National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Special Awards Issue **January 9, 1987**

Langley Staff Members Honored for Accomplishments

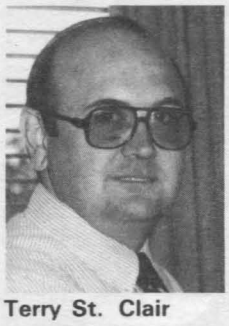
Certificates of Recognition

A **Certificate of Recognition** is presented for the creative development of a scientific contribution which has been determined to be of significant value in the advancement of the aerospace technology program of NASA.

Monetary Space Act awards have been presented to the following:

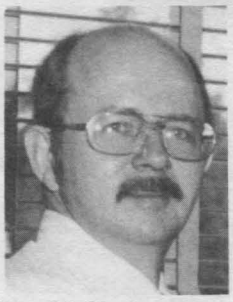
Lana M. Couch, James W. Bailey, Laurence J. Bement, Erick C. Stewart, Allan J. Zuckerwar, Dale V. Dennis, Robert D. Averill, Gregory A. Dries, John M. Butler, Bernard Spencer, Wilmer H. Reed III, John W. Wilkey, John H. Cantrell Jr., Richard Puster, William T. Yost, Terry L. St. Clair, Robert V. Hess, Irvin M. Miller, David R. Schryer, Barry D. Sidney, George M. Wood, Patricia A. Paulin, Ronald F. Hoyt, Martin M. Mikulas Jr.;

Marvin D. Rhodes, Bradley D. Leighty, Charles F. Bryan Jr., Leonard M. Weinstein, H. Douglas Garner, Lucio Maestrello, Daniel J. Jobson, Neal T. Frink, Edward A. Crossley Jr., Howard C. Jones, Irby W. Jones, Timothy D. Schott, Robert L. Fox, John D. Buckley, Paul M. Hergenrother, Ronald K. Clark and Brian J. Jensen.



Terry St. Clair

Paul Hergenrother



Ronald Clark

Brian Jensen

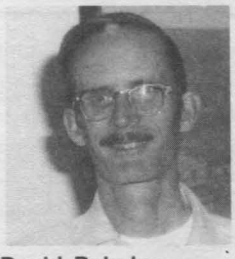
Suggestion Awards

The Langley Suggestion System was established to increase productivity, efficiency, economy and other improvements in center operations. Employees are recognized and rewarded, either individually or collectively, for idea-type contributions which are adopted.

Employees receiving Suggestion Awards are Frederick J. Hines, Robert A. Edahl, Donald L. Smith, Maywood L. Wilson, Clarence E. Stanfield, William F. Adkins, Manford R. Groves, Carlton G. Pike, David B. Robelen, Judson S. Black Jr., Philip F. Walker, James H. Carmines, Nicholas K. Kepics, Gus E. Johnson, Charles A. Poupard, Thomas J. Burns, Marion C. Martin, Robert E. Darby;

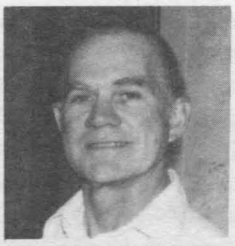
Edward M. Folts, William D. Scarlett, Samuel E. Harper, Cassandra G. Favor, Janice L. McCollum, Willie Barnes, Lawrence B. Cooper III, Jarmon M. Moore, Ronald C. Mills, James S. Post Jr., Arizona White, James S. Jarrell, Bonnie S.L. Cruz, Earl J. Mathis, Bruce D. Little, Wayne D. Geouge, Everette R. Causey, Salvatore S. Gionfrida, E. Wayne Martin.

Honorary Suggestion Awards have been presented to Geneva M. Kelly, Charles A. Poupard, Ronald W. Rader, Robert F. Berry Jr.



David Robelen

Edward Folts



Maywood Wilson

William Adkins

William Scarlett

Samuel Harper

Manford Groves and Carlton Pike

Salvatore Gionfrida

Charles Poupard

Special Achievement Awards

Employees receiving Special Achievement Awards were James J. Kiss, Eric S. Price, Louise H. Sykes, Robert C. Gage, Virgil H. Justice Jr., William M. Kahlbaum, Lucas G. Horta, Sharon L. Padula, Juliet Z. Pao, Aubrey M. Raiford, Mark W. Wynkoop, Marcus A. Wayne, Delwin R. Croom Jr., Garnett C. Horner, William H. Hillingsworth Jr., H. Stanley Hogge, Maxwell E. Hoffman, Dwayne E. Hinton, Sonia S. Herndon;

William C. Henley Jr., Randall L. Harris, David E. Hahne, Gary W. Grew, Richard E. Davis, Charles H. Greenhalgh Jr., Arthur L. Gooden, Barry V. Gibbens, William F. Giannini, D. Elaine Gause, Gregory M. Gatlin, Bobby E. Gaddy, Jose A. Rivera, Gordon Erlebacher, Janet L. Edmondson, David A. Dress, George E. Dickerson, Angela M. Davis, Robert H. Daugherty, Buena E. Crawford, John W. Cox, John A. Costulis;

James Kiss

Robert Gage

Forrest F. Bruce, Arnold C. Burcham, Norma K. Campbell, Gary L. Carl, Michael L. Carr, Kimberly D. Carter, John H. Cline, Karen L. Cole, Virginia M. Cordle, Roosevelt Borden, Charles F. Bradshaw, Ashton D. Brown Sr., Harriet F. Brown, Veronica A. Blakeney, Donald R. Bennington, Robert M. Bennett, Patrick T. Bauer, R. Wayne Barfoot, Charles A. Baldwin, David W. Alderfer, William C. Alexander;

Claude R. Watts Jr., Edward F. Taylor III, Charles E. E. Morris Jr., Jean Miller, Anna J. Lockard, Jacqueline T. Kallick, Robert E. Grandle, Theresa F. Elliott, Samuel M. Dollyhigh, Sherman A. Clevenson, Kenneth J. Balka, Patricia J. W. Block, Emedio M. Bracalente, Kenneth S. Brentner, Harold K. Carney, Aubrey M. Cary Jr., Ida K. Collins, James E. Coutts,

Marcus Wayne

Delwin Croom

Charles Hudgins

Diane Stoakley

Shirley B. Crockett, Lisa P. Crowe, John R. Cunningham;

Joseph B. Davenport Jr. Benjamin F. Defendeifer, Dave E. Eckhardt Jr., Michael C. Fischer, John M. Franke, Nellie E. Freeman, Melvin C. Gilreath, Peyton B. Gregory, Robert W. Guy, Philip L. Hazlett, James L. Hudgins, Victor E. Jenkins, P. M. Jackson Jr., Patrick J. Johnston, Virginia H. Jones, William R. Kivett, William B. Kluge, Edward E. Lawless, Ashby G. Lawson, Shirley L. Lawson, Amy O. Lupton;

Michael A. Marcolini, Joan D. Oster, Peter A. Padilla, Coolidge R. Presnell, Mark E. Price, Rosmary A. Rallo, Micheal C. Rammel, A. Wayne Richardson, Sherry B. Richardson, William M. Rollins Jr., Frances E. Sabo, Thomas E. Saunders, Linda W. Sutherland, Scott R. Thomas, Janice K. Via, Susan J. Voigt, Robert J. Wallis, Loretta W. Watkins, Jo Ann H. Woodcock, Davis B. Wright Jr., W. Robert Young;

Louise Sykes

John Wagner

Mark S. Lake, Rebecca L. Ward, Robert Miserentino, Diane M. Stoakley, John A. Wagner, John D. Whitcomb, Mark R. Carpenter, Lee O. Hall, James A. Keaton, David R. Brooks, William J. McCabe, Linwood G. Burcher, Daniel J. Carey, Alan P. Scheidegger, William H. Garrison, Frank M. Plott, E. Thomas Hall Jr., William R. Hutto, Robert C. Evans, Timothy G. Wood, Ernest R. Dunnigan, Joseph E. Mahler, Bruce M. Adderholdt, Edward G. Carden, Richard L. Chattin, Clarence W. Bailey, Jeffrey C. Hyle, James S. Post;

Joseph G. Hudson, Gregory L. Humphreys, David E. Holmes, Lawrence H. Hoffman, Kathleen L. Hillard, Vernon T. Helms III, Mary D. Henderson, Rhonda R. Harvey, Gale A. Harvey, Franklin K. Harris, Luis E. Gutierrez, Gerald L. Gregory, Howard G. Maahs, Ronald K. Clark, Harold D. Burks, Ruperto T. Razon, Barry K. Lawhorne, Albert H. Bell, Thomas H. Hall Jr., Thomas T. Bales, Patrick Minnis, Raymond E. Midden, John P. McPherson, Nannette D. Lloyd, George E. Lockard, Willie Luceto, Chen-Huei Liu;

Jean M. LaNeave, Scott O. Kjelgaard, Warren C. Kelliher, Gerald M. Keating, Philip C. Kassel Jr., Katherine G. Johnson, Ronald N. Jensen, John T. Inge, Douglas B. Price, Richard W. Powell, Thomas G. Popernack, Ronald A. Outlaw, Harold N. Murrow, Patrick C. Murphy, William R. Motley III, Mark A. Motter, Shirley R. Morton, Alton T. Moore, William L. Sellers III, Daniel I. Sebacher, David R. Schryer, Carroll W. Rowland, Vernelle V. Robinson, James O Riggins Jr.,Curtis P. Rinsland;

John Whitcomb

Clarence Bailey

Ellis E. Remsberg, Henry G. Reichle Jr., Nancy N. Shields, Mary Ann H. Smith, Mario F. Smith, Linda R. Smith, Jacqueline G. Smith, Sauel Sokol, Charles F. Spear, Cary R. Spitzer, William T. Suit, George M. Summerfield, Brenda N. Steele, Theodore A. Talay, John T. Taylor, Richard A. Thompson, Jon E. Thompson, Veer N. Vatsa, Richard D. Walters, Willard R. Weaver Jr., Rosa C. Webster, K. James Weilmuenster, William L. Wells, Wayne H. Wells, John W. Wilson;

Leland E. Wilkinson, Alan W. Wilhite, Bruce A. Wielicki, Robert P. Weston, E. Vincent Zoby, William M. Adams Jr., Richard R. Adams, Kathy H. Abbott, Jose M. Alvarez, Gregory C. Andersen, Roger K. Amick, Laurie W. Andrews, Bruce R. Barkstrom, Martin T. Baxter, James G.

Howard Maahs

Harold Burks

Batterson, John T. Batina, Willie Mae Beckett, James Bene, James J. Buglia, Lewis G. Burney, Gordon F. Bullock, Linwood B. Callis Jr., Charles E. Byvik, Barbara B. Clark, William P. Chu, James K. Charnock;

Robert L. Charles Jr., James P. Chamberlain, Jean G. Cridlin, Mark A. Croom, Alice E. Eley, Jean W. Clough, Karen W. Evans, Jack Fishman, Amy C. Fitzgerald, Vincent J. Fleck, Jean M. Foster, Linda S. Gahan, James E. Gardner, Andrew A. Graham II, Philip R. Young, John H. Crews Jr., Doris L. Crumpler, William A. Corlett, Judy H. Cottle, Edward W. Covington III, Wesley R. Cofer III, Lois D. Collier, Leonard V. Clark, Panice H. Clark, Carlito I. Barnes, Charles N. Gibson, Debra L. Carraway;

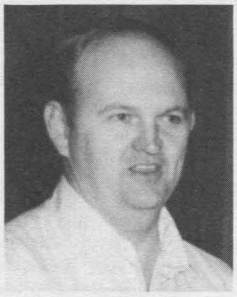
Ruperto Razon

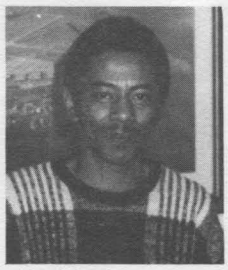
Thomas Bales

Gloria C. Carney, Carolyn V. Carey, James R. Byrne, Helen M. Bruce, Charles S. Bryant, Elizabeth F. Buchan, Clarence F. Breen, Karen D. Brender, James E. Bostic, Elizabeth W. Bierie, Cynthia S. Belsches, Marvin E. Beatty III, Dennis W. Bartlett, Daniel W. Banks, Zachary T. Applin, Cheryl A. Balderston, Virginia K. Anderson, Faith M. Allen, Shirley M. Freeman, Robert H. Huffman Jr., Eugene L. Bunting, Robert T. Hester, William T. Smith, Melanie K. Long, Bruce D. Fisher;

Dolores K. Felty, Robert K. Faison Jr., Glenn R. Farnsworth, Cassandra G. Favor, Jessica L. Emerson, Judy W. Evans, John T. Dorsey, Joseph C. Davis, Sharon D. Deberry, Sylvia B. Lawson, Major C. Lee, Peggy H. Langford, Donald L. Lansing, Norman F. Knight Jr., Frederick J. Lallman, Bruce M. Kendall, Warren C. Kelliher, Stephen J. Katzberg, Sheila D. Johnson, Anna H. Jackson, Charlene L. Gleaton, William H. Greene, Denise R. Greene, Sharon A. Harper;

John Crews


Edward Covington


Carlito Barnes

Jane Hogge

Louise C. Hamilton, Marie W. Hall, James R. Hall, Jane A. Hagaman, Sallie M. Harvey, Theresa C. Hedgepeth, Herbert D. Hendricks, Anne D. Holland, Marcella F. Hogge, Jane M. Hogge, Purnell Hopson Jr., Patricia D. Hurt, James L. Hunt, Artie D. Jessup, Benjamin J. Schlichenmayer, John S. Hunt, John D. Scholz, Leonard R. Stevens, Arthur G. Ritter, Henry E. Freeman Jr., Thomas G. Popernack, James L. Pittman, Charles R. Pruitt, Gregory D. Riebe, Rodney H. Ricketts;

Anne S. Rockey, Lawrence F. Rowell, Nancy C. Rodgers, Donald W. Ruth, Anita M. Runkel, William E. Sanders, Mary L. Sandy, Edward N. Scearce Jr., William G. Sewall, Barry D. Sidney, Daniel F. Slowikowski, Richard J. Silcox, Larry A. Snyder, W. Frank Staylor, Edward M. Sullivan, Deborah L. Sullivan, Frank H. Supplee Jr., Noel A. Talcott Jr., Joseph B. Talbot, Ping Tcheng, Leon V. Taylor, Carolyn C. Thomas, M. Patricia

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Benjamin Schlichenmayer

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Cynthia L. Walker, Theresa C. Walker, Evelyn D. Wallace, Debra E. Watson, Beverly Y. Wells, L. Edward Williams, Cerie W. Wood, John Witherspoon, Andrew S. Wright Jr., Allan J. Zuckerwar, James L. Leuci, Carlos A. Liceaga, Ralph B. Lewis, Marna H. Mayo, Fabiola C. Martin, Virginia B. Marks, Don C. Marcum Jr., Debra P. Mabe, Linda F. McKnight, Catherine B. McGinley, Michael C. McGary, Dollie M. McCown, Charles E. Mercer, Peter D. Gall, Wayne D. Geouge, Ronnie E. Gillian;

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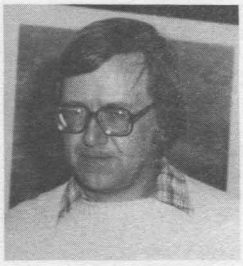
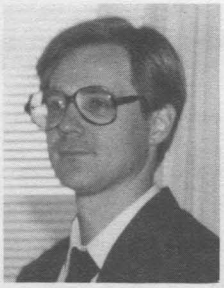
John Scholz


Arthur Ritter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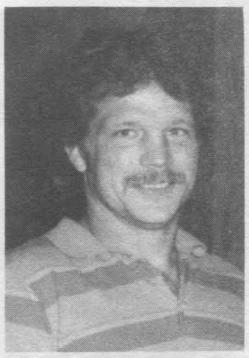
Don Marcum

Sang Tran

William Sanders

Debra Mabe


Wayne Geouge

Penny Murphy

James Neal

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Space Administration

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Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 150, telephone 865-4038. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

TECH BRIEFS. The quarterly "NASA Tech Briefs" journal, distributed nationwide, stimulates technology transfer by disseminating information on new developments stemming from aerospace research. Receiving Tech Brief Awards in the left photograph from Charles Blankenship (standing at right), Director for Structures, are (seated) Paul M. Hergenrother, Linda B. Blackburn, Jeffrey A. Hinkley, Emilio Alfaro-Bou (retired), Marvin D. Rhodes; (standing) Randall C. Davis, Donald J. Progar, Terry L. St. Clair, Robert Miserentino and Blankenship.

NASA Tech Briefs Awards

Dr. Jeremiah F. Creedon, right, Director for Flight Systems, presented awards to James B. Robertson, Dan D. Vicroy and Charles E. Knox. Others receiving awards but not pictured include, Anne K. St. Clair, Diane M. Stoakley, Vernon L. Bell (retired), Sherwood H. Tiffany, Friedrich O. Huck, Melvin C. Gilreath, P. Douglas Arbuckle and Steven M. Sliwa.

AFSC Liaison Office Awards

Marion G. Tuck and Nicholas G. Vretakis of the Air Force Systems Command Liaison Office at Langley, received Sustained Superior Performance Awards from Major James E. Ballengee, Chief. Both individuals were honored for achievements which have contributed significantly to the accomplishment of the Air Force and NASA mission.

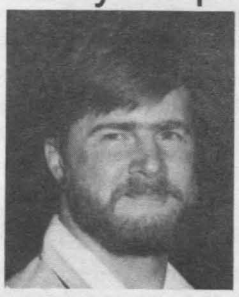
Special Service Awards

Rebecca Ward

Robert Miserentino

Mark Lake

Army Employees Receive Awards



ARMY AWARDS. Charles E. Varner, Acting Chief, Army Aeronautical Research Group, Aerostructures Directorate, recently presented Special Act Awards to Gary L. Farley, John H. Cline and Kevin W. Noonan. Marguerite F. Verlander received a Sustained Superior Performance Award.

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Langley Researcher

Volume 26, Issue 1 **January 16, 1987**

Message from the Director

Langley to Observe 73 Seconds of Silence

All NASA Astronauts who have died in the line of duty will be honored this January 28 at Langley and other NASA centers.

At 11:38 a.m., the time of the launch of Shuttle mission 51-L, the Langley flags will be lowered to half-mast. Employees are requested to observe 73 seconds of silence in recognition of the length of the Challenger mission. The flags will remain at half- mast for the remainder of the day.

I urge all employees to join the Langley Senior Staff in honoring these brave men and women.

Richard H. Petersen

51L crew members will be honored January 28, along with all other NASA Astronauts who have died in the line of duty.

Nunamaker Selected to Chair Congressional Advisory Committee

NASA Administrator, James C. Fletcher, has announced the appointment of Robert A. Nunamaker, Director for Space at Langley, as Chairman of the Advanced Technology Advisory Committee (ATAC).

ATAC was established, in conjunction with the Space Station program, to identify specific Space Station systems which advance automation and robotics (A&R) technologies. Additionally, ATAC is required to follow NASA's progress in A&R for the Space Station and report its findings to Congress semianually.

Nunamaker succeeds Aaron Cohen as ATAC Chairman. Cohen was recently appointed as Director of the Johnson Space Center.

Four Great Observatories Will Aid in Astronomical Explorations

Almost everyone is curious about the universe. Although mankind has studied astronomy since ancient times, many aspects of the universe remain mysterious.

Our understanding of the universe no longer depends on preconceptions but on precise observations and measurements. The advance of spaceflight has made possible the placing of sensitive astronomical instruments into space.

We now have the advanced technology needed to place entire observatories into space for investigations across the spectrum and thereby open a new era of space observations.

Astronomical observations pose some of the greatest challenges of modern technology. During the past two decades, NASA has continued to develop and place into orbit, increasingly sensitive instruments to observe the universe with improved sensitivity. With the development of the four great observatories, we now have technology for the future.

A new generation of space observatories offer new gains of sensitivity through state-of-the-art technology:

Gamma Ray Observatory — (GRO) This observatory will explore the most energetic part of the spectrum across a much greater wavelength range than earlier observatories. The GRO will enable us to determine if most of the known gamma radiation arriving from the universe originates in quasars and pulsars, or whether there are other sources of gamma ray emission.

Advanced X-Ray Astrophysics Facility — (AXAF) This facility will cover the x-ray portion of the spectrum with a 1000-fold improvement in sensitivity. AXAF will be an international observatory for studying highly energetic environments found in nearly every known object in the universe, including stars and planets as well as neutron stars, black holes, quasars and cores of active galaxies. With AXAF, the most distant quasars in the universe will be located and studied.

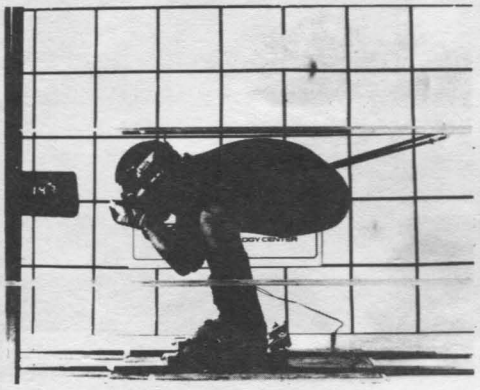
Continued on page 4.

Langley Colloquium

Holden to Discuss Aerodynamics in Skiing Competition

Aerodynamic research in the sports of downhill racing, ski jumping, speed skating and the luge, which was designed both as a training tool for athletes and a means of experimentally and theoretically evaluating techniques to obtain optimum performance, will be the topic of the January 27 Langley colloquium.

Dr. Michael S. Holden, a Calspan Corporation engineer recognized internationally as an expert in the aerodynamics of downhill racing and ski jumping, will discuss "Aerodynamics in Alpine and Nordic Skiing Competition" at 2 p.m. in the Activities Center. Following the lecture, Holden will answer questions and meet with employees in the adjoining Langley Room.



Holden has traveled with U.S. ski teams and participated in their on-slope and wind tunnel training. Since 1980 U.S. Alpine and Nordic athletes have engaged in extensive research and training in the Calspan low-speed wind tunnel.

In his lecture, Holden will describe the results of his aerodynamic research and training, with emphasis on how the aerodynamic performance of the athlete and his equipment contribute to success in competition.

Holden said that 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. Holden added that visual, audio and computer information was provided directly to the skiers so that they could evaluate and improve their performance during the training sessions.

Since joining Calspan in 1964, Holden has worked principally on the theoretical and experimental fluid mechanics of high speed flows, with emphasis on viscous interaction and separated flow in hypersonic laminar and turbulent boundary layers.

Re-Formation

A Poem for Dr. King

The black King
came forth
under a Lutheran name.
Perceiving an impartial God,
he moved his pulpit to the streets
and proclaimed his dream.
Before God and the world,
he stood and marched,
he stood and preached,
he stood and prayed.
Although voted the most
peace-loving man
on our planet,
violent, conspiring hands
ended his march.
At last he is free
to stand in the land
of perfect peace.

Ramona C. Carroll

Martin Luther King
Minister Civil Rights Leader
Nobel Prize Winner
January 15, 1929 --- April 4, 1968

Training Office Announces Courses

A few spaces are available in each session of "How to Get Results with People," a one-day seminar being offered on February 19 and 20. Learn how to:

- Build credibility and authority
- Make "your" ideas "their" idea
- Project yourself in high visibility situations
- Develop teamwork and cooperation
- Get people to take initiative
- Gain support and trust of others
- Handle and defuse conflict

Also, some spaces are available for "Langley Office Policies and Procedures," scheduled for the mornings of February 3, 5, 10 and 12, in which Center personnel inform and update Langley secretaries in Langley administrative policies and procedures. Specialty areas will include: purchase requests, RTOP's and RTR's, technical reports, travel, library procedures, and other areas of interest.

If you wish to enroll in either course, contact your Training Coordinator or call the Training Office, ext. 2611, for forms.

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Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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 Announces Unmanned Launch Forecast for 1987

NASA plans six launches during 1987, which will include the Atlas Centaur, Delta and Scout expendable launch vehicles.

Two missions are scheduled for February.

The first launch is a GOES-H weather satellite aboard a Delta rocket for the National Oceanic and Atmospheric Administration (NOAA). GOES-H will become GOES-East in orbit and be stationed over the Atlantic Ocean. The single GOES satellite now in orbit will be shifted to the Pacific region becoming GOES-West.

The Fleet Satellite Communications (FLTSATCOM) F-6 spacecraft also will be launched in February aboard an Atlas Centaur rocket. This FLTSATCOM will be a continuation of a launch program to place a set of three second generation communications satellites into orbit for the Navy. The first of this serives was launched in December 1986. The FLTSATCOM satellites are also shared with the Air Force and other Department of Defense users.

In March, a Delta rocket will place a Palapa communications satellite into orbit for the government of Indonesia.

The FLTSATCOM F-8 spacecraft, to be launched in May, brings to a conclusion the operation of the Atlas Centaur program under NASA.

During the fourth quarter, a Strategic Defense Initiative launch is planned. This will be the second of four planned Delta launches in this series. Also, at Vandenberg Air Force Base, Calif., a Scout launch is planned for September with SOOS-2 (Stacked Oscar on Scout), a pair of navigation satellites for the Navy. NASA launched SOOS-1 in August 1985.

Key Position

Mitchel E. Thomas has been selected Assistant Head, Flight Instrumentation Branch, Flight Electronics Division, Office of Director for Electronics, under the CPP 86-64.

ATTENTION

The H.J.E. Reid Conference Center is in need of a transparency machine to support the varied conferences held at the Center. If you have a vu-graph making machine that is not being utilized, and would like to donate it to the Conference Center, please contact Pat Gates, ext. 2058.

News Around NASA

MARSHALL, Huntsville, Ala.; — **PRATT & WHITNEY TO DEVELOP MAIN ENGINE TURBOPUMPS.** Pratt & Whitney has been awarded a $198 million contract to develop new high-pressure fuel and oxidizer turbopumps for the Space Shuttle main engines. The contract calls for the development of durable turbopumps that are interchangeable with those used on the Shuttle main engines. The turbopumps must be able to operate for 30 flights without major inspection or overhaul, and have a service life of 55 flights. In late 1989 P&W is expected to deliver one complete set of turbopumps to Marshall for engine integration testing.

JET PROPULSION, Pasadena, Calif.; — **FAIRCHILD SPACE CO. TO BUILD SPACECRAFT FOR TOPEX.** The spacecraft for NASA's Ocean Topography Experiment (TOPEX) is to be built by Fairchild Space Company under a contract which will run through 1994. TOPEX, a collaborative effort with France, will measure the sea level of the global oceans and help to provide a better understanding of the role of oceans in climate changes. The spacecraft will be launched on an Ariane vehicle and all data will be shared by NASA and France's space agency, Centre National d'Etudes Spatiale (CNES). The price of the contract will be announced in May.

JOHNSON, Houston, Tex.; — **WEITZ NAMED JSC DEPUTY DIRECTOR.** Astronaut Paul Weitz has been named Deputy Director of Johnson Space Center, where he had been assigned as technical assistant to the director since October 1986. Weitz was a member of the crew on the first manned visit to the Skylab in 1973 and was Commander of the sixth Shuttle mission in April 1983.

CHINA; — **CHINA GETS LANDSAT RECEIVING AND PROCESSING STATION.** The Chinese Academy of Sciences will begin mapping the country with the newly installed Landsat receiving and processing station, which will allow the Chinese to convert Landsat data into photographic images of China's terrain for the first time. Using the Landsat 4 satellite launched in 1982 by NASA and the National Oceanic and Atmospheric Administration, the Chinese plan to monitor population growth, manage resources and undertake urban and agricultural planning.

GODDARD, Greenbelt, Md.; — **COBE TO BE LAUNCHED ON DELTA ROCKET.** The Cosmic Background Explorer (COBE) satellite will be launched on a Delta expendable launch vehicle rather than the Shuttle, in an effort to pare the backlog of science payloads. Carrying three scientific instruments, COBE is designed to study the "Big Bang" theory. The COBE is scheduled for an early 1989 launch from Vandenburg Air Force Base.

AMES, Moffett Field, Calif.; — **LOCKHEED UNIT AWARDED AIRCRAFT SUPPORT SERVICES CONTRACT.** Ames has awarded a five year, $22 million support services contract for the High Altitude Earth Resources Aircraft Program to Lockheed California Co. Advanced Development Projects. The work, now being performed at Ames, includes maintenance, engineering and piloting services for NASA's U-2 and ER-2 aircraft.

NASA HQ, Washington, D.C.; — **BRADLEY APPOINTED DIRECTOR OF PERSONNEL.** Ann Bradley has been named to the position of Director of Personnel in the Office of Management, effective January 19. Associate Deputy Administrator of NASA since August of 1984, Bradley will be replacing Carl Grant who is being reassigned to the position of Special Assistant to the Associate Administrator for Management.

Rebadging Postponed by NASA Headquarters

The Agency-wide rebadging of NASA employees has been postponed by NASA Headquarters pending completion of a study concerning the size and information content of the employee badge. At least a six month delay is anticipated.

Upcoming Workshop

The workshop on "Sensor Technology for Intelligent Materials" will be held February 3-5, a the Langley Activities Center. Contact Robert S. Rogowski, Instrument Research Division, MS 231, ext. 3036, for more information.

Astronomical Explorations

Continued from page 1.

Space Infrared Telescope Facility — (SIRTF) This facility will span the infrared part of the spectrum with a 1000- fold increase in sensitivity. SIRTF will provide a vital tool needed for detailed studies of the infrared universe. SIRTF will be able to search for planets around the nearest stars. If planets are detected, the Search for the Extraterrestrial Intelligence could be more clearly focused.

Hubble Space Telescope — (HST) The largest telescope ever put into space, the HST will penetrate deep into the universe in visible and ultraviolet light, expanding the volume of observable space by several hundred times more than now possible. Named for Edwin P. Hubble (1889-1953), who discovered that the boundaries of the universe extend far beyond the Milky Way, HST represents a quantum leap in sensitivity, resolution and precision.

HST has a primary mirror 2.4 meters in diameter that is essentially perfect and, being operated above the Earth's atmosphere, the telescope's observations will distinguish fine details with 10 times the clarity of the best ground-based observatories. HST's five primary instruments are:

(1) A High Resolution Spectrograph, which will examine the ultraviolet region of the spectrum, seeing light which cannot reach Earth. It will detect objects 1,000 times dimmer than those observed by previous spacecraft at comparable or higher spectral resolution.

(2) The Wide Field/Planetary Camera, designed to observe relatively large fields of view, can operate in two modes. Its "wide field" capability permits the examination of large areas of space, allowing accurate plotting of the location and spatial structure of distant objects such as galaxies and quasars. It also has a high resolution, or "planetary" mode, to permit the study of planets within our solar system as well as the detailed structure of galaxies, nebulae and star clusters.

(3) The Faint Object Spectrograph can obtain spectra of extremely faint astronomical objects in ultraviolet and visible wavelengths allowing scientists to study comets before they are chemically changed by the sun and to analyze quasars thought to be at the nuclei of some galaxies.

(4) The High Speed Photometer is designed to measure the total light and its time variations from an object in space. The instrument will resolve fluctuations in brightness on a time scale down to 10 millionths of a second.

(5) The Faint Object Camera, was developed by the European Space Agency. This instrument will have the capacity to measure accurately the intensity of faint galaxies at unprecedented distances into the universe and will see closer objects in greater detail.

HST will be placed in a 370 mile orbit. During its mission, which will extend well into the next decade, the telescope will receive in-orbit servicing by astronauts aboard the Shuttle or from crew members aboard the Space Station. Marshall Space Flight Center will manage the maintenance and refurbishment program. In-orbit operation of the telescope is the responsibility of the Space Telescope Operations Control Center, at Goddard Space Flight Center.

The science data from HST will be sent to the Space Telescope Science Institute, located at Johns Hopkins University, Baltimore, Md., for analysis and dissemination to astronomers from around the world who will come to observe the telescope's results.

In this era of the Space Shuttle and Space Station, the new family of permanent observatories in space will make possible the comprehensive study of astrophysics. We will be able to throw open the doors of the universe and look back in time and space for order and meaning.

Troy A. Wilson (left) accepts the plaque naming him"Suggester of the Year" from Deputy Director Paul F. Holloway. Wilson, now retired, was a Lead Engineering Technician assigned to the Operations Support Division when he received a monetary award for his suggestion entitled, "Replacement of Existing Top NTF 'takeup' Reel System with a Passive Wiring Protection/Control System." Wilson was chosen Suggester of the Year based on the savings realized from his suggestion, as well as the degree of innovational/organizational impact, extent of application, and the difficulty of installation.

Klate Holt Company Facilities and Equipment Maintenance Support Services Contract employees held a Bake Sale December 17 to benefit the Daily Press/Times Herald Christmas Fund. Proceeds from the sale were over $150 — and everything was sold in less than one hour! Pictured (left to right) are: Jim Delauder, Steve Williams, Katherine Hedick, Walter Sykes, Willis Alston, Linda Edwards, Doug Johnson, Louis Randall and Kitty Swanson. Front Row: Shirley O'Connell and Jackie Henley. The Klate Holt Company contributed a grand total of $3,482. to the Christmas Fund.

Support Group Targets Recovering Smokers

As a result of the evaluations from the Fall 1986 NASA Smoking Cessation Course, the Employee Development Branch, Personnel Division, has coordinated the implementation of a Smoking Cessation Support Group entitled, the "IQ" Group. This group is open to NASA employees, contractors and family members desiring the benefit from the ongoing support of individuals struggling to remain smoke-free.

Beginning on January 30, 1987, the "IQ" Group will tentatively meet the last Friday of each month during 1987, except for November and December, at which time the third Friday has been scheduled due to the holidays. Building 1194A, Room 106 has been reserved on the above days from 11:45 a.m. through 12:30 p.m. Brown bag lunches are welcome! For further information, call Nancy Moul, R.N., C.F.N.P. or Pam Gebhart, R.T., NASA Smoking Course Coordinators, ext. 2246.

On November 14, 1986, the six-week "Countdown to Quitting Smoking Course" at Langley graduated nine out of fifteen students (as pictured from left to right in the above photo). First Row: Carlito Barnes, Mary Ellison, Robert Hess, Tina Wallace, Jessica Moyer. Second Row: Nancy Moul and Pam Gebhart (Course Coordinators), Abria Wright, Bhaskar Sarkar. Missing from Photo: Ellen Brantley, Susan McCleary.

Scientists Employ Satellites to Map Ocean Floor

If there were no winds, waves or currents, the world's oceans might appear very calm and flat. However, oceans have their own hills and valleys, similar to those on land, according to Dr. James Marsh, a geophysicist at Goddard.

"Think of ocean surfaces as if they were blankets thrown over rugged terrain. The force of gravity pulls water down into the depressions or forces it up around the mountains, causing gentle hills and valleys on the water's surface," said Dr. Marsh. He added that ocean surfaces are so uneven that looking north from Puerto Rico toward Bermuda, one could see the ocean surface drop nearly 60 feet over a distance of almost 30 miles.

A map generated by Marsh and his co-workers, using data obtained from the altimeters of the Geodynamic Experimental Ocean Satellite (GEOS-3) and the Sea Satellite (SEASAT), shows the true topography of the Earth's ocean surfaces in greater detail and more accurately than ever before. The GEOS-3 and SEASAT measured the distance from space to the ocean surface with radar. The radar-generated data then was used to develop a computer image of the surface of the world's oceans.

Marsh said, "The altimeter data allowed us to measure profiles of the ocean surface. By putting together many profiles, we were able to compute a map of its true shape. The map reflects what the Earth's structure is like under the ocean. If we can understand the underlying crustal structure, it'll give us information on other important phenomena, such as earthquakes and volcanoes."

He continued, "The data generated by GEOS-3 and SEASAT also increased our knowledge of ocean circulation and current systems. The spacecrafts' altimeters allowed us to detect and study features one to two meters in height."

Marsh believes the success of these experiments led to the development of the Ocean Topography Experiment satellite (TOPEX/Poseidon), a NASA/CNES (the French Space Agency) joint venture, planned for lauch in 1991.

The altimeters on board future oceanographic satellites, such as TOPEX/Poseidon, will be so accurate they will enable scientists to observe most of the world's ocean surface currents.

Marsh concluded, "The ocean is a major means for transporting heat around the Earth. TOPEX/Poseidon will help us study ocean currents and their circulation and how they influence the world's weather patterns.

1986
Cancer Facts and Figures

Did you know that . . .

. . .Cigarette smoking is responsible for 85 percent of lung cancer cases among men and 75 percent among women

. . .Cancer death rates for female smokers are 67 percent higher than for nonsmokers

. . .Cancer death rates for male smokers are more than double that of nonsmokers

. . .Smoking is a major cause of heart disease and has been linked to cancer of the mouth, pharynx, esophagus, pancreas and bladder

. . ."Passive smoking" or "second-hand smoke" has been declared a health hazard by the Surgeon General.

Notes of Thanks

Norma and Al Schultz write:

"It would hardly be fitting for Norma and me to retire and relocate without a final goodbye and *Thank You* to all of our friends at Langley, especially after they provided such a fine send-off. Prior to the retirement party planned for us, we were somewhat reluctant participants. But the warm assembly of friends and well-wishers on December 2nd changed our attitudes and made it all seem very worthwhile. Our sincere gratitude goes to all for the hard work, the gift, and the love that went into a most memorable evening. We will miss all of you very much."

Larry Hall writes:

"A special thanks to all who attended my retirement party and contributed to the gifts. Most important, however, is your friendship. This I will always treasure. It has made working at NASA a pleasure and not just a job. My wife and I both thank you so much."

Sympathy Extended

Sympathy is extended to the families of:

Clarence Alvin Dews, Jr., who died October 30, 1986. Dews, a 1958 graduate of the apprentice school, retired from Langley in 1985 after 30 years of service.

Harry P. Lishman, who died November 16. Lishman retired in 1975 as a supervisor in the Electrical shop. He worked at Langley for 33 years.

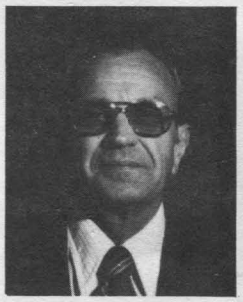
Recent Retirees

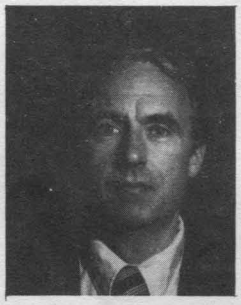
Collis P. Moore, Jr., Operations Support Division, and **Beverly L. Overman,** Facilities Engineering Division, retired December 26.

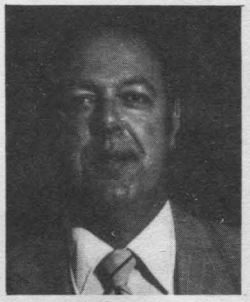
Employees retiring December 31 include, **Anna J. Bailey,** Management Support Division; **Melvin Morris, Jr.,** Systems Engineering Division; **Howard L. Thomas,** Fabrication Division; **Robert B. Forrest,** Operations Support Division; **Charles G. Saunders, Jr.,** Guidance and Control Division; **Domenic J. Maglieri,** Advanced Vehicles Division; **Edmond H. Senn,** Information Systems Division; **James J. Fay,** Personnel Division; **John L. Hudson, Jr.,** Facilities Engineering Division; **Edward A. Hudgins,** Analysis and Computation Division; **Joseph G. Hudson,** Facilities Engineering Division.

January 2 retirees include, **James Monroe Henry,** Systems Engineering Division; **Jacqueline L. Conrad,** Facilities Engineering Division; **Charles Husson,** Information Systems Division; **Louis F. Vosteen,** Office of Director for Structures; **Lloyd S. Jernell,** Transonic Aerodynamics Division; **Arthur R. Friend,** Industry Relations Office; **Calvin M. Bragg,** Operations Support Division; **Clarence E. Caldwell,** Operations Support Division; **C. Donald Babb,** High-Speed Aerodynamics Division; **Virgil H. Justice, Jr.,** Operations Support Division; **Lawrence W. Brown,** Guidance and Control Division.

William C. Henley, Jr., and **William C. Moughon,** both of the Instrument Research Division, retired January 3.


James M. Henry

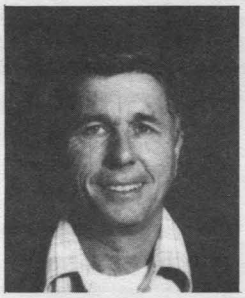

Louis Vosteen


Robert B. Forrest

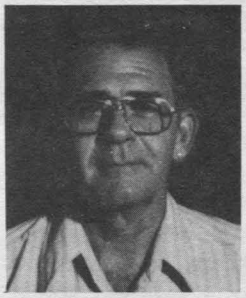
John L. Hudson, Jr.

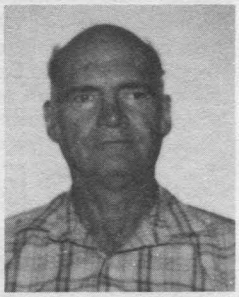
Collis Moore

Melvin Morris

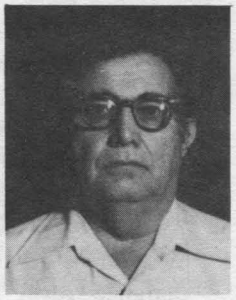

William C. Moughon

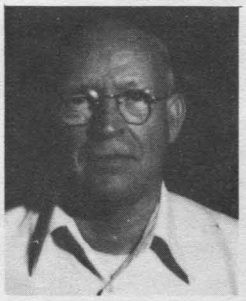
Bill Henley


Donald Babb

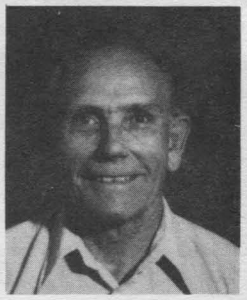

Virgil Justice

Ed Hudgins

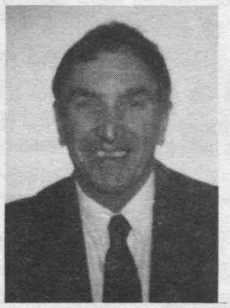

Calvin Bragg

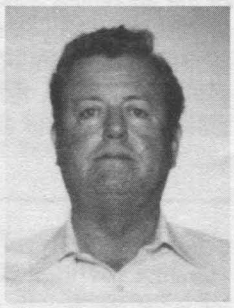

Howard Thomas

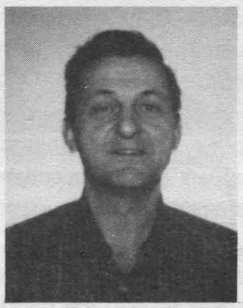
Lawrence Brown

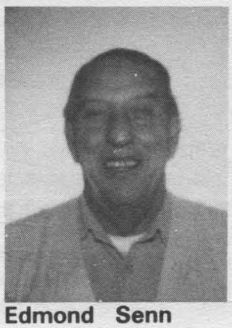

Clarence Caldwell

Anna Bailey

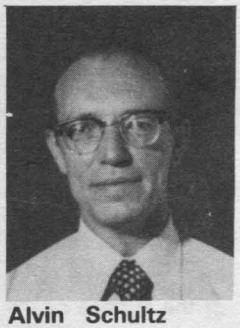

Joseph Hudson


Jim Fay


Domenic Maglieri


Edmond Senn

Norma Schultz


Alvin Schultz

Happenings

COUNTRY-WESTERN DANCE CLUB. The NASA Country- Western Dance Club will hold a dance at the Activities Center, Saturday, January 17, from 7:30 to 11:30 p.m. Come join the fun and fellowship!

SIXTH ANNUAL HAMPTON ROADS WATERFOWL AND WILDLIFE FESTIVAL. Wildlife art and carvings of nearly 40 artists will be featured at this annual art show, scheduled for January 17 and 18 at the Hellenic Community Center, located off Rte. 17 at 60 Traverse Road, Newport News. A festival feature will be an auction of works by each of the exhibiting artists. Festival hours are Saturday, 10 a.m. to 6 p.m. and Sunday, 12 noon to 5 p.m. Admission is $3. For more information, contact Ann Jobson at 596-9540.

AFGE LOCAL 2755 MEETING. The AFGE Local 2755 will hold its regular monthly meeting Wednesday, January 21, 1987, at 4:30 p.m., at the Union Office Bldg. 1232B.

LAA SOCIAL. The Langley Activities Association will hold a social Friday, January 23, from 4 to 6:30 p.m. in the Activities Center.

VISITOR CENTER PRESENTS "SPINOFFS." The wealth of aerospace technology generated by NASA programs is a valuable resource and a foundation for the development of new products and processes to benefit society. At 2 p.m. each Saturday and Sunday during January, the Visitor Center will present "SPINOFFS" — bonus returns on our aerospace investment that directly benefit individuals. Join us for an exciting presentation.

SKI NASA 87. Ski the beautiful mountains of Virginia all winter long! Travel to the slopes in comfort on buses – with no worry about driving or road conditions. Trip schedule: WINTERGREEN, Feb. 5, Feb. 26; MASSANUTTEN, Jan. 22, Feb. 12, March 5; BRYCE, Jan. 29, Feb. 19, March 12. Bus departs Newmarket South in front of Hechingers at 5 a.m. and will arrive at the ski area by 9 a.m. Bus departs at 5 p.m. and returns home by 9:30 p.m. Cost is $38 and includes transportation and lift ticket. For further information, call Richard Bennett, 599-5585.

SUPER BOWL SUNDAY. Watch the Super Bowl on the giant screen at the Langley Activities Center, January 25. Free popcorn will be provided and special foods, beer and soft drinks will be sold. Bring your family and friends and share in the excitement of the game. The Activities Center will open at 3 p.m.

AIAA JANUARY DINNER MEETING. The Hampton Roads Section of the AIAA will hold a dinner meeting January 27, at the Langley Activities Center. Guest speaker Dr. Michael Holden (Calspan Corporation) will give a presentation on Hypersonic Research. Social hour begins at 6 p.m., with dinner at 7. Cost is $10. for members, $5. for student members and $12. for non- members. Deadline for reservations is January 23. For information and reservations, call Gary Price at 898-4198 (H) or 865-2932 (W), or Duane Melson at 898-4260 (H) or 865-2627 (W).

BLOODMOBILE. The American Red Cross will sponsor a Bloodmobile in the Activities Center Wednesday, January 28, from 9 a.m. to 3 p.m.

OUTWARD BOUND: THE EXTRA-TERRESTRIAL CENTURY. The National Air and Space Museum will present its 10th Annual Wernher von Braun Memorial Lecture with guest speaker Thomas O. Paine, Thursday, January 29, at 8 p.m. in the Samuel P. Langley Theater. The lecture is free. Contact the National Air and Space Museum, Washington, D.C. 20560, for more information.

NASA VEGETABLE GARDENS CLUB will hold an organizational meeting on Monday, February 2, at 12 noon in the Activities Center. Old members must attend to reserve their current plots. New members are welcome.

PENNSYLVANIA SKI TRIP. Ski Camelback in Pennsylvania, February 6-8, 1987. Cost of $158. provides two days of skiing, lodging, meals and transportation. For more information, contact Mary Saylor, 865-0900 (W) or 722-5775 (H).

AIKIDO, THE NEWEST OF THE MARTIAL ARTS. For exercise, balance, control and self defense. Monday and Thursday evenings. Call 564-3207 or 229-2219 for information and directions to Norge dojo.

ASM MEETING. Special Agent William Tobin of the Federal Bureau of Investigation in Washington, D.C., will give a talk entitled, "Forensic Applications of Metallurgy at the FBI," Monday, February 9, at the Hampton Roads Chapter of ASM meeting. Tobin will discuss cases of national interest or provoking substantial local publicity. The meeting will be held at the Hampton Elks Lodge #366, 95 Tide Mill Lane, beginning with a social hour at 5 p.m. A buffet dinner will be served at 6:30 p.m. Members and other interested persons are asked to make reservations by noon Tuesday, February 3, by contacting Mary Swain, ext. 3011 or James Arthur, 380-4626.

KILLINGTON, VT SKI TRIP. $249. 100 Ski trails and 17 lifts interconnecting six mountains. Leave Thurs., Feb. 26th at 6 p.m. Trip includes bus transportation, 3 day ski lift ticket, two nights lodging, three breakfasts, two dinners, one box lunch for Sunday trip home, and Wine & Cheese party on Saturday night. Return Mon., March 2 at 6 a.m. For more information, call Bill Dorogy 865-3041 (W), 874-3969 (H).

FEDERAL ALMANACS. Orders are now being taken at the Activities Center for Federal Almanacs. The cost is $3.65 each and must be paid in advance.

PHOTO WORK. Original artwork and charts that were sent to the Photo Lab for making 35mm slides, color Vu- graphs and B&W and color prints must be picked up within 30 days or the work will be destroyed. The originals were too large to be put in distribution and employees failed to pick up the work upon notification. For further information, call Bob Nye, ext. 3521.

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.

TOASTMASTERS CLUB. The Langley Toastmasters Club meets every second and fourth Wednesday at 11:30 a.m. in the Activities Center. For those interested in developing or maintaining technical or public speaking skills, join Toastmasters. Call Bob Lee, ext. 2977, or Davis Wright, ext. 4631, for more information

COLOR COMPUTER USERS GROUP. The Tandy Color Computer users group (CoCoSIG) meets on the third Saturday of each month at Thomas Nelson Community College from 9:30 a.m. to 12:30 p.m. No fees are charged, and all are welcome. Topics of interest to beginners and experienced users are discussed. For exact room location, call the TNCC Continuing Education Department, 825-2758.

CEBAF 1987 SUMMER WORKSHOP. Plan now to attend the 1987 Summer Workshop, to be held June 22 through 26, 1987, at CEBAF. The program will include status reports on the CEBAF project and plans for its scientific program, invited talks, and working group meetings. Additional information will be available; send all inquiries to: Ramona Rickman, CEBAF Research Division, 12070 Jefferson Avenue, Newport News, VA 23606. Phone: 804/875-7877.

National Aeronautics and
Space Administration

Langley Research Center
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General Management Status Review Set

The General Management Status Review will be held Tuesday, January 20, in Building 1219, Room 225, at 9 a.m.

Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

9:30	Flying Complex Paths with the Microwave Landing System Using Electro-Mechanical Flight Instrumentation	Charles Knox (Flight Systems/FLMD)
9:45	Velocity Vector Control/Display Concept Defined	George Steinmetz (Flight Systems/FLMD)
10:00	An Evaluation of Navier-Stokes and Euler Solutions for Leading-Edge Vortex Flows	Naomi McMillin (Aeronautics/HSAD)
10:15	2-D Global/Local Analysis Performed Using CSM Testbed	Norman Knight (Structures/SDD)
10:30	The Advanced Real-Time Simulation (ARTS) System	Daniel Crawford (Electronics/ACD)
10:45	Cloud Transport of Ozone from Boundary Layer to Free Troposphere	Edward Browell (Space/ASD)

cafeteria menu

Week of January 19-23

MONDAY: CLOSED FOR HOLIDAY!

TUESDAY: Chicken & Rice soup, spaghetti dinner, sauteed beef w/ onions & peppers, fried fish nuggets. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, roast turkey dinner, seafood quiche, chuck-wagon steak. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.

THURSDAY: Chicken vegetable soup, braised beef & vegetables, cajun fried chicken, braised chicken livers. Snack Bar: chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes, baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of January 26-30

MONDAY: Three bean soup, chopped steak au jus, blackened fish, ham & macaroni au gratin. Snack Bar: chicken filet, pizza supreme.

TUESDAY: Minestrone soup, lasagna, sea trout almondine, salisbury steak. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, broccoli & cheddar quiche, beef liver & onions. Snack Bar: chicken filet, grilled ham & cheese.

THURSDAY: Chicken noodle soup, chicken chow mein dinner, tuna casserole, meat loaf. Snack Bar: 1/4 lb. cheeseburger, egg salad sandwich.

FRIDAY: Bull Island clam chowder, fish dinner, Austrian Ravioli, chicken pot pie. Snack Bar: chicken filet, hot Italian sausage.

Officers Club Calendar

The Langley Officers' Club is offering a variety of delightful specials in January.

MONDAY: Members Night, Prime Rib dinner.

TUESDAY: Mexican Plate, Jan. 6; Oriental plate, Jan. 13; Italian plate, Jan. 20; Chicken Louise, Jan. 27.

WEDNESDAY: Beef & Burgundy plus Chicken & Chablis.

THURSDAY: Mongolian Bar-B-Que.

FRIDAY: 6oz. Filet, Jan. 2; Lobster Tail w/crab, Jan. 9; Seafood Kabob, Jan 16; "Combat Day," Jan. 23; Filet Mignon w/Stuffed Shrimp, Jan. 30.

SATURDAY: Candlelight Dinner, Jan. 3 and 24; Seafood Buffet, Jan. 17 and 31.

SUNDAY: Brunch from 10:30 a.m. to 1:30 p.m.

swap and shop

FOR SALE

AUTOMOBILES

1980 Pontiac phoenix, 5 door hatchback, V-6, 4 SP, INST, AC, PS, PB, CC, AM-FM, 72,000 mi, one owner, good mileage. $1875. 596- 2423, after 5 p.m.

LOST

Steel framed photo-grey bifocals. If found please call Ray Hook at ext. 4469.

Man's raincoat – at Activities Building. If taken by mistake, please call Dillon at ext. 4004.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 2 **February 2, 1987**

Langley 'Riblets' May Help Win America's Cup

--- by Maurice Parker

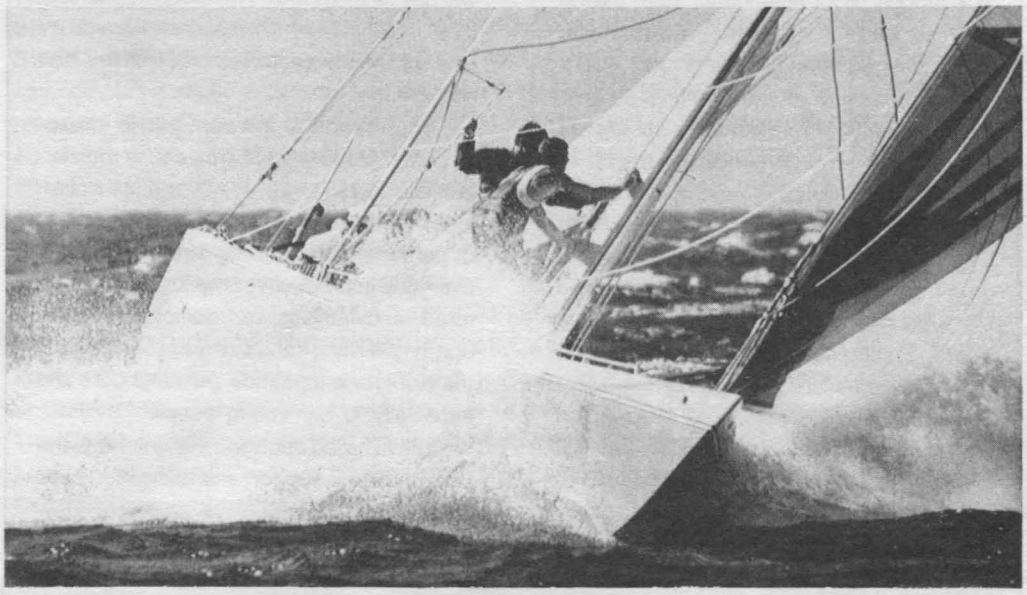
Research at Langley and by private industry to improve aircraft performance may be helping a U.S. yacht win races.

The racing yacht Stars & Stripes, a U.S. challenger in the America's Cup races, has its underside covered with "riblets," tiny V-shaped grooves that were developed by Langley researchers more than three years ago to reduce air turbulence and increase fuel efficiency of airplanes.

The grooves are mounted on an aircraft fuselage aligned in the direction of the flow of air. The size of the grooves varies with the particular application, but it might be no more than two-thousands of an inch deep. That is deep enough, according to the researchers, to favorably alter the turbulent air flow that forms over the surface of a moving airplane.

The idea came from Michael J. Walsh, a research engineer in the Viscous Flow Branch of the High-Speed Aerodynamics Division. Ex-

Continued on page 2.



--- Associated Press Photo

The experimental film being used on the 12-meter yacht, Stars and Stripes, has been micro-grooved with Riblets in hopes of increasing the yacht's speed. Stars & Stripes faces Kookaburra III, the Australian defender, in a best-of-seven finals match for yachting's top prize, the America's Cup, beginning January 31.

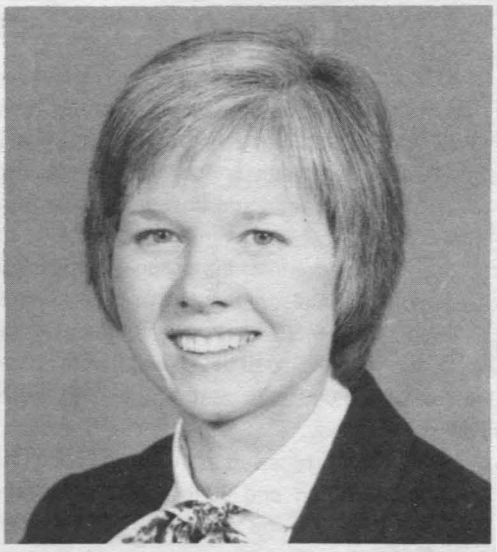
Credeur Selected Technical Assistant to Director

Dr. Karen R. Credeur has been selected as the Technical Assistant to the Langley Director. In this position, she is responsible for assisting the Director and Deputy Director in planning, coordinating and directing the center's research programs.

Credeur began her NASA career in June 1964. She has spent half of her career in aerospace research and half in technical management. Special assignments included assessment of the national risk from effects on electrical and electronic equipment of accidental release of carbon/graphite fibers in civil aircraft. She also spent one year at NASA Headquarters as the Headquarters Program Manager of the then proposed Numerical Aerodynamic Simulator for the Ames Research Center, alternate energy projects for the agency, and construction of facilities programs for the National Space Technology Laboratories. Her last assignment was as Langley's Facilities Engineering Program Planning Manager.

Credeur received the Washington-Jefferson Scholarship at the College of William and Mary where she graduated with bachelor and master of science degrees in mathematics. She earned a doctorate at Harvard University. She also completed graduate engineering courses through the University of Virginia and at Harvard. While a student, she held part-time jobs in research, teaching, consulting, and management at Harvard, the Massachusetts Institute of Technology, William and Mary and the local communities.

Credeur has published eight technical papers; she has received several agency and center special achievement, outstanding performance, Tech Brief and other awards. She is an Associate Fellow of the American Institute of Aeronautics and Astronautics, for which she holds local, regional and national offices.



She and her husband, Leonard, live in Poquoson.

Memorandum For All Executive Branch Employees

President Reagan has requested that the following memorandum concerning drugs in the public service workplace be distributed to all Langley employees. With respect to our implementation of the Executive Order on drug testing, NASA is currently in the research and information-gathering stage. We recognize that this matter is of vital concern to all employees, and we will keep you informed of any developments concerning this program.

As you know, I recently approved several new initiatives with an overriding goal of a drug-free America. This is no easy task, requiring as it does the commitment and support of all Americans. I am asking you, as citizens, parents, friends, and colleagues, to take a leading role.

As members of the Nation's largest work force, you can continue to set an example for other American workers. I know an overwhelming majority of Federal employees have never had trouble with illegal drugs, but our goal is a safe and drug-free workplace for all employees and the American public. Certainly the issue of drug testing has caused some concern, but I want to assure you that my Executive Order contains provisions to ensure that any testing program will be fair and will protect your rights as citizens.

Our intention is not to punish users of illegal drugs, but to help rehabilitate them. When you see colleagues or friends struggling with a drug problem, encourage them to seek help from your Employee Assistance Program or from some other organization or person skilled in drug counseling and treatment. Together we can send a message that illegal drug use in every office, shop, and laboratory simply will not be tolerated. The combined efforts of all of us will make it easier for Federal as well as private sector employees to "Just Say No."

Your efforts to increase public awareness and prevention of drug abuse are also crucial. Illegal drug use is not a "victimless crime," nor is it glamorous or a matter of personal choice. Drug abuse victimizes everyone in productive time lost, lives shattered, and families and communities torn apart. We must send this message beyond the workplace to friends and neighbors and especially to our young people.

I have called upon you many times in the past, and your support and dedication have already helped us achieve so much. Now I am asking you to get personally involved in ridding our offices, schools, homes, and communities of drugs and making them better places to live and work. I know I can count on your personal help.

Ronald Reagan

McCormick Named to Board of Trustees at Washington & Jefferson College

Dr. M. Patrick McCormick, Head of the Aerosol Research Branch, Atmospheric Sciences Division, has been recently elected to a five-year term on the Board of Trustees at Washington and Jefferson College, Washington, Pa.

A 1962 graduate of the college, McCormick is one of 10 alumni representatives on the board. Alumni representatives are recommended for places on the Board of Trustees by vote of the more than 8,000 men and women who form the alumni body.

McCormick received an honorary doctorate from Washington and Jefferson in 1981 and recently spoke at the college's Founders Day Convocation.

For over 10 years, McCormick has been involved in space, airborne and ground-based measurements of stratospheric aerosols and their properties on a global basis, which has led to greatly increased knowledge of their effects on Earth's climate and environment. His work has been noted in the Congressional Record by Senator Paul Trible.

In addition to his degrees from Washington and Jefferson, McCormick received his master of arts and doctorate degrees in physics from the College of William and Mary.

McCormick and his wife, Judy, live in Hampton. They have a son, Michael, and a daughter, Lynn.

Riblets...

