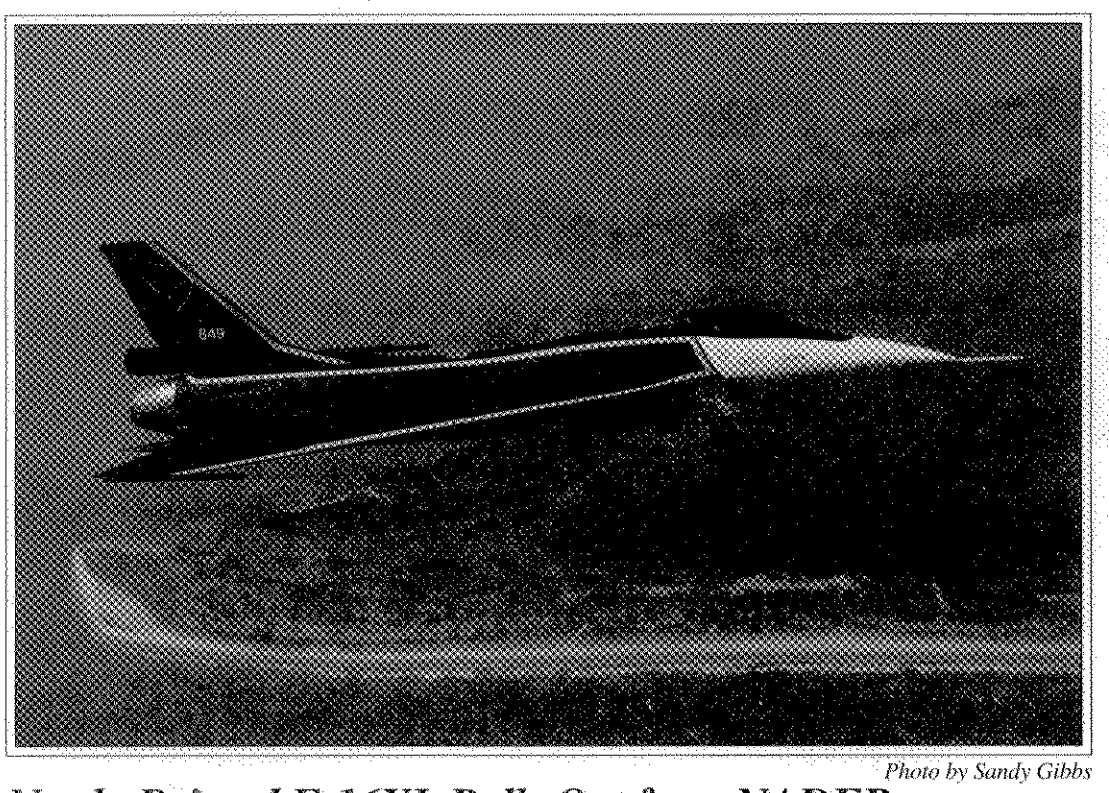


Photo by Sandy Gibbs

Newly-Painted F-16XL Rolls Out from NADEP

The F-16XL is enroute to Langley from the National Aviation Depot where the aircraft was recently repainted in preparation for flight tests. The tests are part of Langley's High-Speed Research program.

NASA's F-16XL was rolled out from the National Aviation Depot (NADEP) October 5 where the high-performance, arrow-wing jet received a custom paint job.

The aircraft's wings and fuselage were painted with a special NASA scheme essential to aerodynamic flow visualization studies. This unique paint pattern was applied to the wings and fuselage to prepare the aircraft for flight tests.

A Langley pilot flew the F-16XL from NADEP back to the Center. The flight tests are aimed at demonstrating a "high-lift" device to improve low-speed aerodynamics and reduce engine noise in airport community areas for the future high-speed civil transport. Both Boeing and McDonnell Douglas are considering building such an aircraft after the turn of the century. As presently planned, it would fly 300 passengers at 1,600 mph across the Pacific Ocean in about four hours.

Langley is NASA's lead center for the agency's High-Speed Research program, aimed at developing technology to help U.S. industry compete in the rapidly expanding trans-oceanic transport market. A U.S. high-speed civil transport is expected to fly in about the year 2010.

Disassembled LDEF Will Go to KSC for Display

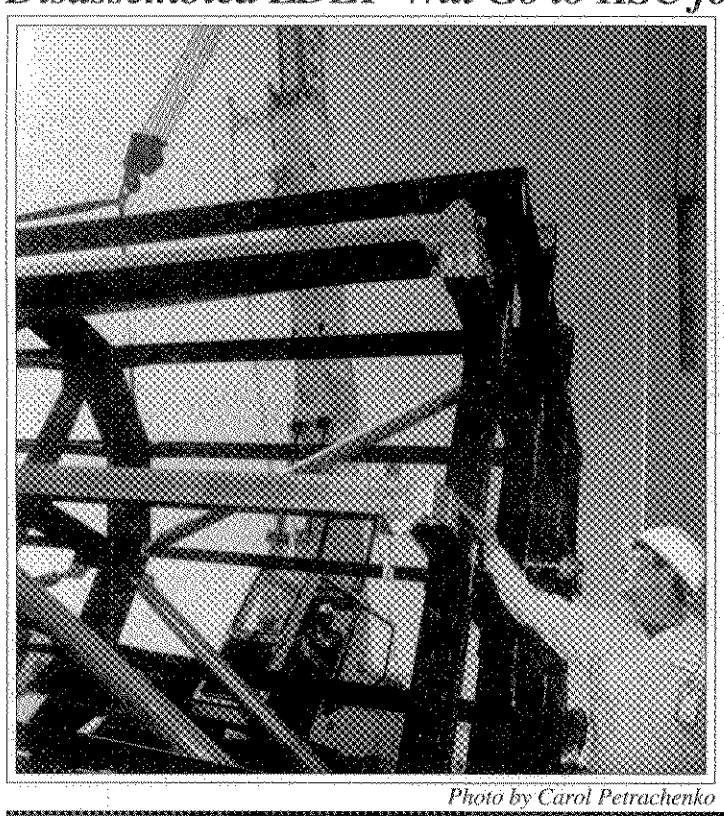


Photo by Carol Petrachenko

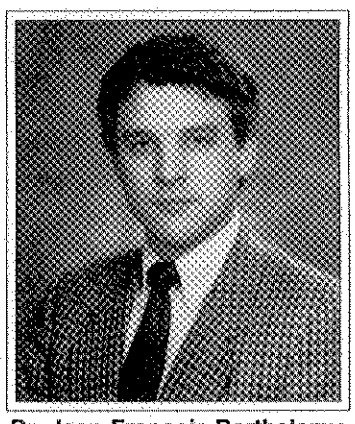
The Long Duration Exposure Facility (LDEF), NASA's satellite that spent 5-1/2 years in space, will leave Langley where it was designed and built. EG&G worker Andy Ligon steadies the structure as a crane moves LDEF from the hangar to Building 1250 where it is being dismantled and crated. It will then be moved to the Kennedy Space Center, where it will eventually be reconstructed and permanently displayed at Spaceport USA, Kennedy's visitor center. LDEF transported 57 experiments into space. The experiments focused on the evolution of galaxies and the impact of radiation on those who might someday live in space. It also carried 13 million tomato seeds as part of one experiment.

It is not too late to show the "Power of Caring." Make a contribution to the CFC.

To Help People
CFC
Virginia Peninsula

Barthelemy Returns from Year in Exchange Program with Boeing

Dr. Jean-Francois M. Barthelemy of the Aeroelastic Analysis and Optimization Branch recently returned from a year in Seattle, Wash., where he took part in an exchange program with Boeing. The exchange program is one component of a memorandum of agreement between Langley and the Boeing Commercial Airplane Group.



Dr. Jean-Francois Barthelemy

The First Exchange

The NASA/Industry Fellowship Program in Aeronautical Research and Technology uses personnel exchange to facilitate technology transfer. Boeing sent Dr. Laurence B. Wigton from its Aero Research activity to work in Langley's Computational Aerodynamics Branch. "It was the first such exchange at ground level," Barthelemy said. "Both organizations wanted to get people working with people."

Barthelemy spent the year performing two main functions. The first was to work as part of a research group at Boeing called a Multidisciplinary Methods Group developing integrated analysis and design methods. Here, his objective was to transfer the experience gained during several years of research at Langley. A group of about 10 Boeing engineers worked with Barthelemy to develop a prototype computer program to demonstrate the benefits of simultaneously optimizing the aerodynamics and structure of a generic transport wing. The group considered variables of twist, camber and thickness as well as conventional structural sizing variables. The wing structure was modeled with a commercial finite element program, while its aerodynamics were modeled with a Langley-developed aerodynamic analysis program. A number of single-cycle redesigns were generated to minimize wing weight or drag.

Begin Tech Transfer

The second function was to establish contacts with potential users of NASA-developed integrated design methodologies and to better understand the design problems they face. He met repeatedly with groups developing the High-Speed Civil Transport and the New Large Airplane, a subsonic transport that will carry 800 passengers.

Barthelemy's wife and three children accompanied him to Seattle for the year. "The whole experience was excellent," he said, "NASA provided wonderful support throughout the year. It all worked out very well for us." Since the Boeing job relates to his positions at Langley both before and after the move, Barthelemy also feels the transfer of his work was "seamless" as well.

Meet Customer Needs

The experience left him impressed by how the Boeing people work at working together. Boeing is a very large company whose business covers the continuum from very basic research through airplane assembly, including all intermediate steps. Each group within the company attempts to identify its suppliers and customers. That way, they ensure that the group's work is clearly understood by its supplier and is responsive to customers needs. Barthelemy is looking forward to directing his research work to solve the critical issues identified and to continue his collaboration with the Boeing engineers and researchers he met while in Seattle. "Boeing practiced research through building people, by identifying their customers and their needs," Barthelemy said. "It will effect how we at Langley develop our research methods in the future."

TOPS
TECHNOLOGY OPPORTUNITIES SHOWCASE
LANGLEY RESEARCH CENTER

News Briefs

Around the Agency

PROTEIN CRYSTAL GROWTH RESEARCH TAKES STEP TOWARD NEW DRUGS

– Results from a spacelab crystal growth experiment flown aboard the space shuttle last summer have brought researchers a step closer to understanding the molecular structure of proteins that will aid scientists in developing more effective disease-fighting, anti-parasitic drugs. During the first United States Microgravity Laboratory (USML-1) mission, shuttle flight STS-50, crystals of Malic Enzyme were produced that showed a dramatic improvement in resolution over Earth-grown crystals. "The USML-1 crystals were of such high quality that they make it possible for researchers to determine the structure of this important protein," said Dr. Lawrence DeLucas of the Center for Macromolecular Crystallography at the University of Alabama in Birmingham. DeLucas flew as payload specialist on USML-1 and is a principal investigator on many of the protein crystal growth experiments.

AIAA Announces Career Program on Video

A video presentation entitled "Developing Career Partnerships" will be shown by the Hampton Roads Section of the American Institute of Aeronautics and Astronautics (AIAA) October 27 from 5-6:15 p.m. at the H.J.E. Reid Conference Center.

The objectives of the program are:

–To introduce a framework for career development discussions between manager and employee.

–To present a five-step process that individuals at any level can use in planning their careers.

–To learn the five multiple career directions that are alternatives to vertical growth.

–To explore the concept of job enrichment as a key to plateauing problems.

The presenter in the video is Dr. Beverly Kaye, president of Beverly Kaye and Associates, Inc., a consulting firm specializing in the design of career development systems. She is also the author of two books and numerous articles.

Dr. Mary Lewis, an employee development specialist at Langley, will be on hand to answer any questions concerning the information contained in the video. Refreshments will be provided. For more information, call Marilyn Ogburn at ext. 41175.

Letters

Thank You and Farewell to Friends

From Patricia Mattingly, Office of Education Programs: "I just wanted to thank my many friends and co-workers who participated in my farewell gatherings before leaving NASA to head for new adventures in Texas with my husband and family. I will miss all of you! I also want to thank those of you who so graciously donated leave on my behalf. What wonderful people to work with at NASA Langley and how you are there when needed!"

In Memoriam

Jimmy Doolittle, Last Chairman of NACA, Dies

Retired General James H. Doolittle, famous World War II aviator and winner of the Medal of Honor, Medal of Freedom and Distinguished Flying Cross, died Monday, Sept. 27, in California at the home of one of his sons.

Doolittle served from 1956-1958 as the last chairman of NACA, the National Advisory Committee for Aeronautics, before it was dissolved to make way for its successor, the National Aeronautics and Space Administration. According to *Model Research*, he "brought unparalleled credentials with him acquired in one of the most remarkable careers in modern American history."

Doolittle earned a doctor of science degree from the Massachusetts Institute of Technology and broke a number of aviation records, among them the first one-day cross-country flight in 1922, the first "blind" instrument flight to show the value of scientific aviation and the world's speed record. Doolittle received every major aviation award for pilots and engineers, had a much-decorated military career and a distinguished business career as a vice president and director of Shell Oil Company.

Former President Bush described him as the "master of the calculated risk" when he conferred the Medal of Freedom on him in 1989, remembering Doolittle's leadership of the first bombing raid on Japan in April 1942. The raid stirred U.S. morale following the Pearl Harbor air raid and warned the Japanese that they were within reach of American air power.

NASA Archive photo

Jimmy Doolittle, the NACA's last chairman, visited Langley in 1928 in his Curtiss Racer, the plane in which he won the 1925 Schneider Trophy Race.

In his role as NACA chairman, Doolittle, with his business savvy and knowledge of aviation, helped usher in an era of new blood and new ideas in technology during the 1950s. NACA began to turn its attention to operating problems of aircraft, like noise reduction and crash research, as well as new directions in nuclear power and rockets and, finally, in space flight technology. NASA was begun on July 29, 1958 and, by the end of 1958, NACA was phased into NASA.

"Any one of his careers would have occupied and fulfilled most men," said Alex Roland, NASA historian and author of *Model Research*, "but Doolittle managed them all and continued in 1956, as he began his chairmanship of NACA, to bring to them a vitality and energy that belied his 60 years." When Doolittle died last month, he was 96. He was buried in Arlington National Cemetery beside his wife of 71 years, Josephine.

Quotable

"The one real object of education is to have a man in the condition of continually asking questions."
— Bishop Mandell Creighton

HALOE Meeting Features International Science Team

BY CRAIG MURDEN

Dr. James M. Russell III

The 23rd gathering of the science team for Langley's Halogen Occultation Experiment (HALOE) was convened here October 6 by principal investigator Dr. James M. Russell III of the Atmospheric Sciences Division. The group, including British and German scientists, heralded the second birthday of the Langley designed and fabricated instrument which is operating aboard the Upper Atmosphere Research Satellite (UARS).

HALOE's primary focus is to analyze the causes of global ozone changes with special attention on the impact of CFCs. Russell reported that among science areas reviewed at the sessions were: (1) natural causes versus CFCs in driving ozone-eating chlorine levels in the Antarctic; (2) the distribution of ozone-threatening chemicals throughout the Southern Hemisphere; (3) the amount of ozone depletion in the Arctic vortex region; and (4) the influence of vertical polar air flows on the cleansing of the ozone layer.

Those present at the HALOE science team meeting included S. Roland Drayson, University of Michigan/Ann Arbor; Adrian F. Tuck, NOAA Aeronomy Laboratory, Boulder, Colo.; John E. Harries, Rutherford Appleton Laboratories, United Kingdom; Jae H. Park, Langley; Christoph Bruhl and Jens Grooss, Max-Planck Institute for Chemistry, Mainz, Germany; Ming Luo, University of California/Irvine; and Larry L. Gordley, GATS, Inc., Hampton, Virginia.

Russell expects continued analyses of HALOE data to progressively unravel the mysteries of ozone chemistry using data from the Langley instrument. Overall, he concluded, "HALOE has broadened our understanding of global ozone chemistry and dynamics, opening the way for a whole new plateau of atmospheric research."

Speakers Bureau Report

The Speakers Bureau reports the following Langley personnel made presentations during September:

Brian Pritchard spoke to the Smithfield Kiwanis Club about "Tech Transfer Related to the Farming Industry."

Bruce Fisher talked about "NASA Storm Hazards and Lightning Research" to the Virginia Department of Mental Health, Retardation and Substance Abuse.

Dr. Tom Shull spoke to the Northside Retired Men's Group about "Space Flight Electronics Instrumentation Development at NASA Langley."

Dr. Joel Levine spoke at the Walnut Hills Baptist Church in Williamsburg, at the College of William and Mary and to the American Society of Mechanical Engineers, Eastern District in Hampton, about "A Planet at Risk."

Martin Waszak spoke at Virginia Polytechnic Institute and State University about "Flutter Suppression System Design."

In Memoriam

Robert C. Spencer

Robert C. Spencer, 86, died Saturday, October 2.

Spencer was a native of Waveland, Indiana, and a Hampton resident for 63 years. He was a physicist at NACA, NASA's predecessor organization, and worked at Langley for 41 years until his retirement in 1971. He was a 1929 graduate of Indiana State University with a degree in physics.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

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Assistant Editor ..... *Susan A Smigielski*
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Photojournalist ..... *Carol Petrachenko*
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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.

TOPS Showcases Langley Technology

Langley's Technology Opportunities Showcase (TOPS) held October 19, 20 and 21 was a concrete example of the Center's commitment to aggressively promote government-industry partnerships.

More than 160 displays featured current Langley technology with commercial product potential as well as past technology transfer success stories. In addition to the multitude of exhibits, the 14- X 22-Foot Subsonic Wind Tunnel was open for tour, the Aircraft Landing Dynamics Facility featured three test runs per day and a narrated tour of the Center rounded out our offerings to our counterparts in industry and academia. The following are examples of some of the exciting TOPS stories:

MEDICAL: TECHNOLOGY FLOWS FROM WIND TUNNEL TO WINDPIPE

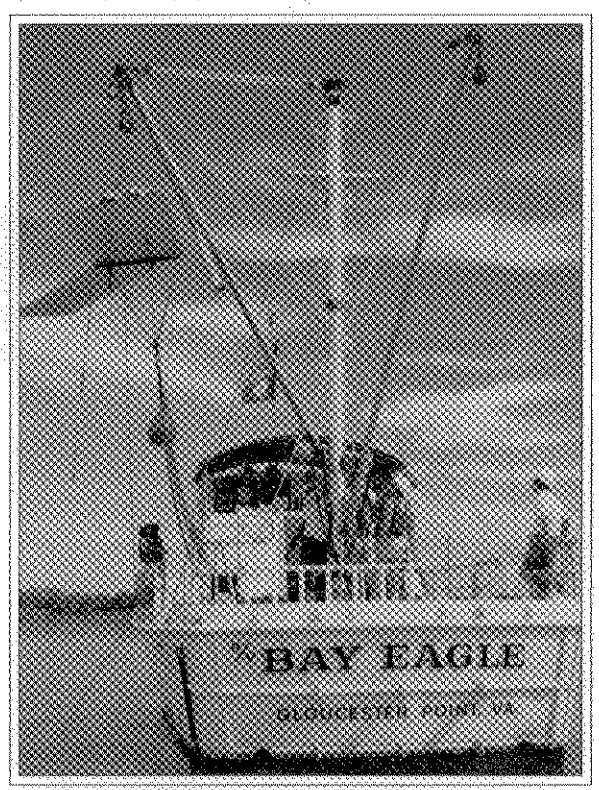
Aerodynamic test techniques, developed by NASA for aerospace research, have been adapted by the Eastern Virginia Medical School and Langley for an improved method of diagnosing and monitoring potentially fatal obstructions in human throats and windpipes. Nonintrustive instruments taped to the outside of a patient's throat can determine the location of an obstruction and the area of windpipe remaining open. This technique replaces observation by fiber-optics placed in the throat which can be frightening to young patients or irritate an already inflamed throat.

BURN-DEPTH TECHNOLOGY RESULTS IN COMMERCIAL PRODUCT

Supra Medical Systems is successfully marketing a device that detects the depth of burn wounds in human skin. To develop the product, the company used technology developed by Langley physicists looking for better ultrasonic detection of small air bubbles and cracks in metals. The device is being marketed to burn wound analysis and treatment centers. Through a Space Act agreement, NASA and the company are also working to further develop ultrasonic instruments for new medical applications.

ENERGY: NASA CLIMATE RESEARCH PROMISES TO BENEFIT SOLAR ENERGY APPLICATIONS

Before the end of this decade, Langley atmospheric scientists expect satellite techniques they recently developed to greatly simplify solar radiation modeling for prospective solar equipment sites. Dependable, high-resolution information about surface radiation is needed to design and develop solar-powered systems which operate efficiently. A series of new satellites to be launched in the next few years will improve resolutions from space-based measurements. Together, these advances – new satellite techniques and higher-resolution satellite instruments – promise to do away with difficult modeling techniques now required to correct data gathered from sparsely distributed ground sites.



ENVIRONMENT: WATER WINGS MIX IT UP FOR MARINE LIFE (photo above).

What NASA is learning about potentially hazardous air flow behind an airplane wing is being used to create life-giving water flow in the Chesapeake Bay. During hot weather, water in the bay forms layers, inhibiting the downward vertical mixing of oxygen from water near the surface and often causes death to marine life near the bottom. To help solve this problem, the College of William & Mary's Virginia Institute of Marine Science and Langley developed the "water wing" — a buoyant wing, moored to the bay bottom, that uses the natural aerodynamic forces of a wing to provide transport and mixing of oxygen.

MATERIALS: LIGHTEST ENGINES MAY SPORT PISTONS OF TOUGH NEW COMPOSITE MATERIAL

Pistons made of a tough, heat-resistant material developed for aerospace applications may prove to be the perfect replacement for aluminum pistons in sport and utility applications from jet skis to lawnmowers. Among its advantages, carbon-carbon composite material has greater strength and stiffness than aluminum and maintains these properties at temperatures of over 2,500-degrees Fahrenheit. Langley researchers believe that an engine using carbon-carbon pistons could operate at higher temperatures without piston failure, be more reliable at high power levels, use leaner fuel-air mixtures for higher fuel economy, lower hydrocarbon emissions and be designed with a lower reciprocating mass.

TOPS

TECHNOLOGY OPPORTUNITIES SHOWCASE

LANGLEY RESEARCH CENTER

COMPUTERS: SOFTWARE TOOL AIDS IN EARLY DESIGN DECISIONS

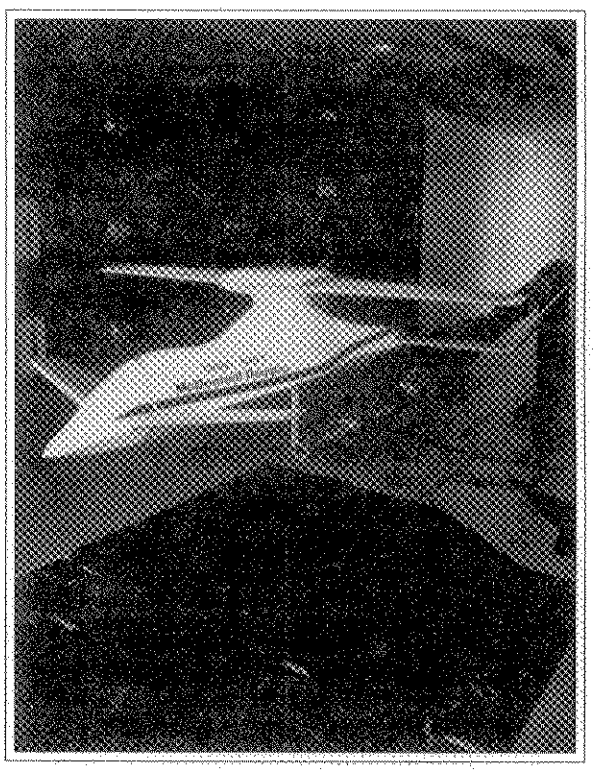
Before the design process can begin — whether it be for a product or for a better way of doing business — managers must visualize design process elements and how they interact in order to plan for the most efficient approach. DeMAID, for Design Manager's Aid for Intelligent Decomposition, is a computer software aid for doing just that. Displayed on a computer monitor in an easy-to-read matrix format, it allows the design manager to see the interactions among the processes, reorder them as needed and determine which processes can be performed in parallel. For instance, DeMAID is excellent for designing an efficient information flow through an organization.

ENGINEERING: COMPUTER-GENERATED FLUID FLOWS ARE NOT JUST FOR AIRPLANES

Supercomputers have made it possible — with methods developed by Langley computer scientists — to perform accurate simulations of the airflow around an entire airplane. The basic methodology, including analysis and design capability, is applicable to general fluid flows and can be applied to non-aerospace uses such as automobiles, submarines, fan cooling, pipe flows and building designs.

AIRCRAFT NOT ONLY SUBJECT STUDIED IN LANGLEY WIND TUNNEL

Although a large variety of aircraft models are tested in the 14- X 22-Foot Subsonic Tunnel, other items have sometimes taken center stage. Among the items tested in this tunnel have been a wheelchair, parachutes, the High-Mobility Multi-Wheeled Vehicle and a scaled exhaust stack. This photo (below) shows the Canard Rotor Wing (CRW) model tested in this facility. The CRW takes off like a helicopter in which its main wings move like rotors and cruises like an airplane when the main wing is fixed.



SAFETY: WIND SHEAR TEAM WORKS TO GIVE PILOTS PRECIOUS EXTRA SECONDS

NASA, the Federal Aviation Administration (FAA) and industry have worked together to take wind shear advance-warning devices from the drawing board to the commercial aviation marketplace in just five years. FAA certification is expected within weeks for several wind shear detection devices ready for market. Many firm orders for production equipment have been placed. Wind shear was a factor in air accidents that caused at least 500 deaths from 1964 to 1985. Shortly thereafter, NASA and the FAA began a joint wind shear research program that included studies of the hazard itself and flight tests of the advance-warning sensors. The sensors provide up to 40 seconds warning of wind shear — sudden, violent changes in wind speed and direction that can endanger aircraft — enough time to avoid or safely fly through the hazard.

NOW EVEN SMALL PLANES CAN BE LIGHTNING-PROTECTED

The first customer deliveries of fiberglass kit planes that make use of new lightning-protection technology are expected within a few weeks. This technology grew out of NASA's Small Business Innovative Research (SBIR) program and resulted in the Glasair III-LP — produced by Stoddard-Hamilton Aircraft, Inc., Arlington, Wash. It is the latest in a family of high-technology, high-performance aircraft sold as kits. The factory-built prototype was used to validate fabrication and protection techniques developed jointly with several other small businesses: Lightning Technologies, Inc., Pittsfield, Mass.; Analytical Services & Materials, Hampton, Va.; and Aero-Space Consultants, Newport News, Va.

NEW TECHNOLOGY TO DETECT AGING AIRCRAFT FLAWS READY FOR COMMERCIALIZATION

A safe, cost-effective method for certifying that aircraft — especially older aircraft — are structurally safe to fly has been developed in NASA Langley's nondestructive evaluation (NDE) labs. Called thermal bond inspection, the technique uses heat and an infrared camera to detect disbonding and corrosion under the aircraft skin. Current inspection techniques require disassembly and removal of aircraft skin. A compact, transportable, field-ready system has been developed and demonstrated on a number of commercial aircraft.

Advanced Degrees Earned in Langley's Graduate Study Program

Twenty-two Langley employees have earned advanced degrees through the Center's Graduate Study Program during fiscal year 1993.

The program, established in the late 1940s, provides Langley scientists, engineers and administrators an opportunity to improve their efficiency in aeronautical and space research and earn advanced degrees while working at the Center.

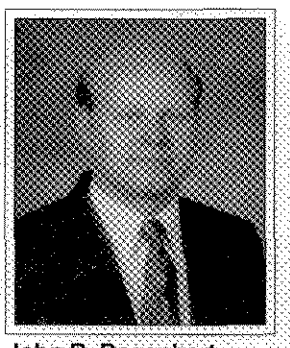
About 1,500 employees have been awarded master of science or doctoral degrees through the program.

Doctoral Degrees

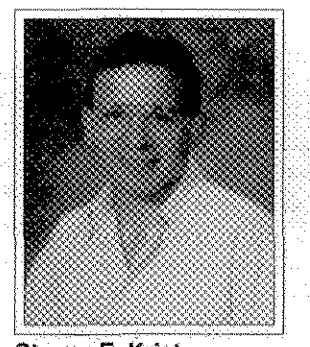
Doctoral degrees have been awarded to the following employees: **John R. Dagenhart**, Fluid Mechanics Division, received a doctor of philosophy in engineering mechanics from Virginia Polytechnic Institute and State University; **William B. Igoe**, Applied Aerodynamics Division, received a doctor of science in aeronautics from the George Washington University; **Steven E. Krist**, Applied Aerodynamics Division, received a doctor of science in fluid mechanics and heat transfer from the George Washington University; **James L. Pittman**, Structural Mechanics Division, received a doctor of science in fluid mechanics and thermal sciences from the George Washington University; and **John Tanner**, Structural Mechanics Division, received a doctor of science in computational structural mechanics from the George Washington University.

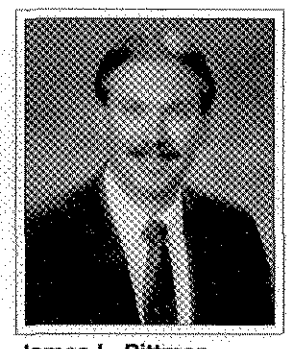
Master's Degrees

Master's degrees were awarded to the following employees: **Phillip L. Brown**, Systems Engineering Division, received a master of science in engineering mechanics from Old Dominion University; **Nancy T. Davis**, Human Resources Management Division, received a master of public administration from Troy State University; **Robert A. Edahl Jr.**, Materials Division, received a master of materials science from the University of Virginia; **Robin C. Elder**, Systems Engineering Division, received a master of science in aeronautical engineering from Purdue University; **K. Scott Ellis**, Flight Electronics Division, received a master of science in optical science from the University of Arizona; **Elka B. Ertur**, Flight Electronics Division, received a master of science in optical science from the University of Arizona; **Eric L. Everton**, Analysis and Computation Division, received a master of science in computer science from the College of William and Mary; **William M. Humphreys**, Instrument Research Division, received a master of science in electrical engineering from Old Dominion University; **Kenneth M. Jones**, Applied Aerodynamics Division, received a master of science in aeronautics from the George Washington University; **Roger A. Lepsch Jr.**, Space Systems Division, received a master of science in astronautics from the George Washington University; **Margaret H. Lamarsh**, Analysis and Computation Division, received a master of science in computer science from the College of William and Mary; **Robert W. Moses**, Systems Engineering Division, received a master of science in mechanical engineering from Stanford University; **John C. Otto**, Fluid Mechanics Division, received a master of science in fluid mechanics from the George Washington University; **Lewis R. Owens Jr.**, Applied Aerodynamics Division, received a master of science in aerospace engineering from the University of Michigan; **Kelly D. Smith**, Systems Engineering Division, received a master of science in engineering mechanics from Stanford University; **Judith J. Watson**, Structural Mechanics Division, received a master of science in engineering mechanics from Old Dominion University; and **Brenton W. Weathered**, Systems Engineering Division, received a master of science in mechanical engineering from the University of Virginia.

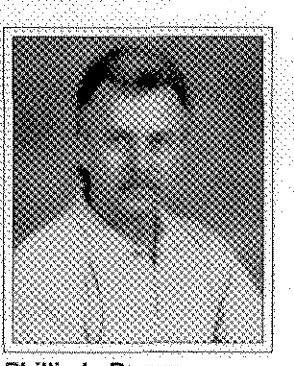

John R. Dagenhart

William B. Igoe

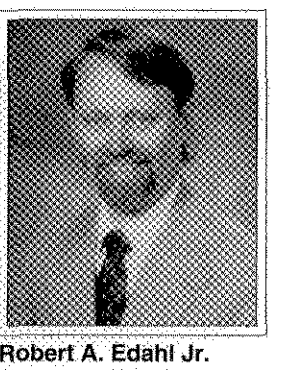

Steven E. Krist

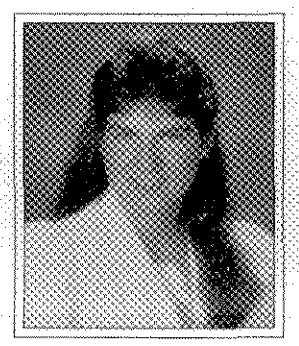

James L. Pittman

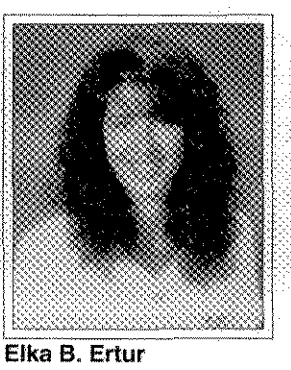
John Tanner

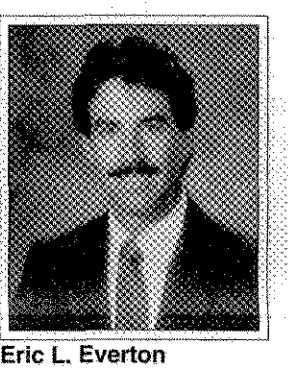

Phillip L. Brown

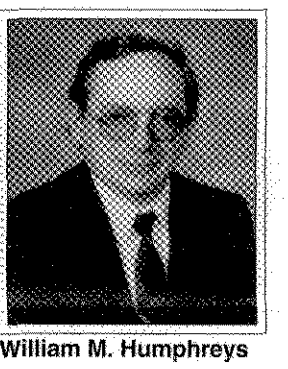
Nancy T. Davis


Robert A. Edahl Jr.

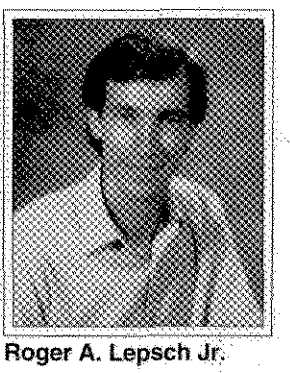

Robin C. Elder


Elka B. Ertur


Eric L. Everton

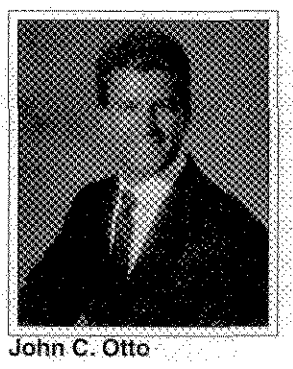

William M. Humphreys

Kenneth M. Jones


Roger A. Lepsch Jr.

Margaret H. Lamarsh

Robert W. Moses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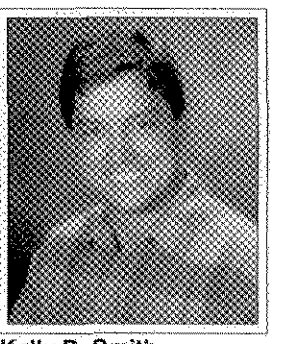
Lewis R. Owens Jr.


Kelly D. Smith

Judith J. Watson

Congratulations

The Employee Development Branch congratulates these individuals for the long hours and hard work necessary to achieve these academic accomplishments. Such work not only brings additional expertise to Langley, but it also enhances the individual's professional growth and career development.

Employees interested in pursuing an advanced degree on a full-time basis or those with questions about the Center's Graduate Study Program should contact the Employee Development Branch at ext. 42594.

Brenton W. Weathered

K. Scott Ellis, no photo available

NASA and the FAA Consider Revised Wind Shear Piloting Procedures

BY H. KEITH HENRY

NASA and the Federal Aviation Administration (FAA) are considering whether pilots should have formal training to interact with new aircraft instruments able to give advance warning of wind shear — sudden changes in wind speed and direction that can endanger aircraft during takeoff and landing.

Training consideration comes after seven years of wind shear studies by NASA and the FAA. The joint effort included research on wind shear hazards, flight tests of three new advance-warning sensors and studies of pilot response to displays generated by data from the devices. The recommendations were reported at a NASA/FAA wind shear meeting in Hampton, late last month.

"Forward-looking wind shear sensors could be available to airlines by the end of this year," said Rosa Oseguera of the Flight Systems Directorate. "We believe the most effective use of the sensors requires an industry standard on displays, a consensus on proper crew procedures for reacting to the information and training to put those procedures into effect."

Wind shear was a factor in air accidents that caused at least 500 deaths from 1964 to 1985. In 1987, the FAA created training aids to help pilots identify the phenomenon and escape if they unexpectedly enter a wind shear.

Oseguera and engineer David Hinton of the Vehicle Operations Research Branch, outlined NASA's suggested displays and pilot actions for use by the FAA, aircraft manufacturers and air carriers. Because the new sensors can give up to 40 seconds warning of a wind shear encounter, the procedures consider how far away the wind shear is and where it is in relation to the plane's flight path.

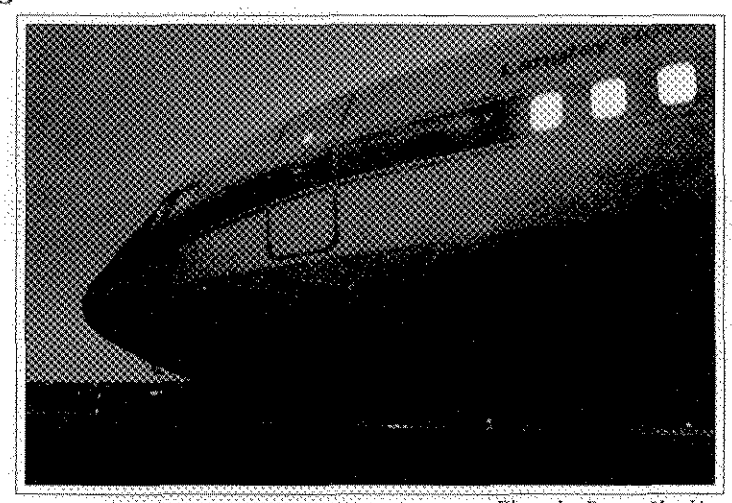


Photo by Peggy Hopkins

Langley's 737 "flying laboratory" flight-tested three advance-warning wind shear sensors: microwave radar in the nose; an infrared sensor (top beam); and a LIDAR (light detecting and ranging) sensor (bottom beam).

If the displays show a wind shear more than three miles away or to the side of the flight path during the approach to the runway, for example, pilots would normally fly around the threat. If a wind shear is on the flight path within three miles, pilots would either execute "missed approach" procedures or fly around it after clearance from air traffic controllers.

A warning of wind shear less than 1.5 miles ahead would dictate a straight-ahead escape, since there might not be enough time to contact controllers, get clearance and turn away from the hazard. The new sensors make this procedure possible because transport aircraft normally have power to fly through wind shear if the pilots know about the hazard in advance and take appropriate actions. Similar rules would apply to wind shear spotted during takeoff, but the distance guidelines are somewhat different.

"Training based on use of the new sensors would let pilots evade wind shears when possible, but also would make sure they can fly through them safely if contact can't be avoided," said Herbert Schlickenmaier, program manager at NASA Headquarters, Washington, D.C. "These procedures would expand on, not replace, current FAA-mandated techniques for avoiding wind shear."

NASA and the FAA began the joint wind shear research program in 1986 to reduce the hazard to transport-type aircraft during takeoff and approach. A NASA Boeing 737 successfully flight-tested three types of forward-looking sensors in 1991 and 1992: microwave radar, Doppler LIDAR (laser radar) and infrared.

"There are a number of tools available to reduce the hazard from the wind shear threat. The ability to detect, locate and quantify this threat and relate it to aircraft performance capability, which these latest devices provide, is a tribute to all the participants in this program," said George C. "Cliff" Hay, FAA airborne wind shear program manager.

These instruments are "predictive" sensors, in contrast to "reactive" sensors that alert pilots only after a plane enters a wind shear. FAA regulations say that reactive systems must be installed by most U.S. airlines by the end of 1993. Continental, Northwest and American Airlines asked for and got exemptions that would let them put predictive sensors in their aircraft by 1995.

Energy Awareness Month Emphasizes Conservation

Each year, the Department of Energy designates October as Energy Awareness Month. The theme of this year's observance, "New Energy Choices for a Changing World," emphasizes the importance of energy conservation in strengthening the national economy and protecting the global environment.

Langley, along with all federal agencies, is required by Executive Order 12759 and the National Energy Conservation Policy Act to reduce energy consumption in buildings by 10 percent by Fiscal Year (FY) 1995 and 20 percent by FY 2000. FY 1985 is used as the base year from which these reductions are measured. In order to meet this goal, employee awareness is an important part of the energy conservation program.

Lighting and air conditioning/heating are the two major areas of energy consumption in our institutional buildings. Adherence to Center standards for space temperatures and light levels is essential in helping to achieve the energy conservation required to meet Langley's goal while providing a comfortable working environment for its employees. Employee diligence in shutting down computers, computer peripherals, lights and other equipment when not needed during the day, and especially at night, will save significant energy.

Langley has had an active, serious energy management program for well over a decade. With this program in place prior to the present-day mandated baseline FY of 1985 and with the integration of high pay-off reductions into the Center's operations, Langley is left with a greater challenge in pursuing new energy-reduction options.

"Most Deserving Student" Honored At Langley Ceremony

BY KRISTINA MURDEN

Lafayette High School student Elizabeth Bradshaw was recognized recently as the "Most Deserving Student" of Thomas Nelson Community College's Regional Summer Math and Science Institute (RSI) in a ceremony at Langley. The freshman received a shadow box containing a shuttle tile for her outstanding performance.

The program is designed to strengthen students' math and science skills and develop their appreciation for technology. Bradshaw showed it works. She came into the program "not really liking math," and left with a new outlook and perfect attendance. "She really put her heart and soul into it. She was skeptical at first but enjoyed it very much," said her father, Richard.

Bradshaw was chosen to be in the program by her middle school teachers, and won the award for her outstanding grades, attitude and participation. The top 10 students from the program of 93 students were selected, and Bradshaw's name was drawn to win the title and the piece of shuttle tile donated by Dr. Michael Card, Chief Scientist. Ed Prior, Langley's Deputy Director for Education, presented the award wishing Bradshaw the best of luck in the future.

RSI is sponsored by Thomas Nelson Community College, NASA Langley, CEBAF, Siemens Automotive, Canon Virginia, Inc., Newport News Shipbuilding and Anheuser-Busch, Inc.

Photo by Fred Jones

"Most Deserving Student" Elizabeth Bradshaw is flanked by Ed Prior, left, and her father, Richard Bradshaw.

Value Engineering Award

In March 1991, Langley established the annual Value Engineering Award to recognize an employee or group for exemplary application of value engineering principles to Langley programs.

Value engineering originated during World War II as an outgrowth of severe material shortages. Industry turned to alternative materials, designs and manufacturing processes as substitutes for pre-war practices. Surprisingly, many of the substitutes functioned as well as or better than the original and often at reduced cost. The General Electric Co., recognizing the value of a continuing search for quality improvement and cost reduction, is credited with institutionalizing the value engineering concept.

NASA's Value Engineering Program was formally adopted in November 1990 and is described in NMI 5184.1B. It is an organized effort directed at analyzing the functions of hardware, software, services and facilities for the purpose of achieving the lowest life cycle cost consistent with required performance, reliability, maintainability, human factors, logistics, quality and safety.

The program addresses both contracted and in-house activities. Since the program began in 1990, all of the Center's procurement contracts, in excess of $100,000, have included value engineering clauses which provide contractors with specific instructions for cost sharing of value engineering savings. In-house, centers have considerable latitude for implementing the program. At Langley, it is believed that the principles of value engineering are not only sound but are a normal part of each employee's job. The annual award is open to all Langley Civil Service employees (individuals and groups) and former employees provided the performance took place while the person(s) was a government employee. If, during this calendar year, you have taken a value engineering action on a program, project or acquisition that resulted in significant savings or added value, you could be a candidate for this year's award.

Letters of nomination should be submitted through line management to the Employee Relations Office, Human Resources Division, Mail Stop 129. The deadline for submitting nominations for the 1993 award is December 31, 1993. The winner will be announced in February 1994. A description of the Value Engineering Award is included in the Langley Incentive Awards Handbook, LHB 3451.1.

Langley Aspires to Meet Baldrige Qualifications

BY SUSAN A. SMIGIELSKI

Keeping in mind the Total Quality Management approach for continual improvement, NASA Administrator Daniel S. Goldin issued a challenge to all centers, NASA headquarters and the Jet Propulsion Laboratory to measure themselves against the criteria set forth in the Malcolm Baldrige National Quality Award. This prestigious award is not open to federal agencies - yet.

The Baldrige Award sets the standard for what continual improvement is all about. It was established in 1988 to help measure progress of total quality culture in American organizations. Every year, two companies in the categories of manufacturing, service and small business are recognized for their continual improvement successes.

While not open to federal agencies, it could be soon. In Vice President Albert Gore's *Report of the National Performance Review*, he recommends the President issue a set of Baldrige Awards for quality in the federal government. This new award will recognize agency and work unit quality initiative and ideas, based on program performance, cost savings, innovation and customer satisfaction. The NASA Agency-wide Quality Steering Committee recommended a semi-annual self-assessment of our continuous improvement program using the criteria of the award prior to eligibility.

Self-Assessment Begins

Langley Center Director Paul Holloway tapped Scott Wagner and Irwin Schauer in May to lead the self-assessment for Langley using the Baldrige Award criteria. The pair is charged with writing and submitting Langley's input that will be combined with the other centers, Jet Propulsion Lab and NASA Headquarters, to have an agency-wide submission made to the Baldrige Award committee. The Langley input for the application is being prepared by seven writing teams composed of all the division chiefs. They are being assisted by members from the SCAN Team, Total Quality Management Facilitator Network and the Institutional Red-Blue Team.

Wagner said both he and Schauer attended a two-day program, led by a Baldrige examiner, to learn how to best benefit from the criteria. They said the Baldrige criteria does not prescribe a system but rather projects clear values, provides elements for a good system and gives a basis for improving systems.

Focusing on Criteria

The overall criteria for the award focuses on seven aspects, each with various point values that together total 1,000. The highest value is "Customer Focus and Satisfaction," which rates almost a third of the total point value. Two other high point items are "Quality and Operational Results" and "Human Resource Development and Management."

The other four management items are "Leadership," "Information and Analysis," "Strategic Quality Planning" and "Management of Process Quality." Within the overall criteria, NASA will be focusing on 28 examination items for the evaluation and writing process.

Evaluation of a current system is always important in continual improvement environment.

Once an agency-wide submission is made, three NASA locations will be selected for a visit by Baldrige committee members.

Schauer said the reason this award was chosen by the Office of Continual Improvement was due to the self-evaluation technique.

"The process of self-evaluation using the Baldrige criteria can lead to important insights, examination and continual organizational development," Schauer said.

"Some organizations admit that they entered the competition just to get the feedback from quality experts that is part of the Baldrige evaluation process," Wagner added.

Boosting Total Quality

In NASA's case, the administrator saw the Baldrige guidelines as a standard for evaluating their own efforts to boost total quality, Wagner said.

In a letter about the Baldrige criteria, Goldin wrote "the focus of the assessment is improvement through fact-finding not fault finding. The information will be used to improve NASA's pending Strategic Plan and Continual Improvement Plan, to adjust goals and objectives of each plan and to share best practices throughout the Agency."

During the evaluation, examiners closely watch for three major indicators of a successful program that include the method the organization uses in attempting world class status, the deployment and its application throughout the organization and the results.

Finalists for the awards are subjected to 350 hours to 400 hours of evaluation by several Baldrige examiners including a site visit.

The group must present their submission to NASA Headquarters by Nov. 1.

Langley's Self-Assessment Data Package Writing Teams

Customer Focus and Satisfaction
John Garren
Joe Chambers
Brian Pritchard
Bill Anderson
Leon Taylor
Cary Spitzer (TQM facilitator)
Marilyn Ogburn (SCAN team member)
Len McMaster (Institutional Red/Blue Team member)

Quality and Operational Results
Don Lawerence
Sully Donadio *for Doug Whipple*
Bill Henderson
Bruce Conway
Bill Kivett

Human Resource Development
Alice Massey
Glenn Taylor
Sammie Joplin
Buena Crawford *for Debbie Watson*
Ron Krodel
Del Croom (SCAN team member and TQM facilitator)

Leadership
Alan Farrow
David Stephens
Bill Piland
Jerry Hansborough
Doug Dwoyer
Chris Rumsey (TQM facilitator)

Information and Analysis
Milt Holt
Fred Moore
Jim Ogiba
Mark Shuart *for John Malone*
Leonard Clark
Joe Mathis

Strategic Quality Planning
Roger Yard
Irving Abel
Roger Breckenridge *for Joe Talbot*
Dick Boykin *for Ralph Muraca*
Darrel Tenney
Christyl Johnson (TQM Facilitator)
Diane Wieting (SCAN team member)

Management of Process Quality
Sam Dollyhigh
Bud Southall
Jon VanCleave
Mo Morin
Dave Caplan
Tom Moul (TQM Facilitator)

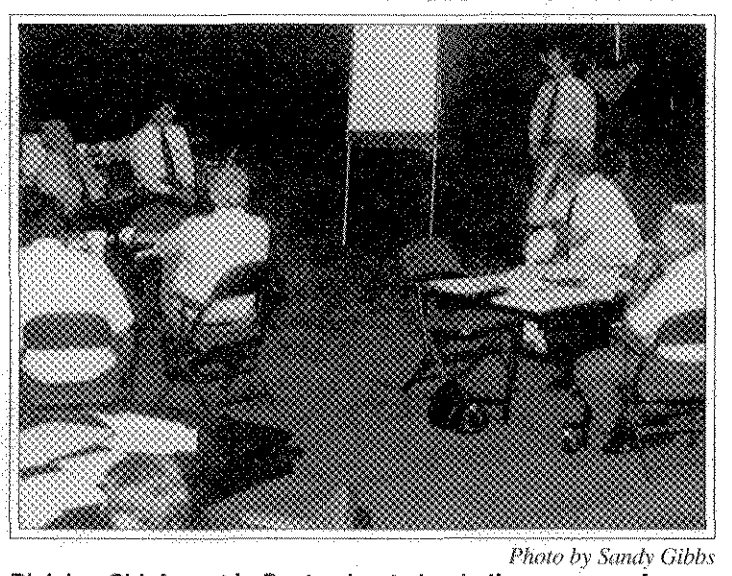


Photo by Sandy Gibbs

Division Chiefs met in September to begin the process of forming writing teams and self-assessment using the criteria of the Malcolm Baldrige National Quality Award.

General Chairman Announces Theme for 31st Space Congress

The theme for the 31st Space Congress has been announced in Cocoa Beach, Fla., by George Faenza, general chairman for the annual event. "Space Exploration and Utilization for the Good of the World" is the guiding theme behind the next congress, scheduled for April 26-29, 1994.

"With this Space Congress, we're reaching out not only to the space professionals, but also to the everyday users of space exploration and experimentation products to better explain the benefits that have been brought to our daily lives," Faenza said. "We will schedule events that will illustrate exploration and utilization and how they improve the world. I'm confident that the content of this Congress will provide significant data to affected parties from around the world."

The Space Congress, sponsored by the Canaveral Council of Technical Societies, is recognized as the nation's oldest gathering of space authorities. The 31st Space Congress will include discussions by several leading names in America's commercial, defense and civil space programs, paper presentations, exhibits by major aerospace contractors, organizations and government agencies as well as an astronaut panel and a science fair.

Improvements in Acquisition Process Are Now Underway

The Acquisition Division (AD) has established a new Purchase Order Administration Group, effective Oct. 4. The responsibilities of the new group are to expedite and administer orders, including, as a minimum, modifications, shipping documents, rejections, claims research. Thanks to the Management Support Division (MSD), the group will be co-located in the Shipping and Receiving Facility, Building 1206, about Nov. 1, and will provide one focal point for all administrative customer services.

The purchase order files will be maintained in that facility to eliminate paperwork between AD and MSD and to help respond to customer inquiries more efficiently. A help desk will be available at ext. 42399.

Members of the group are Laurie Cole, Mary Corbitt, Jane Druen, Mike Stubbs and Joann Harris. As a new and integral part of the Purchase and ADP Contracts Branch, the group will report directly to Sandra Ray, branch head. Metrics for determining customer satisfaction and process improvement will be developed.

Lecture on Heart Disease in Women

Heart disease in women has recently become a popular media topic. It had been previously thought that women were relatively immune to heart disease. Consequently, men had received all of the attention for this illness.

However, immediately following menopause, a women's risk of heart disease rises dramatically.

Patricia Nahormek, M.D., a cardiologist with extensive experience in the field, will present a lecture entitled "Women and Heart Disease," Nov. 2 at 2 p.m. at the H.J.E. Reid Conference Center. Different causes in the development of this condition will be emphasized.

GWU Races Solar Car in Five-Day Sunrayce

BY JASON NEWLIN

What do you think of when you hear "solar-powered?" A cheap calculator, perhaps, or possibly a homeowner trimming a few dollars from the gas bill? Now, what do you think of when you hear "race car?" Engine booming, tires squealing and exhaust billowing? This summer, students at the George Washington University (GWU) combined "solar-powered" and "race car" successfully. They also took fourth place at the DOE/SAE/GMAC-sponsored Sunrayce '93.

The GWU team was helped by Bob Weston from Langley's Computational Aerodynamics Branch who worked with students on the VSAERO grid generation of the solar car, as well as Frank Quinto and Ed Waggoner of the Subsonic Aerodynamics Branch.

The race course took the car from Dallas, Texas, to Minneapolis, Minn., in a five-day stage-type race, June 20-26. The GWU team received a first place award for engineering achievement in the area of solar array design and construction and was honored with a plaque for running the safest race operations.

Starting with a blank sheet of paper, mechanical and electrical engineering students created a vehicle using state-of-the-art materials and techniques. Over the course of two years, these students obtained valuable experience that will prove to be an advantage in today's economy.

What about the car? The solar car itself is an engineering wonder; it uses a carbon-fiber/foam composite monocoque chassis with a Kevlar/Nomex composite outer body. The vehicle is a three-wheel design with the single wheel in the rear. The front is suspended in a dual A-arm configuration by air shocks and the rear in a trailing arm configuration by a standard, although high-tech, spring-over-shock system.

Due to aerodynamic considerations, the car is driven from a fully reclined position, similar to a luge sled. The operator drives the vehicle with help from the on-board computer which monitors speed, power draw, power being received from the array, incline, heading, voltages of batteries and array and other useful information. The heart of the car is a computer-controlled 10-hp DC brushless motor connected to the rear wheel by a switchable geared timing belt.

Because of budgetary and time constraints, the students tried to use existing technology.

The car makes use of high-performance go-cart disk brake calipers, redundant master cylinders and braided steel brake lines. To minimize rolling resistance, special 17-1/2-inch bicycle-style tires were used.

The real challenge was taking this 800-lb. vehicle (driver and 350-lbs. of batteries included) and reaching speeds of 60-mph on 1,000-watts of power — enough to run a hairdryer and a couple of light bulbs. Although the car recharges as it drives, supplemental energy must come from sources such as evening charging and regenerative braking — a system that uses the momentum of the car to drive the motor, making it essentially a generator.

The students' next tasks are fundraising and readying the car for the World Solar Challenge, a race across the Australian Outback later this month. Business students, who are estimating costs and handling logistics for this project, must assist the engineering students in raising $250, 000 for the trip. According to project leader Kevin Groot, "It's a lot of work, but in the end, it'll be worth it."

Jason Newlin is an undergraduate student of mechanical engineering at the George Washington University.

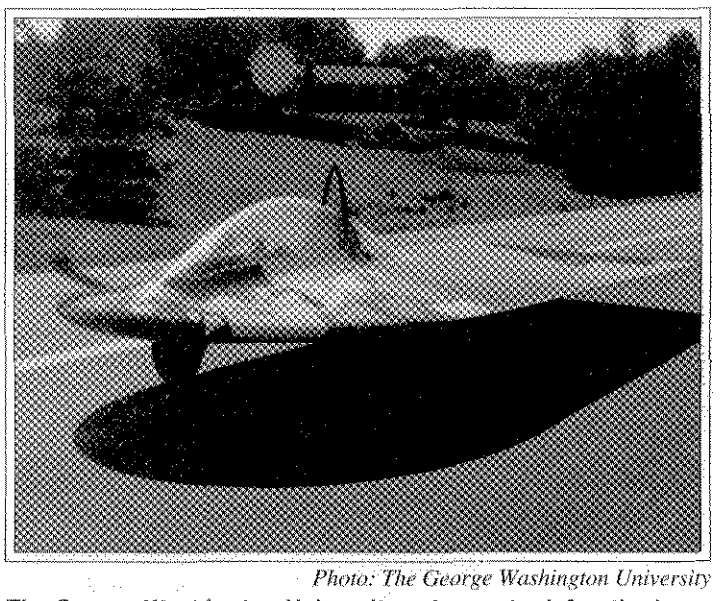


Photo: The George Washington University

The George Washington University solar car took fourth place in the 1993 Sunrayce and also received a first place award for engineering achievement.

FWPC Welcomes New Representatives

The Federal Women's Program Committee (FWPC) welcomed new representatives at their monthly meeting Sept. 22. The head of the Office of Equal Opportunity Programs, Burnett W. Peters Jr., presented outgoing representatives with a plaque and a letter of appreciation signed by the Center's deputy director. Some of these employees had served on the FWPC since its inception in 1974, under the leadership of Alice Massey, who was the Center's first full-time FWP manager. Since 1994 marks the FWPC's 20th Anniversary, the "alumni" will be planning a commemorative program.

Top photo: Outgoing FWPC representatives are, bottom row, left to right, Alberta Reid, Vernelle Robinson, Linda Rowell and Donna Speller; top row, left to right, Sandra Chaney, Sharon Fairheart, Pamela Verniel, Judy Cottle, June Howell and Linda Sutherland. Not pictured is Sharon Crockett. The 1994-95 FWPC members are, first row, left to right, Sherry Sullivan, Carolyn Casey, Loutricia Johnson, Beverly Thomas-Burse, Peggy Howard and E. Marie Ashe. In the second row are Fabiola Martin, Jean Clough, Amy Radford and Kendall Sherman; third row, Nanette Lloyd, Vernet Boone, Lois Breen, Laura Eure, Rosemary Baize and Tom Mitchell. Officers for the new year are: Rosemary Baize, chair; Vernet Boone, vice-chair; and Loutricia Johnson, secretary. Not pictured are David Beals, Carrie Walker, Cheryl Tyler, Donna Gibbs, Debbie Martinez, Dr. Mary Ann Smith, Julie Williams-Byrd, Lisa Yu, Sandra Zumbrun, Diane Forrest and Patsy Campbell.

Notice: Leave Scheduling and Exigencies Of the Public Business

This is to remind you that the current leave year ends January 8, 1994, 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 employee should work together to reschedule the leave to the satisfaction of the employee.

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 (November 28,1993). A properly executed Standard Form (SF) 71, "Application for Leave" satisfies this requirement.

A key element in the leave restoration process is line management's determination that a sufficiently critical problem or situation exists to declare an exigency. Such exigencies should be rare events having significant program cost or schedule impact or involving safety considerations. Poor planning on the part of employees and supervisors is not acceptable.

Except for true emergency situations after November 28, 1993, approval of an exigency of the public business must be obtained prior to canceling or denying leave in the "use or lose" category. The request for exigency must be processed through organizational channels to directorate level and must include the following: a complete description of the exigency; the reason why the employee cannot use scheduled annual leave and the leave cannot be rescheduled prior to the end of the leave year; the proposed beginning and ending dates of the exigency; and a completed SF 71 for each employee affected by the exigency.

"Use or lose" annual leave which has been scheduled by November 28, 1993, may be denied or canceled only if the Deciding Official (director for Management Operations or the Center's deputy director for the employees of the Management Operations Directorate) determines that an exigency of the public business of major importance exists. For more information, consult LHB 3630.3, "Hours of Duty, Absence, Leave, Overtime and Time and Attendance (T&A) Reports," pages 111-115. Exigency requests should be addressed to the Deciding Official and routed through appropriate organizational channels to the Employee Relations Office, Mail Stop 129.

"Use or lose" leave that cannot be used by the end of the leave year may be donated to approved leave recipients under 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. If you have any questions concerning the exigency process or the Voluntary Leave Transfer program, call Lisa Allen at ext. 42610.

Happenings

LAFB: The Langley Chapter of the Air Force Association is sponsoring an 8-K, 5-K and one-mile fun run Sat., Oct. 23 at Langley Air Force Base. Called the "Victory Run," the one-mile run begins at 9 a.m., the 5-K race starts at 9:30 a.m. and the 8-K at 10:30 a.m. Prizes are awarded in age and gender categories. Races are open to the public. For information, call Steve Pivin at 764-2470.

LANGLEY TENNIS CLUB AWARDS PARTY: The Langley Tennis Club has scheduled their Awards Tennis Party for Friday evening, Nov. 5, 7 p.m. to midnight at Center Court. Members and guests are welcome to attend. Court space is limited to the first 48 players to register by the Oct. 29 deadline. Please contact Tom Yager at ext. 41304 for information and registration form.

FREE AEROBICS: Join Langley Fitness Center's 6:15-7:15 a.m. or 11-11:15 a.m. aerobic classes and workout with low-impact, bench or interval training; all accessories provided. Mon., Wed. and Fri. in the gym for NASA employees, contractors and dependents. Call ext. 46387 for details.

HALLOWEEN HAUNTING: There will be a "Halloween Haunting" Party Oct. 29 from 4 to 8 p.m. at the H.J.E. Reid Conference Center sponsored by the Langley Activities Association. Music will be provided by the Foxfire Band and there is a $1 cover charge. For information, call Andrea Lewis at ext. 46369.

HALLOWEEN PARTY: Kids can enjoy safe trick-or-treating at the Virginia Air and Space Center party Oct. 30 from 5-7 p.m. They'll meet the pirates of Hampton, make crafts, have a costume contest (with prizes), go on a scavenger hunt and get treats. Cost is $2 for non-members, $1 for members. Children must be with an adult. For information, call 727-0900, ext. 756.

NASA SKI WEEK: Only four spots left for the Langley contingent to the 3rd annual ski trip to Aspen, Colo. Cost is $1,050 per person and all NASA employees, contractors and retirees, friends and family are invited. Call Michael Schooley, ext. 48524 or 874-2736, for additional information.

BUSINESS INFORMATION SEMINAR: A Business Incubator Information Seminar providing information for potential and growing businesses as well as home-based businesses, will take place Thurs., Nov. 4, at 7 p.m. in the Williamsburg Regional Library Auditorium. There will be presentations by the Industrial Development Authority and the Small Business Development Center followed by a question-and-answer session. For more information, call 253-6645.

VPPSA ANNOUNCEMENT: The next meeting of the Citizens Advisory Board for the Virginia Peninsula Public Service Authority (VPPSA) is Monday, Oct. 25 at 4 p.m. in the York County Public Library, Yorktown. For information, call 728-2062 or 1-800-683-0922.

SHOPPING SPREE: One day shopping spree to Reading, Penn., Saturday, Dec. 4, just in time for Christmas. The cost is $35 per person, transportation included via ACE Charter Bus Service. Call 245-3915, leave message.

WIA MEETING: John Mannarino, manager of Public Programs for the Virginia Air and Space Center will be the luncheon speaker for the Hampton Roads Section of Women in Aerospace business meeting Tuesday, Nov. 2, from 12:30 to 1:30 p.m. in the Executive Dining Room of Building 1213. Mannarino's presentation will include an overview of the Aviation and Aerospace Education Programs sponsored by the Virginia Air and Space Center. For more information, call Donna Roper at 864-2505.

FOR SALE: Crib in perfect condition, cherry brown, four levels, Sears name brand. Cost $160, will sell for $80. Also selling car seat, $20; stroller, $30. Call 766-2229.

RING FOR SALE: Engagement ring for sale, total weight .87 carat. Appraised at $3,000, asking $1,800. Call after 5 p.m., 887-2597.

HOUSE FOR SALE: Lakefront living and super schools! This 3 BR/2 bath rancher sits on 1/2-acre in S. York Co., has cathedral ceilings, skylights, fireplace, community pool and tennis courts; asking $120,000 w/VA assumable option. Call 867-8223 for appointment.

HEALTHY HALLOWEEN TREATS! Enjoy treats Thurs., Oct. 28, 5-6 p.m.; Sat., Oct. 30, 9:30-10:30 a.m. at LAA Gym. All are welcome to join the bench/low-impact circuit classes with Halloween theme. Health foods will be given out after class. For more information, call ext. 42295.

STRESSED OUT?: Langley Fitness Center's Stress & Stretch, offers 30-45 min. of stretching and relaxation at 4:30 p.m. Thursdays in the cafeteria. Beginners can practice proper technique and advance slowly. Smooth, controlled movements are learned. Increase flexibility and relieve stiffness and low back pain. Wear loose-fitting clothes, bring two towels. Call ext. 46387 for details.