Continued from page 1.

periments proved that the small grooves, with equal height and spacing, can reduce net turbulent skin friction drag up to eight percent, compared with ungrooved surfaces. The first riblets were machined on flat aluminum samples and tested in Langley wind tunnels.

An item in NASA's "Tech Briefs" magazine, devoted to the transfer of technology to private industry, prompted the 3M Company of St. Paul, Minn., to design and produce riblet test specimens in tape form. 3M tests showed that a lightweight extruded film with an adhesive backing would be simpler to produce and install than grooving a metal skin. Strips or sheets of the riblet tape could be pressed into place wherever needed.

The Stars & Stripes has had its underside coated with rectangular sheets of the 3M Co. tape. Yacht skipper Dennis Conner has been quoted as saying that the riblet sheets will boost his boat's speed.

The riblet concept was derived from research that indicated low skin friction levels in the corner regions of pipes. Researchers at Langley and in West Germany have since learned that projections on the skins of fast-swimming sharks resemble riblets. The projections, called dermal denticles, are made of the same material as shark teeth. Typical ones have four or five tiny grooves on what looks, to an unaided eye, like flat surfaces. Slower sharks also have grooved projections, but the grooves do not line up to create the effect of continuous V- grooves.

Langley's research identified the riblet concept and its precise V-shape before this clue from nature was found. The riblet-like structure on shark scales was discovered by researchers in the Soviet Union, who have studied the animal world in great depth, looking for ways to improve the propulsion of airplanes, ships and submarines.

National Aeronautics and Space Administration
Langley Research Center

NASA

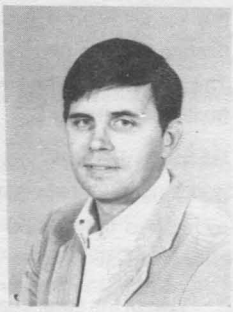
Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 150, telephone 865-4038. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Thomas Receives AIAA Lawrence Sperry Award



Dr. James L. Thomas, a research scientist in the Analytical Methods Branch, Low-Speed Aerodynamics Division, has received the Lawrence Sperry Award from the American Institute of Aeronautics and Astronautics (AIAA).

The award, honoring Lawrence B. Sperry, pioneer aviator and inventor, is presented for a notable contribution made by a young person to the advancement of aeronautics or astronautics. The citation accompanying Thomas' award read, "for major contributions in experimental aerodynamics and in the analysis of inviscid and viscous flow, particularly for the development of subsonic panel methods and an efficient relaxation solution method for upwind-differenced, flux-split Navier-Stokes equations." The award consists of a medal, certificate of citation and rosette pin.

Thomas is engaged in the development and application of efficient algorithms for the three-dimensional Euler and Navier-Stokes equations. He has been employed at Langley since 1972 and has specialized in experimental and computational aerodynamics. His contributions in the last four years represent very rapid progress in the methods needed to solve viscous flow efficiently.

Thomas received a bachelor of science degree in aerospace engineering from Virginia Polytechnic Institute and State University in 1975, a master of science degree in aerospace engineering from George Washington University in 1980 and a doctorate in computational aerodynamics from Mississippi State University in 1983.

He has been active in the AIAA since he was a student at VPI. He was the regional first prize winner of AIAA undergraduate student research paper in 1975 and has been a technical reviewer for the AIAA Journal and for the AIAA Journal of Aircraft since 1977.

Thomas and his wife, Susan, live in Hayes, Va. They have two sons.

Key Positions

John C. Fedors has been selected Deputy Manager, Control of Flexible Structures Project Office, Analysis and Computation Division, Office of Director for Electronics, under the CPP 86-66.

News Around NASA

JPL, Pasadena, Calif.; — **LAESER TO HEAD NEW SPACE STATION SUPPORT OFFICE.** Richard P. Laeser has been appointed to head JPL's new Space Station Support Office in Washington, D.C. The former manager of JPL's Voyager Project, Laeser will assume the title of Director, Office of Program Requirements and Assessment, in the Space Station organization. The office is expected to be in full-scale operation by mid- 1987. Norman R. Haynes, former manager of JPL's Systems Division, has been named Voyager Project Manager.

HEADQUARTERS, Washington, D.C.; — **AC-67 LAUNCH POSTPONED.** The launch of the Atlas Centaur Rocket scheduled to carry the FLTSATCOM F-6 payload has been postponed for one month due to a leakage detected in the area of a seal located between associated sections of the housing component which contains the RP-1 high-pressure turbopump. The communications satellite for the Navy and the Department of Defense is now secheduled for launch on March 26.

DRYDEN, Edwards, Calif.; — **HIDEC PROGRAM DEMONSTRATES ADVANTAGES IN SINGLE-ENGINE TESTS.** The Highly Integrated Digital Electronic Control (HIDEC) program has completed single-engine testing using an F-15 equipped with a Pratt & Whitney PW1128 research engine and dielectronic engine control(DEEC) and a standard P&W F100 engine. According to Dr. James Stewart, project director, this is the first time that a fully integrated flight control system has ever flown. The HIDEC engine gave an outstanding performance, with fuel flows lowered by 14 percent and a thrust increase of 10 percent. The next phase of the project, to begin in late February, includes using two PW1128 engines. A symposium on the HIDEC project is planned for March.

JPL, Pasadena, Calif.; — **NASA, JPL/CALTECH ESTABLISH CENTER FOR SPACE MICROELECTRONICS TECHNOLOGY.** NASA Administrator Dr. James Fletcher, and Dr. Marvin Goldberger, President of California Institute of Technology, signed a Memorandum of Understanding, which establishes the new Center for Space Microelectronics Technology. The Center, which replaces the Advanced Microelectronics Program, will be housed in the new Microdevices Laboratory at JPL, which is scheduled to be completed in early 1988. Dr. Carl Kukkonen will be the Center Director.

Truly Announces Flight Crew for Mission 26

Rear Admiral Richard H. Truly, Associate Administrator for Space Flight, has announced the flight crew for Shuttle mission 26.

The mission will be commanded by Frederick H. Hauck (Captain, USN), currently assigned as Acting Associate Administrator for External Relations at Headquarters. Hauck previously commanded mission 51-A in November 1984 and served as pilot on STS-7 in June 1983. He will resume his astronaut duties about the first week of February.

Richard O. Covey (Lt. Col., USAF) will be the pilot on this mission. Covey served as pilot on flight 51-I in August 1985.

Mission Specialists for the upcoming mission will be John M. Lounge, who flew as a mission specialist on flight 51-I; George D. Nelson, who served as a mission specialist on flights 41-C in April 1984 and 61-C in January 1986; and David C. Hilmers (Major, USMC), who flew as a mission specialist on flight 51-J in October 1985.

In announcing the crew, Adm. Truly said, "The naming of the crew for the next flight is a major event in the process of returning the Shuttle to flight. I am particularly pleased to assemble a group of such experienced individuals led by one of our senior spaceflight veterans, and I am very proud of them."

The primary payload on the upcoming mission is the Tracking and Data Relay Satellite (TDRS).

Researcher Publication Dates Announced

Deadline	Distribution
February 5	February 13
February 19	February 27
March 5	March 13
March 19	March 27
April 2	April 10
April 16	April 24
April 30	May 8
May 14	May 22
May 28	June 5
June 11	June 19

Goddard Plans Two Around-The-World Balloon Flights

Officials at Goddard have announced plans to launch two large, unmanned balloons on around-the-world flights. The flights are expected to be launched during January and February from a site in Alice Springs, Australia. *As of press time, the balloons had not been launched.*

The balloons will carry instruments to examine newly-discovered high energy x-ray microflares and flare plasmas being emitted by the sun. Microflares were discovered to occur more frequently than the classic solar flare. Because of this, energy produced by these microflares is now believed to be significant and may explain some phenomenon like the heating of the sun's corona. Results of these studies may be very useful to an understanding of the micro-scale structure of the sun and other similar stars.

The balloons are expected to circle the globe in about 15 days and return to the Australian launch site, which was selected because of its location in the southern hemisphere and the stability of its summertime winds. To minimize any potential operational interference between the two flights, the balloons will be launched at least three to four days apart.

The helium-filled, 28 million-cubic-feet volume balloons are taller than the Washington Monument and will carry payloads, weighing 3,000 pounds, to an altitude of 130,000 feet. These are the first balloons manufactured from a newly-developed material, called "Astrofilm," to be used in a global application.

According to Harvey Needleman, chief, Balloon Projects Branch at Wallops Flight Facility, "The southern hemisphere is about the only place that we can conduct long duration flights of this type."

"To circumnavigate the globe, the balloons require strong, persistent winds to maintain proper latitude with minimum deviation. We expect that the flights will experience winds between 50 and 75 knots, enabling the balloons to circle the Earth in 12 to 18 days," he continued.

The flights are being conducted by NASA for the University of California, Berkeley and San Diego branches, and carry a joint experiment by Louisiana State University (LSU) and the University of Washington.

Dr. Robert Lin is principal investigator for the Univ. of Calif. experiment studying microflares and solar flares. The principal investigator for the experiment flying on the second balloon is Dr. John Wefel of LSU. His experiment will utilize an emulsion chamber that will be exposed to the primary cosmic rays to study nuclear interactions and cosmic ray composition.

In addition to the scientific experiments, each balloon will carry electronic instrumentation developed to meet the special requirements of long duration flight. The electronic system will be powered by batteries with daily recharging provided by arrays of solar cells.

Satellites play important roles in the success of both flights. Two U.S. polar-orbiting satellites, carrying French ARGOS instruments, will track the balloon flights. A signal transmitted by the balloons every 45 seconds will be relayed by the satellites to a ground station in Toulouse, France, where the positions will be calculated. The information then will be relayed to tracking facilities in the U.S.

Four meteorlogical satellites, orbiting over the equator at different longitudes, will be used to relay to the ground the data acquired by the Univ. of Calif. flight.

Two of the satellites are U.S.-operated GOES satellites, the others belong to the European Space Agency and Japan.

The balloons will circumnavigate the Earth at about 23 degrees south latitude. Countries along the 23rd parallel south have been notified about the flights, including New Zealand, Chile, Peru, Argentina, Bolivia, Paraguay, Brazil, Botswana, Zambia, South Africa, Zimbabwe, Mozambique and Madagascar.

When each balloon nears the end of their around-the-world flight, technicians in Australia will terminate the flight by radio signal to effect land recovery in a safe location during daylight hours. When transmitted, the signal will fire a charge that releases the payload from the balloon, allowing the payload to descend by parachute.

Once recovered, the payloads will be prepared for shipment back to the U.S. where they will be refurbished for future flights.

Langley Second in Number of Tech Briefs Published

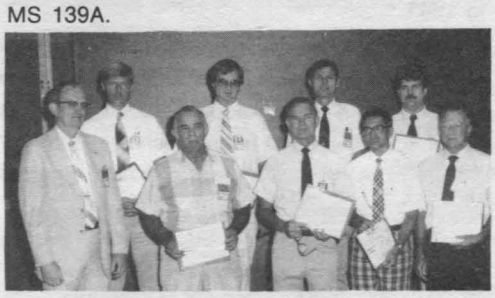
In FY 86 Langley published 96 Tech Briefs, second only to JPL, which published 110, and well ahead of Marshall, which was third with 67.

The Langley Tech Briefs described the work of 173 Langley civil service and contractor employees. Each of these innovators received $150 per Tech Brief, awarded by the Inventions and Contributions Board authorized by the National Aeronautics and Space Act of 1958. The total amount of Tech Brief awards for FY 86 was $32,850.

Dr. J. F. Creedon (back row, center), Director for Flight Systems, presents NASA Tech Briefs Awards to (front row, L to R) Marion A. Wise, Salvatore J. Bavuso, (back row) Hans-Juergen C. Blume, and H. Douglas Garner.

Tech Briefs are short descriptions of ideas, devices, systems, materials, techniques, computer programs, and analyses which result from NASA research programs and have potential applications in other areas. Of particular interest are those new technology items which lead to new products for industry or help to solve public sector problems. Any civil service or contractor employee can submit material for consideration for a Tech Brief.

The "NASA Tech Briefs" journal will be published 10 times this year by Associated Business Publications, Inc., of New York. It is distributed free to qualified engineers and managers in industry and state and local governments, and has a distribution of approximately 125,000. For more information on Tech Briefs, contact Frank Farmer or C.J. Shoemaker in the Technology Utilization and Applications Office, ext. 3281, MS 139A.



Robert L. Swain (front row, far left), Director for Systems Engineering and Operations, presents NASA Tech Brief Awards to (L to R, front row) William R. Hutto, Maywood L. Wilson, Gim Shek Ng, Charles P. Eichelberger (retired), (back row) Henry N. Zumbrun, Delwin R. Croom Jr., Laurence J. Bement, and Charles A. Poupard.

Holmes Receives AIAA Aerodynamics Award

Bruce J. Holmes, Head, Flight Applications Branch, Low-Speed Aerodynamics Division, has received the American Institute of Aeronautics and Astronautics (AIAA) Aerodynamics Award for 1986.

The award, which consists of a medal, certificate of citation and rosette pin, is presented annually for "meritorious achievement in the field of applied aerodynamics recognizing notable contributions in the development, application and evaluation of aerodynamic concepts and methods."

Bruce J. Holmes receives the Aerodynamics Award from Luis Miranda, Chairman, Applied Aerodynamics Technical Committee, AIAA.

Holmes was presented the award for "research excellence demonstrating the practicality of using natural laminar boundary layer flow to reduce the drag on modern, smooth aircraft surfaces."

His research efforts over the past three years have included developing improved flow visualization techniques using sublimating chemicals to display boundary layer transition behavior, conducting many wind tunnel and flight tests to determine the extent of natural boundary layer persistence on modern smooth aircraft surfaces, and developing and validating design criteria for surface requirements and production tolerances.

According to Holmes, this research has altered previous concepts about the practicality of producing surfaces smooth enough to maintain natural laminar flow boundary layers.

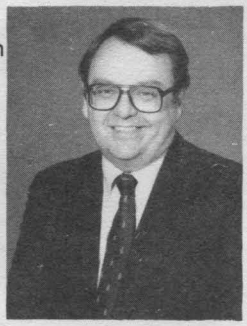
A member of the Langley staff since 1977, Holmes is responsible for research in aerodynamics and aviation safety with emphasis in applications on subsonic business, commuter and commercial transport airplanes. Last November he received a NASA Exceptional Engineering Achievement Medal for "his outstanding contributions to a research program on the application and demonstration of natural laminar flow principles which has led to a resurgence of interest and acceptance by the aviation industry."

Holmes and his wife, Connie, live in Newport News. They have two sons.

Celebrating 70 Years of Research

After considering 15 sites throughout Virginia and six other states, a 1650-acre tract of land in Elizabeth City County, Virginia was chosen for NACA's research facility. Just North of the town of Hampton, the site was chosen for its proximity to the Chesapeake Bay and Washington, D.C., as well as the shipbuilding industries in Newport News and Portsmouth. *Above Photo:* **A party from the U.S. Army Corps of Engineers survey the future site of Langley Field in the Fall of 1916.**

Hansbrough Heads Langley Exchange Council



Andrew J. Hansbrough, Chief, Research Information and Applications Division, has been selected Chairman of the Langley Exchange Council. He replaces Arthur R. Friend who retired earlier this month.

The Langley Exchange promotes employee welfare and morale activities. It operates the cafeteria, child development center, reception and souvenir counters, and oversees employee activities such as banquets, dances, picnics and entertainment of official guests. It also fosters athletic events and other recreational activities. The five-member council, appointed by the Langley Director, oversees the operations of the exchange. The chairman carries out policies established by regulations and directs the management of various branches of the exchange in accord with recommendations of the Exchange Council.

Hansbrough has been a NASA employee since 1964 and has held several management positions at Langley and at NASA Headquarters.

A native of Roanoke, Va., Hansbrough received a bachelor of science degree in business administration from Virginia Polytechnic Institute and State University in 1961. He received a master of science degree in management engineering from George Washington University in 1972.

Hansbrough and his wife, Shirley, live in Grafton. They have two sons.

Langley Director, Richard H. Petersen, presents a gift to Charles Zimmerman of the Westinghouse Corporation. Zimmerman was a loaned executive from the Defense Center in Baltimore and worked directly with Bill Williams, Langley Productivity Officer, from mid-May until mid-December.

LAA Fills Board Vacancies

The Langley Activities Association Executive Board elected two new officers at the January 13 board meeting.

Albert H. Bell, Operations Support Division, was elected Vice President; **Vernelle V. Robinson,** Research Information and Applications Division, was elected Chairperson, Children's Committee.

The position of Vice President was vacated in November when Geoffrey Tennille was elected President, replacing Bobby Huffman who did not seek re-election. Bell will fill the office for one year until the position comes up for general election by Langley employees.

Albert H. Bell

Vernelle V. Robinson

The position of Chairperson, Children's Committee, was also vacated in November when Fran Sabo chose not to run again. Robinson will serve a two-year term.

Langley Tennis Club Plans for Competitive Year

The Langley Tennis Club is planning to have a very active year with over a dozen tournaments, four different ladder play competitions, league play, and at least two indoor doubles play nights scheduled.

Tennis instruction classes will be available and, hopefully, a new tennis backboard facility will be built this Spring.

The Fall/Winter Mixed Players Ladder matches are underway and a mixed doubles play night at Centre Court is planned for February 13. Contact Tom Yager, ext. 2796, if you are interested in participating in the indoor mixed doubles play at Centre Court.

INSTALLATION OF OFFICERS. The NASA Langley Toastmasters Club recently installed its new officers. Robert Miserentino (far left), Assistant Area Governor for the Toastmasters, presided over the ceremony. The new officers are Rod Harvey (2nd from left), Educational Vice President; Natalie Johnson, Treasurer; and Steve Yaros, Administrative Vice President. Ray Whipple, President, was not present for the photo.

Retirement Parties

A Retirement Party for Mr. James J. Fay will be held on February 17, 1987, at 5 p.m., in the Activities Center. The price per person is $6.50, including heavy hors d'oeuvres and gift. Contributions to the gift only will be gratefully accepted. Please respond by February 10, 1987, to Mary Jo Dorsey, ext. 2266, MS 129.

A Retirement Party for Robert B. "Buddy" Forrest will be held Friday, February 13 at the Activities Center. The price per person is $10, including a Steamship Round dinner and gift. Social hour begins at 6:30 p.m., with dinner at 7:30. Please make reservations by February 10, by contacting Linda McKnight, MS 387, ext. 3131.

Klate Holt Company FEMSS employees Glenn DeVol, Mechanic (left), and Jonathan Leaman, Electrician, recently received certificates marking the successful completion of their apprenticeships. Both spent four years in the Apprenticeship Program at Langley before attaining Journeyman status.

Happy

Valentine's Day

The Visitor Center Souvenir Counter Valentines Gift Shop will be open from 10 a.m. until 2 p.m. in the cafeteria. Flower arrangements will be available.

Happenings

ENGINEERS CLUB OF THE VIRGINIA PENINSULA. Mr. Charles R. McClinton of the Aerospace Plane Project Office at Langley will give a talk entitled, "National Aero-Space Plane," Wednesday, February 4, 1987, at the ECVP meeting. The meeting will be held at the Langley Activities Center, beginning with a cash bar at 6:30 p.m. A buffet dinner will be served at 7:30, with the talk to follow at 8:30. Cost of the buffet is $10 per person. Members and other interested persons are asked to make reservations by 10 p.m. Monday, February 2, by calling Dan Poulin, 595-6646, after 5 p.m.

PENINSULA APPLE CORE. The Apple computer users group meets on the first Wednesday of each month in the Thomas Nelson College cafeteria. Topics of interest to beginners and experienced users are discussed. The next meeting is February 4th at 7:30 p.m. We will have a demonstration and discussion of telecommunications. All are welcome.

HAMPTON UNIV. GRADUATE STUDY. The 2nd Annual Hampton Univ. Graduate Study (HUGS) program at CEBAF will be held June 22 through July 10. The program is designed for selected graduate students in their second or third year of graduate school. Featured lecturers will include, T. W. Donnelly (MIT), K. Kang (Brown Univ.), J. McCarthy (UVa), and B. Mecking (CEBAF). A special seminar on "Hyper States" will be presented by S. Cotanch (NCSU). More information will be available in April. Contact is W.W. Buck, Physics Department, Hampton University, Hampton, VA 23668, 727-5277.

BLACK HISTORY SPEAKER. The Office of Equal Opportunity Programs will sponsor a program to commemorate Black History Month on Thursday, February 12 at 1 p.m. in the Activities Center. Mrs. Jessie M. Rattley, Mayor of the City of Newport News, will speak on "Women and Politics." All employees are encouraged to attend and should charge their time to JO A1980.

PHOTO WORK. Original artwork and charts that were sent to the Photo Lab for making 35mm slides, color Vu- graphs and B&W and color prints must be picked up within 30 days or the work will be destroyed. The originals were too large to be put in distribution and employees failed to pick up the work upon notification. For further information, call Bob Nye, ext. 3521.

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.

LAA EXECUTIVE BOARD. The Langley Activities Association Executive Board will meet February 10 at 11 a.m. in the Activities Center.

VOYAGER SOUVENIRS. The Visitor Center Souvenir Counter has a limited amount of VOYAGER items now in stock. These items go fast, so don't delay.

TOASTMASTERS. The NASA Langley Toastmasters Club meets every second and fourth Wednesdays at 11:30 a.m. in the Activities Center. For those interested in developing and maintaining technical or public speaking skills, join Toastmasters. Call Ray Whipple, ext. 2244, or Ron Harvey, ext. 2032, for more information.

GWU COMPUTER WORKSHOP. The George Washington University, Tidewater Center, will offer a computer workshop February 3 through March 6. This six week orientation program introduces students to word processing, spreadsheets and database management. Fee for the workshop is $150. For additional information and registration forms, please call 838-8444.

KILLINGTON, VT SKI TRIP. $249. 100 Ski trails and 17 lifts interconnecting six mountains. Leave Thurs., Feb. 26th at 6 p.m. Trip includes bus transportation, 3 day ski lift ticket, two nights lodging, three breakfasts, two dinners, one box lunch for Sunday trip home, and Wine & Cheese party on Saturday night. Return Mon., March 2 at 6 a.m. For more information, call Bill Dorogy 865-3041 (W), 874-3969 (H).

ASM MEETING. Special Agent William Tobin of the Federal Bureau of Investigation in Washington, D.C., will give a talk entitled, "Forensic Applications of Metallurgy at the FBI," Monday, February 9, at the Hampton Roads Chapter of ASM meeting. Tobin will discuss cases of national interest or provoking substantial local publicity. The meeting will be held at the Hampton Elks Lodge #366, 95 Tide Mill Lane, beginning with a social hour at 5 p.m. A buffet dinner will be served at 6:30 p.m. Members and other interested persons are asked to make reservations by noon Tuesday, February 3, by contacting Mary Swain, ext. 3011 or James Arthur, 380-4626.

SKI NASA 87. Ski the beautiful mountains of Virginia all winter long! Travel to the slopes in comfort on buses — with no worry about driving or road conditions. Trip schedule — WINTERGREEN: Feb. 5, Feb. 26; MASSANUTTEN: Feb. 12, March 5; BRYCE: Feb. 19, March 12. Bus departs Newmarket South in front of Hechingers at 5 a.m. and will arrive at the ski area by 9 a.m. Bus departs ski area at 5 p.m. and returns home by 9:30 p.m. Cost is $38 and includes transportation and lift ticket. For further information, call Richard Bennett, 599-5585.

"Black Wings: The American Black in Aviation," an exhibition depicting the contributions and achievements of blacks in the field of aviation, will be on view at the Visitor Center February 7 through March 8. This photograph from the exhibit shows members of the 99th Fighter Squadron at Tuskegee, the location where the first all-Black fighter units were trained during World War II. The exhibition, which was orgainized by the Smithsonian's National Air and Space Museum, is touring the United States.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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27-01 LANGLEY EMPLOYEE (LRC ADDRESS)
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WAVY-TV 10 reporter Andy Fox (standing, center) clarifies some last minute details as cameraman Sam Fifield prepares to photograph takeoff of the next student-built airplane model. Twenty-four students from Cooperating Hampton Roads Organization for Minorities in Engineering (CHROME) participated in the two-day Aero-Space Camp at the NASA Langley Visitor Center.

Langley Stocked Forms Announced

FORM NUMBER	TITLE	DATE OF FORM
REVISED:		
LF 32	R&I Report, Cancellation or Correction	December 1986
LF 44	Hazardous Material-Procurement, Inventory and Storage Record	December 1986
LF 113	Research and Technology Resume'	October 1986
LF 125	Purchase Request/Purchase Order	December 1986
SF 50B	Notification of Personnel Action	November 1985
NEW:		
LF 70	Cover Sheet, Diners Club Travel Voucher	October 1986
CANCELLED:		
NF 682	Vu-Graph Frame (Use NF 1598, "'Vu-Graph Frame")	November 1986

cafeteria menu

Week of February 2-6

MONDAY: Split pea soup, chopped steak au jus, cajun fried chicken, baked beans & franks. Snack Bar: 1/4 lb. cheeseburger.
TUESDAY: Chicken & Rice Soup, Spaghetti dinner, fried flounder, beef liver & onions. Snack Bar: chicken filet, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, seafood quiche, beef enchiladas. 1/4 lb. cheeseburger, ham & cheese club.
THURSDAY: Chicken vegetable soup, turkey dinner, chopped BBQ, meat loaf. Snack Bar: chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes, ham steak. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of February 9-13

MONDAY: Three bean soup, New England scrod, veal parmesan, salmon casserole. Snack Bar: chicken filet, pizza supreme.
TUESDAY: Minestrone soup, lasagna, crab cakes, ham & macaroni au gratin. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, broccoli & cheddar quiche, salisbury steak. Snack Bar: chicken filet, grilled ham & cheese.
THURSDAY: Chicken noodle soup, fried soft shell crabs, beef pot pie, chicken livers. Snack Bar: 1/4 lb. cheeseburger, egg salad sandwich.
FRIDAY: Bull Island clam chowder, fish dinner, stuffed chicken breast, Polish sausage & kraut. Snack Bar: chicken filet, hot Italian sausage.

swap and shop

FOR SALE

Automobiles

1978 Dodge Van. AT, PS, AC, loaded custom interior. $4,500. 868-6042.

Recreational

73 STARCRAFT pop-up camper. Sleeps 8, gas/elec. frig, closet, 2 tables, 3-burner stove, heater, sink, drain, curtains, roomy. 693-4241 (Gloucester).

Real Estate

Poquoson: Corner lot, 100' x 150' on deep water. $60,000. 868-6042.

FOUND

Opal earring on sidewalk of B-1213 (Cafeteria). Call Security Office, ext. 2452.

SEIKO WATCH, silver wave, battery-powered, fairly new. Found in 1251. Call Clayton James, ext. 3161, to identify.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 3 **February 13, 1987**

Voyager Designer, Burt Rutan, to Visit Langley

Burt Rutan, designer of the now famous Voyager airplane, will discuss the Voyager flight and express his appreciation to Langley employees for their assistance Tuesday, February 24, in a special briefing.

In his lecture, Rutan will explain how and why the project began and will use slides and a film to illustrate his presentation. Rutan's lecture will be held in the Langley Activities Center, at 7 p.m., followed by a question and answer session and an informal discussion.

Rutan's brother, Dick, and Jeana Yeager, made a nonstop, unrefueled, 25,012 miles, around-the-world flight in December 1986, which doubled the existing distance record of 12,532 miles set in a Boeing B-52H airplane in 1962.

Rutan has spent many hours at the Langley Research Center conducting flight testing and wind tunnel research. In the early 1980's when NASA research on natural laminar flow aerodynamics began to show promise for drag reduction, Burt Rutan rapidly assimilated this technology into his advanced designs to significantly increase range. Thus, over a period of many years, Burt Rutan has systematically contributed to, or incorporated new advancements in innovative configurations, natural laminar flow aerodynamics, and composite construction techniques in his advanced airplane concepts.

"While at Langley, I will meet with Bruce Holmes to discuss new data he has gathered on advanced wing-tip shapes and the use of surface treatment to reduce turbulent drag to see if any of this data can be used in our current designs and development," Rutan said. "We will also be assessing the current status of the 30-by 60-Foot Tunnel, run by Joe Johnson, to see if there is any mutually-beneficial research that would assist each party in conducting projects in the next few years."

NASA College Scholarship Fund

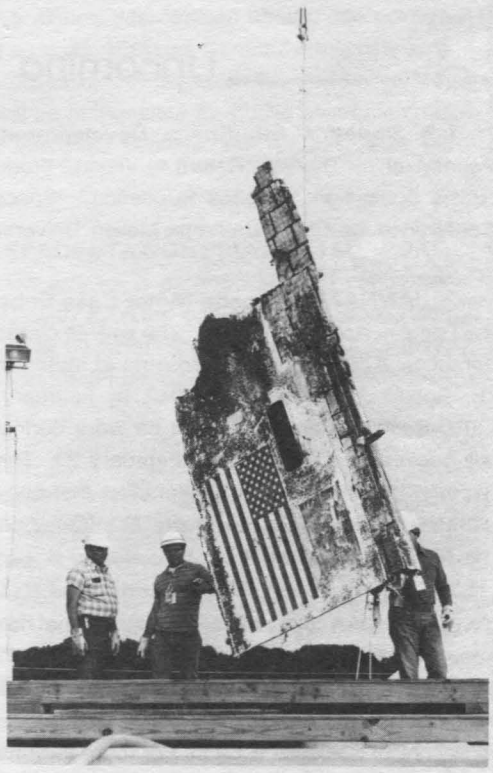
Two scholarships, in the amount of $1500 each, will be awarded for the 1987-88 school year to qualified dependents of NASA and former NASA employees, agency wide.

The NASA College Scholarship Fund, Inc., a Texas non-profit corporation, was established in 1982 as the direct result of a substantial unsolicited gift offer by the noted Pulitzer Prize winning author, James Michener. Michener gave as his reasons for the gift that he held the people of NASA in such high esteem for their good work through the years and that he thought it important for education to go forward in this country.

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. In addition to the NASA dependency requirement, applicants must be graduated properly from an accredited public, private, or parochial high school or be currently enrolled in college with good academic standing. An applicant must have a combined high school grade and college (if any) grade point average of 2.5 on a 4.0 scale or the equivalent. Applicants who are dependents of current or retired NASA employees must be dependents of NASA employees who are actually emplyed by NASA for a period of two years as of January of the scholarship year. There is no minimum period of employment requirement for eligible dependents of former NASA employees or former reimbursable detailees to NASA who died while employed by NASA.

After meeting the minimum requirements, applicants will be ranked based on the following objective standards: academic preparation, school activities, community activities, performance on aptitude tests (such as the SAT or ACT), written recommendations from instructors or other individuals (not related to the applicant) individuals, and a one-page statement of academic purpose by applicant.

All completed application forms, transcripts, scores or other materials must be received no later than March 27, 1987. They must be mailed in a sealed envelope directly to NASA Johnson Space Center, NASA College Scholarship Fund, Inc., BY5/Scholarship Committee, Houston, TX 77058. For more information, contact the Office of External Affairs, ext 2932.



A section of the Space Shuttle Challenger is lowered into an abandoned Minuteman Missile silo at Complex 31 on the Cape Canaveral Air Force Station. Two silos at Complex 31 will serve as permanent storage sites for all of the Challenger debris which will be stored in such a way that it can be readily retrieved at a later date if necessary.

Senior Management Research Review Set

The Senior Management Research Review (SMRR) will be held Tuesday, February 17, in Bldg. 1219, Room 225, at 10 a.m.

Following the Director's Comments and program director's status reports, program accomplishments will be given by Langley scientists.

TIME	TITLE OF TALK	SPEAKER
10:30	Shock Impingement on a Cylindrical Leading Edge - Augmented Heating Rate Measurements	Allan Wieting (Structures/LAD)
10:45	A Method of Predicting the Energy-Absorption Capability of Composite Subfloor Beams	Gary Farley (Structures/AD)
11:00	Rocket propulsion Studies for Advanced Earth-to-Orbit Vehicles	James Martin (Space/SSD)
11:15	NDE for Detection of Temper Embrittlement in Steel	Sidney Allison (Electronics/IRD)
11:30	Multiple Vortices Found Above Wing of F-106B During Flight	John Lamar (Aeronautics/TAD)
11:45	A Software Reliability Growth Model	Carlos Liceage (Flight Systems/ISD)

Upcoming Workshops

L-5 Society's 6th Space Development Conference, March 27- 29, Pittsburgh Hilton, Pennsylvania. Theme: "Return to Vision." Workshops and Seminars: "Innovative Space Systems," "Basic Spaceflight," "Space Education," "Space Defense," and "Arts." Contact: Dale Amon, L5 Conference Co-Chair, Carnegie-Mellon University's Center for Art & Technology, (412) 268-2627.

JANNAF Composite Motor Case Subcommittee Meeting will be held February 23-27 at the Langley Activities Center. The overall classification of this meeting is CONFIDENTIAL. Langley personnel (C.S. and N.P.S.) desiring to attend must submit their name to the Meeting Coordinator, Dr. Robert J. Hayduk, ext. 2042, by February 18. Identification badges will be prepared by the LaRC Security Office and must be worn during the meeting. Registration at the Activities Center will begin at 7 a.m., Monday, February 23. There will be a $7 charge at registration to cover the expense of coffee and doughnuts.The first two days will consist of a composite case assessment workshop followed by the technical information exchange sessions. An agenda is available from the Meeting Coordinator.

Twenty-Fourth Space Congress, will be held in Cocoa Beach, Florida, April 21-24. Keynote speaker will be Congressman Bill Nelson (D-Florida). Featured speakers include Arnold Aldrich, NASA's Director of the National Space Transportation System, and Andrew Stofan, NASA's Associate Administrator for the Space Station. The Space Congress is sponsored by the Canaveral Council of Technical Societies (CCTS). For more information contact, Twenty-Fourth Space Congress, P.O. Box 1333, Cocoa Beach, FL 32931, (305)867-6444.

New Courses Available in Microcomputer Center

The following course will be available starting in March.

Intermediate dBASE III PLUS (12 hours)

Prerequisite: Introduction to dBASE III Course or experience working with dBASE.

This course is designed for those individuals with experience in working with dBASE III or dBASE III PLUS. The lecture/hands-on training covers:

- Review basic commands
- Customizing dBASE III PLUS
- File types
- Sort and Indexing
- Date manipulation
- Functions
- Memo fields
- Set commands
- Locating records
- Using multiple data files
- View files
- Entry forms
- Label generator
- Report generator
- Communication with other software
- Using catalogs

The following new computer-based tutorial is now available.

THE EXPERT SERIES TRAINING FOR WordPerfect is an interactive, computer-based **tutorial** from CDEX Corporation. WordPerfect can run concurrently with the training program. The user can switch from the training program to WordPerfect and practice using the skills learned in the training program. Topics covered include:

- Startup and help
- Producing a document
- Checking spelling
- Managing files

The MTC is located in Bldg. 1194, Room 121. For more information or to enroll in a course, call Fay, ext. 3391.

National Aeronautics and Space Administration
Langley Research Center
NASA
Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 150, telephone 865-4038. Articles are due at noon on the Thursday following the date of this issue.
Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab
The privilege of advertising articles in this publication is restricted to the staff 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.

GWU Adjunct Faculty Position

The School of Engineering & Applied Science of The George Washington University has available, an adjunct faculty position (full-time) in the Engineering Administration off-campus graduate program, starting September 1987. The position requires:

— Ability to function as the on-site representative for the department's graduate program in the Hampton, VA area;

— Ability to teach courses in Engineering Administration; and

— Ability to successfully interact with on-campus departmental faculty.

The department offers evening graduate programs for approximately 85 part-time students in the Hampton area. The adjunct professor will be expected to teach in addition to representing the program.

The successful applicant will possess at least one Engineering or Science degree (an earned Doctorate is desirable), and appropriate industrial, government and/or academic experience. Salary and academic rank will be dependent on qualifications. The position is non-tenure track.

Send vita and references to:

Professor John L. Whitesides
Associate Director
Joint Institute for Advancement
of Flight Sciences
The George Washington University
NASA Langley Research Center
Mail Stop 269
Hampton, VA 23665-5225

The GWU is an Equal Employment/Affirmative Action Employer

COLONIAL WILLIAMSBURG LEARNING WEEK END. "Williamsburg: An Architectural Odyssey," will be the topic for the March 5-8 Learning Weekend at Colonial Williamsburg. Under the guidance of resident architect Nicholas Pappas and the architects at Colonial Williamsburg, participants will explore and analyze the 18th-century architecture of Williamsburg and the continuation of the classical tradition. The program is for amateurs as well as those with more advanced architectural interests. For more information, contact: Registrar, Colonial Williamsburg Foundation, P.O. Box C, Williamsburg, VA 23187

News Around NASA

HEADQUARTERS, Washington, D.C.; — **NASA/MOROCCO SIGN AGREEMENT FOR SHUTTLE EMERGENCY LANDING.** NASA and the Royal Moroccan Air Force have concluded an agreement that will permit the use of Ben Guerir Air Force Base as an emergency landing site for the U.S. Space Shuttle. The agreement provides for an emergency recovery location in the event of certain contingencies during launch phase of missions originating from KSC.

LEWIS, Cleveland, Ohio; — **LEWIS SEEKING PROPOSALS FOR SOLAR CONCENTRATOR.** Lewis has announced to industry that they are seeking proposals for solar concentrators for advanced solar dynamic power systems (SDPS) as sources of electricity for the space station, as well as for space applications beyond 1995. Proposals are expected to identify and develop conceptual designs of highly efficient concentrators to supply solar energy to SDPS receivers of various sizes and power levels, along with defining technical barriers and limitation factors. So far 45 companies and universities have shown an interest; proposals are due by March 23.

HEADQUARTERS — **MOORE RESIGNS FROM NASA.** Jesse W. Moore, a special assistant to the Associate Administrator for Policy and Planning, has resigned from NASA, effective Feb. 8. Moore, who was Director at Johnson during 1986, has accepted a position with Ball Aerospace Systems, Boulder, Colo., as Director of Program Development.

HEADQUARTERS — **NASA HQ REALIGNS EXTERNAL FUNCTIONS; CANTUS APPOINTED AA.** NASA management announced the realignment of major external communications functions within two offices at Headquarters: the Office of External Relations and the new Office of Communications, both of which will be headed by an associate administrator. External Relations will be responsible for legislative affairs, international affairs, intergovernmental affairs, industry affairs and educational affairs. H. Hollister Cantus, previously with the United Technologies Corp., has been appointed associate administrator for this office, effective Feb. 17. The Office of Communications will be responsible for public affairs, internal communications and television development. The associate administrator for this office will be selected in the near future.

HEADQUARTERS — **PROPOSALS SOUGHT FOR SPACE STATION PROGRAM SUPPORT.** NASA has issued a request for proposal to U.S. industry for a program support contractor to assist the Space Station Program Office in D.C. with systems engineering, analysis and integration activities and also to support field offices to be established at five NASA centers. This is the third major RFP to be issued in support of future Space Station development activities. Proposals are due April 3.

GODDARD, Greenbelt, Md.; — **The first of Goddard's two around-the-world balloon flights went down unexpectantly on February 1, landing in the vicinity of Concepcion, Paraguay. While the cause is being investigated, it is believed that heavy rains might have been a contributing factor. The balloon had been in the air for seven days. The flight, though ended abruptly, is still expected to produce valuable data, according to Harvey Needleman, Head of the Balloon Project Branch at Wallops. The second balloon, scheduled to be launched February 3, will be put on hold until the payload from the first flight is recovered and examined.**

WHEN ONE DOOR CLOSES, another opens; but we often look so long and regretfully on the closed door, that we do not see the one which has opened to us. Defeat is really education; it is the first step toward something better.

-Prints of Paris

Training Office Announces Upcoming Classes

A few spaces are available in the following classes. If you have not already enrolled, you can do so by calling the Training Office, ext. 2611.

MANAGING YOUR TIME

Instructor: Dick Lohr
Target Audience: General Interest
Length/Date: 8 hours — March 3, 1987

This seminar is designed to maximize your hour-by-hour productivity by using a results-oriented system of self-management. The major topics to be covered should enable you to:

— Accomplish your high priorities
— Develop critical relationships
— Reduce work anxiety
— Make meetings work
— Excel at details
— Build internal productivity habits

ANALYTICAL TECHNIQUES

Instructor: Robert Fickley
Target Audience: GS-12 and above
Length/Dates: 3 days — April 1987

This course approaches analysis from a perspective that is of interest to both managers and professionals. It deals with the problem-solving capabilities of the individual and the organization and with the ability to recognize and maintain the tools applicable to problem solving. It categorizes these tools as talent, data, methods, approaches, time, and support. The overall theme is that analytical techniques chosen are situation dependent. The following topics will be covered:

— Analytical styles
— Creative problem solving
— Structuring techniques
— Analytical techniques
— Decision support tools
— Documentation and defense

NTU Research Seminar

"Aeroelastic Interactions with Aircraft Flight Control" will be broadcast live via the NTU Satellite Network, Tuesday, March 3, from 12 noon to 1:45 p.m. The seminar will be given by Dr. Robert L. Swaim, Associate Dean, College of Engineering, Architecture and Technology, Oklahoma State University.

The importance of accounting for dynamic aeroelastic interactions in aircraft control systems design will be discussed. A review of past research in the U.S.A. will be given, as well as research needed in the future for new programs, such as the National Aerospace Plane.

This briefing is intended for engineers and researchers in aerospace industries, government agencies, and universities who need to become familiar with the subject.

Dr. Swaim has 25 years of research experience on this topic in industry, a government laboratory, and at two universities.

VideoConference

A videoconference entitled, "The Changing Workforce: Strategies for Future Management," will be broadcast Wednesday, March 11, 1987; 1-4 p.m. in Bldg. 1194A, Room 206. If you are interested in attending, contact your training coordinator.

For more information on the above courses and seminars, please call the Training Office, ext. 2611.

Langley Directives Distributed

NUMBER REVISED:	TITLE	DATE	T.S.#	DATE DISTRIBUTED
LMI 5000.2	Attachments A& B, "Procurements"	12-1-86	1507	12-31-86
LMD 1200.16	"Langley Research Center (LaRC) Small Business Specialist"	1-8-87	1508	1-29-87
LMI 1500.5	"Signs and Directory Boards"	1-8-87	1509	1-29- 87
LMI 1100.10	Attachment, "Property Survey Board"	1-16-87	1510	1-29-87

Key Positions

Felton D. Bartlett, Jr., has been selected Chief, Structures Division, Aerostructures Directorate, under the Merit Promotion Announcement Number A86-10

Wayne R. Mantay has been selected Chief, Aeromechanics Division, Aerostructures Directorate, under the Merit Promotion Announcement Number A86-13.

James L. Hunt has been designated Manager, Conceptual Studies Office, Aero-Space Plane Office, Office of Director for Aeronautics.

Douglas B. Price has been selected Assistant Head, Spacecraft Controls Branch, Guidance and Control Division, Office of Director for Flight Systems, under CPP 86-86.

Frank W. Cazier, Jr., has been selected Assistant Head, Configuration Aeroelasticity Branch, Loads and Aeroelasticity Division, Structures Directorate, under CPP 86-85.

Learning Center Offers Self-Study Courses

The following new self-study courses are now available in the Learning Center:

Executive Memory Program, 3 hours, audio tapes

The Massey Triad (3*parts*) *videotape*

For more information, call ext. 3014.

Overwhelmed by things? NASA Civil Service employees and family members call your Employee Assistance Program at 873-0228 for help.

Having trouble getting out of the drink? NASA Civil Service employees and family members call your Employee Assistance Program at 873-0228 for help.

AA and ALANON meetings, call NASA Clinic at Extension 2246 or Health Office at ext. 2605 for information.

U.S. SAVINGS BONDS
Paying Better Than Ever

Red Cross Bloodmobile

A total of 325 Langley employees, retirees and contractors donated pints of blood at the January 28 visit of the American Red Cross Bloodmobile.

Achieving gallon status were:

13 gallons — C. M. Hudson, Richard Holt.

11 gallons — William G. Chapin.

10 gallons — William J. Debnam, Carrol A. Williams, W. A. Tuck.

7 gallons — Doyle T. Arboneaux.

6 gallons — Richard G. Booth.

5 gallons — Steven L. Yaros, Walter L. Wade, Tyrone O. Ellis, Don E. Avery, Kathryn Smith, Weldon Staton.

4 gallons — Jack Ellingsworth, Mark T. Lord, Fred Whitehead, William L. Williams.

3 gallons — Guy Kemmerly, Douglas johnson, Dennis R. Holloway, Jeffrey S. Pickering, Aaron J. Ostroff.

2 gallons — Harold Neal.

1 gallon — David Barnes, Daniel Giesy, Wayne D. Geouge, Jean Schofield.

First time donors included: Ernestine E. Rodgers, Tom Frasher, Glenn Ornsby, Ronald Geouge, Felicia Baines, Tina Ferretti, Lloyd B. Johnson III, Stephen R. Robbins, Jacqueline Schryer, William J. Wilson, and Heide C. Lawson.

Annette L. Forrest was the coordinator.

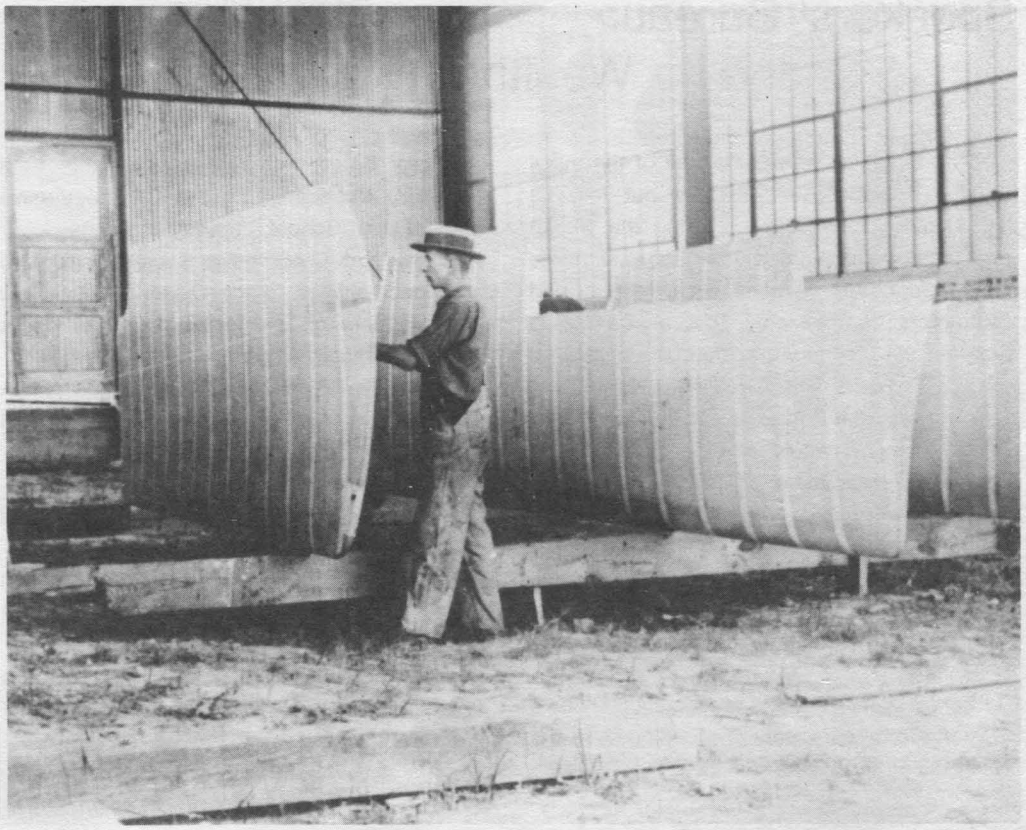
Recent Retiree

Christine B. Richie, Conceptual Studies Office, retired January 30.

Thanks for Support

Stan Ward of the Contracts Branch is proud to announce the birth of a son, Matthew Wade Ward, born January 12, 1987.

Both mother and child are doing fine, and the baby is now home from the hospital. The Ward family is extremely grateful for the support given by their many friends in the NASA family.



Celebrating 70 Years of Research

The Shape of Wings to Come

One of the many questions in aeronautics in the early years of the NACA involved shaping wings to increase lift at low speeds yet decrease drag at high speeds. In its Annual Report to Congress in 1915, the NACA called for "the evaluation of more efficient wing sections of practical form, embodying suitable dimensions for an economical structure, with moderate travel of the center of pressure and still affording a large angle of attack combined with efficient action." *Above Photo:* **A LMAL carpenter prepares full-scale wings for flight research. (1920)**

In Memoriam

Sympathy is extended to the families of:

R. Paul Seaford, who died January 1. Seaford, an engineering technician in the Instrument Research Division, was employed at NASA for over 35 years.

A. Bruce Amole, who died January 14. Amole, who worked in the Employee Services Branch, retired in 1972 after 30 years of service.

Eula S. Trent, who died December 22. Trent retired in 1973 from the Low-Speed Aerodynamics Division after 29 years of service.

Beverly L. Overman, who died January 14. Overman, who worked in the Facilities Engineering Division, retired in 1986 after 33 years of service.

Arthur B. Lawson, who died December 31. Lawson retired in 1970 from the Fabrication Division after 29 years of service.

James Joyner, Jr., who died January 30. Joyner retired in 1981 after 21 years of service. He worked in the Metals Technology Development Section.

Thomas J. Kurtyka, Sr., who died January 18. Kurtyka, who worked in the Machining Development Section, retired in 1973 after 32 years of service.

Speakers' Bureau: Sharing a Wealth of Knowledge

The Speakers' Bureau is one of the many ways in which NASA reaches out into its surrounding communities, sharing the wealth of technology and information that exemplifies NASA. Supported by employees, retirees and contractors from Langley, it is an on- going program that continues to flourish, while also providing an enriching service to the community.

Currently, the Speakers' Bureau is seeking employees who would like to participate in Career Day programs or as science fair judges. Interested employees should contact Ann Suit, Public Services, MS 154, ext. 3967.

The Speakers' Bureau would like to thank the following employees for their participation in community presentations throughout the month of January:

Lester J. Rose gave a presentation entitled, "Spinoffs from Aerospace Technology," to the Peninsula Rotary Club, January 7.

Cary Spitzer presented Snapshots from Planetary Exploration to the Central Virginia Management School, January 8.

Lenwood Clark gave a presentation on the Space Station to the Oyster Point Rotary Club, January 16, and to the Young Astronaut Chapter, Francis Asbury School, January 22.

Dr. Christine Darden spoke on NASA Careers at the Yorktown Intermediate School Career Day Program, January 16.

Frances and Charles Meissner participated as judges in the Bruton High School (Williamsburg) Science Fair, January 17.

Earl Andrews gave a presentation on High Speed Aeronautical Research to the Christ United Methodist Mens Club, January 19.

Elijah C. Kent spoke on NASA Careers at the Blair Junior High School Career Day Program, January 30.

On October 24, 1986, a call from the Colonial Williamsburg Foundation for technical advice lead to field measurements of the draft force of a pair of oxen attached to various farm implements, conducted at Carter's Grove Plantation. The historians were trying to trace the perceptions of the forefathers and discover why the colonials made some design decisions. The field tests on authentic reproduction hardware showed that sizes were scaled to multiples of a single animal's draft ability and that the older designs more automatically adjusted to conditions. As the models were modernized, generally, more was put under the control of the farmer and more consistent field conditions were required. *Above Photo:* **Bob Miserentino (far left), Structural Dynamics Branch, is shown working with Wayne Randolph (Plowman), Manager of the Agriculture Program, and John Patterson (Driver). The oxen, Tip and Top, are pulling a Pennsilvain bar-shore plow.**

NASA Tech Briefs Awards

William D. Mace, Director for Electronics, and Roy V. Harris, Jr., Director for Aeronautics, presented NASA Tech Briefs Awards to Langley employees. *Front row, left to right:* **Mace, Thomas C. Moore, Debra L. Carraway, Harris.** *Back row, left to right:* **Harlen K. Holmes, Gregory S. Manuel, Bruce J. Holmes.**

John F. Stokes (standing), Director for Management Operations, presents NASA Tech Briefs Awards to (L to R) A. Vernon Vann, Richard H. Jones, William E. Rew and Don E. Avery.

Robert L. Swain (far left), Director for Systems Engineering and Operations, presented NASA Tech Briefs Awards to (front row, L to R) Robert M. Ely, Robert M. Stewart, James R. Tyeryer, Robert L. Fox, (back row, L to R) Walter D. Gibson, Warren C. Kelliher, K. Mason Proctor, and Laurence J. Bement.

Happenings

FEDERAL ALMANACS can be ordered at the Activities Office through February 20. The price is $3.65 each and must be paid in advance.

LAA SOCIAL. The Langley Activities Association will hold a social Friday, February 20, from 4 to 6:30 p.m. in the Activities Center.

HAMPTON SERVICES DIRECTORY. Find out about the cultural and recreational activities offered by the city, special education programs in the public schools, or one of hundreds of other city and school programs — all in the Hampton Citizen Services Directory. The directory is available free of charge at all Hampton libraries. For more information call 727-6417.

COMMODORE COMPUTER USER'S GROUP. The NASA Commodore User's Group (NASCUG) meets on the first Thursday of each month at 4:30 p.m. in Bldg. 1244, Room 223. Primary interests include VIC-20, C-64 and C128. Visitors are welcome.

COLOR AND EXPRESSIVE CALLIGRAPHY WORKSHOP. The Calligraphers Guild of the Peninsula is sponsoring this workshop conducted by artist calligrapher Leana Fay, Saturday, February 21, from 9 a.m. to 5 p.m. The workshop will deal with using watercolor techniques and letterforms to develop personal expression. Cost is $25 for members, $35 for non-members. Pre-registration is required. Contact Shirley Rawls, 898-2972, for more information.

COMMANDER HAUCK TO SPEAK IN NORFOLK. Frederick H. Hauck, recently announced as the commander for Shuttle mission 26, will speak to the Norfolk chapter of the American Marketing Association, March 11, at the Sheraton — Military Circle. Prior to being assigned to this mission, Hauck was Acting Associate Administrator for External Relations at Headquarters. The meeting begins with a cash bar at 11:30 a.m., followed by lunch and the featured speaker. Cost is $14. for non-members. Call 489-4887 for reservations.

SKI NASA 87. There's still time to ski the wonderful mountains of Virginia! WINTERGREEN: Feb. 26; MASSANUTTEN: March 5; BRYCE: Feb. 19, March 12. Bus departs Newmarket South in front of Hechingers at 5 a.m. and will arrive at the ski area by 9 a.m. Bus departs ski area at 5 p.m. and returns home by 9:30 p.m. Cost is $38 and includes transportation and lift ticket. For futher information, call Richard Bennett, 599-5585.

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.

RIVERDALE POOL. The Riverdale Pool in hampton is looking for an assistant pool manager, a number of lifeguards, and a coach for their swim team. These positions may be combined. Please call Edwina Clark, 826-2649, or Thomas Strganac, 826-9328, for details or applications.

NASA LANGLEY GOLF ASSOCIATION ANNUAL MEETING. The NASA Langley Golf Association will have its annual winter organizational meeting on February 27 at 6 p.m. The meeting will be held in the Langley Room at the Activities Center. Eight tournaments have already been scheduled for 1987, with anticipation of four additional tournaments. A possible weekend tournament at Nags Head is also being explored. Contact Dick Everett, ext. 2715, for more information. The Golf Association is open only to NASA employees and retirees.

COUNTRY-WESTERN DANCE CLUB. The NASA Country- Western Dance Club will hold a dance at the Activities Center, Saturday, February 21, from 7:30 to 11:30 p.m. Come join the fun and fellowship.

DISCOUNT TICKETS AVAILABLE. The LAA Ticket office is now selling a variety of discount tickets for area attractions. If you're heading to Disney World or Disneyland, stop by the ticket office for your free Magic Kingdom Club Card, entitling you to many discounts. For more information, call the ticket office, ext. 3139.

Lieutenant General Frank E. Petersen, the first black officer to command a squadron in either the U.S. Navy or Marine Corps, will discuss the contributions and achievements of blacks in aviation at the Langley Activities Center, Sunday, February 22, at 2 p.m. General Petersen is the Commanding General of the Marine Corps Development and Education Command at Quantico, Virginia. Following General Petersen's presentation, there will be a reception at the Visitor Center and an opportunity to view the exhibit, "Black Wings: The American Black in Aviation."

HOW THE OTHER HALF LOVES. Alan Ayckbourn's hilarious comedy revolves around the romantic triangle of three different couples, with the husbands all working for the same company. Currently playing at the Tidewater Dinner Theatre, Thursdays through Sundays, until February 22. Don't forget to pick up your discount tickets at the Langley Activities Office. For reservations call 245-8304. *Above Photo, Left to Right:* **Michael Blankenship, Frankie Little Hardin, Mary Christine Danner, Cliff Hoffman, Robert Nelson, Mary Jean Feton.**

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Langley Runners Club Heads Off Year With 10-Miler

The LANGLEY RUNNERS CLUB Handicap-Start 10 Miler was held on January 31, a cool and windy Saturday morning. Pete Earls was the winner with a time of 65:14. He was followed by Chip Trepte, Bill Greene, Bob Ferguson, Gale Harvey and Marion Martin.

For more information on the Langley Runners Club, contact Richard Shearer, MS 433.

swap and shop

FOR SALE

TANDY 2002, 256K RAM, Graphic OPT. BD. Twin disk drive. Less than 750 hrs. Original software, manuals included. $1800. Call 723- 0818.

1980 PONTIAC PHOENIX, 5 dr hatchback, V-6, 4 sp, inst, AC,PS,PB,CC,AM-FM, 73,000 mi, one owner, good mileage. $1700. 596-2423 after 5 p.m.

OLD ENGLISH SHEEP DOG PUPPIES. Call 898-6834.

WANTED

Join carpool from Gloucester (high school area) on 7:45 or 7:30 shift. Call Barbara Eutsler, ext. 3121 or 693-3861.

FOR RENT

VACATION WEEKS AT NAGS HEAD (SEA SCAPE). 3 weeks for rent, $550 each week. Sleeps 6, everything furnished. Weeks: June 6-13, June 20-21, August 29 — September 5. Call 826-7171, 838-1286, or 838-6620.

cafeteria menu

cafeteria menu

WEEK OF FEBRUARY 16-20

MONDAY: Have a Good Holiday!
TUESDAY: Black bean soup, spaghetti dinner, chicken & dumplings, beef liver & onions. Snack Bar: chicken filet, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, seafood quiche, country style steak. 1/4 lb. cheeseburger, pizza supreme.
THURSDAY: Chicken vegetable soup, turkey dinner, blackened fish, meat loaf. Snack Bar: chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes; stuffed chicken breast. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of February 23-27

MONDAY: Three bean soup, Mexican dinner, New England scrod, veal parmesan. Snack Bar: chicken filet, pizza supreme.
TUESDAY: Minestrone soup, lasagna, sea trout almondine, BBQ chicken breast. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, chicken dinner, broccoli & cheddar quiche, salisbury steak. Snack Bar: chicken filet, grilled ham & cheese.
THURSDAY: Chicken noodle soup, pig feet dinner, beef w/onions & peppers, braised chicken livers. Snack Bar: 1/4 lb. cheeseburger, egg salad sandwich.
FRIDAY: Bull Island clam chowder, fish dinner, chicken breast teriayki, baked beans & franks. Snack Bar: chicken filet, hot Italian sausage.

Officers Club Calendar

The Langley Officers' Club is offering a host of specials throughout the month of February, including a Valentine's Sweetheart Dance and Seafood Buffet, February 14th; a special Membership night with a buffet dinner, live entertainment and door prizes, on the 20th; and a gala celebration in support of Black History Month on the 28th.

MONDAY: Club closed for Washington's Birthday, 16th; Member's Night, Prime Rib dinner, 23rd.
TUESDAY: Chicken Louise, 17th; Catfish Dinner, 24th.
WEDNESDAY: Beef & Burgundy plus Chicken & Chablis, 18th and 25th.
THURSDAY: Mongolian Bar-B-Que, 19th and 26th.
FRIDAY: Prime Rib, 13th; Membership Night, 20th; Filet Mignon w/Crab Stuffed Shrimp, 27th.
SATURDAY: Valentine's Sweetheart Dance and Seafood Buffet, 14th; Candlelight Dinner, 21st; Black History Month gala, Mini Buffet in new dining room, 28th.
SUNDAY: Brunch — 10:30 a.m. to 1:30 p.m.

Lunchtime Buffet Menu

Monday	All American
Tuesday	Oriental
Wednesday	Mexican
Thurday	Italian
Friday	Seafood

Just a Thought

Judging from the amount of the public debt, it is no longer much of a compliment to tell someone they look like a million bucks.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 4 **February 27, 1987**

Space Technology Brings New Findings on Ancient Maya

Satellite images of Mexico's Yucatan Peninsula, Central Guatemala and Belize have led to new discoveries about ancient Maya settlement patterns, environmental setting and natural resource use. NASA scientists have found evidence of an ancient river plain, sea level changes and tectonic fault lines, which may have been important geographic elements in shaping the ancient Maya civilization.

Investigators at NASA's Ames Research Center, Mountain View, Calif., also are using the satellite imagery to detect Maya water sources, such as natural wells and ponds, and compare their locations to those of ancient Maya ruins. Investigators believe the remote sensing project will help resolve a central question in Maya studies–how the Maya built a sophisticated civilization in a relatively resource-poor environment? They also hope to understand the mysterious cycles of expansion and decline that characterized Maya civilization. Many scholars believe that environmental problems, including misuse of resources, may have led to the periods of decline. The Maya civilization, noted for elaborate temples, advanced mathematics and astronomy and large- scale agriculture, spread across Central America from 2000 BC until the Spanish conquest in the 16th Century.