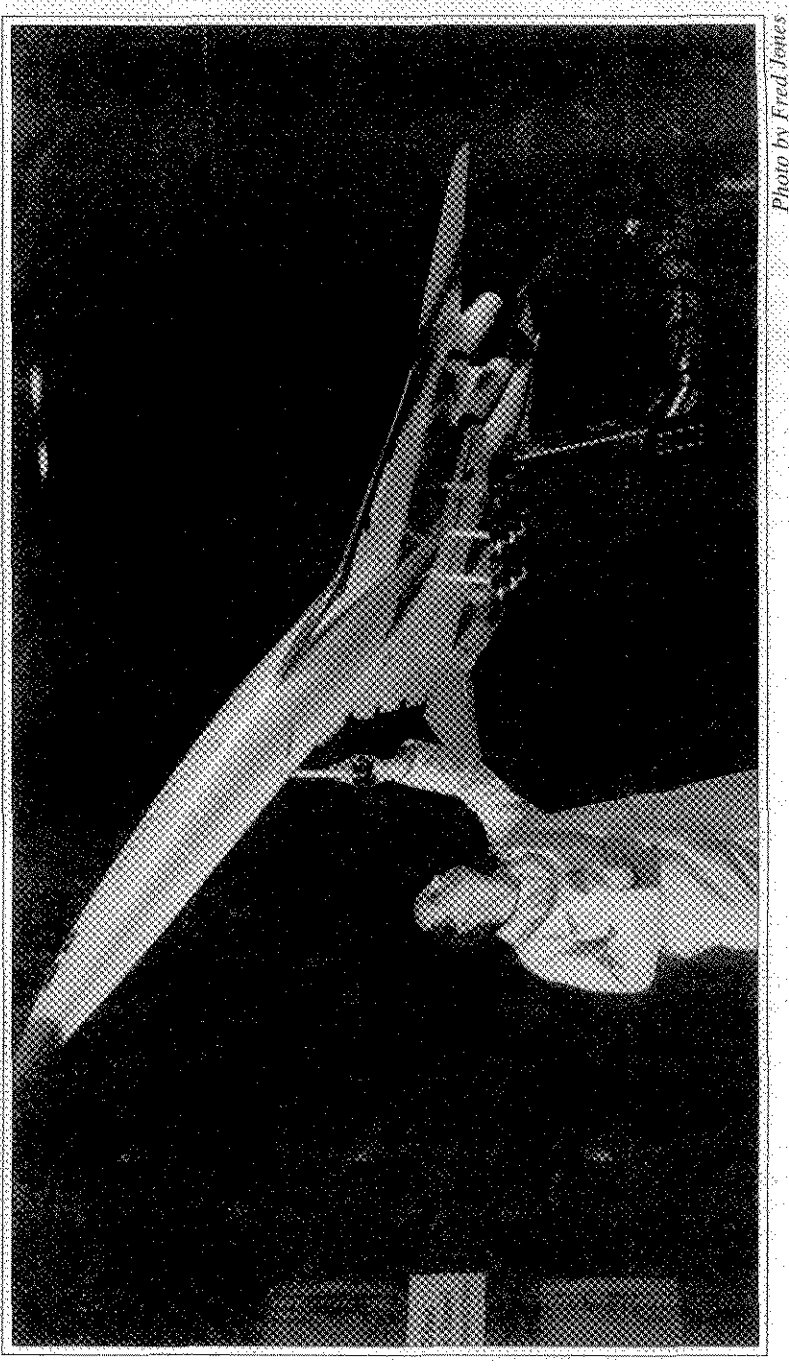


Photo by Fred Jones

Langley technician Mike Ramsey inspects a high-speed civil transport model between wind tunnel tests. Aerodynamic tests of the 19-foot (5.7 m) model in the 14- by 22-Foot Subsonic Tunnel simulate takeoff and landing of a 300-passenger commercial transport that would cruise at Mach 2.4 (approx. 1,600 mph/2,560 kph).

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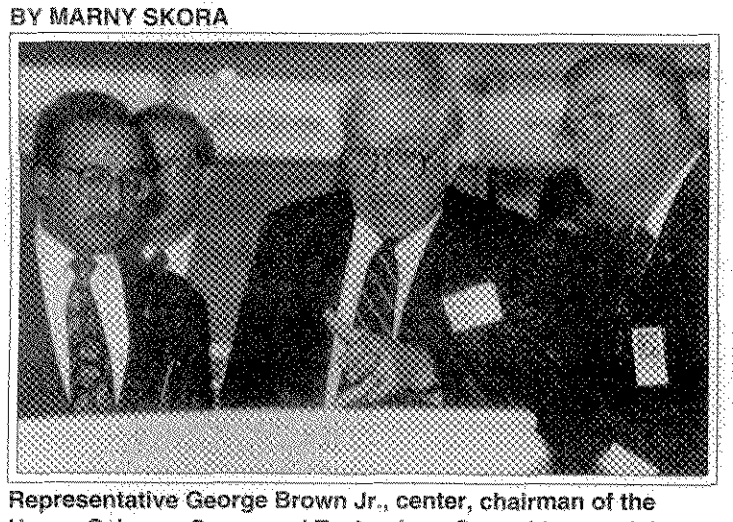
Photos by Peggy Hopkins

During opening day of the exhibits, October 19, NASA Administrator Daniel S. Goldin made the rounds of Langley's TOPS (Technology Opportunities Showcase). Here, Michael C. Fischer, right, of the Laminar Flow Control Project Office, talks with Goldin, explaining a laminar flow demonstration panel fabricated by Boeing. The panel verifies the design of a larger suction panel to be fabricated and installed on the F-16XL-2 to achieve extensive laminar flow in supersonic flight as part of the High-Speed Research Program.

NASA Administrator Lauds TOPS as Boon to Technology Transfer

BY MARNY SKORA



Representative George Brown Jr., center, chairman of the House Science, Space and Technology Committee, explains the importance of Langley's wind shear research to fellow Congressmen Robert C. Scott, left, and Herbert H. Batemen. Brown advocated the program after a visit to Langley in 1985.

"Today's showcase of technology is part of a concerted effort to funnel new ideas and new techniques into the marketplace," said NASA Administrator Daniel S. Goldin at opening ceremonies for Langley's Technology Opportunities Showcase (TOPS) on Oct.19.

We have been a mission-driven agency, Goldin continued. NASA needed smaller components, so we drove the state of the art in micro-miniaturization. We needed dependable components, and we drove the ultra-reliability of computer software and avionics. Identifying needed technology is one of the special talents NASA has always brought to the future, he said.

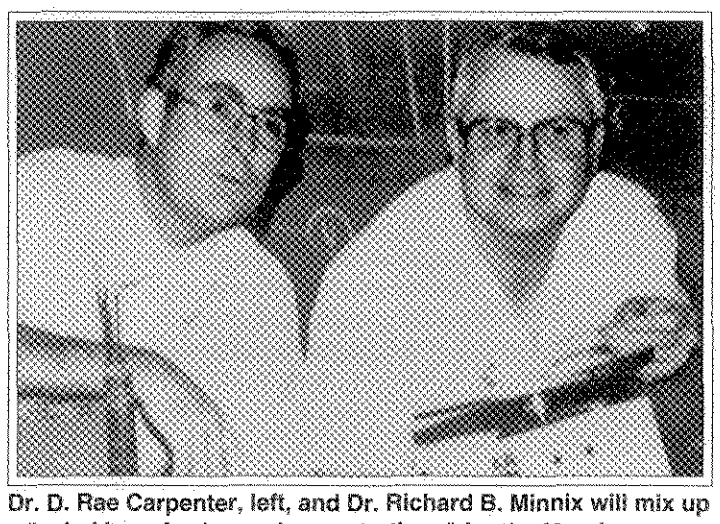
The TOPS three-day business expo focused on multiple applications of Langley technology, encouraging industry to profit from government research. More than 160 exhibits highlighted the potential of aerospace innovations to diverse markets.

"The President sees great potential in the federal lab system as a catalyst to bolster the nation's businesses in order to increase our manufacturing capability, to increase our exports and to ultimately

Continued on Page 4

November Colloquium Features Demonstrations of Physical Phenomena

BY CATHARINE G. SCHAUER



Dr. D. Rae Carpenter, left, and Dr. Richard B. Minnix will mix up a "salad bar of science demonstrations" for the Monday, November 8, colloquium at the H.J.E. Reid Conference Center.

Langley's November 8 colloquium features Drs. D. Rae Carpenter Jr. and Richard B. Minnix in "Some Interesting Demonstrations of Physical Phenomena," a potpourri of demonstrations designed to appeal to everyone.

These inexpensive, simple-to-construct demonstrations include learning how to stand on an egg without breaking it, how to "bounce" eggs, and how to create giant smoke rings. The program is both entertaining and educational.

Dr. Carpenter received his bachelor's degree in physics and mathematics from Roanoke College, his master's degree in experimental physics and applied math at Cornell University and his doctorate in experimental physics from the University of Virginia. He is currently the acting director for the Virginia Military Institute's Research Laboratories. Dr. Minnix received his bachelor's degree from Roanoke College, his master's degree from the University of Virginia in physics and his doctorate from the University of North Carolina at Chapel Hill in experimental physics. He is currently the head of the physics and astronomy department at the Virginia Military Institute.

Individually and collectively, they give presentations to 4,000 people a year, in places ranging from kindergartens to retirement homes and from civic clubs to graduate seminars, and they conduct summer workshops for teachers. Drs. Carpenter and Minnix recently published a resource for teachers entitled "The Dick and Rae Physics Demo Notebook."

The colloquium begins at 2 p.m. at the H.J.E. Reid Conference Center, 14 Langley Boulevard.

Another lecture—geared to high school and college students—begins at 7:30 p.m., November 8 at the Virginia Air and Space Center's IMAX theatre as part of the Sigma Series. Audience participation will be encouraged as students learn, for example, how to make a straw trombone and how to sit on a "seat" of nails.

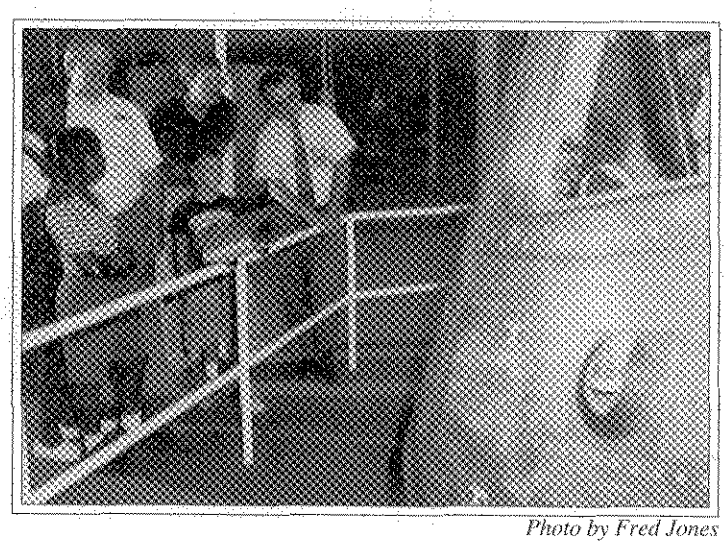


Photo by Fred Jones

CFC Contributions Still Sought

Big Brothers/Big Sisters of the Peninsula, Inc., is one of many agencies Langley employees can support through contributions to the Combined Federal Campaign (CFC). One Langley couple, Veloria J. and Scott D. Martinson, find having a little brother and little sister very rewarding. Veloria and Scott spend about five hours a week with them, attending planned agency activities, school functions or movies. Recently, they took time to see the Virginia Air and Space Center. In the photo, from left, Veloria, her little sister Monique Jenkins of Newport News, John A. Tanner, Scott, his little brother P.J. Heydt of Newport News, and Bruce A. Conway take a look at the Apollo 12 command module. Big Brothers/Big Sisters matches psychologically-screened adults with single-parent children ages 6-12 to foster emotional stability, character growth, and leadership development in a morally sound environment. There is still time to contribute to the CFC. Please consider the needs of others when you make your pledge.

To Help People
CFC
Virginia Peninsula

A Message from the 1993 CFC Chairman

As of October 25, Langley's Combined Federal Campaign (CFC) raised 98 percent of its goal. While this is great, we still haven't hit goal. To those of you who have already pledged, thank you! For those of you who haven't, I urge you to act now!

If you can't find your pledge form, see your key worker and he or she will gladly provide you with a replacement.

Langley's goal for this year's CFC represents a 2-percent increase over 1992, but the local United Way campaign has set a much more ambitious 21-percent increase in donations. This reflects the fact that last year they fell far short of meeting the needs of many local agencies requesting support.

There are about 800 employees who have not yet responded to the appeal. I urge all of you to give generously to the CFC. Let's all remember this year's campaign theme, "The Power of Caring," and show that Langley really cares!

—Douglas L. Dwoyer

TOPS — Seen Through the Eyes of Industry

Langley's Technology Opportunities Showcase (TOPS), featuring more than 160 exhibits of Langley technology, displayed innovations available for licensing and commercialization in addition to selected past technology transfer successes. The three-day event, Oct. 19-21, was a chance for the Center to highlight NASA's multiple-use technology as a cornerstone in strengthening U.S. competitiveness in the world marketplace. The expo showed how industry, both aerospace and non-aerospace firms, can profit from government research by helping them understand how to do business with NASA Langley.

Commercial aviation has been a major benefactor of aeronautical research spin-offs from NASA and every taxpayer has reaped rewards from the myriad of commercial applications of space-age technologies.

Now, under the Clinton Administration's new direction to place government in a pivotal role to help industry, non-aerospace companies, small and minority business and universities will profit from Federal lab innovations. The Agency is redoubling its efforts to share critical research results.

Featured were advanced research and development in high-speed aeronautics, subsonics and hypersonics, high-performance aircraft, large-scale computing, atmospherics, space transport and spacecraft.

Langley's senior managers, scientists, engineers and technicians were on hand to greet attending business representatives and to detail research efforts in each area of interest. Supporting research documentation together with procedures for technology transfer partnerships were also featured.

"Hundreds of people, many from industries and consortiums of businesses, walked through Langley's doors during the exposition," said Jim Raper, TOPS project manager. "They came away impressed with the breadth and depth of research on display. Some were just looking for new ideas, but the seeds of several partnerships were sown during the week between researchers and their ideas and products and companies and universities throughout the country."

Here is a sample of comments from business people who came to the TOPS exhibit:

David S. Hicks, program manager in technology sourcing for the National Center for Manufacturing Sciences of Ann Arbor, Mich., represents a consortium of 165 U.S. and Canadian companies: "Our company is already involved with Langley through the SBIR program but the relationship has been so successful that I came looking for more applications of Langley technology for the companies I represent. TOPS has presented a wide field from which to choose."

David A. Dietsch of ARINC Research Corp. in Oklahoma City works with Air Force depot maintenance organizations: "Our company looks to environmentally improve industrial areas and find cleaner ways to construct the work place. We also need to improve our nondestructive inspection techniques in the worksites we serve. I came 'idea-shopping' and found lots of ideas at TOPS!"

Walt Bosenberg is a senior scientist at Lightwave Electronics, Mountain View, Calif. "Lightwave builds laser products – small, compact diode laser-pumped solid-state lasers, to be specific. These are used to help repair memory on chips damaged during manufacturing, so we sell quite a few to different industries. I came to Langley looking for new ideas, specifically for lasers that could plumb the depths of environmental waste sites to determine what exactly is there. All the laser technology at the exhibit may prove to be an excellent resource."

Gerald Doekett from Northwest Airlines : "TOPS displayed some excellent sources of X-ray technology that we are investigating for use on corrosive parts on our airplanes, especially the DC-9."

The team of **Donald Jeffries**, producer and writer for WHRO Public Television in Norfolk, **Larry Crum** and **Joseph D. Exline**, V-QUEST, Virginia Quality Education in Sciences and Technology, were on hand with Dr. Joel Levine, Atmospheric Sciences Division, to demonstrate Langley's interaction in the field of education. Jeffries said: "We have been broadcasting our program 'The Greenhouse Effect,' written by Dr. Levine, and fielding questions and ideas about how to take NASA science and technology into the classroom on a grander scale."

Michael DeSimone, publisher of Technology Transfer Business, in Vienna, Va., said: "We bill our publication as a 'magazine for profitable partnerships' and we saw TOPS as a way to find out about many of NASA's technologies and to send them to a wider audience."

Stan Majewski, project manager for a detector group at CEBAF: "We are also interested in technology transfer at CEBAF and the Department of Energy wants us to seek partners with businesses.

"We are doing basic science so we are perhaps in a more difficult position than NASA to transfer technology. How can we relate to the public that we study quarks? For physicists, it is exciting, but for the general public, quarks may not be so exciting. We feel the pressure and need to transfer the technology that has developed from basic science into practical applications. The medical and industrial areas seem like a very natural place to potentially use some of the techniques developed. Some of the scientific factors of our experiments are ones we hold in common with other disciplines and scientific communities. We would like to take some of the ideas garnered here at TOPS, bring them into our industry and adapt them for experimentation."

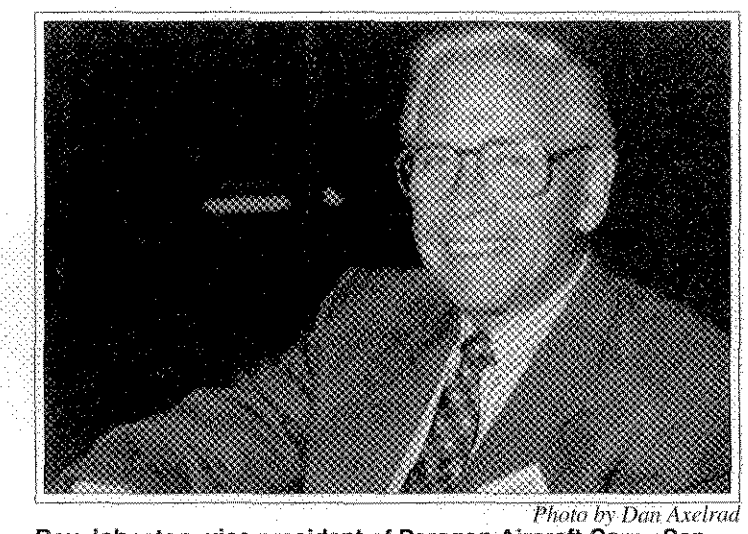


Photo by Dan Axelrad

Roy Johnston, vice president of Paragon Aircraft Corp., San Diego, Calif.: "Our company wants to start with a clean sheet of paper and build a composite airplane from the ground up. We came to TOPS because we wanted to find advanced techniques and technologies, especially in the areas of materials, light systems and manufacturing. We hoped to interface with Langley researchers and get insights into the design for our single-engine turbo-fan entry-level airplane. We have seen technologies from France that have fit the bill but we want to make an airplane in the United States using U.S.-manufactured parts. With Langley opening its doors, this could be exactly what we are looking for – keeping things in the United States."

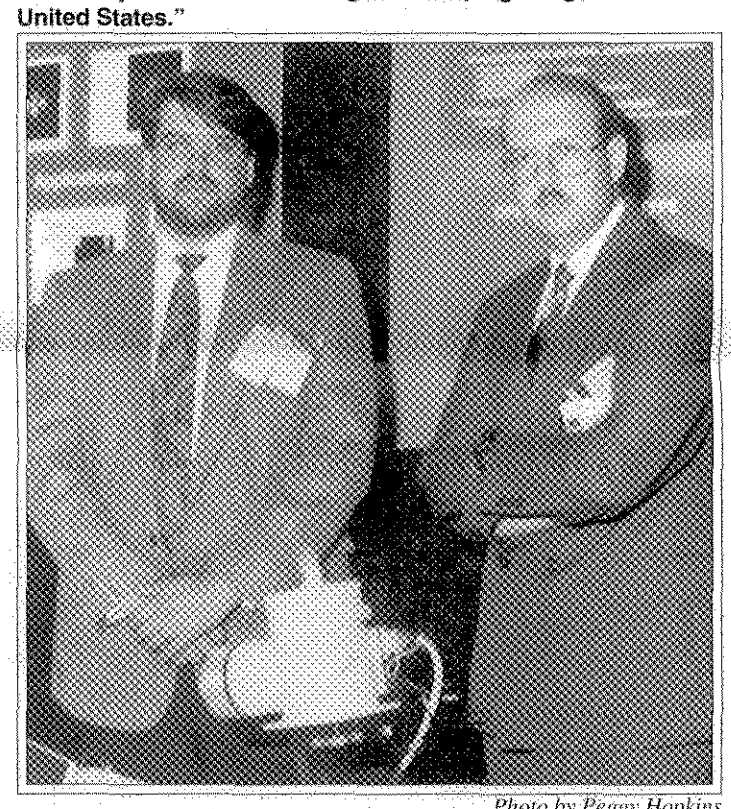


Photo by Peggy Hopkins

Jon Lesniak, senior vice president of Stress Photonics of Madison, Wis., left, and an exhibitor said : "Our company is presently involved in a Phase II SBIR project with Langley. We are readying our stress analysis products, based on research done here, for the ground vehicle transportation industry. TOPS is an important place to show our products to other industries and helps find ways to market our product and other applications for it." On the right is Elliott Cramer of the Nondestructive Evaluation Sciences Branch, manning the Thermography booth. Anthony Ghorieshi, (below) who teaches mechanical engineering in the Mechanical Materials department at Wilkes University, Wilkes Barre, Penn., drove seven hours each way just to see TOPS. He found it worth the drive.

Photo by Peggy Hopkins

Finley Hicks, a Langley co-op student from the University of Tennessee, explains the Electronic Shearography display to Virginia Mullin of Aeries Analytics. Mullins said: "I like TOPS– it's an excellent opportunity to see the technologies and make the connections."

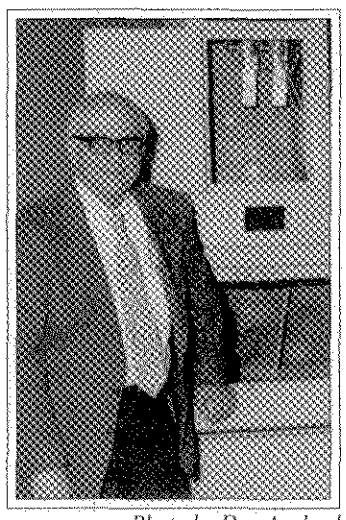


Photo by Dan Axelrad

Dr. Richard Albert, left, inventor of the Digiray machine (see story in July 30 issue): "When we made the reverse geometry X-ray machine, we thought it would only have medical applications. The Nondestructive Sciences Evaluation Branch has adapted it for use with aircraft, for measuring composite materials and assessing support structures. Future uses might include checking welds and plastics parts on machinery and vehicles."

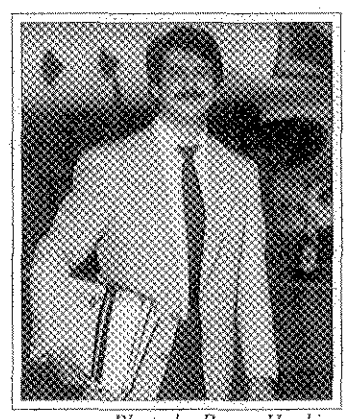


Photo by Peggy Hopkins

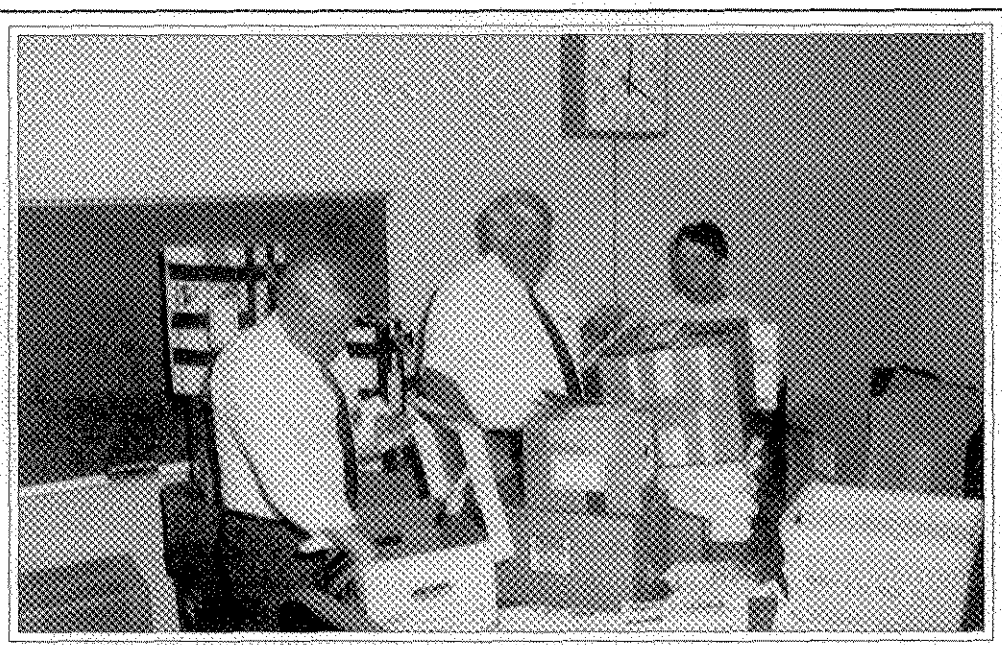


Photo by Fred Jones

Beat the Clock: High-Speed Research

Bill Kivett, chief of the Acquisitions Division, Ray Hook, director of the High-Speed Research Project Office, and Brad Gardner, Research and Projects Contracts Branch open the first of many packages at the 4 p.m., Oct. 13 deadline for industry proposals to develop High-Speed Research (HSR) airframe technologies. Receipt of the industry proposals marks a milestone in the transition from Phase I to Phase II of the HSR program, designed to enable U.S. industry to build an environmentally friendly, economically viable supersonic transport after the turn of the century. Phase I focused on environmental issues, while Phase II will focus on technology development. A parallel request for proposals was issued by NASA Lewis Research Center in Cleveland, Ohio, for HSR propulsion-related technology development.

TQM Facilitators Receive Awards

Photo by Sandy Gibbs

Langley Total Quality Management (TQM) facilitators received Superior Accomplishment Awards for "demonstrating extraordinary expertise and dedication in support of implementing TQM at the Langley Research Center."
Pictured are (from left to right): Ed Dean, Sue Voigt, Jerry Garcia, Lisa Jones, David Beals, Gretchen Gottlich, Tom Moul, Allison Ballew, Bruce Little and Langley's assistant director Dr. Belinda H. Adams. The following TQM facilitators also received awards but are not pictured: Fred Allamby, Butch Barringer, Charlie Cockrell, Gail Temple, Mark Wampler, Rosa Webster, Sally Johnson, Alicia Allen and Sharon Jones.

News from the AIAA Hampton Roads Section

Young Professionals Paper Competition

The Young Professionals Committee of the American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section is sponsoring a paper competition designed to recognize outstanding on-the-job technical accomplishments of young professional members. Members under the age of 35 are invited to submit one first-author paper that has been published or accepted for publication in an archival and refereed publication.

The paper must have been originally submitted while a professional member. Papers will be judged for technical content and style by an independent review committee. The winner will be selected in March and presented an award at the AIAA Hampton Roads Section Awards Banquet in the Spring.

Please submit three reprints or three copies of the manuscript, with a copy of the acceptance letter, and author information, including age and AIAA membership number, on or before Jan. 7, 1994, to Odilyn L. Santa Maria, Mail Stop 460, ext. 45104.

Aviation Safety in a Changing World

Most of us are confident, if slightly edgy, when boarding a commercial airliner. What are the chances of an accident? Dr. John Strong has devoted much of his career to studying commercial aviation in developed and developing nations. In compiling data for their book "Why Airplanes Crash," Strong and his collaborators C. Oster and C.K. Zorin, studied reports and findings from 16,000 plane crashes from 1970 to 1990. They developed "risk tiers" to differentiate regional safety records. Strong will talk about the results of his investigations into commercial aviation. He has been on leave from the College of William and Mary, serving as a professor at Harvard and a consultant to the European Bank for Reconstruction and Development. His talk will focus on the current state of commercial aviation in eastern Europe and the states of the former Soviet Union. The program will be Thurs., Nov. 11, with dinner at 6 p.m. Reservations are required by Nov. 8. For information and reservations, call Dan Vicroy, ext. 42022, or Stan Lamkin at 865-7093.

1994 Calendars Are Available from Stock

Requests for the 1994 calendars may now be submitted to the Stockroom, Mail Stop 382, on NASA Langley Form 55. Stock numbers for the calendars are:

NSN	Description
7510-01-275-0643	Calendar Pad, flipover, size 3" x 3-5/8" (EA)
7510-01-275-0645	Calendar Pad, executive flipover, 3-5/8" x 5-7/8" (EA)
7510-01-241-0547	Wall Calendar, displays three months at a time; 11-5/8" x 8-7/8" (EA)
7530-01-275-0587	Loose-leaf Appointment Book Refill, daily and monthly calendar sheets; 6-1/2" x 5-1/2" (EA)
7530-01-233-7484	Weekly Appointment Book, features two pages per week, columns for appointments and reminders are marked in 15-minute intervals; 8-1/2" x 11" (EA)
7510-01-241-0552	Desk Blotter, monthly sheets ruled and squared for each day; 17" x 22" (EA)

Each branch secretary should submit branch and section requirements to reduce the number of requests. Other stock supplies cannot be ordered on the same form as the calendar requests.

TOPS . . .

Continued from Page 1

TOPS
TECHNOLOGY OPPORTUNITIES SHOWCASE
LANGLEY RESEARCH CENTER

increase jobs," said Center Director Paul F. Holloway. "I believe TOPS is a concrete example of Langley's commitment to aggressively promote government-industry partnerships."

TOPS drew 847 participants from industry, other government agencies and academia. Nearly 500 businesses—large and small, aerospace and non-aerospace firms—were represented. In addition to interacting with exhibitors in the display areas, visitors toured the 14- by 22-Foot Wind Tunnel, viewed test runs at the Aircraft Landing Dynamics Facility and took advantage of narrated bus tours of the Center.

"Langley has been transferring technology to the aircraft industry for over 76 years, and we have been good at it," said Holloway. "Now we have to use those same skills to transfer our research and development to other sectors—especially the non-aerospace sectors—of our economy," he concluded.

NASA technology has always mirrored the demands of the mission, "but now that mission is changing," said Goldin. "In the post Cold War world, our goal must be to pursue our dreams, but also to make those dreams pay off for American industry.

"If you want to see the future unfolding before your eyes, all you have to do is look around at the people in the crowd next to you. They are the ones who will take up the challenge and make it happen. They are the people of Langley, and the people of NASA."

Joining Holloway and Goldin on stage were Lionel Skipwith Johns, associate director for technology in the Office of Science and Technology Policy, who brought a message from the White House, and Congressional representatives Herbert H. Bateman, Robert C. Scott and Thomas Bliley from Virginia and George Brown Jr., chairman of the House Science, Space and Technology Committee.

Flight Tests Prove Simpler Satellite-Guided Autoland Method

BY H. KEITH HENRY

Flight tests with a NASA research aircraft recently demonstrated the first precision, automatic approaches and landings using Differential Global Positioning System (DGPS) navigation satellite signals without relying on complex processing techniques.

Wilcox Electric, Kansas City, Mo., and Langley performed the tests using DGPS and a simple "code tracking" signal-processing technique. The aircraft position accuracies achieved appear to satisfy tough Federal Aviation Administration (FAA) requirements for landings in low-visibility conditions, called R Category IIIB.

"We've picked up where other recent flight tests have left off," said Wayne Dohlman, Wilcox Electric's Business Development Director. "This is the first time a DGPS autoland has been achieved without the use of special equipment or processing techniques such as pseudolites or carrier phase tracking."

Seventeen "hands off" approaches and landings were completed on Sept. 15 using Wilcox DGPS avionics installed in NASA's Boeing 737 research aircraft. The flight tests at NASA's Wallops Flight Facility, Wallops Island, Va., were conducted under an agreement to test new flight technologies.

Ground instrument data to confirm that the tests achieved Category IIIB accuracies will be analyzed next month, but observations based on flight performance look encouraging.

"The system performed exceptionally well and consistently, especially for a first flight test. I'm looking forward to analyzing the data," said Richard M. Hueschen, NASA flight test project engineer.

The aircraft guidance information was unaided by the flight management system or other avionics. The landings used raw, DGPS guidance supplied to the autopilot in the Boeing 737. A laser tracker, placed at a known geographical reference point near the runways, served as an independent reference system for aircraft-based measurements.

The code tracking technique used for the tests is a simpler way to determine aircraft position that is expected to lead to more economical DGPS ground systems and avionics. That could make satellite guidance of precision approaches and landings practical for commercial aircraft.

The aviation industry now is doing tests with the DGPS to see if the satellite technology is feasible for widespread private and commercial airline use in precision approach landings. The technology could provide an inexpensive, worldwide, all-weather landing system. Differential techniques are used to augment or correct raw signals beamed through space from the GPS satellites.

FAA is evaluating DGPS readiness for precision approach and landing. FAA and other international civil aviation authorities will meet in 1995 to examine the results of these evaluations and agree on a worldwide policy for the use of DGPS for navigation and landing.

Fall Legislative Update

Langley Research Center
FWP
Federal Women's Program

BY PAM VERNIEL

Bills Signed:

On Oct. 6, 1993, President Clinton signed Public Law 103-94, the Hatch Act Reform. Some provisions are:

- Federal employees, in their free time, have the right to take an active part in political management of campaigns, run for office within party organizations and affiliated groups, and solicit contributions to the political action committee of the organization to which both the employee and the donor belong, provided that the donor is not a subordinate employee.
- This legislation prohibits Federal employees from using their official position to influence or coerce colleagues and election results, wearing political buttons in government buildings, wearing a government uniform or government insignia while engaged in political activities.
- This law excludes several groups of federal employees from participating, such as those in the FBI, CIA, National Security Agency, Secret Service, and Senior Executive Service.
- Another provision of the Hatch Act Reform is garnishing of federal pay in order to settle private debts. Child support and alimony orders will take priority over orders for collecting any other debts.
- This law takes effect 120 days after it was signed.

On Oct. 8, 1993, Public Law 103-103, Federal Employees Leave Sharing Amendments Act of 1993, was signed by the President. This law will make permanent both the leave transfer and leave bank programs. This allows federal employees to either receive donated annual leave from co-workers or voluntarily donate accrued leave time to co-workers for a family or medical crisis.

President Clinton signed the National Service Trust Act of 1993, Public Law 103-82, on September 21. People who are 17 years or older may now receive up to $4,725 a year while they perform community service before, during, or after college.

Bills Introduced:

On Sept. 14, the Women's Health Equity Act of 1993 (WHEA) was introduced. This legislative package (H.R. 3075) consists of more than 30 separate bills to improve health care research and services for women.

Senator Barbara Mukulski introduced the Fairness in Education for Girls and Boys Act (S. 1463). The bill encourages the recruitment or retraining of female math and science teachers, who would serve as role models for girls entering math and science.

Floor Action:

The Federal Employees Humanitarian Leave Act of 1993 (H.R. 2751) was passed by the House on Sept. 21. H.R. 2751 allows federal employees to use their accrued sick leave to serve as bone marrow or organ donors and for purposes relating to the adoption of a child. The bill was referred to the Senate Committee on Government Affairs on Sept. 22.

"Professor Glick," Highlight of Deaf Awareness Week

BY DIANE FORREST

During the week of Sept. 21, the H.J.E. Reid Conference Center was filled with "hearies" and "deafies" learning about "deafing aids" and "vocal discords" and how to "upplaud."

The instructor for this course in Deaf Awareness was Ken Glickman, better known as "Professor Glick." In one hour, he managed to touch on nearly everything hearing people (hearies) want to know about deaf people (deafies) but were afraid to ask, by providing the audience with a crash course in deaf culture as seen from the eyes of a deaf humorist.

Glickman was born profoundly deaf and graduated from Dartmouth College magna cum laude with a degree in psychology. He then joined IBM as a computer programmer. He has taught computer programming and graphics at Rochester Institute of Technology's National Technical Institute for the deaf in Rochester, New York, and at Gallaudet University in Washington, D.C., under IBM's Faculty Loan Program.

Author of the "Deafinitions Poster" and two "Deafinitions" humor books, Glickman is currently self-employed as a desktop publisher at Deafinitely Yours Studio in Silver Springs, Md. When not at work there, he performs as a professional magician and occasionally flies as a private pilot.

A film of Glick's course and copies of his books are available in the Disability Program manager's office.

Following the program, monitors showing various films about deaf awareness and tables with information and technology were also on display.

William M. Vance, Electronics Fabrication Development Section, left, stands with Ken Glickman, a.k.a. "Professor Glick" in front of one of the Deaf Awareness Week displays prior to the deaf humorist's presentation.

On Friday, Sept. 24, the Second Annual Silent Picnic got underway in the H.J.E. Reid Conference Center park. The ability to use sign language was not a requirement for entrance to the festivities. Many of the participants joined the mime who was there and used "body language" to communicate.

For more information about Langley's Disability Program, call the office at ext. 47718 or TDD 47883.

Virginia Air and Space Center News

Virginia Air and Space Center
Hampton Roads History Center

Veterans Day Open House

The Virginia Air and Space Center salutes Veterans Day by inviting all active duty personnel and veterans with identification to an Open House, Nov. 11.

Active duty personnel and veterans will be admitted to the exhibit areas for free. The IMAX presentations are $4 for adults and $2 for children. There will be special programs focusing on the military exhibits. the center will also premiere the new *World War II Remembered* commemorative exhibition on Nov. 11.

For more information, call (804) 727-0800 or 1-800-296-0800.

Video Move

Video editing and video duplication will be unavailable from the Video Section, Nov. 8-12. The Edit Suite will be moving to the Visual Imaging Studio, Building 1145.

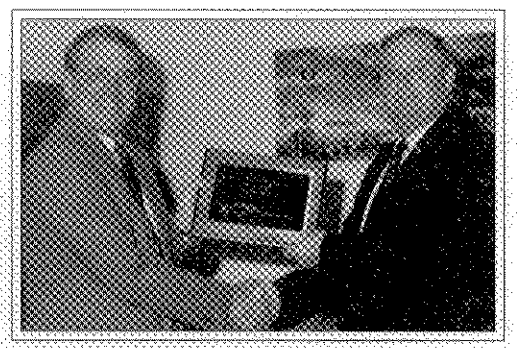
News Briefs

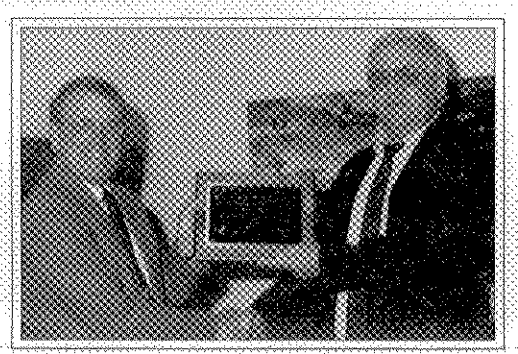
Around the Agency

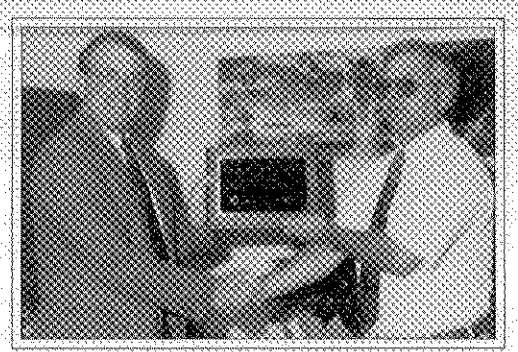
HUBBLE FIRST SERVICING MISSION HARDWARE AT KSC–Preparations for the first servicing mission of the Hubble Space Telescope (HST) began in August at Kennedy Space Center with the arrival of the Space Support Equipment (SSE). Some of the flight hardware will house the delicate Hubble replacement components inside Endeavour's payload bay during the mission. The SSE was shipped from Goddard Space Flight Center, Greenbelt, Md., and consists of three parts: the Orbital Replacement Unit Carrier, a dedicated Spacelab maintenance and repair pallet; the Solar Array Carrier, used to hold the replacement solar panels; and the Flight Support Structure that will hold and orient the telescope while it is being repaired by the astronauts in Endeavour's payload bay. The device was used aboard the Space Shuttle Challenger in 1984 during the Solar Maximum Satellite repair mission. Replacement components to service the Hubble Space Telescope will fly aboard Mission STS-61, currently scheduled for December.

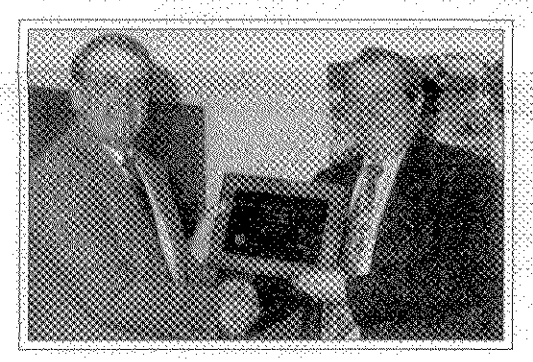
Five Receive Equal Opportunity Awards

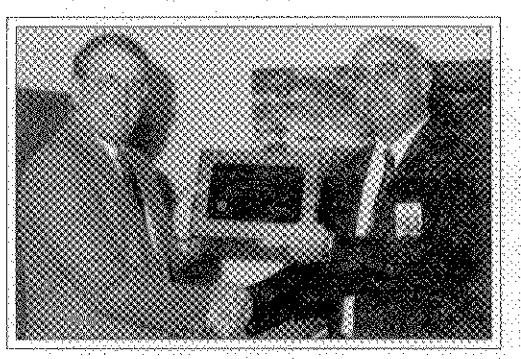
Dr. H. Lee Beach Jr., Center deputy director, recently presented Equal Opportunity Awards to five Langley employees. They were given to W. Albert Shearen, a technician in the Fabrication Division, for "sustained superior service in support of the Equal Opportunity Program (EOP);" to Glenn R. Taylor, chief of the Flight Electronics Division, for "outstanding leadership in support of the EOP;" Lawrence B. Cooper III, a technician in the Fabrication Division, for "exceptional contributions and personal commitment to the Disabled Program;" to Dr. Frank Allario, director of the Electronics Directorate, for "leadership in supporting the employment and growth of individuals with disabilities;" and to Joseph R. Chambers, chief of the Flight Applications Division, for "exceptional contributions and personal commitment to the goals of Equal Employment Opportunity."











Photos by Paul Bagby

Pictured with Dr. H. Lee Beach (at left in each photo), are, above top to bottom, W. Albert Shearen, Fabrication Division; Glenn R. Taylor, chief of the Flight Electronics Division; and Lawrence B. Cooper III, Fabrication Division; at left above, Dr. Frank Allario, director of the Electronics Directorate; and Joseph R. Chambers, chief of the Flight Applications Division.

Manned Flight Awareness Awards Given to Three at Langley

One of the most coveted awards given by NASA is the Manned Flight Awareness Honoree Program award. It is presented to those government and industry employees for their dedication to quality and flight safety. Three Langley personnel were given the award in ceremonies at Kennedy Space Center in September. They are Mark W. Frye of the Material Processing and Development Section; Ann H. Suit of the Office of Public Services; and William C. Woods of the Experimental Hypersonics Branch.

The three attended the Manned Flight Awareness program events and witnessed the blast-off of the STS-51 mission.

Frye worked on the CETA (Crew Equipment Translation Aid) and ACCESS (Assembly Concept for Construction of Erectable Space Structures) projects and has been involved in spaceflight work on Center for the past 11 years. He is currently involved in the LITE (Lidar In-space Technology Experiment) project.

Suit has been Langley's contact for the Manned Flight Awareness Program since its inception. Among her other jobs in the Office of Public Services are the Speakers Bureau and Langley's involvement in the Experimental Aircraft Association's Fly-In Convention in Oshkosh, Wis., each summer.

Woods has worked on the space shuttle from 1969 to the present and during the 1970s performed extensive wind tunnel testing in support of the configuration development and aerothermal characterization of the shuttle orbiter. Currently, his research is focused on advanced space transportation systems concepts such as Space Transfer Vehicles and National Aero-Space Plane. Woods is also the facility operations engineer for the Hypersonic Helium Tunnel.

Photo by Bill Suit

Recipients of the Manned Flight Awareness Honoree Program Awards are, from left, Mark W. Frye, Materials Processing and Development Section, Ann H. Suit, Office of Public Services, and William C. Woods, Experimental Hypersonics Branch.

The 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 employees are approved leave recipients: Monica L. Cooper, Bette L. (Jeanie) Duncan, Deneace M. Hines, Cynthia L. Lach, Janice B. Mongesku, Lori Nichols Pennington, Howard E. Price, Carissa T. Robinson (Smith), P. Daniel Sydow, Terry L. Shephard, John P. Stack, Cassandra D. Stevens, Belle L. Wood and Darrell A. Wood and from other government agencies: U.S. Government Printing Office, Hampton Regional Printing Procurement Office, Susan B. Burnett.

Health Corner

Back Injuries/Low Back Pain

Back injuries and low back pain are the number one industrial cause for prolonged absence from work and for disability payments.

Almost all of these injuries are preventable and most can be effectively treated with bed rest during the most acutely painful period. There are also suitable exercises that can help make recurrent injuries less common.

Bring your lunch to the Executive Dining Room in the Main Cafeteria at noon on Tuesday, November 16, and hear Dr. Hap Hansen talk about back injuries, their prevention and treatment.

For more information, call ext. 43215

Blood Drive

The next Bloodmobile visit will be Wednesday, November 24 from 9 a.m. to 3 p.m. at the H.J.E. Reid Conference Center. Mark your calendars now!

Announcements

Retirement Party

A retirement party for Larry Edwards will be held on Tuesday, Nov. 16, from 4:30 to 6:30 p.m. at the H.J.E. Reid Conference Center. Cost for the party is $8 per person. For information, please contact Goldie Smith or Virginia Marks at ext. 42267, Mail Stop 119.

Photo Lab

Due to the absence of Earl Williams during the period of Nov. 15 to 26, the Photographics Lab will be unable to do any half-tones or PMTs. Any questions regarding this matter may be directed to Alton Moore at ext. 43321.

In Memoriam

William H. Lane

William H. Lane, 58, a native of McDonough, Ga., and a Peninsula resident for 38 years, died Monday, Oct.11.

Lane retired from the Analysis and Simulation Branch in 1993 after 38 years at Langley.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... *Marny Skora*

Editor..... *Ann C. Gaudreaux*
The Bionetics Corporation

Assistant Editor ..... *Susan A Smigielski*
The Bionetics Corporation

Photojournalist ..... *Carol Petrachenko*
The Bionetics Corporation

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.

Happenings

LOST: During an office move between Building 1202 and 1229T in early Sept., a box labeled "Storm" was misplaced. It contained various textbooks. Please check your stack of unpacked boxes. If found, call Mark Storm, at ext. 41635.

NATIONAL SPACE SOCIETY: The Langley Chapter of the National Space Society is sponsoring a dinner meeting Monday, Nov. 8, 5:30 p.m., at Anna's Italian Restaurant, 2845 North Armistead Ave., Hampton. Doug Stanley, Space Systems Division, will discuss NASA's recent studies examining replacing the current space shuttle with a single-stage reusable rocket vehicle to lower transportation costs. Anyone interested in creating a spacefaring civilization is invited to attend. For information about the meeting or the society, call 864-4518.

LAA ACTIVITIES: There will be a regular social hour Nov. 5, from 4-6:30 p.m. Nov. 19, from 4-8 p.m., the "LAA Pilgrim's Party" is scheduled, complete with entertainment. Both events will be in the H.J.E. Reid Conference Center. For more information, call Andrea Lewis at ext. 46369.

HFL ALUMNI: The Health for Life Alumni Association will meet Tues., Nov. 9, at noon in the Conference Center. Bring a bag lunch and get motivated for the holidays; call ext. 46387.

FREE AEROBICS: Join Langley Fitness Center's (LFC) 6:15-7:15 a.m. or 11-11:45 a.m. aerobic classes with low-impact, bench or interval training, including accessories. Mon., Wed. and Fri. in the gym. LFC's **Stress & Stretch**, offers 30-45 min. of stretching and relaxation at 4:30 p.m. Thursdays in the cafeteria. Open to NASA employees and contractors. Call ext. 46387 for details.

BENCH, LOW-IMPACT & TONING CLASSES: Develop your personal fitness from certified personal trainers and certified aerobics instructors. Weights, dyna-band and ultra-toners for resistance training and benches ranging in height from 2-10" are provided. Free body composition analysis and cardiovascular fitness assessments are given before class. Sat. features low-fat health food after class. LAA Gym, 5-6 p.m. Tues. and Thurs., 9:30-10:30 a.m. on Sat. Call ext. 42295, for more information.

LUNCH WITH WRITERS: All are invited to the Peninsula Area Writers' Luncheon, Sat., Nov. 20 at 11:30 a.m. at the Christopher's, Christopher Newport University (CNU) Student Center, Newport News. The featured speaker is Will Molineux, book editor of the *Daily Press* and more than 30 local authors will be there. Have lunch and discuss works with area authors. The lunch is sponsored by the Newport News Branch of the American Association of University Women and the Continuing Education Department of CNU. Cost is $15. For more information, call Carole Barrett, 898-3556.

AGA MEETING: The Association of Government Accountants, Virginia Peninsula Chapter, presents Tony Musick of the National Performance Review Team at the Nov. 17 meeting. He will talk about the advisory committee's proposals to Vice President Gore on "Reinventing Government." The meeting is at the Radisson Hotel, social at 5:30 p.m., dinner at 6:30 p.m. and speaker at 7:30 p.m. Cost is $12. For reservations, call Pat Link at ext. 48102.

VACATION RENTAL: Orlando, Fla., 2 BR townhouse can sleep six, has full kitchen, TV, VCR, pools and tennis; three miles from Disney. Pick any week in 1993-94; $600 per week. Call Victor, 3:30-6:30 p.m. at 220-3550, leave message.

HOUSE FOR SALE: York Co., near NASA, 3 BR, 2 baths, ranch w/great room, fireplace, many extras. Asking $120,000, assumable loan. Call 867-8223.

SYMPHONY TICKETS: Tickets are on sale at the Exchange Shop for the Virginia Symphony Classical Masterworks concerts featuring violinist Gil Shaham with performances of Vivaldi's "Four Seasons," Prokofiev's "Romeo and Juliet", and "Remembering Gatsby." Concerts are Nov. 12 and 13 at 8 p.m. in Chrysler Hall, Norfolk. Get tickets at the Exchange Shop at a 20-percent discount plus $1 for handling, or by calling the Virginia Symphony Ticket Store at 380-0040 or 623-2310. To get the best seats for any concert, call the Ticket Store for an Anytime Concert Pass. For information, call the Exchange Shop at ext. 47044.

BRASS BAND PERFORMANCE: The U.S. Continental Army's new Brass Band of 25 musicians, using instruments developed in Great Britain during the 19th century, will perform at Ft. Monroe Nov. 9 at 7:30 p.m. at the post theater. Admission is free and it is open to the public. For more information, call 727-3205.

CAR FOR SALE: 1988 Ford Mustang LX, 5.0 V-8, power windows and lock, air conditioned, 5-speed, excellent condition, best offer. Call 440-8363.

VIRGINIA TECH ALUMNI ASSOCIATION: The Peninsula Chapter of the Virginia Polytechnic Institute and State University (Virginia Tech) Alumni Association is sponsoring a bus trip to the Virginia Tech/University of Virginia football game in Charlottesville Saturday, Nov. 20. Call Joe Drewry at 722-4443 for information or to make reservations.

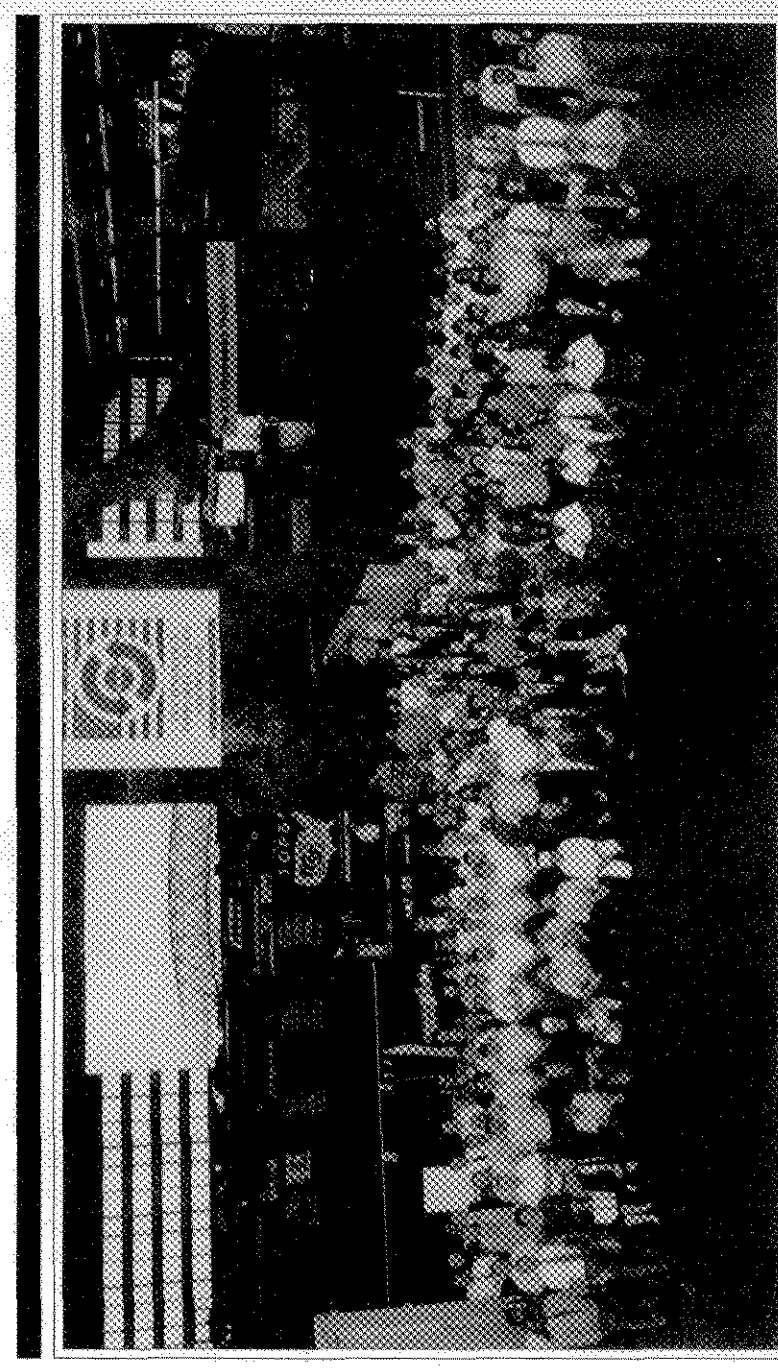


Photo by Sandy Gibbs

Center Director Paul F. Holloway (kneeling center) poses with some of the hundreds of employees who contributed to the success of Langley's Technology Opportunities Showcase (TOPS) held October 19-21. The business expo showcased Langley technology on a large scale. Materials used included 220 gallons of black paint, 1/2 mile of plywood, 2 miles of electrical wire, 1,000 electrical outlets and 4,500 push pins. And, according to Jim Raper, project manager, all was accomplished within the established budget. It was TOPS!

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Researcher News

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Langley Research Center
Hampton, Virginia 23681-0001

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National Aeronautics and Space Administration
Langley Research Center

News Researcher

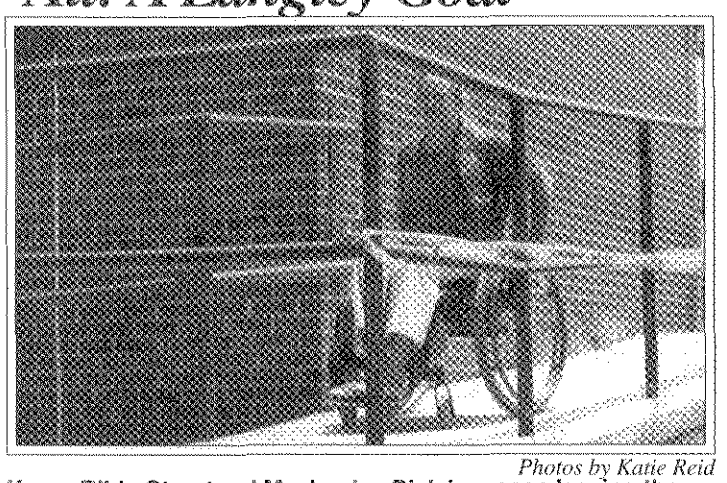
Biweekly Employee and Contractor Publication

Volume 7 ❖ Issue 23 ❖ November 19, 1993

Accessibility for All: A Langley Goal

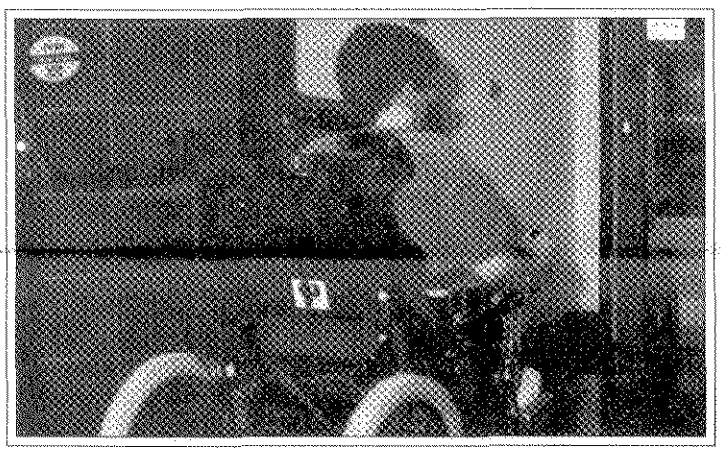
BY KRISTINA MURDEN

Langley's senior management has made official a campaign to make the Center safer and accessible to everyone, thanks to the efforts of the Satellite Committee for People with Disabilities. A recent presentation of issues and concerns to Systems Engineering and Operations and Management Operation staffs resulted in six new task teams that will address the total accessibility goal process.



Photos by Katie Reid

Karen Bibb, Structural Mechanics Division, seen leaving the Material Processing Building, heads a new task team that seeks to improve safety and accessibility for everyone at Langley. She also serves as a "tester" of new equipment. Automatic doors like these (below) will eventually be installed in many of Langley's buildings in an effort to make buildings more accessible. Here, Scott Warrington, Lockheed, heads toward the Polymeric Materials Branch on West Taylor Street.



Task Teams

John Mouring, Center master planner, heads the task teams with Task Group co-leader Karen Bibb, aerospace technologist, Structural Mechanics Division. "What we have is a bunch of bright, informed, motivated people that make this a great program," said Mouring. "Our priority is to first make an inventory of the problems that need to be solved--and then solve them." So far, 25 volunteers and assignees make up the six teams of Langley's Accessibility Task Group, with many serving on more than one. Team leaders were selected for their expertise and many committee members are experts themselves because they are disabled.

The teams' objectives are to incorporate accessibility features Center-wide. This will include interior features, like door handles and ramps; and outdoor features, like curb cuts and parking. Many existing features will be modified and construction plans will meet accepted accessibility standards and codes.

The SCPD

The Satellite Committee for People with Disabilities has been advocating improvements to the Center since 1989.

"What's new is that there will now be a universal standard for what exactly will be accomplished," said Mouring, "and now we can address issues head-on."

Continued on Page 3

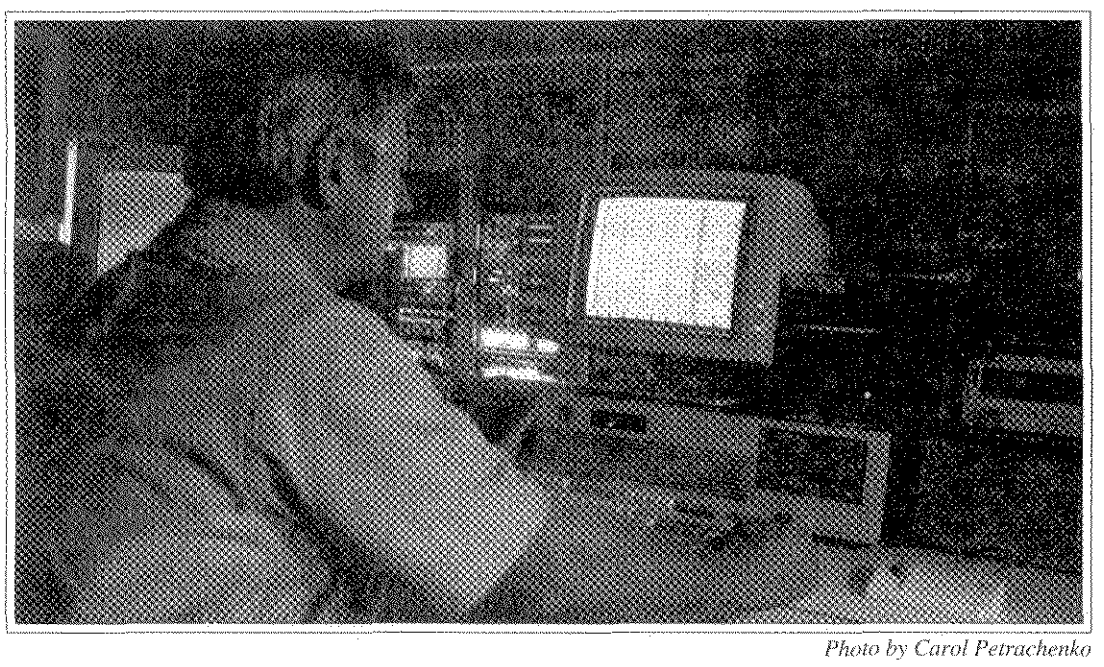
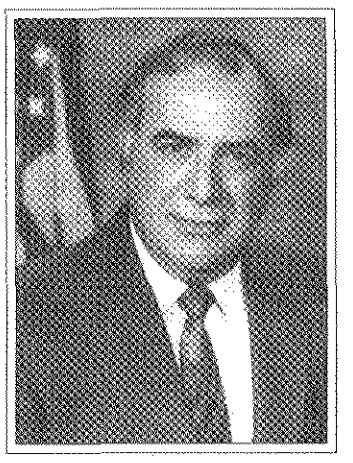


Photo by Carol Petrachenko

Herb Kowitz, Aircraft Instrumentation Branch, evaluated live data received from the Orbital Acceleration Research Experiment during STS-58, which landed November 1, after a 14-day mission. This is the first time Langley received a "live" feed of data during a shuttle mission. OARE essentially measures the Shuttle's aerodynamic forces (drag) in orbit and during early stages of reentry. These measurements will be used to establish models predicting orbital aerodynamic behavior. OARE is now scheduled to fly on STS-62 and STS-65, where the experiment will be adapted to support microgravity work.

Director Supports Total Accessibility Goals for Center



Paul F. Holloway

"Recently we have begun to make major progress toward reaching our goal of an accessible center. In September, the accessibility subcommittee of the Satellite Committee for People with Disabilities (SCPD) gave a presentation to key staff personnel of Systems Engineering and Operations Directorate and Management Operations Directorate about a wide range of issues and concerns regarding facility access and safety. That meeting resulted in the formation of the LaRC Accessibility Task Group (LATG) with the goal of providing a responsive and prioritized accessibility program. With the trimming of our budget and the current hiring freeze, the necessity of providing an accessible Center within the limited funding and manpower has been obvious.

"In order to accomplish this, support is being provided to include process management and training, new guideline assessment development, and informed design and product selection. It will be necessary for some employees to attend committee planning meetings and training work sessions. Hopefully, the interruptions to the work of the Center will be minor and the knowledge obtained will be great.

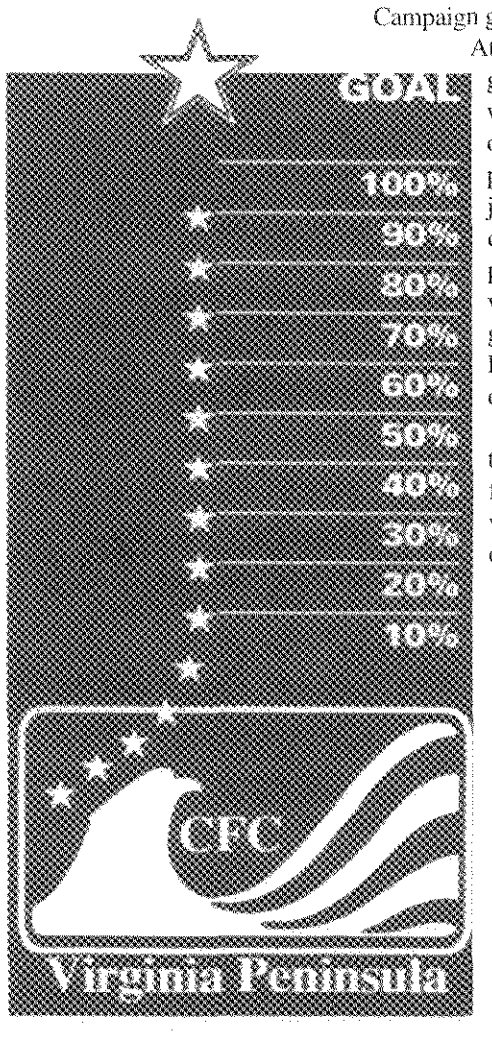
"My goal has always been to provide an accommodating and accessible work environment for all employees at Langley, and now we are beginning to see results."