"Environmental problems resembling today's problems were experienced long ago, on a smaller scale by the Mayas and other ancient peoples," said Ames project chief Charles Duller. "By studying the Maya, we can better understand human interaction with the Earth system: how they adapted to the environment and its changes, and what changes they may have caused."

While remote sensing has been widely used to search for archaeological sites, the Ames project is among the first to use space technology to attempt to understand an ancient civilization by studying its environment. "In combining remote sensing, environmental studies and archaeology, this is a pioneering effort," Duller says.

Using Earth Observation Satellite and Earth Resources Observation Systems imagery from the Landsat 5 satellite, which has an advanced multi-spectral sensor called Thematic Mapper, the NASA-Ames researchers have imaged more than 24,000 square miles of the northern Yucatan Peninsula. A total of 50,000 square miles will be imaged by 1987. Researchers also are studying the Maya environment in central Guatemala, Belize and Quintana Roo, Mexico, with SEASAT, a radar-equipped satellite which operated in 1978. SEASAT data was supplied by the National Oceanic and Atmospheric Administration and NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Analysis of Landsat images has shown that ancient Maya settlements in the northern Yucatan were closely concentrated along faults and fracture zones in the Earth. The fracture zones, shallow depressions created by tectonic fault lines in the bedrock, provide close access to subsurface water and have the best soil in the region. Previously, scientists had believed that topographical features in the flat, densely-forested region were too small and scattered to affect Maya settlement patterns. "We've found a very dramatic difference in resource distribution in what was thought to be a relatively undifferentiated region," said Maya archaeologist Edward Kurjack of Western Illinois University, Macomb, Ill., the principal archaeological collaborator in the project.

Continued on page 2.

DINING OUT. Two "snowpeople" enjoy a leisurely lunch on the patio despite the cool temperatures.

New Findings

Continued from page 1.

In another research area, using SEASAT data, Duller has discovered what appears to be an ancient river plain extending 300 miles across lowland Guatemala. If confirmed by ground-based studies, the finding could explain the location of Tikal, a major Maya trade and ceremonial center from 200 BC to 900 AD. Tikal appears remote and landlocked today.

The dry river plain also would provide evidence of a changing climate which could explain why the Maya abandoned major centers in this region in the 10th century as archaeological findings suggest.

A third major focus of investigation is the Yucatan Peninsula's northern coastline. Scholars have long known that the sea level along the Yucatan rose during Maya times, inundating the coast and increasing the salinity of the subsurface water table. The rise in sea level curtailed the important Maya salt trade as the salt flats became submerged, shut down coastal settlements and may have affected agriculture far inland.

Ames researchers have found that the satellite images show natural linear features marking former coastlines beneath the water, enabling mapping and dating of various changes in sea level. Duller and Kevin Pope, a paleoecologist now at Ames, have begun analysis of the coastline changes.

The research also is focused on studying the availability and use of surface water by the Maya. "Water is the key to understanding the Maya," Kurjack says. "Finding sufficient water was an enormous challenge faced by the Maya and studying water resources will help in understanding their agriculture and population distribution."

Satellites can detect major Maya surface water sources, including small, scattered lakes, as well as aguadas, natural pools of water which the Maya often used for water storage, and cenotes, natural wells formed from collapse or erosion of the limestone shelf. Kurjack and Duller plan to study the means of water storage used by the Maya in different regions by mapping the natural opportunities for getting water and overlaying this with a map of archaeological sites.

In the Yucatan, which has mainly seasonal surface water, the NASA researchers are comparing imagery from the wet and dry seasons to determine the distribution of surface water. Coupled with ground-based studies of how the climate has changed, the research will lead to a determination of how much water might have been available during Maya times. Scientists could then determine which areas might have been optimal for agriculture and how many people the land could have supported. This could help shed light on the periods of Maya decline.

Some scholars believe the Maya may have exhausted the soil in attempting to support a large population. The Maya are thought to have practiced slash-and-burn farming, which leads to water run-off, erosion and depletion of nutrients, unless the land is allowed to lie fallow for 8 out of 10 years. "They may have severely damaged their environment. Much as we do today, they appear to have sought short-term benefits and created a long-term disaster," Kurjack said.

Researchers believe that locating surface water sources is an effective means of discovering new archaeological sites. "It's closely coupled. Where you find water, you usually find ruins," Duller says. The Landsat images show numerous apparent aguadas and cenotes, which must be confirmed by field investigation.

NASA researchers had initially hoped Landsat would detect ruins directly. They had thought vegetation growing on ruins would be weaker or more stressed, since they have poorer access to water, and thus appear in a different shade in the infrared images from surrounding vegetation. But the researchers found that in the Yucatan all vegetation appears highly stressed. Duller believes that radar imagery will be able to penetrate the dense vegetation covering many sites. If permission from the Mexican government can be obtained, he would like to use radar- equipped aircraft for further research.

Satellite imagery has been highly effective for locating cleared ruins. This capability is significant because much of the Yucatan is only now being mapped and locating even excavated sites from the ground has been extremely difficult since the region is flat, thickly forested and has few roads. "There were explorers in the Yucatan for a hundred years. Sites were discovered, lost to memory, rediscovered, named and renamed," Kurjack recalls. (Kurjack is now working with the Mexican National Institute of Anthropology and History, in their project to map all archaeological ruins in the Yucatan.)

Ames researchers have mapped large portions of the 62-mile raised road from Coba to Yaxuna, which is by far the longest of the many elaborate causeways built by the Mayas to connect ceremonial centers. Kurjack and Duller now plan to study the environmental setting of the Coba-Yaxuna road, particularly its location in relation to water sources and settlements.

The researchers stress that satellite data is highly valuable in archaeology not just for finding ruins, but for helping to understand the environment and thus, the civilization. "Archaeology is not just a glorified treasure hunt. It is the study of the relationship between human beings and their environment. Satellite technology is an extremely effective and inspiring way for archaeologists to study the environment," Kurjack said.

The Ames archaeology-remote sensing project stems from NASA's interest in demonstrating the applications of space technology to a wide variety of disciplines. The project also reflects NASA's growing emphasis on applying space technology to studying the Earth's ecosystem — the problems involved in maintaining a stable, life-sustaining environment on Earth.

CALL FOR PAPERS

Papers by Langley researchers are solicited for presentation in the Aerospace Sciences Section at the annual meeting of the Virginia Academy of Science, May 21, 1987, at Old Dominion university, Norfolk, Virginia. Prospective authors should submit a brief abstract to Leroy Spearman, MS 412, or Oktay Baysal, MS 170, by March 9, 1987.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 150, telephone 865-4038. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Competitive Placement

The following Competitive Placement Announcements are currently open:

87-17 — **Supervisory Aerospace Engineer**
AST, Structural Mechanics
GM-0861-15
Structures Directorate
Materials Division
Fatigue and Fracture Branch
Closes March 2, 1987

87-18 — **Accounting Assistant**
GS-0503-6 or 7
Temporary Position
Financial Management Division
Financial Services Branch
Payroll Section
Closes March 2, 1987

87-19 — **Secretary (Stenography)**
GS-0318-5 or 6
Management Operations Directorate
Business Data Systems Division
Office of the Chief
Closes March 2, 1987

87-20 — **Supervisory Aerospace Engineer**
AST, Fluid and Flight Mechanics Program Management
GM-0861-13 or 14
Aeronautics Directorate
Low-Speed Aerodynamics Division
Flight Applications Branch
Closes March 6, 1987

87-21 — **Supervisory Engineering Technician**
GS-0802-11 or 12 (NIGHT SHIFT)
Fabrication Division
Metals Applications Technology Branch
Advanced Machining Development Section
Closes March 9, 1987

Key Positions

Lloyd W. Nelson has been selected Construction Representative (Temporary Position), Systems Safety, Quality, and Reliability Division, Systems Assurance Branch, Construction Inspection Section, under CPP 86-80.

Victor E. Wilson has been selected Supervisory Engineering Technician, Fabrication Division, Metals Applications Technology Branch, Metals Section, under CPP 86-53

Roy W. Mason has been selected Laboratories Operations, Manager, Operations Support Division, Laboratories Operations Branch, under CPP 86-85.

Donald I. Ewton has been selected Head, Composites, Models and Materials Technology Branch, Fabrication Division, under CPP 86-54.

News Around NASA

AMES, Mountain View, Calif.; — **NAS COMPUTER SYSTEM TO BE ACTIVATED.** The Numerical Aerodynamic Simulation (NAS) computer system will become operational at Ames in March. Dedication ceremonies are set for March 9. NAS, considered the world's most powerful computer system, will be used for aeronautical research, including work on the National Aero-Space Plane program and will advance simulation of aircraft flight and designs in a computer, reducing cost and increasing performance. Other uses include computational chemistry, weather modeling, astrophysics applications and genetics research.

JOHNSON, Houston, Tex.; — **JOHNSON PLANS SHUTTLE UPPER STAGE STUDY.** Johnson plans to issue a one-year study contract by September 30 for an upper stage for use in the payload bay of the Space Shuttle. Other competitive procurements planned include studies of a cryogenic on-orbit resupply system and a Moon-based research facility and transportation system.

GODDARD, Greenbelt, Md.; — **SECOND EXTENDED- DURATION BALLOON FLIGHT LAUNCHED.** The second unmanned balloon in the project to gather data about the sun was launched from Alice Springs, Australia, Monday, February 9. The flight, traveling at 69 miles per hour, is carrying an experiment from the University of California, Berkeley and San Diego branches. The payload is studying the new solar phenomena of hard X-ray microflares and super hot, flare plasma from a variety of active regions of the sun. The payload from the first extended-duration balloon flight has been recovered, with the instruments appearing to be in good working order. The flight was terminated after seven days when the balloon passed over an extensive thunderstorm, causing a drop in altitude.

Upcoming Workshops

NASA Symposium on NLF and LFC Research, March 17-19 at the Langley Activities Center. Contact Jerry N. Hefner, MS 410, ext. 2196, or Frances E. Sabo, ext 2658.

Sixth Symposium on Reliability in Distributed Software and Database Systems, March 17-19 at the Hilton Conference Center in Williamsburg. Contact Edwin C. Foudriat, ext. 2233.

Just Released

Shedding a New Light on the Wright Brothers

The story of the Wright brothers and their accomplishments has been told many times, but the engineering genius behind the design and construction of the first successful machine to make a controlled, powered, heavier-than-air flight is still little understood.

A new book, *The Wright Flyer: An Engineering Perspective,* edited by Howard S. Wolko, technology advisor for the National Air and Space Museum's Aeronautics Department, was recently published by the Smithsonian Institution Press. The publication gives a detailed analysis of the approach, methods and accomplishments of the Wright brothers, shedding new light on an old story.

Five distinguished engineers in separate chapters investigate specific elements of the aerodynamic, structural and propulsive technology incorporated in the Wright Flyer. The book also includes information and photographs on pre-Wright aeronautics and an assessment of its impact on the ultimate success of the Wright brothers. Extensive graphs, tables and charts provide new technical information about their talents and craftsmanship.

The publication is the result of a public symposium held at the National Air and Space Museum December 16, 1983, to commemorate the 80th anniversary of the invention of the airplane. The papers presented at the symposium were edited, annotated and illustrated to create this volume.

For more information, contact the Smithsonian Institution Press, Customer Service, P.O. Box 4866, Hampden Station, Baltimore, MD 21211. Cost of the book is $19.95 in paperback.

NASA Selects 38 Investigations for the Comet Rondezvous Mission

NASA has selected 38 possible investigations for the Comet Rondezvous Asteroid Flyby (CRAF) mission planned for launch in the early 1990's. The mission is designed to send an unmanned U.S. spacecraft to rendezvous with a comet, fly in formation with it for three years and fire an instrumented penetrator into the comet's nucleus. The spacecraft also will make close flybys of two asteroids on its way to the comet encounter.

The announcement was made by Dr. Burton I. Edelson, Associate Administrator, Office of Space Science and Applications, who stated, "this selection is particularly important in that it signifies NASA's commitment to the planetary mission strategy recommended by the Solar System Exploration Committee in 1983. The CRAF mission will be the first of a series to utilize a new planetary-class spacecraft, the Mariner Mark II, designed for missions beyond the orbit of Mars. These, together with the planetary observer missions to the inner planets, symbolize our commitment to a strong program in planetary science and exploration."

The CRAF mission will conduct a detailed study of the composition and physical properties of the comet nucleus and will observe changes that occur as the comet approaches the sun. Other mission objectives include analysis of the gas, dust and plasma comprising the comet's atmosphere and measuring the size, shape and surface properties of the asteroids. The CRAF spacecraft will carry 11 to 14 instruments including cameras, dust analyzers and a nucleus penetrator. Results from a 2-year instrument accommodation study will determine the final payload composition.

The scientific goal of comet and asteroid research is to advance man's understanding of the early solar system history by studying those objects believed to have undergone little change since the system was formed.

Several comets and asteroids have been considered as possible targets for the CRAF mission. The baseline plan calls for the CRAF spacecraft to be launched in late 1992 into an orbit about the sun.

After making observations during a flyby of the asteroid Malautra in mid-1993, the spacecraft will swing by the Earth again and a gravity-assist maneuver will boost the spacecraft to the orbit of comet Tempel-2. Following a flyby of asteroid Hestia, rendezvous with the comet will occur in late 1996 near the orbit of Jupiter.

The spacecraft's propulsion subsystem, planned to be provided by the Federal Republic of Germany, will slow the spacecraft and place it in the same orbit as Tempel-2. The spacecraft will fly in close formation with the comet for three years, first observing its quiet phase when distant from the sun and then observing the formation of the coma, dust and plasma tails as the comet nears the sun and becomes active. In 1997, the spacecraft will target and release an instrumented probe to penetrate the surface of the comet's nucleus and to make direct measurements of its composition, temperature and surface structure.

Tempel-2 is a short-period comet that circles the sun once every five and a half years, from near the orbit of Mars out to the orbit of Jupiter. If, for some reason, the CRAF mission cannot be launched in time for the planned Tempel-2 rendezvous, other suitable target comets and asteroids have been identified.

The penetrator is a pointed, spear-like projectile designed to penetrate the comet's nucleus to a depth of up to one meter. It will carry five instruments: a gamma-ray spectrometer to measure the elemental composition of both ice and non-volatile material; an accelerometer to measure the strength and struchture of the surface; thermometers to measure the temperature profile with depth and themal conductivity; a calorimeter to detect phase changes as an ice sample is heated; and a gas chromatograph to determine the amounts and types of gaseous molecules released from the ice sample.

Dr. William Quaide, Chief Scientist, Solar System Exploration Division, said "clearly, the most exciting aspect of this mission is the penetrator package. No one has ever sent a projectile into the nucleus of a comet."

Comets are thought to be the most pristine and unaltered samples of the early solar system, and many scientists believe comets may contain remnants of the primordial matter from which the solar system formed.

The most accepted model of a comet nucleus is the "dirty snowball" model, a mixture of ices, silicate minerals and possibly metals. The ices are solid, frozen substances that usually are liquids or gases under more familiar conditions. These may include water, methane, carbon dioxide, ammonia and more exotic species.

Observations of Comet Halley earlier this year indicated that the surface of its nucleus is almost black, suggesting the presence of carbon compounds and perhaps complex organic molecules. Asteroids are small rocky objects orbiting the sun between Mars and Jupiter. They also are believed to be remnants of early solar system material, some maybe fragments of larger objects broken apart by collisions.

CRAF mission development and operations will be conducted by NASA's Jet Propulsion Laboratory, Pasadena, Calif. Ronald F. Draper is the project manager and Dr. Marcia M. Neugebauer, the project scientist. The CRAF program is managed by the Office of Space Science and Applications, NASA Headquarters.

NASA TECH BRIEFS AWARDS. Roy V. Harris, Jr., Director for Aeronautics, recently presented employees with Tech Briefs Awards. (L to R, sitting) Ajay Kumar, Gregory S. Manuel, Cynthia C. Croom, Harris, Christine M. Darden, Lucia Maestrello, (standing) Bruce J. Holmes, Joseph L. Johnson Jr., James L. Pittman, Long P. Yip, Daniel G. Murri and Joe Elliott (Army).

Rogallo named to North Carolina Sports Hall of Fame

When you think of a sports hall of fame, you usually expect to find football stars, basketball players and golf pros, but Francis Rogallo, an employee of NASA for 34 years, has achieved a rare first in North Carolina.

Rogallo, known for his invention of the flexible wing, has been named to the North Carolina Sports Hall of Fame. Now living in Southern Shores, Rogallo and his wife Gertrude developed the flexible wing while working for NACA. A modified form of the wing is used on hang gliders today.

According to Rogallo, he and his wife developed and perfected a flexible wing in their spare time, experiemting with various designs of small kites and model gliders. He was awarded a patent for his design in 1951.

But it wasn't until almost seven years later — when the Russians launched Sputnik, that the government officially recognized and became interested in Rogallo's work. NASA then tested the flexible wing for man-carrying parachutes, large gliders and powered aircraft.

Government reports of these experiments led to publicity in newspapers and magazines — and eventually the sport of hang gliding as it is known today resulted.

Surprised about being named to the hall of fame, Rogallo, who recently turned 75, commented that there weren't any other hang gliding people in it. While he still enjoys an occasional glide off of Jockey's Ridge, he says that the original flexible wing was "truly flexible, without the sticks or stiffeners found on today's hang gliders.

Rogallo is one of five people named to the Hall of Fame this year. He and the other four — a former National Football League linebacker, a major league baseball pitcher, a professional golfer and a television sports producer — will be inducted during a May banquet in Raleigh.

When someone tells you "I'm going to tell you the truth," you probably wonder what he has been telling you since the conversation began.

Celebrating 70 Years of Research

Determination to Shape Tomorrow

In the 1920s aeronautical engineers concerned themselves with the problem of reducing the drag of radial engines without degrading their cooling. Under the direction of Fred E. Weick, head of the Propeller Research Tunnel section from 1925 to 1929, engineers designed ten different cowlings for experimentation. The cowlings varied from one extreme — that of a bare engine with no cowling at all — to another, the other being enclosing the engine completely. With the help of Elliott G. Reid, the head of the Atmospheric Wind Tunnel section, the team of researchers worked to modify the cooling air inlet, as well as controlling the air in its passage and exit. After many design changes and modifications they were finally able to obtain satisfactory cooling with a complete cowl. And — to everyone's surprise, this cowling reduced drag by a factor of almost three! *Above Photo* **NACA mechanics install cowling on a Wright Apache in the initial stages of cowling testing at Langley. (1928)**

Forty Years Ago Today...

Forty years ago, as reported in the February 28, 1947 issue of the *AIR SCOOP*, Dr. Antonio Ferri, head of the Gas Dynamics Analysis Section of the Compressibility Research Division, gave a first-hand account of conditions in Italy prior to and during WWII . . .admission to the "smoker" was fifty cents and tickets were purchased from the District Representative to the General Assembly of the Morale Activities Association . . .in the men's basketball league, two teams, Stability and IRD, ended the season with a tie for the top position . . .Laboratory employees were reminded to file their income tax returns by March 15 . . .and the Brainbusters Model Club met with executive members of the AMA in Washington, D.C. to discuss regulations governing model activity.

NASA Teacher Resource Center Established

NASA has established its first satellite Teacher Resource Center in the agency's Mid-Atlantic region at The University of North Carolina at Charlotte (UNCC).

The agency has Teacher Resource Centers at each of its nine field centers plus 15 regional satellite centers throughout the country. The first regional center was established in the Midwest in 1982.

The Teacher Resource Centers allow educators to copy existing video and audio tapes as well as slides for a variety of educational purposes. Lesson plans and NASA printed educational materials are also available for duplication. Requested material is copied on a non-profit basis.

NASA's Teacher-in-Space designee, Barbara Morgan, was among those present for the dedication ceremony, held in January at UNCC. Later in the day, Morgan spoke before several hundred educators on "The Teacher In Space Program — Touching the Future."

UNCC was chosen by Langley as the sight for a regional center partly because of its strategic location in the middle of a five- state region formed by Virginia, West Virginia, Kentucky, North Carolina and South Carolina.

But, more importantly, UNCC provides an ideal setting due to its strong educator program, its math and science education center, and its existing curriculum and instructional materials center (CMIC). The Teacher Resource Center, which will be housed in the CMIC, will be professionally staffed and available to educators an average of 87 hours per week.

According to Mary L. Sandy, Head of the Office of Public Services at Langley, having a regional center will "allow us to more effectively reach educators within our region and help to reduce an increasingly heavy workload on our Langley Teacher Resource Center."

FACTS & FIGURES

Public Mail, the office which answers most of the general inquiries at Langley, received and answered almost 18,000 letters during 1986.

The Langley Visitor Center had almost 200,000 visitors throughout 1986 and added five new exhibits. The exhibit vans participated in 125 events, reaching over 450,000 people.

During the last snow storm the Langley Special Announcement telephone system logged over 9300 calls. The system, which contains five rotary numbers, relayed messages almost non-stop for two days. The number to call is 865-2111.

NASA TECH BRIEFS AWARDS. William D. Mace, Director for Electronics, recently presented Tech Briefs Awards to (L to R, front row) William P. Winfree, Joseph S. Heyman, D. Michele Heath, Debra L. Carraway, Thomas C. Moore, (back row) Ping Tcheng, William E. Miller, Francis D. Stone, and Harlen K. Holmes.

Retirement Parties

A retirement party for **Paul R. Yeager** will be held Wednesday, March 11, at 7 p.m. The price is $12 per person for gift and a buffet at the Langley Officers Club. Contributions to the gift only will be gratefully accepted. Please respond to Rise' Williams, MS 234, ext. 2466, by March 4.

Opal Davis, who recently retired from IRD, is being honored with a luncheon in the NASA cafeteria on March 12, from 11:30- 12:30. Cost is $3 per person, $4 per couple. (Provide your own lunch.) Send check or cash to Ralph Lewis or DC Davis for reservations. MS 238, ext. 3446.

A retirement party for **Clarence E. Caldwell** will be held in the Activities Center, Friday, March 13, at 7 p.m. Refreshments and light hor d'oeuvres will be served. Cost is $5 per person. Send to Dolan Clontz, MS 171 or Ronnie Saunders, MS 485.

Notes of Thanks

Christine Richie writes:

"A special thanks to all who attended my retirement luncheon and contributed to the gifts. It was a memorable occasion to have so many friends celebrate with me."

Robert B. "Buddy" Forrest writes:

"The memorable evening honoring my retirement will always be a part of my pleasant days at Langley. Your years of friendship have been a very important part of my life. I appreciate the party and unique gifts. Thanks to each and everyone of you. Come to see me in the land of pleasant living: Smithfield."

Anna J. "Polly" Bailey writes:

"I would like to express my sincere thanks and appreciation to those who honored me with a luncheon on the occasion of my retirement. The lovely gifts, the book of memorabilia and the NASA plaque are treasures that will always remind me of the good times and good friends at NASA. Your contributions, attendance and warm wishes will never be forgotten."

Just A Thought

The true test of intelligence is not how much we know how to do; but how we behave when we don't know what to do.

Happenings

COMMODORE COMPUTER USER'S GROUP. The NASA Commodore User's Group (NASCUG) will meet March 5 at 4:30 p.m. in Bldg. 1244, Room 223. Primary interests include VIC-20, C-64 and C-128. Visitors are welcome.

LAA SOCIAL. The Langley Activities Association will hold a social Friday, March 6, from 4 to 6:30 p.m. in the Activities Center.

VIDEOCONFERENCE. A videoconference entitled "The Changing Workforce: Strategies for Future Management" will be broadcast Wednesday, March 11, from 1 to 4 p.m., in Building 1194A, Room 206. If you are interested in attending, contact your training coordinator.

CEBAF SEMINAR. Dr. Ulrich Wienands of TRIUMF, Vancouver, B.C., will present a seminar entitled, "Status and resent developments of the proposed TRIUMF KAON Factory," March 12, at 10:30 a.m., in room 53. For more information call 875-7800.

TOASTMASTERS. The NASA Langley Toastmasters Club will meet Wednesday, March 11, at 11:30 a.m. in the Activities Center. All people interested in developing their public speaking skills are invited to attend — as a guest you will not be under any obligation to speak! Come see what our young and dynamic organization is doing. Call Steve Yaros, ext. 2673, for more information.

HAUCK TO SPEAK IN NORFOLK. Frederick H. Hauck, recently announced as the commander for Shuttle Mission 26, will speak to the Norfolk chapter of the American Marketing Association, March 11, at the Sheraton-Military Circle. The meeting begins with a cash bar at 11:30 a.m., followed by lunch and the featured speaker. Cost is $14. for non-members. Call 489-4887 for reservations.

DISCOUNT TICKETS AVAILABLE. The LAA Ticket office, located in the Activities Center, is now selling a variety of discount tickets for area attractions. Stop by the office for the latests information, or call ext. 3139.

THURSDAY NIGHT BINGO. Begins with an early bird special at 7:10 p.m., followed by regular games at 7:30. At the Langley Activities Center. Anyone interested in working as a bingo caller, contact Eugene Hicks, ext. 3737.

VIRGINIA CHORAL SOCIETY. The Virginia Choral Society will be featuring fine classical fare for its winter concert, performing Haydn's **Missa St. Bernardi von Offida** (Heiligmesse) and Dvorak's **Te Deum.** Featured soloists include Mary William Baines, Buzz Bonta, Lisa Gregovich, Lois Hunter, Fritz Raitch, and Bert Lightner (a NASA Langley employee). The chorus will be under the direction of maestro Gary Lewis and accompanied by Oliver Douberly. Performances will be held March 13 at Christ and St. Lukes Church, Stockley Gardens and Olney Road, in Norfolk; and March 12 at Ogden Hall, on the campus of Hampton University, in Hampton. Both performances begin at 8 p.m. Both concerts are free and open to the public; and offering will be received. For further information, call 851-5515.

SKI NASA 87. Still time to hit the slopes! MASSANUTTEN: March 5; BRYCE: March 12. Bus departs Newmarket South in front of Hechingers at 5 a.m. and will arrive at the ski area by 9 a.m. Bus departs ski area at 5 p.m. and returns home by 9:30 p.m. Cost is $38 and includes transportation and lift ticket. For further information, call Richard Bennett, 599-5585.

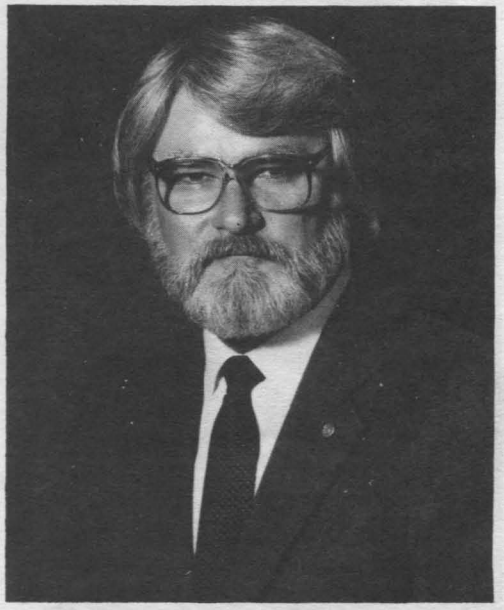
NASA SOFTBALL ASSOCIATION. The organizational meeting for the 1987 softball season will be held March 18 at 4:45 p.m. in the new gym. All current team managers and representatives of new teams interested in joining the association are encouraged to attend.

CEBAF SEMINAR. Dr. Carl Dover (BNL) will present a seminar on "Open Questions in Hypernuclear Physics," Thursday, March 19, 1:30 p.m., in Room 53 at CEBAF. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

AMATEUR RADIO EXAMS. The Williamsburg Amateur Radio Club will give Novice and upgrade exams on Saturday, April 4 at 2 p.m. at the EOC Building in Toano. Pre-register by sending a check for $4.35 payable to ARRL VEC to Andy Swanson, WJ4X, 259 Nottingham Rd., Williamsburg, VA, 23185 by March 6. A few walk-ins will be allowed. Call Andy at 253-2811 for more information.

12-DAY CARIBBEAN CRUISE. Cruise direct from Newport News on a 12 day Caribbean Cruise featuring the Panama Canal, November 2-14, 1987. Other ports of call include Charleston, South Carolina; Montego Bay, Jamaica; Cartagena, Columbia; San Blas Island; Playa Del Carmen, Mexico; Cozumel, Mexico and New Orleans, Louisiana. An optional stayover in New Orleans will be available. Special Cruise discounts apply. Price includes: 12 days cruising, use of ship as your hotel while in port, full American breakfast each morning, Lunch each afternoon in the dining room or on deck, full course dinner each evening, between meal snacks and late night buffet, nightly floor show, bands for dancing, duty-free shopping on board, wide variety of ship-board activities planned by cruise staff, health center, outdoor pool, shore excursion briefings, full casino on board ship, return air to Norfolk International. For brochure or additional information, call Ernie Greene, ext. 2312 or 838-0567 (home).

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.



Robert R. Nunamaker, Director for Space at Langley, will launch the discussion of Soviet space exploration at the Visitors Center on Thursday, March 12, at 11:30 a.m. Nunamaker will address NASA's competition with the Soviet Union and specifically discuss his personal experience with Russian scientists related to the exploration of the planet Venus. "Soviets in Space," a slide/lecture program, will also be shown at 2 p.m. on Saturdays and Sundays, beginning March 14.

National Aeronautics and
Space Administration

Langley Research Center
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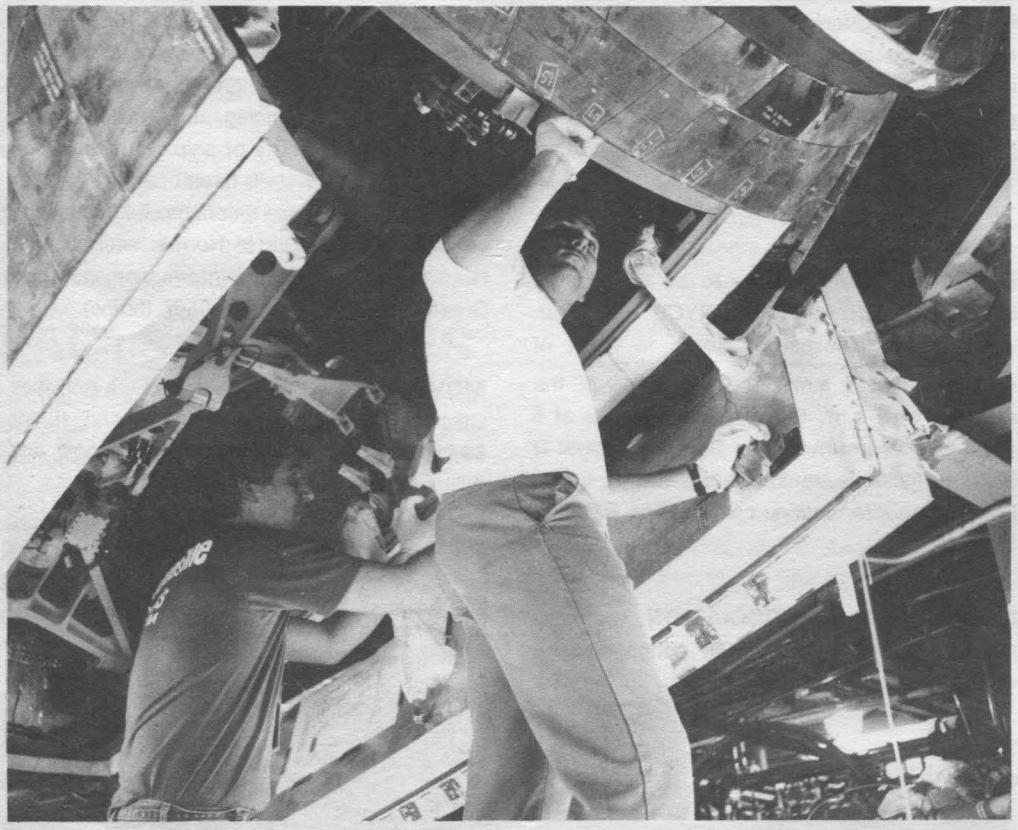

Technicians work on installation of a new thermal barrier around the nose landing gear door on the orbiter Discovery. The modification is one of a number of orbiter enhancements that are being performed on the Discovery, which is to fly the next Space Shuttle mission, STS-26.

In Memoriam

Condolences are extended to the families of:

Vance W. Nunn, who died February 7. Nunn retired in 1963 after 21 years of service.

Dr. Frederick H. Norton, who died November 27, 1986. Norton was the first technical employee at the NACA Langley Memorial Aeronautical Laboratory, where he worked from 1918-1923 with the title of Chief Physicist. During his period of employment at Langley, Dr. Norton was the author of over 39 technical reports and articles. He was interviewed in recent years by Dr. James Hansen, Langley Historian, at which time he said his contribution to the NACA in which he took greatest pride was the development of flight instrumentation so that scientific flight tests could be conducted on airplanes. Norton later became a Professor of Ceramics in the Metallurgy Department at MIT where he achieved wide recognition for formulating the basic principles by whcih the field of ceramics evolved into an important science.

cafeteria menu

Week of March 2-6

MONDAY: Black bean soup, chopped steak au jus, cajun fried chicken, blackened fish. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & Rice soup, spaghetti dinner, fried flounder, beef liver & onions. Snack Bar: chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, seafood quiche, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.

THURSDAY: Chicken vegetable soup, roast turkey dinner, sea trout almondine, meat loaf. Snack Bar: chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes; baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, pizza pocket.

Week of March 9-13

MONDAY: Three bean soup, fried cod, veal parmesan, stuffed 1/2 cornish hen. Snack Bar: chicken filet, pizza supreme.

TUESDAY: Minestrone soup, baked Italian lasagna, cajun popcorn shrimp, ham & macaroni au gratin. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, broccoli & cheddar quiche, salisbury steak. Snack Bar: chicken filet, grilled ham & cheese.

THURSDAY: Chicken Noodle soup, chicken chow mein dinner, beef pot pie, chicken livers. Snack Bar: 1/4 lb. cheeseburger, egg salad sandwich.

FRIDAY: Bull Island clam chowder, fish dinner, stuffed chicken breast, Polish sausage & kraut. Snack Bar: chicken filet, pizza pocket.

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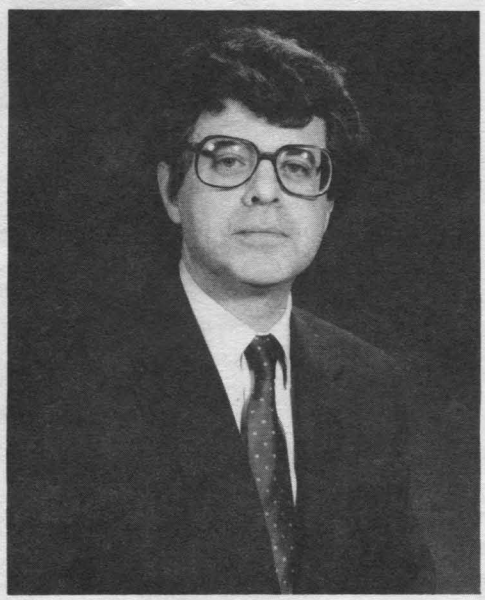
Langley Researcher

Volume 26, Issue 5 **March 13, 1987**

Levine Selected as Virginia's Outstanding Scientist



Dr. Joel S. Levine, a Senior Research Scientist at Langley, has been selected as Virginia's Outstanding Scientist for 1987. The award was presented by Governor Baliles at a formal awards banquet at the Science Museum of Virginia in Richmond March 3. Levine was nominated by Richard H. Petersen, Langley Director.

Levine was selected for his internationally known, pioneering research at Langley in the areas of atmospheric composition, chemistry and change, and their impact on the origin, evolution and maintenance of life on Earth. Levine's research is detailed in over five dozen scientific papers, reports and chapters in books.

Using theoretical computer models that he developed, as well as satellite measurements of young stars and the other planets, Levine reconstructed the 4.6 billion year history of the atmosphere, up to and including the present time. To reconstruct the changes in atmospheric composition and chemistry over the last century, since the beginning of the Industrial Revolution, historical records were uncovered, analyzed and interpreted.

To better understand the present and future composition and chemistry of the atmosphere, Levine initiated an extensive program to gather samples of air under different environmental conditions, including collecting air samples struck by lightning in electrically active thunderstorms, with a specially equipped Langley jet aircraft; collecting air samples over a 1,000-acre burning forest in California; and measuring the production of atmospheric gases by microorganisms in the soil.

Levine's research has led to a new understanding of the origin, early history and evolution of the atmosphere, including its early composition; a new timetable for the origin and evolution of ozone in the atmosphere; and the discovery, from analyses of historic records, that since the Industrial Revolution, the trace gas composition of the atmosphere has probably changed at a faster rate than at any time in the history of the atmosphere. These changes in atmospheric composition and chemistry are attributable to various human activities, including the combustion of fossil fuels, forest and agricultural burning, and increased global use of nitrogen-based agricultural fertilizers.

Levine contributed to and edited the recently published text, "The Photochemistry of Atmospheres: The Earth, The Other Planets and Comets." He presented seven one-hour lectures on atmospheric and planetary science in the public television series, "Earth Science for Teachers." He is now working on a new public television series, "Life in The Cosmos," to be telecast in the fall. Levine is an adjunct professor in atmospheric science at Old Dominion University and at the Tidewater Center of the University of Virginia.

In 1982 Levine became the youngest recipient of the New York Academy of Sciences' Halpern Award. He also received a NASA Medal for Exceptional Scientific Achievement.

Born and raised in New York City, Levine received a bachelor of science degree in physics from Brooklyn College of the City University of New York, a master of science degree in meteorology from New York University, and a master of science degree in aeronomy and planetary atmospheres and a doctorate in atmospheric sciences from the University of Michigan.

Levine is assigned to the Theoretical Studies Branch, Atmospheric Sciences Division, at Langley.

Levine and his wife, Dr. Arlene S. Levine, live in Hampton. Their daughter, Lisa, is a freshman at Virginia Polytechnic Institute.

Delta 179, carrying the GOES-H weather satellite, is launched into the evening sky at 6:05 p.m. from Complex 17-A on the Cape Canaveral Air Force Station. The GOES-H (Geostationary Operations Environmental Satellite) will be placed into a geosynchronous orbit for the National Oceanic and Atmospheric Administration (NOAA) Launched by NASA, the GOES-H satellite will be operated by NOAA. It is the seventh GOES spacecraft and the 10th meteorological satellite to be launched since 1974 for transmitting cloud images from a geosynchronous orbit.

Swain, Lawrence Receive Presidential Awards

Two managers at NASA's Langley Research Center have received Presidential Rank of Meritorious Executive Service Awards.

Robert L. Swain, Director for Systems Engineering and Operations, and **Dr. James D. Lawrence Jr.**, Chief, Atmospheric Sciences Division, were presented the Senior Executive Service awards for "sustained superior accomplishment in management of programs of the United States Government and for noteworthy achievement of quality and efficiency in the public service."

Employed at Langley since May 1955, Swain manages the organizations responsible for the services required to support the center's research programs and institutional plant, including the construction of facilities program, mechanical and electrical systems, complex research facilities, equipment and test apparatus; complex aerospace systems and research test articles; comprehensive safety, quality and reliability; and institutional buildings, structures and ground maintenance.

He and his wife, Sandra, live in Newport News. They have two children.

In his position, Lawrence provides technical and administrative leadership to a broad program of basic and applied research to expand knowledge of the Earth's atmosphere and mankind's impact on the atmospheric environment. He has worked for NASA since 1967.

Lawrence and his wife, Sue, live in Poquoson.

Robert L. Swain

Don Lawrence

1987 L-5 Conference Symposium to Spotlight Advances in Nanotechnology

Computers millions of times smaller than a human cell are among the topics slated for discussion at the nanotechnology seminar during the L-5 Society's Sixth Space Development Conference, in Pittsburgh this month.

Led by nationally recognized researchers Hans P. Moravec of Carnegie Mellon's Robotics Institute, Marvin Minsky of MIT, and author K. Eric Drexler, the symposium will explore opportunities and consequences of the groundbreaking technology based on molecular machines able to build objects to complex atomic specifications.

"Among the possibilities," according to Drexler, "are self-replicating molecular machines, microscopic devices able to enter and repair cells, and much more."

"Nanotechnology literally changes all of technology's rules," says L-5 conference co-chairman, Dale Amon of Carnegie Mellon University's Center for Art & Technology. "Moravec, Minsky and Drexler are amond the world's most forward- thinking scientists, and their presence at our conference promises to be the most up-to-date look yet into these fascinating possibilities.

The L-5 Society's Sixth Space Development Conference will be held at the Pittsburgh Hilton, March 27-29. Under the theme "Return to the Vision," the gathering will probe the future of manned space travel — with distinguished participants from business, industry, academics and government exploring the challenges and opportunities the next 50 years will bring.

New Courses Offered at Learning Center

The Learning Center is now offering the following new courses:

- Aerospace Research Development, Foundation of
- Building the One-Minute Manager Skills
- Concepts in Fracture Mechanics
- How to Listen Powerfully
- Leadership and the One-Minute Manager
- Motivation, How to Influence
- One-Minute Manager, The
- Putting the One-Minute Manager to Work

Employees wishing to sign up for Learning Center courses should call ext. 3014 for additional information.

Key Position

William O. Moore III has been selected as Supervisory Engineering Technician, Technical Support Section C, Tunnels Operations Branch, Operations Support Division, under Competitive Placement Plan 86-94.

One should be more concerned about what his conscience whispers than about what other people shout.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of its staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3006. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Shapley Named Associate Deputy Administrator (Policy)

Willis H. Shapley has been appointed Associate Deputy Administrator (Policy), NASA Headquarters, effective March 9, 1987.

This new position, the third ranking position in NASA, was established in the planned organization released earlier this year in response to the recommendations of the NASA Management Study Group. Shapley will serve as the principal advisor to the NASA Administrator and Deputy Administrator on policy, external affairs and related matters and will help to ensure the effective use of staff and program office resources in these areas.

Shapley entered government service in 1942 with the Bureau of the Budget, Executive office of the President, where for 23 years he specialized in research and development, national defense and space programs. In 1965, he came to NASA Headquarters as Associate Deputy Administrator where he served for 10 years as the principal senior assistant to the Administrator and Deputy Administrator. He was the senior NASA representative in the Soviet Union during the joint US-USSR Apollo-Soyuz space mission in July 1975.

Since retiring from NASA in September 1975, Shapley has been a consultant to the NASA Administrator, the American Association for the Advancemnt of Science, the Office of Management and Budget, the Office of Science and Technology Policy, the Office of Technology Assessment and other organizations.

Born in 1917 in Pasadena, Calif., Shapley was educated at Harvard College and the University of Chicago where he was a graduate fellow and research assistant in political science.

Positions Available

Responsible individuals (e.g., facility coordinators and time and attendance clerks) are reminded that competitive placement and upward mobility announcements are to be posted on bulletin boards for access to all employees in your responsible area.

The following position under the Competitive Placement Plan is open at Langley:

87-24 - Lead Photographer (Scientific Technical), GS-1060- 11, Research Information and Applications Division, Visual and Printing Services Branch; closes March 19.

News Around NASA

AMES, Mountain View, Calif.; — **NASA SUPERCOMPUTER SYSTEM OPERATIONAL.** NASA's numerical aerodynamic simulation (NAS) supercomputer system, the world's most advanced, became fully operational on March 9 at the Ames Research Center, marking a new era in many types of research. The NAS system will perform a wide range of basic and applied research, with its primary use centered on pioneering research in aeronautics. Its ability to simulate actual aircraft flight will help insure continued national preeminence in aeronautics and advanced aircraft. Other uses include computational chemistry, weather modeling, astrophysics and biological research. Part of the NAS charter is to serve as a pathfinder for major improvements in supercomputer systems. With NAS, scientists and engineers will be able to "see" the complex airflows around a proposed new aircraft or spacecraft. Scientists can watch "real" weather systems in action or "real" galactic collisions. A computer system has, for the first time, the power to replace informed technical judgments with detailed calculations of previously uncalculatable, extremely complex phenomena. Such computational capability is a new development in scientific history.

Milwaukee, Wis.; — **ASEA SELECTED TO TEST SHUTTLE THERMAL PROTECTION SYSTEM.** ASEA Industrial Systems Inc., Milwaukee, Wis., announced that it has been selected by Northrop Services Inc. to provide a process control system for testing the thermal protection system on the Shuttle orbiters. The order covers AseaMaster equipment to control critical and auxiliary processes in the NASA Atmospheric Re-entry Materials and Structures Evaluation Facility at the Johnson Space Center. The facility subjects materials such as the insulation tiles on the Shuttle to temperatures as high as 3200 degrees.

HEADQUARTERS, Washington, D.C.; — **FISK TO SUCCEED EDELSON.** DR. LENNARD A. FISK will succeed Dr. Burton I. Edelson as NASA Associate Administrator for Space Science and Applications, effective April 6. Fisk is VP for research and financial affairs at the University of New Hampshire.

GODDARD, Greenbelt, Md.; — **NASA COSPAS/SARSAT MANAGERS HONORED BY USSR.** Two NASA search and rescue mission managers, Robert Lovell and Fred Flatow, have been awarded the Yuri Gagarin medal by a space delegation from the Soviet Union. The medal was bestowed upon Lovell and Flatow in recognition of their contribution to COSPAS/SARSAT, an international search and rescue program which uses satellites to locate people in distress. Lovell, who has worked for NASA for 25 years, serves as director, Communications Division, at Headquarters. Flatow joined COSPAS/SARSAT in 1982 as deputy for search and rescue missions at Goddard. In 1984 he became search and rescue missions manager. In the United States, COSPAS/SARSAT is jointly operated by NASA, the National Oceanic and Atmospheric Administration, the Coast Guard and the Air Force. Since its inception in 1979 it has helped save nearly 750 lives.

AMES, Mountain View, Calif.; — **PIONEER 9 DEAD AT 18 YEARS – ONE OF FIRST INTERPLANETARY PROBES.** NASA's Pioneer 9 spacecraft, which has orbited the Sun for almost 2 decades, was declared officially out of operation, after a final attempt to contact it was unsuccessful. The final attempt to reach Pioneer 9 came 18 years after it was launched, on Nov. 8, 1968. The spacecraft, which had greatly outlasted its required design lifetime of six months, circled the Sun 22 times, covering 11 billion miles. One of its accomplishments includes determining the structure and flow of the solar wind, the million-mile-an- hour stream of ionized gases which spirals out from the Sun. The last signal from Pioneer 9 was received May 18, 1983.

Upcoming Workshop

Mental-State Estimation Workshop — 1987, to be held June 3-5, in Williamsburg. Contact: Randall L. Harris, Sr., Flight Management Division, MS 152E, ext. 3917.

Employees Awarded for Special Achievements

The following Langley employees have been recognized for a special act or service exceeding their normal job requirements:

Sandra S. Chaney, Barbara A. Pasternak, C. Lynn Jenkins, Ronald J. Logioco, Jean W. Clough, Carolyn H. Graham, Mildred F. Hartman, Doris B. Vandeveer, Alton Barnes, Gary P. Stergin, George M. Wood Jr., Deborah T. Powell, Glinda S. Seay, Donald B. Phillips, Ellwood L. Peele Jr., William D. Castle, Reginald T. Brown, James E. Spencer, Michael B. Crawford, Warner W. Smith Jr., and Lisa J. Massie.

Training Classes Available

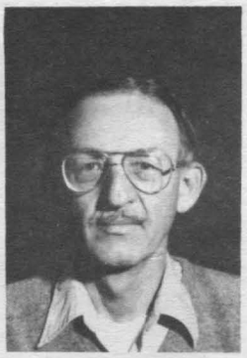
The following training classes are being offered by the Employee Development Branch, Personnel Division:

MAST Follow-on Program No. 3: A follow-on program for the Langley Management and Supervisory Training (MAST) alumni will be held April 6-8 at the Airfield Conference Center in Wakefield, Va. Nominations are being handled by each directorate office.

Videoconference: The final videoconference in the Management Vision series will be entitled "Visioning: Setting Management Strategy." The program will be telecast Wednesday, April 1, from 1 to 4 p.m. Contact division training coordinator for registration.

MAST Program No. 17: A MAST Program will be held May 3-8 and 12. Nominations are being handled by each directorate office.

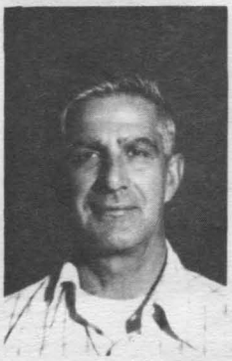
Recent Retirees



Andrew B. Connor

Andrew B. Connor, Acoustics Division; **Duane C. Zellers**, Operations Support Division; and **Paul R. Yeager** and **Opal G. Davis**, Instrument Research Division, retired February 27.

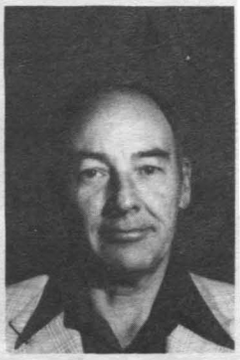
Milton J. Neubauer Jr., Flight Management Division, retired March 3.



Duane C. Zellers

Paul Yeager

Opal G. Davis



Milton J. Newbauer

LAA Children's Committee Seeks Volunteers

As the new chairperson for the LAA Children's Committee, I am asking for your support during the Easter Egg Hunt and Carnival this year.

If you can give an hour of your time at one or both events, please call me at ext. 2691 by March 31.

Thank you for your support.

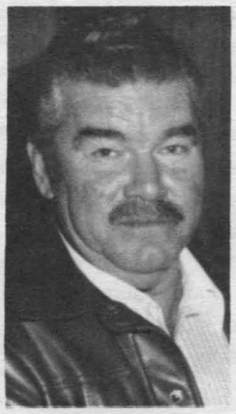
Vernelle Robinson

Notes of Thanks...

Collis Moore writes, "I cannot thank those of you enough who were part of my retirement luncheon recently. It was a humbling experience for me, one I'll never forget. Thank you so much for the hospitality shown me and my family and also for the gifts and other mementoes. But most of all, thank you for being the friend that you are."

NASA Tech Briefs Awarded

Karen S. Whitley (left) and Sharon E. Lowther (right) were presented NASA Tech Briefs Awards for their work on "High-Temperature Copolyimide Adhesive."



William T. Davis (above left) received a NASA Tech Briefs Award for his work on "Phase Measurement Technique."

John W. Eves (above right) received a NASA Tech Briefs Award for his work on "Reduction of Orifice-Induced Pressure Error on Airfoils."

Roy V. Harris, Jr. (center), Director for Aeronautics, presented NASA Tech Briefs Awards to John P. Stack (left) and Elizabeth B. Plentovich (right) for their work on the "Reduction of Orifice-Induced Pressure Error on Airfoils." Blair B. Gloss (not shown) also received an award.

Speakers Bureau

The Langley Speakers Bureau participated in a variety of events throughout the month, providing informative and educational talks all across Hampton Roads. Much appreciation is given to the Langley employees who devoted their time and efforts.

John B. Hall, Jr., gave a presentation on Manned Long- Termed Space Missions to the Raleigh Air Pollution Control Association in Raleigh, North Carolina, January 29.

Weldon Staton spoke to the Young Engineers and Scientist Club of Williamsburg on Minority Awareness and Science Related Careers, January 30.

Robert L. Calloway gave a Space Shuttle Update at the Steward School in Richmond, February 3.

Vickie Johnson, Elvin Ahl and **Thomas Strganac** participated as judges for the Science Fair at Out Lady of Mt. Carmel Catholic School, February 10.

Bill Kahlbaum represented NASA Langley during the Career Day Program at Gloucester High School, February 11.

George Hickman spoke about Careers at NASA at Hines Middle School, February 12. Hickman also spoke at the Young Adult Conference in Black Studies held at Hines Middle School February 26.

L.A. Dillon-Townes participated as a judge for the Our Lady of Mount Carmel Junior High School Science Fair, February 12.

Steven Yaros spoke on NASA Careers during Career Day at the Benjamin Syms Middle School, February 18.

Bill Tennis gave a presentation on NASA Programs to the Big Brothers/Big Sisters of the Peninsula, Inc., February 21.

George Ware gave a talk about the Space Shuttle to the Hampton Kiwanis Club, February 24.

William E. Howell gave a presentation on NASA Careers Available in Aeronautics and Space at the Churchland Junior High School, February 25.

Terri Lazarus participated as a judge for the Science Fair at St. Mary's School, February 26.

Lenwood Clark gave a presentation about the Space Shuttle to the Pope Air Force Association, Fayetteville, North Carolina, February 27.

Celebrating 70 Years of Research

Women at Langley: helping shape tomorrow

The contributions of women to NACA research began well before WWII, but did not truly expand until after 1941. Before the war Langley had never employed more than 100 women at one time, mostly for traditional office functions. The exception to the rule was Pearl I. Young (shown above), the NACA's first female professional. A Phi Beta Kappa graduate in physics from the University of North Dakota, Young first came to Langley in 1922, where she worked side-by-side with Henry Reid, in the Instrument Research Division. (1929)

Retirement Parties

A retirement party for **Bill Henley** will be held Tuesday, March 17, in the Langley Activities Center. A cash bar will begin at 6 p.m., followed by dinner at 7. The cost is $8.75 per person, including gift. Non-attendee gift contributions welcome. Please respond to Courtney Russ, mail stop 236, ext. 2094.

John L. "Jack" Hudson, who retired December 31 after more than 38 years of service, will be honored by his friends and co-workers at a retirement dinner Wednesday, April 8, at Fort Monroe Officers' Club. A social will begin at 6:30 p.m., followed by dinner at 7. For reservations or to contribute to the gift, contact A.L. Fitzgerald or Dorsey White, building 1209, room 150-D, mail stop 439, ext. 4656, by March 27.

Pete DeLozier will be honored with a retirement luncheon Friday, March 13, at 11:30 a.m. in the Langley Activities Center. The cost, including gift donation, is $5. Please send reservations to Lloyd Nelson, mail stop 428, by March 6.

A retirement party for **T. Coleman Moore, W. Clayton Moughon** and **Raymond H. Womble** will be held at the Fort Monroe Officers' Club Friday, April 3. A cash bar will begin at 6:30 p.m., followed by prime rib buffet at 7:30. The cost is $13 per person or $21 per couple, which includes gifts. Contribution to the gift(s) only will be accepted. Please respond to Jane Everett, mail stop 233, ext. 2801, by March 27.

Volunteer Donors Provide Valuable Community Resources

The next Bloodmobile visit will be held Wednesday, March 25, 9 a.m. to 3 p.m., at the Activities Center. For more information or an Appointment, contact the Health Unit, ext. 3976 or 2246.

Blood is a community resource that only people can supply for other people. The goal of the Red Cross is to assist the community in its responsibility to provide the highest quality product at the lowest cost to patients through volunteer donors. To meet this responsibility, over 550 units of blood must be collected, processed and distributed daily in southeastern Virginia and northeastern North Carolina by the Blood Center.

While there is no charge for blood itself in the Tidewater Region, blood is not free. The Red Cross charges hospitals a processing fee, which covers the cost of collecting, processing and distributing blood. By relying on the totally volunteer donor and using extensive volunteer help and leadership, it is possible to keep costs down, resulting in a lower processing fee.

Mr. Al Buchanan, Blood Services Consultant, states that there has been much concern about AIDS by blood donors. He states that AIDS can not be contracted by donating blood. During blood donation, a person never comes into contact with any blood other than his own. It is therefore, impossible to contract AIDS or any other disease by donating blood. The AIDS panic has caused a decrease in blood collection. Because of this there will be patients who need blood and may not be able to get it. Blood has no substitute. This life-giving substance must be available when and where patients need it.

All blood collected is tested for Hepatitis, ALT liver enzyme level, Syphillis and the HIV (AIDS) antibody. The dafety of the blood supply is now more reliable than it has ever been.

Langley Research Center was recognized for being one of the top producers of blood at a recent Bloodmobile Recognition Luncheon sponsored by the Hampton Roads Chapter of the American Red Cross. In 1986, there were over 2052 units of blood collected at the center, which was over the projected goal.

First Lieutenant Mark Frassinelli (center) is presented with the Air Force Achievement Medal for Meritorious Service for his outstanding technical skills and accomplishments in identifying complex fighter aircraft aerodynamic design problems and in developing and conducting innovative research projects leading to the solution of these problems. Bud Bobbitt (left) and William Henderson (right), both of the Transonic Aerodynamics Division, assisted in presenting the award.

Sympathy is Extended

Sympathy is extended to the families of:

Benjamin Franklin Holloway, who died February 24, and **Donald Eugene Stewart Sr.**, who died February 25. Holloway and Stewart retired from the Plant Engineering Division in August 1979 and October 1978, respectively.

Overton C. Fowlkes, who died February 12. At the time of his retirement in March 1972, he was assigned to Facilities Engineering Division.

Happenings

LAA SOCIAL. The Langley Activities Association will hold a social Friday, March 20, from 4 to 6:30 p.m. in the Activities Center.

NASA SOFTBALL ASSOCIATION. The organizational meeting for the 1987 softball season will be held March 18 at 4:45 p.m. in the new gym. All current team managers and representatives of new teams interested in joining the association are encouraged to attend.

LANGLEY RUNNERS' CLUB. The Langley 1986 Runner- of-the Year competition ended with a tie between **Nancy Hess** and **Nancy Turner**, each earning 55.88 points in the NASA Intercenter races. Rounding out the top ten were **Pat Leary, Bob Ferguson, Al Graham, Marge Mikula, Joe Kubalak, Greg Humphreys, Chris Slominski** and **Gale Harvey**.

THURSDAY NIGHT BINGO. Begins with an early bird special at 7:10 p.m., followed by regular games at 7:30. At the Langley Activities Center. Anyone interested in working as a bingo caller, contact Eugene Hicks, ext. 3737.

41ST ANNUAL WILLIAMSBURG GARDEN SYMPOSIUM. Enjoy an exciting program of daily lectures, tours, clinics and demonstrations conducted by nationally recognized horticultural authorities, plus a special opening reception and more during this symposium entitled "The Gardener's Year — The Seasonal Nature of Our Trial and Triumphs." For more information and registration write, Registrar, Williamsburg Garden Symposium, P.O. Box C, Williamsburg, VA 23187, or call 229-1000, ext. 2750.

CEBAF SEMINAR. Dr. Carl Dover (BNL) will present a seminar on "Open Questions in Hypernuclear Physics," Thursday, March 19, 1:30 p.m., in Room 53 at CEBAF. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.

1987 MID-ATLANTIC SCIENCE FICTION CONVENTION ATLANTICON IV. The Peninsula Science Fiction Association celebrates the twentieth anniversary of Star Trek on television with their fourth annual convention, April 3, 4, & 5, at the Sheraton Beach Inn, Virginia Beach. The guest of honor will be Majel Barrett Roddenberry (CMDR Chapel from STAR TREK IV: The Voyage Home), with guest artist Frank Kelly Freas (Master of science fiction art & illustration), and NASA representative Ray Goodman (from Langley). Events include an art show, comics, computer games, displays, films, lectures, robots, and more. For more information, registration forms are available at Tracks Records, or call Atlanticon at 587-1084.

12-DAY CARIBBEAN CRUISE. Cruise direct from Newport News on a 12 day Caribbean Cruise featuring the Panama Canal, November 2-14, 1987. Other ports of call include Charleston, South Carolina; Montego Bay, Jamaica; Cartagena, Columbia; San Blas Island; Playa Del Carmen, Mexico; Cozumel, Mexico and New Orleans, Louisiana. An optional stayover in New Orleans will be available. Special Cruise discounts apply. Price includes: 12 days cruising, use of ship as your hotel while in port, full American breakfast each morning, Lunch each afternoon in the dining room or on deck, full course dinner each evening, between meal snacks and late night buffet, nightly floor show, bands for dancing, duty-free shopping on board, wide variety of ship-board activities planned by cruise staff, health center, outdoor pool, shore excursion briefings, full casino on board ship, return air to Norfolk International. For brochure or additional information, call Ernie Greene, ext. 2312 or 838-0567 (home).

Langley Colloquium and The Sigma Series

PAINE to Address Proposals

The National Commission on Space was charged by the Congress and the President to look into the future to propose civilian space goals for 21st century America. By projecting possible developments for the next 50 years, the Commission recommended programs for the next 20 years.

Dr. Thomas O. Paine, Chairman of the Commission and former NASA Administrator, will present a lecture on the Space Commission's proposal Monday, March 23, at the Langley Research Center. The lecture, "Space Goals for 21st Century America," will be held in the Langley Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

That evening, Paine will give the same lecture at the Sheraton- Inn-Coliseum, at 7:30 p.m., as part of The Sigma Series. The Sigma Series is a series of free public lectures sponsored by the Langley Research Center, the City of Hampton and the Daily Press, Inc.

In his lecture, Paine will discuss the construction of a "Highway to Space" and establishing a "Bridge Between Worlds." The results show that lunar and Mars outposts can be established with costs within reasonable expectations.

Paine led NASA from 1969 to 1976, during the first seven Apollo flights. From 1976 to 1987, he was President of Northrop.

He is credited with numerous publications, patents and awards, including the NASA Distinguished Service Medal. He is a member of the National Academy of Engineering and serves on the National Academy of Science's Naval Studies Board. He is a Director of the Planetary Society, the National Institute and the Pacific Forum.

LAA, Exchange Council to Hold Opening Ceremony for New Facility

An opening ceremony will be held jointly by the Langley Activities Association and the Exchange Council for the new Activities Association gymnasium and Langley Fitness Center, Thursday, March 19, at 10:30 a.m. in Building 1222B.

Richard H. Petersen, Langley Director, will officiate at the ribbon cutting ceremony. An open house and tour will follow.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Senior Management Research Review

The Senior Management Research Review will be held Tuesday, March 17, in Building 1219, Room 225, beginning at 9 a.m.

Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

TIME	TITLE OF TALK	SPEAKER
9:30	Three-Dimensional Computations of Hydrogen-Air Combustion in Scramjet Combustor with Transverse Fuel Injectors	Kenji Uenishi (Aeronautics/Vigyan Research Assoc., Inc.)
9:45	Turbulent Viscous Drag Reduction by Selective Surface Suction	Stephen Wilkinson (Aeronautics/HSAD)
10:00	Realistic Image Synthesis by Parallel Processing	William Von Ofenheim (Electronics/ACD)
10:15	A Linear Optimum Longitudinal Trim Solution for Multi-Surface and Thrust-Vectored Aircraft	Kenneth Goodrich (Flight Systems/GCD)
10:30	Manned Mars Accommodation Study	Robert Murray (Space/SSO)
10:45	RSRA/X-Wing Stopped Rotor Stability Characteristics Changed by Static Aeroelastic Deformation	Michael Gilbert (Structures/LAD)

cafeteria menu

Week of March 16-20

MONDAY: Split pea soup, veal parmesan, baked stuffed trout, Cajun fried chicken. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.
TUESDAY: Chicken & rice soup, spaghetti & meat sauce dinner, corned beef & cabbage dinner, fried fish nuggets. Snack Bar: Chicken filet, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, seafood quiche, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, crabcake sandwich.
THURSDAY: Chicken vegetable soup, roast turkey dinner, fried flounder, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes; baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, pizza pocket.

Week of March 23-27

MONDAY: Three bean soup, chopped steak au jus, blackened fish, ham & macaroni au gratin. Snack Bar: Chicken filet, pizza supreme.
TUESDAY: Minestrone soup, lasagna, New England scrod, beef liver & onions. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, broccoli & cheddar quiche, salisbury steak. Snack Bar: Chicken filet, grilled ham & cheese.
THURSDAY: Chicken noodle soup, chicken chow mein dinner, chicken & dumplings, meat loaf. Snack Bar: 1/4 lb. cheeseburger, pepperoni pizza.
FRIDAY: Bull Island clam chowder, fish dinner, Austrian ravioli, chicken pot pie. Chicken filet, hot Italian sausage.

swap and shop

FOR SALE

RADIO SHACK TAD-112 TELEPHONE ANSWERING SYSTEM. Includes remote feature. LNC. Asking $45. 588-8617 (Norfolk).

TRAILER. Oakwood '83, 14x62, Exc. condition. 2 BR, 1 BA, washer, dryer, appls, track lights, shades, full skirting, fenced lot, 8x10 alum. shed w/elect. $18,200. 868-9901 after 6p.m. or 868-6281 anytime.

FOR RENT

TIME SHARE. Ocean Landings Rocket Club and Resort, Cocoa Beach, Fla. Next to Cape Kennedy. 1 Bedroom. $400. — one week, $700. — two weeks. May 3-16. 877-2939.

Officers' Club Calendar

The Langley Officers' Club is offering a variety of specials throughout the month of March, including a new special, "Adventure Night Dinner." Another feature this month is the OWC Art Auction, which features a variety of noted artists.

MONDAY: Member's Night, Prime Rib dinner.

TUESDAY: St. Patty's Day Dinner, Luck of the Irish Party, March 17; Adventure Night Dinner, March 24; Fried Chicken Night, March 31.

WEDNESDAY: Beef & Burgundy Plus Chicken & Chablis, March 18, 25.

THURSDAY: Mini Buffet in new dining room, March 19; Mongolian Bar-B-Que, March 26.

FRIDAY: Prime Rib, March 13, 20, 27. Eagle's Landing Entertainment: 13th — Fever, 20th and 27th — Chris & Jeanne.

SATURDAY: OWC Art Auction and Special Buffet, March 14; Prime Rib, Beef-Chicken-Shrimp, March 21; Prime Rib Charbroiled Teriyaki Steak and Charbroiled Chicken Breast, March 28.

SUNDAY: Brunch — 10:30 a.m. to 1:30 p.m.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 6 **March 27, 1987**

Langley Begins 70th Anniversary Celebration with Education Programs

On July 17, 1917, ground breaking ceremonies were held for the Langley Memorial Aeronautical Laboratory. This year, NASA's Langley Research Center celebrates its 70th anniversary with a number of activities for employees and the public.

Leading the celebration, and in conjunction with National Science and Technology Education Week (April 5-10), will be a Career Day, Tuesday, April 7, for high school students in the greater Hampton Roads area. Langley will host the event for tenth and eleventh graders in the Activities Center, Building 1222, beginning at 9 a.m.

The three-hour program will focus on career information and opportunities for students who are interested in pursuing a career in high technology as an engineer, scientist, engineering technician or a related field.

Approximately 425 students will be welcomed by Richard H. Petersen, Langley Director. Gary Price, Head, Office of External Affairs, will present an overview of the center, followed by Robert Nunamaker, Director for Space, who will give a talk, "Space Station–The Challenge or Not."

The program will also consist of a panel discusssion with Langley Cooperative Education Program students, engineers and technicians as panelists; and an interactive session. The session will include displays and demonstrations by Langley employees, and students will have the opportunity to discuss careers, research and development projects, and related information with NASA employees and contractors.

Throughout the week elementary and junior high schools will be offered assembly programs by NASA Aerospace Education Specialists. The programs, designed to acquaint teachers and students with NASA's research and technology, will focus on NASA's aeronautical accomplishments and provide highlights of Langley's history. Approximately 30 outreach programs are planned during the week.

The second major event this year will be a special 70th Anniversary Program and Reception for Langley employees, contractors and retirees Friday, July 17. The final event for the anniversary celebration will be an Open House for the public on Saturday, October 24. An employee announcement will be distributed next week highlighting anniversary plans.

Frederick H. Hauck (Captain, USN) toured various facilities on a recent visit to NASA Langley. Hauck, who previously commanded mission 51-A in November 1984 and served as pilot on STS-7 in June 1983, has been named commander for Shuttle mission 26, scheduled for February 1988. Before resuming his astronaut duties in February, Hauck had previously been assigned to NASA Headquarters as Acting Associate Administrator for External Relations. *Shown above:* **Scott Thomas, Commander Hauck, and Deputy Director Paul Holloway on a tour of the Scramjet facilities.**

Puckett Named Industry Relations Officer

Howard R. Puckett has been selected as Industry Relations Officer for Langley Research Center, replacing Arthur R. Friend who retired in January.

In this position Puckett serves as a senior adviser to center management concerning Langley's labor relations with private industry. His office is the integrating point for all activities concerned with the center's support service contracts.

Puckett began his NASA career in April 1973 as a contract specialist. In February 1976 he became a personnel management specialist and in February 1978 a program analyst. He has specialized in private sector labor/management relations, acquisition support, resources analysis and management support.

In addition to his work at Langley, Puckett is a professorial lecturer at Langley Air Force Base.

From July 1968 to October 1969 he served in the U.S. Marine Corps.

A native of Newport News, Puckett received a bachelor of science degree in business administration from Christopher Newport College in 1972 and a master of science in administration (industrial personnel management) from George Washington University in 1975.

He has received three Langley Special Achievement Awards and three Group Achievement Awards.

Puckett and his wife, Deborah, live in Smithfield. They have two children.

Viking Device to Help Combat Pollution

A compact but complex JPL instrument of the type that analyzed Martian soil and atmosphere analyses is being readied to combat a rising threat on Earth — pollution.

The instrument carries a hefty name, Gas Chromatograph Mass Spectrometer, or GCMS. One of these devices was aboard each of the two Viking Landers which touched down on Mars in 1976, and functioned for several years in the hostile Martian environment.

In laboratories on Earth, GCMS instruments have been used for chemical analysis for some time. During the Viking project, the GCMS technology was miniaturized and made more efficient for space flight. With this miniaturization, it is now possible to construct a portable instrument that can be used for the rapid analysis of pollution samples.

Of the five GCMS' constructed, two went aloft with the Viking Landers, one went to the Smithsonian and two remained at JPL. One of the two at JPL has been adapted and modified for Earth application and has been loaned out to a private sector company, Viking Instruments Inc., of Virginia, as part of a technology transfer program.

As explained by Amy L. Walton, manager of the Environmental Technology Subprogram at JPL, the GCMS offers high sensitivity, low weight, power and size, and rugged construction — all characteristics demanded during the Mars mission, and essential to its potential challenges on Earth.

The job the GCMS takes on promises to be a big one. The Surgeon General of the United States has warned that in the years ahead, the nation will face a series of toxic chemical emergencies. To determine the risk to the health of people exposed to potentially toxic materials in industrial environments, it is important to chemically analyze the surrounding air, water and other fluids and to obtain results as rapidly as possible.

Present state-of-the-art, Walton explains, is such that when toxic elements are suspected, a team of specialists must go to the scene and gather samples for laboratory analysis — a time- consuming and expensive procedure.

The mass spectrometer's portability will provide on-site and rapid collection and identification of existing chemical elements — within minutes it will be known whether or not a true emergency exists.

Possible applications of this NASA technology include the evaluation of waste sites and spill monitoring from firms such as metals companies, pesticide producers, inorganic chemical firms, petroleum refiners, electroplating companies, leather tanning firms and semiconductor companies.

Viking Instruments plans to construct its own prototype of the GCMS, complete engineering development, start an advanced research and development program on second-generation instruments and begin limited production and market testing. The company already has several patents on improvements to the device.

OEA Asks for Assistance

In an effort to pay tribute to Langley employees who died in the line of duty, the Office of External Affairs is asking for your assistance in gathering information.

We need your help in locating this information and in updating Langley's historical records, especially for the years prior to 1970. Anyone who can be of assistance, please contact Ann Suit, ext. 3967.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of its staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3006. Articles are due at noon on the Thursday following the date of this issue.

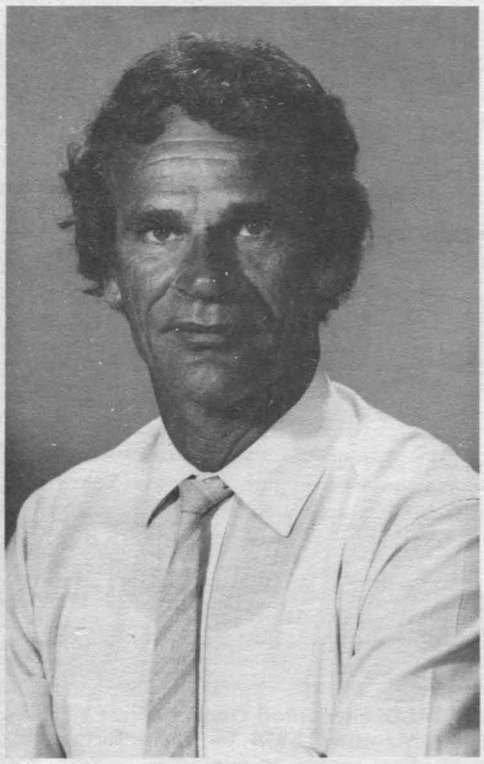
Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Key Positions

Robert L. Kreiger has been selected Head, Digital Data Acquisition Section, Electro-Mechanical Instrumentation Branch, Instrument Research Division, under CPP 86-90.

John A. Tanner has been selected Head, Impact Dynamics Branch, Structures and Dynamics Division, under CPP 87-16.



Wolf Elber, Director of the Aerostructures Directorate of the Army Aviation Research and Technology Activity (ARTA) at NASA Langley, has been named to the Structures and Materials Panel of the Advisory Group for Aerospace Research and Development (AGARD) for NATO. Located in Paris, France, AGARD has created a meeting place where scientists and technologists of the NATO Aerospace Community can gather for research project discussions of mutual interest. The work of AGARD is achieved by nine Technical Scientific Panels and the Aerospace Applications Studies Committee.

Daylight Savings Time Moved Up!

On Sunday, April 5, turn your clocks *forward* one hour, as we observe Daylight Savings Time.

If this seems a bit early — you're right! Congress decided to add three weeks to daylight savings time by moving the date from the last Sunday in April to the first Sunday in April.

News Around NASA

HEADQUARTERS, Washington, D.C.; — **SHUTTLE PROCESSING REVIEW COMPLETED.** NASA Administrator Dr. James C. Fletcher has announced that he will retain and strengthen the current Space Shuttle processing arrangement at the Kennedy Space Center, Fla., with Lockheed Space Operations Co., as recommended by the group which reviewed the process. Several actions, identified by the review group to improve the processing management, will be implemented, including augmenting staff in critical areas such as quality assurance and engineering, increasing emphasis on launch support services contracts with hardware development contractors and stressing more thorough technical documentation.

SPACE STATION OFFICE, Washington, D.C. — **QUICK IS BEAUTIFUL STUDY.** A group of approximately 20 scientists and researchers, representing NASA, the National Science Foundation (NSF), the National Institutes of Health (NIH), and the private sector, will be formed to identify Space Station activities that could be conducted in a manner which would significantly reduce the time between experiment concept development and publishable results. The group, which will be chaired by Dr. David C. Black, NASA Headquarters Space Station Chief Scientist, plans to address major subjects, such as documentation of prior experience in space; defining the rationale, objectives and guiding principles for the program; and identifying and characterizing potential categories of Space Station activities and identifying requirements both on the Space Station and the transportation system arising from the program. The study is expected to be completed about mid-year.

MARSHALL, Huntsville, Ala.; — **SOLID ROCKET MOTOR TEST FIRING UNDER REVIEW.** Detailed teardown analysis of the test article from the solid rocket motor (SRM) joint environment simulator (JES) firing at Morton Thiokol on Feb. 23, has indicated potential insulation bonding deficiencies in the assembly process of the test hardware. NASA and Morton Thiokol are assessing options for correcting this occurrence, which potentially affects the insulation configuration in the area of the field joints on several other test articles, including the first full-scale firing test, the Engineering Test Motor (ETM-1), scheduled for late this month.

JPL, Pasadena, Calif.; —**NASA's DEEP SPACE NETWORK (DSN)** near Canberra, Australia, configured with Australia's Parkes Radio Observatory is observing radio wave emissions from Supernova 1987a, the first such star explosion in the neighborhood of the Milky Way Galaxy since 1604. Located in the Large Magellanic Cloud about 160,000 light years away, the supernova is at a declination of 69 degrees South and can only be observed in the Southern Hemisphere. The 110-foot DSN antenna at Tidbinbilla near Canberra and the 210-foot Parkes facility, 200 miles away, are configured together using a microwave link to form one giant radio telescope, a process called interferometry. The DSN-Parkes observations began Feb. 26.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

87-26 — Supervisory Operating Accountant
GS-0510-9 or 11, Financial Management Division, Accounting Branch, Commercial Accounting Section. Closes March 30, 1987.

87-29 — Lead Engineering Technician
GS-0802-10 or 11, Operations Support Division, Tunnels Operations Branch, Technical Support Section "D." Closes March 30, 1987.

Supervisory Aerospace Engineer
AST, Navigation, Guidance and Control Systems
GM-0861-14 or 15, Flight Systems Directorate, Flight Management Division, Office of the Chief. Closes April 8, 1987.

Purchasing Agent
GS-1105-5 or 7 (2 positions), Acquisitions Division, Acquisition Operations Branch, Purchasing Section. Closes April 10, 1987.

Visitor Center Debuts Traveling Exhibits

In a salute to National Science and Technology Week (NSTW), April 5-10, the Visitor Center will feature three traveling exhibits highlighting NASA research.

On display for the month of April are: **"Space Station: the Next Logical Step,"** which outlines NASA's plans to launch and assemble in orbit the permanently manned Space Station; **"Large Antennas in Space: The Hoop-Column Antenna,"** which explains how large structures can be built in the microgravity environment of earth orbit; and **"Flight Safety Research at NASA,"** which provides a look at safety research topics ranging from storm hazards to fire, and includes information regarding dangers of stall-spin.

Also on view in the Space Gallery is a scale model of the Hubble Space Telescope. Heralded as a "window into the universe," the Space Telescope is expected to expand the universe visible to man by 350 times.

The Visitor Center is open Monday through Saturday, 8:30 a.m. to 4:30 p.m. and Sunday, noon to 4:30 p.m. Admission is free of charge.

Note of Thanks

Opal Davis writes:

"I'd like to take this opportunity to thank all my friends who contributed to and came to my retirement party. I really appreciate the nice microwave oven. I have enjoyed all the years I have worked at NASA and all the wonderful friends I have made. I will never forget a single one of you and hope to see you many times in the future. Thanks again for your friendship."

Quality Circle Achievement Awards Presented

Kenneth Cole, Chief, OSD, presented Quality Circle Achievement Awards to the "Problem Seekers/Solvers" (LOB) for their efforts related to improving the method of identifying inventoried equipment. Pictured are: Kenneth Williams, George Johnson, Donald Coffey, Cheri Wood, Kenneth Cole, Frank Robinson and Craig Leggette. Not pictured: John Brown.

Andrew Swanson, Chief, MSD, presented Quality Circle Achievement Awards to the "Equip-Mentors," EMS, for their efforts related to reducing duplication of effort regarding custodian reports. Pictured are: (front) Stanley P. Shields, Nellie E. Freeman, Shirley D. Evans, Dollie M. McCown, James S. Coon, (back row) Earl F. Quinn (Klate-Holt), Franklin H. Farmer, and Andrew G. Swanson.

Kenneth Cole, Chief OSD, presented Quality Circle Achievement Awards to the "Better Way Coordinators" for their efforts related to meeting calibration schedules for standard recall items. Pictured are: (seated) Robert F. Schwartz, Boyce E. Lavender Jr., Kemp L. Parrish, James I. Richardson; (standing) C. M. Cole (QC Facilitator), Kenneth Cole, Mack G. Lawrence, Horace E. C. Bellamy, Ramon P. Barr (Head, LOB, OSD), and Roy W. Mason (Head, LOB, OSD).

Andrew Swanson, Chief, MSD, presented Quality Circle Achievement Awards to the "Stockwatchers," SMS, for their efforts related to reducing the workload associated with slow moving items. Pictured are: (front row) Evelyn D. Wallace, Shirley W. Hogge, Lucy B. Watkins, Suzanne Scarborough, (back row) Arthur S. Johnson and Andrew G. Swanson. Not pictured: Theresa F. Elliott, and Anna J. Bailey (retired).

Sympathy is Extended...

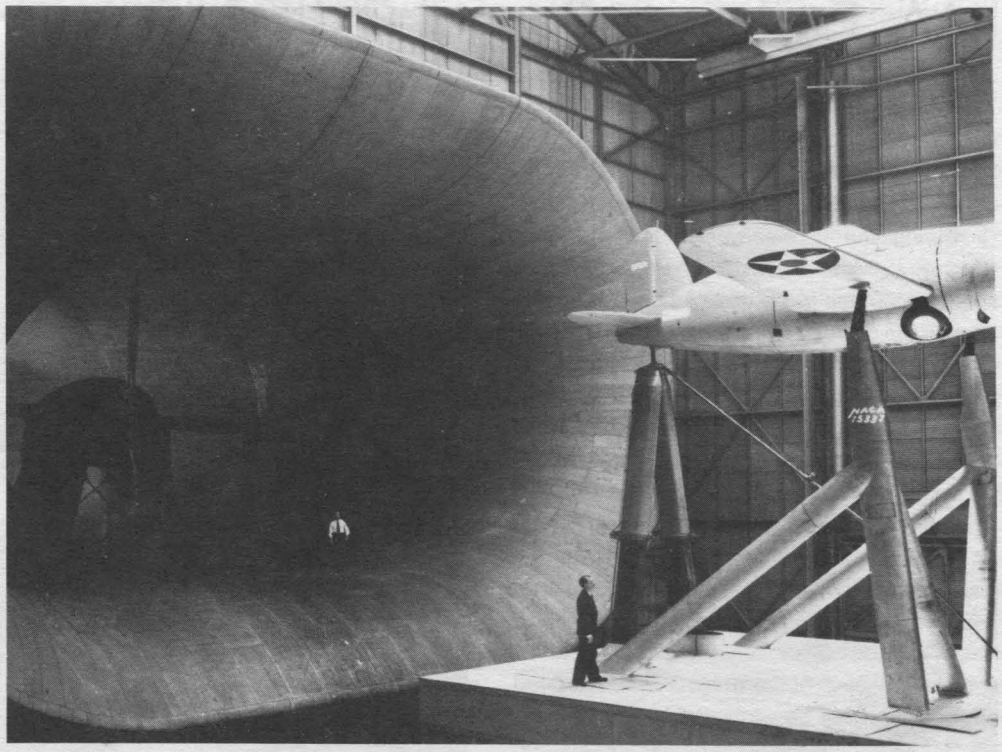
Sympathy is extended to the families of:

Walter Rogers, who died March 5. Rogers, an Engineering Technician in the Operations Support Division, joined Langley in 1977. A graduate of Embry-Riddle Aeronautical University, Rogers served over 22 years in the U.S. Army.

Benjamin Brown Forsythe, who died January 24. Forsythe retired in 1971 after 30 years of service. He worked in the Fabrication Division.

James Richard Powell, who died March 9. Powell retired in 1973 from the Operations Support Division, after 32 years of service.

George Jefferson Hurt, Jr., who died March 10. Hurt retired in 1980 after 33 years of service.

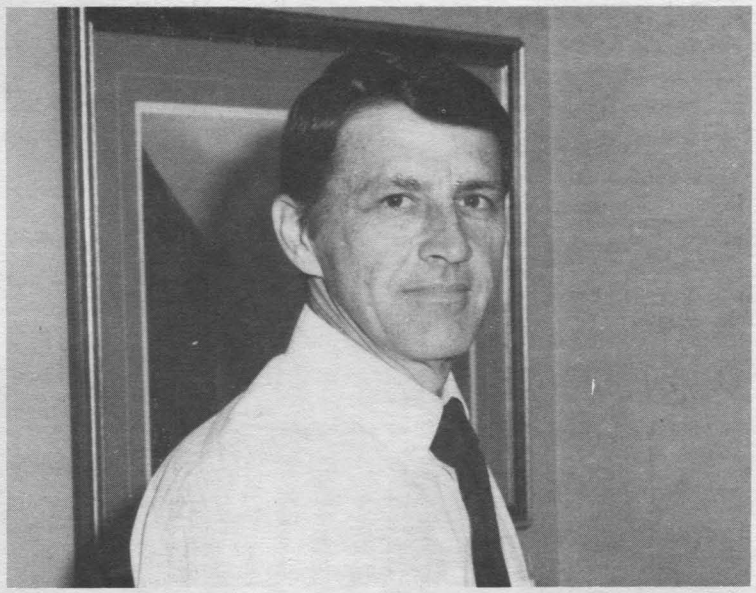


Celebrating 70 Years of Research

Expanding to Meet the Challenges

During World War II, Langley experienced a whirlwind of change and expansion. In 1938, the total staff numbered 426, but by 1945 this number had increased to over 3000. With the American involvement in the war, Langley changed its emphasis from general research to specific testing; researchers assigned to the major wind tunnels and to the Flight Research Division spent most of their time on tests of specific aircraft configurations. *Above:* **Langley mounted the Navy's Brewster XF2A-1 Buffalo in the Full-Scale Tunnel for drag reduction, or "cleanup" studies. In one week's time, the FST team had found ways to modify the aircraft, increasing the top speed from 250 to 281 miles-per-hour. (1938)**

Dr. J. F. Creedon (far right), Director for Flight Systems, presented NASA Tech Brief Awards to Russell V. Parrish, H. Douglas Garner, Thomas W. Hogge and Anthony M. Busquets, for their work on the Auxiliary Data Input Device, "Thumball."



Dr. John F. Garren, Jr.(right), Chief, Flight Management Division, presented a NASA Tech Brief award to James B. Robertson, for his work on Single-Layer, Multicolor Electroluminescent Phosphors.

LAA, Exchange Council Cut Ribbons on New Gym, Stress Lab

The dream of having a gymnasium and fitness center came alive on March 19, as Langley employees joined in on the dedication ceremony marking the opening of the new facility.

During the ceremony, Geoffrey Tennille, Langley Activities Association President, told employees of the plans that had been on-going for over ten years. Noting the hard work of past LAA board members, as well as the immediate past chairman of the Exchange Council, Art Friend, Tennille commented on the hopes they had of encouraging employees to participate in the various programs.

Irwin Schauer, Chief of Personnel, served as the Master of Ceremonies, recognizing the many people who had worked toward this goal. Virginia Jones, Head of the Occupational Health Services Office, and the person who has coordinated much of the work, received a round of applause from the crowded gymnasium.

Before cutting the ribbon, Langley Director, Richard H. Petersen, commented on the great manner that everyone had worked together in the "usual Langley spirit."

The Stress Lab will be coordinated by Franki Robbins Pivarnik, a physiologists who has been busy these past few months organizing equipment and plans for the lab. Of the 800 employees who initially signed up for the lab, says Pivarnik, 470 are ready to use it. During the next six weeks, these employees will go through a fitness assessment program, including instructions on how to use the equipment.

Before an employee can work out in the stress lab, he or she must have completed an application packet, along with a fitness evaluation. The fitness evaluation must include a treadmill evaluation (treadmill tests can be taken at the clinic by enrolling in the Physical Examination program.) Then the employee must have two instructional appointments at the lab, which includes learning how to use the various equipment. After completing these appointments, the employee can sign up for an exercise time.

As of now, the Stress Lab will be open Monday through Friday from 10:30 a.m. to 7 p.m. As the lab adds additional staff, they plan to increase the hours. For more information, you can contact the Stress Lab, Mail Stop 498.

Happenings

LAA SOCIAL will be held Friday, April 3, from 4 to 6:30 p.m. in the Activities Center.

MARCH OF DIMES TEAMWALK. AFGE 2755 is sponsoring a NASA Teamwalk for the March of Dimes Teamwalk America. The walk will be Sunday, April 26, on the trails in Newport News Park. It is a 25 kilometer (16 miles) walk from 8 a.m. to 3 p.m. There will be periodic rest stops offering free doughnuts, soft drinks, water, popcicles and free hamburgers and drinks at the end. Portable bathroom facilities will be placed at each rest stop. The walk is open to all NASA employees and contractor personnel and their families. Special T-shirts are being considered for the occasion. Those interested should call Bob Garletts, ext 2771, to sign up and receive a sponsor sheet.

FUNDAMENTALS OF SPACE SYSTEMS DESIGN. The AIAA Hampton Roads Section invited lecture series will present Fundamentals of Space Systems Design, Monday and Tuesday, May 18- 19, at the Activities Center. The lecture series will present state-of-the-art surveys in various technologies required in space systems design. The presentations are by leaders from research and industry who are involved in current design practice. They will define the present state-of-the-art, current problems, and future directions in their activities.

CHILDREN'S COMMITTEE SEEKS VOLUNTEERS. Anyone interested in helping out during the Easter Egg Hunt and/or the Carnival should contact Vernelle Robinson, ext. 2691, before March 31.

SOFTWARE CATALOG AVAILABLE. NASA's Computer Software Management and Information Center, COSMIC, has released their 1987 catalog containing 1,161 computer programs. Langley Research Center employees may obtain a free copy by calling the Technology Utilization Office, ext. 3281.

16MM MOTION PICTURE FILM DUPLICATION SERVICE HAS BEEN REINSTATED as an in-house service in the photographics section. Turnaround time is expected to be five (5) working days. Submit request for this service on NASA FORM 78 PHOTOGRAPHICS SERVICES REQUEST (Mail Stop 425). Please note — when filling out Form 78, list 16MM Motion Picture Film duplication under "Description of work" using black and white services or color services under "Other (specify)" if needed. If you have any further questions, call Ann Wilson, ext. 3521.

CEBAF SEMINAR. Dr. Don Gubser (NRL) will give a presentation entitled "High Temperature Superconductors: T_c Over 100K," Thursday, April 2, at 9:30 a.m. at CEBAF, Room 53. All members of the CEBAF staff and the public are welcome.

VSC PREMIERES NEW PLAY. Mystery, intrigue and evil spirits are the elements of Virginia Stage Company's production of HAUT GOUT by Allan Havis. Terrifying and controversial, HAUT GOUT is the story of a young American doctor in Haiti who is drawn into a CIA plot. The play opens Friday, April 3 at the Wells Theatre. For more information, call 627- 1234.

NASA COMMODORE USER'S GROUP will meet April 2, at 4:30 p.m. in Building 1244, Room 223. The subject of the program will be the "Computer Eyes" digitizing program. Visitors are welcome.

NOTICE: HAVE YOU SEEN . . . 2 Astronaut gloves (Skylab A-7LB suit) loaned out over the past year. Anyone who has one or both of these gloves or knows someone who has them, please contact Judith Watson, Structural Concepts Branch, ext. 2414, Mail Stop 190.

NASA LANGLEY TOASTMASTERS CLUB will meet Wednesday, April 8, at 11:30 a.m. in the Activities Center. This will be a regular meeting consisting of "Table Topics" and prepared speeches. Visitors are welcome and are, of course, under no obligation to speak! Call Steve Yaros, ext. 2673, for details.

THE ANNUAL GREENBELT COOPERATIVE MEETING DINNER will be held at Sammy and Nicks in Yorktown, April 11, at 6:30 p.m. There will be no charge for NASA Co-op members. A registration fee of $2 includes door prizes. For reservations call 877-2939.

CEBAF SEMINAR. Dr. Regis Babinet (Saclay) will give a seminar entitled "The 4π Detector Diogene: Perspective for Future Use at the Saturne II Facility," Monday, April 13, 1:30 p.m., at CEBAF, Room 47.

THE NEWPORT NEWS HISTORICAL COMMITTEE will hold a dedication ceremony at the Victory Arch, Sunday, May 31. A new plaque listing war casualties that were previously unknown will be unveiled. The ceremony will honor all soldiers listed on the Peninsula Honor Roll from WWI, WWII, the Korean Conflict and the Vietnam War. The Committee is asking for assistance in locating family members of these soldiers. If you have any information write to: Victory Arch Names, c/o War Memorial Museum, 9285 Warwick Blvd., Newport News, VA 23607.

LAA EXECUTIVE BOARD will meet Tuesday, April 14, at 11 a.m. in the Activities Center.

1987 MID-ATLANTIC SCIENCE FICTION CONVENTION ATLANTICON IV. The Peninsula Science Fiction Association celebrates the twentieth anniversary of Star Trek on television with their fourth annual convention, April 3, 4, & 5, at the Sheraton Beach Inn, Virginia Beach. The guest of honor will be Majel Barrett Roddenberry (CMDR Chapel from STAR TREK IV: The Voyage Home), with guest artist Frank Kelly Freas (Master of science fiction art & illustration), and NASA representative Ray Goodman (from Langley). Events include an art show, comics, computer games, displays, films, lectures, robots, and more. For more information, registration forms are available at Tracks Records, or call Atlanticon at 587-1084.

THURSDAY NIGHT BINGO. Begins with an early bird special at 7:10 p.m., followed by regular games at 7:30. At the Langley Activities Center. Anyone interested in working as a bingo caller, contact Eugene Hicks, ext. 3737.

MOVIE TICKETS are available in the Activities Office for Coliseum Cinemas I and II for $3.25 each and for Riverdale, Beechmont and Williamsburg theaters for $2.75 each.

Langley Runners Club Announces Dates for Intercenter Races

NASA Intercenter Races will be held between April 4 and May 3.

— The 10 KM races will be on April 6, 13, 23 and 27;

— the 2 Mile races will be on April 9, 13, 20 and 29.

These races start at 5 p.m. on Doolittle Road.

A 2 Mile race will also be run on April 14 at the Bethel High School track at 12 Noon, and on April 22 there will be a WALKERS 2 Mile special at 4:40 p.m. on Doolittle Road.

All NASA employees, retirees, on-site contractors, and co-ops at work can earn points for Langley by participating. WALKERS are welcome at all races.

In the Fall 1986 races, Langley finished 2nd behind JPL in the 10 KM and 3rd behind Goddard and JPL in the 2 Mile.

For more information, call Richard Shearer, ext. 4621.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Langley Directives Distributed

NUMBER REVISED:	TITLE	DATE	T.S.#	DATE DISTRIBUTED
LMI 3510.1	"Positional Classification Program"	2-12- 87	1511	3-10-87
LMI 1571.1	"Word Processing Equipment Management Program"	2-12- 87	1512	3-10-87
LMI 6000.2	"Incoming and Outgoing Shipments"	2-19-87	1513	3-5-87
LMI 1700.1	"Safety Program"	2-19-87	1514	3-5-87
LMI 1100.9	Attachment, "Property Disposal Review Board"	2-19- 87	1515	3-5-87
CANCELLED:				
LMI 2220.1	"Requests for Scientific and Technical Documentation"	2-25- 87	1516	3-5-87

NASA Langley Research Center has been recognized as the University of Cincinnati's 1986 Outstanding Employer of the Year. A participant in the University's Cooperative Professional Practice Program since 1975, Langley was noted for its strong and consistent support of the program, as well as for providing assignments that have proven to be challenging and rewarding, while contributing significantly to the students' education. Evelyn D. Harris (second from right), Co-op Coordinator for Langley, accepted the award, which was presented by UC staff members Ann E. Keeling, Assistant Dean, Prefessional Practice; Stanley G. Rubin, Department Head, Aerospace Engineering; and E. Sam Sovilla, Director/Associate Dean, Professional Practice.

cafeteria menu

Week of March 30-April 3

MONDAY: Split pea soup, veal parmesan, broiled flounder, Cajun fried chicken. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & rice soup, spaghetti dinner, Cajun popcorn shrimp, seafood quiche. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New Orleans scrod, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, crab cake sandwich.

THURSDAY: Chicken vegetable soup, turkey dinner, fried cod, braised chicken livers. Snack Bar: chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder, fish dinner, stuffed chicken breast, Spanish franks & rice. Snack Bar: 1/4 lb. cheeseburger, pizza pocket.

Week of April 6-10

MONDAY: Three bean soup, chopped steak, baked stuffed trout, stuffed shells. Snack Bar: Chicken filet, pizza supreme.

TUESDAY: Minestrone soup, lasagna, quiche Lorraine, blackened fish. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, chicken dinner, New England scrod, beef liver & onions. Snack Bar: chicken filet, grilled ham & cheese.

THURSDAY: Chicken noodle soup, 6oz. luncheon steak, chicken & dumplings, meat loaf. Snack Bar: 1/4 lb. cheeseburger, bratwurst.

FRIDAY: Bull Island clam chowder, fish dinner, meatballs stroganoff over noodles, sausage & baked beans. Snack Bar: chicken filet, hot Italian sausage.

swap and shop

FOUND

PRESCRIPTION GLASSES with brown frames Found in Building 1212, Room 202. Call Ann Bell, ext. 4816, to identify.

WANTED

FOURTH MEMBER OF CARPOOL from Norfolk to West Area, 7:30 shift. Call Perry, ext. 3323.

FOR SALE

SAILBOAT: 21' Clipper Marine, CB, 6 HP Evinrude, can be seen at 700 Dandy Loop Road. $4,500. 898-4145.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 7 **April 10, 1987**

NASA and Brazil Lead Studies Over the Amazon

by Jean Drummond Clough

More than 100 scientists from NASA, Brazil, U.S. universities and industry will conduct a 45-day study of tropospheric chemistry during the wet season in the atmosphere over the tropical rain forest of Brazil's Amazon River basin.

The second Amazon Boundary Layer Experiment (ABLE) will begin in mid-April to assess how tropical forests affect the gas exchange, chemistry and budgets of several key gases in the troposphere, that part of the atmosphere closest to Earth. Several of the gases, such as carbon monoxide and methane, are increasing globally and could influence long-range climate and global air quality.

ABLE is one phase of NASA's Global Tropospheric Experiment, which was established in the early 1980's to study the chemistry of Earth's atmosphere and its interaction with the land and the oceans.

Tropical rain forests have been identified as possible sources for carbon monoxide and other trace gases, such as ozone, nitrous oxide and methane. Thermal energy from the tropics has been recognized as a major factor in the movement of Earth's atmosphere and, consequently, the transport of chemical species.

A Space Shuttle experiment called Measurement of Air Pollution from Satellites (MAPS), which measures tropospheric carbon monoxide with a gas-filter radiometer, showed an enhancement of carbon monoxide above and off the coast of South America, relative to other areas of Earth, during experiments in 1981 and 1984.

The first ABLE study was conducted during the 1985 dry season. It documented the importance of biosphere-atmosphere interactions in determining chemical processes in the troposphere over undisturbed rain forests. The burning of biomass (plants and other organic fuel) in the grasslands and forests of northern Brazil was also shown to influence air chemistry over the entire region.

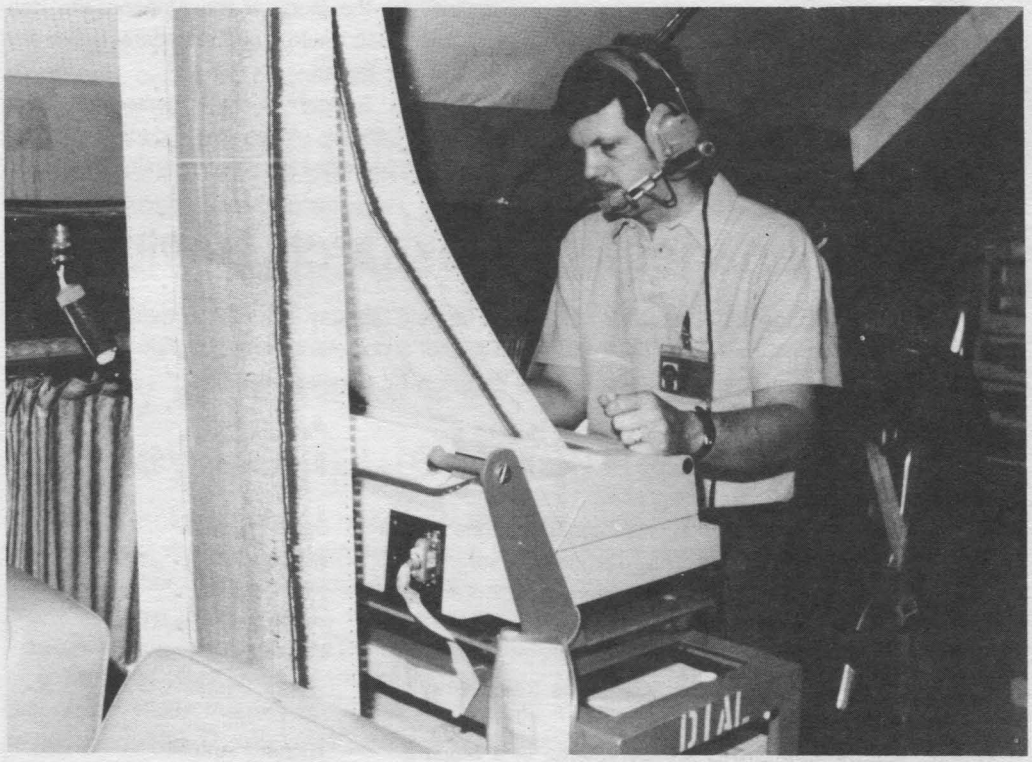
During dry months, however, thunderstorm activity is at a minimum; consequently, so is coupling between the Amazon biosphere and the global atmosphere. The wet period coincides with the maximum extent of the floodplain area and the peak production of gases associated with active decomposition in wetlands. The floodplain is the mosaic of the forests and meadows that change in area as the Amazon River rises and falls each year.

The 1987 ABLE wet season study will be the first attempt to understand the potential role of tropical ecosystems in global atmospheric chemistry when thunderstorm activity couples the biosphere to the entire overlying atmospheric column on an almost daily basis.

A NASA Electra aircraft will be stationed in Manaus, Brazil, in the center of the Amazon River basin. Instruments aboard the aircraft will make in-place and remote measurements of atmospheric trace gases and aerosols during a series of flights. The Electra will fly a variety of flight patterns to study the exchange of gases between the forest canopy and the troposphere in different meteorological conditions.

The Brazilian weather service and meteorological support from NASA's Langley Research Center will provide daily satellite information for flight planning and analysis of measurements. Ground-based measurements will be made at a test site in the Ducke Forest Preserve north of Manaus, and in lake and riverine environments west of Manaus. These measurements will provide smaller scale, independent data on gas fluxes (movements) for correlation with the aircraft results.

Continued on page 2.



Dr. Edward V. Browell, a scientist in the Atmospheric Sciences Division at Langley, is shown aboard a NASA Electra examining the vertical profiles of atmospheric constituents as they are measured with the ultra-violet differential absorption lidar. The Global Tropospheric Experiment is using the unique capability to not only characterize the atmosphere, but also to provide real-time information that is used to direct the aircraft to areas of special interest where other instruments on board can take direct samples for detailed analysis.

Langley Colloquium

Virginia Tech Scientist to Present Lecture

Over its 4.6 billion year history, our planet has experienced a number of global extinctions of animal and plant life. A Virginia Tech scientist has a new explanation for some of these extinctions, including the famous of all, the dinosaurs, some 65 million years ago.

Dr. Dewey M. McLean, Professor of Geology, Department of Geological Sciences, Virginia Polytechnic Institute and State University, will present a lecture Monday, April 13, at Langley. The lecture, "Global Climate Change and Biological Extinction," will be held in the Langley Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

Of all the natural phenomena that terrestrial vertebrates have encountered in their long history, rapid global warming is the most deadly of all, according to McLean. In several past extinction events, global warming has been linked to build up of carbon dioxide in the atmosphere through "greenhouse" conditions. A recently discovered mechanism that couples rise in ambient air temperature directly to vertebrate reproductive failure, via heat damage to developing embryos, accounts for several ancient global extinction events, and provides a basis for evaluating potential impact of the modern carbon dioxide buildup on our civilization.

McLean says that terrestrial mammals, including humans, survived the most extreme ice-age cold, and restricted living space and food with relatively minimal effect. It was during the warming at the ends of ice ages that great mammalian extinctions occurred, such as the extinction of the dinosaur; knowledge that rapid climatic warming can kill on a global scale explains those extinction events, McLean said.

Today, we are living on a thermally high "plateau" to which we may not be comfortably adapted, and that we may be merely enduring until earth begins its new cycle of climatic cooling, according to McLean. A future rapid rise in global temperature will take us up into unexplored thermal terraine. The fact that rapid warming kills developing embryos suggests that we may not be able to readily adapt to any future rapid rise in global temperature.

In his lecture, McLean will discuss the changes in the atmosphere and how they have affected terrestrial life, and why he has linked global extinction events to carbon dioxide-induced climatic warming.

NASA and Brazil Lead Studies of Atmospheric Chemistry

Continued from page 1.

Data from both ABLE missions will be compared to evaluate seasonal variations in atmospheric chemistry. This will be the second expedition to combine ground-aircraft-space measurements to study the source and transport of a specific tropospheric trace gas–carbon monoxide.

Science team members will meet in Brazil early in 1988 to review results from individual experiments. A comprehensive picture of the atmosphericc chemistry will be assessed and plans made for joint publication of results.

Brazilian scientists will have two experiments aboard the NASA aircraft and several investigations at ground sites. The investigators are from the Instituto de Pesquisas Espaciais, Brazil's counterpart to NASA; the Instituto Nacional de Pesquisas de Amazonia, the Brazilian agency for the study of the Amazon; the University of Sao Paulo; and the Federal University of Para in Belem.

The U.S. team included scientists from NASA's Langley, Ames and Goddard-Wallops research centers; Harvard University; University of Virginia; Oregon Graduate Center; Florida State University; Stanford University; University of Washington; University of California at Santa Barbara; State University of New York at Albany; and Simpson Weather Associates of Charlottesville, Va.

The Tropospheric Chemistry Program is managed by NASA's Office of Space Science and Applications. The ABLE project is managed by Langley's Atmospheric Sciences Division, with logistical support provided by the Bionetics Corporation, Hampton, Va.

Senior Management Research Review

The Senior Management Research Review will be held Monday, April 20, in Building 1219, Room 225, beginning at 9 a.m. Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

9:30	Prediction of Added Noise Due to the Effect of Unsteady Flow on Pusher Propellers	Patricia Block (Structures/ACOD)
9:45	Derivation of a Tropospheric Ozone Signal from Satellite Total Ozone Measurements	Jack Fishman (Space/ASD)
10:00	General Control Structure for Coordinated Movement of Robot Arms	Keith Barker (Flight Systems/ISD)
10:15	Distributed Parameter Modeling of the Structural Dynamics of the Solar Array Flight Experiment	Lawrence Taylor (Flight Systems/GCD)
10:30	Initial CARS Measurements in a Mach 2 Combustor	Richard Antcliff (Electronics/IRD)
10:45	A Numerical method for Computing Transonic Flow Over Wings in a Wind Tunnel	Veer Vatsa (Aeronautics/TAD)

Researcher Relocated

As of April 10, the office of the **LANGLEY RESEARCHER** will be located in Room 301, Building 1219. Please direct all submissions and inquiries to The Editor, Mail Stop 115, ext. 3707.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 150, telephone 865-4038. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Petersen to Give State-of-the-Center Message

Langley Director Richard H. Petersen will address the Center employees on the state of NASA and the Langley Research Center on April 20 and 21, 1987, at the Activities Center.

Five sessions have been scheduled as follows:

April 20, 1987

1:30-2:15 p.m. — Systems Engineering and Operations Directorate (except for the Operations Support Division).

3:00-3:45 p.m. — Space Directorate, Structures Directorate.

April 21, 1987

8:30-9:15 a.m. — Aeronautics Directorate, Operations Support Division.

10:00-10:45 a.m. — Electronics Directorate, Flight Systems Directorate.

1:30-2:15 p.m. — Office of Director, Management Operations Directorate.

This invitation is also extended to all retirees and support services contract personnel. These employees are encouraged to attend the session scheduled for the Directorate they support. Time should be charged to Job Order Number A-1980.

Key Position

William E. Miller has been selected Assistant Head, Environmental Sensors Branch, Flight Electronics Division, under CPP 87-15.

Correction

Apologies to Dr. John F. Garren, Jr., Chief, Flight Management Division, and James B. Robertson for incorrectly cropping the photograph of Dr. Garren presenting a NASA Tech Briefs Award to Mr. Robertson (March 27, page 5). — *EDITOR*

Look in the face of the person to whom you are speaking if you wish to know his real sentiments, for he can command his words more easily than his countenance.
— *Lord Chesterfield*

News Around NASA

OAST, Washington, D.C.; — **McIVER HONORED.** Duncan McIver, Office of Aeronautics and Space Technology (OAST), was recently recognized for his successful completion of the President's Executive Exchange Program. McIver, one of 12 Federal executives selected for the 1985-86 program, spent the year at Bechtel National, Inc., San Francisco, CA, researching new technologies for marketing applications. McIver was appointed Director, National Aero-Space Plane in OAST, in November of 1986.

HEADQUARTERS, Washington, D.C. — **NASA AND FRENCH SPACE AGENCY SIGN COOPERATIVE MISSION AGREEMENT.** NASA and the French Space Agency, the Centre National d'Etudes Spatiales (CNES), have signed a memorandum of understanding (MOU) for a joint satellite oceanographic mission. The mission, an ocean topography experiment called TOPEX/POSEIDON, is planned for a late 1991 launch, and will provide oceanographers with their first opportunity to observe ocean circulation on a global scale. NASA's Jet Propulsion Laboratory, Pasadena, Calif., and CNES Centre Spatial, Toulouse, France, are responsible for management of the U.S. and French portions of the project.

MARSHALL, Huntsville, Ala.; — **MARSHALL ASSISTS LOCAL UNIVERSITY RESEARCHER DISCOVER SUPERCONDUCTIVITY.** Scientists from Marshall have been working with and partially funding a research team which achieved a goal that world scientists have been seeking for 75 years in the field of superconductivity. The team of physicists, headed by Paul C.W. Chu of the University of Houston and M.K. Wu of the University of Alabama at Huntsville, announced recently that it has achieved superconductivity — the ability to transport electrical current with no resistance — at 283 degrees below zero farenheit, or 98 degrees Kelvin, a much higher temperature than previously possible. The Marshall scientists, Dr. Peter A. Curreri and Dr. Robert E. Shurney, worked on projects with members of the research team throughout 1986. NASA funding was used to explore various unique alloys that could only be formed in low gravity. The research team is interested in further research at Marshall, using Marshall's drop tube, drop tower and the NASA KC-135.

GODDARD, Greenbelt, Md.; — **NASA HANDS OVER WEATHER SATELLITE TO NOAA.** GOES-H, the geostationary weather satellite launched February 26, has completed a month of tests and has been turned over fully-operational to the National Oceanic and Atmospheric Administration (NOAA). GOES-H, which has been designated GOES-7 since reaching orbit, is the eighth GOES spacecraft to be launched since 1974 for transmitting cloud cover images from a geosynchronous orbit. In addition to providing cloud cover images and atmospheric temperature profiles, it will collect space environmental data and conduct an experiment for detecting emergency distress signals on the ground from geosynchronous orbit.

Langley in the News:
Langley Computer Grant Highlighted

Two newspapers in Illinois recently featured work being funded by Langley at the University of Illinois. Langley's Susan Voigt, Information Systems Division, was interviewed about the Illinois Computer Laboratory for Aerospace Systems and Software, known as ICLASS. The thrust of each article was that the university's research in space-related computer technology will contribute to future space projects, including the development of a space station. Voigt is the technical monitor of a $400,000 block grant which established ICLASS. "NASA established a computer research program in 1983," Voigt is quoted as saying, "and it wanted to choose at least two universities to house 'centers of excellence' which would supplement the NASA program." The University of Illinois laboratory was established in 1985. The Illinois researchers already have produced several results that NASA scientists plan to use, according to one article, including a learning-based system that "detects 'symptoms' of major problems and predicts their onset."

— *From The Daily Illini and ILLINIWEEK.*

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

87-1 — Secretary (Stenography) and Secretary (Typing)

GS-0318-4 or 5, Various locations at Langley Research Center. Open continuous.

87-31 — Purchasing Agent

GS-1105-5 or 7, Acquisitions Division, Acquisitions Operations Branch, Purchasing Section. Closes April 13, 1987.

87-32 — Supervisory Aerospace Engineer, AST, Structural Mechanics

GM-0861-14 or 15, Structures Directorate, Materials Division, Fatigue and Fracture Branch. Closes April 15, 1987.

87-33 — Supervisory Engineering Technician

GS-0802-10 or 11, Operations Support Division, Tunnels Operations Branch, Technical Support Section "D." Closes April 13, 1987.

87-34 — Supervisory Engineering Technician

GS-0802-11 or 12, Operations Support Division, Tunnels Operations Branch, Technical Support Section "C." Closes April 15, 1987.

Effective Telephone Techniques Course

A course entitled, "Effective Telephone Techniques," will be offered by the Employee Development Branch in the near future. The course will cover the major topics:

A. Projecting a Winning Image
B. Increasing Your Telephone Efficiency
C. Handling Incoming Calls
D. Cooling Off the Angry Caller
E. Telephone Tips

Employees who are interested in signing up for this course should contact the Employee Development Branch, ext. 2611, by April 20.

Lee and Norris Represent Langley Toastmasters

Robert B. Lee and **James W. Norris** represented the NASA Langley Toastmasters at the Area 5 contest, held March 25.

During the contest, Lee placed second in the Table Topics competition and Norris, who entered the International Speech Contest, placed third. Competition was among the Area 5 Toastmasters clubs; winners of the competition will represent the area in the Eastern Division Competition on April 10 in Newport News.

In order to qualify for the Area 5 contest, Lee and North won in competitions held at the NASA Langley Toastmasters on March 11.

Achievement Awards

The following Langley employees have been recognized for a special act or service exceeding their normal job requirements:

Shirley W. Hogge, Arizona White, Henry T. Bunting, N. Gail Birch, Kenneth W. Hall, Kimberly W. Marriott, Leslie S. F. Ferguson.

MTC Closed Temporarily

The Microcomputer Training Center (MTC) is temporarily closed until arrangements can be made to satisfy our training requirements.

If you have already requested training through the MTC, you will be contacted when classes resume.

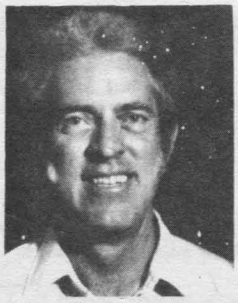
Retirement Parties

A retirement dinner for **Chuck Bryan** will be held Wednesday, April 15, at the Activities Center. The evening will begin with a cash bar at 6, followed by a prime rib dinner at 7 p.m. Cost is $11.50 per person. Make checks payable to Ed Scearce or Ken Deyerle by April 10th. Mail Stop 385, ext. 2651.

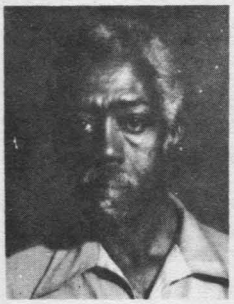
A retirement dinner for **John L. Price** will be held, Monday, April 20, in the Activities Center. Social at 6:30 p.m. and dinner at 7 p.m. Cost, including gift, is $11.50/single or $21 per couple. Send reservations to Faith Allen or John Wallace, Mail Stop 432, ext. 4666.

Recent Retirees

The following employees retired March 27: Charles F. Bryan, Jr., Fabrication Division; Frank W. Veney, Operations Support Division, and Horace E. C. Bellamy, Operations Support Division.

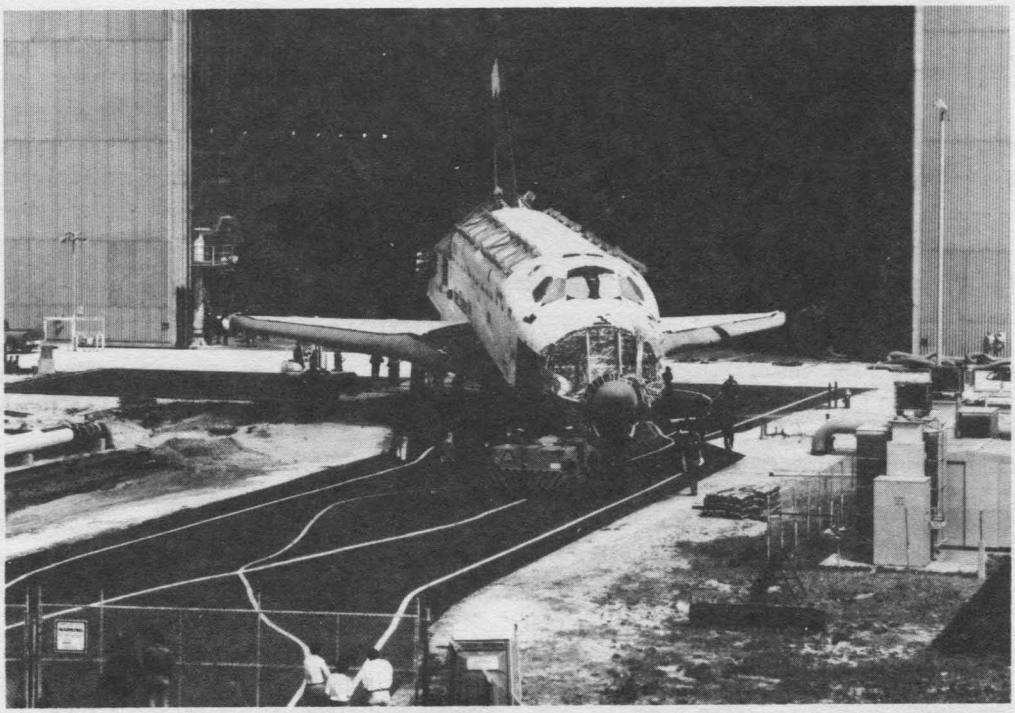


Charles F. Bryan, Jr.



Frank W. Veney

Horace E. C. Bellamy



The orbiter Columbia is backed into the Vehicle Assembly Building (VAB) after being rolled out of the Orbiter Processing Facility. Columbia is expected to remain in the VAB storage area until early September, when it will be transferred to the new Orbiter Maintenance and Refurbishment Facility north of the VAB.

Speakers Bureau

The Langley Speakers Bureau participated in a number of events throughout the month of March, providing a wealth of knowledge and information on a variety of NASA topics. For more information on how to be an active participant in the Speakers Bureau, contact Ann Suit, ext. 3967.

Our thanks and appreciation to the following Langley employees:

Brian Pritchard, who gave a presentation on the Space Station to the Newport News Lions Club, March 2.

Roger Breckenridge, who gave a presentation on the Space Station at the Virginia Chemicals Research Department Awards Banquet in Portsmouth, March 3.

James Schoenster, for his presentation on Careers in Science & Engineering at the Syms Junior High School, March 4.

Ray Hook, who gave a presentation on the Space Station to the Pattern Makers League, March 5.

Dr. Steven Yaros, for his presentation on Aerospace Engineering at the Syms Middle School Career Fair, March 4.

John Tanner, who gave a presentation on Flight Safety Research for NASA to the Norfolk Sertoma Club, March 12.

Lenwood Clark, for his presentations on the Space Station to the York Kiwanis Club on March 12, and to the Air Force Association, Baptist College, The Citidel and two high schools in Charleston, South Carolina, March 18 and 19. While in Charleston, Mr. Clark was also interviewed by WKCN radio and WCBD, WCIV and WCSC-TV.

Dr. Frank Allario, who gave a presentation on NASA's Laser Research to the Association for Information & Image Management and the Association of Records Managers and Administrators, March 18.

Dr. Robert A. Kilgore, for his presentation on Wind Tunnel Experiment Test Techniques to the Hampton Rotary Club, March 19.

Frank Quinto, for his presentation on Toys In Space to the Francis Asbury School, March 19.

Frances and Charles Meissner, for their participation as Science Fair Judges at Tabb Elementary School, March 19 & 24.

Bob Pegg, who gave a presentation on the Aerospace Plane to the York Lions Club, March 26.

Celebrating 70 Years of Research

The Challenge of High-Speed Aerodynamics

Throughout World War II, Langley researchers realized the need for refinement of conventional aircraft technology, as well as the need for basic research into the areas of high-speed aerodynamics. During this challenging period of transonic research many techniques evolved, including Robert R. Gilruth's "wing-flow" technique. After hearing test pilots talk about seeing a "shock wave" on the airplane's wings, Gilruth believed that the supersonic flow region that existed on wings at supercritical flight speeds could be used as a test environment. (Above Photo) NACA test pilots in front of XP- 51. (L to R) Jack Reeder, Herbert H. Hoover, Mel Gough, William E. Gray, Jr. (1943)

March Bloodmobile Report

A total of 341 Langley employees, retirees and contractors donated pints of blood at the March 25 visit of the American Red Cross Bloodmobile.

Achieving gallon status, were:

11 gallons — Ray Haynes and Stanley Pearce.

9 gallons — Robert A. Bruce.

8 gallons — Daniel J. DiCarlo.

7 gallons — Kenneth Voss and Earl Knight.

6 gallons — Edward S. Bradshaw.

5 gallons — Robin Rubrecht, Robert Miserentino, Robert L. Calloway, Robert Daugherty, Spencer Johnson and John Simpson.

4 gallons — Otto Ripley, Maureen B. Tracey, Andrew Forbes, Darlene Mays, Jerry Wright and Janice McCollum.

3 gallons — Mark Frye.

2 gallons — Douglas Arbuckle, Stephen Jumper, Franklin Edwards, Sandra Glenn, Henry Freeman, Alan Scheidegger, Charles Henderson and Richard Bloxam.

1 gallon — Veronica Kmetz, Diane Tingen, James Bronson and John Covington.

1st Timers — James Gormsen, Peter Spence, Mark Jones, Brad Leighty, Stephen Jones, Ellen Brantley, Amy Copley, Lynn Purkiss, Cheryl McVicker, Gerald Alexander, Karen Burck, Carroll Lewis and James Anderson.

Coordinators for the visit were Annette L. Forrest, NASA, and Morylin Asby, Redcross.

American Heart Association CPR Classes Changed

The American Heart Association (AHA) Cardiopulminary Resuscitation (CPR) classes have been significantly changed to implement new standards and guidelines. These changes present a more effective approach to reducing lives lost to sudden, unexpected death.

Due to these changes, Langley CPR and Basic Cardiac Life Support (BCLS) recertification classes have been delayed. Many current AHA certifications have expired and because the new standards and guidelines involve new techniques, teaching materials, and equipment, very few current certifications exist. Therefore, Langley will be conducting the applicable new Basic Life Support (BLS) courses from 8 a.m. to 4:30 p.m. on April 30-May 1 in Building 1212, Room 200; and May 12-13 in Building 1222.

Some of the changes in CPR technique include: adoption of the head-lift/chin-lift method as the only open-the-airway technique recommended for the lay public; use of two initial ventilations at 1 — 1.5 seconds per breath instead of four quick breaths for adult, child, and infant CPR; increase the compression rate to 80-100 compressions per minute in adult CPR; adoption of the Heimlich maneuver for relieving foreign body airway obstruction in children; introduction of newly established guidelines for child CPR; and relocation of the compression point on the infant to one fingerbreadth below the imaginary intermammary line.

The course structure also has been changed. No longer are there CPR (Heart Saver) and BCLS (Heart Rescuer) courses. Instead, there are a series of alphabetically identified Basic Life Support courses. Those courses which are applicable to Langley are:

BLS Course A (for lay persons) — one-person adult CPR and obstructed airway.