——Paul F. Holloway
Center Director

CFC --Let's Break Through the Roof !

We have almost met our 1993 Combined Federal Campaign goal of $315,000. At 99.7 percent of goal on Nov. 10, with only 70 percent of employees participating, we are just a few hundred dollars short of 100 percent. Let's see if we can dig deep and go over the top as Langley usually does.

It is not too late to request forms from your key worker and make a contribution for the 1993 campaign.



It's Not too Late to Show the "Power of Caring"

News Briefs

Around the Agency

FROZEN MOLECULAR HYDROGEN DISCOVERED IN STELLAR NURSERY – Scientists at Ames Research Center, Mountain View, Calif., and the Joint Astronomy Centre, Hilo, Hawaii, have discovered an unexpected type of molecule in the ices of a star-forming cloud. Drs. Scott Sandford, Louis Allamandola and Thomas Geballe have detected large amounts of molecular hydrogen frozen into the ice grains in a dense molecular cloud in Rho Ophiuchus. Rho Ophiuchus is known as a stellar nursery, a region in the Milky Way galaxy where new stars are being formed. Their findings were published in the October issue of *Science* magazine.

1993 ANTARCTIC OZONE HOLE REACHES RECORD LOWS – Antarctic ozone levels have reached record lows, according to data obtained by scientists at Goddard Space Flight Center, Greenbelt, Md., and the National Oceanic and Atmospheric Administration (NOAA), Climate Monitoring and Diagnostic Lab, Boulder, Colo. These record low levels were recorded at the South Pole Station, Antarctica, at the end of September and early October 1993 and confirmed by satellite measurements. Data from NASA's Total Ozone Mapping Spectrometer (TOMS) and a balloon-borne ozone sensor flown by NOAA both measured values of less than 100 Dobson units (DU) in the region near the South Pole. These measurements were confirmed by a surface-based Dobson spectrometer in Antarctica which measured 88 DU on October 6. These are the lowest values of total column ozone ever measured anywhere in the world.

HUBBLE INVESTIGATES COMET ON COLLISION COURSE WITH JUPITER – NASA's Hubble Space Telescope has provided the most detailed look yet at the comet hurtling toward a July 1994 collision with the giant planet Jupiter. Hubble's high resolution images show that the approximately 20 objects that make up comet P/Shoemaker-Levy 9 — giving it the appearance of a string of pearls — are much smaller than originally estimated from observations with ground-based telescopes. "The Hubble observations show that the cometary nuclei are probably no bigger than three miles across, as opposed to earlier estimates of nine miles," said Dr. Harold Weaver of the Space Telescope Science Institute in Baltimore, Md. The new Hubble data show that the impacts will unleash only 1/10th to 1/100th as much energy as thought previously, but the impacts will be comparable in strength to the collision of a large asteroid or comet with Earth 65 million years ago.

GALILEO DETECTS MAGNETIC FIELD AROUND ASTEROID IDA – NASA's Galileo spacecraft detected changes in the interplanetary magnetic field as it passed the asteroid Ida on Aug. 28. Dr. Margaret Kivelson, principal investigator of the Galileo magnetometer and a physicist at the University of California at Los Angeles, reported that the instrument measured several field rotations as it had two years ago while flying by the asteroid Gaspra. "The team believes these rotations were produced by the interaction of the solar wind with Ida," Kivelon said. However, several interactions could cause the field to rotate so the observations do not necessarily show that the asteroid has a magnetic field. Ida represented the fifth encounter for Galileo, said project scientist Dr. Torrence Johnson.

All Langley Civil Servants, Contractors and Retirees

Please note this event on your calendar:

Director's Holiday Reception
December 17, 1993
1 to 3 p.m.
H.J.E. Reid Conference Center
Sponsored by the Langley Activities Association

The 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. Annual leave donations are greatly appreciated. The following Langley employees are approved leave recipients: Monica L. Cooper, Bette L. (Jeanie) Duncan, Deneace M. Hines, Cynthia L. Lach, Janice B. Mongesku, Lori Nichols Pennington, Howard E. Price, Carissa T. Robinson (Smith), P. Daniel Sydow, Terry L. Shephard, John P. Stack, Cassandra D. Stevens, Belle L. Wood and Darrell A. Wood and from other government agencies: U.S. Government Printing Office, Hampton Regional Printing Procurement Office, Susan B. Burnett.

Speakers Bureau Report

The following people made presentations as part of the Speakers Bureau this fall:

John B. Davidson spoke to Purdue University graduate students about the "Design of a Lateral Directional Control Law for the NASA High Angle of Attack Research Vehicle."

Dr. Joel Levine spoke to the Kiwanis Club of Williamsburg about "A Planet at Risk;" at the Science Museum of Virginia in Richmond about "Stratospheric Ozone Depletion–1993; and the Tercentenary Celebration at the College of William and Mary about "Measurements of Global Change in the Atmosphere."

Bruce D. Fisher spoke to the Denbigh Lions Club about the "Storm Hazards and Lightning Research Program."

Dr. Norman Johnston spoke to the East Carolina Chemistry Professional Society about "Test Tube to Wings: Advanced Composites Technology."

Letters

Thanks to Electrical Personnel/OSD

From Clyde Medley and Rodney Russell: "A special thanks to all those persons who helped with their participation in the CFC fund drive. As key persons for the electrical group, thank you for your kind and thoughtful donations. We appreciate your help."

In Memoriam

James F. McNulty

Dr. James Francis McNulty, 71, died November 3.

A native of New York City and an Air Corps veteran of World War II, McNulty received his doctorate in administrative engineering. He retired from Langley in 1978 after 38 years of service.

Photo by Peggy Hopkins

Super blood donors are, left to right, Dr. Victor Delnore, Richard Holt, Robert Davis, Dr. C. Michael Hudson, Billy Dancy, James Fay, William Chapin, Harvey Murray and James Young.

Langley Commends Nine Representative Blood Donors

Langley is well known for its support to the community and one very special way the Center helps the community is through its bloodmobile. The American Red Cross helped to identify some of Langley's top blood donors who deserve both recognition and thanks for supporting the bloodmobile for many years. They are Dr. Victor E. Delnore, Lockheed Engineering and Sciences Company; Richard B. Holt, Fabrication Division; Dr. C. Michael Hudson, Facilities Engineering Division; James Fay, NASA retiree; Harvey W. Murray, UNISYS Corporation; Robert P. Davis, Facilities Engineering Division; Billy B. Dancy, NASA retiree; William G. Chapin, Instrument Research Division; and James R. Young, EG&G.

According to the Red Cross, their combined blood donor efforts have provided 1,093 units of blood. Because a single unit of blood can be made into at least three separate blood products, these donors have potentially helped more than 3,000 people. If the donations of just these few are tallied with the combined efforts of all of Langley's donors, the results are lifesaving blood products for many more thousands of people.

Richard Holt has been a blood donor since he first arrived at the Center in 1956. "It is very easy to give blood," he said. "We have a wonderful bloodmobile program here at Langley and I encourage everyone to participate. The American Red Cross has a professional staff who are always courteous and friendly."

And it is very safe to give blood. If you are in good health, weigh at least 110 pounds and are 17 years of age or older, you may give blood. It only takes 10 minutes to donate a pint of blood and the entire process, from registration to refreshments, takes about an hour.

Center blood drives are scheduled to accommodate the 56 days needed between blood donations.

The Occupational Health Services Office (OHS) wishes to thank all donors who have participated and continue to participate in the blood drives and challenges all Center employees to strongly support this program. The demand for blood increases during the holiday season, making the November blood drive one of the most important drives during the year. Even if you participate in only one of the six blood drives each year, it is one more unit of blood that may help several people.

November 24, OHS will be giving raffle tickets to all blood donors for six chances to win a Farm Fresh gift certificate toward the purchase of a holiday turkey. The winner does not need to be present. The representative donors pictured invite all their co-workers to join them for the blood drive Wednesday, Nov. 24, at the H.J.E. Reid Conference Center from 9 a.m. to 3 p.m., and the opportunity to win the gift certificate.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... *Marny Skora*

Editor ..... *Ann C. Gaudreaux*
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Assistant Editor ..... *Susan A Smigielski*
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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.

The Colloquium Series: 22 Years of Service to the Langley Community

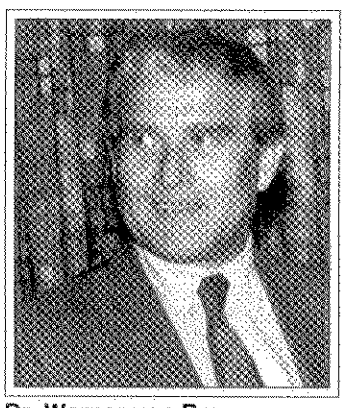
Langley's Colloquium Series, which began 22 years ago, was started to provide monthly lectures on a wide range of science and related topics.

Founder of the program was Dr. Sheila Ann Thibeault of the Applied Materials Branch. Dr. W. Hewitt Phillips, now a Distinguished Research Associate, and Dr. James D. Lawrence Jr., chief of the Atmospheric Sciences Division, were its original consultants. Besides Thibeault and Phillips, Dr. Edward R. Long Jr., Applied Materials Branch, was on the original Colloquium Committee, and the three have served continuously.

The series was begun in the hope that the colloquia lectures and demonstrations would stimulate the creative processes of the Center's employees and enhance the quality of life at Langley by providing more opportunities for learning.

The Colloquium Committee is responsible for selecting topics and hosting the speakers at Langley. The committee is composed of three representatives from each of the technical directorates.

Throughout the years, more than 250 presentations have been made as part of the series. Some highlights include the first colloquium lecture, Dr. Werner von Braun's October 1971 talk on "The U.S. Space Program through the 70s" and Capt. Jacques Yves Cousteau's January 1979 presentation "Space and the Oceans," during which John Denver's song "Hail Calypso" was first introduced to the public. Calypso was the name of Cousteau's research vessel. That colloquium took place at the Hampton Coliseum and attracted an audience of 10,000 people. Dr. Mary Leakey presented "From Fossils to Footprints" in April 1981; Dr. Gerald Johnson spoke in May 1987 about "The Chesapeake Bay: Its Past, Present and Future;" and Harry Gregori gave the audience "Garbage!!!" in January 1991. Members of the Colloquium Committee have their own lists of favorites and a complete list is available for the asking from any committee member.



Dr. Werner von Braun

Colloquia topics that are scheduled for 1993-1994 are: Monday, Dec. 13, Jeffrey Hecht, "What's New in Lasers;" Monday, Jan. 31, Dr. Ralph Muraca, "Space Station Reconfiguration;" Monday, Feb. 14, Henry Thomas, "Energy and Policy;" Monday, March 14, Marc Rosenberg, "Privacy and Crime in a Computerized Society;" Monday, Apr. 11, Sergi Sikorsky, "A Pioneer's Perspective on Helicopters;" Monday, May 9, Duane McRuer, "Pilot/Aircraft Control Coupling;" and Monday, June 13, George Doersch, "Air Power by an Ace Who Did It."

"The Langley Senior Staff highly endorses the Colloquium Series," said Dr. Belinda H. Adams, assistant director. "We encourage employees to take advantage of this opportunity to broaden their perspectives."

Civil service personnel should charge their time to A1980 and contract employees should charge their time according to individual company policies. Each Colloquium presentation is videotaped in VHS format and copies are available for employees to borrow from the Technical Library.

Photo: The Cousteau Society

Capt. Jacques Yves Cousteau

Members of the Colloquium Committee

The Colloquium Committee also welcomes suggestions for future colloquium topics. Members are: Laurence J. Bement, Dr. Michael F. Card, Lenwood G. Clark, Dr. Karen R. Credeur, Dana J. Dunham, Kevin E. Dutton; Dr. William B. Grant, Dr. Robert M. Hall, Dr. John C. Hoppe, Dr. Patrick H. Johnston, Dr. Arlene S. Levine, Dr. Joel S. Levine, Dr. Edward R. Long Jr., Susan O. Palmer, William Hewitt Phillips, Dr. R. Clayton Rogers, Dr. John N. Shoosmith, Cary R. Spitzer and Dr. Sheila Ann Thibeault. Representing the Virginia Air and Space Center is committee member Ray Goodman. The Committee secretary is Loutricia S. Johnson.

Accessibility

Continued from Page 1

In the past, only the busiest facilities, especially those open to the public, were made accessible to everyone. "It was apparent that we needed a more systematic approach, and now we have one," said Mouring.

"Before the official program, the Center was responding to individual needs and isolated applications based on conflicting industry standards and misadvertised products."

When Bibb arrived to work at Langley two years ago, a wooden ramp was hurriedly installed days before her arrival. It hasn't been replaced yet, and needs constant maintenance.

"This is the kind of thing we want to avoid," Bibb said. "We want the facilities to be 'ready' for people."

"Our goal is to make Langley as accessible as we can–to make sure that everyone, especially people with disabilities, can work here in a very productive manner," Bibb said. An issue we plan to address is ramp placement. It would be nice to enter buildings the same way that people who are walking do–instead of always from the back. It's important to consider the feelings of the people plans are made for. In cases where the best place to build ramps is in the back, though, better signage would make it easier to enter buildings."

A high priority is to make the public access buildings the best. "We want people from the outside to easily use our facilities," Bibb said.

An end of the year goal for the Accessibility Task Group is to have a tentative program in place for appropriate upgrades, and a grasp for some of the funding. "With Center management support, we've got the footing we need to increase improvements," said Mouring.

CPI "Boot Camp"

BY SUSAN A. SMIGIELSKI

Langley has been chosen to lead the agency in a quality improvement program that has direct application to the everyday workplace.

Continuous Process Improvement (CPI) Boot Camp is a unique training program that allows the participants to experience, first-hand, what continual improvement is all about, said Marge Gildenhorn, project leader in the Office of Continual Improvement at NASA Headquarters.

Photos by Sandy Gibbs

Mary Wong, Jet Propulsion Laboratory (JPL), shows Langley's Tony Maturo, Jim Gordon, NASA Headquarters, and Mark Wampler, JPL, details of the soldering process.

She said the program, purchased by NASA from Tatham Process Engineering, covers both the technical and administrative sides of the agency, making it applicable to everyone. Members of NASA senior management, including Administrator Daniel S. Goldin, participated in a camp prior to its installation in the agency.

Langley's role is to host facilitators-in-training from Kennedy Space Center, Goddard Space Flight Center, NASA Headquarters and Marshall Space Flight Center. In addition, Ames Research Center, Lewis Research Center and Stennis Space Center sent observers to the first camp. Anthony J. Maturo, Jr., Employee Development Branch, is charged with coordinating the needs of the camp. Mark Wampler, Structural Engineering Section, also participated in the initial boot camp.

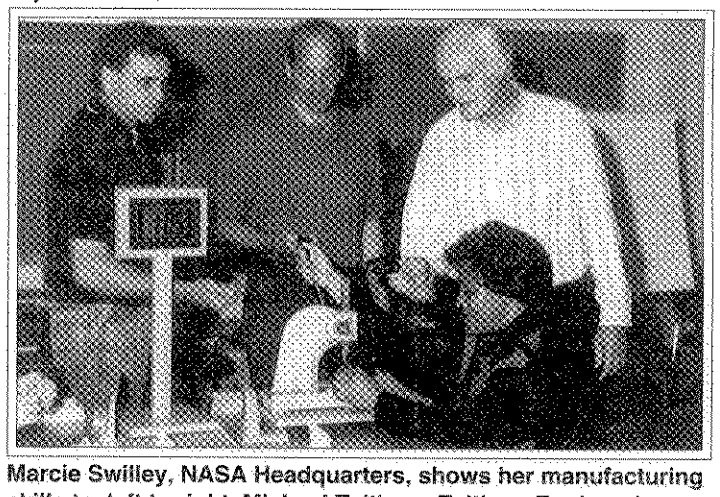
The difference between the boot camp and the two-day Total Quality Management (TQM) overview is the direct application to solving a problem in the workplace, Gildenhorn said. "This method uses the hands-on approach as the key to understanding," she added.

Unlike other TQM training, the NASA boot camp added a third day where participants were asked to directly apply what they learned to problems in their workplace. They also added intense problem solving. Gildenhorn said the process improvement method is a three-step process that includes a way to look at the situation, find the "non-value" steps and figure out ways to eliminate them.

"We are learning data gathering, how to use flow charts and the prevention of bottle necks," she said. Items purchased from Tatham Process Engineering include a license to conduct the program throughout the agency, as well as a kit that is a mini-factory and emphasizes the hands-on approach.

The mini-factory is a demonstration of the push-pull factor, said Maturo. "It shows the product-to-process method. When we started, there was no communication; we weren't working as team. Through experience and frustration we began together," he said. "There can be all kinds of change, but first the measurement and recognition system must change and, once that happens, people will be more open and trusting and they, in turn, can change."

Gildenhorn said certain criteria must also be met for proper participation and results. "Management must support the idea. A critical process that needs improvement must be identified and a team must be formed, " she added. "The key is to have a team with everyone working on a charter and a goal." To work, the program also needs people. Gildenhorn said the nine facilitators were carefully selected based on their work experience, knowledge of TQM and belief that the program can make a difference. "There is no doubt that these nine people are extremely talented and that's the key to success," she said.



Marcie Swilley, NASA Headquarters, shows her manufacturing skills to, left to right, Michael Taltham, Taltham Engineering, and Don Sawyer and Bill Neff, both of Lewis Research Center.

Improvements to Wythe Creek Entrance Underway

BY KRISTINA MURDEN

Improvements to the Wythe Creek gate began with clearing trees for two new lanes and will continue through the winter for a late winter-early spring completion "target."

Modifications

Modifications include adding two lanes on the other side of the gatehouse, a median with street lighting will divide the roads with two openings allowing cars to turn around and park. Langley's master planner, John Mouring, with Clarence Breen, traffic, and O.J. Cole, security, encourage Langley motorists coming from Poquoson in the morning to continue using Langley Boulevard's left lane during the one-way, dual-lane period.

Right-turning morning traffic coming from Drummond's Corner should continue using the normal right-hand lane of Langley Boulevard with signal light control — and until the project is complete — right-turning traffic under a red light may no longer proceed right on red, according to state law. Motorists could be cited by city or state police in this no-right-turn-on-red matter.

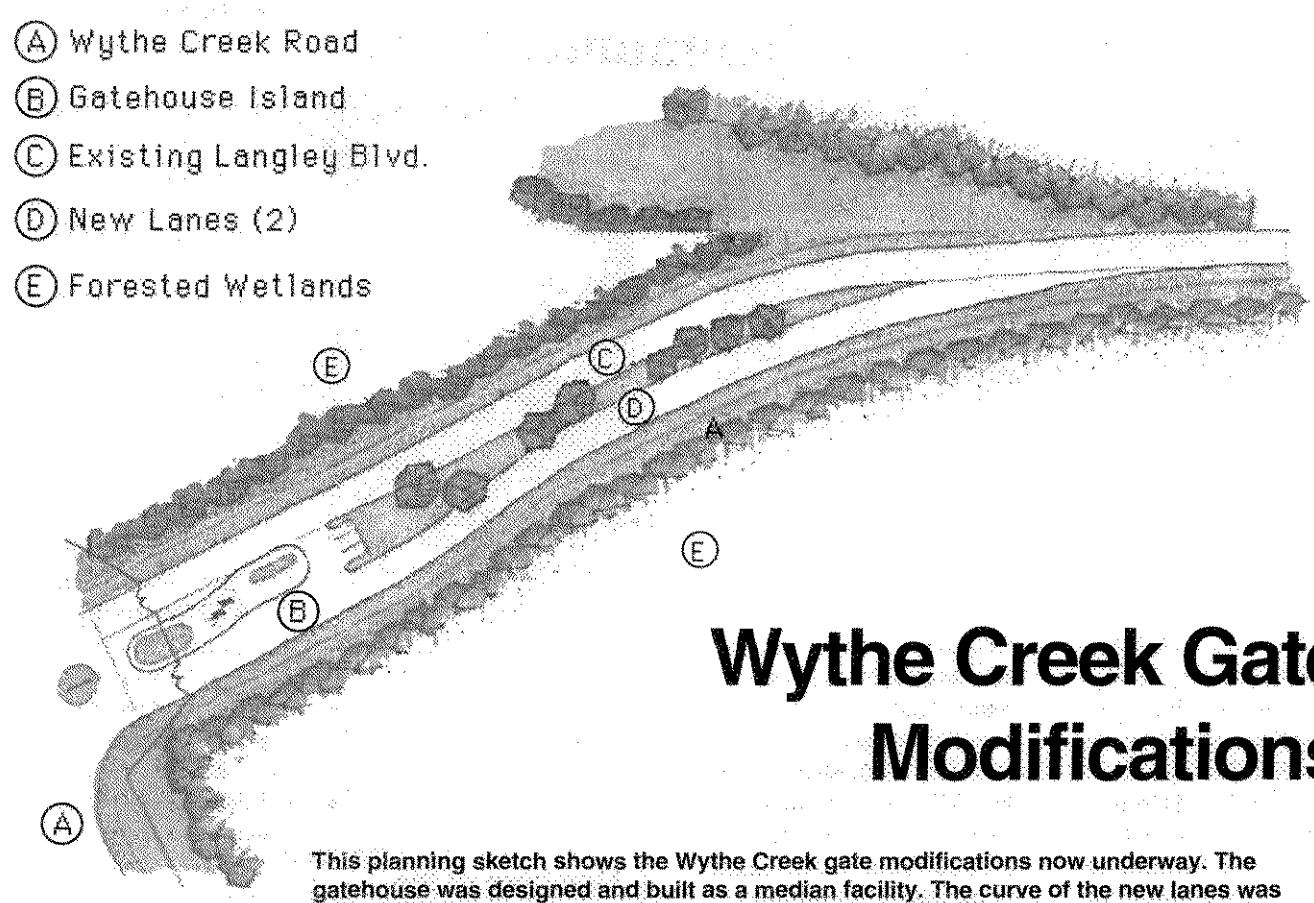
Breen cautions motorists to be especially alert during this winter construction period of less daylight and usually inclement weather.

Mouring notes that this project, another piece of Langley's Master Plan, is becoming a reality and that the added safety and the enhancement of full-time two-way traffic will be worth this temporary inconvenience.

Environmental Issues

As with other Langley projects, protection of the environment was considered and included in the activity. Jan Benson, Environmental Engineering Branch, is Langley's interface with the Corps of Engineers, which has jurisdiction in wetlands issues. Mouring added that this project avoided wetlands impact even though felling trees is not a welcome sight. The relocation of the smaller native volunteer trees was considered, but not found to be advisable value engineering. Unless there is an investment or other significance in a rare or cultured specimen, relocation of established plant material is usually not feasible.

Langley's Kim "Skip" Schroeder, Project Manager, is coordinating day-to-day conditions that may affect Langley motorists.



This planning sketch shows the Wythe Creek gate modifications now underway. The gatehouse was designed and built as a median facility. The curve of the new lanes was designed to conserve both land and non-tidal wetlands. The Facilities Master Plan calls for further widening of Langley Boulevard (not shown) to better suit existing facilities and the intersection with Dryden Street.

Management Support Division Automates Forms

What used to be a rather lengthy exercise to design, print, circulate and update a form is now being transformed into an automated system of electronic forms development. The new system allows organizationally unique forms (Langley forms with an LaRC number) and NASA forms to be accessed on-line via software packages on Macintosh computers.

Langley's original forms program required a clerk to work with the forms requester, pencil out a design and send it to an "outside printer" who would prepare a "camera-ready" copy for the actual printing. Most single-page forms could be printed on site and multiple-page forms were sent to outside print shops.

Phase I of electronic forms development has included the designing of forms by the forms manager on a Macintosh computer using "form designer" software, thereby eliminating the need to contract outside printers for a camera-ready copy of the form.

With the proliferation of office personal computers and the necessity to create new forms, a need for a centralized Electronic Forms Program evolved. The initial use of "True Form" software could no longer be supported because it was too difficult to use and the search for new forms technology began. The search included software packages that could be used on the Macintosh, stored centrally and transmitted and accessed by many users. The software also had to be changeable so that forms could be updated as needed. A program that would potentially meet these qualifications was chosen and a decision was made to purchase and test it.

A Pilot Program group was formed and participants were Brenda Simpson, Fluid Mechanics Division; Kim Elliott, Business Data Systems Division; Tammy Spellman, Electronics Directorate; Forms Manager Nola Graves, Directives and Forms Management Office; and Laura Campbell, Evaluation and Information Center (EIC). The pilot team purchased software from the Shana Company of Canada, received training from Shana personnel, developed the initial forms for testing and stored them in a PC server at the EIC. Testing of the accessing server and of downloading forms was done. Completion of data and printing of the completed forms was also tested. All testing was successful and it was decided that the Shana software would be selected.

A mass buy of 50 site licenses was done initially and under the current Phase II plan, about 250 users will be added. At present, 44 forms have been loaded onto the system and are available electronically to all who have purchased the software. "Informed Manager" and "Revision Distributor" software must be installed on users' hard drives to access the forms which are available on the EIC Guest Server through AppleShare with LaRCNET.

All new forms are being developed on the Macintosh and a cross platform is also being developed for IBM-PC users. The most current version of a form can be downloaded to all individual users, ensuring that they are always using an updated form. The Langley-developed forms will be made available to other NASA centers. "Although not all of the centers use the Shana software package," said Graves. "Ames Research Center at Moffett Field, Calif., does and we have begun to share information with them to avoid duplication of effort."

"We hope to automate all forms here at Langley," Graves continued. "We are currently working on forms that have the highest demand, or ones used most often. Multiple-copy forms," she added, "are a real challenge. You must print out all copies of the form from your computer. Then you must sign each form individually or use carbon paper. Some people will say we are headed back into the stone age, but the cost savings are enormous. Multiple-copy, NCR-type forms are very expensive and we can virtually eliminate their use."

Other benefits of electronic forms include: immediate availability, reduction in printing costs, the most current version of the forms are the only ones accessible; they are perfectly aligned on the computer monitor and, therefore, are easier to complete. "In addition, the forms are also easier to print, and will reduce clerical time. New forms will be added monthly," said Graves, "until all forms are automated."

Virginia Air and Space Center News

Virginia Air and Space Center
Hampton Roads History Center

Sea to the Stars Tours

Every weekend from now until Dec. 26, visitors can take a docent-guided "Sea to the Stars" tour at the center. The tour provides an overview of the center's unique collections by examining the many ways humans explore the world and the universe.

The center is open from 10 a.m. to 5 p.m., Monday through Saturday and noon to 5 p.m. on Sunday. Admission to the exhibits is $4 for adults, $3.50 for senior citizens and $2 for children ages four through 12. For more information, call (804) 727-0900.

Researchers Find TV, Comic Books Promote Science

Parents who want their children to learn science should set them down in front of "Star Trek" or give them a comic book, Purdue University researchers say.

Purdue researchers surveyed more than 30,000 students in Indiana and Chicago and found that by far the characters on "Star Trek" exerted the most influence in promoting science. "It's very clear these characters are the current cultural scientific heroes," said Dennis Harp, coordinator of Purdue's physics outreach program.

The "Star Trek" characters were followed by the television show "Beekman's World," NASA and astronauts, Steven Spielberg and George Lucas movies, Mr. Wizard, Michael Crichton, Isaac Asimov and Carl Sagan, scientist Steven Hawking and Marvel Comics characters, especially X-Men and Spider-Man.

"Shows that deal with innovative science are interesting," said Harry Kloor, director of corporate relations for the physics department. "The enjoyability of the program may make the kids watch, but its the science that makes them ask questions. The shows spark their imaginations, which is a big part of science." Kloor said that students often ask questions about how things work on Star Trek. "People in the show are always working with computers, so the kids ask about what the computers can actually do," Kloor said. "They also ask if there's sound in space. Even young children have heard about the gravity and that objects in space are weightless. They ask why the crew doesn't float around on the ship."

Kloor said even movies like "Terminator 2" generate questions about liquid metal and the liquid nitrogen used to freeze the bad guy. "Whether it knows it or not, the entertainment industry is stimulating the imaginations of these students," Kloor said.

"Kids get exposed to the words and science terms used on television and in the movies, such as matter-antimatter power, space-time continuum, worm holes and black holes. Though we don't have matter-antimatter engines, they are definitely within the realm of possibility."

This article is a reprint from a UPI story that appeared in a West Lafayette, Indiana newspaper.

Gravy Is Not on the Politically Correct '90s Menu

BY CRAIG HUNTER

Remember the eighties; the party decade? We bought things on credit, lived in excess and had a good time. Then, somewhere along the line, some stick-in-the-mud spoilsports realized that the federal deficit had more digits than pi and a 10-year bash suddenly came to an end. Our summer camp was over with the screech of a whistle; "OK, everybody, out of the pool!"

Enter the nineties, the "politically correct" decade where we have to clean up the mess and pay off the Mastercard bill from the eighties. We are cutting costs, spending sensibly and planning for the future. Living in the nineties means that we're environmentally aware, ecologically conscientious and conservation-minded. It also means that we must exercise regularly and eat healthy. In these health-conscious nineties, it's hip to eat light; big meals are out and, even the notion of a traditional square meal will evince sparks from the stairmaster and send health club devotees running for cover.

In addition to the four basic food groups, there are three basic groups of eaters in the nineties. First, we have the healthy crowd, you know, the General Nutrition Co.-types who pay strict attention to what they eat and perform detailed caloric and dietary intake calculations with complexity that rivals modern computer codes. These people know what's good and not good for them and would rather handle a live grenade than eat something off the wild and dangerous list. Members of the healthy crowd follow a strict exercise program and usually have some sort of unique physical attributes associated with hours spent on an exercise bike or liferower machine.

On the other extreme are the leftovers from the eighties crowd, the people who think gravy is a beverage. These people have absolutely no regard for what they eat, except in the sense that more is better. Gravy drinkers typically eat with a fork in one hand and some sort of scooping utensil in the other, like a piece of bread or a shovel. They end a meal by pushing back their chair and grinning with accomplishment, as if they had just scaled Mt. Everest and skied back down. Gravy drinkers may or may not exercise, depending on the diagonal measurement of their television set. They view members of the healthy crowd and their relentless pursuit of fitness to be about as dumb as an acre of mud. Not surprisingly, gravy drinkers routinely violate the law of conservation of energy when it comes to acquiring and expending calories.

Finally, we come to the third group, the maintainers. These folks get their name because they have good intentions, but basically just try to maintain some sort of balance between eating and exercise. Maintainers try to eat correctly but, more often than not, they just eat what's convenient. They also exercise if its convenient, however, they generally need peer pressure or some sort of minor crisis to get them into the gym. Most maintainers aspire to be members of the healthy crowd and like to think of themselves as healthy crowd dropouts who could get back to the other side if they had to. They sometimes turn into gravy drinkers, especially on Sunday afternoons during football season, but this usually leads to feelings of guilt which snap them back into a strict regimen of maintaining at some predetermined level of mediocrity.

A natural question that comes to mind is, "Does it really matter how we eat?" Are peoples' eating habits more than the result of a political state of mind? Medical evidence suggests that people who eat right and exercise live longer and healthier than the typical gravy-guzzling shopping channel viewer. History also shows us that many people die of causes that are not diet-related. With the advance of modern medical technology, we can expect to live far beyond what used to be considered a normal life expectancy anyway, and there's no telling what science will come up with next. So, does it really matter? Being a maintainer, I'd like to think so, but I dunno.

Pass the gravy.

Craig Hunter is a research assistant in the George Washington University/Joint Institute for Advancement of Flight Sciences program. He divides his time between the Propulsion Aerodynamics Branch and the Aeroacoustics Branch.

American Diabetes Association

There will be a Diabetes Expo '93 on Saturday, November 20, from 7:30 a.m. to 2:15 p.m. at the Holiday Inn Executive Center, 5655 Greenwich Road, Virginia Beach.

For more information, call 623-4068.

Photo by Carol Petrachenko

Sun Rays Fuel Solar Eagle II

A solar-powered electric car built by students and faculty at California State University, Los Angeles campus, competed in the 2,000-mile 1993 World Solar Challenge III race in Australia November 7. The Solar Eagle II, one of 70 cars in the race, received financial and technical support under the auspices of Langley's Education Office. The race is held every three years.

According to the builders, the car is environmentally safe, was built with all volunteer labor and travels at 50 mph. It is one of many Langley programs aimed at supporting minority colleges and universities.