BLS Course B (for lay persons) — one-person adult, child, and infant CPR and obstructed airway.

BLS Course C (for health care and professional rescuers) — one- and two-person adult, child, and infant CPR; obstructed airway; and airway maintenance (taught by Health Office only).

BLS Course D (specialized pediatrics) — one-person child and infant CPR and obstructed airway (taught by Day-Care Center only).

Langley will conduct single BLS classes to initially certify and recertify both AHA BLS courses A and B competency. BLS course A (initial certification) and BLS courses A and B (recertification) should take only one day; BLS course B (initial certification) should take two days.

New child mannequins have been ordered and received. New instruction booklets and an updated film also have been received.

Enrollment in Langley CPR classes is open to NASA employees, contractors and their family members. To enroll in one of the above classes you must: 1) get the approval of your immediate supervisor, and 2) call the Training Office, ext. 2611. Since enrollment may be large, class attendees should enroll by April 22, so the size of the classes can be controlled.

In Memoriam

Condolences are extended to the families of:

Dr. Kennedy F. Rubert, who died February 20. Rubert, who retired in 1973, was the former head of the Internal Aerodynamics Branch and Hypersonic Research Engine Project.

LaVern E. Winn, Sr., who died March 26. Winn retired in 1975 after 33 years of service. He worked in the Fabrication Division.

Warren W. Thomas, who died March 24. Thomas, who worked in the Instrument Research Division, retired in 1976 after 42 years of service.

Notes of Thanks

Raymond (Pete) DeLozier writes:

"I would like to give special thanks to the people who organized the retirement luncheon in my honor, and to all those who attended and contributed to the wonderful gifts. It is something that I appreciated and will be remembered all my life because it came from friends."

Candace M. Rogers, whose husband Walter L. Rogers was employed at Langley until his death, would like to thank those employees who sent cards, flowers and food. Your kindness was very much appreciated.

TDT DEVELOPMENT TEAM RECEIVES AWARD. The Wyle Laboratories team developing the new TDT data system was recently honored with a NASA award. Charles Bryant presented team members with Langley Certificates of Appreciation for their outstanding work in conducting an integrated system demonstration. Pictured (L to R) in the front row are: Charles Bryant, NASA Project Manager; Richard Paradis; Erin Moran; Patricia Patrinely; John Iacobucci, Wyle Project Manager. Back Row: Byron Stonecypher, Joe Old, Joe Boyle, Ray Tackett and Jeff Leischner. Team members not shown were Marta Fenn and Silvio Fernandes.

Happenings

COUNTRY-WESTERN DANCE CLUB. The NASA Country- Western Dance Club will hold a dance at the Activities Center, Saturday, April 18, from 7:30 to 11:30 p.m. Come join the fun and fellowship.

REVISED CEBAF SEMINAR. Dr. Regis Babinet (Saclay) will present a seminar entitled, "The 4π Detector Diogene: Perspective for Future Use at the Saturne II Facility," Monday, April 13, at 1:30 p.m., in ROOM 53. All members of the CEBAF staff and the public are welcome.

LAA EXECUTIVE BOARD will meet Tuesday, April 14, at 11 a.m. in the Activities Center.

LIGHTER-THAN-AIR — NAVAL AIRSHIP PROGRAM. The American Helicopter Society, Hampton Roads Chapter, will host a Naval Airship Program featuring Commander Jerome P. LaReau, Advanced Development Project Officer, Naval Air Systems Command. LaReau, who acts as the Project Manager for the Naval Airship Program, will review the history of Navy experience with lighter-than-air craft and the current program to develop a replacement for the ZPG-3W, which was the last big Navy airship. The program will be held Wednesday, April 15, at the Sheraton Inn-Coliseum, with lunch beginning at 12 noon. Reservations must be made by 4 p.m. on April 13. For more information, contact Sandy Shackelford, 878-5703/2413.

SOCIAL. All ex-employees are invited to the Third Annual Get-Together at the Langley Activities Center, Saturday, April 25. No charge. Enjoy the social with Charlie Johnson's orchestra. For information call 877-2939.

NASA LANGLEY TOASTMASTERS CLUB will meet Wednesday, April 22, at 11:30 a.m. in the Activities Center for its regular semi-monthly meeting. If you are interested in developing new public speaking skills while retaining your old ones, please come and join us. Contact Steve Yaros, ext. 2673, for further details.

CEBAF SEMINAR. Dr. E. W. Otten, University of Mainz, Germany, will present a seminar entitled, "Test of the Electroweak Interaction by Quasi-elastic Electron Scattering from B_9 Nuclei," Friday, April 24, at 11 a.m. in CEBAF Room 53. For more information, call 875-7800.

LRC TENNIS CLUB. The outdoor tennis season is here! Join the Langley Tennis Club for some great tournament competition, ladder challenge matches and instruction classes during the spring and summer months. Pick up a membership form at the LAA office, or call Everitt Brown, ext.2771, or Tom Yager, ext. 2796, for further information.

LAA SOCIAL. The Langley Activities Association will hold a social on Friday, April 17, beginning at 6:30 p.m., in the Activities Center.

AIAA SPRING FIELD TRIP. This years trip will be to Airship Industries, USA Ltd. in Weeksville, North Carolina, Tuesday, April 28. Airship Industries, USA Ltd. is currently building and testing airships at the old blimp base in Weeksville, near Elizabeth City. Along with a briefing on the renewed interest in blimps, the Section will also be given a tour of the blimp facility. The program is limited to 46 people on a first come, first served basis. The bus will leave from the Langley Activities Center at exactly 12 noon and return at approximately 6 p.m. on April 28. For reservations call Gary Price at 898-4198 (home) or ext. 2932 (work).

FUNDAMENTALS OF SPACE SYSTEMS DESIGN. The AIAA Hampton Roads Section Invited Lecture series will present Fundamentals of Space Systems Design, Monday and Tuesday, May 18- 19, at the Activities Center. The lecture series will present state-of-the-art surveys in various technologies requried in space systems design. The presentations are by leaders from research and industry who are involved in current design practice. They will define the present state-of-the-art, current problems and future directions in their activities. Pre- registration is requested. For more information, contact S. M. Joshi, ext 4591.

SAVE WITH LAA DISCOUNT TICKETS. The Langley Activities Association offers a number of ways to enjoy area attractions at reduced rates. Discounted tickets are available for MOVIES, BUSCH GARDENS, TIDEWATER DINNER THEATER, COLONIAL WILLIAMSBURG and KINGS DOMINION. For more information, stop by the Activities Office.

THE NEWPORT NEWS HISTORICAL COMMITTEE will hold a dedication ceremony at the Victory Arch, Sunday, May 31. A new plaque listing war casualties that were previously unknown will be unveiled. The ceremony will honor all soldiers listed on the Peninsula Honor Roll from WWI, WWII, the Korean Conflict and the Vietnam War. The Committee is asking for assistance in locating family members of these soldiers. If you have any information write to: Victory Arch Names, c/o War Memorial Museum, 9285 Warwick Blvd., Newport News, VA 23607.

MARCH OF DIMES TEAMWALK. AFGE 2755 is sponsoring a NASA Teamwalk for the March of Dimes Teamwalk America. The walk will be Sunday, April 26, on the trails in Newport News Park. It is a 25 kilometer (16 miles) walk from 8 a.m. to 3 p.m. There will be periodic rest stops offering free doughnuts, soft drinks, water, popcicles and free hamburgers and drinks at the end. Portable bathroom facilities will be placed at each rest stop. The walk is open to all NASA employees and contractor personnel and their families. Special T-shirts are being considered for the occasion. Those interested should call Bob Garletts, ext 2771, to sign up and receive a sponsor sheet.

THUNDERBIRDS AT LANGLEY AFB. Don't miss the thrill and excitement of the Thunderbirds, the U.S. Air Force aerial demonstration team, which will headline Langley Air Force Base's Community Appreciation Day, Sunday, May 10, from noon to five p.m. Demonstrations by F-15 and A-10 aircraft are also planned, along with displays of the Air Force's most advanced aircraft and exhibits by base units and by aerospace corporations. Admission and parking are free.

THURSDAY NIGHT BINGO. Begins with an early bird special at 7:10 p.m., followed by regular games at 7:30. At the Langley Activities Center. Anyone interested in working as a bingo caller, contact Eugene Hicks, ext. 3737.

TEACHER RESOURCE CENTER EXTENDS HOURS. Beginning Tuesday, April 28, the Langley Teacher Resource Center will remain open until 6:30 p.m., on Tuesdays only. The facility, which makes available instructional materials such as lesson plans and video tape programs, is a public service available exclusively to educators.

NASA INTERCENTER COMPETITION. The NASA intercenter competition is now being held with races on the following dates: the 10 KM races on April 13, 23 and 27; and the 2-Mile races on April 13, 14, 20, 22 and 29. All races start at 5 p.m. on Doolittle Road, except the 2-Mile races on April 14 and 22. The April 14 race will be run at Bethel HS track at 12 noon and the April 22 race is a walkers special and will start at 4:40 p.m. on Doolittle Road. All NASA employees, retirees, on-site contractors and co-ops at work can earn points for Langley by participating. For more information about the races or the Runners Club, call Richard Shearer, ext. 4621.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Baals to Speak on History of Wind Tunnels

The Visitor Center and the AIAA-Hampton Roads Section Student Branch will co-sponsor a Guest Lecture Series on Aerospace Sciences throughout the Spring and Summer, featuring a variety of experts in aerospace technologies. **Donald D. Baals,** noted aeronautical engineer, will be the opening speaker for this special series. Baals will discuss "The History of Early NACA Wind Tunnels," Wednesday, April 22, at noon, in the Visitor Center main theater.

Man, from the earliest times, has aspired to fly. Men with vision realized they needed a machine to replace nature's unpredictable winds with a steady, controllable flow of air to test their flying machines. Baals, in his book *Wind Tunnels of NASA*, puts it this way: "The wind tunnel is indispensible to the development of modern aircraft. Today, no aeronautical engineer would contemplate committing an advanced aircraft design to flight without first measuring its lift and drag properties and its stability and controllability in a wind tunnel. Tunnel tests first, free-flight tests later, is the proper order of things."

An aeronautical engineer with more than 40 years of wind tunnel experience, Baals has been

with NASA and its predecessor, the National Advisory Committee for Aeronautics (NACA), since 1939 and has continued to serve the agency as a senior research associate since his retirement in 1975. The many honors he has received include the NASA Medal for Exceptional Service and the NASA Public Service Award for his role in planning the National Transonic Facility.

cafeteria menu

Week of April 13-17

MONDAY: Mexican bean soup, chopped steak, sea trout almondine, chicken parmesan. Snack Bar: Chicken filet, pizza supreme.

TUESDAY: Minestrone soup, baked Italian lasagna, grilled pork loin, blackened fish. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, shrimp creole, beef liver & onions. Snack Bar: Chicken filet, grilled ham & cheese.

THURSDAY: Chicken noodle soup, Mexican dinner, ham & Swiss quiche, meat loaf. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.

FRIDAY: Bull Island clam chowder; fish dinner; beef, macaroni & tomatoes; chicken & dumplings. Snack Bar: Chicken filet, hot Italian sausage.

Week of April 20-24

MONDAY: Split pea soup, veal parmesan, seafood gumbo, Cajun fried chicken. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & rice soup, spaghetti & meat sauce dinner, sweet & sour pork, seafood quiche. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, baked stuffed trout, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, crab cake sandwich.

THURSDAY: Chicken vegetable soup, roast turkey dinner, stuffed flounder, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder, fish dinner, chuckwagon steak, baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, pizza pocket.

swap and shop

FOR RENT

RIVERDALE, on small creek, 10 minutes from Langley, brick rancher, 3 BR, 1 1/2 BA, LR w/FP, DR, eat-in Kitchen, den, garage, patio, large corner lot with fruit trees and garden plot, CA, gas heat, some furnishings and appliances available. Lease and deposit required, no pets. $550/month. Available June 1. Call 868-6453.

VACATION HOUSE in secluded, uncrowded area of Northern Outer Banks of North Carolina. Large living rm, 4 BR, 2 BA, CAC, DW, W/D. Spacious decking, including screened deck and upper level sundeck. Located in Corolla, 3rd lot back from ocean. $400 to $800 a week. Call J. Davis, ext 4631.

23' MINI-WINNEBAGO MOTOR HOME, fully self contained, sleeps 6, 4kw generator, dual air, $300 week — Daily/weekend rates available. 599-5408 after 5 p.m. for details.

WANTED

SMALL MALE SHELTIE, Thoroughbred, tricolors, to breed with our very small thoroughbred female sheltie. Contact Pat Gates, ext. 2058, or 838-0770.

FOR SALE

MOBILE HOME, '82 14 x 70, immaculate 2BR, enormous kit w/bay window, large BA, deck w/bench, LR w/FP, shed, stove, AC included. $18,300 OBO. 867-8624.

National Aeronautics and
Space Administration

Langley Research Center

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Langley Researcher

Volume 26, Issue 8 **April 24, 1987**

Small Business Program Working for Langley

In 1981, Joe Heyman, Head of Langley's Material Characterization Instrumentation Section, began talking about an idea he had to incorporate computer tomography with materials testing. He thought that if you could see the material in 3-D you could see just how it was failing. By seeing the structures inside the materials in real time, you would be able to study the growth of damage, thereby opening a new aspect in the field of materials.

Dr. Heyman's problem was getting the project funded. That's where the Small Business Innovation Research (SBIR) program came into the picture.

Congress, to stimulate technological innovation in the United States, and increase participation of small high-technology firms (defined as companies with fewer than 500 employees), enacted the "Small Business Innovation Development Act of 1982," requiring federal agencies with more than $100 million in extramural research and development funds to establish a Small Business Innovation Research program. The federal agencies, including NASA, would phase in over four years, an eventual 1.25 percent-of-R&D budget SBIR set aside for small business.

Divided into three phases, the SBIR program allows small businesses to take innovative risks, without a huge investment. Phase I selections are awarded contracts of $50,000 or less, with a six-month projected time frame. Phase II extends the development of promising Phase I projects, with a maximum award of $500,000 and a performance period of two years. Phase III, commercialization, usually does not involve federal funds.

The SBIR program provided Joe Heyman with a means of getting his concept under development. In response to an SBIR solicitation, a small business proposal was submitted in 1984. Selected by NASA as a Phase I project, the concept was proven successful and has recently been awarded a Phase II contract. The system that is being designed during Phase II will be installed in the new Non-Destructive Evaluation facility. In ten years, says Dr. Heyman, "I think every major materials lab will own a machine — Langley will demonstrate that this is the way to do materials . . .and time will prove that this (the SBIR program) is the way to do innovative research."

In 1986 NASA received over 1600 proposals, 383 of which were submitted under Langley's subtopics. After technical evaluation of the proposals, Langley's SBIR Program Committee, including Chief Scientist Jerry South, and his Technical Assistant Ed Prior, all directorate Technical Assistants and SBIR Program Manager Thayer Sheets, prioritized the proposals according to Langley's interests. NASA's Office of Commerical Programs, NASA Headquarters, then decided which proposals to fund. Since the program has begun, says Thayer Sheets, Langley has received 89 Phase I and 32 Phase II projects, for a combined value of over $19 million. Of this total, almost $14 million has been received by the Center in the past two years, representing the most Phase II funded proposals for any center in the agency.

Bob Kilgore and Pierce Lawing, of the Transonic Aerodynamics Division, view the program as a means of getting funding for research that is vital to their technology base, yet doesn't necessarily fall under their department.

An example is a problem they encountered while trying to construct an airfoil model with cryogenically compatible materials that were unfamiliar to the model maker. What was needed was an airfoil pressure model that was

Continued on Page 2.

Guess who hopped into the cafeteria on the way to the Easter Parade? Cecelia Huffman, Manager of the Visitor Center Souvenir Counter, surprised diners with unexpected sweets just before the holiday.
photo by William C. Salyer, Jr.

Boyer Named Assistant Chief of PRD

Sadie L. Boyer has been selected as Assistant Chief, Programs and Resources Division, at NASA's Langley Research Center. In this position she serves as special adviser to the division chief for research and development resources management. Her assignments include studies related to Langley's resources management processes as well as responsibility for planning and overseeing special ad hoc resources exercises and submissions.

Boyer was previously Head, Research and Development Programs Branch, where she was the principal operating technical resources management analyst for the center's total R&D budget of approximately $200 million per year. She was responsible for coordinating, planning, programing and forecasting budget requirements and services for all R&D funds received at the center.

A member of the Langley staff since 1958, she has also served as a mathematician and an aerospace technologist.

The co-author of two technical publications, Boyer has received five achievement awards for her work in technical resources management and analyses and for developing advanced computer software. In 1986 she received a NASA Exceptional Service Medal "for exceptional dedication and service in support of LaRC's research and development program management and conceiving an Automated Resource Planning System."

Boyer received a bachelor of arts degree in mathematics in 1958 from Winthrop College, Rockhill, S.C.

She is married to Dale B. Boyer and lives in Carrollton.

SBIR Program

Continued from Page 1.

accurate in contour and had a high degree of dimensional stability during large swings in temperature and force levels. The surface edge of the model had to be very good due to the high Reynolds number capability.

What evolved from their work was the development of the "Bonded Plate Method" of constructing airfoil pressure models. Through the SBIR program, they were able to test this method further, obtaining more advanced data and a useable model that proved to be very cost efficient.

Along with this project, which is in Phase II, Kilgore and Lawing are also working with two other Phase II projects. One of these, the Magnetic Suspension and Balance System for Large Tunnels, has an initial cost savings of over $60 million. The second, which involves the recovery of liquid nitrogen from cryogenic tunnels, has the potential to cut operating costs by 5-10 percent. Kilgore and Lawing agree that the program would not be so beneficial if it were not for the good relationship they maintain with the small business contractors involved.

Ed Prior, who has been involved in the program since it began at Langley, attributes the program's success to three sources. Although there were reservations about the program when it began, says Prior, the strong foundations laid by Bob Tolson, who was then Chief Scientist, helped to establish the SBIR at Langley. Jerry South, current Chief Scientist, continues to keep the program strong and solid, says Prior, and Thayer Sheets has been extremely valuable to the program.

By 1988, more than 2000 Phase I and 1000 Phase II projects, with a combined value of over $500 million, are expected to be in progress throughout the 12 participating federal agencies. Originally scheduled to run through 1988, Congress has voted to extend the program through 1993. "This program is giving some of the most creative companies in the United States a chance to prove ideas that may be too risky for the venture capital community," says Thayer Sheets, "as awardees carry out research for the government, they will strengthen their credibility among private investors."

Among the popular topics for SBIR projects are those involving the development of advanced solid state laser materials and lasers associated with LIDAR (Light Detection and Ranging) Projects at Langley. Frank Allario, Chief of the Flight Electronics Division, says LIDAR-related technologies are a hot topic among small innovative businesses. Because of the national effort that has evolved around developing these advanced materials, says Allario, there has been a lot of "entrepreneurial activity." The SBIR program encourages good, innovative ideas.

The Flight Electronics Division, according to Art Newcomb, is working with seven active SBIR projects, all LIDAR related. Five of the seven, says Newcomb, the technical representative to the contracting officer (TRCO), are Phase II projects.

Bob Swann, Chief Scientist in the Materials Divison, and an SBIR program Subtopic Manager for composite materials, believes the program is a positive way "to be stimulating the outside." Associated with five SBIR projects within his division, Swann says that last year they received 48 proposals in the materials subtopics alone. This year, 15 percent of his budget is from the program.

One of the SBIR projects the Materials Division is currently working with involves the "rapid solidification melt overflow techniques" for high-temperature thin-guage materials. Barry Lisagor, Head of the Metallic Materials Branch, described the project and its applications for long-range hypersonic vehicles, such as the aerospace plane or Shuttle II. "Phase I demonstrated that we could produce a strip of this material," said Lisagor, "Phase II will include the development of equipment and facilities."

A fresh way to fund research, the SBIR program is proving to be a valuable tool for NASA and the other participating agencies. It is helping research efforts and keeps the Center in touch with outside technology. The return on investment goes beyond dollars.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Fisher of Langley on Investigation Team

Bruce D. Fisher of Langley Research Center is part of the team investigating the March 26 loss of the Atlas Centaur 67 mission. The team will issue a report, to include findings and recommended actions, on May 25.

Chairman of the team is Jon R. Busse, director, Office of Flight Assurance, Goddard Space Flight Center (GSFC) Greenbelt, Md. Other members are: Kenneth J. Cox, chief, Avionics Systems Division, Engineering Directorate, Johnson Space Center (JSC), Houston; William C. Bradford, director, Information and Electronic Systems Lab, Science and Engineering Directorate, Marshall Space Flight Center (MSFC), Huntsville, Ala.; Creighton A. Terhune, Integration Office, Payload Management and Operations Directorate, KSC; Norman C. Wenger, chief, Instrumentation and Control Technology Office, Aeronautics Directorate, Lewis Research Center (LeRC), Cleveland; Robert C. Baumann, deputy director, Flight Projects Directorate, GSFC; Lt. Col. John Kim, commander, Weather Detachment, Eglin AFB, Fla.; Col. John W. Allsbrook, USAF, FLTSATCOM System Program Director, Space Division, Los Angeles AFS. Fisher is part of the Flight Applications Branch, Low-Speed Aerodynamics Division at Langley.

Team members have specialties in structures, avionics, expendable launch vehicles, weather and lightening. None of them were involved in the launch.

The flight of Atlas Centaur 67, carrying a Navy satellite, ended 51 seconds after an apparent normal countdown and liftoff, when it began to tumble. It was destroyed by the Range Safety Officer at 14,250 feet in altitude.

Key Positions

Robert M. Ely has been selected Supervisory Engineering Technician, Technical Support Section "B," Laboratories Operations Branch, Operations Support Division, under CPP 87-8.

James D. Smith has been selected Head, Technical Support Section "B," Laboratories Operations Branch, Operations Support Division.

The testimony of a good conscience is worth more than a dozen character witnesses.

News Around NASA

JOHNSON–JPL — **MARS SAMPLE RETURN.** Two NASA centers are studying concepts for designing and building a robot space vehicle to travel to Mars, explore its surface and return with an 11-pound sample of rocks and soil. The centers are the Johnson Space Center in Houston and the Jet Propulsion Laboratory in Pasadena, Calif. Human exploration of Mars, following the robotic missions, is one of four space initiatives being studied by NASA to help the nation determine its next goal in space. The other initiatives are: expanded Earth systems study, enhanced solar system exploration and a permanent scientific base on the moon. If approved and funded, the sample-return mission would be launched in 1998 and return with the sample in 2001. NASA allocated $1.2 million for studies of this in 1987-1988.

HEADQUARTERS — **APPOINTMENTS OF ASSISTANT DEPUTY ADMINISTRATOR AND COMPTROLLER.** C. Thomas Newman has been appointed to the position of Assistant Deputy Administrator, with Thomas Campbell replacing Mr. Newman as Comptroller. As senior official in the Office of the Administrator, Newman's responsibilities will include assisting the Administrator and Deputy Administrator in the areas of general oversight of the Agency program and financial plan, internal program approval and monitoring and obtaining OMB and Congressional approvals of budget and operating plans. Newman had previously served as comptroller since 1981; Campbell has served as Deputy Comptroller since that time.

NASA SIGNS COMMERCIAL AGREEMENT WITH GENERAL DYNAMICS. NASA has signed the first U.S. government agreement transferring commercial operations of an expendable launch vehicle (ELV) to the private sector. The agreement is with General Dynamics Space Systems Division, San Diego, Calif., for the Atlas/Centaur launch vehicle. The agreement transfers authority to General Dynamics to use NASA-controlled facilities and capabilities for commercial manufacture and launch of the Atlas/Centaur.

HEADQUARTERS — **SHEEHAN NAMED ASSOCIATE ADMINISTRATOR FOR COMMUNICATIONS.** William Sheehan has been appointed Associate Administrator for Communications, NASA Headquarters, effective May 4. In this position, Sheehan will be the principal advisor to the Administrator and Deputy Administrator on public affairs matters. He will be responsible for policy level management and direction of NASA's public affairs, television development and internal communications organizations.

ISRAELI BIOLOGY EXPERIMENT TO FLY ON SPACE SHUTTLE. NASA and the Israel Space Agency (ISA) recently signed an agreement to fly the first Israeli space experiment on the Space Shuttle, on a space-available basis once Shuttle flights resume. The experiment, "Gravity Perception by Hornets and Their Reactions to Change in the Force," is in response to a NASA notice on emerging opportunities in the Space Biology Program. The investigation project, known as "Isaiah," is designed to determine the effects of gravity and most importantly, weightlessness on orientation, reproduction capability and social activities. Differences in the semiconductive properties of the hornets outer shell and venom toxicity between space-exposed and ground-controlled animals also will be tested. This experiment will determine if spaceflight changes the photo-thermo conductive properties of the outer shell, the method by which hornets send impulse signals to various parts of the body.

Research Seminar

NTU Research Seminar, "Challenging Research Opportunities (The Picture To The Year 2000)," will be broadcast live via the NTU Satellite Network, Tuesday, May 19, from 12 noon to 1:45 p.m. in Building 1194A, Rooms 203/204 and 109/110. The seminar will be given by Dr. M. L. Millett, Chief Engineer of the Naval Airship Program for the Boeing Wichita Company.

Opportunity exists in a number of areas to conduct research directly applicable to the development of sophisticated weaponry with many direct applications to commercial products.

This seminar outlines the most promising areas to advance the state of the art and insure continuing U.S. leadership in technology.

For additional information, please contact your Training Coordinator.

Pioneer 12 Measuring Newly-Discovered Comet

NASA's Pioneer 12, orbiting Venus, is in the middle of six weeks of measuring the newly-discovered Comet Wilson as it streaks by the planet and the sun.

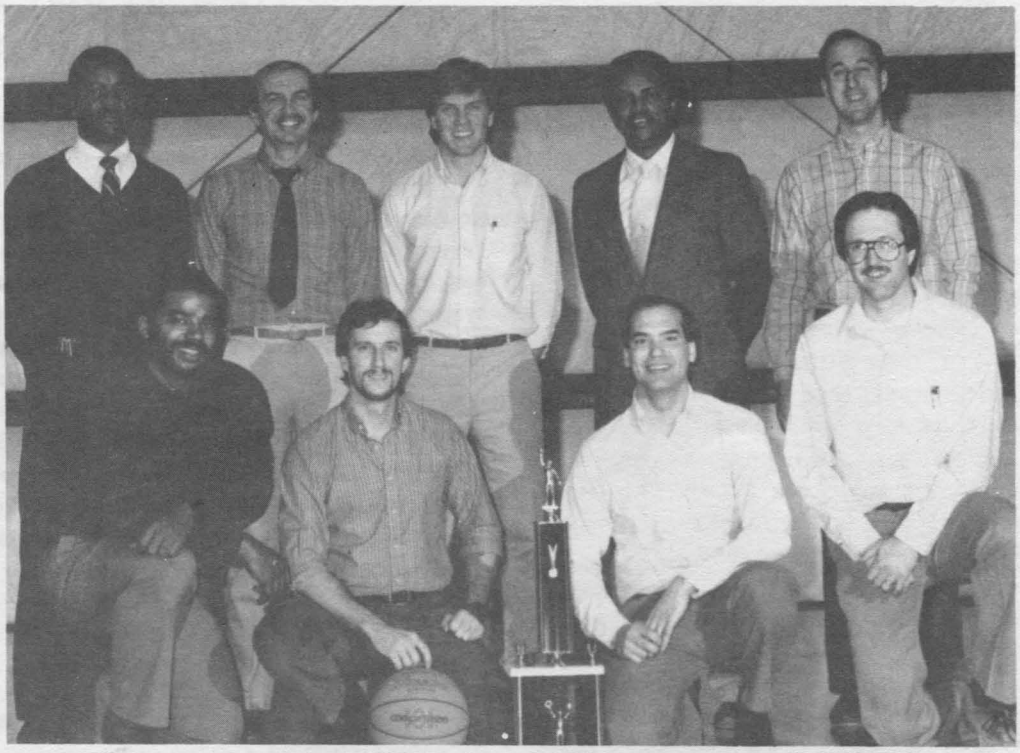
Controllers at the Ames Research Center in Mountain View, Calif., will use the spacecraft to track the comet for about 20 hours per day until April 30. This time will include the comet's closest pass to the sun.

Pioneer 12 will measure the rate of water evaporation from the comet's nucleus and the amount of carbon and oxygen emitted by studying it in the ultraviolet portion of the electromagnetic spectrum. This data will help scientists learn how comets change over time.

Wilson, discovered in 1986 by Christine Wilson, a Ph.D. candidate at the California Institute of Technology, is considered a fresh comet. This means it has not been modified by the sun and may provide a better record of primitive conditions in the solar system.

The Wilson observations are the fourth time Pioneer 12 has been used in comet studies. The previous times are: Halley in 1986; Giacobini-Zinner in 1985 and Encke in 1984.

Scientists do not know if Wilson will return to this solar system. Its orbit has been traced to a parabolic curve, which means it will not return. If the orbit is elliptical it may return periodically.



The 1987 Champions of the NASA Basketball "A" League are the SHOCKERS, the first team to win the championship in the newly constructed gymnasium. The SHOCKERS, shown above, are: (front row, L to R) Tony Brooks, Barry Gibbens, Paul Roberts and Bill Larson; (second row, L to R) Roger Hathaway, Don Randall, Len Bailey, Zach Applin and Steve Pillow.

Martial Arts Classes Offered

Martial arts, which evokes images of violence, can be very helpful to people, providing cardiovascular exercise, self- defense, mental discipline and holistic body training.

The Langley Oriental Martial Arts Club (LOMAC) provides this training in 'Cuong Nhu', a new form combining Vietnamese (Vovinam), Chinese (Wing Chun and Tai-Chi), Japanese (Judo, Shotokan karate and Aikido) and boxing martial arts forms. It was developed by Dr. Ngo Dong of the University of Florida.

Classes are available for everyone from beginners to those with black belts. They will be from 5 to 6:30 p.m. Mondays and Wednesdays, beginning May 4 at the new gym. For more information call Roy Albang at ext. 3737 or Guillo Gonzalez at ext 4621.

NASA TECH BRIEFS AWARDS. Charles P. Blankenship (center) Director for Structures, presents NASA Tech Briefs Awards to Kevin W. Noonan (left) and Harold G. Bush. Noonan was recognized for his work on "High Lift, Low Pitching Moment Airfoils;" Bush was recognized for his work, "Seamless Metal Clad Organic Matrix-Graphite Fiber Composites Tubes."

NASA TECH BRIEFS AWARDS. Dr. Gerald D. Walberg (right), Chief, Space Systems Division, presents a NASA Tech Briefs Award to Donald H. Humes for his work on "Time, Direction and Composition of Impacting Space Dust."

Call for Papers

FIBER-TEX 87, a conference on advanced engineering fibers and textile structures for composites, is being jointly sponsored by NASA and the Advanced Engineering Fibers Laboratory of Clemson University. The conference will be held November 3–5, at the Hyatt Regency, Greenville, South Carolina.

Sessions will be planned covering developments in the areas of Fiber and Whisker Precursor Materials and Production Methods; Engineering Mechanics of Fiber, Whiskers and Composite Materials; Structural Fabric Production Machinery and Production Methods; Composite Matrix Materials; Composite Structures and Production Methods; and Future Applications of Composites.

General Chairman for the conference will be Jerome Persh, Office of Undersecretary of Defense (Research & Engineering), DOD. John D. Buckley of NASA Langley, along with Dan D. Edie from Clemson University, will serve as Technical Program Chairmen.

A one-half page abstract should be submitted for acceptance prior to June 30, 1987. Accepted papers will be notified by July 17, 1987. Send Abstracts to: Dan D. Edie, Advanced Engineering Fibers Laboratory, Earle Hall, Clemson University, Clemson, SC 29634-0909.

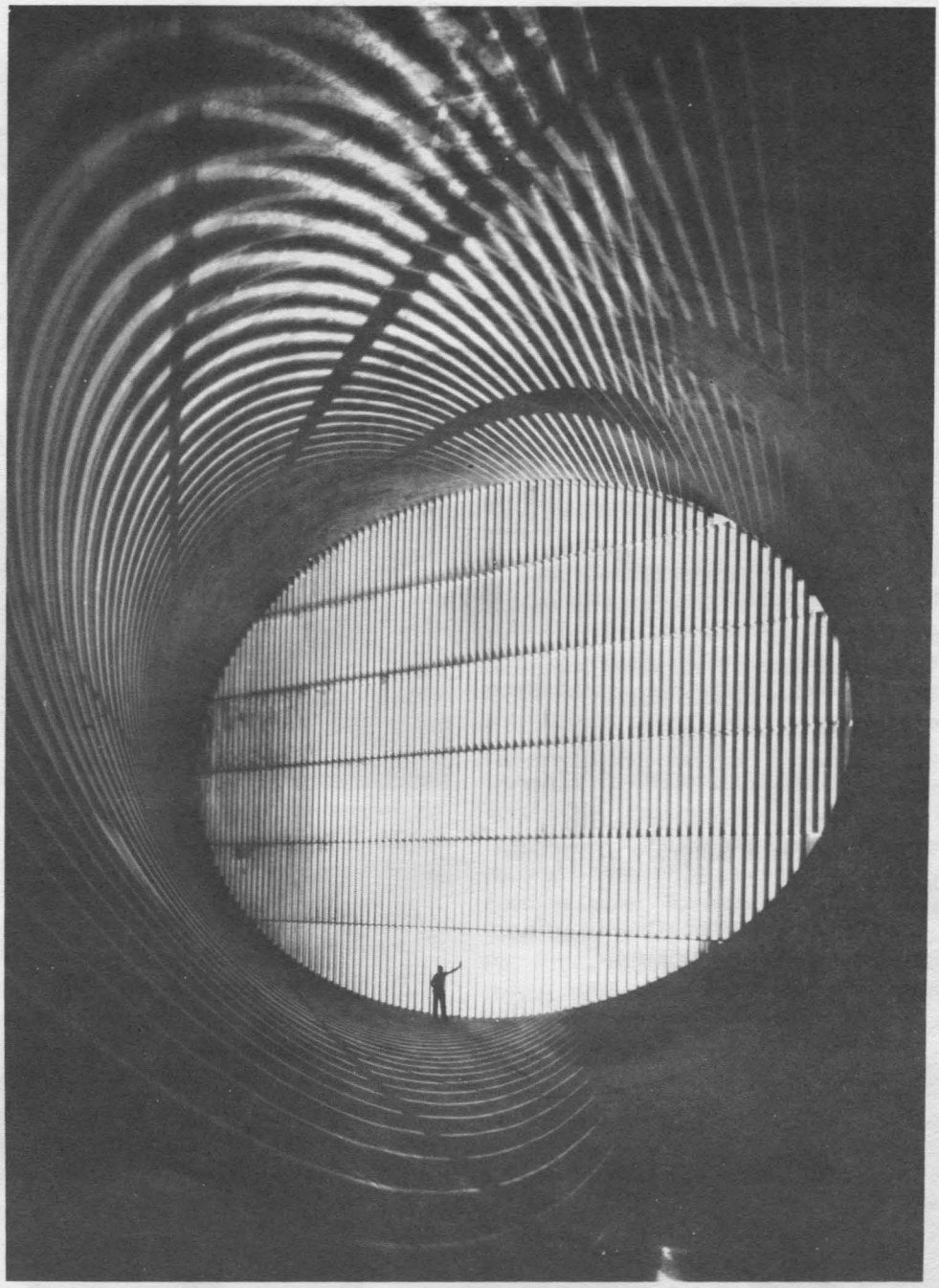
TRCO's Take Note

Beginning in 1987, Technical Representatives of the Contracting Officer (TRCO) have an increased potential for selection as an annual Technology Utilization Awardee.

The Technology Utilization Awards are presented each year to the individual and division that has contributed the most to the Technology Utilization Program. Selection is based on established weighted criteria for many of the Technology Utilization Program functional elements.

Weighted criteria has been established in those cases where a TRCO identifies, *to the Technology Utilization and Applications Office,* new technology items that the contractor/grantee should report. Criteria is included for (1) the number of new technology items identified by the TRCO, and (2) the number of items reported by a contractor/grantee based on the particular new technology identified by the TRCO.

This action was initiated to further recognize the importance of the TRCO in helping to identify new technology that should be reported by NASA contractors and grantees. For more information, contact the Technology Utilization Office, ext. 3281.



Celebrating 70 Years of Research

Re-Shaping for Tomorrow's Challenge

During the war the 16-Foot High-Speed Tunnel (HST) tested various air-cooled aircraft engines, cooling systems, high-speed propellers, and even the shapes of the first atomic bombs. The first tunnel to receive the NACA's authorization for installation of a slotted-throat transonic test section (in 1947), the HST was not converted until 1950. Despite their limitations, the slotted throat tunnels (both the 8-Foot HST and the 16-Foot HST) became "best practice" in transonic research almost immediately. *Above:* **This picture shows the vanes that turn the airflow around one of the HST corners.**

Upcoming Symposium

The Symposium on Transonic Unsteady Aerodynamics and Aeroelasticity — 1987, will be held May 20-22 at the Langley Activities Center. For more information, contact Samuel R. Bland, Mail Stop 173, ext. 4236.

Learning Center Offers Self-Study Courses

The following new self-study courses are now available in the Learning Center:

FAST TRACK (Audio Tapes)

Power and Influence by John P. Kotter

Take a Chance to Be First by Warren Avis

CEO: Chapter 3–Walter Wriston by Harry Levinson and Stuart Rosenthal

Funny Money by Mark Singer

A Passion for Excellence by Tom Peters and Nancy Austin

Robert Half on Hiring by Robert Half

Ford: The Men and the Machine by Robert Lacey

The Intuitive Manager by Roy Rowan

The Intelligent Investor by Benjamin Graham

How to Make a Speech by Steve Allen

Predicting Executive Success by Melvin Sorcher

Augustine's Laws by Norman R. Augustine

Made in Japan by Akio Marita

Phone Power by George R. Walther

Innovation and Entrepreneurship by Peter F. Drucker

Breakpoints by Andrew Sherwood

Fast Track is a summary of the best business books.

POWER OF EXCELLENCE: THE FORGOTTEN CUSTOMER
(with Tom Peters) (Video Tape, VHS)

MANAGEMENT VISION SERIES (Video Tape, VHS)

Intrapreneuring

Corporate Culture

Leadership: Management with a Vision

The Service Economy

The Changing Workforce: Strategies for Future Management

Visioning: Setting Management Strategy

For more information, please call ext. 3014.

Recent Retirees

John L. Price

George W. Johnson

George W. Johnson, Operations Support Division, retired April 10.

John L. Price, Systems Engineering Division, retired April 3.

1Lt Edward R. Hartman, AFSC Liaison Office, receives his captains bars during a promotion ceremony. Erin Hartman (left), Captain Hartman's wife, and Wallace C. Sawyer (right), HSAD, Fundamental Aerodynamics Branch, are shown pinning Captain Hartman.

Retirement Parties

A retirement dinner will be held for **Libby Bierie**, May 4, at the Langley Activities Center, with a cash bar beginning at 6:30 p.m., followed by dinner at 7:30 p.m. Cost is $12/single (including gift), $22/couple. Please send reservations and check to Fran Sabo, Mail Stop 410, ext. 2658, by April 27. Contributions to gift alone are welcome.

The retirement dinner for **John L. Price**, originally scheduled for April 20, has been rescheduled for Monday, May 18, in the Activities Center. Times and cost remain the same. For additional information and reservations, contact Faith Allen or John Wallace, Mail Stop 432, ext. 4666.

Note of Thanks

Raymond H. Womble writes:

"Thank you to all who came to the retirement party at the Fort Monroe Officer's Club. It was a most enjoyable occasion. Thanks also, to those who contributed but were not able to come. I appreciate your time and the momentos. And a special thank you to Jane Everett in Instrument Control, for the fine job she did in putting it all together."

Sympathy Is Extended

Sympathies are extended to the families of:

Joseph J. Evans, who died February 22. Evans retired from the Fabrication Division in 1979.

Katherine Hennessey, who died December 21, 1986. Hennessey, who retired in 1980, was a Mathematician in Aeronautics and a former EEO Counselor.

E. Elizabeth Johnston, who died April 9. Johnston retired in 1971 after 29 years of service.

Radio License Exams

Amateur radio license exams, required by the FCC for technician, general, advanced and extra class amateur radio licenses will be given at 1 pm May 2 at the Salvation Army Building, 1033 Big Bethel Road, Hampton.

Participants should bring form 610, a copy of their license, identification and $4.35. Checks should be made out to 'ARRL/VEC'. The examining team is provided by the Southern Peninsula Amateur Radio Klub and is accredited by the American Radio Relay League as the volunteer examining coordinator under the FCC.

For more information call Sid Evans, N4IIC, 851-5573.

Happenings

LAA SOCIALS. The LAA Social will be from 4 to 6:30 p.m. May 1, 29 and June 12 at the Activities Center. The May 15 social has been cancelled because of a scheduling problem with an official function.

LANGLEY FEDERAL CREDIT UNION Miss Virginia, Julianna Smith, will be the featured performer at the 51st Annual Meeting of the Langley Federal Credit Union at Tabb High School Auditorium at 7 p.m., April 28. Voting for the LFCU Board of Directors will be at 6:30 p.m. at the annual meeting and from 10 a.m. to 3 p.m. April 22-24 and 27-28 at the branch offices. Prime members age 16 and older may vote for four of the seven candidates. To be eligible to vote and win door prizes at the annual meeting, members must have an account in their own name; joint owners are not eligible.

FINAL RACES. A 10km race will be held April 27 and a 2-mile race will be held April 29 on Doolittle Road. Both races begin at 5 pm and are part of an intercenter competition. Walkers are welcome. All NASA employees, retirees, on-site contractors and co-ops earn points for Langley by participating. For more information about the races or the Runners Club, call Richard Shearer at ext 4621.

ADULT DANCE. The Poquoson Exchange Club is sponsoring an adult dance from 8:30 to 11:30 p.m. April 25 at the Poquoson High School gym. The cost is $10 to benefit the Exchange Club. Dress is informal and participants are invited to dress as they did in high school. Prizes will be awarded to the best dressers. Music from the '40s to the '60s will be provided by a disc jockey. Send checks, made payable to Poquoson Exchange Club, to The Poquoson Exchange Club, PO Box 2036, Poquoson, Va., 23662. For more information call 868-9882.

VIRGINIA CHORAL SOCIETY. The Virginia Choral Society will end its performing season with the 'Just for Fun' concert at 8 p.m. May 9 at Ogden Hall, Hampton University. The program will feature a variety of songs from the 1930s to modern Broadway. Admission is $3 at the door. For more information call 851-5515

ELECTRON SCATTERING LECTURES. Dr. J.D. Walecka's lectures on electron scattering have been revised to 1:30 to 3:30 p.m. in Room 53 at CEBAF, 12070 Jefferson Ave., Newport News. The dates are: April 17, May 29, and June 5, 12, and 19. The lecture on May 6 will be from 2:30 to 4:30 p.m. in Room 47.

CHILDREN'S THEATRE. The classic tale Charlotte's Web will be brought to life by the Atlanta Children's Theatre company April 23-25 at the Wells Theatre in Norfolk. School performances are at 10 a.m. and 1 p.m. on April 23 and 1 p.m. on April 24. Public performances are at 7 p.m. April 24 and 1 p.m. and 5 p.m. April 25. Tickets are $3.50 and can be purchased by calling the VSC office at 627-1234

LANGLEY TENNIS CLUB. The Langley Tennis Club ladder tournaments will start April 24-27 with the Men's Championship Ladder players. The All Players and Women's Singles Ladder Tournaments will be the first and second weeks in May, respectively. To join the tennis club and participate in these activities pick up a membership form at the Activities Association or call Tom Yager at ext 2796. A members get- acquainted social will be held at 4:30 p.m. April 29 at the tennis courts.

ASTRO NITE. On May 8, the Langley Skywatchers Astronomy Club will host an evening of celestial observing. The observing session will begin at 8 p.m. at the club observatory, Building 1231 (the former helicopter test facility), and continue until midnight. A variety of astronomical telescopes will be available and club members will be at hand to answer questions. If the evening skys are clouded over, the observing session will be postponed until the next evening, Saturday, May 9. All — family and kids —- are invited to enjoy an evening of observing the heavens.

ANNUAL SCOUT-A-RAMA. The Annual Scout-a-rama will be held Saturday, May 9, at the Hampton Coliseum, between the hours of 11:30 a.m. and 5 p.m. All are invited.

BASIC CARDIAC LIFE SUPPORT CLASS. Langley CPR and Basic Cardiac Life Support recertification classes will be held *April 30–May 1* in Building 1212, Room 200; and *May 7–8* in Building 1222. For more information, contact the Training Office, ext. 2611.

CEBAF SEMINAR. Dr. Oren Maxwell (Florida International University) will give a lecture entitled, "PION SCATTERING OFF OF HE ^{3}," May 1, from 9 to 10:30 a.m., in Room 47, CEBAF. All members of the CEBAF staff and the public are welcome.

COMMODORE USERS. Koala Pad Graphics System will be discussed at the NASA Commodore User's Group meeting at 4:30 p.m., May 7, in Building 1244, Room 223.

LINDBERGH EXPERT SPEAKS AT VISITOR CENTER. In celebration of the sixtieth anniversary of Lindbergh's non-stop, solo flight across the Atlantic, the Visitor Center presents William R. Camp, curator of the Cradle of Aviation Museum in Garden City, New York. Camp will discuss "Charles A. Lindbergh: An American Life," at 2 p.m., Saturday, May 2, in the main theater. A number of Lindbergh artifacts on loan from the Cradle of Aviation Museum will also be on display at the Visitor Center.

MARCH OF DIMES TEAMWALK. AFGE 2755 is sponsoring a NASA Teamwalk for the March of Dimes Teamwalk America. The walk will be from 8 a.m. to 3 p.m. on April 26 in Newport News Park. There will be free doughnuts, soft drinks, water and popsicles along the 16-mile walk and hamburgers and drinks at the end. The walk is open to all NASA employees and contract personnel and their families. Special T-shirts are being considered. For more information call Bob Garletts at ext. 2771.

LANGLEY TOASTMASTERS CLUB. Nervous about public speaking? Then take part in the next meeting of the Langley Toastmasters Club on May 6 from 11:30 a.m. to 1 p.m. in the Activities Center. For more information contact Steve Yaros at ext. 2673.

PIG PICKIN'. The Peninsula Chapter of the Virginia Tech Alumni Association is having a pig pickin 'May 30 at the picnic grounds of Sarah Bonwell Hudgins Regional Center (off Big Bethel Road). The cost is $8 for adults and $4 for children 12 and under. For tickets and information contact Mike Marcolini at ext 2645 or 826-8482, Joe Drewery at ext. 4933 or 722-4443 or Dave Conner at ext. 4313 or 723-5818.

SURRY POWER PLANT VISIT. The Hampton Roads Section of the American Institute of Aeronautics and Astronautics is sponsoring a trip to the Surry Nuclear Power Plant on May 18 from 11:30 a.m. to 5:30 p.m. Visitors will be briefed on the recent steam accident that resulted in several deaths. The topics include design and heat transfer problems, metallurgy, and operational considerations – all part of the same briefing given the Nuclear Regulatory Commission. Visitors will tour the turbine and reactor areas. Participants must make reservations by May 1 to Gary Price at ext. 2932 or home 898-4198. There will be security checks and participants must provide their full names, home addresses, Social Security numbers, citizenship, dates of birth and organization affiliations.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Langley Stocked Forms Announced

FORM NO.		
NEW		
LF 41	LaRC Directory Change Notice (Langley & Non-Langley Telephone and Personnel Locator Files) (Previously N-1307, N-1242A, and N-1242B)	March 1987
LF 71	Travel Requests Only (envelope)	Feb. 1987
LF 80	Management and Supervisory Performance Appraisal (Mid-Term/Interim Assessment)	March 1987
LF 94	Equipment Issue & Turn In	Jan. 1987
REVISED		
LF 2	Forms Supplies Requisition (Prev. edition is obsolete)	Feb. 1987
LF 3	Request for Additions of Supplies to Stock (Prev. edition may be used)	Jan. 1987
LF 35	Notice for Correction for T&A Report (Feb. 1984 Edition may be used)	Jan. 1987
LF 40	Property Disposition Storage Request (Prev. Edition may be used)	Feb. 1987
LF 69	Work Order (Prev. Edition may be used)	Jan. 1987
LF 95	Supervisor's Report of Accident (Prev. Edition is obsolete)	Feb. 1987
LF 114	Advance Notice Requirement for Travel to Australia, Canada, France, or the United Kingdom (Prev. Editions are obsolete)	Feb. 1987
LF 174	Standard Distribution List (SDL) Service Request (Prev. Edition may be used)	Feb. 1987
SF 1012A	SF 1012ATravel Voucher Memorandum (yellow) Change to Zip Code (Prev. Edition may be used)	March 1987
CANCELLED		
LF 170	Requests for Scientific & Technical Documentation	March 1987

1917 70 1987
Shaping Tomorrow
NASA Langley Research Center

cafeteria menu

Week of April 27–May 1

MONDAY: Mexican bean soup, chopped steak, BBQ chicken quarter, baked fish mozzerella. Snack Bar: Chicken filet, pizza supreme.

TUESDAY: Minestrone soup, baked Italian lasagna, stuffed boneless chicken breast, Polish sausage & kraut. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, baked rainbow trout, beef liver & onions. Snack Bar: Chicken filet, grilled ham & cheese.

THURSDAY: Chicken noodle soup, ribeye roast beef, fried flounder, meat loaf. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

FRIDAY: Bull Island clam chowder, fish dinner, tomato olive quiche, chuckwagon steak. Snack Bar: Chicken filet, hot Italian sausage.

Week of May 4-8

MONDAY: Split pea soup, veal parmesan, ham & macaroni au gratin, Cajun fried chicken. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & rice soup, spaghetti dinner, seafood quiche, chicken pot pie. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New England scrod, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, turkey & swiss club.

THURSDAY: Chicken vegetable soup, roast turkey dinner, festive Italian quiche, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes; baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 9 **May 8, 1987**

Langley Colloquium and Sigma Series

William and Mary Professor Discusses 'The Chesapeake Bay: Past, Present, and Future'

The Chesapeake Bay is of great importance to the economy, industry and recreation of the Tidewater area. The Chesapeake Bay and its past, present and future will be discussed by a William and Mary geologist during two lectures on the Peninsula in May.

Dr. Gerald H. Johnson will speak at a Langley Research Center colloquium, Monday, May 11. The lecture will be held in the Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

That evening, Johnson will give the same lecture at the Sheraton Inn-Coliseum, at 7:30 p.m., as part of the Sigma Series. The Sigma Series is a series of free public lectures sponsored by NASA, the City of Hampton and the Daily Press, Inc.

During the last 1.6 million years, the Chesapeake region and adjoining continental shelf were alternately emergent and submergent, according to Johnson. At least eight interglacial episodes of innundation of varying magnitude are recorded by the sediments, fossils and landforms of this region. Intervening periods of continental glaciation caused lowered sea levels, the consequent migration of the Atlantic Ocean shoreline seaward, and the incision of streams. With these swings of sea level, predecessors of Chesapeake Bay were alternately created and destroyed.

The rise of sea level over the last 18,000 years resulted in the westward shifts of the Atlantic shoreline and caused flooding of the Susquehanna River valley and the creation of the present Chesapeake Bay, Johnson explained. Geologically, recent enlargement of the bay has been accomplished by shoreline erosion and the flooding of low-lying areas. Presently, the bay is being filled at approximately the rate of sea level rise by sediments carried down river, eroded from the shoreline, and washed into its mouth.

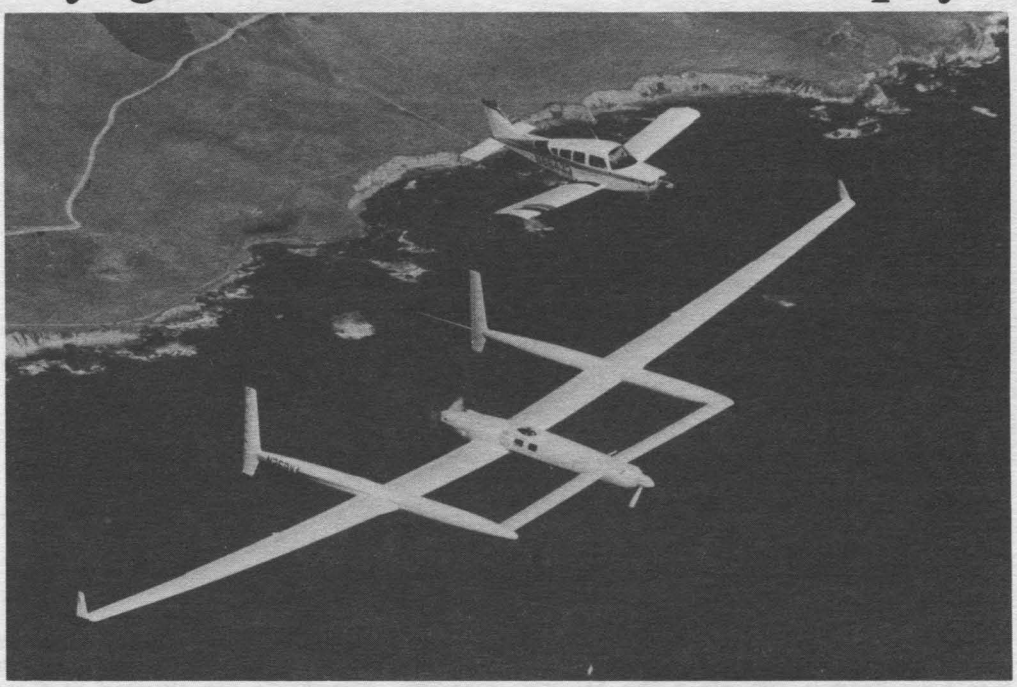
Johnson said that human activity, such as construction on or in the water, dredging, oyster harvesting, shoreline protection, groundwater withdrawal and waste disposal, is altering the physical character of the bay. Increase in the height of sea level will aggravate erosion and flooding problems in the future.

Johnson has conducted mapping of glacial deposits in northern Indiana and southern Michigan for the Indiana and Michigan Geological Surveys. In addition, he has conducted research into coastal plain geology of the central Atlantic states, including the geologic history of the Chesapeake Bay.

He began teaching in the Department of Geology, College of William and Mary, in 1965. He served as an American Society of Engineering Education (ASEE) Summer Faculty Fellow in Langley's Atmospheric Sciences Division in 1986 and has performed research on the early history of Earth and Mars.

Johnson received bachelor and master of science degrees and a doctorate in paleontology and stratisgraphy from Indiana University.

Voyager Team Wins Collier Trophy



Jeana Yeager, Dick and Burt Rutan, and their team of volunteers have been chosen to receive the Collier Trophy "for the ingenious design and development of the Voyager aircraft and their skillful execution of the first non-stop, non-refueled flight around the world." The Trophy, which is awarded annually for the greatest achievement in aeronautics or astronautics in America, will be presented on May 15 in Washington, D.C. Yeager and Dick Rutan will present highlights of the round-the-world flight at the July 17 special Anniversary Program for employees, contractors, and retirees.

Holmes Receives Arthur Flemming Award

Dr. Bruce J. Holmes, Head, Flight Applications Branch, Low- Speed Aerodynamics Division, has been presented The Arthur S. Flemming Award by the Downtown Jaycees of Washington, D.C.

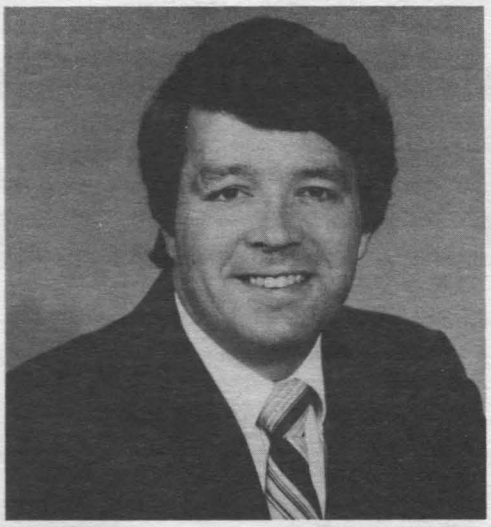
Honored as one of 10 outstanding young federal government employees of 1986, Holmes received the award for his outstanding contributions to a research program on the application and demonstration of natural laminar flow principles which has led to a resurgence of interest and acceptance by the aviation industry.

Holmes' research efforts over the past seven years included developing improved flow visualization techniques using sublimating chemicals and liquid crystals to display the boundary transition behavior, conducting experiments to determine the extent of natural laminar boundary-layer persistence on modern smooth aircraft surfaces, and developing and validating design criteria for surface requirements and production tolerances.

The extensive experiments and analyses conducted by Holmes have conclusively established the facts that natural laminar flow can be achieved on modern, smooth, production aircraft surfaces, and that many earlier concerns about laminar flow durability and maintainability were not warranted for many applications. The results of his research were sufficiently convincing to the U.S. aviation industry to generate renewed interest and acceptance of the use of laminar flow applications on new aircraft designs.

This is the 39th year that The Downtown Jaycees have presented the Flemming Award to recognize young men and women who have performed outstanding and meritorious work for the federal government. The award was presented to Holmes at the Jaycees' ceremonial dinner in Washington, D.C., May 7.

Holmes earned bachelor and master of science degrees in aerospace engineering, as well as a doctorate in engineering from the University of Kansas, Lawrence. The author or co-author of 50 technical publications, Holmes is a member of Sigma Gamma Tau (national aerospace engineering honor society), American Institute of Aeronautics and Astronautics and the Experimental Aircraft Association.



In 1986 Holmes received a NASA Exceptional Engineering Achievement Medal and the AIAA Aerodynamics Award for his work in natural laminar flow. In addition, he has received four individual NASA Special Achievement Awards and three NASA Group Achievement Awards for his aeronautical research accomplishments.

Holmes and his wife, Connie, and their two sons, live in Newport News.

STX Awarded NASA Contract

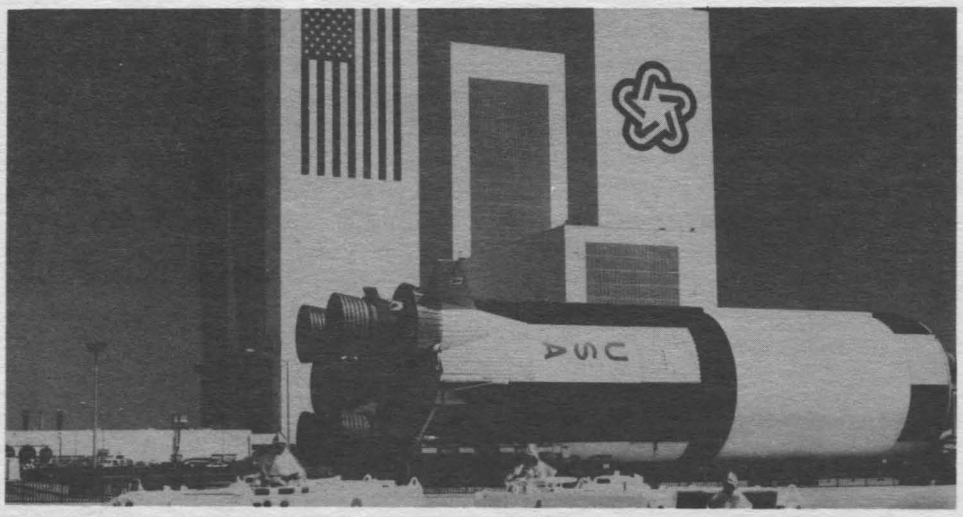
Company to Provide Support for Atmospheric Sciences Research

ST Systems Corporation (STX) has been awarded a two-year contract with three one-year options valued at $22.5 million over five years with options for an additional $6.8 million. The contract will provide support services for atmospheric science research at Langley.

STX has supported Langley's atmospheric science research program for 12 years and will integrate its past work into this new contract. The STX team will work on analytical modeling studies; operational data processing of remotely sensed data; technical support for development of instrument systems; and logistical support for field experiments.

Additionally, STX will analyze atmospheric spectra obtained with high resolution instruments to provide information on atmospheric parameters such as trace gas concentrations, pressure, and temperature.

STX is a Washington-based, high-technology firm providing hardware/software systems engineering/integration; analysis/consulting services; research and development; image processing; office automation/information/networkin systems; and telemetry processing to government and industry on both a national and international level. STX employs 800 persons in six locations throughout the U.S., with main offices in Vienna, Va.



Firefighters inspect two of NASA's three new diesel- powered Armored Personnel Carriers (APC), also known as MI-13s. They will replace the three old gasoline-powered APCs that have been in use since the Mercury program. The APCs are situated at three strategic locations during a Space Shuttle launch countdown to support flight-crew rescue if necessary. The vehicle's top speed is about 40 mph. It weighs about 25,000 pounds and can hold seven people.

National Aeronautics and Space Administration
Langley Research Center
NASA
Langley Researcher

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Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab
The privilege of advertising articles in this publication is restricted to the staff 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.

Key Positions

Thomas E. Noll has been selected Assistant Head, Aeroservoelasticity Branch, Loads and Aeroelasticity Division, Structures Directorate, under CPP 87-2.

William P. Gilbert has been selected Head, Subsonic Aerodynamics Branch, Low-Speed Aerodynamics Division, under CPP 87-6.

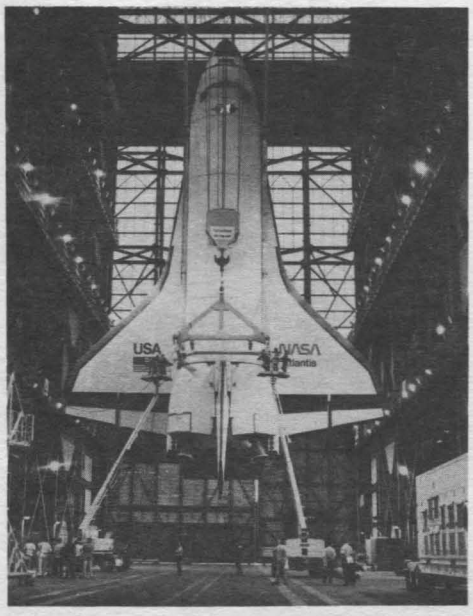
Roger K. Amick has been selected Supervisory Engineering Technician, Advanced Machining Development Section, Metals Applications Technology Branch, Fabrication Division, under CPP 87-21.

Harry P. Stough, III has been selected Assistant Head, Flight Applications Branch, Low-Speed Aerodynamics Division, under CPP 87-20.

William C. Salyer, Jr. has been selected Lead Photographer (Scientific-Technical), Photographics Section, Visual and Printing Services Branch, Research Information and Applications Division, under CPP 87-24.

Note of Thanks

Joe Hudson writes: "Please express my gratitude to all my friends at work for the great picture of John, the albums, the nice gifts, and most of all for their thoughtfulness. Thanks again!"



The orbiter Atlantis hangs above the transfer aisle in the Vehicle Assembly Building after being hoisted from the space shuttle stack in high bay 3 during destack operations. In the next and final step of the operation, Atlantis will be lowered to a horizontal position and placed on its own landing gear. After destack Atlantis will be moved to the Orbiter Processing Facility where it will begin an extended processing flow to undergo return-to-flight modifications and preparations for the STS-27 mission.

News Around NASA

HEADQUARTERS, Washington, D.C. — **PRINCIPAL INVESTIGATORS SELECTED FOR TETHERED SATELLITE SYSTEM.** NASA has selected five American principal investigators whose experiments will make use of the Tethered Satellite System (TSS-1), a deployable subsatellite to be "tethered" to the Space Shuttle via a retractable cable. TSS is a joint U.S.-Italian project; each will provide investigators and experiments. Italy will build the satellite and the U.S. will build the deployment mechanism and fly the complete payload aboard the Shuttle

Tuscon, Ariz. — **SPACE INTEREST GROUPS MERGE.** Two of the nation's leading pro-space development groups, the L5 Society and the National Space Institute, have joined forces to form the National Space Society, which will be headquartered in Washington, D.C. The newly formed organization will represent 15,000 space activists organized in local chapters throughout the United States as well as Canada, Australia, Sweden, and other countries around the world. Leaders and members of both organizations celebrated the merge at the Sixth Annual Space Development Conference held in Pittsburgh in March.

HEADQUARTERS, Washington, D.C. — **WEEKS APPOINTED DEPUTY DIRECTOR OF NASP OFFICE.** L. Michael Weeks has been appointed Deputy Director of the National Aero-Space Plane (NASP) Office in the Office of Aeronautics and Space Technology. In this position he will assist the Director, Duncan E. McIver, in NASP coordination, advocacy, resources management, technology oversight, and program reporting activities. NASP is a joint NASA/DOD program to develop technology for a new class of aerospace vehicles.

GODDARD, Greenbelt, Md. — **BLUE SUPERGIANT STAR DISAPPEARS.** Now you see it ...now you don't" That's what Dr. George Sonneborn, staff astronomer at Goddard's International Ultraviolet Explorer (IUE) Observatory Control Center, has been saying since he reported that Sanduleak-69 202, a blue supergiant in the Large Magellanic Cloud, may be the star which exploded creating the brightest supernova see since 1604. Astronomers have used a telescope aboard the IUE, a nine-year-old orbiting satellite, to monitor the intense emissions of ultraviolet radiation from the supernova since late February.

AMES, Mountain View, Calif. — **THREE EXPERIMENTS SELECTED FOR COMET INVESTIGATION.** Three experiments submitted by scientific teams at Ames have been selected by an international panel of scientists for participation in the study of comets. The Comet Rendezvous Asteroid Flyby (CRAF) mission, being considered for launch in the early 1990s, will be the first of the new Mariner Mark II series of spacecraft. The three CRAF proposals are: The cometary ice and dust experiment (CIDEX), thermal infrared radiometer experiment (TIREX), and an interdisciplinary scientist for exobiology (IDS).

GODDARD, Greenbelt, Md. — **NASA PLANS BALLOON FLIGHTS TO STUDY SUPERNOVA.** Three primary instruments to study gamma ray radiation produced by Supernova 1987a have been selected and approved to fly on a series of balloon flights scheduled to be launched over a one-month period from Alice Springs, Australia, no earlier than May 7. Goddard's Wallops Flight Facility, Wallops Island, VA., which manages NASA's balloon program, will provide launch services and helium for the three flights.

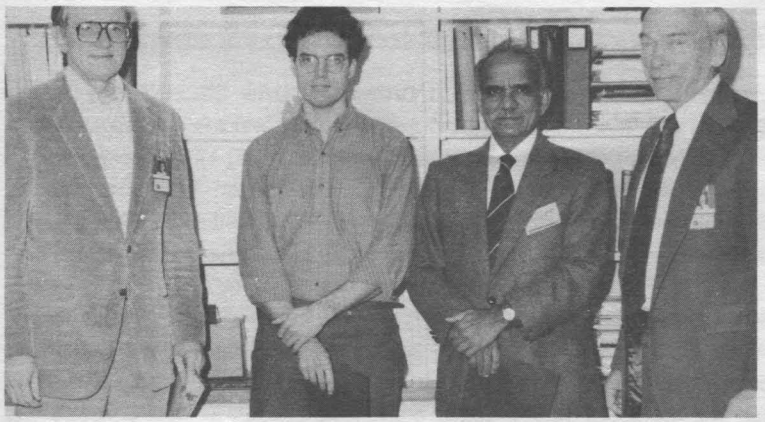
HEADQUARTERS, Washington, D.C. — **SHUTTLE TESTING IMPACTS LAUNCH DATE.** Admiral Richard H. Truly, Associate Administrator for Space Flight, announced that a final decision to perform two major systems tests prior to the next Space Shuttle launch will result in a new target launch date. A "wet" countdown demonstration test, in which the external tank is filled with fuel for a simulated launch countdown, and a flight readiness firing, in which the main engines are fired for about 20 seconds, will be performed on the Shuttle orbiter Discovery at the Kennedy Space Center prior to the next launch. These tests will provide the needed engineering data to evaluate and confirm various sustems modifications, as well as exercise the launch and mission control teams after the hiatus in Space Shuttle operations.

New Film From Learning Center

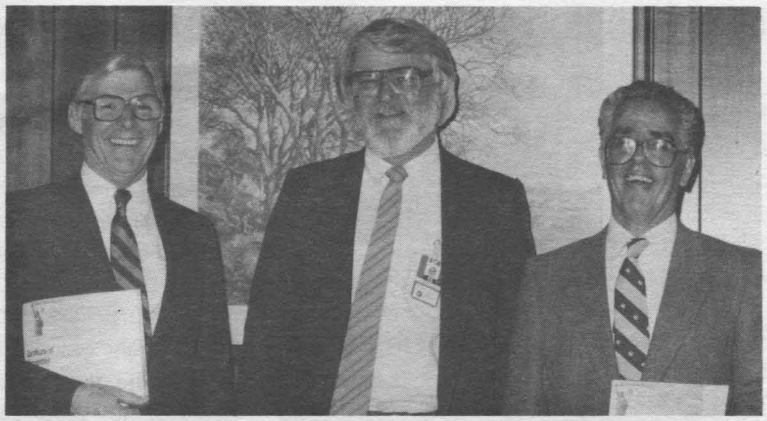
Let's Talk Back, color, 22 minutes (guide), video tape, available in VHS and U-Matic format.

The biomedical sacro-iliac replacement exercise, developed by Dr. Alec Thompson, is one method of low back pain treatment. The relatively simple procedure is demonstrated in this film The accompanying guide book describes the procedure in detail and also outlines basic tips on avoiding further injury to your back. This film was part of a "hands-on" seminar conducted by Dr. Edgar A. DeMar at Langley on April 24, 1987.

For more information about the film, contact the Learning Center staff at ext. 3014.

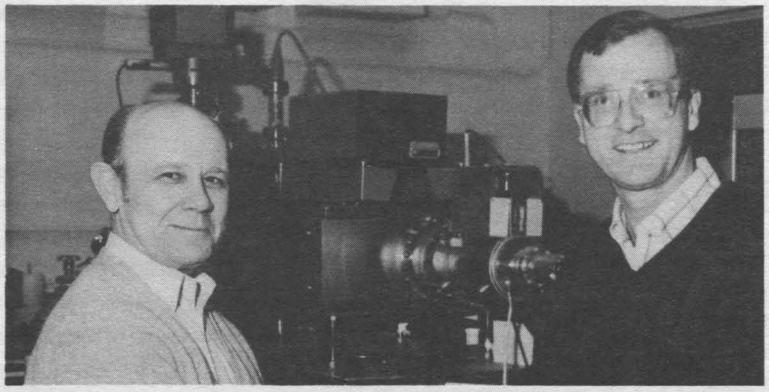


NASA TECH BRIEFS AWARDS. William D. Mace (far right), Director for Electronics, presents NASA Tech Briefs Awards to (left to right) Philip C. Kassel, Jr., for his work on "Time, Direction and Composition of Impacting Space Dust;" and Danny R. Sprinkle and Jag J. Singh, for their work on "Nuclear Gauge for Fuel Quantity Measurement Aboard Aircraft."



Robert R. Nunamaker (center), Director for Space, presents NASA Tech Briefs Awards to George C. Ashby, Jr. (at left), for his work on "Miniature Flow-Direction/Pitot- Static Pressure Survey Probes," and to Jose M. Alvarez (at right) for his work on the "Deplorization Measurement Device."

John F. Stokes, Director for Management Operations, presents a NASA Tech Briefs Award to Stanley W. Ward (right) for the work entitled, "Surface Conduction Thread-Mounted Instrumentation Thermocouple."



Dr. Gerald D. Walberg, Chief of the Space Systems Division, presents a NASA Tech Briefs Award to Ronald A. Outlaw (right) for the work entitled, "Electron Stimulated Desorption of Atomic Oxygen From Oxygen Supplied Silver Surfaces."

NTA/Langley Sponsor Student Symposium

College students and their faculty advisors from four states and the District of Columbia attended a student symposium at Langley on April 10, 1987. The symposium, sponsored by NASA and the Hampton Roads Chapter of the National Technical Association (NTA), consisted of 14 technical presentations, tours of the Center, and interactive sessions with Langley employees.

Student authors were judged on the organization, presentation, and content of their papers and prizes were awarded — two in the graduate and three in the undergraduate category. The majority of the 120 students and 15 faculty sponsors were from historically black colleges.

The keynote speaker for the symposium was Dr. Eugene Deloatch, Dean of the School of Engineering at Morgan State University in Baltimore, MD. Deloatch stressed his concern that our nation maintain its leadership in technology and emphasized that more minorities and women must answer this challenge. Knox W. Tull, Secretary-Treasurer of Jackson and Tull Engineering, a minority business headquartered in Washington, D. C., was guest speaker at the awards banquet.

The NTA is an organization consisting primarily of minority technical professionals. One of the main goals of the association is to promote technical careers among minorities.

Dr. Christine Darden, Advanced Vehicles Division, is president of the Hampton Roads Chapter of NTA. David Woods, Atmospheric Sciences Division, served as chairman of the symposium.

NTA Student Symposium. (Left to Right) Christine Darden, Hampton Roads Chapter President; Oscar Barton, Howard Univ., 2nd Place Graduate; Dannellia Gladden, N.C. A&T State Univ., 2nd Place Undergraduate; Larry King, National President, NTA; Carla Newsome, Norfolk State University, 3rd Place Undergraduate; Antonio Ransom, Norfolk State University, 1st Place Undergraduate; Michael Keeve, University of Virginia, 1st Place Graduate; Wyllona Harris, Editorial Chairman; David Woods, Symposium Chairman; John Thompson, Regional Director, NTA.

Speakers Bureau

The Speakers Bureau is one of the many ways in which NASA reaches out into the community, sharing the wealth of technology and information that exemplifies NASA. Many thanks to the following Langley employees who have shared their time and talents.

Leroy Spearman spoke on Soviet Military Development and Design Philosophy to the Smithfield Rotary Club, April 2.

William E. Howell gave a presentation on the Role of Engineers in Space Exploration at Achilles Elementary School, April 3.

Jane Hagaman gave a presentation on Space Station at the First Presbyterian Church, Norfolk, April 8.

Weldon Station participated in a Career Day program at Willoughby Elementary School, Norfolk, April 8.

Lenwood Clark gave presentations on Space Station to the York High EXTEND Center and the Norfolk W. W. Houston Boys Club on April 10, to the Charleston Air Force Base Young Astronaut Program on April 25, and to the IEEE-Hampton Roads Section on April 30.

Roger Breckenridge spoke on the Space Station to the Tau Beta Pi Engineering Society, Norfolk, April 12, and at the Embry Riddle Aeronautics School, April 27. Breckenridge also spoke on the Future of Space to the Williamsburg Landing Mens Club, April 15.

Frank Farmer gave a presentation on Medical Spinoffs and Technology Utilization Applications at the Medical College of Virginia, April 15.

Lester Rose presented "Spinoffs from Aerospace Technology" to the Newport News Kiwanis on April 15, to the Smithfield Rotary on April 23, and to the Inter-Agency Motor Equipment Advanced Communication on April 29.

Take Note of Road Closing

As a result of the 8 Ft. HTT Modification Project, it is necessary to close a part of **Marvin Road.** Effective May 11, 1987, the segment of Marvin Road between Moffett Road and the entrance to the warehouse area will be closed to through traffic.

A new access road from the parking lot of Building 1267A to Marvin Road has been established for **emergency vehicle use only.** Warning signs and chains have been installed to preclude normal use. Employees are reminded that this access road is not for general use.

Celebrating 70 Years of Research

Astronauts Alter Opinion of NASA

The spaceflight training of the Mercury astronauts at Langley caused a major change in local residents' perception of the research center. Instead of considering the laboratory as the home of NACA nuts, they now saw it as the home of NASA wizards. Hamptonians were so pleased with the attention that the space program was bringing to their city that they voted to change the name of "Military Highway" to "Mercury Boulevard" and to dedicate the town's bridges in honor of the astronauts. Above photo: seated L to R, Virgil "Gus" Grissom, Scott Carpenter, Donald "Deke" Slayton, Gordon Cooper; standing, Alan Shepard, Walter Schirra, and John Glenn.

Upcoming Seminars

AIAA/NASA INTERNATIONAL SYMPOSIUM ON SPACE INFORMATION SYSTEMS IN THE SPACE STATION ERA: June 22-23, The Capital Hilton, Washington, D.C. and NASA Goddard Space Flight Center, Greenbelt, MD. The symposium will cover systems concepts, implementation approaches, operational scenarios and user interfaces proposed for future space communications, networking, data handling, and mission control systems with emphasis on capabilities associated with Space Station operations. Attendees will receive a panoramic view of evolving international space information system plans and capabilities and will be able to participate in shaping the future of these systems. The symposium is being sponsored by NASA and is operated by the AIAA. A one-day Space Information Systems Workshop will be held on Wednesday, June 24. Participation is open to all symposium attendees. Space is limited. Registration for both the symposium and the workshop should be made no later than June 1, 1987. For more information contact Miss Adrianne Applegate, AIAA Headquarters, (212) 408-9748.

CEBAF 1987 SUMMER WORKSHOP. June 22-26, 12070 Jefferson Avenue, Newport News. Users who are interested in influencing the direction of the experimental program or who are interested in collaborating with CEBAF for the purpose of constructing some of the experimental equipment needed for this program, should plan to participate this summer. Theorists interested in the CEBAF program should also attend. The fourth annual Users Group meeting will be held on Wednesday, June 24. Registration is due by June 5. For more information, contact Ramona Rickman, Administrative Assistant, Research Division, CEBAF, (804) 875-7800.

12TH INTERNATIONAL CONGRESS ON INSTRUMENTATION IN AEROSPACE SIMULATION FACILITIES. June 22-25, College of William and Mary, Williamsburg. For more information, contact William W. Hunter, Jr., ext. 2791, mail stop 235A.

Contestants Needed for Monarch

LAA Begins Plans for 1987 Carnival

The Langley Activities Association has announced plans to hold its annual Carnival Friday and Saturday, August 21 and 22, at the Activities Center.

The association is looking for contestants to run for the 1987 Carnival Monarch. The contestant selling the most Carnival raffle tickets will be crowned Carnival Monarch on Friday evening and will reign over all events.

NASA Langley and contractor employees are invited to become contestants. Names should be submitted to Paula Ware, mail stop 286, **no later than May 29.** Contestants will be featured in the July 3 issue of the **Langley Researcher.**

Other activities planned during the weekend include raffle drawings, game booths, casino, rides, arts and crafts show and souvenirs. Food and beverages will be sold. Cash prizes, ranging from $50 to $1,500, will be given away throughout the two-day festivities.

Anyone interested in working the Carnival or displaying their arts and crafts should call Pat Gates, ext. 2058, for further information.

Harvey's Janitorial Service Earns Small Business Award

Harvey's Janitorial Service, Newport News, Virginia, has earned the Small Business Administration's "Administrator's Award for Excellence" certificate. Harvey's was nominated by Langley's Acquisition Division. The presentation of this certificate will be in Washington, D. C., on May 13, 1987, during the Twentieth Annual Joint Industry/SBA Small Business Procurement Conference.

In recognition of the vital role played by our nation's 14 million small businesses, President Reagan has proclaimed the week of May 10-16, 1987, as Small Business Week. This year's theme is "Small Business: America's Growth Industry."

Langley will honor Small Business Week by attending the Seventh Annual Small Business Contracting Day to be held on May 15, 1987, at Norfolk Scope. One goal of the Small Business Contracting Day is to alert the small business community to procurement opportunities with federal, state, and local governments.

It is NASA policy to place a fair proportion of its total purchases and contracts for supplies, research and development, and services with small business concerns. The Acquisition Division invites small business firms to contact the Industry Assistance Office for information regarding inclusion in Langley's Automated Bidders Source System for fulfilling future contractual requirements.

KENNEDY "C" LEAGUE NASA BASKETBALL CHAMPIONS. The team, XGWU, remained undefeated throughout the season, to become the regular season and tournament champions. Kneeling (from L to R): David Hahne, Chris Cruz, Frank Quinto. Standing (from L to R): David Dress, Greg Brauckmann, Roger Lepsch, Mark Nixon and Scott Berry. Not Shown: Scott Fears, Steve Krist, Joe Ritchie, Tom Strayhorn, Glenn Diskin.

Faculty Position Open

The von Karman Institute for Fluid Dynamics, an international postgraduate educational and research establishment, seeks a junior faculty member for the Aeronautics/Aerospace Department.

Duties will include teaching and research supervision at the post-university level as well as the development of a program of funded research. A background in aeronautical engineering and computational fluid dynamics with application to external flows is required. Experience in one of the following areas would be considered a plus factor: compressible flows, heat transfer, or unsteady aerodynamics. A Ph.D. degree is a prerequisite as well as a good command of the English language.

Qualified applicants are requested to send a resume to:

Professor John F. Wendt
Dean of Faculty
Head, Aeronautics/Aerospace Department
von Karman Institute for Fluid Dynamics
72 chaussee de Waterloo
1640 Rhode-Saint-Genese
Belgium

Be a Part of History

A Martin Luther King, Jr. Time Capsule will be implanted in Washington, D.C., in 1987 and will remain underground for 100 years. The capsule will contain selected memorabilia chosen by Mrs. Coretta Scott King, as well as photos, video and audio tapes, film strips, speeches and sermons, depicting national historical events highlighting the work of Martin Luther King, Jr.

Brief audio statements by world and national leaders, historians, educators, children, and working men and women on the life and legacy of Dr. King will be collected and included in the capsule.

The time capsule will also contain a miniature Liberty Bell on which will be inscribed the famous "Let Freedom Ring" passage from Dr. King's "I Have A Dream" speech. Individuals are invited to have their names laser-inscribed on the miniature bell. Donations of $1 per name are asked.

Make checks payable to MLK Federal Holiday Commission, and mail to Martin Luther King, Jr. Time Capsule, P.O. Box 44820, Washington, D.C., 20410. All donations will be used to support activities of the Martin Luther King, Jr. Holiday Observances nationwide for years to come.

Happenings

ATTENTION HOKIES. It is not too late to sign up for the VPI alumni reception to be held in the Activities Center Friday, May 15, at 4:45 p.m. For reservations, send $3 to Ann Suit, mail stop 154.

AEROVAN ON EXHIBIT AT VISITOR CENTER. The AEROVAN, a large, traveling exhibit unit that tells the story of the first A in NASA — aeronautics — will be on display at the Visitor Center from 1 to 4 p.m. on Sunday, May 17, to salute the opening of National Tourism Week. Ray Goodman, Visitor Center Exhibits Manager, will be on hand to answer questions. The Visitor Center Gift Counter will salute National Tourism Week, May 17-23, by offering a free postcard and pen to the first 25 people who register each day.

Ray B. Goodman

FUNDAMENTALS OF SPACE SYSTEMS DESIGN. The AIAA Hampton Roads Section Invited Lecture series will present Fundamentals of Space Systems Design, Monday and Tuesday, May 18- 19, at the Activities Center. The lecture series will present state-of-the-art surveys in various technologies required in space systems design. The presentations are by leaders from research and industry who are involved in current design practice. They will define the present state-of-the-art, current problems and future directions in their activities. Pre- registration is requested. For more information, contact S. M. Joshi, ext 459l.

VSC CLOSES SEASON WITH SHAKESPEAREAN COMEDY. Shipwrecks and islands, monsters and spirits, and political intrigue and personal forgiveness are combined in Virginia Stage Company's final production of the season: THE TEMPEST by William Shakespeare. One of Shakespeare's last plays, it weaves mysticism, reality, good, evil, revenge, reconciliation, and romance together as only Shakespeare can. The play opens Friday, May 8 at the Wells Theatre. For more information, call 627-1234.

VIRGINIA CHORAL SOCIETY. The Virginia Choral Society will end its performing season with the 'Just for Fun' concert at 8 p.m. May 9 at Ogden Hall, Hampton University. The program will feature a variety of songs from the l930s to modern Broadway. Admission is $3 at the door. For more information, call 851-5515.

LAA SOCIAL CANCELLED. The Langley Activities Association Social for May 15 has been cancelled due to a scheduling problem.

THURSDAY NIGHT BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working as a bingo caller, contact Eugene Hicks, ext. 3737.

TIDEWATER DINNER THEATER. THE BEST LITTLE WHOREHOUSE IN TEXAS, a clap-hands singin', hoe-down dancin', and gut bustin' laughin' musical comedy, is now playing at the Tidewater Dinner Theater. Performances continue, Wednesday through Saturday nights, through May 31. Discount tickets are available at the Activities Center. For more information, call 245-8304 or 461-2933.

TOASTMASTERS. The NASA Langley Toastmasters Club will meet Wednesday, May 13, at 11:30 a.m. in the Activities Center. Contact Steve Yaros, ext. 2673, if you are interested in honing your public speaking capabilities.

Just confirmed . . .

June Gibbs Brown, Associate Administrator for Management, NASA Headquarters, will be the guest speaker for the Federal Women's Program on Friday, May 22, l987. Brown has recently been named Inspector General for the Department of Defense. Her presentation is entitled "Taking Charge and Making Changes" and will begin at 1:30 p.m. This program is tentatively scheduled for Conference Room 20l, Building 1212. For further information, contact Gloria Champine, ext. 4463.

USAARTA/AVSCOM Awards Presented

Dr. Wolf Elber, Director, Aerostructures Directorate, USAARTA- AVSCOM, presented awards recently to members of his directorate.

Rachelle D. Saunders received a Certificate of Service in recognition of 15 years of Federal Service.

Elber presented Sustained Superior Performance Awards to three members of his staff. Arthur E. Phelps III, Assistant Head of the Subsonic Aerodynamics Branch (SAB), was cited for maintaining a delicate balance of Army research needs with available tunnel time. He promoted and provided for experimental research activities in rotor dynamics that significantly advanced the stature and respect of Aerostructures Directorate in the research community in the areas of rotorcraft design, helicopter performance testing and threat assessment.

Wayne R. Mantay, Group Leader for the Rotorcraft Aeroelasticity Group, led his team in a very successful wind tunnel program documenting performance improvements for an advanced rotor system for growth version of the black Hawk helicopter which includes both aerodynamic and aeroelastic characteristics. The team also conducted numerous other innovative research programs under Mantay's leadership.

John C. Wilson received the Sustained Superior Performance Award as Head of the Rotorcraft Aerodynamics Office (ROA). Through Wilson's leadership, the RAO accomplished a variety of program objectives including AHIP rotor performance evaluations; UH-60 main rotor/tail rotor acoustics investigation; UH-60/ESSS Stinger Installation drag tests; rotor inflow measurement with laser velocimetry; foreign helicopter aerodynamics loads investigation; and AH-64 advanced rotor hover performance tests.

Rachelle D. Saunders

Arthur E. Phelps III

Wayne R. Mantay

John C. Wilson

National Aeronautics and
Space Administration

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Talay Discusses 'Shuttle II' at Visitor Center

Dr. Theodore A. Talay, Langley aerospace engineer, will present "Shuttle II — A Look Ahead" at noon on Thursday, May 14, 1987, in the Visitor Center main theater. Talay's presentation is the second in the Guest Lecture Series on Aerospace Sciences co-sponsored by the Visitor Center and the AIAA-Hampton Roads Section Student Branch.

The roots of the shuttle concept can be traced back over 40 years; today's Space Shuttle is only the first step in the evolution of reusable space transportation. International activities suggest a new generation of shuttle vehicles emerging in the Soviet Union, Europe, and Japan. Ambitious options for expanding man's activities into space over the next several decades, as outlined by the National Commission on Space, dictate the need in this country for a new, low-cost, reliable approach to moving people and material to and from space. Underway for the past two years at Langley has been a study of a second-generation, manned space transport system called Shuttle II. Talay is the lead engineer for this study.

Talay is a research engineer in the Vehicle Analysis Branch, Space Systems Division. He received his bachelor's and master's degrees in aeronautical engineering from Rensselaer Polytechnic Institute and a doctorate in engineering from Old Dominion University. Since beginning his career at NASA in 1970, Talay has conducted studies in Viking parachute dynamics and the design of high-altitude, solar-powered aircraft for remote sensing. His most recent research is on the performance and operations of advanced space transportation systems.

In Memoriam

Sympathy is extended to the family of **Kennedy F. Rubert**, who died February 20. Rubert retired in 1973 from the Aeronautics Directorate.

1917 70 Shaping Tomorrow
NASA Langley Research Center
1987

cafeteria menu

Week of May 18-22

MONDAY: Worcestered beef & vegetable soup, chopped steak, fried flounder, baked chicken quarters. Snack Bar: Chicken filet, pizza supreme.
TUESDAY: Minestrone soup, lasagna, spinach & bacon quiche, fried fish nuggets. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, blackened fish, beef liver & onions. Snack Bar: Chicken filet, grilled ham & cheese.
THURSDAY: Fish & corn chowder, pork chow mein dinner, meat loaf, salmon cakes. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.
FRIDAY: Bull Island clam chowder, fish dinner, tomato & olive quiche, Polish sausage & kraut. Snack Bar: Chicken filet, hot Italian sausage.

Week of May 11-15

MONDAY: Split pea soup, veal parmesan, shrimp creole, Cajun fried chicken. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & rice soup, spaghetti dinner, seafood quiche, grilled pork chops. Snack Bar: Chicken filet, steak & cheese sub.
WEDNESDAY: Fresh Vegetable soup, fried chicken dinner, New England scrod, Italian sausage w/pasta. Snack Bar: 1/4 lb. cheeseburger, turkey & Swiss club.
THURSDAY: Chicken vegetable soup, roast turkey dinner, beef tips over rice, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder; fish dinner; beef, macaroni & tomatoes; baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 10 **May 22, 1987**

Young Attends Carnegie Mellon Seminar

Dr. Clarence P. Young, Head, Engineering Analysis Branch, Systems Engineering Division, is attending the Senior Executive Seminar at Carnegie Mellon University, Pittsburgh, through June 5.

The seminar is an intensive graduate-level program for a select group of men and women in policy-making positions in the government, corporations and other organizations concerned with the interaction between the public and private sectors.

Young, who was selected for the Carnegie Mellon seminar in a NASA-wide competition, said, "I hope to broaden my exposure and management education beyond those programs offered within NASA. I feel that this program is a logical next step in my career development."

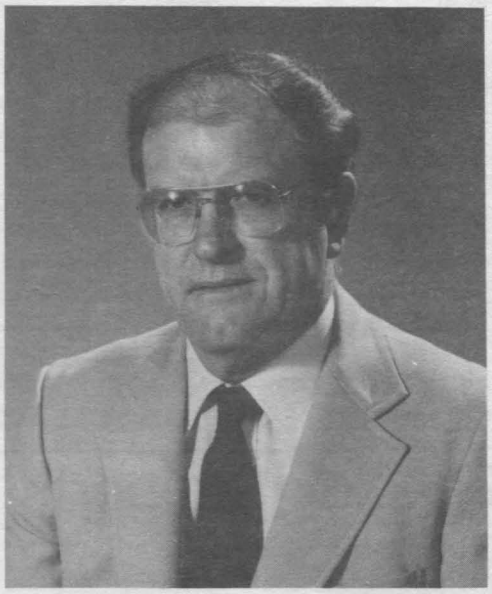
The three weeks at the School of Urban and Public Affairs involves the participants in an integrated sequence of classes, practical work and discussions of key issues in political economy, management sciences and other disciplines relevant to policy-making and administration in large organizations.

"The objectives of the program in the areas of management concepts, human behavior, organizational effectiveness, and productivity are in line with my objectives in seeking to improve my managerial and leadership skills," Young explained.

In his position at Langley, Young is responsible for the overall technical and administrative supervision of 25 engineering specialists performing complex design analysis and test support for aeronautical, space and facility systems. In addition, he serves as a technical consultant on high-level review committees and manages research and development of cryogenic models.

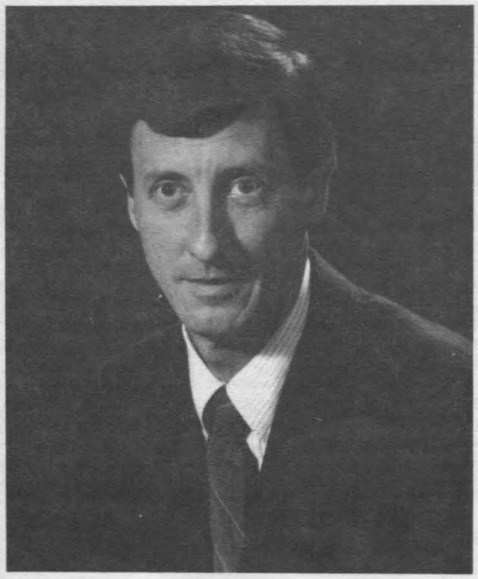
Young began his Langley career in 1961 as an aerospace engineer, and from 1971 to 1979 was Head of the Structural Analysis Section. He is internationally known for his work in slender- body aeroelasticity and has specialized in structural dynamics, structural stability, aerodynamics, and cryogenic wind-tunnel models technology.

A native of Virginia, Young received a bachelor of science degree in civil engineering in 1960, a master of science degree in engineering mechanics in 1965 and a doctorate in aerospace engineering in 1971, all from the Virginia Polytechnic Institute and State University.



The author or co-author of 50 technical papers, Young has received 10 NASA awards, including the NASA Exceptional Engineering Achievement Medal in 1985. He is a member of the American Institute of Aeronautics and Astronautics.

Young and his wife, Donna, live in Yorktown. They have two sons.



Sawyer Named Assistant Chief, Advanced Vehicles Division

Wallace C. Sawyer has been designated Assistant Chief, Advanced Vehicles Division. In this position he assists the chief in directing multidisciplinary advanced aeronautics studies to assess the benefits of discipline research advances and to identify potential new research thrusts. In addition, he is responsible for the vertical cut management of military technology and management of the Advanced Aircraft Program.

Sawyer began his Langley career in 1965 as an aerospace engineer. He has served as Head, Concepts Analysis Section; Assistant Head, Supersonic Aerodynamics Branch; Head, Fundamental Aerodynamics Branch; and Head, Supersonic/Hypersonic Aerodynamics Branch, High-Speed Aerodynamics Division.

He received a bachelor of arts degree in physics and mathematics from Elon College in 1964 and has done graduate work in physics at the College of William and Mary and in engineering management at George Washington University.

The author or co-author of 42 technical publications and a chapter in a technical textbook, Sawyer and his wife, Rae, live in Williamsburg. They have a son, Greg, and a daughter, Kirsten.

Campbell Granted Space Act Award for External-Flow Jet Flap

John P. Campbell, former NACA/NASA research scientist, has been granted a Space Act Award in the amount of $10,000 for his exceptional scientific contribution — the external-flow jet flap.

The award was recommended by the Inventions and Contributions Board and was granted by the Administrator of NASA. Langley Director Richard H. Petersen presented the award to Campbell in a ceremony on Thursday, May 14.

Campbell envisioned the concept while testing the British internal jet-flap technique in the NACA free flight tunnel in the 1950s. He was issued a patent for his design on June 23, 1959.

The external-flow jet flap consists of an under-wing, pod-mounted jet engine in combination with a trailing-edge mechanical flap. Campbell's invention directs the exhaust from the engine onto the flap to increase lift.

The concept has been used by Douglas Aircraft Company in the development of the C-17 transport aircraft. The Air Force has awarded Douglas more than $728 million worth of contracts on this program. The C-17 is scheduled to enter service in 1992; according to present plans, more than 200 such aircraft will be built.

John P. Campbell (left) receives Space Act Award Certificate of Recognition from Langley Director Richard H. Petersen (right). The award and check in the amount of $10,000 was recommended by the Inventions and Contributions Board for Campbell's design of the external-flow jet flap.

Among the benefits of Campbell's design is the reduction in take- off and landing speeds and distances. Future military operations at austere sites may employ this technology. Commercial versions of the C-17 with externally blown flaps can be used to carry freight to remote, undeveloped sites.

Chief of the Low Speed Aircraft Division, Campbell retired from NASA in 1974 after 35 years of service. He is currently research professor with George Washington University's Joint Institute for the Advancement of Flight Sciences.

Langley Supports Propfan Testing

by H. Keith Henry

Lockheed-Georgia Company, Marietta, Ga., has begun flight testing an advanced, fuel-saving propeller, called a "propfan," in a $56 million, NASA sponsored research program.

Langley has supported the NASA research effort – led by Lewis Research Center – in areas of acoustics, aeroelasticity and aerodynamic performance.

The propfan is a revolutionary type propeller with eight or more thin blades and highly swept tips. The blades are swept back like the wings of a jet aircraft for greater efficiency at high speeds.

The propfan propulsion system is mounted on the left wing of a Gulfstream II business jet. Data gathered in the flight research program will aid engineers in designing a new generation of propfan-propelled aircraft.

Aircraft equipped with propfan propulsion systems will burn 15-30 percent less fuel than the most advanced turbofan (conventional jet) powered aircraft flying in the 1990's and still fly as fast as conventional jet transport.

But for the promise of fuel-efficient propfans to be fully realized, an old problem relating to propeller engines had to be addressed – high noise levels – and this is where Langley is contributing significantly to the PTA program.

Since 1977, Langley's Acoustics Division has been working to understand and control noise generated by these new propfan propulsion systems. Noise from their large, uncovered propellers are not muffled by a cowling, as with conventional jet engines. Measurements of propfan noise have been conducted in Langley's Quiet Flow Facility and in the 14- by 22-Foot Subsonic Tunnel to validate propfan noise theory. Lab tests have been conducted to develop concepts for noise control.

Langley is the lead NASA center for reducing aircraft interior noise, important in gaining passenger acceptance of this radically-different propulsion concept. The challenge is to design the interior wall and sound insulation system so that interior noise is no greater than on a conventional jet – without paying a significant weight penalty. This has been accomplished through in-house work and through a number of grants and contracts, all leading to a flight test on the Lockheed PTA test aircraft.

This Langley-developed technology will be demonstrated later this year when the Gulfstream II will be further modified by installing a Langley-designed "acoustic treatment test section" which will replace a part of the original interior wall and trim in the mid section of the cabin. This should be completed in time for the airplane to resume test flights in the first half of 1988.

Note Deadline Change

Due to the Memorial Day Holiday, deadline for the next edition of the **LANGLEY RESEARCHER** will be **Wednesday, May 27**. Please direct all submissions and inquiries to The Editor, Mail Stop 115, ext. 3707.

National Aeronautics and Space Administration
Langley Research Center
NASA
Langley Researcher

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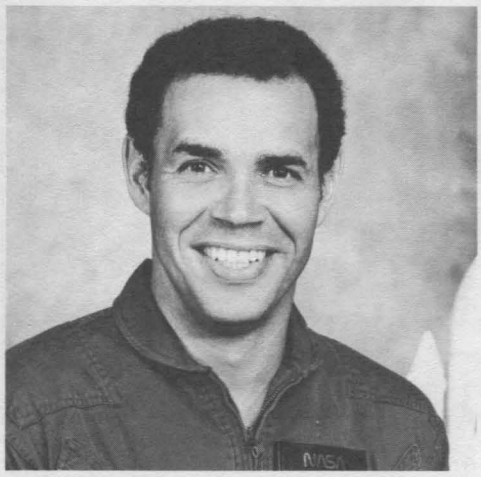
Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Tamara J. Krebs
Photographs . . . . . Photo Lab
The privilege of advertising articles in this publication is restricted to the staff of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.



Gregory to Speak at Awards Banquet

The Engineers' Club of the Virginia Peninsula will hold its Annual Student Awards Banquet on Monday, June I, at the Activities Center. Guest speaker will be Col. Frederick D. Gregory, Astronaut and current Chief of the Operational Safety Branch at NASA Headquarters. Gregory was the pilot of Shuttle Mission 51-B, which flew in April-May I985. He will discuss "Challenging the Space Frontier."

The evening will begin with a social at 6 p.m., followed by a steamship round dinner at 7. The awards program, which will honor outstanding science and math students from each of the Peninsula high schools, will begin at 8 p.m.

Non-members are welcome. The cost is $11 per person, and reservations can be made by calling Dan DiCarlo or Paul Stough at ext. 3274, by Friday, May 29.

Competitive Placement Announcements

The following Competitive Placement Announcements are currently open:

87-42: AST, Technical Resources Management, GM- 0801-13 or 14, Office of Director for Management Operations, Programs and Resources Division, R&D Programs Branch. Closes June 1.

87-43: AST, Electrical Experimental Equipment Supervisory Electronics Engineer, GM-0850-13 or14, Facilities Engineering Division, Electronic Systems Branch, Facility Automated Controls Section. Closes June 8.

87-44: Procurement Officer, GM-1102-14 (Promotion Potential, GM-15), Office of Director for Management Operations, Acquisition Division, Office of the Chief. Closes June 9.

News Around NASA

HEADQUARTERS, Washington, D.C. — **NASA ANNOUNCES EXCELLENCE AWARD RECIPIENTS.** Two NASA contractors have been selected as the first recipients of the NASA Excellence Award for Quality and Productivity. International Business Machines (IBM), Federal Systems Division, Houston, and Martin Marietta Michoud Aerospace, New Orleans, were selected from among seven finalists. They were judged on their measurable and verifiable accomplishments in quality and productivity, employing factors such as product and/or service performance,attainment of cost and schedule objectives, and comprehensive reporting and communication systems.

GODDARD, Greenbelt, Md. — **SPACE DATA CONSORTIUM FACILITY TO BE LOCATED AT GODDARD.** NASA, the Universities Space Research Association, Columbia, Md., and the University of Maryland, College Park, Md., have agreed to establish a space data and information sciences research facility at Goddard Space Flight Center beginning Oct. 1, I987. To be known as the Center for Excellence in Space Data and Information Sciences, the facility will serve as the nerve center for a network of researchers from leading university and industry computer science departments from across the country.

HEADQUARTERS, Washington, D.C. — **NASA MOUNTS MAJOR SUPERNOVA SCIENCE PROGRAM.** Astronomer Ian Shelton, working at the Las Campanas Observatory in Chile on Feb. 24, I987, discovered a supernova in the nearby Large Magellanic Cloud galaxy. Within hours, NASA scientists were monitoring the supernova with the Earth-orbiting International Ultraviolet Explorer (IUE), Solar Max Mission (SMM) spacecraft, and ground antennas of NASA's Deep Space Network. Scientists expect this deployment of NASA's astrophysics arsenal will yield a totally new undestanding of the chemistry and physics of supernovae and a potentially deep understanding of the creation of matter.

KENNEDY SPACE CENTER, Fla. — **ATLAS/CENTAUR-67 ACCIDENT BOARD ANNOUNCES FINDINGS.** An electrical transient, caused by a single-triggered lightning flash, was the most probable cause of the loss of the Atlas/Centaur-67 on March 26, according to Accident Investigation Board Chairman Jon R. Busse, director, office of flight assurance, Goddard. In a report to Rear Admiral Truly, NASA associate administrator for space flight, the investigation board reported that the launch was made in violation of the launch commit criteria associated with weather.

JPL, Pasadena, Calif. — **PLUTO SHOWS EVIDENCE OF HAVING AN ATMOSPHERE.** New evidence has been discovered indicating that a significant atmosphere surrounds the distant planet Pluto. The new Pluto findings are based on results from the Infrared Astronomical Satellite (IRAS) and extensive observations through telescopes on Earth taken over the past three years. This latest discovery greatly enhances the stature of Pluto, which some astronomers have described as an asteroid masquerading as a planet due to its small size, odd orbit, and other characteristics more befitting an asteroid or other minor member of the solar system.

HEADQUARTERS, Washington, D.C. — **ANTARCTIC STUDIES MAY AID IN SEARCH FOR LIFE ON MARS.** The research of Dr. E. Imre Friedman, a professor at Florida State University, and Dr. Rebecca Weed, a graduate student at the University of Maine, suggests that the method by which lichens grow and live and the traces they leave in Antarctic rocks when they die might be clues to search for evidence of life on Mars. Friedmann and Weed's research, supported by grants from NASA and the National Science Foundation, also outlines that evidence of the presence of water, during the early history of Mars, raises the possibility that primitive lifeforms might have developed.

Retirement Parties

A retirement luncheon for **James E. Rammell** will be held in the cafeteria private dining room on May 28 at 11:30 a.m. Cost is $2/person (lunch is dutch treat). Please send reservations and cash or check to Jane Everett, Mail Stop 233, ext. 280I, by May 26. Contributions to the gift alone are welcome.

A retirement social for **Paul W. Jones Sr.** will be held at 5 p.m. on Friday, June 5, at the Activities Center. Cost is $7.25/person or $14/couple. For reservations, please send your check to Gloria Evans, Mail Stop 163B, or Lloyd Overbay, Mail Stop 419, by May 27. Contributions for gift only are welcome.

These Langley inventors were honored at an awards luncheon May 13 for receiving United States patents in 1986. Receiving awards were: (front row, L to R) Ping Tcheng, Bert C. Deis (retired), Terry L. St. Clair, Russell J. DeYoung, Joseph S. Heyman, Brian J. Jensen, William D. Mace (Director for Electronics who presented awards); (middle row, L to R) Elvin L. Ahl Jr., Frank H. Supplee Jr., Wesley R. Cofer III, David F. Johnston, Anne K. St. Clair, Bruce J. Holmes, Reginald J. Exton; (back row, L to R) Ernest W. Millen and Marvin D. Rhodes. Not pictured is Paul M. Hergenrother, Joseph L. Johnson Jr., Victor A. Carreno, Harold G. Bush, and Martin M. Mikulas Jr.

photos by Fred Jones

Seven Langley employees received Technology Transfer Awards at the luncheon May 13 for their accomplishments during 1986. Receiving awards were: (front row, L to R) Jag J. Singh, Anne K. St. Clair, John Samos (Technology Utilization Officer), John H. Cantrell Jr; (back row, L to R) Terry L. St. Clair, Warren C. Kelliher, Joseph S. Heyman, William T. Yost, and William D. Mace (Director for Electronics). Not pictured is Paul M. Hergenrother.

NASA-Langley Honors Inventors at Luncheon

Twenty-one NASA Langley Research Center inventors who received United States patents in 1986 and recipients of Langley's Technology Transfer awards were honored at the annual Inventors' Luncheon Wednesday, May 13, at the Hampton Holiday Inn.

William B. Mace, Langley Director for Electronics, presented the awards. Carroll C. Dicus Jr., Chairman, Inventions and Contributions Board, NASA Headquarters, Washington, D.C., was the guest speaker for the occasion.

Langley employees are recognized annually for inventions which have been determined to be of significant value in the advancement of the aerospace technology program of NASA.

Inventors receiving awards were **Terry L. St. Clair, Anne K. St. Clair, Paul M. Hergenrother, Brian J. Jensen, Wesley R. Cofer III, Russell J. DeYoung, Elvin L. Ahl Jr., Ernest W. Millen, Harold G. Bush, Martin M. Mikulas Jr.;**

Marvin D. Rhodes, Bert C. Deis (retired), **Ping Tcheng, Frank H. Supplee Jr., David F. Johnston, Bruce J. Holmes, Joseph S. Heyman, Reginald J. Exton, Victor A. Carreno, Joseph L. Johnson Jr., and E. Richard White.**

Since a large number of researchers participate in technology transfer activities at the Langley Research Center, seven employees received Technology Transfer Awards for their accomplishments during 1986. A plaque was presented as the top award to **Terry St. Clair,** for "outstanding initiative and achievement in the transfer of polymeric materials technology to industry." Certificates were presented to **Joseph Heyman, Anne K. St. Clair, Jag Singh, William T. Yost, Paul M. Hergenrother and Warren C. Kelliher,** for "excellence in promoting the transfer of NASA technology to the industrial, biomedical and public sectors."

In addition, the following 16 Langley contractor employees had patents issued in 1986: **Shubha Maudgal, Stephen J. Havens, Vernon G. Collins, Glenn L. Martin, Christopher S. Domack, Clifford J. Obara, Ahmed A. Hassan, Billy R. Adams, John M. Hassler Jr., Leonard J. Hart-Smith, Bruce L. Bunin, Donald J. Watts, Donald E. Ackley, Dan Boetz, Thomas J. Kane and Robert L. Byer.**

The Senior Management Research Review will be held Thursday, May 28, in Building 1219, Room 225, beginning at 9 a.m. Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

9:30	Methodology for Baseline Performance Evaluation of Fault-Tolerant Computers	George Finelli (Flight Systems/ISD)
9:45	Modeling of Tunable Solid State Lasers	Martin Buoncristiani (Electronics/FED)
10:00	Waviness Induced Transition — With and Without Tunnel Noise	Leon Morrisette (Aeronautics/HSAD)
10:15	Fiber-Resin Micromechanics Analysis of Delamination	John Crews (Structures/MD)
10:30	Space Radiation Physics Research	Lawrence Towwnsend (Space/SSD)
10:45	Evaluation of a Lifting Body as a Crew Emergency Rescue Vehicle (CERV)	Ian MacConochie (Space/SSD)

Course Offering

TIME SERIES ANALYSIS

Harmonic analysis of deterministic and random signals; auto- and cross-correlations and spectra; coherence; modern techniques for spectral estimation including periodogram, Blackman-Tukey, direct filtering, maximum entropy, and maximum likelihood; fast Fourier transform and zoom FFT; effects of finite length and digitization on bias and variability; spectral analysis with randomly sampled data; digital filtering; applications in modern technology.

Instructor: Dr. J. C. Hardin Date: June 22-26, 1987

Employees who are interested in signing up for this course should contact the Employee Development Branch, ext. 2611.

AIAA Holds Annual Awards Banquet

Francis Rogallo, a former NACA/NASA Langley researcher, is considered the father of modern hang gliding. Rogallo and his wife Gertrude developed the flexible wing in the 1940's while employed at Langley. Rogallo was awarded a patent for his design in 1951.

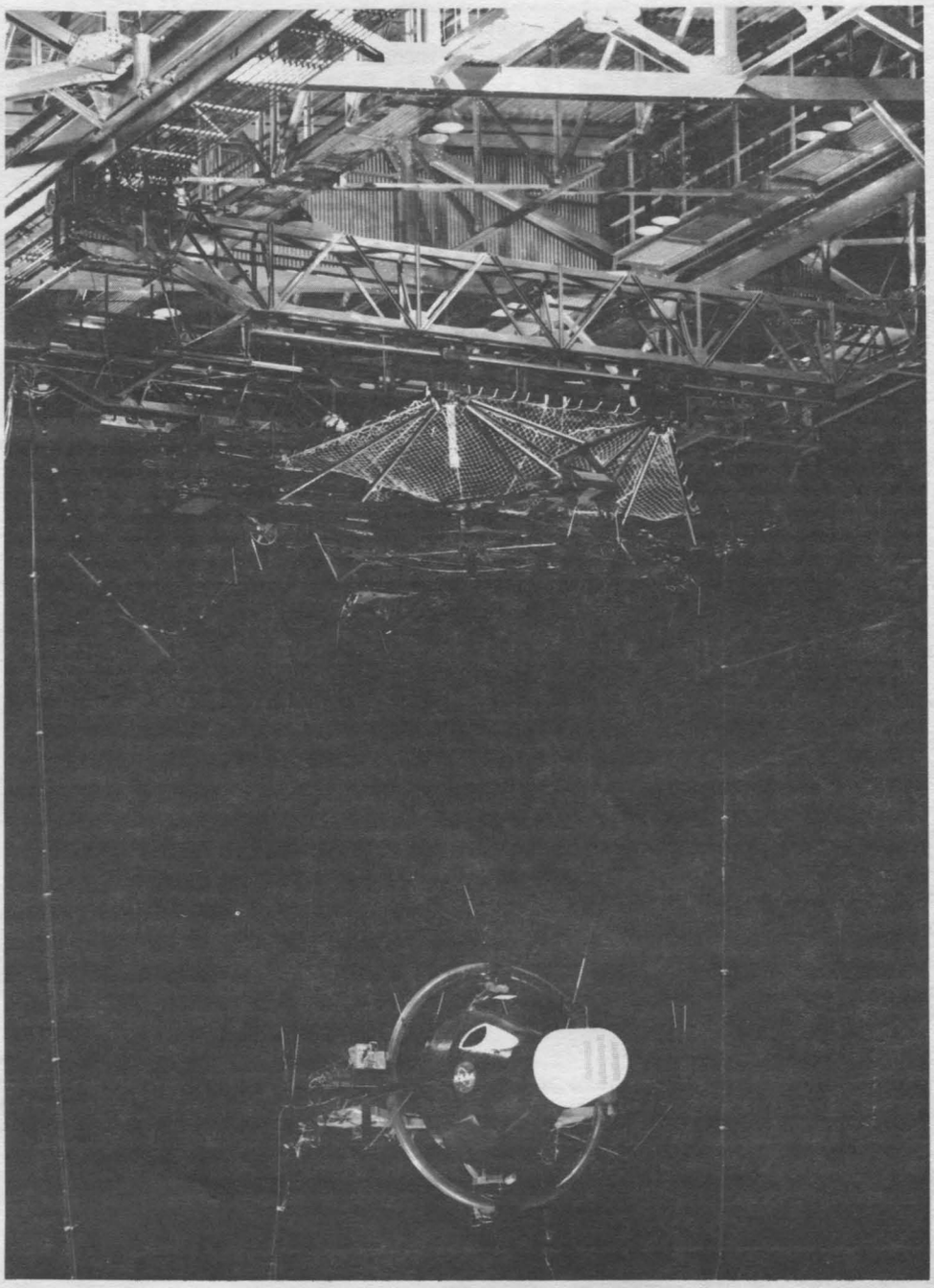
Rogallo will discuss "From a Flexible Wing to an Olympic Sport: The Story of Hang Gliding Technology" at the AIAA Annual Awards Banquet on Wednesday, May 27, in the H.J.E. Reid Auditorium, Langley Activities Center.

Rogallo has continued to follow the technology and to be involved in the sport, including taking an occasional flight from Jockey's Ridge on North Carolina's Outer Banks. He is being honored in May for his contributions to the sport of hang gliding by being inducted into the North Carolina Sports Hall of Fame.

Rogallo joined the Langley staff in 1936 after receiving a degree in Mechanical Engineering, Aeronautics from Stanford University. He has authored numerous publications and has received 25 patents. He has been a member of the AIAA since 1935 and a Fellow since 1966.

The banquet will begin at 7 p.m. preceded by a social at 6 and followed by the program at 8. The cost of the steamship round dinner is $10 for members and family, $12 for non-members, and $5 for students. For reservations, contact Gary Price, ext. 2932, or Duane Melson, ext. 2627, by May 22.

Niki Wenger, teacher in space finalist assigned to Langley, was awarded an honorary doctor of humanities degree by West Virginia Institute of Technology on May 16. When asked about her reaction to this honor, Wenger explains: "I feel a tremendous exhilaration from receiving this honor. But my greatest sense of pride comes from the fact that it has been awarded to me because of, and not incidental to, the fact that I am a teacher." During her two years at Langley, Wenger has developed and implemented projects to enhance the NASA/education partnership across the nation.



Celebrating 70 years of Research

Precision Preceded Moon Missions

Every astronaut bound for the Moon came to Langley to train. Rendezvousing in space, moving about in reduced gravity, and re-entries to the Earth's atmosphere were simulated and analyzed here. Langley also bore initial responsibility for planning and contracting for a worldwide network to track manned spacecraft. Pictured above is a docking simulator, a free moving vehicle suspended on cables, used to practice docking in space. To go to the Moon, men had to separate and unite spacecraft. This training vehicle that could be guided in any direction from within was used to master the docking technique.

Visitor Center Salutes Volunteers

The Visitor Center recently honored a corps of over 30 docents at a Volunteer Recognition Program. Langley Director Richard H. Petersen gave the keynote address, "Future Directions of Langley." A. Gary Price, Head of the Office of External Affairs, presided over the awards presentation.

As many as 200,000 visitors tour the Visitor Center each year. Visitors come from all over the world to trace man's accomplishments in his quest to fly. Retired military personnel reminisce, school children explore, and senior citizens marvel at the progression from the Wright Brothers' primitive "Flyer" to the Space Shuttle and beyond.

Most of these visitors are greeted by docents – or volunteers – who welcome them warmly and share their enthusiasm about air and space. Visitor Center volunteers are of all ages and all backgrounds. They share the common bond of interest in and commitment to aeronautics and the American space program.

"Working as NASA ambassadors, the Visitor Center volunteers are a tremendous asset to the center," says Programs Manager/Docent Coordinator Lindy J. Perkes. "They work as aerospace lecturers, receptionists, tour guides, and assist in serving educators at the Teacher Resource Center. In our expansion of programming, we need the services of many more volunteers."

Residents from all over Tidewater volunteer at the center. Docents from the Hampton area are William Beczkalo, Victor Cooley, Maxine Copeland, Vincent D'Elia Jr., Jennifer Green, David Hillerson, John M. Hort, Tamara Krebs, Suellen Lansell, Elizabeth Leggett and Jane Swingle.

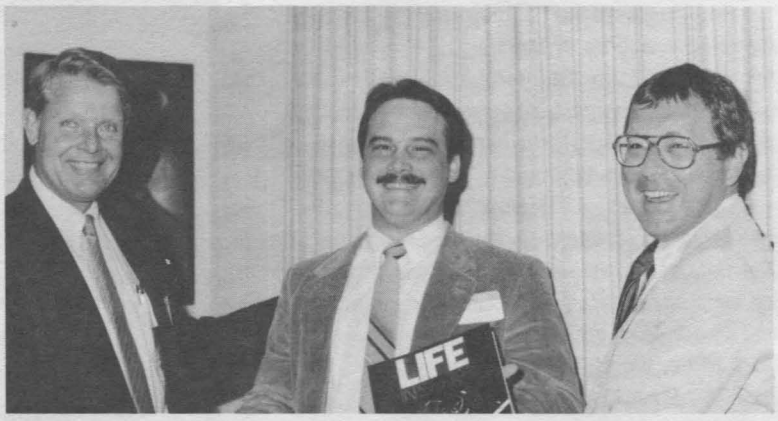
Volunteers from Newport News are Robert C. Anderson, Anne Bahr, Neil Bates, Dixie Lee Hoke, Ann McConachie, Elwood M. Reinhardt, John F. Slack and Terry W. Young.

York County/Poquoson area volunteers are Carol Lynn Farrant, Ethel Mae McEvoy, Linda D. Hunt, Linda Lucas, and Linda G. Nunamaker.

Southside volunteers include Kathryn Barclay, Howard Borodkin, Frank Quinto, Mark William Walker and Jerry Wells from Norfolk; Charles M. Fremaux and Margaret A. Gray from Virginia Beach; and Randy Wagner from Chesapeake.

Those interested in learning more about the Docent Program may visit the Visitor Center or call 865-2855.

Five volunteers who have contributed over 200 hours each to the Visitor Center Docent Program were recently recognized. Langley Director Richard H. Petersen (left) and A. G. Price, Head of the Office of External Affairs (second from right) congratulate (left to right) Kathryn Barclay of Norfolk, Maxine Copeland of Hampton, and Frank Quinto of Norfolk. Not pictured are Dixie Lee Hoke of Newport News and William Beczkalo of Hampton.



photos by Sandra Horsey

Recognized for exceptional service to Langley through the Visitor Center program was John "Randy" Wagner of Chesapeake. Petersen (left) and Price (right) congratulate Wagner (center), who has given more than 500 hours of service.

photo by Fred Jones

SHUTTLE STUDENT INVOLVEMENT PROGRAM CONFERENCE. The Shuttle Student Involvement Project (SSIP) is designed to stimulate interest and participation in science and math by providing secondary school students with the opportunity to design experiments which might be conducted in space. The recent regional conference sponsored by Langley's Office of Public Services was attended by 12 semifinalists, accompanied by their teacher-advisors. During the conference each student presented their experimental proposal to consultants representing NASA and several universities. Student participants, pictured above, are: (front row, L to R) Susan Green, Lilia Vigdarovich, Karen Reardon, Crystal Burnside, and Michael Cate; (second row, L to R) Gregory Greco, Robert Stimpson, Scott Turner, Daryl Spencer, Emil Auram, Todd Harris, and Scott Witz.

Key Position

Charles E. Barr has been selected Supervisory Aerospace Engineering Technician, Research Aircraft Support Section, Aircraft Operations Branch, Low-Speed Aerodynamics Division, under CPP 87-28.

Note of Thanks

Jim Tyeryar writes: "My family and I would like to thank everyone for the visits, cards, flowers, donations of blood, offers of help, and, especially, for the prayers while I was at Riverside and the Mayo Clinic. It is great to have such wonderful friends."

Happenings

VISITOR CENTER FEATURES JUDY WHITE, TEACHER IN SPACE AMBASSADOR. Kentucky Teacher in Space Ambassador and Young Astronaut Chapter Leader Judy White will speak on "To Peace and Friendship: The Young Astronaut-Young Cosmonaut Exchange Program" at 1 p.m., Saturday, June 6, in the Visitor Center main theater. White accompanied a group of ten students, aged 13-15, and five adults on a tour of the Soviet Union last November.

LAA SOCIAL. The Langley Activities Association will hold a social Friday, May 29, from 4 to 6:30 p.m. in the Activities Center. Featured will be disc jockey Ernie Stokes with music of the 60s and 70s.

BLOODMOBILE. The next Bloodmobile visit will be held Wednesday, May 27, 9 a.m. to 3 p.m., at the Activities Center. For more information or to make an appointment, contact the Health Unit, ext. 3976 or 2246.

NAGS MAY MEETING. National Association of Government Secretaries will meet on Tuesday, May 19, 6:30 p.m., Holiday Inn on Mercury Blvd. Featured speaker will be Niki Wenger, teacher in space finalist assigned to Langley. Cost is $10. For reservations, call Reachie Hall, ext. 2159, or Shirley Davis, ext. 2759.

CEBAF SEMINARS. Dr. Bernard Metsch, University of Bonn, will present a seminar on "Quark Excitations in Nuclei," Wednesday, May 27, 11 a.m., in room 47 at CEBAF. On Thursday, May 28, Dr. Rudolph Tegen, University of Cape Town, will speak on "Nucleon Electromagnetic Form Factors from Scattering of Polarized Muons or Electrons,"11 a.m., in room 47. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

PUBLICK TIMES CHORUS SHOW. Publick Times Chorus, Inc. of Sweet Adelines, Inc., will present "Goodbye to Broadway" at the Williamsburg Regional Library Auditorium. Show times are Friday and Saturday, May 29 and 30, at 8 p.m., and Sunday, May 31, at 3 p.m. For information or tickets, call Linda Hunt, ext. 4932. Tickets are also available at the door.

SIGART. The formation meeting for the new SIGART local will be held Monday, June 1, 6:30 p.m., at the Western Sizzlin' restaurant on Cunningham Drive. For more information, please contact Jim Rogers, ext. 2887.

THURSDAY NIGHT BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, contact Eugene Hicks, ext 3737.