In the photo, Dr. Chivey Wu, left, professor of mechanical engineering at California State University, and Robert L. Yang, assistant University Affairs officer, examine a model of the Solar Eagle II.

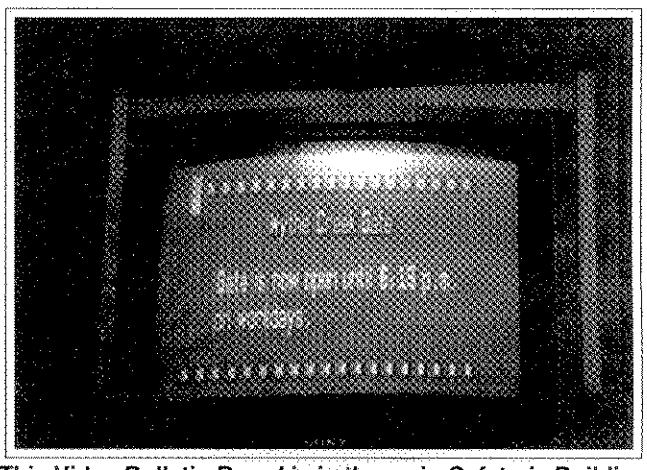
Langley Runners Club Results

The NASA Intercenter Running Competition is held twice a year among the NASA centers. For the Fall 1993 races, 35 Langley employees and contractors took part in the 10K race and 74 people in the two-mile race.

The top Langley runners in the 10K were: Men — Bill Rogers with a time of 34:49; Erik Kielin, 37:50; and Jim Lacasse, 40:30; Women — Jan Spangler, 48:13; Dianne DeTurris, 56:14; and Wei Anderson, 58:14.

In the two-mile, top runners were: Men — Bill Rogers, 10:47; Erik Kielin, 11:41; and Jim Lacasse, 11:55; Women — Jan Spangler, 14:55; Karen Sage, 15:57; and Diane DeTurris, 16:54.

The Video Bulletin Board Survey



This Video Bulletin Board is in the main Cafeteria Building but the Center has many bulletin board locations where current information is available.

The Video Bulletin Board is a service presented by the Office of Public Affairs (OPA). The Video Bulletin Board, which has been in service for about four years, is available at 190 sites and in more than 80 buildings around the Center, including the cafeteria.

Please help OPA evaluate this service by sending your comments about its usefulness to: Video Bulletin Board, Mail Stop 115. Let OPA know how you and your organization use the information and how this service can be improved.

Happenings

LANGLEY TOAST-MASTERS CLUB: Develop public speaking and leadership skills; come to the Langley Toastmasters Club meetings every other Wednesday at 11:30 a.m. to 1 p.m., in the H.J.E. Reid Conference Center. The upcoming meeting is Nov. 24. For more information, call John Lin, ext. 45556.

FOR RENT/LEASE: Townhouse, well-maintained in Mallard Point, view of water, 2 BR, 1-1/2 baths, living/dining room combination, all appliances, central heat and air, many extras. No pets please; available immediately, $520/month. Call 727-9187, after 5 p.m., weekends anytime.

VPPSA: The Virginia Peninsulas Public Service Authority Board will meet Friday, December 3, at 10 a.m. in York County's Human Service Building, 301 Goodwin Neck Rd. For information, call 728-2062.

FOR SALE: Wedding dress, sheath-type, puffed sleeves pearl and sequin bodice with matching full train, size 16. Asking $300. Call 887-2597, after 5 p.m.

AGA SEMINAR: The Association of Government Accountants, Virginia Peninsula Chapter, is announcing the Annual Fall Professional Development Seminar. This year's topic is "Enhancing Financial Management Skills to Survive in a Shrinking Budget Environment." Several speakers will discuss these issues: "CFO Act — Is It Working?," "The Budget Deficit: What's the Problem?," "Fraud Happens," and "Integrating Audit and Investigator Roles." The seminar will be at the Radisson Hotel, Hampton, from 8 a.m. to 4:30 p.m. Cost is $50 for members, $60 for non-members and includes lunch. Eight CPEs will be awarded. For more information, call Pat Link, ext. 48102.

TAMPA BAY FANS: Any fans of the Tampa Bay Buccaneers who want to get together to talk about the season, call John Emery at 723-7419.

STRESS & STRETCH: Langley Fitness Center offers 30-45 min. of stretching and relaxation at 4:30 p.m. Thursdays in the cafeteria. Open to NASA employees and contractors. Call ext. 46387 for details.

MODEL RAILROAD OPEN HOUSE: The Chesapeake Bay & Western HO-scale model railroad will be open to the public on Saturday, Nov. 20, from 10 a.m. to 5 p.m. and Sunday, Nov. 21, from 1 to 5 p.m. Admission is free. On Saturday, a Train Swap Meet and Flea Market will be held in the adjacent building with a door charge of $2. Location: Grafton (York Co.), turn east off Hwy. 17 on Dare Rd. (Rt. 621) and then left into the parking lot behind the Grafton Hobby Center. For more details, call Joe at 864-3730.

CHILD CARE: Poquoson, Bethel Manor, Langley, Yorktown area, Monday-Friday, experienced teacher w/ CPR training will provide meals and activities, references. For more information, call Arlene Bermudez, 865-0853.

HOUSE FOR SALE: York Co./Tabb, 3 BR, 2 bath ranch on large lot, lakefront view, near NASA. Has cathedral ceilings, skylights, fireplace, community pool and tennis. Put $2,500 down and assume payments of $905/month. Call 867-8223.

FREE AEROBICS: Join Langley Fitness Center's 6:15-7:15 a.m. or 11-11:45 a.m. aerobic classes with low-impact, bench or interval training, including accessories. Mon., Wed. and Fri. in the gym.

BENCH, LOW-IMPACT CLASSES: Develop your personal fitness from certified personal trainers and certified aerobics instructors. Weights, dyna-band and ultra-toners for resistance training and benches ranging in height from 2-10" are provided. Free body composition analysis and cardiovascular fitness assessments are given before class. Sat. features low-fat health food after class. LAA Gym, 5-6 p.m. Tues. and Thurs., 9:30-10:30 a.m. on Sat. Call ext. 42295, for more information.

TOYS IN SPACE: Children ages six through twelve can play with toys like the one astronauts used in space that measured the effects of a weightless environment. The Toys in Space program at the Virginia Air and Space Center will be on Dec. 5, 11, 12, 18, 19 and 27 through 30. Fee is $2 per person. To register and for more information, call 727-0900, ext.756.

LAA ACTIVITIES: There will be a regular social hour Dec. 3, from 4-6:30 p.m. Dec. 17, from 3:30-8 p.m., the "LAA Holiday Open House" is scheduled, entertainment by Mark Bradley. Both events will be in the H.J.E. Reid Conference Center. For more information, call Andrea Lewis at ext. 46369.

JAMESTOWN SETTLEMENT: The eating and cooking habits of the Powhatan Indians and the colonists will be demonstrated during the "Foods and Feasts in 17th-Century Virginia," Thursday through Saturday, Nov. 26-28, at Jamestown Settlement. Techniques of food preparation, open-hearth cooking and food preservation will be presented during this food festival. They are open 9 a.m. to 5 p.m. daily. For information, call (804) 229-1607.

TURKEY SHOOT: Saturday, Nov. 20, from 8 a.m. to 4 p.m., there will be a Turkey Shoot competition at the Firing Range at Langley Air Force Base. It is open to the public and turkeys will be awarded during the day. For information, call 764-2613 or 764-6091.

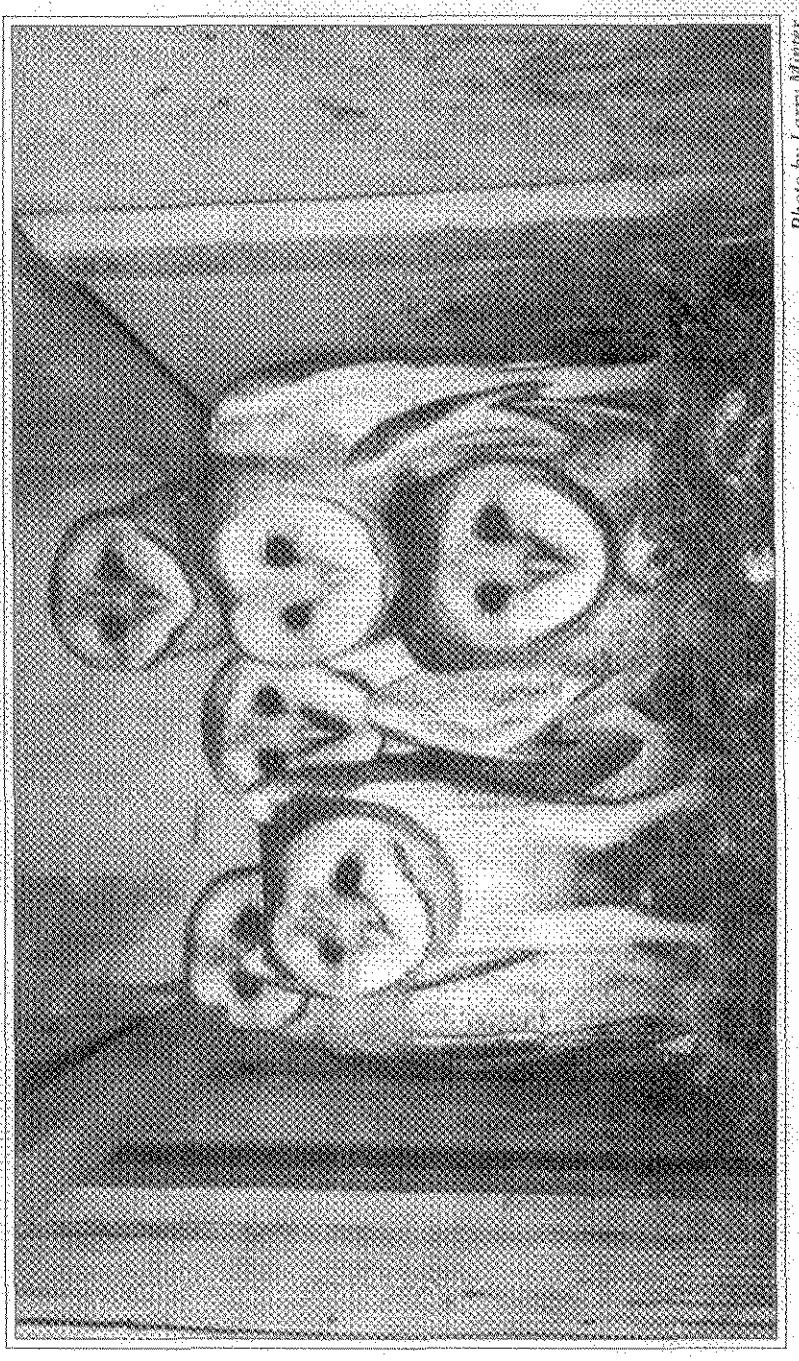


Photo by Larry Minter

These baby barn owls were found by George Palko III and friend, Larry Minter, in a cozy resting place on top of the gantry of the Impact Dynamics Facility this summer. They stayed until they were able to fly and hunt for themselves. Although a bit camera-shy, they are now adults and have flown on to prowl the local fields and woods.

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Langley Research Center

News Researcher

Bi-weekly Employee and Contractor Publication

Volume 7 ❖ Issue 24 ❖ December 3, 1993

Town Meetings Announce New Center Organization

A major reorganization of Langley was unveiled by Center Director Paul F. Holloway in a series of "Town Meetings," conducted November 17-19 at the H.J.E. Reid Conference Center.

The Restructuring

In introducing the restructuring, Holloway spoke about the changing global environment. The end of the Cold War has brought about a new battleground: economic competition. The Clinton Administration has demanded that NASA produce tangibles that will bring jobs back to the United States, increase exports and help balance the budget. "Our predecessor, NACA, was created to help industry," Holloway said. "We've been doing that here at Langley longer than anyone else and we're going to continue to do it. NASA's continued existence is dependent upon demonstrating a good return on investments to the people of the Unites States."

Quoting Vice President Al Gore, Holloway said, "'Aeronautics is the crown jewel of the American economy' since U.S. performance in exports is dominated by aeronautics. But our lead is slipping. Where we once held over 90 percent of the air transport market, our share is now only 68 percent."

Embracing Change

Holloway quoted John Gibbons, head of the Office of Science and Technology Policy and White House Science Advisor as saying, "We have 726 government laboratories; there's no reason to believe we need them all. If you don't change, you're dead." Holloway added, "We must embrace change as our ally and reinvent Langley to fit the future."

Reorganization

Highlights of the reorganization are:

– The Office of the Director has been expanded to five positions: Paul F. Holloway, director; Dr. H. Lee Beach, deputy director; Sidney F. Pauls, associate director; Dr. Belinda H. Adams, assistant director; and Roy V. Harris, assistant director.

– The Chief Scientist and Chief Engineer will continue to report to that office.

Staff Offices

Flowing from the Office of the Director will be six staff offices: the Office of the Chief Counsel, minus patent attorneys; the Office of Equal Opportunity Programs; the Office of External Affairs; the Office of Human Resources; the Office of Education and the Office of Systems Safety, Quality and Reliability. The two Agency programs for which Langley is the lead center, the National Aero-Space Plane and High-Speed Research, will continue to report directly to the Office of the Director.

Langley's former directorates have been reorganized to five groups. They are the Aeronautics Programs Group, the Space and Atmospheric Sciences Programs Group, the Research and Technology Group, the Technology Transfer Group and the Internal Operations Group.

Group Heads

– Aeronautics

Heading the Aeronautics Programs Group will be Jeremiah F. Creedon, with Wallace C. Sawyer, serving as deputy. Contained in this group will be the Mission Analysis and Vehicle Integration Branches and others to be decided. Holloway explained that the organization will continue to evolve and, as technicalities are resolved within groups, some additional personnel may be reassigned.

– Space and Atmospheric Sciences

The Space and Atmospheric Sciences Programs Group will be headed by Darrell R. Branscome, with Joseph B. Talbot as deputy. The group will consist of the Advanced Space Concepts and Atmospheric Sciences Divisions, the Space Technology Initiative Office, the Vehicle Analysis Branch and others, to be decided.

–Research & Technology

The Research and Technology Group, headed by Dr. Douglas L. Dwoyer, with

Continued on Page 3

Let's Face the Changes and Challenges Together

Paul F. Holloway

As most of you are aware from the series of Town Meetings I held on Center November 17 through 19, both Langley and NASA are facing tremendous challenges. As a result, we are undergoing a major internal reorganization.

We do not expect these changes to affect our overall budget nor the number of civil service employees working at the Center beyond the Executive Order reduction required for all of government. We do view these changes as an opportunity to refocus, to streamline and to increase productivity.

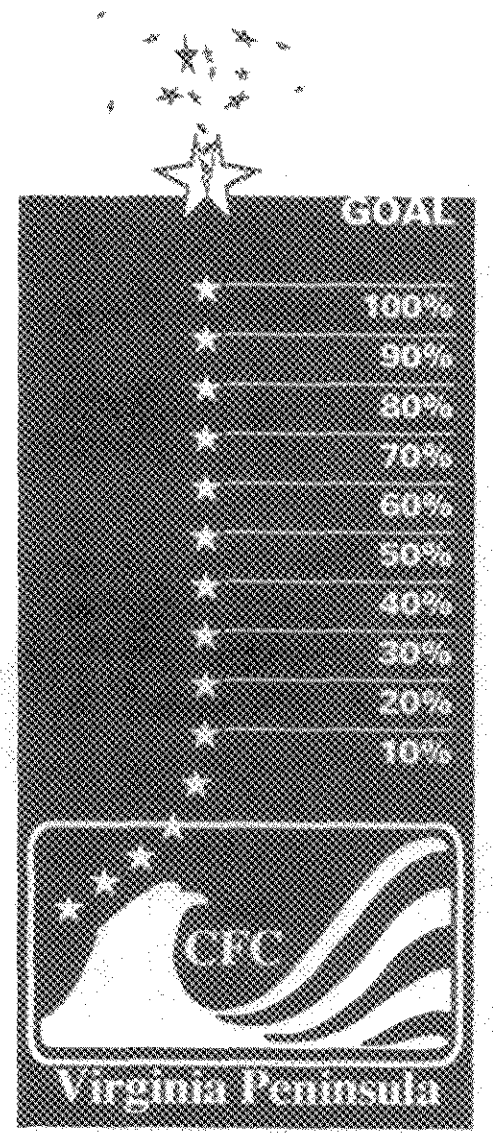
Our rationale for change is a reflection of the changes in the roles and the mission of NASA as an Agency and the evolving program at Langley. They are also a direct result of the changes occurring in the Federal Government due to the findings of the National Performance Review conducted by Vice President Al Gore.

While Langley's overall mission of aerospace research and technology remains the same, the reorganization will increase the Center's focus on advanced technology and on the transfer of technology to industry. The reorganization places a renewed emphasis on aeronautics and space strategic planning. It also helps streamline the Center to become more efficient, to increase productivity and to clearly define our operational costs. President Clinton has directed that all federal laboratories use technology to help the U.S. economy and increase national productivity, thereby increasing American jobs.

Final approval of this carefully planned, new organization has begun. We can look forward to facing these changes and challenges together.

– Paul F. Holloway
Center Director

Over the Top Thanks to You !!!



As of Friday, November 19, 70.3% of Langley employees contributed $315,247 to the Combined Federal Campaign (CFC). That figure represents 100.08 percent of Langley's $315,000 goal. Thanks to the 2,146 Langley employees who gave so generously, we can again show our community the "Power of Caring."

Thank You from the Director. . .

Thanks to your generosity, the Center has once again exceeded its Combined Federal Campaign goal of $315,000.

We thank all those who contributed initially to the campaign and give a special thanks to those who responded with new or additional contributions when you learned that the Center was just short of its goal.

As we noted earlier in the campaign, this is a time of extraordinary need in our community and our Nation for the services of the CFC. Your generous response will make a difference!!

— Paul F. Holloway
Center Director

And from the Chairman

On behalf of your 1994 Combined Federal Campaign Committee, I would like to offer a huge thank you to all Langley employees who gave to this year's campaign. Because of your generosity the Center not only met but exceeded its goal, collecting almost $316,000 as of November 19.

We are especially grateful to those of you who responded to our last-minute appeal and put us over the top! The Center has truly demonstrated the "Power of Caring."

—Doug Dwoyer
1993 CFC Chairman

News Briefs

Around the Agency

MYSTERY OF "FASTEST FLICKERING" GALAXY SOLVED – Since its discovery in the mid-1980s, Galaxy NGC 6814, located about 47 million light years from Earth, has held special interest with astronomers. Of the billions of galaxies that make up the universe, a few galaxies "flicker" and this one "flickered" faster than any other. Furthermore, it was the only one with predictable flicker. Every 3.4-hours it became brighter. Then, 3.4-hours later, it became dimmer. The reason for the flickering has become clear. However, the reason is not related to the galaxy. Astronomers using data from the orbiting ROSAT X-ray observatory have discovered two stars that orbit each other near the line of sight between Earth and the galaxy. When the two stars, called a binary system, become aligned with each other in relation to Earth, the galaxy image appears much brighter. When the binary stars move out of alignment, the galaxy becomes dimmer. "Given the limited spatial resolution of the previous X-ray observatories, it simply was not possible to disentangle the two sources, namely NGC 6814 and this binary star system," said Dr. Greg Madejski of the Universities Space Research Association at Goddard Space Flight Center, Greenbelt, Md. "It required the precise imaging capability of the ROSAT observatory, coupled with its large field of view. In fact, these two stars have absolutely nothing whatever to do with NGC 6814."

NASA FLIES FIBER OPTICS ON AIRCRAFT CONTROL SYSTEMS TEST – NASA started flight tests of a fiber optic control system that could result in lighter, more fuel-efficient airplanes with more capable control and monitoring systems. The tests using the F/A-18 Systems Research Aircraft at Ames-Dryden Flight Research Facility, Edwards, Calif., are developing fiber optic systems — small bundles of light-transmitting cables — that weigh less and take up less space than the copper wiring in today's aircraft. Fiber optics also have better immunity from strong radio signals and lightning, are free from short circuit arcing and can carry more electronic signals. "Replacing copper wire with fiber optics, where appropriate, offers an unsurpassed ability to transmit commands and data between parts of an airplane," said Darlene Kerner, chief engineer and principal investigator for the Systems Research Aircraft. "These flight tests will help develop fiber optic components that will carry signals to and from flight controls in tomorrow's civilian transport aircraft."

SAM II and SAGE II Celebrate

A joint birthday party for two satellite experiments still in orbit was held on Oct. 25. SAM II and SAGE II reached 15-years and nine-years in-orbit, milestones that were meant to be celebrated, according to Ed Mauldin of the SAGE III Project Office.

SAM II, aboard the Nimbus 7 Earth Radiation Budget Satellite (ERBS), was launched by shuttle on October 4, 1984. These instruments have both flown flawlessly in space due to the outstanding efforts of the Langley engineering and project groups that developed them and because of the many employees who served on design and tiger teams during the satellite's development.

The core engineering team members for SAM II were Ed Mauldin, instrument management and optics; Reggie Holloway, electronics; Don Hedgepeth, mechanical/thermal; Ron Baker, pointing; and Tom Moore, product assurance.

The core engineering team members for SAGE II were Winn Vaughan, project management and electronics; Ed Mauldin, systems; John Gustafson, mechanical/thermal; Scott Laney, controls; Len McMaster, detectors and science team management; and Tom Moore, product assurance.

In addition to being durable, both instruments have proven to be very successful for atmospheric research and returning data crucial to the understanding of the physics and chemistry of stratospheric ozone and aerosols on a global basis. Both data sets, for example, are being used to unravel the mechanisms associated with the springtime ozone hole found in Antarctica. Using SAM II, scientists were able to discover Polar Stratospheric Clouds. These clouds are key to understanding the mechanisms that create the ozone hole.

In addition to vertically mapping ozone losses in the hole, the SAGE II data have enabled scientists to pinpoint the altitudes at which worldwide ozone losses occur. This data has become the standard for long-term ozone trend determination. SAM II and SAGE II have also produced global maps of stratospheric aerosols produced by volcanic eruptions. The maps are crucial to understanding effects of aerosols on climate and atmospheric chemistry.

Dr. M. Patrick McCormick, head of the Aerosol Research Branch, left, and Joe Talbot, acting director for Space, get ready to cut the cake at the celebration.

These durable and highly successful science missions provide testimony to the skills and dedication of the Langley teams that were responsible for all aspects of developing the experiments, including science, engineering and data processing. Ball Aerospace Corporation, Boulder, Colo., built the SAGE II instrument and teamed with the University of Wyoming to build the SAM II instrument. Both were built under the direction of Langley engineers and researchers. The next generation of the SAGE instruments, SAGE III, has been chosen for flight on Mission to Planet Earth's Earth Observing System, with eight launches scheduled between the years 2000 and 2015.

Photos by Dan Axelrad

The SAGE II core team is, from left to right, John Gustafson, Winn Vaughan, Len McMaster, Pat McCormick and Ed Mauldin. Not pictured are Tom Moore and Scott Laney

The SAM II core team is, from left to right, Ron Baker, Reggie Holloway, Pat McCormick, Don Hedgepeth and Ed Mauldin. Not pictured is Tom Moore.

Community Corner

Bowlers and Swimmers: Come Share Some Fun with the Disabled

Clients at Sarah Bonwell Hudgins Regional Center need some help to fully enjoy a couple of organized sporting activities. Though disabled, these adults, from 19 to 65 years of age, look forward to weekly swimming and bowling events. They just need a little help.

Background

The Association for Retarded Citizens of the Peninsula, Inc., (ARC-Peninsula) was organized in 1953 by a group of concerned parents who were committed to promoting community services for people with developmental disabilities. ARC-Peninsula and the Sarah Bonwell Hudgins Foundation established the Sarah Bonwell Hudgins Regional Center and other community-based programs now serving more than 800 individuals annually.

The ARC Parents Auxiliary provides social and recreational activities for local citizens with disabilities. The auxiliary raises funds to support dances, field trips, camping, bowling, swimming, scouting and Special Olympics events.

Here's How You Can Help

During the holiday season, our thoughts turn to how we can help others. Here are two ways you can help any week during the year:

Swimmers are needed **Wednesday nights** at the Hampton Recreation Center on Lincoln Street in Hampton. The evening swim starts at 7:30 and consists of 30 minutes of aquatic exercise and 30 minutes of free time. The event generally draws 15 to 30 participants. The ideal situation for learning is one volunteer to help each swimmer.

If **Saturday afternoons** are more convenient, would-be bowlers need your help from 1:30 to 3 p.m. at Century Bowling Lanes on Pembroke Avenue in Hampton. This activity draws from 70 to 90 particpants, all enthusiastic and eager to have fun. Scorekeepers and game assistants are needed.

If you can help with either of these events—every week or just one time—call Ted Pritchard at 826-0049. Ted has been helping with these kinds of activities for over 25 years. He guarantees it's fun, fullfilling, and may even be habit-forming!

If you know of other community needs, call Marny Skora at 864-3315.

In Memorian

Upshur T. Joyner

Upshur Tucker Joyner, 85, died on Tuesday, Nov. 9.

Joyner retired as a physicist from Langley in 1971 after 40 years with NASA and its predecessor organization, the National Advisory Committee for Aeronautics. He was a graduate of the College of William and Mary, a founding member of the Hampton Roads Power Squadron and an associate member of the American Institute for Aeronautics and Astronautics (AIAA) and the Engineers Club of the Virginia Peninsula.

Louise C. Thore

Louise Crawford Thore, 80, a native of Macon County, N.C., and a Peninsula resident for 55 years , died Saturday, Nov. 13. Thore retired as a cafeteria cashier at Langley in 1978 after 25 years of service.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... *Marny Skora*

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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.

Town Meetings Get the Word Out

Continued from Page 1

deputy to be announced, reflects a combination of many functions. It will encompass the Structures Directorate, the Flight Systems Directorate, all of the Aeronautics Directorate except the Mission Analysis and Vehicle Integration Branches, all of the Space Systems Division with the exception of the Vehicle Analysis Branch, and the Non-Intrusive Diagnostics and Non-Destructive Evaluation Sciences Branches. About this move, Holloway said, "We want to preserve the identity of this Center, its research, discipline, strength, but make changes where necessary. We need to form effective multi-disciplinary teams quickly and the R and T Group will be the strength of our Center program."

– *Technology Transfer*

Charles P. Blankenship will head the Technology Transfer group, with a deputy group head to be announced. The Group will be made up of the Technology Utilization Office, the Space Commercialization Office, the Small Business Innovative Research program office, the patent attorneys and others, to be decided as this group evolves and grows. This group will represent the full program and capability of Langley. "I want this Center to be so successful and attract so much attention, that no one would ever dream of questioning our existence," Holloway said. "With the Group's emphasis directed toward technology transfer, we can accomplish this goal."

– *Internal Operations*

The Internal Operations Group will be led by Dr. Kristin A. Hessenius, who most recently served as deputy associate administrator for Aeronautics at NASA Headquarters. Serving with her will be three deputies, Sammie D. Joplin, heading Facilities Engineering and Operations; Robert T. Wingate, leading Engineering and Information Systems; and John F. Stokes, who heads up Administrative Services. Under Wingate, Dr. Frank Allario will be chief of an Information Services Division. The division's main objective will be to form an integrated information systems organization and will consist of the Analysis and Computation Division, Business Data Systems Division, Information Resources Management and Management Information Systems.

– *The Comptroller*

The Comptroller's Office remains the same with Joseph A. Struhar as head. The office oversees the Financial Management Division and Programs and Resources Division.

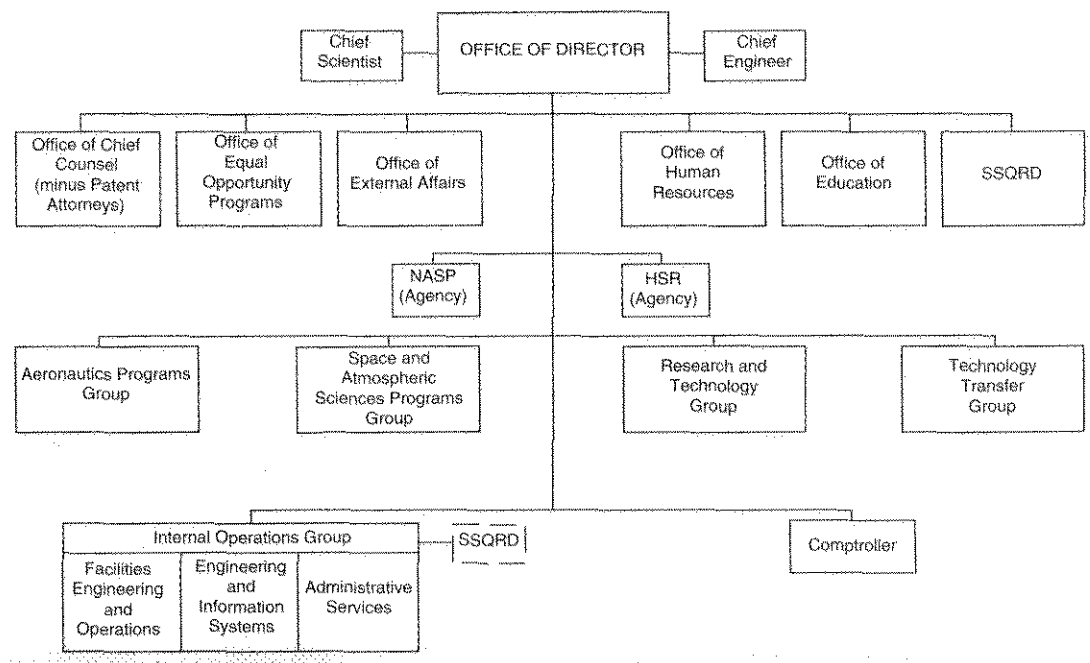
– *What happens next?*

A Transition Team, headed by Adams, plus the group heads, the Comptroller and chief of Human Resources, Alice Massey, will work out the details of the reorganization and the interactions of the new groups. A reorganization package will be submitted by the team to NASA Headquarters for approval. For now, Holloway said, we will begin to transition to the new organization immediately and will overlap the work of the transition team.

"I set up these town meetings for several reasons," he said. "I wanted you to understand the changes and how national priorities have influenced what happens here on Center. I wanted you to know what has occupied the senior staff for the past year, that we have heard your voice through the Climate Survey and that we are committed to the continual improvement process and Total Quality Management.

"Reorganizations are time and energy-consuming but I hope that through these town meetings and others that we have planned for the coming weeks and months, all employees will understand the rationale for and the importance of the changes that have been made."

A Guide to the Restructuring



What Happened to Your Input?

Your input helped with the new restructuring of Langley. As a result of the Quality Climate Survey, answered by 66 percent of employees, Strategic and Quality Directions were formulated to direct the Center toward its goal: "Securing World Class Leadership." A pamphlet, describing the goal as well as Langley's mission, values and vision statements plus seven areas of improvement, was given to all attendees of the town meetings.

Using these Strategic and Quality Directions, the Center Redesign Team set up reorganization guidelines. Some of these included: Starting with a clean piece of paper, the team had to decide that there were no "sacred cows;" that the Center will be flexible and respond to a changing environment; and that team members would be guided by reorganizational changes within NASA Headquarters. Other factors to be considered would be a smaller senior staff and the active involvement by members of the Office of the Director with officials and lawmakers in Washington, D.C. Using these guidelines, the team went into action during the Summer and early Fall to formulate the restructuring. (See Quality Climate Survey Story on Page 4)

TQM at Work in the Acquisition Division

The Communications Quality Action Team (CQAT) was initiated last fall as one part of the Center's Total Quality Management (TQM) demonstration project.

According to their plan, the team's goal was to increase Acquisition Division and customer understanding of each others' needs and expectations of the procurement process through improved communications and information transfer.

The CQAT conducted a survey in which 200 customers responded to questions about communication, knowledge of the acquisitions process, the degree of teamwork between the division and its customers and customer satisfaction. All responses were analyzed to determine significant variations in responses and written comments and suggestions were captured.

The team used the survey data along with customer input on problem identification and solution to develop six primary recommendations to help achieve the stated goal. The recommendations were selected based on two criteria; consistency to customer desire and potential for achieving the goal. The six recommendations were adopted by a sponsor group consisting of all Acquisition Division branch heads and a plan for using the recommendations was developed.

Next, the CQAT passed the responsibilities to the first of several implementation teams and then the CQAT was dissolved. One of the first goals of the new team is to develop feedback mechanism(s) and process(es) designed to measure customer satisfaction. Their target date for this goal is December 1, 1993.