VISITOR CENTER SOUVENIR COUNTER ANNOUNCES 'SPORTS WEEK.' Souvenir Counter personnel will set up shop in the Langley cafeteria May 26-29 featuring sports items. The specialty products will include shorts, t-shirts, coolers, thermos bottles, frisbees, windseekers — even jogging suits for babies! Get your summer off to a fashionable start. Items also available at the Visitor Center. Come see what's new.

OSU Offers Videocourse on Materials

Oklahoma State University (OSU) will sponsor a videocourse entitled "An Engineer's Guide to Materials: Their Properties & Selection" presented by Dr. Eric Price, Professor of Mechanical Engineering. The videocourse can be seen in Bldg. 1194A, Rooms 109/110 and 203/204.

Specific topics include:

1. The world of materials
2. Structure, properties, applications, selection
3. Properties, processing, selection
4. Introducing steels
5. Carbon and low alloy steels
6. Higher alloy steels
7. Castings and welding

Course form/length: Two 6-hour sessions followed by live question and answer sessions after each topic.

Schedule: Thursday, June 18, 11 a.m.- 5 p.m.
Friday, June 19, 11 a.m.- 5 p.m.

swap and shop

FOR SALE

'83 OAKWOOD MOBILE HOME, spacious, 2 BR,1 BA, appls, bay window, track lighting, on fenced lot w/shed. $16,900. 868-6281.
SOFA, 4-piece sectional, brown, LNC. $200. 868-6281.
KENMORE WASHER, heavy duty, white, GC. $50. 596- 2155.
SAILBOAT, 15 ft. sloop rigged Albacore, w/trailer, 2 sets sails. $1200, neg. 898-5113 after 5 p.m.

FOR RENT

BEACH COTTAGE, Kill Devil Hills, NC, 3BR, A/C, cable TV, 1 block from beach. Rent by week/weekend. 867-8504.
GARDEN PLOTS available, 20 x 40 ft., $5. Call Martha Norman, ext. 3294.

Tune In TV-13

"It's great to be in Hampton Roads," a special presentation of WVEC-TV-13, will look into the lifestyles of people on the Peninsula and Southside. Langley engineers **Buddy** and **Dariene DeRyder** are featured both at home and at work. Tune in at 8 p.m. on Friday, June 5, for Langley sites and sounds.

June Gibbs Brown, Associate Administrator for Management, NASA Headquarters, is speaking at 2 p.m. today at the Activities Center, Building 1222, for the Spring Federal Women's Program. Brown's address, "Taking Charge and Making Changes," gives an account of how she changed her life from housewife to business woman and dealt with the challenges and obstacles along the way. All employees are invited to attend and should charge their time to job order A-1980.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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McClinton Presents National Aero-Space Plane at Visitor Center

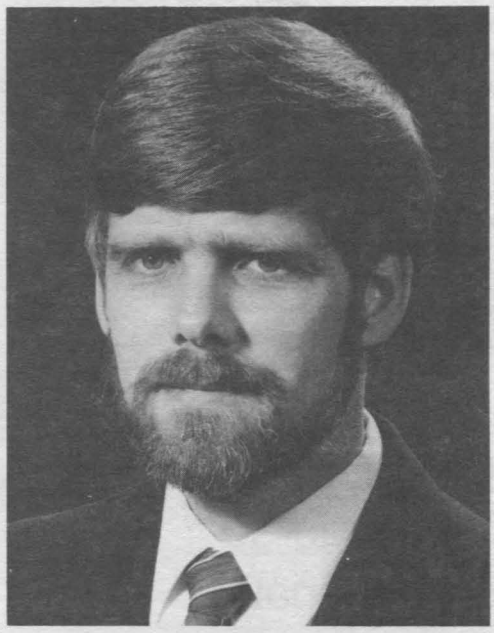
Charles R. "Chuck" McClinton, Langley aerospace engineer, will discuss the National Aero-Space Plane (NASP) Program at noon on Thursday, May 28, 1987, in the Visitor Center main theater. McClinton's presentation is the third in the Guest Lecture Series on Aerospace Sciences co-sponsored by the Visitor Center and the AIAA-Hampton Roads Section Student Branch.

Imagine a vehicle that takes off from a conventional runway, is able to fly halfway round the world in two hours or boost to orbit to work in space, and then return via an airport runway. Sound impossible? Actually, this is an oversimplified but accurate description of the X-30 series NASP, a joint venture of NASA and the Department of Defense.

In his 1986 State of the Union message, President Reagan announced plans to go forward with research on an aerospace plane that could shrink travel time between Washington, D.C., and Toyko to less than two hours. The President asked for research and development that could lead to one-stage, fully reusable aerospace vehicles capable of reaching orbit directly from conventional airport runways.

For several years NASA and the Department of Defense have done research on hypersonic technology – flight several times faster than the speed of sound. These research results have been augmented by hypersonic and transatmospheric flight experience gained through the X-15 in the 1960s, Shuttle missions in the early 1980s, and by recent advances in propulsion, materials, and computer technology.

McClinton has spent 18 years in the Hypersonic Propulsion Branch at Langley and is now working with the Aero-Space Plane Project Office on the Conceptual Design Team.



Please make note of the following dates for 70th Anniversary festivities:

Friday, July 17 . . . . ANNIVERSARY CELEBRATION

Saturday, October 24 . . OPEN HOUSE

1917 70 Shaping Tomorrow
NASA Langley Research Center
1987

cafeteria menu

Week of May 26-29

MONDAY: CLOSED FOR HOLIDAY!

TUESDAY: Chicken & rice soup, spaghetti & meat sauce dinner, seafood quiche, grilled pork chops. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New England scrod, beef enchiladas. Snack Bar: 1/4 lb. cheeseburger, turkey & Swiss club.

THURSDAY: Chicken vegetable soup, roast turkey dinner, beef tips over rice, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.
FRIDAY: Manhatten clam chowder; filet of fish dinner; beef, macaroni & tomatoes, baked beans & franks. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of June 1-5

MONDAY: Worcestered beef & vegetable soup, chopped steak, baked rainbow trout, BBQ chicken quarter. Snack Bar: Chicken filet, pizza supreme.
TUESDAY: Minestrone soup, baked Italian lasagna, meat loaf w/brown gravy, fried fish nuggets. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, blackened fish, beef liver & onions. Snack Bar: Chicken filet, grilled ham & cheese.
THURSDAY: Fish & corn chowder, ribeye roast beef w/vegetable, stuffed boneless chicken breast, broccoli & cheddar quiche. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.
FRIDAY: Bull Island clam chowder, filet of fish dinner, chicken breast Teriyaki, ham & macaroni au gratin. Snack Bar: Chicken filet, hot Italian sausage.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

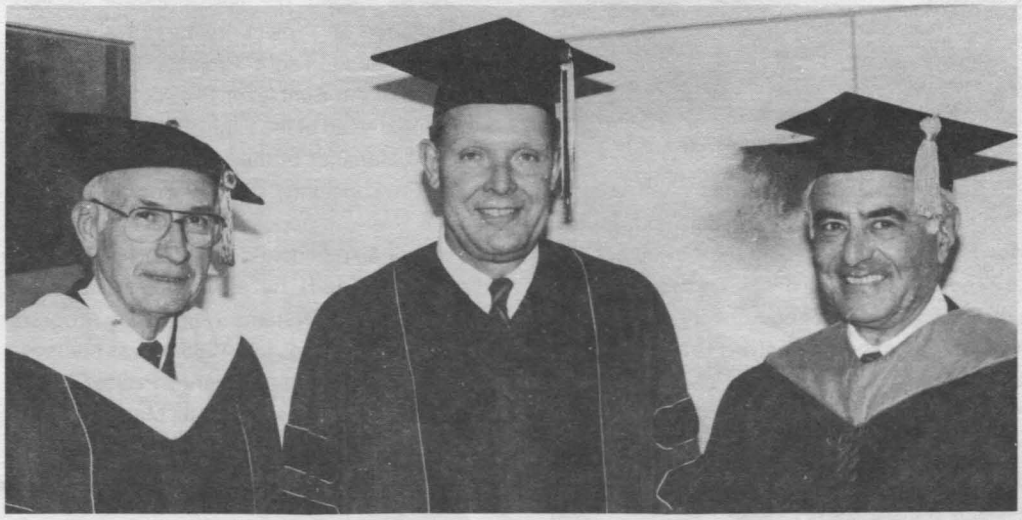
Volume 26, Issue 11 **June 5, 1987**

Petersen Honored with Doctorate from GWU

Langley Director Richard H. Petersen was awarded a Doctor of Public Service degree by George Washington University May 10 during graduation exercises. Petersen was honored for his "scientific and managerial leadership in US aerospace programs; commitment to the educational community in the improvement of manpower capabilities for aerospace progress and strengthening of aerospace-related graduate training; and leadership in the School of Engineering and Applied Science's Joint Institute for the Advancement of Flight Sciences."

Petersen has been Langley Director since January 1985. He came to Langley in July 1980 as Deputy Director serving as General Manager of the Center, reporting to the Director, and responsible for directing aeronautical research and technology activities and programs, and institutional management of all facilities and equipment.

Before his assignment to Langley, Petersen was Chief of the Aerodynamics Division at the Ames Research Center. Petersen joined NASA at Ames in 1957.



Langley Director Richard H. Petersen has been awarded a Doctor of Public Service degree by George Washington University. Pictured following graduation exercises in Washington, D.C., are (L to R) Lloyd Elliott, President of GWU, Petersen, and Harold Liebowitz, Dean of the School of Engineering and Applied Science.

The author of a number of technical publications on aeronautical subjects, Petersen is a Fellow of the American Institute of Aeronautics and Astronautics and was elected to the Board of Directors in May 1984.

Petersen and his wife, Joandra, have a son and a daughter.

Pauls is New Associate Director at Langley

Sidney F. Pauls has been selected as the new Associate Director at Langley, under the Senior Executive Service program.

Pending approval from the Office of Personnel Management, Pauls will participate with the Director and Deputy Director in the overall management of the center. These duties involve all aspects of center management, including planning, directing and evaluating center programs; formulating and executing center policy; developing and directing center administrative and technical support functions; and providing center representation to top NASA management, other government agencies, industry, universities, and the general public.

A member of the Langley staff since 1963, Pauls has served as Assistant Director for Management Operations since June 1986. In this position he has assisted in Langley institutional management operations, including personnel, programs and resources, acquisition financial management, management support, research information and applications, business computer systems, chief counsel and industry relations.

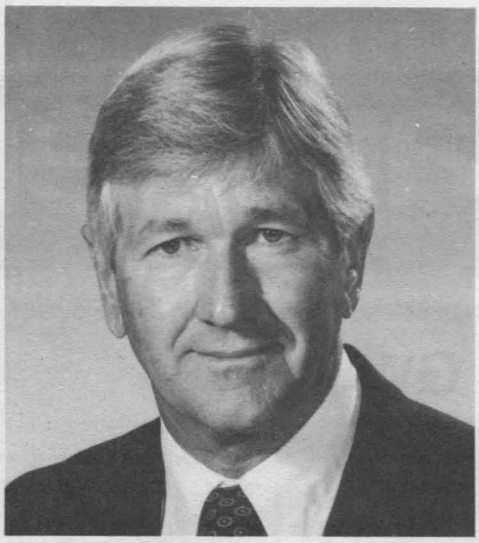
Previously Pauls was Staff Assistant to the Langley Director, coordinating centerwide program planning activities, integrating Langley's program and institutional planning and providing staff support to the Director and Langley Director. He also has served as Chief, Assistant Chief and Branch Head in the Business Data Systems Division; Chief, Personnel Division; Deputy Director of the Office of Aeronautics and Space Technology's Administration and Program Support Division, at NASA Headquarters, Washington, D.C.; Assistant Chief and Head of the Analysis and Planning Group, Programs and Resources Division.

Pauls received a bachelor of science degree in economics from the College of William and Mary in 1958 and a master of science degree in management science from George Washington University in 1970.

Pauls and his wife, Betty, live in Poquoson. They have two children.

James/Harris Lead New Projects Division

longer head



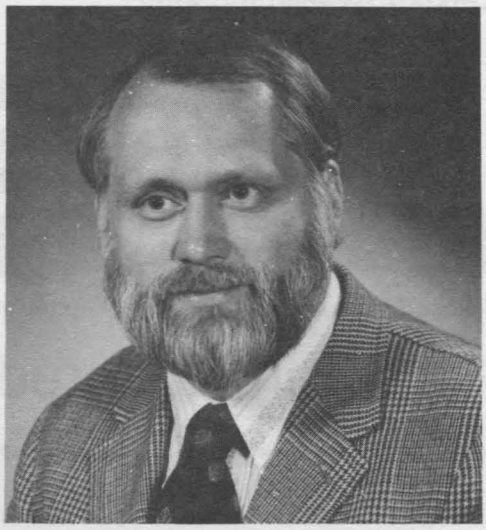
Robert L. James, Jr.

Robert L. James Jr. has been selected as Chief of the Projects Division and **Jack E. Harris** has been named as the Assistant Chief.

The division was established within the Electronics Directorate, effective April 27, and consists of the Resource Analysis Branch, Projects Development Branch, Control of Flexible Structures Project Office, Long Duration Exposure Facility Project Office, Scout Project Office and the ERBE/SAGE and LASA Office.

James, assisted by Harris, is responsible for defining, planning, advocating, directing, and coordinating the management of major flight projects at Langley. This includes supervision of major pre-approval tasks, such as studies to identify needs and opportunities for flight experiments; the definition and evaluation of candidate hardware/software configurations; the determination of resource requirements, procurement strategies; and internal and external advocacy and coordination.

James began his NASA career in 1959 as Manager of Project Vector. He became Assistant Head, Flight Projects Branch, and Manager of the Sunblazer Project in 1966. He was named Head of the Flight Projects Branch in 1970 and Manager of the Mission Development Office, Environmental Quality Programs Office, in 1972. He was appointed as Manager of the Nimbus G Experiments Project in 1973, and from 1979 to 1981 he served as Manager of the Large Space Systems Technology Program Office. From 1981 to June 1985 he was Manager of the Aircraft Energy Efficiency Project Office. In June 1985 he was selected as Manager of the Long-Duration Exposure Facility Project where he served until chosen for his current position.



Jack E. Harris

Harris began his NASA career in 1961 as an aeronautical research engineer in the Aerospace Mechanics Division. He was assigned to the Electrical Systems Division, working in the Lunar Orbiter Project Office from 1963 to 1968. He transferred to the Viking Project Office in 1968.

He was named Deputy Manager, Joint NASA/Air Force National Hypersonic Flight Research Facility Program in 1976. He later became Manager of Langley's Atmospheric Lidar Study Office.

Langley Colloquium

Mushala Discusses Project Forecast II at Colloquium

The Air Force has once again launched a project designed to improve its future warfare capabilities. It is called Project Forecast II.

Lt. Colonel Michael C. Mushala, an Air Force Systems Command officer, will speak about Project Forecastr II at a Langley colloquium Monday, June 8. The lecture will be held in the Activities Center at 2 p.m. followed by a question and answer session and informal discussion.

This project was created in 1985 by the Secretary and the Chief of Staff of the United States Air Force. The primary aim of Project Forecast II, as stated in various publications, is to provide Air Force commanders with an index of the "art of the possible" in future warfare.

The project, which was directed by the Commander of the Air Force Science and Technology (AFSC) program, has been supported by a staff of 175 military and civilian experts who have developed the plan for the operation. This plan is composed of 70 initiatives that the Air Force believes will give the US continued technological supremacy.

In his lecture, Mushala will discuss how he feels Project Forecast II is a "roadmap for future science and technology development" and how it is designed to live up to the Air Force's expectations.

Mushala is the Chief of Plans Division for the Director of Science and Technology. He is responsible for long range planning of the AFSC program.

The primary goal of his division today, however, is to make sure that Project Forecast II technologies and systems are firmly "bedded down" in the AFSC program. This fact makes him one of a few perfect candidates to share information on what the Air Force is attempting to accomplish with the program.

Mushala is part of a group that has 14 Air Force laboratories and a combined research budget totaling $1.6 billion. His background has thoroughly prepared him for the task of keeping the AFSC programs together.

Mushala has won numerous honors and achievements, including the Air Force Academy Clement's Award as the Outstanding Military Educator for 1982 and the Headquarters ATC Company Grade Officer of the Year for 1977.

National Aeronautics and Space Administration
Langley Research Center

NASA

Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Marny S. Skora
Photographs . . . . . Photo Lab

The privelege of advertising articles in this publication is restricted to the staff 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 Plans Use of ELV

NASA Administrator Dr. James C. Fletcher recently announced a plan to acquire expendable launch vehicle (ELV) services for NASA missions. Launch services will be procured competitively from the private sector whenever they are available on a commercial basis except for a transitional first phase covering launches through 1991.

"NASA's purpose in seeking expendable launch services is to lessen dependence on a single launch system, the Space Shuttle. Expendable launch vehicles will help assure access to space, add flexibility to the space program, and free the Shuttle for manned scientific, Shuttle-unique, and important national security missions," Dr. Fletcher said.

"A major objective of this plan is to accelerate the deployment of the nation's backlog of space science missions. The reinroduction of expendable launch vehicles will provide NASA with a so-called 'mixed fleet' and help achieve this objective," Dr. Fletcher continued.

In the first phase NASA plans to acquire launch services noncompetitively in order to make the best match between available ELVs and already designed payloads and mission requirements. Launch services for types of ELVs the Department of Defense (DOD) currently has under contract with industry may be acquired through DOD.

For ELV launch services beyond the first phase, NASA plans to initiate the necessary actions in FY 1988 to contract competitively with industry beginning in FY 1989.

This approach actively supports the Administration's ELV commercialization policy. It will provide industry with a sufficiently long-term business base to sustain operations and compete effectively in the commercial marketplace for new business. Additional advantages are quantity-buy cost savings and the flexibility to substitute missions when payloads fall behind schedule or priorities change.

In Memoriam

Sympathy is extended to the family of **William A. Brooks, Jr.** who retired from the Structures Directorate in February 1980. He died May 8 at age 66.

Take note:

Beginning July 3, the **CAFETERIA MENU** will no longer be published in the **Researcher**. For the convenience of your staff, be sure to post the menu mailed to you in a conspicuous location. Thank you.

News Around NASA

JPL, Pasadena, Calif. — **VOYAGERS PRECISELY MEASURE NEW COSMIC RAY PARTICLE SPECIES.** NASA's two Voyager spacecraft, exploring different areas of the solar system more than two billion miles from Earth, have provided the most precise measurements yet of new species of cosmic ray particles. Cosmic ray particles are the nuclei of atoms moving at nearly the speed of light. The Voyager investigation offers the potential of independent measurements of the elemental compositions of the local instellar medium.

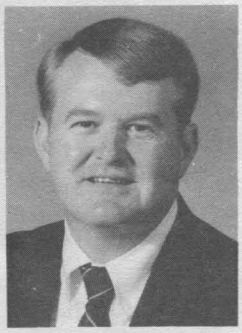
HEADQUARTERS, Washington, D.C. — **ASTRONAUT RIDE WILL LEAVE NASA FOR STANFORD UNIVERSITY.** Dr. Sally K. Ride will leave NASA in early autumn to assume the position of Science Fellow at the Stanford University Center for International Security and Arms Control, Palo Alto, Calif. The first American woman in space, Ride's assignments in Shuttle systems development, mission control activities and Shuttle flights, Challenger accident investigation, and as special administrator for long range and strategic planning mark her career as one of the most varied and productive in agency history.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — **FULL SCALE SOLID ROCKET MOTOR SUCCESSFULLY TEST FIRED.** Morton Thiokol, NASA's prime contractor for Space Shuttle solid rocket motors, successfully test fired a full-scale motor at its Wasatch facility in Utah. The motor fired consisted primarily of original motor case hardware, that is without the capture feature and third O-ring being implemented in the SRM redesign.

HEADQUARTERS, Washington, D.C. — **FLIGHT PATH TO THE FUTURE IS FEATURED AT PARIS AIR SHOW.** "Flight Path to the Future" is the theme of NASA's exhibit at the 37th Paris Air Show, Le Bourget, France, June 11-21. Located in the United States pavilion, the audio-visual production will focus on the advances in aerospace research, challenges of the future in space, and the people of NASA.

Awards Presented for ACCESS

Two Langley researchers have received Manned Flight Awareness awards for their contributions to the Assembly Concept for Construction of Erectable Space Structures (ACCESS) Project. The awards were presented during a special ceremony at NASA Headquarters May 13.



Walter L. Heard, Jr. **John F. Rogers**

Walter L. Heard Jr., senior aerospace engineer and principal investigator on the project, was cited for "outstanding efforts in developing techniques of on-orbit construction."

John F. Rogers, engineering manager for the ACCESS Project, was commended for "exceptional service in the engineering management of the NASA ACCESS Experiment, resulting in the demonstration of a new space structure technology."

The nation's first orbital construction was successfully conducted during Space Shuttle mission 61-B, aboard Atlantis, in late 1985. The main purpose of the flight experiment was to demonstrate man's capability to manually erect large structures in space during extravehicular activity (EVA) and to time- correlate the activity with 1 g and neutral buoyancy assembly of the structure on Earth. The success of the ACCESS experiment has led to acceptance of EVA as an efficient method of construction for Space Station.

Heard developed the method of constructing the 45-foot beam structure in space and became a qualified "astronaut diver," performing space-suited construction simulations in neutral buoyancy facilities. Since the ACCESS flight, he has been working on another flight experiment demonstrating construction techniques for Space Station scale structures. He has made significant technical contributions to the acceptance of on-orbit construction of large space structures for future NASA missions.

Rogers was responsible for design, development, delivery, integration and launch support of the ACCESS hardware. He managed all technical interfaces with personnel, including the astronauts, from the Kennedy Space Center, Marshall Space Flight Center and Johnson Space Center, and had responsibility for the technical content of all design and flight safety reviews. He has received commendations from JSC and MSFC for "dedication and outstanding performance as engineering manager and critical contributions which ensured success of the ACCESS project."

21 Years as NASA Research Pilot

Jim Patton Reminisces

about Langley Career
longer head

-by Felicia Walker

Being in the right place at the right time has a lot to do with success, James M. Patton, Jr. believes. This philosophy has certainly been reflected in the movement of his career.

Patton, retiring head of the Aircraft Operations Branch, seemingly has placed himself in the right places at all the right times.

Patton will begin another journey June 1 to find the right place for himself and his wife, because that will be his final day or, as Patton puts it, his "jumping off day."

Moving up from the ranks in the US Navy to Lieutenant Commander, working with the Federal Aviation Administration as a test pilot, and ultimately joining NASA are the results of Patton's never- ending quest to be somehow involved with airplanes.

"I've always been nuts about airplanes," Patton said. "I can't recall ever wanting to do or be anything else; no fireman syndrome, no policeman dreams. That's one reason I feel extremely lucky to have had everything work out."

Things have worked out for Patton in a career spanning over two decades, allowing him the time to accrue numerous awards, honors, and professional accomplishments.

Receiving awards like the Iven C. Kincheloe Award in 1978 or the NASA Exceptional Service Medal in 1979 or even the Safety and Flight Equipment Society Award in 1980 has not made Patton complacent.

"Guys in the military will be the first to tell you that there are probably a hundred guys that deserve them (medals) for every one that gets them," Patton said, "but it's certainly not to say I'd turn them down; I'm very proud of them."

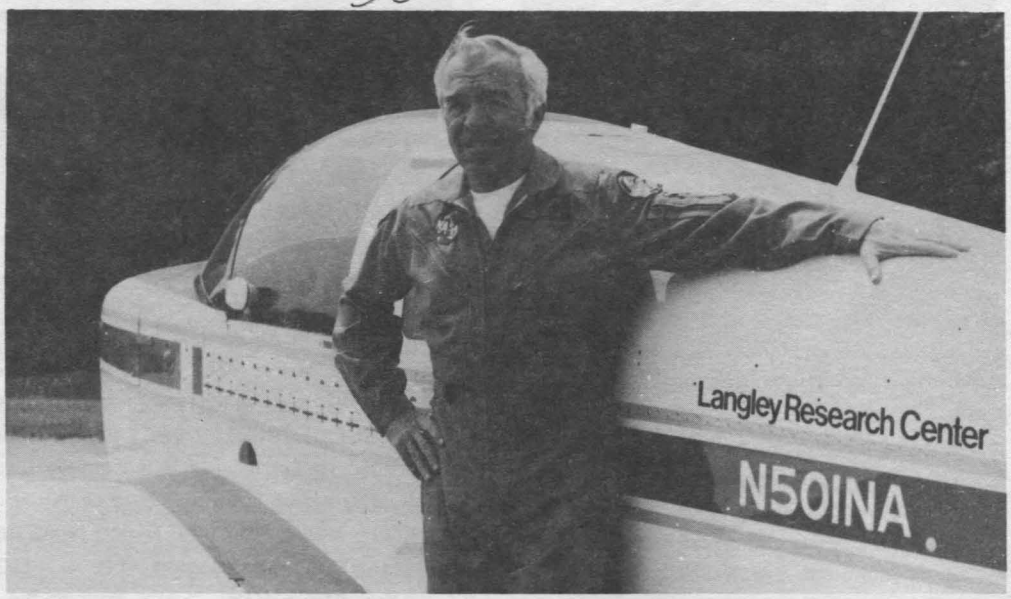
When asked what times afforded him his favorite memories, Patton did not mention the acceptance of his awards. He continued to reminisce about his engineering and fighter test pilot experiences.

Patton said his most memorable experience occurred at the onset of his career when he worked in Germany on a highly experimental transport jet.

"It was the state-of-the-art machine at the time and it was exciting because it had few margins for safety. One failure could force you to eject."

The concept of that particular airplane was never developed, however, Patton added.

The highlight of his career at Langley was his work on light aircraft. "It really bothered me that manufacturers didn't understand how to design an airplane with safe stall/spin characteristics and the public didn't know what they were buying."



Jim Patton, NASA research pilot, is pictured in a most familiar setting – with one of the many aircraft that has consitituted his career for the past 20 years.

His initiation of a research program on unrecoverable spins was an outstanding contribution to aviation safety.

With the glamour and adventure of being a research test pilot and engineer came hard work and some close calls. Much of the hard work came from incentive – high standards and hard-to-attain goals. Patton put forth much effort to produce top grade work.

As far as his close calls go, Patton feels many of them were because of "dumb things" that he did. He cited one example when he almost "bought the farm."

"When I was somewhat younger and in the military, I would do night bombing under a parachute flare and pull back up again into the blackness. I would sometimes experience vertigo (a sensation of dizziness)," Patton said.

His greatest adventure is still to come as he and his wife, Marcele, prepare to search for a new home.

"We'll go down to Key West and begin working our way northward, spending a little time in each of the spots we've selected."

He and his wife will choose the best of the candidate spots and live in the area for a year or so. Each of Patton's three daughters, Kathleen, Dana and Ellen, are happy about the impending move.

To a man who has flown more than 150 different aircraft, has accumulated more than 8,700 flight hours, and has served as a night attack carrier pilot in the Navy, this adventure is the scariest of them all.

How does he explain this view of his move? By saying, "It's the unknown."

Even this move will not prevent Patton from doing what he loves best, working with airplanes.

"What will happen is," Patton said, "I'll get bored eventually . I'll do some consulting and I may get a certificate from the FAA which would allow me to do some flight testing."

All in all, Patton is a man who has great things still planned for the future.

Note of Thanks

Jim Patton writes:

"To my Friends:

I'm retiring from NASA on June 1, 1987. I preferred not to have a retirement party and so this is to express my thanks to all of you with whom I've worked and played over the years. It's been a great adventure . . . lots of strange, different, and wonderful aircraft (of course, there are no bad ones), but more important that that has been my association with truly great people like yourselves. We were privileged to accomplish some useful, valuable things with flight research and to have fun doing it – usually, anyway. Marcie and I are excited and challenged by the next big step. Wish us the best, as we do for you."

Key Positions

W. Jefferson Stroud has been selected Assistant Head, Structural Mechanics Branch, Structures and Dynamics Division, Office of Director for Structures.

Samuel A. Morello has been selected Supervisory Aerospace Engineer, AST, Navigation, Guidance and Control Systems, Flight Management Division, under CPP 87-30.

Gail N. Birch has been selected Secretary, Employee Development Branch, Personnel Division, under CPP 87-1 (4).

Positions Available

The following Competitive Placement Announcements are currently open:

87-43: AST, Electrical Experimental Equipment Supervisory Electrical Engineer, GM-0850-13 or 14, Facilities Engineering Division, Electronic Systems Branch, Facility Automated Controls Section. Closes June 9.

87-44: Procurement Officer, GM-1102-14, Acquisition Division. Closes June 9.

87-45: Contract Price/Cost Analyst, GS-1102-11 or 12, Acquisition Division, Acquisition Operations Branch. Closes June 19.

Correction

Announced CPP position 87-42: AST, Technical Resources Management, was published in error. (May 22, page 3) There is no such position available. Apologies per Don Petrine.

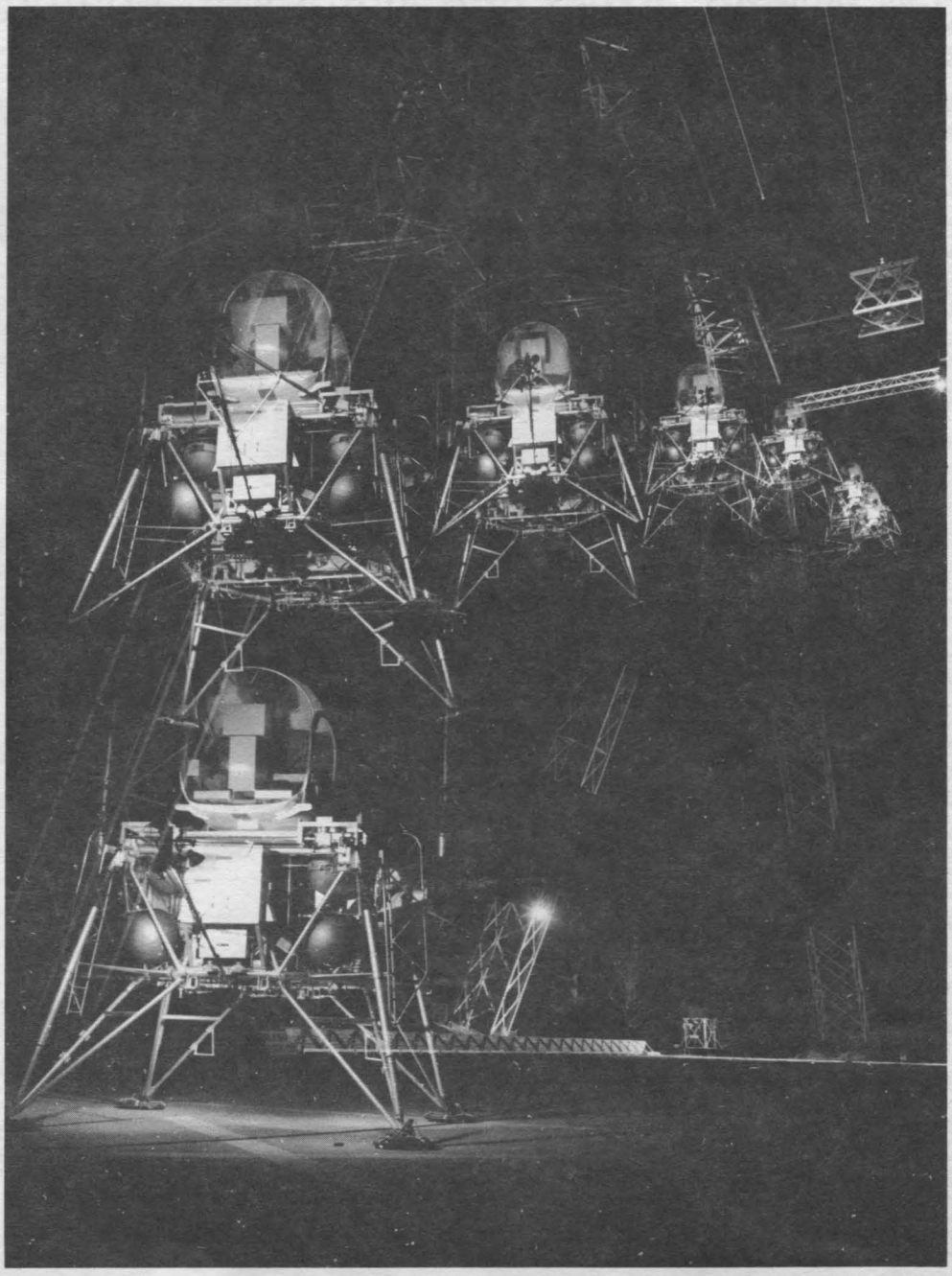
AIAA Manuscript Award Competition

The AIAA announces the opening of the 1988 competition for the best historical manuscript dealing with science, technology, and/or the impact of aeronautics and astronautics on society. This is the only literary prize in the history of aerospace technology of a book-length manuscript.

Entries must be in English and not over 75,000 words in length. Manuscripts must be submitted by September 1, 1987. AIAA History Manuscript Contest winner receives an AIAA Medal, Certificate of Citation and rosette pin. Value of this award is demonstrated by the fact the manuscripts of all previous award winners have been or are being published.

For contest rules and further information, contact Gary Link, 838-2176.

The testimony of a good conscience is worth more than a dozen character witnesses.



Celebrating 70 Years of Research

Descending Structure Simulates Moon Landing

With its sights on the Moon, NASA settled on the concept of a lunar rendezvous as the best way of getting there and back. The master plan was to detach a small manned spacecraft from a command craft, make the lunar landing, and then catch up and dock with the mother ship in orbit.

This multiple-exposure image shows a practice Moon landing in progress at Langley in 1967. Note the helicopter-style crew cabin atop the lunar landing module.

Self-Study Courses

The following new self-study courses are now available in the Learning Center:

The Gaia Hypothesis, 1985 (Video Tape, VHS, 30 Minutes)

Situational Leadership II, (6 Audio Tapes, 6 Hours)

Strategic Defense Initiative: The Technical Challenge (Video Tape, VHS, 1 Hour)

For more information, please call ext. 3014.

Jim Wilson, Artist and Naturalist, Featured at VLM

Langley data technician Jim Wilson leads two distinct lives, but the designation artist and naturalist spans them both.

An employee of the ST Systems Corp., Wilson is chief technician for five major projects of the Atmospheric Sciences Division. He works directly with scientists and specialists to create accurate technical graphics of scenes, processes, objects, and ideas representing the research in progress at Langley ASD.

There's a flip side to the technical illustration Wilson works on from 8 to 4:30 each day. After hours, he chooses the subject of his attention and becomes a creator. Even with this latitude, it's back to nature for his inspiration. He refers to himself as "an avid preservationist, very interested in all parts of our world and very concerned about the permanent destruction which is taking place in different parts of it." Conservation seems to be the underlying current of his existence, both at Langley and in his art.

Wilson was chosen from a field of several wildlife artists to do the commemorative painting marking the grand opening of the Virginia Living Museum (VLM) in Newport News. "It just couldn't be more natural," says VLM Executive Director Robert P. Sullivan. "The goal of the museum is to foster deep respect and appreciation for preserving our natural world. Jim Wilson, local award-winning artist, seems to have this same goal in mind each time he puts the finishing strokes on another beautiful wildlife painting." Wilson has donated the painting to the museum as a permanent memento.

STX data technician Jim Wilson works on the commemorative painting he was commissioned to do for the opening of the Virginia Living Museum. Wilson is pictured in his studio which he and his family refer to as the "Outback."

Wilson's art has also been chosen to open the Changing Exhibit Gallery at the museum. Thirty original pieces, mostly watercolors and a few pencil drawings, will be on display through June.

Wilson is a staunch supporter of conservation groups and a firm believer in the work they are doing to protect our natural environment and the creatures that inhabit it. Jim Wilson lives this commitment, both through his work at Langley and in his private life.

Winners and runner-up players in the Langley Tennis Club Spring Ladder Tournaments are (front row, L to R:) John F. Wilson, Carol Wilson, and Charles Bryant; (back row, L to R:) Tom Yager, Carol Wieseman, and Dennis Bartlett. Bryant defeated Bartlett, 6-4, 6-2, in the Men's Championship Ladder Tournament; Carol Wilson defeated Wieseman, 6-4, 4-6, 6-0, in the Women's Ladder Tournament. In the All Players Ladder Tournament, which drew 37 entries, John Wilson defeated Tom Yager in the finals, 7- 6, 7-5, 6-4. For more information about the Langley Tennis Club, pick up membership forms at the Activities Association Office, the tennis court bulletin board, or call Tom Yager, ext. 2796.

swap and shop

FOR SALE

VEHICLE. 1978 Honda CIVIC. 2-door, new tires, AM/FM cassette, price neg. Call 898-5113 after 5 p.m.

SAILBOAT. 15 ft., sloop-rigged Albacore, w/trailer. 2 sets sails, $1200, neg. Call 898-5113 after 5 p.m.

FOR RENT

HOUSE. 9800 River Rd., NN. 3BR, 1 1/2B, LR, DR, Study, Screened porch, deck, all appl. $650/month plus util. Call 595-3586.

Coming soon . . .

Beginning July 3, the **Langley Researcher** will take on a new look:

-new name

-new format

-new faces

The Editor and Staff, employing the suggestions you offered in our recent survey, are striving to make your in-house newspaper more appealing, more readable, and more enjoyable to YOU. Watch for the July 3 issue! *-Editor*

Happenings

LANGLEY TOASTMASTERS CLUB. Toastmasters will meet Wednesday, June 10, at 11:30 a.m. in the Activities Center. Be our guest at the meeting and learn how to be a good listener as well as a good speaker. Call Steve Yaros, ext. 2673, for details.

BUCKROE BEACH DAZE. Hampton Parks and Recreation will sponsor the Buckroe Beach Daze festival, Saturday, June 6, from 10 a.m. until 4 p.m. Varied activities and live entertainment will be featured. For additional information, call 727-6197.

CONTACT PENINSULA FUNDRAISING FEAST! Saturday, June 20, at the Hellenic Community Center. Good food, entertainment, over 50 door prizes. Tickets: $10/person, proceeds to support Contact Peninsula. Call the Contact business office, 244-0594, for tickets and more information.

AIAA PICNIC. Hampton Roads Section of AIAA will hold its 8th annual spring picnic on Tuesday, June 9, on the grounds of the Activities Building. The menu include hotdogs, hamburgers, barbeque, beer, soft drinks, etc. Cost is $5 for members, $3 for students, $6 for non-members, $1 for children 6-12, children under 6 are free. For reservations, call Gary Price, ext. 2932, or Duane Melson, ext. 2627.

RUNNERS CLUB. Predict-your-time 5 K run will be held Tuesday, June 9, at 5 p.m., on Doolittle Road. The winner will be the runner whose finish time is closest to his/her predicted time. No watches will be allowed! This event is open to all NASA and Contractor employees and family members. Runners Club membership is only $1/year. For more information, call Richard Shearer, ext. 4621.

THURSDAY NIGHT BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, please contact Eugene Hicks, ext. 3737.

CEBAF SEMINAR. Dr. Anjam Khursheed (CERN) will present a seminar on "Numerical Methods to Solve Electromagnetic Fields," Monday, June 15, 2:30 p.m. CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

VISITOR CENTER FEATURES JUDY WHITE, TEACHER IN SPACE AMBASSADOR. Kentucky Teacher in Space Ambassador and Young Astronaut Chapter Leader Judy White will speak at 1 p.m., Saturday, June 6, in the Visitor Center main theater. White accompanied a group of ten students, ages 13-15, and five adults on a tour of the Soviet Union last November.

Space Station Program Office Now Recruiting

In carrying out the recommendations of the Phillips Committee,the Space Station Program Office has been established in Washington, D.C., reporting directly to the Associate Administrator for Space Station. To staff this program office, it is desirable to utlilize talented, experienced personnel from within the NASA centers to form the core of the organization.

Utilization of experienced center personnel has the obvious dual advantage of quality staffing for the program office and a career development opportunity for the employee by a tour at NASA Headquarters.

Representatives from Headquarters will visit Langley to discuss these opportunities with interested center personnel. In the meantime, direct inquiries to the contacts outlined in the vacancy chart at right.

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SYSTEM ENGINEERING AND INTEGRATION	**Contact Ray Roberts**	**755-1122**
Systems Engineers Power, Thermal, Guidance, Environment	40 Vacancies	GS/GM 13-15
Technical Management	40 Vacancies	GS/GM 13-15
Systems Verification	20 Vacancies	GS/GM 13-15
UTILIZATION AND OPERATIONS	**Contact John Cox**	**755-1122**
Operations Management	10 Vacancies	GS/GM 13-15
Technical Management	10 Vacancies	GS/GM 13-15
Program Management	10 Vacancies	GS/GM 13-15
SAFETY/PRODUCT ASSURANCE	**Contact Dick Storm**	**453-8928**
Reliability, Quality, Safety	10 Vacancies	GS/GM 13-15
INFORMATION SYSTEMS SERVICES	**Contact Jack Garman**	**453-8686**
Data Systems, Software or Hardware Commercial or flight experience	50 Vacancies	GS/GM 12-15
INTERNATIONAL PROGRAMS	**Contact Gene Rice**	**755-1122**
International Project Engineer	5 Vacancies	GS/GM 13-15
International Data Base Manager	1 Vancancy	GS/GM 14-15
Technical Management	4 Vacancies	GS/GM 15
PROGRAM INTEGRATION	**Contact David Greenshields**	**755-1257**
Technical Management	2 Vacancies	GS/GM 14-15
Documentation Control	6 Vacancies	GS/GM 13-15
Configuration Management	9 Vacancies	GS/GM 13-15
PROGRAM CONTROL	**Contact John Sheahan**	**755-1251**
Program, Cost, Schedule Analysts	10 vacancies	GS/GM 12/15
PROGRAM SUPPORT	**Contact Tom Brown**	**755-1050**
Contract Management/Administration	3 Vacancies	GS/GM 12/15
Policy/Legislative Analyst/Writer	3 Vacancies	GS/GM 12/15
Management Analyst/Office Automation	2 Vacancies	GS 11-13
Administrative Officer	4 Vacancies	GS 7-11
ALL ORGANIZATIONS	**Contact all**	**453-8928**
Journeyman Engineers	10 Vacancies	GS 9, 11, 12
Secretaries	15 Vacancies	GS 7, 8

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Lawrence Presents Atmospheric Sciences Program at Visitor Center

James Donald Lawrence Jr., Chief of the Atmospheric Sciences Division, will discuss Langley contributions to the NASA Space Sciences and Applications research program focused on planet Earth at noon on Thursday, June 11, in the Visitor Center main theater. Lawrence's presentation is the fourth in the Guest Lecture Series on Aerospace Sciences co-sponsored by the Visitor Center and the AIAA-Hampton Roads Student Branch.

Our Earth is not a dead hunk of rock that supports life. On the contrary, it's an integrated system in which all the parts interact and contribute to the harmonious working of the whole. NASA is involved in a concerted effort to understand our planet and what human activity is doing to it.

Questions of importance to the scientific community and to the man on the street include: Is the ozone layer being depleted by chloroflorocarbons? Is the green house effect raising the air temperature and melting polar ice? What impact will eradication of tropical rain forests have on climate and on the viability of life? Such questions demand careful study of an imposing experimental subject – Planet Earth.

Monitoring the health of Planet Earth requires phenomenal cooperation. It involves extensive study of the oceans, surveys and data-gathering on land, and use of a network of Earth- observing satellites whose data are freely shared among all nations.

The idea of tracking and understanding global change has fired the imagination of scientists around the world and caught the attention of their governments. In the US three major agencies are cooperating to tackle the challenge. NASA, the National Oceanic and Atmospheric Administration and the National Science Foundation are involved in a comprehensive study of Earth that will continue into the next century. Globally, the International Council of Scientific Unions has begun a major program, called the International Geosphere/Biosphere Program, to look at Earth in an integrated way.

Langley atmospheric scientists and engineers have developed a series of instruments that use the unique vantage point of space to gather data that has and will continue to expand our knowledge of Planet Earth. Lawrence will highlight more specifically the involvement of Langley researchers in this massive effort to take the pulse of our ailing planet.

Lawrence has played a major role in creating the atmospheric sciences program within NASA in response to rising national concerns in the early 1970s. Working with NASA Headquarters, he planned and initiated programs throughout the agency to capitalize on the vantage point of space for remotely sensing the properties of the Earth's atmosphere. He has directed the Atmospheric Sciences Division since its formation in 1976.

The author of many technical papers,

Lawrence was awarded the NASA Medal for Exceptional Scientific Achievement in 1975, a NASA Outstanding Leadership Medal in 1982, and the Presidential Rank of Meritorious Executive Service Award in 1987. He is a member of the American Institute of Aeronautics and Astronautics and the American Physical Society.

cafeteria menu

Week of June 15-19

MONDAY: Three bean soup, chopped steak, fried soft shell crabs, BBQ chicken quarter. Snack Bar: Chicken filet, pizza supreme.
TUESDAY: Minestrone soup, lasagna, meat loaf, baked fish mozzerella. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fried chicken dinner, seafood cacciatore, beef liver & onions. Snack Bar: chicken filet, grilled ham & cheese.
THURSDAY: Chicken noodle soup, Mexican dinner, fried flounder, broccoli & cheddar quiche. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.
FRIDAY: Bull Island clam chowder, fish dinner, beef pot pie, baked beans & franks. Snack Bar: chicken filet, hot Italian sausage.

Week of June 8-12

MONDAY: Split pea soup, veal parmesan, beef enchiladas, Cajun fried chicken. Snack bar: 1/4 lb. cheeseburger, pizza supreme.
TUESDAY: Chicken & rice soup, spaghetti dinner, stuffed boneless chicken breast, seafood quiche. Snack Bar: Chicken filet, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New England scrod, sweet & sour pork. Snack Bar: 1/4 lb. cheeseburger, grilled cheese sandwich.
THURSDAY: Chicken vegetable soup, roast turkey dinner, pepper steak, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder, fish dinner, blackened chicken breast, Polish sausage & kraut. Snack Bar: 1/4 lb. cheeseburger, suasage pizza.

National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 12 **June 19, 1987**

Bergeron, Gatski Awarded Floyd Thompson Fellowship

Two Langley scientists have been awarded Floyd L. Thompson Fellowships for 1987-88 to further their research and increase their knowledge in their related fields.

Hugh P. Bergeron, a senior research scientist in the Vehicle Operations Research Branch, Flight Management Division, will spend four months at the Massachusetts Institute of Technology and eight months at the Ames Research Center. **Dr. Thomas B. Gatski**, a senior research scientist in the Viscous Flow Branch, High-Speed Aerodynamics Division, will spend an academic year at the University of Cambridge in England.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Langley staff. The fellowship allows researchers who have demonstrated continued growth in research to spend up to 12 months at an educational or research institution. It is named in memory of Dr. Floyd L. Thompson, Langley Director from 1960 to 1968.

Bergeron's proposed research will address the issues and problems associated with the control of air traffic in high-density terminal areas. "I am developing a concept that uses object-oriented computer language to program Air Traffic Control (ATC) strategies to assist controllers in the ATC process," Bergeron explained.

Hugh P. Bergeron

Thomas B. Gatski

At MIT, he will confer with controllers at Boston Logan Airport and review actual control situations to determine and analyze the reasoning and decision-making process used by air traffic controllers in formulating control strategies. He will use the information assembled to develop computer subroutines that duplicate various aspects of these strategies. He will work with the MIT air traffic control simulation facility to explore the implementation of the strategies in an interactive (real-time operations) ATC environment.

At Ames, he will further develop and then program the control strategies on the Ames Symbolics 3670 computer. The concept will be tested and evaluated using the Ames ATC simulation facility.

Bergeron says the end product of his investigation will be a new approach for performing ATC research, for the purpose of developing

Continued on page 2.

Voyager Crew Featured Speakers

Employees, Contractors, and Retirees Invited to Attend 70th Anniversary Celebration

Langley employees, contractors and retirees are invited to attend a special celebration commemorating the 70th anniversary of the Langley Research Center. The program will be held Friday, July 17, at 2 p.m. in the hangar, building 1244.

Ground breaking ceremonies were held July 17, 1917, for the Langley Memorial Aeronautical Laboratory. Throughout the years Langley has experienced a whirlwind of change and expansion. Today, Langley continues to expand to meet challenges and to prepare the world for tomorrow in aeronautics and space research.

The theme for the anniversary is "Shaping Tomorrow."

Special guest speakers will be Voyager Crew, Dick Rutan and Jeana Yeager, who will present an audiovisual presentation of the first non-stop, non-refueled flight around the world. They, along with Burt Rutan and their team of volunteers, recently received the Collier Trophy, awarded annually for the greatest achievement in aeronautics or astronautics in America.

Other program participants will include Dale D. Myers, NASA's Deputy Administrator, and Dr. Raymond S. Colladay, NASA's Associate Administrator for Aeronautics and Space Technology, both from NASA Headquarters, Washington, D.C. The Headquarters Tactical Air Command

Continued on page 2.

Chinese Engineers Visit for Aerodynamics Symposium

A delegation from the People's Republic of China is attending a joint NASA/Chinese Aeronautical Establishmentment symposium at the Langley Research Center this week. The joint symposium features an exchange of papers on fundamental experimental aerodynamics.

Heading the delegation from China is Zhu Xiao Yun, Head of International Affairs, CAE; Professor Lian Qixiang, Beijing Institute of Aeronautics and Astronautics; Associate Professor Zhang Qiwei, Nanjing Institute of Aeronautics and Astronautics; Wang Shujie and Zhang Xiaodi, engineers from Harbin Aerodynamics Research Institute; and Chen Ruixi, engineer from the Developing Department of Shenyang Aircraft Company.

Presenting papers from Langley are Dennis Bushnell, Head, Viscous Flow Branch, who is also serving as the technical host; Dr. Bruce J. Holmes, Head, Flight Applications Branch; Dr. Perry A. Newman, senior research scientist, Theoretical Aerodynamics Branch; Lawrence E. Putnam, Head, High-Reynolds-Humber Branch; Dr. Leonard M. Weinstein, Leader, Turbulence Structures and Modeling Group; George Beeler and John Lin, research scientists, Viscous Flow Branch; and Dr. Rabindra D. Mehta, research associate from Stanford University.

In addition to the technical meetings, the delegation has toured Langley facilities where they were given overviews of research being conducted at the center, Wallops Flight Research Facility, and the Peninsula and Tidewater areas. On Monday, Bushnell and his wife, Judy, hosted a dinner for the delegation at their house.

Next week, the Chinese delegation will visit the Illinois Institute of Technology, the University of Southern California, the California Institute of Technology, the Ames Research Center and Stanford University before returning to China Sunday, June 28.

Anniversary Celebration

Continued from page 1.

Honor Guard and the U.S. Army 76th Division Training Band will share in saluting Langley on its 70th anniversary.

An area of the hangar will be devoted to a special exhibit of historic photographs and artifacts, including a restored JN-4 "Jenny" biplane. The "Jenny" was one of the first aircraft tested at Langley. Kenneth Hyde of Warrenton, Va., has spent the past ten years restoring the "Jenny." It will make its first appearance away from home at Langley's 70th anniversary celebration

Because of expected warm weather, attendees are encouraged to dress casually. Due to anticipated crowds, two overflow sites, the Activities Center and the Cafeteria, will be open where the program can be watched via the NASA Communications Network. Buses will be at the hangar to transport guests to these sites when the hangar reaches its seating capacity. Guests are encouraged to arrive at the hangar by 1:30 p.m. to view exhibits and preview a special 70th anniversary video presentation.

Since parking spaces near building 1244 will be limited, employees and on-site contractors are encouraged to walk or car pool.

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A reception will be held in the hangar immediately following the program. Refreshments will be provided by the Langley Exchange Council.

Floyd Thompson Fellows

Continued from page 1.

concepts and techniques to enhance efficiency and safety in air traffic control. He states that the work will result in a core program to be used at Langley, complementing the existing air traffic control simulation at the center, for researching next generation air traffic control issues and problems. He said that additional research will be performed at Langley to validate and extend this capability. "I believe this concept has great potential and is a necessary addition to the current Langley ATC simulation facility if we are to continue to perform quality aircraft-air traffic control-related research."

Bergeron has been a member of the Langley staff since June 1962 and has specialized in aircraft-air traffic control systems, man/machine integration, flight research, simulation technology and human factors research.

Gatski's proposed study at the University of Cambridge is a numerical investigation of the receptivity of a laminar flat- plate boundary-layer flow to free-stream disturbances. "The numerical method involves the solution of the unsteady Navier-Stokes equations using a unique compact finite-difference method," Gatski explained.

"Emphasis will be placed on the dynamic interactions occurring at and near the leading-edge region of the plate. It is in this region where the boundary layer is most effective in converting free-stream irrotational disturbances, such as sound waves, to rotational motion within the boundary layer," Gatski said.

According to Gatski, this problem is relevant to the area of laminar flow control where the maintenance of subcritical flow conditions is important. In addition, it is also relevant to the dynamics of the transition process and the identifying characteristics of the subsequent turbulent flow. Knowledge of the fluid flow phenomena is directly applicable to the minimization of drag on aerodynamic surfaces.

Gatski will be working with Professor M. Gaster, a leading international researcher in the stability field, whose experimental research into the physics of boundary-layer receptivity will supplement Gatski's numerical research.

Gatski joined the Langley staff in May 1977 and has specialized in computational and theoretical fluid dynamics in both unsteady laminar vortical flow and turbulent flow.

National Aeronautics and Space Administration
Langley Research Center
NASA
Langley Researcher

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Editor . . . . . Marny S. Skora
Photographs . . . . . Photo Lab
The privelege of advertising articles in this publication is restricted to the staff 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.

Heyman Receives Technology Transfer Award

Dr. Joseph S. Heyman, head of the Materials Characterization Instrumentation Section of the Instrument Research Division, recently received an award for his work in the development and transfer of ultrasonic technology.

Heyman, along with 28 other recipients, was honored at the Federal Laboratory Consortium's (FLC) annual Spring dinner in Lexington, Kentucky.

The FLC recognized Heyman for "developing and transferring ultrasonic technology for the nondestructive evaluation of material mechanical properties and transferring this technology to the mining, railroad, and aerospace industries."

The Consortium is a congressionally chartered group of over 300 Federal research and development institutions and 11 Federal agencies. The common interest of the group is to maximize the opportunities for finding new and multiple applications for available technologies.

Heyman was named NASA Inventor of the Year in 1982. He has received numerous awards, including four IR-100s, the Arthur S. Flemming Award, a NASA Exceptional Service Medal and a Langley Technology Transfer Award. The author or co-author of more than 100 publications and presentations and the author of one book, Heyman holds 13 patents.

Training Notice

Employees who will complete requirements for the graduate degree program during Fiscal Year 1986, and have not notified the Employee Development Branch, please call George Allison, ext. 2611.

For Your Information

In keeping with the festive mood of the 70th Anniversary celebration and in order to comply with contract specifications, the new format for the **Researcher** will debut on July 17, not July 3 as previously mentioned.

Contemplating the accomplishments of the past 70 years, the Editor and Staff look forward to added accomplishments for Langley and a new style of in-house publications to reflect a spirit of center-wide recommitment.

News Around NASA

Headquarters, Washington, D.C. — **KLINEBERG APPOINTED DIRECTOR OF LEWIS.** NASA Administrator James C. Fletcher recently announced the appointment of Dr. John M. Klineberg as director of the Lewis Research Center, Cleveland, Ohio. Klineberg has served as deputy director of Lewis since July 1979. He came to Lewis from NASA Headquarters where he was deputy associate admininstrator for Aeronautics and Space Technology.

Johnson Space Center, Houston, Texas — **NASA AWARDS CONTRACT FOR SHUTTLE ARRESTING SYSTEM.** Johnson Space Center has recently awarded a contract to All American Engineering (AAE) Corp., Newark, Del., to develop an arresting system to provide emergency stopping capability for Space Shuttle orbiters. The system is an adaptation of military arresting equipment that AAE has designed, manufactured and installed in 32 countries to minimize aircraft damage in the event of a landing emergency.

Goddard Space Flight Center, Greenbelt, Md. — **MODULAR DATA HANDLING AND LINKING SYSTEM TESTED.** NASA engineers have successfully tested a modular, fit-all-spacecraft data handling and linking system capable of operating with the agency's Tracking and Data Relay Satellite System (TDRSS) network. Called the NASA data link module (NDLM), the system will reduce data handling system costs because of its modular features, permitting the system to be adapted to any spacecraft without expensive and extensive engineering modifications.

Ames Research Center, Mountain View, Calif. — **NASA BEGINS MAJOR RESEARCH EFFORT IN ARTIFICIAL INTELLIGENCE.** NASA has begun an expanded initiative to apply artificial intelligence (AI) technology to space exploration and to conduct basic research in artificial intelligence. A new division has been organized to spearhead the work. Working with other NASA centers and with private industry, the new Ames' Information Sciences Division will develop automated systems for all phases of space missions, from lauch to mission control and on-board operations. The U.S. Space Station will have advanced automated systems controlling many on-board functions.

Headquarters, Washington, D.C. — **NASA ESTABLISHED SAFETY REPORTING SYSTEM.** NASA has established a voluntary, confidential safety reporting system for its 100,000 employees and contractor personnel to alert NASA management of safety concerns. The new reporting system supplements existing safety reporting procedures and, initially, will focus on safety concerns associated with the Space Shuttle program. The new system is being established as a result of the Challenger accident.

Ames Research Center, Mountain View, Calif. — **TILTROTOR AIRCRAFT CONCEPT MAY HAVE WORLDWIDE APPLICATIONS.** Tiltrotor aircraft, embodying a revolutionary new flight concept, may have a major impact on short and medium range air transportation in the U.S. and the rest of the world. Utilizing the tiltrotor concept, passenger aircraft will take off and land vertically like helicopters, yet fly horizontally for up to 1000 miles at 300-400 mph., twice the speed and range of helicopters with half the operating cost.

Jet Propulsion Laboratory, Pasadena, Calif. — **SCIENTISTS DISCOVER NEW SOURCE OF NORTHERN LIGHTS.** The long held view that the northern lights are part of the magnetic storms themselves is incorrect. In a paper recently presented before the American Geophysical Union, Drs. Bruce Tsurutani and Walter Gonzalez reported that the Aurora Borealis and the Aurora Australis are caused by waves called Alfven waves.

Goddard Space Flight Center, Greenbelt, Md. — **NASA LEADS INTERNATIONAL CLIMATE EXPERIMENTS IN KANSAS PRARIE.** Over 100 scientists from more than 25 institutions are converging on the Konza Prarie in Kansas this summer to conduct a major experiment to better understand how to use satellites to study our natural environment. This experiment is the first which addresses the issues of routinely measuring all relevant parameters of a specified area from the ground, the air, and from space.

Retirement Party

Archie Norton will be honored with a retirement party Monday, June 22 at 4 p.m. on the grounds of the Activities Center. The cost is $3/person and/or $1/gift. For more information contact Shirley Jones or Jim Fay, ext. 3065.

Note of Thanks

James E. Rammell writes: "I would like to express my thanks to those friends who recently honored me with gifts and luncheon on the occasion of my recent retirement. I especially thank those who organized the affair. I wish all well."

An Outstanding Example of Technology Transfer

Langley Engineering Technician Builds Test Apparatus for VA Hospital

Bruce Little, engineering technician assigned to the Advanced Materials and Development Section of the Fabrication Division, finds one of the most rewarding aspects of his job at Langley has been the opportunity to use his expertise to develop devices for a wide range of applications. His most recent assignment was to design and build a lab test apparatus for the Veterans' Administration Medical Center in Hampton.

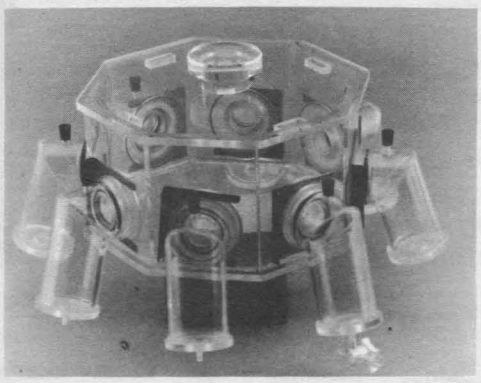
Medical researchers at the VA Hospital are investigating the possibility that the peritoneal membrane (the lining of the intestinal cavity) can absorb nutrients and thus supplement or partially replace the intestines. To test the permeability of peritoneal membrane samples, they had designed and built a small dialysis chamber. This initial design was complicated and difficult to use. The VA Hospital lacked the technical expertise to redesign and construct a larger, improved version of the chamber, so they turned to Langley's Technology Utilization and Applications Office for help.

Little was identified as the logical research candidate by Dr. John D. Buckley, Technical Assistant for the Fabrication Division. Buckley and Little had collaborated on previous projects. Ten years of experience in the instrument shop had made Little very familiar with precision and inventive-type equipment.

After meeting with key members of the VA staff to assess the needs of the project, Little conceived the "cake box" design, an eight-sided chamber with eight smaller chambers attached and secured by O-ring seals. The final design is simple, interchangeable, time controllable, and doubles the research capability of the earlier model. The apparatus was delivered to the VA Medical Center on April 13, research on nutrient permeability through the peritoneal membrane is underway, and Little is hard at work on a new project.

Langley engineering technician Bruce Little (second from L) presents the lab test apparatus he designed and built for the VA Hospital to hospital officials (L to R) Timothy Morck, Ph.D., O. Ramirez, M.D., Chief of Staff, and Galen Barbour, M.D.

Little describes himself as a second-generation Langley Fabrication Division enthusiast. He follows in the footsteps of his father, Robert E. Little, who retired from FD after 34 years of government service. The younger Little has been gratified by the cooperative efforts of NASA's TU Office, the Fabriciation Division, and the VA Hospital. With 16 years in FD himself, Little looks forward to additional special assignments that allow him to use his obvious creative abilities.