The next phase will be to initiate other teams and complete all recommendations that came from the survey within one year.

The CQAT would like to thank each customer who took the time to respond to the survey and, as a result, helped improve the procurement process. If there are any questions about the survey or more details are required, please contact Richard Siebels, at ext. 48683.

Recommendations for Achieving the Goal

"What's New In Lasers" Is Colloquium Topic

Photos by Albert's Photo Studio, MA.
Jeff Hecht

Jeff Hecht will discuss advances in laser technology that are used in a range of consumer products and as powerful research tools at Langley's December 13 colloquium.

His presentation features work done on solid state lasers for semiconductor diode lasers, which are smaller, more compact, and easier to use than other available laser technology.

Solid state lasers have been the focus of research and projects sponsored by NASA during the past 10 years, some at Langley Research Center, which represent major contributions to the improved solid state laser systems. Langley's Lidar In-Space Technology Experiment (LITE), which will fly on STS-64 Discovery in late 1994, uses solid state laser sensors to measure clouds, dust particles and temperature. LITE is the first lidar system flown in space for atmospheric studies and is an example of these new solid state lasers.

Large numbers of semiconductor diode lasers are used commercially in items like compact disk (CD) players, video disc systems, fiber optic communications, and computer storage systems.

Promising new electronic structures allow making an array of many lasers at the surface of one electronic chip, which may produce higher power and better quality emitted beams than earlier chips that emitted asymmetric beams from the sides.

Hecht, co-founder and senior contributing editor for *Lasers and Optronics* magazine, is the Boston correspondent for *New Scientist* magazine. His presentation includes practical uses for laser technology — from medicine to industrial processes.

Hecht, a member of the American Physical Society, Institute of Electrical and Electronics Engineers, Optical Society of America, and the American Geophysical Union, writes books and articles on laser-related subjects.

The colloquium begins at 2 p.m. at the H.J.E. Reid Conference Center, 14 Langley Boulevard.

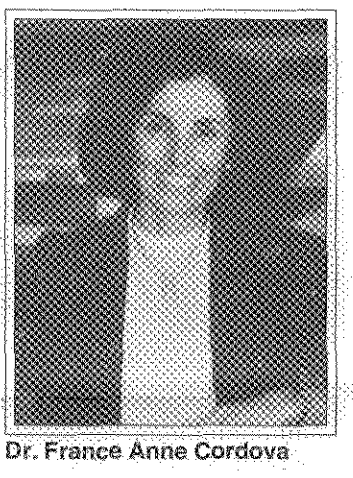
NASA Chief Scientist to Lecture at Langley

BY JEAN CLOUGH

Langley Research Center
FWP
Federal Women's Program

Dr. France Anne Cordova, NASA chief scientist, will present a lecture in the H.J.E. Reid Conference Center Monday, December 6, from 1 to 2 p.m. In her talk to employees and contractors, she will discuss her goals, objectives and vision as NASA's chief scientist.

The lecture is co-sponsored by the Federal Women's Program Committee and the Hampton Roads Section of Women in Aerospace. Refreshments will be served following the lecture.



Dr. France Anne Cordova

Hampton Roads Section of Women In Aerospace WIA

In her position since mid-October, Cordova is the Administrator's senior scientific advisor. Also, she is the principal interface between the Administrator and the national and international science community to ensure that NASA programs are universally regarded as scientifically and technologically well founded and are appropriate for their intended applications. One of her critical duties is to coordinate an integrated strategic plan for all the scientific disciplines across NASA.

Cordova is on extended detail to NASA from Pennsylvania State University. At Penn State, she heads the Astronomy and Astrophysics Department. Prior to assuming her position at Penn State in 1989, she was deputy group leader for the Space Astronomy and Astrophysics Group, Los Alamos National Laboratory, N.M., from 1979 to 1989.

Cordova is a member of the President's National Medal of Science Committee and the Space Science and Applications Advisory Committee of the NASA Advisory Council, and is vice president of the American Astronomical Society.

She has served on the Roentgen X-ray Observatory International Users Committee, the Extreme Ultraviolet Explorer Guest Observer Working Group, the Hubble Space Telescope Advanced Camera Team and on a number of astronomy and astrophysics committees for the National Science Foundation. Cordova's scientific contributions have been in the areas of observational and experimental astrophysics, multispectral research on x-ray and gamma ray sources and space-borne instrumentation.

Cordova has a bachelor of science degree in English from Stanford University and a doctorate in physics from the California Institute of Technology.

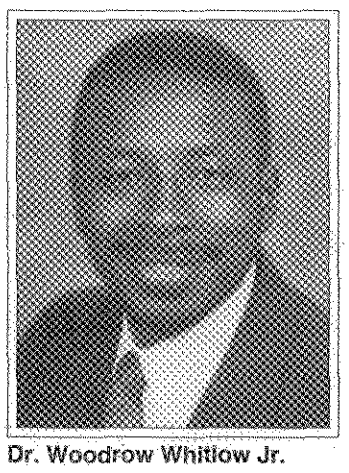
"Celebration of Heroes" Includes Whitlow

Among the "heroes" who shared their personal and professional experiences during the third "Celebration of Heroes" was Dr. Woodrow Whitlow Jr. of the Unsteady Aerodynamics Branch.

The celebration was held in Richmond, November 16, and was co-chaired by Governor Douglas Wilder and Jeanne Ashe, widow of the late tennis star Arthur Ashe. It was attended by 600 middle school children and was sponsored by the Virginia Heroes Organization. The group is intended to enhance relationships between positive and highly visible role models and the students.

Whitlow was one of about 90 role models invited to talk to the students. Among his fellow "heroes" were Katie Couric of the Today Show; former Virginia Supreme Court Justice John Charles Thomas; Lonnie Liston Smith, jazz musician and Grammy nominee; football Hall of Famer Willie Lanier; and University of Virginia All-American Ralph Sampson.

Whitlow's specialized fields are in the areas of computational and theoretical fluid dynamics, aerodynamics, unsteady flows and aeroelasticity. He began his Langley career in 1979 as a research scientist, and has served as a senior research scientist and program manager at NASA Headquarters.



Dr. Woodrow Whitlow Jr.

The Floyd L. Thompson Fellowship Program 1994-95

Applications are invited for the 18th annual Floyd L. Thompson Fellowship Program. This program was established in 1977 to enhance an individual's research capability and to provide a mechanism for infusing the Center with new ideas from other centers of excellence. Applicants may propose an area of research to be pursued at Langley or other research or educational institutions. The research effort may last one to two years, of which no more than a year may be spent in a sabbatical away from Langley. One or two Fellows will be selected and will be supported by salary, travel and per diem, and other general research expenses.

Interested individuals are encouraged to explore the possibilities of a research assignment with an appropriate institution and to seek the support of their line management for their candidacy. The required application form and instructions for its completion may be obtained from George D. Allison of the Employee Development Branch. Questions concerning the program or the application process should also be directed to Allison at ext. 42594. To be considered, completed applications must be received by January 31, 1994.

Virginia Air and Space Center News

East Coast Premier of "The Discoverers"

Virginia Air and Space Center
Hampton Roads History Center

The thrill of discovery and our unquenchable desire to extend the boundaries of knowledge are captured in the IMAX® film, "The Discoverers." The film opened at the center and continues through May 31, 1994. According to Pulitzer Prize winning author and historian, Dr. Daniel J. Boorstin, who wrote the best-selling book that inspired the 40-minute film, "We are all discoverers piecing together the puzzle for the first time."

The Discoverers enables us to experience remarkable adventures around the world and in space. The film takes us on a journey of new worlds with six discoverers who live to solve mysteries. It is their desire to discover and a passion for knowledge that inspires their quest.

For author Boorstin, the individual stories of the discoverers reveal something important about ourselves. He states, "My focus remains on mankind's need to know – to know what is out there. Discovery is a story without end . . . The most promising words ever written on the maps of human knowledge are 'terra incognita' — unknown territory."

Admission to the IMAX® film and exhibits is $8 for adults and $5.50 for children four through 12 years old. The center is open 10 a.m. to 5 p.m. Monday through Saturday and noon to 5 p.m. Sunday. For information, call 727-0900.

Membership Offers Unlimited Free Admission to Your Visitor Center

The center is offering a special holiday bonus to all members of the NASA Langley family. With the purchase of a Bronze, Silver or Gold membership before Dec. 24, you will receive two extra guest passes – each good for both exhibits and one IMAX ® film.

Membership to the center has a lot to offer including admission to the center's exhibits, a 10-percent discount on 10 or more Combination Guest Passes, a 10-percent discount at the Gift Shop, invitations to member's events, previews and programs, a specially-designed window decal and a personalized membership card. For details, call 727-0900, ext. 716.

Quality Survey Results Help Steer Langley to Better Future

Last spring, a Quality Climate Survey was conducted for Langley by 3M Quality Management Service. The survey results provide a baseline against which the Center's progress in Total Quality Management (TQM) implementation can be measured as well as guidance for the prioritization of areas of improvement. The survey results have been reviewed with senior staff, division chiefs and branch heads. Copies are available in branch, division and directorate offices for review by all employees.

During a Summer retreat, the senior staff used the information from the survey to establish seven Centerwide areas of improvement for focus in 1993-94. The Strategic/Quality Directions Brochure, distributed by the Center Director at the November 17-19 town meetings, provides information on the areas selected and the senior staff members sponsoring a Quality Action Team (QAT) in each area.

TQM facilitators have already begun assisting individual organizational units in the interpretation and use of the information. As the new organizational structure is implemented, each organization will use the pertinent information to establish evidences of success, metrics and improvement goals for the organizational unit. The objective is to cascade the process through the organizational levels all the way to the individual who will designate his or her personal contribution to the organization's areas of improvement.

The Survey

Using a survey developed by 3M, more than 2,800 employees from 186 different branches and divisions within 10 directorates (Offices of the Director, Electronics, Structures, Aeronautics, Management Operations, Systems Engineering and Operations, Space, National Aero-Space Plane, Comptroller, and Flight Systems) were surveyed. Of the surveys sent to employees, 1,906 were completed and returned to 3M, a response rate of 66 percent. Responses were quantified using a scale from one to five, with one being "strongly disagree," three being "neither agree nor disagree," and five being "strongly agree" with the question. On the degree of importance scale questions, one meant "very unimportant," three "neutral" and five "very important."

Questions were grouped in the following categories: measures, organization, problem solving, communication, management, work group, customer orientation, training, recognition and rewards, and general. All of the category summary questions were important according to employees and rated between 4.0 and 4.5 for importance.

Key Findings

The following information is just an overview of the survey results. For complete details, a copy of the complete NASA Langley Quality Climate Survey Report is available to all employees through their branch heads.

Organization

The five questions which received the highest mean ratings were: employees felt they had a good opportunity to show what they could do; had the right tools to perform their jobs; had enough space in which to do their work; worked in a work group that had a positive attitude about performing quality work; and had a positive attitude about performing quality work on their own jobs. Major topics of concern in this category were empowerment-related issues, work group staffing levels, and morale of work groups.

Management

Employees think that they should get all the information they need to do their jobs effectively. They seek feedback from management on how to improve the quality of their work and they want customer feedback given to them as well. Center employees want regular meetings of the work group and need to receive adequate information about other work groups, branches, etc. They hope that cross-functional problem solving teams can be formed to determine who the customers and suppliers are for each work product on Center, hopefully leading to greater communications among the different work groups.

Work Group

Most employees are satisfied with the teamwork that is taking place within their work groups. The survey shows that Langley has a tremendous strength in regard to its work groups and the teamwork they demonstrate. Comments, however, indicate that there is a need for improvement in interdepartmental communication and cooperation.

Problem Solving

Most employees are satisfied with the way their work groups handle problems. Many of them, however, are uncertain as to what happens to their suggestions for workplace improvements once they have been shared with managers and other employees. All levels of management, the survey shows a need to listen to employee suggestions and use those that are worthwhile. Whether a suggestion is used or not, its dispensation should be communicated to the employee. Encouraging more people to participate on a team or project to solve a quality problem is a suggestion that came out of this category.

Customer Orientation

The majority of employees perceive that they have a high regard for the quality of work they produce; many know who their customers are; they are encouraged to make improvements in their work to enhance customer satisfaction; and their work groups are quick to respond to customer needs and problems. A large number thought that Langley should continue to emphasize customer satisfaction principles throughout the Center, educate all employees about who their external customers are and keep them well informed about internal/external customers' expectations and requirements.

Communication

The overall summary question on communication received the lowest mean rating of all the category questions in the survey. The following questions received unfavorable ratings: "My work group has regular meetings to discuss the quality of our work;" and "I receive adequate information concerning other work groups/departments." Three other questions were returned with low favorable mean ratings as well: "My management gives me feedback on how to improve the quality of my work;" "Management shares customer feedback on the quality of my work with me;" and "Communications between work groups are encouraged within our organization."

As a result of the low ratings in this category, it has been chosen by the Center as an Area of Improvement for 1993-94.

Measures

Employees feel that Center management should collect the amount and types of customer satisfaction data that employees and work groups need in order to be more customer responsive to internal customers, as well as external customers. Employees want pertinent customer satisfaction data and a way to measure the quality of products and services they produce and deliver.

Training

Employees are generally satisfied with their training and development at Langley. According to some employees, there is a need for additional training in management skills, TQM and technical areas applicable to the job responsibilities of engineers and technicians.

Rewards and Recognition

It appears from the survey results that recognition and rewards for high-quality work at the work group/project team level, as well as the individual employee level, are used at Langley more often than they are in many other organizations. More than half of the respondents indicated that they receive positive reinforcement for doing high-quality work; however, almost one-third of the employees who responded are dissatisfied regarding this topic. As a result, this area has been selected by the Center as an Area of Improvement for 1993-94.

General

A full 78 percent of respondents are satisfied with Langley as a place to work. This is a very positive indication of employee commitment to NASA Langley. In this category, however, the following three questions received unfavorable or undecided ratings: "I feel that management will act upon the results of this survey;" "We have a supplier quality process in place within Langley;" and "Career coaching/counseling of employees by the supervisors is improving in my organization."

You are cordially invited to attend an Open House for the new Office of Education Building, Building 1216, 17 Langley Blvd. Wednesday, December 15, 1993 4 to 6 p.m.

Army Office Presents Quality Awards

The Army's Vehicle Structures Directorate hosted the Army Office Annual Awards Ceremony at the Ft. Eustis Officers and Civilians Club in November. Awards were presented to NASA employees who have helped to accomplish the Army mission at Langley.

Team Spirit Awards

Team Spirit Awards were presented to Dr. Gary L. Farley, Aircraft Structures Branch, and Dr. Henry E. Jones, Computational Science Branch, for "outstanding and exceptional leadership in promoting and demonstrating the ideas of team building and integrated multidisciplinary research.

Quality Enhancement Awards

Jocelyn I. Pritchard, Interdisciplinary Research Office; Donald R. Beasley, Quality Assurance and Inspection Branch; Carol P. Jackson, Structures Technology Program Office; and Henry Russell, Vehicle Structures Directorate, each received a Quality Enhancement Award for "taking an active role in facilitating the continuing improvement processes that exemplify the goals of Total Quality Management (TQM)."

Technology Transfer Awards

Technology Transfer Awards went to Dr. T. Kevin O'Brien, Mechanics of Materials Branch; Dr. John D. Berry, Subsonic Aerodynamics Branch; and D. Dale Davis, Computational Mechanics Branch, for "individual achievement in providing timely and meaningful technology support to outside organizations and customers."

Customer Service Awards

Customer Service Awards were given to Kathryn C. Murphrey, Research and Development Programs Branch; Amy C. Radford, Research and Programs Management Branch; Capt. Gregory W. Walker, U.S. Army; and Farley for "special and selfless contributions in working with customers to meet their expectations and to enhance the competencies of the Army."

Happenings

LAA HOLIDAY OPEN HOUSE: The LAA presents a Holiday Open House, Friday, Dec. 17, from 3:30-8 p.m. at the H.J.E. Reid Conference Center. There is no cover charge and entertainment will be provided by Mark Bradley. For more information, call ext. 46369.

ON-SITE TRAINING: Employees interested in registering for the "CPR," "Forklift" and "Crane and Lifting" training classes, contact Millie Boone at ext. 42589 or Kim Dobbs at ext. 42597, for an on-site training form. Forms are also available in the back of the On-Site Training Catalog. Interested persons will be contacted when the dates of the classes are determined.

VIDEO BULLETIN BOARD SURVEY: The Video Bulletin Board is a service presented by the Office of Public Affairs (OPA). It has been in service for about four years and is available at 190 sites and in more than 80 buildings around the Center, including the cafeteria. Help OPA evaluate the service by sending your comments to: Video Bulletin Board, Mail Stop 115.

RETIREMENT SOCIAL: A retirement social for Silvio Fernandes of Wyle Laboratories will be held Monday, Dec. 20, from 4-6:30 p.m. at the H.J.E. Reid Conference Center. Cost is $4 per person and includes hors d'oeuvres and gift contribution. Cash bar will be available. Please send reservations to Pat Lucker, 865-0000, ext. 287, Mail Stop 239, by Dec. 15. Make checks payable to Pat Lucker.

FOR SALE: Two tickets to "Man of LaMancha" at Chrysler Hall, Friday, Dec. 31, $25 each. Call 851-2079.

SYMPHONY TICKETS: Tickets are on sale at the Langley Exchange Shop for the Virginia Symphony Pops concerts Dec. 12 in Virginia Beach, Skitch Henderson conducting, and Dec. 19, in Norfolk, Joann Falletta conducting. Handels' "Messiah" will be performed Dec. 15 and 16 in Williamsburg and Dec. 17 and 18 at Chrysler Hall. Get tickets at a 20 percent discount plus $1 for handling. Call ext. 41585 for more information.

GWU ANNOUNCEMENT: The George Washington University School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences 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 for the Spring semester will take place through Dec. 17 and Jan. 4-6, 1994, for degree students; Jan. 7 for non-degree students. For a listing of courses and telephone registration procedures, call the GWU office at ext. 41982.

CITIZENS AGAINST CRIME: CAC will present "Living Safely in a Dangerous World," Dec. 7 at 9:30 a.m. and Dec. 8 at 1:30 p.m. in the H.J.E. Reid Conference Center. The program, sponsored by the Federal Women's Program Committee and Security Services Branch, is open to NASA employees, contractors, family and friends. Your family's safety is the greatest gift you can give. Charge time to Job Order A2987.

ANNUAL RETIREE HOLIDAY COFFEE: The Annual Coffee will be Saturday, Dec. 18, 9-11 a.m. in the hangar, Building 1244, Room 121. For information, contact Calvin Chandler, ext. 43900.

CW DANCES: Country Western dances will be held Saturday, Dec. 4 and Dec. 18, in the H.J.E. Reid Conference Center from 7-11 p.m. Cost is $3 per person.

FMD RETIREES AND FORMER EMPLOYEES: The Financial Management Division is planning an after-hours Christmas party. To catch up on what everyone has been doing since retiring or leaving FMD, come Dec. 16 for an evening of fun, food and entertainment. Contact Marilyn Aldrich at ext. 48278 or Lisa Oliver at ext. 47973 for more details.

STRESS PROOFING: Want to know how to be "stress proof" for the holidays? Come to the Executive Dining Room at noon, Dec. 9 and hear Pat Mezaros, Employee Assistance Program coordinator.

FOR SALE: 1955 Ford, F-100, 6-cylinder engine, new brakes, generator, starter and rebuilt carburetor; $3,450 or best offer. Furniture: sofa, love seat, recliner, coffee and end tables, $450 or best offer. Call 249-2246, after 5 p.m.

HOUSE FOR SALE: Denbigh Shores, 3 BR, 1-1/2 baths, garage converted to den, large fenced-in yard with deck. Asking $80,500. Call 875-0066, leave message.

FITNESS WITH FAT LOSS: Join the LAA Aerobics Club and get an exercise program and nutritional advice to help you reach your individual goals. Certified personal trainers will design and help you maintain your program. Progress measured with body composition analysis and cardio-fitness assessment. Classes include low-impact, bench, body-sculpting and circuit training. Classes are Tuesday and Thursday, 5-6 p.m., and Saturdays, 9:30-10:30 a.m., in the LAA Gym. Call ext. 42295 for more information.

Holday Aerobics Schedule: Classes will be in the LAA Gym Dec. 26, Jan. 2 and Jan. 8, from 2-3 p.m. to help work off the holiday goodies. Call ext. 42295 for more information.

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Researcher News

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23681-0001
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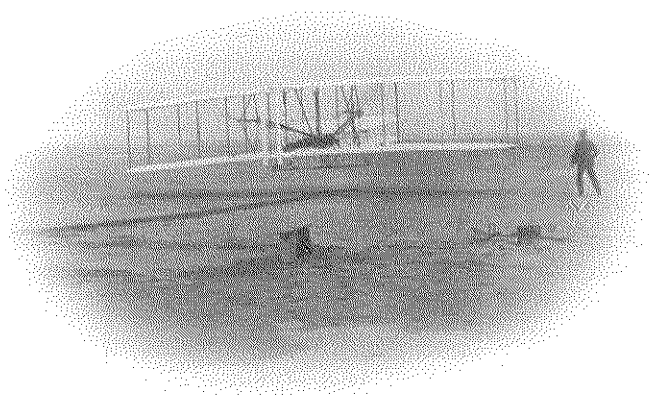
In celebration of the 90th anniversary
of the Wright Brothers' flight
The Director of Langley Research Center
and Mrs. Paul F. Holloway
cordially invite you to attend a Holiday Reception
at the H.J.E. Reid Conference Center
on the afternoon of December 17, 1993
from one to three o'clock.



Sponsored by the Langley Activities Association and
the Langley Federal Credit Uniion

National Aeronautics and
Space Administration
Langley Research Center

Researcher News

Biweekly Employee and Contractor Publication

Volume 7 ❖ Issue 25 ❖ December 17, 1993

Holiday Message to All at Langley

On behalf of the entire senior staff, I would like to wish you and your family a very happy holiday season and a healthy and prosperous new year.

I'm sure you'll agree, 1993 has been a busy one for us at Langley and for all of NASA. An era of global economic warfare has brought new challenges to the United States as a nation and to the Agency. Technology transfer has become an additional and primary focus for the 1990s. At Langley, we have used our research to benefit the aerospace industry since our beginnings 76 years ago; now we must expand our horizons to include non-aerospace industries.

This year, I returned from my tenure at NASA Headquarters with renewed dedication to keep Langley in the forefront of the technology race. Working in conjunction with the Center Redesign Team and all of you, we have formulated a plan that will both streamline the Center and make it a more productive place to work.

Langley continues to be the NASA lead center for the National Aero-Space Plane (NASP) program, fixed wing short-haul aircraft and the High-Speed Research program, and we are a major player in the Advanced Subsonic Technology (AST) program.

We held a most successful Technology Opportunities Showcase (TOPS) in October featuring more than 160 exhibits and attended by nearly 900 industry representatives. Langley's Gas Permeable Polymeric Materials (GPPM) experiment and Orbital Acceleration Research Experiment (OARE) flew on shuttle missions in 1993 as well. In space technology, we shipped the Lidar In-space Technology Experiment (LITE) and the Long Duration Exposure Facility (LDEF) south; LITE is scheduled for launch in 1994 and LDEF will be displayed where thousands can view it each year at Kennedy Space Center.

Finally, we have continued on schedule for a significant role in the Earth Observing System and solved major technical problems with the LASE experiment hardware.

I want to thank the entire Center work force, civil servant and contractor, for the exceptional effort and outstanding accomplishments during this past year. We look forward to the new year and are confident that together we can meet the challenges it will bring. Your spirit of dedication and commitment to excellence — that have long been a Langley tradition — will ensure a successful 1994.

With my best wishes,

— Paul F. Holloway, Center Director

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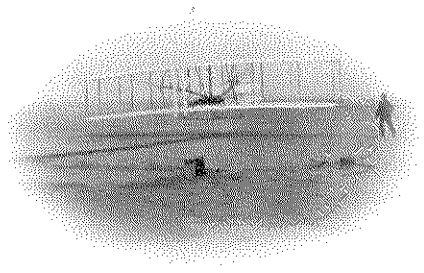

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the Langley Federal Credit Union

Weather System May Save Airlines Millions

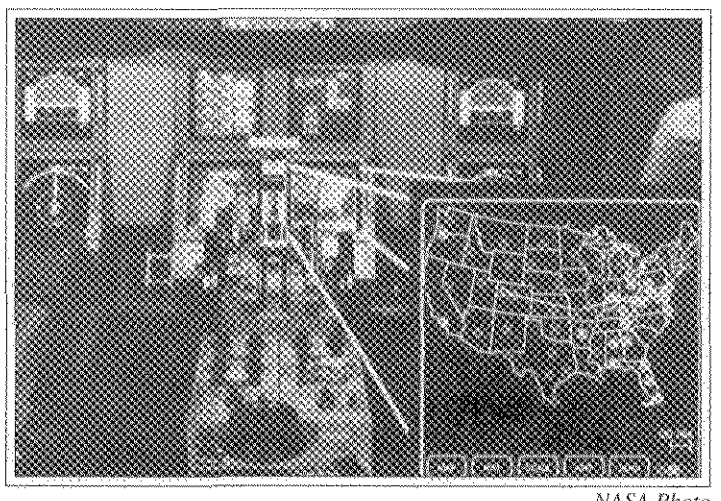
Tests of a new NASA-developed, in-flight weather information system show that it could help airlines save nearly $6 million per year.

The Cockpit Weather Information Needs (CWIN) system draws on several commercial data sources to create radar maps of storms and lightning and reports of surface observations. In NASA simulations from March to July, pilots on 14 flight crews burned less fuel and flew fewer miles in avoiding bad weather using CWIN displays.

"We believe the fuel, distance and time savings from a system like CWIN would cut a typical airline's operating costs by $5.9 million annually," said Dr. Charles H. Scanlon, Vehicle Operations Research Branch, who developed the system at Langley. "Planes have to fly around storm hazards about once in every 13 flights, so it's a real issue."

Pilots have problems getting and evaluating timely weather information. Onboard radar cannot "see" more than 150 miles out or through large thunderstorms. Pilots receive weather data from air traffic controllers by voice or through digital transmissions, but the pilots must figure out the size of storm cells and their relation to the plane's flight path.

In contrast, CWIN provides computer graphics that show the position of storms and lightning on maps that also contain the aircraft's actual flight path and possible alternate routes. A green-yellow-red color coding system shows the intensity of the radar echoes. Lightning reports appear as yellow dots. Pilots interact with CWIN via a touch-sensitive screen.



NASA Photo

The CWIN system has been flight tested in Langley's Boeing 737, and in the Transport Systems Research Vehicle simulator, above. The enlarged display is called the category map. It displays the current weather category at airports throughout the map area. The circles are color coded to communicate cloud ceiling and visibility at each site. Combining graphical weather and flight management information results in a plot of the active and provisional routes.

From March 29 to July 8, 1993, flight crews from America West, Northwest, United, USAir, Boeing and Honeywell tested CWIN at Langley. Each crew made two simulated flights from Denver to Reno, and two from Denver to St. Louis. CWIN was used on half the missions.

The pilots used five percent less fuel and flew five percent fewer miles detouring around adverse weather on the flights where CWIN was available. Almost all said their ability to monitor weather along the route was "much better" than current systems. Eighteen of the 26 pilots gave CWIN a "much better" safety level in bad weather operations.

The pilots especially like CWIN's ability to display historical data. The system replays the five most recent maps of storms, lightning and surface observations when a button on the screen is touched. This feature lets pilots make better decisions about alternate routes based on how bad weather is or is not developing.

Weather data for the CWIN evaluations were pulled from several sources. Radar summaries came from WSI, Inc., Billerica, Mass. Lightning data came from GDS, Inc., Tuscon, Ariz. Alden Weather, Westborough, Mass., supplied surface observations and airport forecasts. Text for the weather data was drawn from CompuServe, Columbus, Ohio.

CWIN technology already is being adapted for the general aviation market. Two companies are marketing a cockpit weather system called "WxLink" that uses several CWIN features, including lightning graphics and ground-based radar summaries.

WxLink sends weather data to an aircraft and accepts automatic pilot reports of weather conditions. The pilot reports are then sent via satellite into the National Weather System, where other weather users can access them. WxLink uses a network of ground transceivers owned by PanAm.

LITE Flight Hardware Shipped to Kennedy Space Center

The Lidar In-space Technology Experiment (LITE) began the journey to Kennedy Space Center (KSC) at 5 a.m. November 29. LITE uses a high-energy, three-wavelength laser to obtain data on clouds, tropospheric and stratospheric aerosols and atmospheric temperature variations. The instrument is housed in a portable clean room to protect the optical components and other environmentally sensitive components. Following its arrival at KSC December 1, post-shipment testing and integration activities were scheduled to begin. LITE is being readied for launch on STS-64 in September 1994.

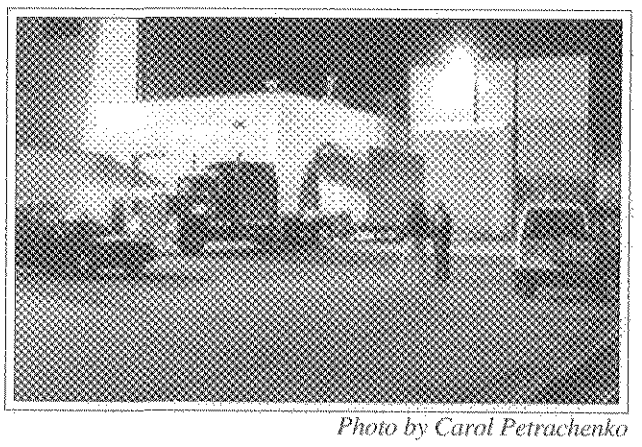


Photo by Carol Petrachenko

News Briefs

Around the Agency

SHUTTLE RAT EXPERIMENT YIELDS UNEXPECTED RESULTS – Unexpected results from a recent space shuttle experiment on rats may some day lead to the discovery of the genes that direct bone cells to produce more bone. Last April's third Physiological and Anatomical Rodent Experiment (PARE-3) studied changes in the activity of bone-forming cells after nine days of space flight. It also investigated whether these changes were reversed within three days of return to Earth. "We were totally surprised by some of the data from this flight experiment," said Dr. Emily Morey-Holton of Ames Research Center, Mountain View, Calif. Although she cautioned that much research remains to be done, Morey-Holton said the findings may accelerate the development of drugs to stimulate the production of new bone. Such medications could be important not only for astronauts on long-duration space missions but also for people on Earth suffering from bone-weakening disorders.

HUBBLE DEEP-SKY SURVEY FINDS INTERACTING GALAXIES IN A CLUSTER – In one of the deepest celestial surveys yet made by NASA's Hubble Space Telescope (HST), astronomers have discovered a small group of previously unknown interacting galaxies estimated to be three billion light-years away. Because Hubble caught the galaxies in an early stage of evolution, they offer new clues to developing a much clearer understanding of how galaxies and clusters of galaxies have changed over time, according to astronomers. These results might help improve theories which predict that galaxies evolved faster than earlier thought, perhaps due to the influence of dark matter — invisible or undetected mass pervading the universe. A galaxy is a city of stars held together by their mutual gravitation. Galaxies are considered the basic building blocks of the universe. HST's high-resolution image reveals that many early galaxy "building blocks" are in pairs.

NASA PROGRAM TO HELP VICTIMS OF RUSSIAN EMERGENCY – NASA received a request for medical assistance from U.S. clinicians from Russian physicians, who have been treating victims of the recent emergency in Moscow. These urgent medical consultations are using a previously established U.S./Russian satellite telemedicine program known as "Spacebridge to Moscow." Spacebridge to Moscow is a cooperative demonstration program between Russia and the United States to develop the use of telemedicine technologies and procedures. Initial program sessions began in September and will go until May 1994. The Spacebridge telemedicine project uses two-way interactive video between consultants at Moscow Clinical Hospital and four clinical sites in the United States.

NASA-RUSSIAN MISSION EXPLORES KAMCHATKAN VOLCANOES – Preliminary results from an historic U.S.-Russian scientific expedition are shedding new light on the geology of Eastern Russia. The data was obtained by NASA and Russian scientists using NASA's Learjet Model 23 based at the John C. Stennis Space Center, Miss. The expedition studied a variety of sites on the Kamchatkan Peninsula to provide remote-sensing imagery and field data. These data will be used to study the geologic evolution of the volcanoes and the impact of large volcanic eruptions on the atmosphere and its chemistry. Data will also be used to model thermal and dynamical aspects of volcanoes. Carrying NASA's Thermal Infrared Multispectral Scanner (TIMS) and a Zeiss camera, the plane flew the first civilian research mission over Russian territory.

Toastmasters Receive Club Cup

Gathered above are some of the initial recipients of the official cup of the NASA Langley Toastmasters Club. The cups are presented to the "Best Speaker of the Day" at each club meeting as well as to those who have achieved certain educational levels within the Toastmasters organization. Pictured, from left, are: Richard G. Booth Jr., Data Systems Development Section; Chuck Fleming, deputy city engineer, City of Hampton; Gregory McCarthy, retired DuPont engineer; Dr. Marco A. Egoavil, Structural Engineering Section; Robert Miserentino, Spacecraft Dynamics Branch; Myra L. Walton, Materials Processing and Development Section; and Gary Flodin, electrical engineer, nView Corp. Also honored, but not pictured, were: Sadie Boyer, NASA retiree; Leslie Holland, Environmental Engineering Branch; Regina L. Spellman, Structural Engineering Section; Raymond D. Whipple, Flight Dynamics Branch; and Daniel Whitaker, U.S. Air Force.

Letters

Thanks for Leave

From Connie A. Smith: "I would like to sincerely thank each of you who donated leave to me. I appreciate the flowers, the cards and, most importantly, your thoughts and prayers. It truly does help to know others care."

November Speakers Bureau Report

The November Speakers Bureau Report includes the following speakers:

Dr. Joel Levine spoke to the docents at the Virginia Air and Space Center about "Atmospheric Science Research," and at the College of William and Mary on the topic, "Is There Life on Earth?"

Douglas O. Stanley spoke to the National Space Society about "Studies on Replacement of Shuttle with a Single-Stage Reusable Rocket."

Dr. Christine Darden was a speaker at the Virginia Heroes Mentoring Program at the Richmond Technical Center. Her topic was "Engineering as a Career."

Sharon E. Tanner spoke at Hines Middle School about "NASA Careers."

Brian Pritchard spoke at the Western Branch Masonic Lodge, Portsmouth, about "Future Manned Spaceflight."

Keith R. Norwood spoke to students at Lindsey Middle School in Hampton about "Careers in Aerospace Engineering."

Community Corner

Acquisition Tradition Catches On

Employees in Langley's Acquisition Division are excited about their annual tradition of adopting Salvation Army "Angel Tree kids" at Christmastime. "Acquisition members genuinely look forward to this season of sharing. We purchase needed items for our adopted kids," explains Stan Ward who originated the practice in 1988.

"Each year, the enthusiasm is greater and our 'family' gets larger," Ward adds. Last year, the Division adopted 34 kids. All were outfitted with jeans, a shirt, underwear, socks, gloves, a warm hat, a special need such as shoes or a coat and, of course, something fun!

This year they hope to adopt a whole family plus as many individual Angel Tree kids as their funds allow. And the holiday spirit is "snowballing!" Ward said.

"The spirit of caring and giving has touched the lives of others at the Center," reports Ward. "Both Programs and Resources and Human Resources Management Divisions are sponsoring Angel Tree kids this year. It seems that each year the tradition spreads to more organizations throughout the Center."

And, some very fortunate local residents who need a helping hand will get it again this year.

AIAA Honors Anderson

The American Institute of Aeronautics and Astronautics (AIAA) announced that Dr. W. Kyle Anderson of the Computational Aerodynamics Branch is the 1994 recipient of the AIAA Lawrence Sperry Award. The award was presented to Anderson for "pioneering advancements in the development and application of computational algorithms to solve complex, steady and unsteady, aerodynamic problems."

The award honors Lawrence Sperry, a pioneer aviator and inventor. It is presented for a notable contribution made by a young person to the advancement of aeronautics and astronautics. Anderson will receive the award Jan. 11 during the 32nd Aerospace Sciences Meeting and Exhibit in Reno, Nev.

Anderson is currently a senior research scientist who consults with researchers in government, academia and industry in the creation and use of methods for analyzing realistic aerodynamic configurations. His research focuses on improving the accuracy and efficiency of steady and unsteady viscous (Navier-Stokes) and inviscid (Euler) flow solution techniques. Anderson also serves as a graduate study program/thesis advisor to several George Washington University students and is the author of 25 publications.

The Name Game Narrows

NASA has narrowed the list of potential names for the international space station to five. They are Alliance, Alpha, Aurora, Sigma and Unity.

NASA Administrator Daniel S. Goldin will send his choice to the White House for final approval.

In Memoriam

Joseph D. Pride Jr.

Joseph Davis "Joe" Pride Jr., 65, died Wednesday, Nov. 24.

Pride retired in 1989 as the head of the aeronautical engineering section after a 30-year Langley career.

Ramiro R. Valadez

Ramiro Ramirez Valadez, 66, of Hampton, died Wednesday, Dec. 1. Valadez retired as a supervisor in the supply department in 1987 after 20 years at Langley. He also retired in 1967 after 20 years in the Air Force.

News 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 115, telephone 864-6126. Articles are due at noon the Tuesday following the date of this issue.

Managing Editor ..... *Marny Skora*

Editor..... *Ann C. Gaudreaux*
The Bionetics Corporation

Assistant Editor ..... *Susan A Smigielski*
The Bionetics Corporation

Photojournalist ..... *Carol Petrachenko*
The Bionetics Corporation

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.

Technical Reports Get New Look

Beginning January 1, Langley technical reports will have a new look.

The reports will emphasize the NASA insignia and will be printed on white cover stock instead of the colored paper currently used. All technical reports will use the same font (lettering), called Palatino, and the same lettering sizes to make set-up and production easier and faster. The color of the ink on the covers will vary to indicate the type of report: Technical Papers will be printed in blue ink, Technical Memoranda, both high- and low-numbered, in black; Conference Publications in red; Contractor Reports in green, and reference Publications in burgundy. Contractors must still submit their high-numbered Contractor Reports in black ink. Special Publications will continue to be individually designed to suit the subject.

According to Mary McCaskill, head of the Technical Editing Branch, the white cover stock will help streamline the covers. "In the past year, printing contractors had difficulty stocking the cover paper that we previously used," McCaskill said. "In addition, the colored paper was a problem once the hard copy version was made into a microfiche or electronic version."

The covers for Technical Papers, low-numbered Technical Memoranda, Conference Publications and Reference Publications will continue to be typeset in the Technical Documentation Section of the Technical Editing Branch. Printed copy samples and electronic templates (in Microsoft Word, WordPerfect and TEX) for high-numbered Technical Memoranda and Contractor Reports will soon be available by calling Cheryl Winstead at ext. 42497 (s.w.winstead@larc.nasa.gov) for electronic formats or Susan Stewart at ext. 42518 (s.h.stewart@larc.nasa.gov) for printed versions.

Langley is currently working with other NASA centers to adapt this cover design to fit a variety of printing and publication needs within the Agency.

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. Your annual leave donations are greatly appreciated. Please contact Lisa Allen at ext. 42610 for more information.

The following Langley employees are approved annual leave recipients: David S. Aliff, Monica L. Cooper, Bette L. (Jeanie) Duncan, Cynthia L. Lach, Janice B. Mongesku, Lori Nichols Pennington, Howard E. Price, Carissa T. (Smith) Robinson, Terry L. Shephard, John P. Stack, Cassandra D. Stevens, Marie C. Storms, Geraldine M. Tucker, Belle L. Wood and Darrell A. Wood.

An approved leave recipient from another Government agency: Susan P. Burnett, U.S. Government Printing Office, Hampton Regional Printing Procurement Office.

CFC Plaque on Display

Photo by Fred Jones

The Virginia Peninsula 1993 Combined Federal Campaign awarded Langley a plaque for "extraordinary unit achievement in giving." The Plaque is on display at the H.J.E. Reid Conference Center where all employees are welcome to view it. Employees contributed $316,771 during the CFC, achieving 100.56 percent of the goal.

Health Corner

Health Clinic Adjusts to Budget Reductions

Both the fiscal year (FY) 1994 and 1995 budgets for the Health Clinic have been reduced in compliance with the overall NASA reduction in funding. The decrease in funding will affect the entire range of services offered by the Office of Occupational Health Services and the Health Clinic. The good news is that the preventive medicine and physical exam program will continue, although in altered forms. For the past five years, Langley has exceeded the NASA Management Instruction (NMI) in services offered. In effect, the reductions for FY 1994 and 1995 allow for the provision health services that fully meet the guidance contained in the NMI. The effective date for changes is January 3, 1994.

Physicals

– **Protocol Physicals:** The physicals required by one's occupation, i.e. lead worker, painter, high worker, etc. will continue exactly as they have in past years— no change.

– **Complete Physical/Health Maintenance Exams:** The complete physical offered to all NASA employees will continue to be offered during the employee's birth month every three years. The basis for the various diagnostic tests has changed since certain procedures will only be conducted based on health risk factors, age and gender considerations. This means that during the health maintenance physical, the following procedures will be given every three years: Height, weight, blood pressure, chemistry, hematology, urinalysis, hearing acuity test, visual acuity test and tonometry, pelvic examination (including stain), breast examination (for women only), actual physical by a health care provider, discussion of findings with the employee by a physician and a narrative report of the physical.

Employees may or may not be offered the following based on health risk factors and age: Spirometry, chest X-ray, electrocardiogram, treadmill and proctosigmoidoscopy.

– **Partial Physicals:** This physical will be provided during interim years between complete physicals to all NASA employees. The physical will consist of: height, weight, blood pressure, chemistry, hematology, urinalysis, hearing acuity test, visual acuity test and tonometry, pelvic examination (including satin) and breasts examination (women only).

Based on health risk factors and age, the following may or may not be offered on the partial physical: spirometry, chest X-ray, electrocardiogram, treadmill and proctosigmoidoscopy.

Each employee receiving a partial physical will be provided, if requested, copies of lab results and a narrative concerning questionable findings. Employees are encouraged to bring these results to his/her private physician.

– **Health Education/Preventive Medicine:** All current health education and preventive medicine programs, such as Brown Bag Health Seminars, quarterly health presentations, job-site classes, mammography screening, etc., will continue.

The reduction in funding will result in reduced staffing of the Health Clinic. Every effort will be made to continue to treat each patient as our only customer. With reduced funding, our goal continues to be, "The provision of timely, efficient, effective, professional and friendly health care to the Langley community," according to Pete Edgette, head of the Occupational Health Services Office.

Healthful New Year's Resolutions

If you promise to adopt just one new healthful habit next year, you'll be better off. Here are a few to get you started: Quit smoking; wear your seatbelt; exercise more (body and mind); know your ideal weight and maintain it; worry less, plan more; brush and floss your teeth daily; drink more water, drink less alcohol and coffee; ask your doctor or pharmacist to check all your prescriptions and over-the-counter medicines for drug interactions; promise never to say "I'm too old for that"; if you are a woman, examine your breasts monthly for any lumps or changes; and reduce fats and cholesterol in your diet.

Concerned About Matters of the Heart?

Call free and get answers to your questions related to heart health, cardiovascular diseases or stroke. Call 1-800-HEARTLINE.

NASA Team Thunder Wins Senior League

NASA Team Thunder won first place in the Peninsula Tennis Patrons Association's (PTPA) Senior Men's 50s Doubles League. The league is sponsored by Wheat First Security and is composed of six teams throughout the Peninsula. Each team played the other teams twice during a season divided into Spring and Fall sessions. Each contest consists of three doubles matches. NASA Team Thunder, with a 9-1 record, edged second-place Ft. Monroe which finished with an 8-1-1 record.

Other teams in the league were NASA Team Lightning, Hilton, Village Green and Riverside Wellness Center. Playing for NASA Team Thunder were Tom Yager, captain; Charles Bryant, Leonard Credeur, George Lawrence, Maynard Sandford, Bob Smith, George Steinmetz and John Wilson.

Photo by Charles Bryant

Senior League players include, left to right, Champion NASA Team Thunder captain Tom Yager, League commissioner and NASA Team Lightning captain Bill Shinn, Wheat First Securities representative Rob Roadarmel and Ft. Monroe team captain H.L. Shankles.

Competition Yields Awards

Researcher News Garners First Place

Each year the National Association of Government Communicators (NAGC) recognize excellence in communications throughout government. Titled the "Blue Pencil/Gold Screen" awards, the NAGC honors outstanding government publications and their producers and outstanding audiovisual productions by and for government, respectively.

The *Researcher News* was given a first place award for the 1993 Blue Pencil competition in Category 3 — Newspapers.

Judges' comments included: "Interesting blend of technical writing and rich, colorful journalism . . .," and "The writing and style reaches a diverse group of readers on many levels and the eclectic quality seems appropriate for such an accomplished and innovative group."

Reviewers also gave a thumbs up to *Researcher News* photos: "Very nice photos, some exceptionally dramatic and fine." Their overall rating of the newspaper yielded this comment: "The *Researcher News* is a wonderful blend of the human and the technical. It shows pride without conceit by conveying the message of their impressive tradition of science, engineering and innovation."

Other Awards

A second place Blue Pencil award in the Photography Category was given to Fred Jones of the Photographics Section. His color photo of the 14- X 22-Foot Wind Tunnel drive motor captured the prize.

An honorable mention Blue Pencil award went to Carol Petrachenko, The Bionetics Corporation, for her color photo of the 737 Flying Laboratory.

A Gold Screen award of merit in the Educational Development category went to Mike O'Hara of the Video Section for the video "Dreams."

Search Is on For Magazine From 1987

Can you help us?

Anyone having an original copy of the August 1987 *Aerospace America* cover, shown at left, is requested to call the Office of Public Affairs at ext. 46120.

MLB Shows Employee Appreciation

MLB Enterprises, Inc., the Center's landscape management pest control support services contractor, held an Employee Appreciation Day this Fall. Recognized for outstanding contributions to the company's mission were, front row, left to right: Robert Brock, Robert Pauly Jr. and Gerald Smith; back, left to right, Hilton Saunders, Joseph Mavin, Bonnie Hampton, Jackie Trent and Emmett Williams. Brock, Pauly, Saunders, Mavin, Trent and Williams were cited with Job Performance Awards; Smith was the Safety Award winner; and Hampton was named Employee of the Year. Awards were presented by Michael L. Brittin, contract manager.

'Twas Several Months Before Christmas . . . .

BY MARNY SKORA

Christmas is a magical time. The very word conjures up traditional music, festive gatherings and a special concern for others. Some of us immediately think *snow* —but that's not a necessity. Others think *December*, but Allen Langford of Langley's Antenna and Microwave Research Branch affirms that's not a prerequisite either.

Langford and the staff of Camp Rainbow Connection staged a Christmas celebration in July and August in Blackstone! Hot, yes, he readily admits, but "A Country Christmas'" embodied all the fun of the traditional holiday for over 100 disabled campers from all over the state.

"We did it up right—from the brightly decorated Christmas tree to a visit from Santa Claus," said Langford. Each day was geared to the grand holiday at week's end. And there was so much to do. There was popcorn to string, door decorations to make, tee shirts to design, refreshments to cook, murals to paint and, of course, carols to learn in anticipation of a visit from the bearded one. In addition, the campers showed their "stuff" at the Christmas Talent Show and danced the night away at the formal Holly Ball.

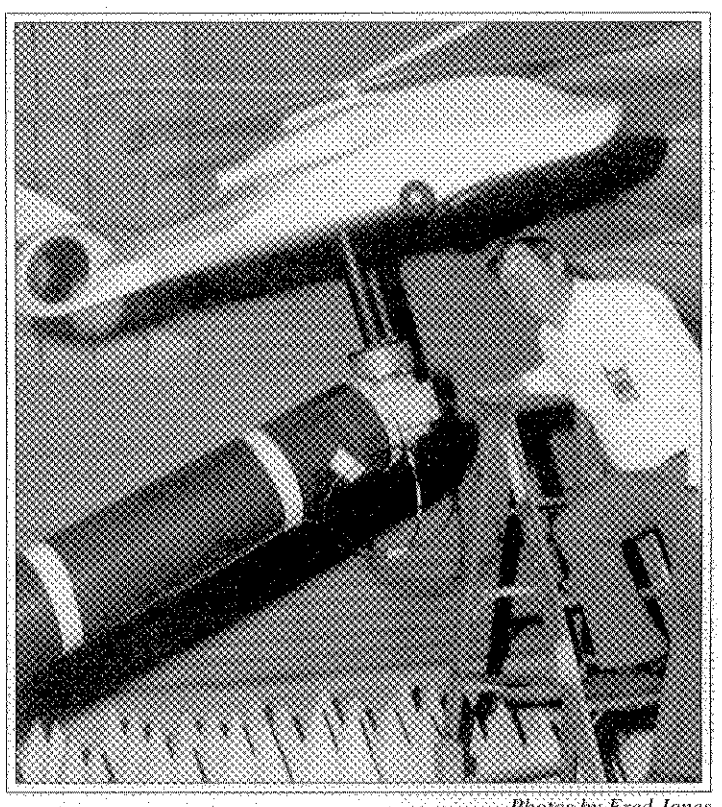
It was truly an event to remember—but Camp Rainbow Connection has proven to be a memorable occasion for the past three years. The theme changes each year but the outcome is the same: very happy campers and very satisfied counselors.

Planning for the summer activity begins shortly after camp ends. Brainstorming sessions are held for several weekends by a core committee of which Langford is a member. Then, in a January planning session, a theme is developed, props are gathered and the only thing left is to round up the volunteers.

"I find this experience so personally satisfying that I find myself referring to it as 'the week that I go to camp'," said Langford. The purpose is to give mentally and physically disabled adults a fun-filled and productive week away from home. "But I think we volunteers are the real beneficiaries. These special campers teach me a great deal and they are such a joy to be with."

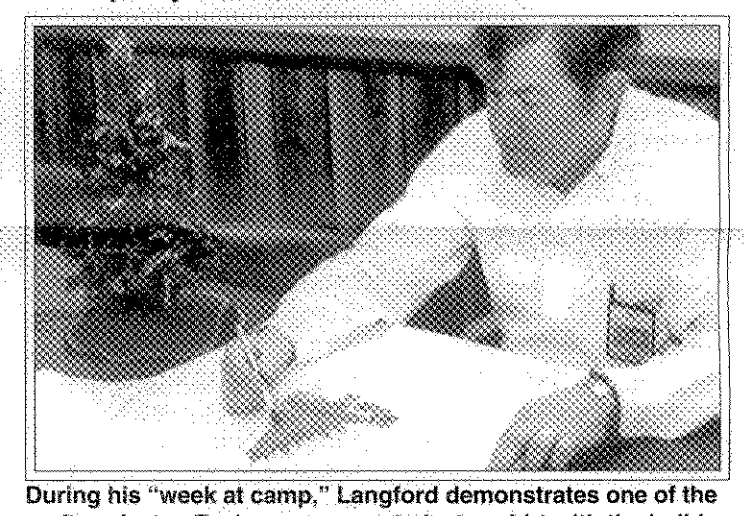
Each volunteer is paired with a camper or two. The teams are "buddies" for the week. Campers interact with the whole volunteer staff as they rotate through the prepared activities, but turn to their buddy for help, advice or other needs. Langford's association with Camp Rainbow Connection is a natural. He works with mentally retarded adults at his church. "One of the mothers recruited me for summer camp and I've been a dedicated camper ever since," he concludes.

With Christmas just around the corner, Langford remembers that special week-long event. He also remembers that the magic and the memory of the Christmas spirit can last all year long.



Photos by Fred Jones

Allen Langford is a graduate of the apprentice school and works as an electronics technician. Here he checks the mating flanges between the model and the positioner in Langley's low-frequency anechoic chamber.



During his "week at camp," Langford demonstrates one of the craft projects. Each camper created a tee shirt with the holiday theme.

Call for Papers: FAA/NASA International Symposium

The Advanced Structural Integrity Methods for Airframe Durability and Damage Tolerance Symposium will take place May 4-6, 1994, at the Radisson Hotel in Hampton.

The purpose of the meeting is to assemble international technical experts in the areas of durability and damage tolerance of metallic airframe structures. They will gather to present and discuss research findings and the development of advanced design and analysis methods, structural concepts and advanced materials. The focus of the symposium will be the development of advanced methodologies.

Abstracts of proposed oral presentations of full-length papers and abstracts describing posters for display during the poster session are due January 7, 1994.

For more information about the symposium or the submittal of papers, please contact:
Dr. Charles E. Harris, Symposium General Chairman, Mail Stop 188E; (804) 864-3449; FAX (804) 864-7729;
or Doris B. Stroup, Conference Manager, The Bionetics Corporation, 2 Eaton Street, Suite 1000, Hampton, VA. 23669; (804) 722-0330; FAX (804) 722-0894.

Researcher News 1994 Schedule

DEADLINE (12 NOON)	DISTRIBUTION
January 4	January 14 – first RN of 1994
January 18	January 28
February 1	February 11
February 15	February 25
March 1	March 11
March 15	March 25
March 29	April 8
April 12	April 22
April 26	May 6
May 10	May 20
May 24	June 3
June 7	June 17
June 21	July 1
July 5	July 15
July 19	July 29
August 2	August 12
August 16	August 26
August 30	September 9
September 13	September 23
September 27	October 7
October 11	October 21
October 25	November 4
November 8	November 18
November 22	December 2
December 6	December 16 – last RN of 1994

Young Professionals Paper Competition

The Young Professionals Committee of the American Institute of Aeronautics and Astronautics (AIAA) Hampton Roads Section is sponsoring a paper competition designed to recognize outstanding on-the-job technical accomplishments of young professional members. Members under the age of 35 are invited to submit one first-author paper that has been published or accepted for publication in an archival and refereed publication.

The paper must have been originally submitted while the author was a professional member. Papers received on or before January 7, 1994, will be judged for technical content and style by an independent review committee. The winner will be selected in March and recognized at the AIAA Hampton Roads Section Awards Banquet in the Spring.

Please submit three reprints or three copies of the manuscript, with a copy of the acceptance letter and author information, including age and AIAA membership number by the deadline to qualify.

Send submissions to: Odilyn L. Santa Maria, NASA Langley Research Center, Mail Stop 460, Hampton, VA., 23681, (804) 864-5104.

Quotable

"All good things which exist are the fruits of originality."

— John Stuart Mill (1806-1873)

Virginia Space Grant Consortium Announces Scholarship/Fellowship Competition

Students pursuing studies in fields related to aerospace may qualify for scholarships and fellowships offered by the Virginia Space Grant Consortium (VSGC) for the 1994-1995 academic year.

The VSGC has established undergraduate scholarships and graduate fellowships whereby a minimum of $151,000 is awarded annually to qualifying students in aerospace-related disciplines at the five Virginia Space Grant institutions: The College of William and Mary, Hampton University, Old Dominion University, the University of Virginia and Virginia Polytechnic Institute and State University. The awards require that a student participate in an active, identified research experience with a faculty advisor. Funding has been provided by NASA, the Commonwealth of Virginia and The Bionetics Corporation of Hampton.

Completed scholarship and fellowship applications must be received by January 21, 1994. Application packets, which provide complete details of the programs, may be obtained from the Virginia Space Grant Consortium, 2713-D Magruder Boulevard, Hampton, VA. 23666, (804) 865-0726.

Virginia Air and Space Center News

Membership Offers Unlimited Admission

BY KIM HINSON

Virginia Air and Space Center
Hampton Roads History Center

Share with family and friends the achievements of NASA's explorations and discoveries at Langley's official visitor center.

The center is offering a special holiday bonus to all members of the NASA Langley family. With the purchase of a Bronze, Silver or Gold membership before December 24, you will receive two extra guest passes – each good for both the center's exhibits and one IMAX® film.

Membership to the center has a lot to offer, whether it is for yourself or as a gift. The basic benefits of membership include unlimited admission to the center's exhibits, a 10-percent discount on a purchase of 10 or more Combination Guests Passes, free subscription to *Centerline*, a 10-percent discount in the center's Gift Store, invitations to members events, previews and programs, a specially designed window decal and a personalized membership card.

The center offers several membership categories to meet everyone's needs. One of the most popular categories is the $50 Silver membership. A Silver membership for a family pays for itself with just two visits.

If you have considered membership, be sure to sign up today to take advantage of this special opportunity. Take out-of-town guests to the center during the holidays to see the new IMAX® film, *The Discoverers*, showing at the center through May 31, 1994.

For those who have not seen an IMAX® film before, it is an exciting experience. The films are shown on a five-story-high projection screen giving the illusion that the viewer is part of the action. During the month of December, the center will be featuring three IMAX® films, *The Dream Is Alive*, *Blue Planet* and *The Discoverers*.

Since the center continues to bring in new exhibits and offer special programs, membership is an ideal way to visit the center anytime. The center has many exciting events coming up including a visit from former astronauts Bryon Lichtenberg on January 22 and a visit from astronaut Charles Walker on February 19. During January and February, the family can participate in the wonders of "discovery" through Family Discovery Weekends. These free programs are a special extension of the center's IMAX® presentation, *The Discoverers*.

Sign up today to receive two extra guest passes that can be used anytime through March 1994.

Membership Categories:

Bronze . . . $35, for a couple, includes four IMAX® tickets

Silver . . . $50, for families or couples, includes six IMAX® tickets

Gold . . . $100, for individuals, families and couples, includes free parking, eight IMAX® tickets and 8 single admission Combination Guest Passes

For more information, please call 727-0900, ext. 716.

Latest Blood Drive a Huge Success

A special thank you goes to all blood donors. As one Red Cross volunteer said, "We can always count on NASA. They are always consistent." The Red Cross established a Center goal of 300 units of blood for the November drive. Langley surpassed that goal with 323 units of blood.

Because levels of blood units being donated has dropped considerably since October and the demand for blood increases during the holiday season, the Red Cross is encouraging donors across the Nation to give blood.

The Center has a strong bloodmobile program but we are always trying to increase the number of blood donors. If you have any questions about the bloodmobile, please contact the Occupational Services Health (OHS) Office at ext. 43195 or the American Red Cross, Hampton Roads Chapter.

Special thanks go to first-time blood donors John D. Antinori Jr., Rolando F. Padilla, Nadine E. McHatton, Robin K. Land, Noel A. Talcott Jr., Daniel Axelrad, Joyce Reed, Marc Graveline, Sally Schwaner, Robin S. Barefoot, Robert J. Scarborough, G. Alan Moran Jr., Tammy L. Seward, Elaine Crawford, Gregory D. Nowicki, Keith Jackson and Michael T. Oliver. "Thanks" are also extended to multiple blood donors: 16 gallons, Robert P. Davis; 14 gallons, Robert F. Berry Jr.; 11 gallons, Russ D. Rausch; 10 gallons, Edward E. Crum; 9 gallons, Barry L. Price; 8 gallons, Jerry W. Wright and Carl N. Robeson Jr.; 7 gallons, Henry E. Freeman Jr., Thomas R. Levin, Wayne S. Melton, Raymond C. Scholz and Wilbur B. Fichter; 6 gallons, Richard N. Zacharias; 5 gallons, Felecia C. Berry, Jan A. Benson and Daniel W. Fisher; 4 gallons, Timothy Harris III and Cindy W. Albertson; 3 gallons, Jerry R. Harris and Bradley D. Leighty; 2 gallons, Catherine S. Jones, Ronald W. Sterling and Joseph M. Falzone; 1 gallon, William L. Kleb, John W. Swartzbaugh, Bobby L. Hibbitts Sr., Clifford J. Obara, Mary H. Deuell and James R. Comstock Jr.

Please mark your calendars for the next blood drive, January 26. OHS appreciates the generosity of all participants.

Langley Exhibits at Technology 2003

Technology 2003, an exhibition of the latest in science and technology, was sponsored by NASA, *NASA Tech Briefs* and the Technology Utilization Foundation and consisted of more than 250 exhibitors. It was held at the Anaheim Convention Center in Anaheim, Calif., in early December.

Technology 2003, featured eight exhibits of Langley innovative research available for license or sale. Exhibits included Langley's carbon-carbon composite materials, including a carbon-carbon piston; a thermal non-destructive evaluation system developed to evaluate air worthiness of aging aircraft structures suitable for non-aerospace applications; and colorless polyimide thin films and coatings that have high resistance to radiation and can be used for items like satellite antennas, high-performance paints and coatings, and for eye lens implants.

Happenings

WANTED: Films, photos and audio on the space program. Varied Directions Co. is producing a television series on the history of NASA's space program: Projects Mercury, Gemini and Apollo (1950s to 1976). They are seeking images from personal collections: home movies and interviews with astronauts; audio interviews with astronauts; and photographs. The project will tell the story of the program from the astronauts' perspective. Images of people who were there at the time will be available. If you have material or know of images, please contact Catharine G. Schauer, Office of Public Affairs, ext. 46122.

BRIDGE/CHESS CLUB: Foreign female scientist wants to form a friendly club for bridge and chess aficionados. If you work at NASA and live in the Hampton area, call in the evening, 827-5052, Rm. 405. Ask for Dr. Shiva Thacker.

CHILD CARE: Poquoson, Bethel Manor, Langley and Yorktown area. Monday-Friday, experienced teacher w/ CPR training will provide meals and activities. References available. For more information, call Arlene Bermudez at 865-0853.

HOUSE FOR SALE: Poquoson, 2-story contemporary on 7/8-acre cul-de-sac lot, great room w/fireplace, dining room, eat-in kitchen, 3 BR, 2 baths, 2-car garage and large game room, lots more. Asking $164,900. Call 868-0818.

HOUSE FOR SALE: Beaconsdale/Newport News, 3 BR, nursery, 2 baths, 1,700 sq. ft. Cape Cod. New kitchen, large lot, 1-1/2 car garage, porch, workshop. Asking $84,900. Call 591-8813.

HOUSE FOR SALE: York Co./Tabb, 3 BR, 2 bath ranch on large lot w/lakefront view. Has cathedral ceilings, skylights, fireplace, etc. Asking $120,000 or $2,500 down and assume 7.5 percent loan payments of $905. Call 867-8223.

KING STREET BRIDGE REPAIRS: Next summer, the King Street Bridge will be closed for resurfacing. The bridge connects the City of Hampton with Langley Air Force Base and bridge traffic will be rerouted on the base's other two entrances during the repairs. At issue is whether the bridge will be closed for 60 days with around-the-clock repairs or close for 90 working days of repairs preserving Sundays and nights as quiet times for local residents. Look for information in the *Researcher News* as developments unfold.

GWU ANNOUNCEMENT: The George Washington University (GWU) School of Engineering and Applied Science's Joint Institute for Advancement of Flight Sciences at Langley offers several degrees. Registration for the Spring 1994 semester will take place through Dec. 17, 1993, and Jan. 4-6, 1994, for degree students; Jan. 7 for non-degree students. For a complete listing of courses and telephone registration procedures, call the GWU office at ext. 41982.

FITNESS WITH FAT LOSS: Join the LAA Aerobics Club and get an exercise program and nutritional advice to help you reach your individual goals. Certified personal trainers will design and help you maintain your program. Progress measured with body composition analysis and cardio-fitness assessment. Classes include low-impact, bench, body sculpting and circuit training. Classes are Tuesday and Thursday, 5-6 p.m. and Saturday, 9:30-10:30 a.m. in the LAA Gym. Call ext. 42295 for more information.

HOLIDAY AEROBICS SCHEDULE: Low-impact, bench and circuit training classes will be held in the LAA Gym Dec. 26, Jan. 2 and Jan. 8, from 2-3 p.m. to help work off the holiday goodies. Call ext. 42295, for more information.

MISSING EQUIPMENT: IBM computer, model 5155, ECN #549213. Anyone with information, please call ext. 42325. It's urgent!

THOMPSON FELLOWSHIP PROGRAM: Applications are invited for the 1994-1995 program. The application form and instructions for its completion may be obtained from George D. Allison of the Employee Development Branch. Questions concerning the program or the application process should also be directed to him at ext. 42594. Deadline for completed applications is Jan. 31, 1994.

SYMPHONY TICKETS are on sale at the Langley Exchange Shop. Join Skitch Henderson and the Virginia Symphony Pops in a "Holiday Spectacular," on Dec. 22 at Ogden Hall, Hampton University. The symphony is offering a special rate to NASA employees: $10 for adults and $5 for students (plus $1 for handling). Performances of Handel's "Messiah" will be Dec. 17 and 18 at Chrysler Hall, Norfolk, and Dec. 21 at Hampton Roads Academy, Newport News. For more information, call the Exchange Shop at ext. 41585, TicketMaster or the Virginia Symphony Ticket Store at 380-0040 or 623-2310.

Photo courtesy of SEM Les Productions La Geode, Paris

Ferdinand Magellan's crew row through the rough waters off Chile as part of their mission to locate the southern passage. Discovering this passage to the Pacific through Tierra del Fuego expanded our knowledge of the world. Magellan's adventure is one of the many depicted in the IMAX ® film, *The Discoverers*, now being shown at the Virginia Air and Space Center through May 31, 1994.

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