This "cake box" apparatus consists of an eight- sided chamber with eight smaller chambers attached and secured by O-ring seals. The design is simple, interchangeable, time controllable, and doubles the research capability of an earlier design.

NASA Establishes Office of Exploration

Dr. James C. Fletcher, administrator of NASA, has announced the creation of an Office of Exploration to coordinate agency activities that would "expand the human presence beyond Earth," particularly to the Moon and Mars.

Dr. Sally K. Ride will serve as its acting assistant administrator until mid-August. Ride is scheduled to leave NASA in early autumn to assume a position at Stanford University. Currently she is in charge of a NASA study to determine a possible new major space goal for the United States.

"There are considerable - even urgent - demands for a major initiative that would re-energize America's space program and stimulate development of new technology to help the nation remain pre-eminent both in space and in the world's high-tech marketplace," Fletcher said.

"This office is a step in responding to that demand. It will analyze and define missions proposed to achieve the goal of human expansion off the planet. It will provide central coordination of technical planning studies that will involve the entire agency. In particular, it will focus on studies of potential lunar and Mars initiatives."

The new office will concentrate on mission concepts and scenarios, schedules, transportation requirements, facilities utilization, resources requirements and science opportunities.

Positions Available

The following Competitive Placement Positions are currently open:

87-44: Procurement Officer, GM-1102-14 or 15, Acquisition Division. Closes June 26.

87-45: Contract Price/Cost Analyst, GS-1102-11 or 12, Acquisition Division, Acquisition Operations Branch. Closes June 19.

Positions Filled

Marcia M. Pateat, **Marie W. Dunn**, and **Laurette E. Cole** have been selected Purchasing Agents, Acquisition Operations Branch, Acquisition Division, under CPP 87-31.

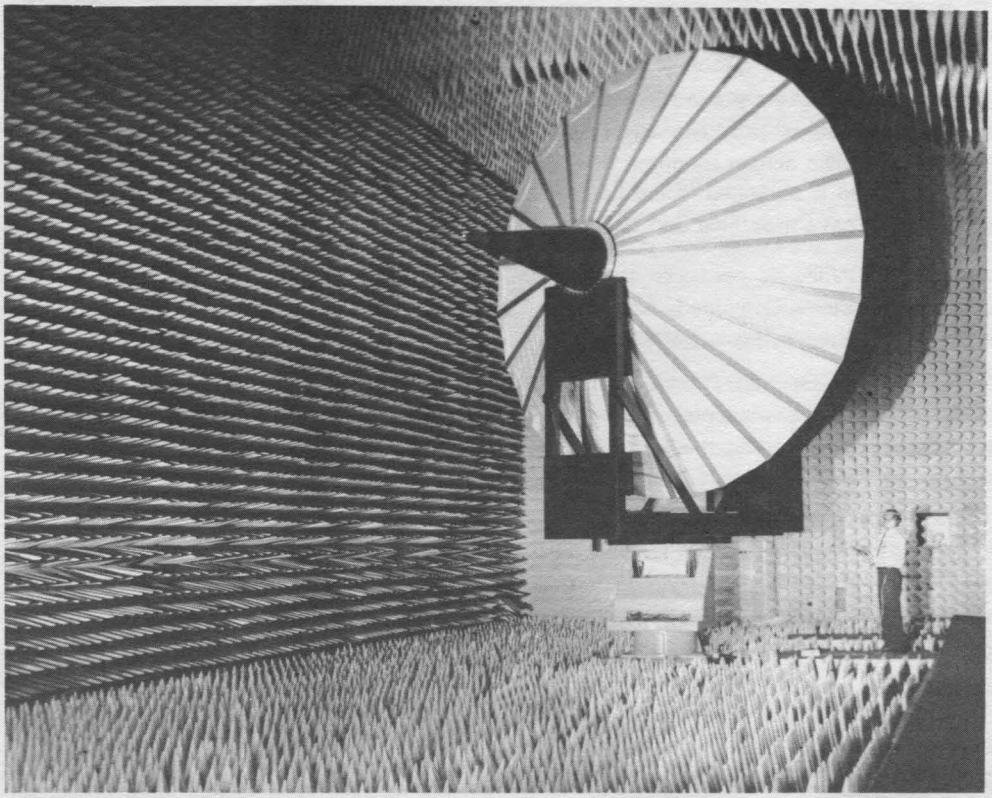
Frances M. Sleigher has been selected Computer Systems Analyst, Acquisition Operations Branch, Acquisition Division, under CPP 87-41.

Emily E. Kornegay has been selected Secretary (Stenographer), Spacecraft Controls Branch, Guidance and Control Division, under CPP 87-1 (3).

Gail N. Birch has been selected Secretary (Stenographer), Employee Development Branch, Personnel Division, under CPP 87-1 (4).

Raymond M. Taylor and **E. Wayne Martin** have been selected Supervisory Engineering Technicians, Tunnel Operations Branch, Operations Support Division, under CPP 87-34 and 87-35, respectively.

Michael A. Talley has been selected Electronics Engineer, AST, Measurement and Instrumentation, Accoustics and Vibration Instrumentation Section, Electro-Mechanical Instrumentation Branch, Instrument Research Division under CPP 87-36.



Celebrating 70 Years of Research

Test Chamber Valuable Tool in Evaluating Antenna Systems

The low frequency anechoic test chamber in Building 1299 is used to evaluate antenna systems for spacecraft. The walls of the test chamber are covered with radio frequency absorbing material. The materials allow researchers to produce a simulated free space environment to properly test antenna signals.

College Scholarships Awarded to NASA Dependents

The NASA College Scholarship Fund, Inc. has selected Brandon R. Brown of League City, Texas, and Jennifer J. Muhonen of Owings, Maryland, to receive 1987-88 college scholarship grants.

Ninety-one high school seniors, including ten from Langley, applied for the two $1,500 renewable scholarships. All had exceedingly high grade point averages, all scored well on the scholastic aptitude test (several in the 1500 and above range), and all were actively involved in their communities.

Brandon, son of Johnson Space Center employee Robert H. Brown, graduated from Clear Creek High School, fourth in his class of 644 students. He has a 4.45 grade point average and scored 1440 on the SAT examination. Brandon plans to earn degrees in physics and/or computer science and has been accepted at Rice University and Texas A&M.

Jennifer, daughter of Goddard Space Flight Center employee Daniel P. Muhonen, graduated from Northern High School, first out of 325 graduating students. She has a 4.248 grade point average with a score of 1430 on the SAT. Jennifer plans to study mathematics at Duke University.

The NASA College Scholarship Fund, Inc. was established in 1982 for the purpose of awarding scholarships to dependents of NASA employees.

The corporation was established by a substantial gift from the famous author James A. Michener. Other benefactors, including NASA employees, have since made contributions to the fund.

To date, the scholarship fund has awarded ten scholarships to outstanding young people from five different NASA Centers. Scholarships are available for qualified applicants studying the fields of science and engineering. Applicants are reviewed by an independent scholarship committee which has no access to the applicant's name, location, sex, age, or other identifying data.

This worthwhile program which exclusively benefits NASA employees and their dependents will continue, but needs to grow if it is to award a greater number of scholarships to deserving NASA applicants. If interested, tax-deductible contributions may be made to the following address: NASA College Scholarship Fund, Inc., NASA Johnson Space Center, Mail Code BY5, Houston, TX 77058.

Speakers Bureau Serves Community

The Langley Speakers Bureau participated in a variety of events providing informative and educational talks across Hampton Roads. Much appreciation is extended to the Langley employees who gave their time and talents.

William L. Williams spoke to the USA Training and Doctrine Command Productivity Workshop on the Langley Productivity Program, April 15.

Robert Nunamaker presented "Space Station — The New Challenge" to the York Kiwanis Club, April 16.

Doug Garner spoke on the Personal Aspect of a Career in Research at Covenant College, Lookout Mountain, Tennessee, April 16.

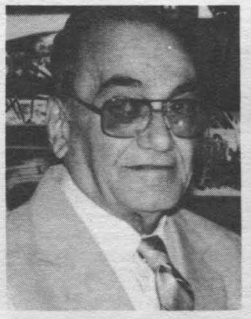
Ronald "Ron" Harvey gave a presentation on NASA Careers at Hines Middle School, April 17.

Dr. John Shoosmith presented "Applications of Mathematics" at Norfolk State University, April 21.

Richard Hellbaum spoke on NASA Careers at Hampton High School, April 28.

John Tanner addressed the Engineers Club of Hampton Roads and the Tidewater Chapter of the Virginia Society of Professional Engineers on Flight Safety Research at NASA, April 28.

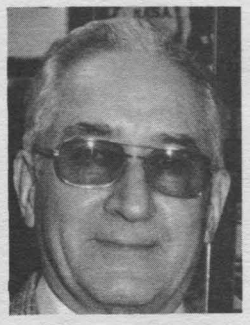
Karen Jackson gave a presentation on NASA Engineering Careers at Tidewater Community College, Frederick Campus, April 30.



George H. Veneris

Bertrand E. Fullerton

Marion A. Wise



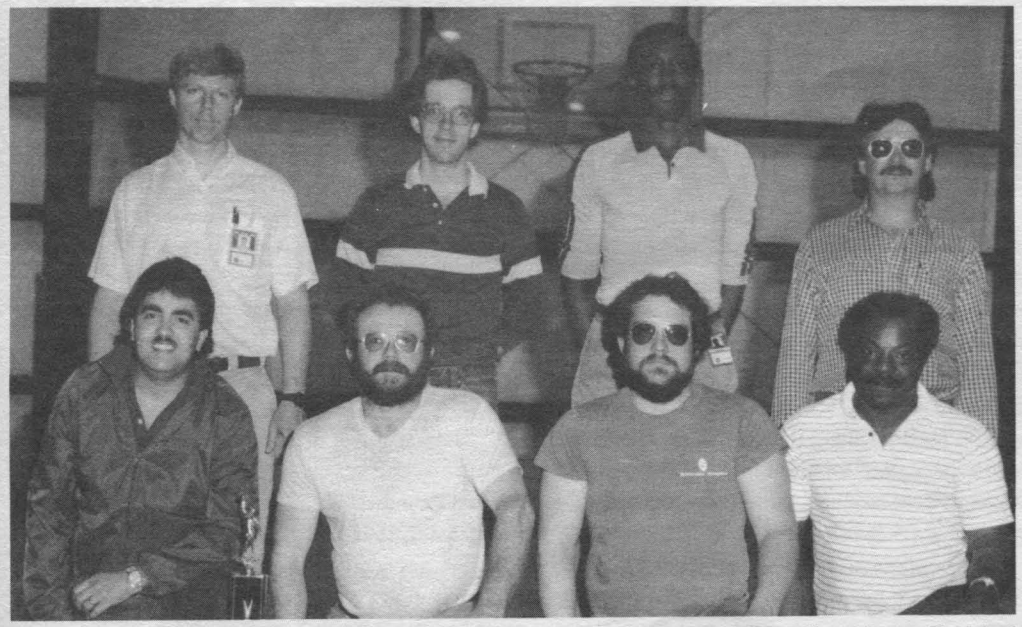
William A. Byars, Jr.

Service Awards

Five Langley employees received Service Awards recently. Certificates were presented by Langley Director Richard H. Petersen.

George H. Veneris, Fabrication Division, was recognized for 45 years of service to the federal government, including 13 years with NACA and 28 years with NASA.

Recognized for 40 years of service were **Laurence R. Bradshaw**, Operations Support Division, **William A. Byars, Jr.**, Facilities Engineering Division, **Bertrand E. Fullerton**, Fabrication Division, and **Marion A. Wise** Information Systems Division.



AMDS II, 1987 Johnson League Champs are pictured above. Standing, L to R: Hank Zumbrun, Mike Smock, Curtis Horton, Russ Tatum. Kneeling, L to R: Archie Dimmery, John Bowman, Brian Carpenter, Carl Moore. Not pictured are Charlie DeBro, Jimmy McRae, Matthew Winder and M.V.P. Glen Robbins.

New Courses Offered in Learning Center

A new 30-minute video program, "Applied Strategic Planning," which ties in with the recent move toward strategic management at Langley, is available in the Learning Center. The supplemental handouts, texts and suggested activities provide resource material suitable for individual study, workshop and retreat presentations, or weekly classes.

Applied strategic planning is a functional method which provides criteria to an organization for making day-to-day decisions. Authors J. William Pfeiffer, Leonard Goodstein and Timothy Nolan discuss the various phases of strategic planning: environmental scanning, organizational culture, mission formulation, strategic modeling, gap analysis, contingency planning, and key indicators and "trigger points."

In addition to the strategic planning program, the Learning Center is offering the following new courses:

FastTract Series: Summaries of the best business books on audio tape, 37 minutes.

- "How to Make Money in Wall Street"
- "The Real Coke, The Real Story"

New Videos: The following new videos were furnished by Lewis Research Center, VHS, 30 minutes:

- "The Golden Days of Flight"
- "Serendipity Machine"

New Cassettes. Subliminal time-compression audio cassettes, 30 minutes each on the following subjects: Concentration, depression, memory power, mind and body tune-up, self-confidence/self esteem, and success.

Runners Club Race Results

Bob Thomas won the Runners Club Predict-Your-Time 5K race by finishing in 23:58, only 2 seconds off his predicted time. The other top five finishers were: **Jim Morris**, 27:47 (3 sec. off); **Frank Rossi**, 16:49 (11 sec.); **Bob Ferguson**, 20:53 (20 sec.); and **Jim Johnson**, 21:00 (27 sec.).

Correction

An error was made in listing the winners of the Women's Tennis Ladder Tournament in the last issue (June 5, page 6). **Carol Wieseman** defeated Carol Wilson in a long, hard- played, 3 set match, 6-4, 4-6, 6-0. Apologies to Carol and Carol and thanks to David Carter for setting the record straight. *-Editor*

Happenings

SPORTS WRITER NEEDED. The Public Affairs Office is looking for a sports enthusiast to volunteer to write short articles about LAA sports activities for the **Researcher**. Interested persons should call Marny Skora, ext. 3707.

ARTS AND CRAFTS. Anyone interested in displaying arts and crafts at the LAA Carnival, Friday and Saturday, August 21 and 22, should call Betty Hughes, ext. 3264.

BINGO workers and callers are needed for the LAA Carnival. Anyone wishing to volunteer time to assist the LAA, please call Eugene Hicks, ext. 3737.

TIDEWATER DINNER THEATER. "Biloxi Blues," the second play in the Neil Simon trilogy, is playing at the Tidewater Dinner Theater in Norfolk. Discount tickets are on sale in the Activities Office.

LAA SOCIAL will be held Friday, June 26, from 4 to 6:30 p.m. in the Activities Center.

TOASTMASTERS. NASA Langley Toastmasters Club will meet Wednesday, June 24, at 11:30 a.m. in the Activities Center. Come and join - learn about eye contact, hand and arm motions, and how to handle those butterflies in the stomach. Call Steve Yaros, ext. 2673, for details.

WELLS THEATRE. Inventive, athletic, quirky are some of the descriptions attributed to the internationally acclaimed dance troupe that has created a new definition of dance. Hampton Roads dance-lovers have a special chance to come up with original descriptions as PHILOBUS comes to the Wells Theater for two nights only, June 19 and 20. Call 625-6868 for details.

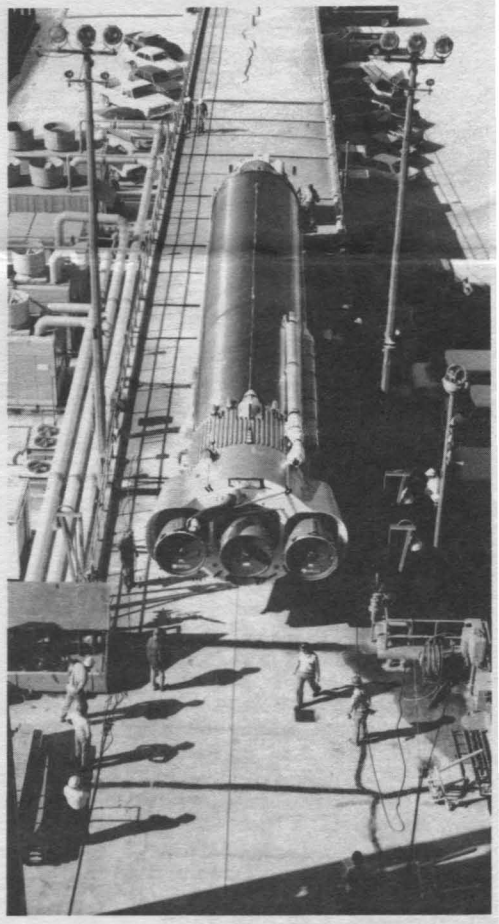
BOARD MEETING. Due to planned vacations, the Langley Activities Association Executive Board will hold its July meeting, Tuesday, June 30, at 10 a.m. in the Activities Center.

CARNIVAL TICKETS are now on sale for the LAA Carnival, August 21 and 22. Individuals interested in selling tickets should call the Activities Office, ext. 3139. Two tickets to Busch Gardens will be given to each of the five individuals who sell the most tickets.

ENTERTAINMENT NEEDED. LAA is looking for dance groups, bands and other performers to volunteer their time and talents for the Carnival. Contact Eugene Hicks, ext 3737.

THURSDAY NIGHT BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center.

DIRECTIVES NUMBER	TITLE	DATE	T.S.#	DATE DISTR.
LMI 1100.4	Attachment, "Langley Research Center (LaRC) Productivity Review Committee"	3-9-87	1517	4-2-87
LMI 3300.2	"Position Changes and Details of Employees"	3-9-87	1518	4-2-87
LMI 9050.6	Attachment C, "NASA Langley Exchange"	3-10-87	1519	4-2-87
LMI 1415.1	"Reports Management Program"	3-10-87	1520	3-31-87
LMI 4500.1	"Storage and Disposition of Materials and Equipment"	3-10-87	1521	3-31-87
LMI 4100.1	"Materials Inventory Management Program"	3-10-87	1522	3-31-87
LMI 4300.2	"Recovery of Precious Metals and Strategic and Critical Materials"	3-10-87	1523	3-31-87
LMI 6000.3	"Motor Vehicle Management	3-17-87	1524	4-8-87
LMI 1700.3	"The Executive Safety Board and Its Committees"	3-24-87	1525	4-8-87
	Table of Contents to the Management Manual	4-21-87	1527	5-11-87
	Index to the Management Manual	4-22-87	1528	5-11-87
LMI 2200.3	"Technology Transfer Agents"	5-1-87	1529	5-11-87
LMI 1100.6	Attachment,"Employee Suggestion Committee"	5-1-87	1530	5-11-87
LMI 4200.5	"Equipment Loan Program	5-1-87	1531	5-11-87
LMI 4220.1	"Standards for Office Furniture and Furnishings"	5-1-87	1532	5-11-87
LMI 1600.1	"Physical Security"	5-1-87	1533	5-20-87
LMI 3300.3	"Handicapped Individuals and Disabled Veterans Workforce Program (HIDVWP)"	5-1-87	1534	5-13-87
LHB 1740.2	"Facility Safety Requirements"	3-87	-	4-13-87
LHB 1450.1	Change 6, "Office Procedures"	3-87	-	5-4-87
LHB 9700.1	Change 8, "Travel Guidance"	3-31-87	-	5-13-87
LMI 3410.3	"Employee-Initiated Mobility Program"	3-25-87	1526	4-2-87



KENNEDY SPACE CENTER, Fla. — Workers prepare to raise the Atlas stage of AC-68 to the vertical position at Complex 36 pad B on the Cape Canaveral Air Force Station. Launch of AC-68 s expected in mid-summer of 1987. It will carry the Fltsatcom F-8 communications satellite, the third and final satellite in a second generation Fltsatcom series of three.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

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Hatfield Discusses Advanced Flight Display at Visitor Center

Jack J. Hatfield, Head of the Crew/Vehicle Interface Research Branch of the Flight Management Division, will discuss advanced flight display technology at noon on Thursday, June 25, in the Visitor Center main theater. Hatfield's presentation is the fifth in the Guest Lecture Series on Aerospace Sciences co- sponsored by the Visitor Center and the AIAA-Hampton Roads Section Student Branch.

Hatfield will review recent research and technology trends in the field of advanced electronic controls and displays for cockpits of future aircraft. Research and development efforts underway at Langley include flight display graphic technology, advanced display media, information management, and input/output technologies.

Hatfield joined Langley in 1960 and specialized in research on communications theory. He has done research on computer- generated display technology and requirements for aeronauitical applications. He has served as a communications/display systems consultant for the Lunar Orbit and Letdown Approach simulator, the Lunar Orbiter Project, the Terminal Configured Vehicle Program, and the Cockpit Display of Traffic Information effort.

As a member of the Flight Electronics Division technical staff, Hatfield conceived and developed the Flight Display Research System. At present, he is Head of the Crew Interface Research Branch which is responsible for aeronautical research and technology in flight display, human engineering methods, and crew interface requirements.

He is a senior member of the AIAA and a member of the Society for Information Display and holder of one U.S. patent.

swap and shop

FOR SALE

SAILBOAT. 15 ft., sloop-rigged Albacore, w/trailer. 2 sets sails, $1200, neg. Call 898-5113 after 5 p.m.

SAILBOAT. Morgan 28, shallow draft, inboard engine, 5 berths, 5 bags of sails, good headroom. Excellent cruising boat. $15,000, neg. Call 851-0552.

1987 KAWASAKI KZ650. 15K miles, saddle seat, new tires & battery, windshield, mint condition. $750. Call 827-0198.

FOR RENT

TOWNHOUSE in Poquoson. 3BR, 2 1/2 B, LR, DR, eat-in K, shed. 24 Charles Parrish. $550/month. Call 868-9365.

FOUND

WATCH. Men's Timex Quartz wristwatch found in Bldg. 1194A during April CPR training. Contact Susan Hurd, ext. 3014.

cafeteria menu

Week of June 22-26

MONDAY: Split pea soup, veal parmesan, blackened fish, BBQ chicken quarter. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.
TUESDAY: Chicken & rice soup, spaghetti dinner, stuffed chicken breast, seafood quiche. Snack Bar: Chicken filet, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New England scrod, manicotti w/ tomato sauce. Snack Bar: 1/4 lb. cheeseburger, grilled cheese sandwich.
THURSDAY: Chicken vegetable soup, turkey dinner, shrimp creole, braised chicken livers. Snack Bar: Chicken filet, egg salad sandwich.
FRIDAY: Manhattan clam chowder, fish dinner, chicken Fajita, Italian sausage w/ pasta. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of June 29-July 3

MONDAY: Three bean soup, chopped steak, Cajun fried chicken, turkey nuggets. Snack Bar: Chicken filet, pizza supreme.
TUESDAY: Minestrone soup, baked lasagna, meat loaf, fried whiting. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.
WEDNESDAY: Fresh vegetable soup, fried chicken dinner, New Orleans scrod, beef liver & onions. Snack Bar: Chicken filet, grilled ham & cheese.
THURSDAY: Chicken noodle soup, chicken chow mein dinner, fried flounder, broccoli & cheddar quiche. Snack Bar: 1/4 lb. cheeseburger, ham & cheese club.
FRIDAY: HOLIDAY!

T&A Clerks TAKE NOTE:

To avoid duplication, beginning with the new format on July 17, the **CAFETERIA MENU** will no longer be published in the **Researcher**. For the convenience of your staff, please be sure to post the menu mailed to you in a conspicuous location. Thank you.

Upcoming Workshop

CEBAF 1987 Summer Workshop. June 22-26, at Christopher Newport College, 50 Shoe Lane, Newport News. For schedule and additional information, contact workshop co-chairmen Franz Gross and Claude Williamson, 875-7800.

National Aeronautics and
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Langley Research Center

NASA

Langley Researcher

Volume 26, Issue 13 **July 3, 1987**

Moore, Assistant Director for Management Operations

Robert R. Moore Jr., has been appointed Assistant Director for Management Operations, replacing Sidney F. Pauls, who was recently selected as Langley's Associate Director. Moore will remain Acting Chief of the Acquisition Division until his replacement is chosen.

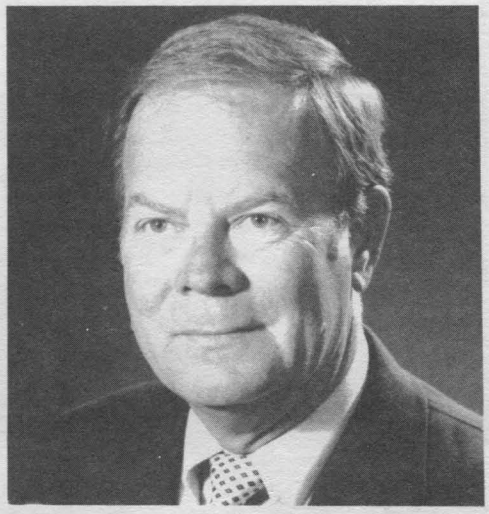
In his new position, Moore assists the Director for Management Operations in Langley institutional management operations, including personnel, programs and resources, acquisition, financial management, management support, research information and applications, business computer systems, chief counsel and industry relations.

Moore joined the Langley staff in January 1962 as a procurement agent. He was named Assistant Head of the Research and Development Contracting Branch in October 1973, Assistant Chief of the Procurement Division, now known as the Acquisition Division, in November 1975, Associate Chief in November 1978 and Chief in January 1981.

He received a bachelor of science degree in business from Virginia Commonwealth University in 1959. He completed the program for Management Development at Harvard's Graduate School of Business Administration in 1973.

A certified professional contracts manager, Moore received a NASA Exceptional Service Medal in November 1984 for his outstanding leadership as the center's procurement officer.

Moore and his wife, Sara, live in Virginia Beach. They have four sons and a daughter.



-photo courtesy of Jeanne Darden Riley

Langley aerospace engineer Christine M. Darden (right), winner of the 1987 Candace Award in the area of technolog, is pictured with program hostess singer- actress Melba Moore (left) and Coretta Scott King (center), Candace Distinguished Service Award recipient.

Story on page 2.

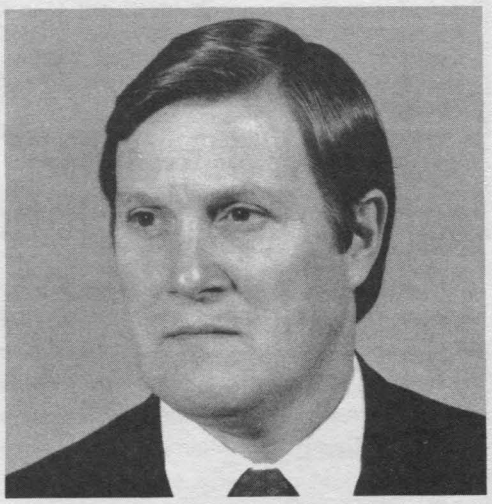
Tenney is Materials Division Chief

Dr. Darrel R. Tenney Assistant Chief of the Materials Division, has been named Chief of the division, pending approval from the Office of Personnel Management.

In this position, Tenney will head the division that conducts research on advanced structural materials such as metals, polymers and composites; structural characteristics of materials; damage tolerance and integrity of aerospace vehicle structures; and applying advanced materials to aircraft and space vehicles.

Tenney came to Langley in March 1974 as a materials engineer. From May 1976 to April 1981 he was Group Leader, Materials Research Branch. In 1981 he became Head, Environmental Effects Branch and in August 1983, Head, Applied Materials Branch. In July 1984 he was named Assistant Chief, Materials Division. His specialized fields of study include spacecraft materials, high temperature materials, metal matrix composites, diffusion and kinetics in solids, resin matrix composites and environmental effects.

Before joining NASA, Tenney was an assistant professor of materials engineering at Virginia Polytechnic Institute and State University.



Tenney received a bachelor of science degree in physics from West Virginia Wesleyan in 1964 and a doctorate in materials engineering from Virginia Polytechnic Institute and State University in 1969.

Tenney and his wife, Linda, live in Newport News. They have three children.

NASA Studies Climate Effects of Ocean Clouds

by H. Keith Henry

More than 100 scientists from NASA, other government agencies, universities, the United Kingdom and France will conduct a 21-day study of ocean clouds off the southwest coast of California beginning June 29. In addition to ground and shipboard measurements, five instrumented aircraft will gather data for correlation with remote measurements from a variety of overpassing satellites.

Called FIRE, for the First ISCCP Regional Experiment, it is a multidisciplinary research program to study the roles that clouds play in the global climate.

The role that clouds play in determining our climate is not well understood. In fact, they are the major uncertainty in assessing man's impact upon climate. For example, clouds could moderate a frequently-predicted global warming trend associated with the increase of carbon dioxide from modern-era fossil fuel burning. As the planet warms, ocean water evaporates to form clouds which, in turn, cool the surface. The ability to quantify this feedback mechanism would greatly add to knowledge about man's impact and the future direction of our climate.

FIRE is a United States scientific program organized in support of the International Satellite Cloud Climatology Project (ISCCP). The five-year FIRE experiment started with a detailed look at cirrus clouds over selected areas of the continental United States.

Experimenters have now shifted their attention to marine stratocumulus (MS) clouds, the puffy picture-postcard clouds that are equally important to climate studies. The research team will measure the radiative and physical properties of MS cloud systems, aided by the variety of vantage points and an impressive array of measurement techniques.

NASA is the lead agency for FIRE, with its project office located at the Langley Research Center. Other sponsoring agencies are the National Science Foundation, the National Oceanic and Atmospheric Administration, Department of Defense and Department of Energy.

Data deemed to be of general utility to the scientific community from FIRE will be archived at the Goddard Space Flight Center. The data will be released approximately 18 months after the experiment is concluded. At the time of release, or when published, the data will become available to the general scientific community.

NASA participants, in addition to Langley and Goddard, are Ames Research Center, NASA National Scientific Balloon Facility and NASA Wallops Flight Facility.

A delegation from the People's Republic of China recently attended a joint NASA/Chinese Aeronautical Establishment symposium at Langley. Shown above are (L to R) Zhang Qiwei, Nanjing Institute of Aeronautics and Astronautics; Zhang Xiaodi, Harbin Aerodynamics Research Institute; Lian Qixiang, Beijing Institute of Aeronautics and Astronautics; Paul Holloway, Langley Deputy Director; Richard Petersen, Langley Director; Zhu Xiao Yun, Head of International Affairs, CAE; Chen Ruixi, Developing Department of Shenyang Aircraft Company; and Wang Shujie, Harbin Aerodynamics Research Institute.

1987 Candace Award for Science and Technology

Darden Wins National Award

Christine M. Darden, Langley aerospace engineer, has been selected to receive the 1987 national Candace Award for Science and Technology. The award was presented at a gala ceremony honoring distinguished black women June 17 at New York's Metropolitan Museum of Art.

The Candace Awards honors outstanding black women in the arts, sciences and business. The awards are presented annually by the National Coalition of 100 Black Women and the Paddington Corporation.

Now assigned to the High Speed Aerodynamics Division, Darden joined the research staff at Langley in 1967 as a data analyst. She has developed expertise in supersonic aircraft aerodynamics, high-lift wing design, and minimization of the sonic boom. In addition to earning a doctorate in Mechanical Engineering, Darden has published numerous articles reporting the results of her research.

She has received a Langley Outstanding Performance Award and has been cited as an Outstanding Woman of America. She is listed in Who's Who Among Black Americans and is the recipient of Hampton University's Twenty-Year Alumnus Award.

6000 Women Pilots Honor Amelia Earhart

On July 2, 6000 members of the Ninety-Nines, Inc., the International Organization of Women Pilots, participated in a FLY OVER to honor their first president, Amelia Earhart. Fifty years ago, on July 2, 1937, Earhart departed Lae, New Guinea, on what was to have been the last leg of her round-the-world flight. It turned out, instead, to be her last flight.

In honor of the memory of Amelia Earhart, the Ninety-nines were in the air beginning at 11:00 EDT. LAFB Captain Barbara Woods, Langley Flying Club, and Sixty-Six member Niki Wenger, teacher in space finalist assigned to NASA Langley, participated in the tribute.

National Aeronautics and Space Administration
Langley Research Center
NASA
Langley Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia 23665, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3707. Articles are due at noon on the Thursday following the date of this issue.
Managing Editor . . . . . Jean Drummond Clough
Editor . . . . . Marny S. Skora
Photographs . . . . . Photo Lab
The privelege of advertising articles in this publication is restricted to the staff 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.

Positions Available

The following Competitive Placement Positions are currently open:

87-46: AST, Reliability and Quality Assurance, Aerospace Engineer, GS-861-12 or 13, Systems Safety, Quality and Reliability Division, Systems Assurance Branch, Flight Systems Assurance Section. Closes July 29.

87-47: Computer Programmer Analyst, GS-0334-11 or 12, Management Operations Directorate, Personnel Division. Closes July 10.

87-48: Supervisory Aerospace Engineer, AST, Navigation, Guidance and Control Systems, GM-0861-14 or 15, Office of Director for Flight Systems, Flight Management Division, Vehicle Operations Branch. Closes July 24.

Positions Filled

Humbert E. Rockey, Jr. has been selected Engineering Contract Specialist, Specifications and Contract Coordination Office, Facilities Engineering Division, under CPP 87-38.

Langley Staff Supports Bloodmobile

Langley employees, retirees, and contractors donated 334 pints of blood during the May 27 visit of the American Red Cross Bloodmobile.

Achieving gallon status were:

9 Gallons - **Joseph Powers, George T. Carson, Jr. and Stephen E. Devan.**

8 gallons - **George J. Trombley and William G. Johnson, Jr.**

7 gallons - **Fred J. Hines and Richard G. Bellan.**

6 gallons - **Henry N. Zumbrun, Douglas W. Grizzle, Joseph C. Davis and Maxwell E. Hoffman.**

5 gallons - **Robert M. Connell, Jr. and Don E. Avery.**

4 gallons - **Neil A. Holmberg and David E. Terray.**

3 gallons - **Linda S. Little, Kim F. Schroeder, Timothy D. Bryant, Sidney G. Allison, Mark S. Wampler, and John G. Wells, Jr.**

2 gallons - **Darrell G. Wood, William R. Tate, Kelli F. Willshire, Karen L. Slothouber, and Ronnie R. Henk.**

1 gallon - **Barbara B. Gormsen, John C. Covington, Edward N. Scearce, Fernandus Ratliff, Kurt N. Detweiler, Kevin T. Larman, and Robert V. Gifford.**

Marilyn Johnson, Red Cross, and Annette L. Forrest, NASA, were coordinators for the Bloodmobile.

News Around NASA

HEADQUARTERS, Washington, D.C. — **BARTOE NAMED CHIEF SCIENTIST OF NASA SPACE STATION.** Dr. John-David F. Bartoe has been named chief scientist of NASA's Space Station program. He will serve as principal advisor to the associate administrator of Space Station involving program plans, policies, and user- related requirements. His appointment was effective June 15. After his two-year tenure, Dr. Bartoe will return to the Naval Research Laboratory, Washington, D.C.

GODDARD WALLOPS FLIGHT FACILITY, Wallops Island, Va. - - **SMALL SOUNDING ROCKET DESTROYED BY LIGHTNING.** Lightning destroyed a small sounding rocket, its payload, and support equipment during an intense storm June 9 at the Wallops Flight Facility. Destroyed were an Orion rocket and its scientific experiment payload to study nightime thunderstorm effects on the ionosphere. NASA said the total value of the destroyed equipment is estimated to be under $50,000.

AMES RESEARCH CENTER, Mountain View, Calif. — **NASA AMES LARGE WIND TUNNEL REOPENS.** The world's largest wind tunnel reopened at Ames Research Center with greatly increased test capabilities after undergoing major modifications. Called the 40-by-80-Foot Wind Tunnel reflecting the size of its test chamber, the tunnel was constructed in 1944 and has been used to test most of the nation's important aircraft for the last 40 years. The 40-by-80 is large enough to test many full-scale aircraft, hence eliminating some of the uncertainties of scale model testing.

HEADQUARTERS, Washington, D.C. — **HINNERS AND TOWNSEND APPOINTED TO NASA MANAGEMENT POSITIONS.** Dr. Noel W. Hinners, Director, Goddard Spaceflight Center, has been appointed NASA Associate Deputy Administrator (Institution). Dr. John W. Townsend, Jr. has been appointed to replace Dr. Hinners. Appointments were effective June 22. This new position has been created in response to recommendations of the NASA Management Study Group to provide a focus on institutional management matters, within the office of the administrator, including determination of requirements and distribution of resources for manpower, facilities, and institutional funding at NASA's nine field centers employing approximately 22,000 people.

MARSHALL SPACE FLIGHT CENTER, Hunstville, Ala. — **NEW TECHNOLOGY AIDS IN DETECTION OF EYE DISORDERS.** A new mass vision screening system for children has been perfected by NASA's Marshall Space Flight Center and an Alabama-based small business. Called the Photorefractor Ocular Screening System, the device is a portable unit that detects eye problems in children through a photometric analysis of retinal reflexes.

HEADQUARTERS, Washington, D.C. — **NASA IMAGING TECHNOLOGY TO HELP PROTECT U.S. DOCUMENTS.** Imaging technology, originally designed to photograph planets from unmanned spacecraft, will be used to help protect the U.S.'s most valued documents as part of a monitoring system developed by the Jet Propulsion Laboratory for the National Archives. The Charters of Freedom Monitoring System will periodically assess the physical condition of the Constitution, Declaration of Independence, and the Bill of Rights.

Visitor Center 'Toys in Space' Program Features Hands-On Demonstrations

A special children's program, "Toys in Space," will be presented to youngsters from 4 through 12 years of age during July at the Visitor Center.

On April 12, 1985, the Space Shuttle Discovery transported 11 familiar motion toys into space. The toys–among them a slinky, paper airplane, and gyroscope–were used by the astronauts as educational tools to demonstrate basic laws of physics.

The Toys in Space program highlights Newton's laws of motion. Hands-on demonstrations help children observe how gravity affects the behavior of toys on Earth. In-flight Shuttle footage will show how the micro-gravity environment of space alters the behavior of these same toys.

Programs are scheduled Monday through Friday afternoons during July in two sessions: 1 to 2 p.m. for children ages 4 through 8, and 2 to 3 p.m. for students 9 through 12 years of age. The program is free but reservations are required and are available on an individual sign-up basis. To make reservations or for additional information, call the Visitor Center, 865-2855.

'Langley Researcher' Retires

Newspaper to Reflect New Look

-by Jean Drummond Clough, Managing Editor

Twenty-five years ago, the name of Langley's in-house newspaper, **Air Scoop**, was changed to the **Langley Researcher**. Today, this issue marks the end of that era–an era that has been filled with many accomplishments and many changes in the workplace and the workforce.

It is now time to look to a new publication that reflects the changes that have taken place at Langley and to increase center- wide communication. An important vehicle in our effort to "talk to each other" is our in-house publication.

Beginning with the July 17 issue, and in conjunction with Langley's 70th anniversary, the Office of External Affairs will introduce a new employee newspaper, **Researcher News**. The new look for our center newspaper is a result of your response to a survey conducted last fall and has been approved by Langley Senior Staff and NASA Headquarters.

In addition to the change in format, the distribution of the paper will be increased. All on-site, non-civil servants will receive an individual copy of **Research News** at their mail stop. Contractors, university associates and grantees are nearly half of our complement, and we believe it is very important to the morale of these employees to make them feel part of the Langley team. This increased distribution will aid in keeping the fine communication network that characterizes Langley stable and growing.

In an attempt to make the in-house newspaper more appealing, more vital and more readable, we are striving to include information for and about all facets of our center family–civil service/ contractor/ retiree news, personnel actions, educational opportunities and more photographs. We will continue to bring you technical information, especially about Langley research programs, and news from other NASA centers. We would like to augment this with feature stories on the people who make Langley unique, more in-depth club news and added coverage of Langley sports.

To accomplish these ambitious goals, we will need your help. Everyone, including the Senior Staff, is being tapped for participation. A new column, Langley Headquarters Forum, gives the Senior Staff an opportunity to keep you informed on management areas of concern and interest. Langley Director Richard Petersen will introduce this column July 17. The Letters to the Editor column welcomes serious comments, questions and concerns; issues will be directed to the appropriate person for response.

I encourage you to be in touch with the **Researcher News** Editor, Marny Skora. Her extension is 3707 and her office is in the Public Affairs Office, building 1219, room 301. Your contributions, comments, and story ideas are an integral part of the success of this communication effort.

Our accomplishments directly reflect our ability to communicate.

C of F Projects Needed

A request for projects for the FY 1990-FY 1994 Construction of Facilities (CoF) Budget has been sent to Division Offices with an initial response due by July 24, 1987. Included are definitions of the four CoF Programs and a listing of the current proposed FY 1989-FY1993 programs. Please inform your Division Office by July 20, 1987, if you have a facilities project costing more than $100K that should be considered for the FY 1990-FY 1994 CoF program.

Note of Thanks

Willie A. Strickland, retired Klate Holt rigging foreman writes:

"Thanks to all who honored me at my retirement. Your presence and presents are appreciated. I will enjoy my retirement but I will really miss associating with the great people at a great Research Center."

Secretarial Effectiveness Training Program Held at Wallops Facility

Two groups of Langley secretaries participated in the first Secretarial Effectiveness Training Program. Pictured above are (front row, L to R) Margarette Pitts, E. Louise Baker, Theresa C. Hedgepeth, Queenella M. Perrin, Nadine E. McHatton, Susan R. Edwards; (middle row, L to R) Darlene K. Butler, Katie M. Greene, Nancy P. Green, F. Louise Haynesworth, Dreamie S. Newsome, Angela M. Davis, Valinita L. Hicks, Louise Hamilton, training coordinator, and Velma R. Martin; (back row, L to R) Eileen M. Strickland, Gloria S. Evans, Marilou S. Phillips, Amy C. Fitzgerald, Effie L. Nicosia, Sheila D. Johnson, Maria K. Elliott, Rise M. Williams, Richard Dali, instructor, Marlene E. Firman, and Pamala L. Hucks.

Also participating in the two-day workshop held at Wallops Flight Facility were (front row, L to R) Althea O. Brown, Anne S. Rockey, Sherry R. Ellis, Carolyn V. Carey, Alberta W. Reid, Sheila F. Ruckman, Paula A. Ware; (middle row, L to R) Richard Dali, instructor, Willie Mae Beckett, Donna Augburn Gilchrist, Gloria F. Ragsdale, Marian L. Jones, E. Marie Ashe, Patricia A. Holland, Louise Hamilton, training instructor, Emily J. Evans, Sandra C. Hurst; (back row, L to R) Shirley R. Morton, Alice E. Eley, Margaret H. Robbins, Nita W. Langford, Catherine A. McCargo, Angela E. Claud, Mary J. Dorsey, Paula R. Rawles, Millie Boone, training instructor, Bettie E. Messier, Jane C. Leffel, and Marcella F. Hogge.

Speakers Bureau

The Langley Speakers Bureau participated in a variety of events providing informative and educational programs to groups across Hampton Roads.

George Helfrich spoke on Intellectual Property Patents and Trade Secrets at the University of Virginia, April 1.

Ron Harvey gave a presentation on Careers at NASA at Rene B. Wright Elementary School, Chesapeake, May 1.

Bill Williams presented a Langley Productivity Program to NASA Goddard Productivity Review Committee, May 4.

George Ware gave a Space Shuttle Update to the Waverly Ruritan Club, May 5.

Geoff Tennille spoke on the Greenhouse Effect to the Science Club of Ferguson High School, May 6.

Dr. Kelli Willshire presented a program on Women's Careers in Space at Kings Dominion, Doswell, May 9.

Leroy Spearman spoke to the Experimental Aircraft Association, Patrick Henry Airport, on Aircraft Research and Development Trend in the U.S. and U.S.S.R., May 12.

Randy Wagner gave a program on Advanced Space Technology at Embry Riddle University, May 14.

Lester J. Rose presented "Spinoffs from Aerospace Technology" at the Virginia Regional Technology Education Student Conference, May 16.

Roger Breckenridge spoke on Space Station to the Exchange Club of Williamsburg, May 18.

Robert L. Wright spoke on NASA Careers/Job Opportunities at Cesar Tarrant Elementary School, May 19.

Leonard Weinstein gave a program on Astronomy at Old Dominion University, May 20.

Edwin J. Prior acted as an Astronomy and Space Judge for the Virginia Junior Academy of Science, May 20.

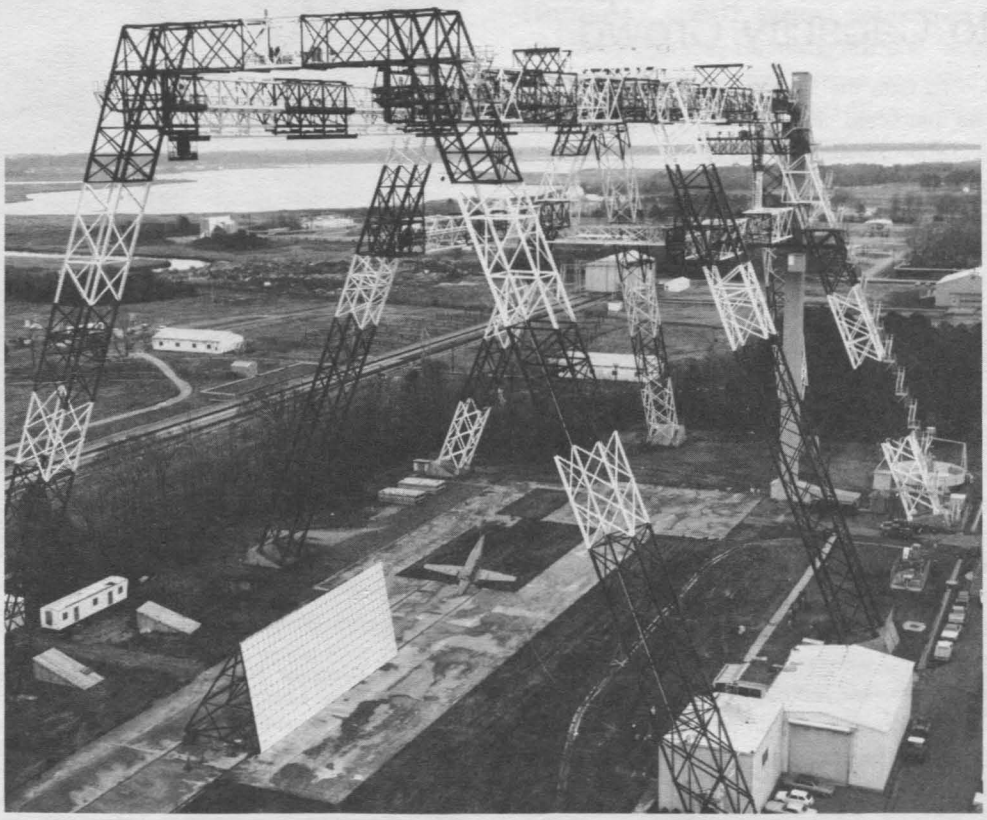
Lenwood Clark spoke on Space Station to The Order of Daedalians, Langley Air Force Base, on May 20, to the Virginia Tech Sigma Xi Scientific Research Society on May 26, and to the Southside Lions Club on May 28.

Bob Mack spoke on Astronomy to the Northeast District Extension Agents, May 28.

Much appreciation is entended to these Langley employees who have given of their time and talent.

In Memoriam

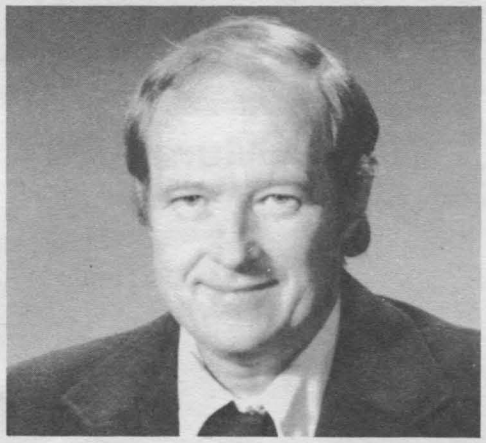
Sympathy is extended to the family of **Veryl Dean Crowder**, who died June 11. Crowder retired from the Scout Project Office in 1974.



Celebrating 70 Years of Research

From Spacecraft to Aircraft, Langley's Role is Research

Built as the Lunar Landing Research Facility for testing the Apollo lunar lander and training Apollo astronauts, this 250-foot-high structure is now known as the Impact Dynamics Facility and is used to conduct crashworthiness testing. Crash tests provide structural and passenger-protection data which can be used to make future aircraft safer.



Word has been received at the center that Ray V. Hood has transferred to NASA Headquarters as the Deputy Director, Information Sciences and Human Factors Division, Office of Aeronautics and Space Technology. Hood, the former Head of the Aircraft Control Branch, Guidance and Control Division at Langley, went to Headquarters in January on a temporary assignment as Acting Deputy Director of the division.

Participants Sought for Development Programs, Management Fellowships

Langley is seeking participants for FY 1988 development programs and management fellowships. The grade requirement is as low as GS-12 for one program while others may require a grade of Senior Executive Service. Applications may be initiated by individuals but must go through the appropriate division or project office channels for approval at the directorate level.

Nomination deadline is the end of July. For additional information on development programs and management fellowships available, contact your division office or Joe Mathis, Employee Development Branch, ext. 2611.

Fitness Center Opens to Capacity Crowd

To date the Langley Fitness Center (LFC) has instructed close to 400 NASA employees with approximately 90% of them using the center on a regular basis. Another 200 employees are waiting for their initial fitness evaluations and/or instructional appointments to be able to use the facility. Director Franki Robbins-Pivarnik asks that all those waiting to use the center please be patient. There is a back up on testing and instruction due to the great response. "We are working you in as fast as we can!" Franki promises.

Currently the hours for the fitness center are 10:30 a.m. to 7:30 p.m., Monday through Friday, with scheduled hourly appointments on the half-hour from 10:30 a.m. to 5:30 p.m. Employees may choose either a 3-day/week (M-W-F) or a 2-day/week(T-TH) program. Beginning August 3, the LFC will expand its hours to 6:30 a.m. until 7 p.m. for you early-bird exercisers! Look for the sign-up sheet on the LFC bulletin board if you are interested in switching to a morning time slot.

Be watching for Fitness Tips from Franki.

Vote for the contestant of your choice.

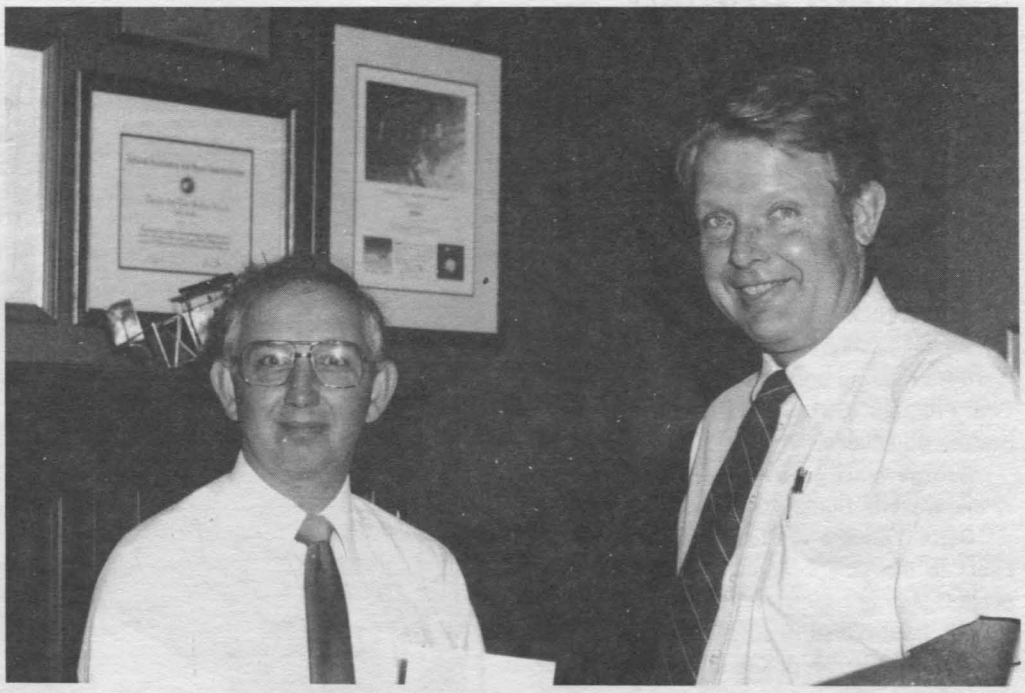
Cast your ballot by buying a carnival ticket.

swap and shop

ROOM. Va. Beach. Room w/private bath, kitchen/laundry privileges, use of den w/fireplace, TV. Convenient to VB Expressway/I-64. Carpool to LaRC West area possible. $400/month includes utilities, linens, wkly cleaning. References/dep. required. Call ext. 3409 or 1-481-4162 until 10 p.m.

TRAILER. "Buzzards Roost" on Hatteras Island at Frisco, oceanside: 50' house trailer, furnished, including dishes; 2 BR, full bath, sun porch, outdoor shower, AF/FM stereo; walking distance to beach and fishing pier; 5 min. drive to Sport Fishing Center and charter boats. $150/wk., $75/wknd., $25/wkdy. Rustic but fun. Available thru Oct. Call Fogle, 826-6177.

TRANSPORTATION needed to LaRC from 21st & Chestnut, Newport News. 8:00-4:30 or 7:30-4:00 shift. Call Gloria Finnell, ext. 3521.



Langley Director Richard H. Petersen begins this year's Carnival season by purchasing ticket 1 from Langley Activities Association President Geoffrey M. Tennille. The LAA will sponsor its biggest fund-raising event on Friday and Saturday, August 21 and 22. Tickets may be purchased from the LAA Office, Carnival Monarch contestants or members of the LAA Executive Board. The contestant selling the most raffle tickets will be crowned Carnival Monarch on Friday evening and will reign over all events.

Carnival Monarch Contestants

Nancy Murawski
Acquisition Division

Patricia Jackson
Operations Support Division

Cheryl Pruitt
High-Speed Aerodynamics Division

Tina Forrest
Klate Holt

Happenings

You're Invited

Employees, Contractors, and retirees are invited to attend a special celebration commemorating the 70th anniversary of the Langley Research Center. The program will be held Friday, July 17, at 2 p.m. in the hangar, building 1244.

Special guest speakers for the anniversary celebration will be Voyager crew members, Dick Rutan and Jeana Yeager.

1917 70 Shaping Tomorrow
NASA Langley Research Center
1987

LAA SOCIAL. The Langley Activities Association will sponsor an after- work social in the Activities Center, Friday, July 10, from 4 to 6:30 p.m. This is a good time to "unwind" after a busy week and to enjoy the company of friends.

TOASTMASTERS. NASA Toastmasters will meet on Wednesday, July 8, at the Activities Center. Let Toastmasters help you to become not only a better speaker, but a better listener. For information, call Steve Yaros, ext. 2673.

CARNIVAL TICKETS are now on sale for the LAA Carnival, August 21 and 22. Individuals interested in selling tickets should call the Activities Office, ext. 3139. Two tickets to Busch Gardens will be given to each of the five individuals who sell the most tickets.

ARTS AND CRAFTS. Anyone interested in displaying arts and crafts at the LAA Carnival, Friday and Saturday, August 21 and 22, should call Betty Hughes, ext. 3264.

THURSDAY NIGHT BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, please contact Eugene Hicks, ext. 3737.

WINETASTERS CLUB. If you love wine, make wine, grow grapes, have large feet, or wouldn't mind rubbing elbows with people who do, then come to the organizational meeting of the NASA Winetasters Club at 4:30 p.m., July 8, at the Activities Center. Contact Bill Edmonds, ext. 3761, mail stop 474, for more details.

ENTERTAINMENT NEEDED. LAA is looking for dance groups, bands and other performers to volunteer their time and talents for the Carnival. Contact Eugene Hicks, ext 3737.

SPORTS WRITER NEEDED. The Public Affairs Office is looking for a sports enthusiast to volunteer to write short articles about LAA sports activities for the **Researcher**. Interested persons should call Marny Skora, ext. 3707.

Langley Stocked Forms Announced

FORM NO.	FORM	DATE
NEW		
LF 104	Request for Key	April 1987
NF 1626	Report Documentation Page (Replaces LF 63)	Oct. 1986
NF 1630	Request for Access to Classified National Security Information	Jan. 1987
REVISED		
LF 82	Information for Preparing Contracts Involving Security Requirements (previous edition is useable)	April 1987
LF 84	Non Supervisory Performance Appraisal (previous edition is obsolete)	June 1987
LF 116	Employee Final Checkout (previous edition is obsolete)	Feb. 1987
LF 127	Change Notification Sheet (previous edition is obsolete)	April 1987
NF 372	Travel Request & Authorization LaRC Overprint April 1987 (previous edition is obsolete)	June 1983
NF692	Position Description (previous edition is obsolete)	Jan. 1987
NF 1592A	Manager & Supervisory Performance Appraisal (Continuing Management Responsibilities) (previous edition is obsolete)	Oct. 1986
NF1592B	Manager & Supervisory Performance Appraisal (Key Specific Objectives) (previous edition is obsolete)	Oct. 1986
CANCELLED		
LF 63	Standard Bibliographic Page (replaced by NF 1626)	June 1985

AFSC Promotion Ceremonies

1Lt Mark C. Frassinelli, propulsion integration engineer, receives his captains bars during a promotion ceremony. William P. Henderson, Branch Chief, Propulsion Aerodynamics Branch, is shown pinning Captain Frassinelli.

1Lt Steven W. Moss, aerospace engineer, receives his captains bars during a promotion ceremony. James E. Ballengee, Chief, AFSC Liaison Office, is shown congratulating Captain Moss.

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia
23665

Official Business
Penalty for Private Use $300

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NASA Washington, DC
Permit No. G-27

Taylor Discusses Structures and Materials for Next Generation Space Launch Vehicles at Visitor Center

Allan H. Taylor, senior research engineer, will discuss Structures and Materials for the Next Generation Space Launch Vehicles at noon on Wednesday, July 8, in the Visitor Center main theater. Taylor's presentation is the sixth in the Guest Lecture Series on Aerospace Sciences co-sponsored by the Visitor Center and the AIAA-Hampton Roads Section Student Branch.

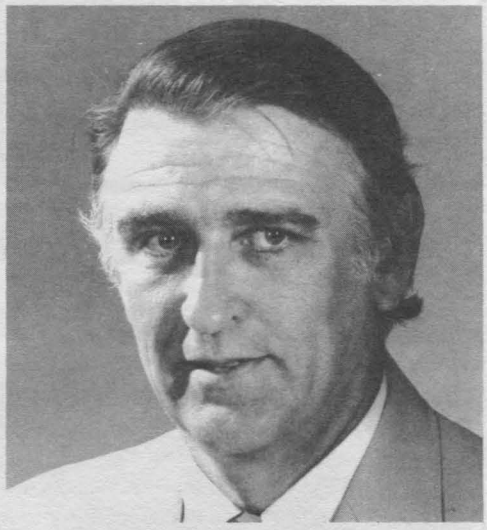
Over the past 30 years space launch vehicles have matured from relatively small and simple expendable ballistic systems to large, complex flight systems that are generally reusable. During this time period, technology improvements have allowed enormous increases in the weight and size of payloads while greatly reducing the cost of delivering a pound of payload to orbit. To a large extent these economies are the result of improved materials, manufacturing processes, and structural concepts that have increased the efficiency of the vehicle structures.

Langley Research Center has been conducting analytical and experimental development programs for space vehicle structures for the past 30 years. The materials for primary structure–metal-matrix composites, organic composites, advanced metals, and carbon-carbon–have emerged from laboratory curiosities to state-of-the-art structures. New manufacturing processes, electron beam welding, superplastic forming and diffusion bonding, allow innovative design concepts that were not producible a decade ago. Analytical techniques have also improved to where the design and analysis of complex thermostructural concepts can be readily evaluated in relatively short time frames, when only 20 years ago these techniques were unknown.

Taylor will discuss these technologies–proven, emerging, and conceptual–in relation to their applications to future space vehicles. He will also have display samples of most of the concepts discussed for hands-on examination following the presentation.

Taylor has been a senior research engineer in the Loads and Aeroelasticity Division since July 1984. From January 1981 to July 1984 he was assigned to the Structures and Dynamics Division at Langley. Prior to this, Taylor had amassed 18 years of professional experience in aerospace research, design, and development concerned with diverse problems in transport aircraft, high speed aircraft, missiles, space launch vehicles, and ground based facilities.

Taylor earned his Bachelor of Science degrees in Aeronautical Engineering and Metallurgical Engineering from California State Polytechnic College. He has completed post-graduate studies in engineering, mathematics, and industrial management at San Diego State College and Georgia Institute of Technology.



The recipient of a NASA Superior Achievement Award and holder of five patents, Taylor is recognized as an expert in thermal dynamics and mechanical attachments. He is an Associate Fellow of the AIAA.

cafeteria menu

Week of July 6-10

MONDAY: Split pea soup, veal parmesan, ham & macaroni au gratin. Snack Bar: 1/4 lb. cheeseburger, pizza supreme.

TUESDAY: Chicken & rice soup, spaghetti & meat sauce, stuffed boneless chicken breast, seafood quiche. Snack Bar: Chicken filet, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken, grilled pork chops, stuffed Italian shells. Snack Bar: 1/4 lb. cheeseburger, grilled cheese sandwich.

THURSDAY: Chicken vegetable soup, roast turkey, stuffed green peppers, braised chicken livers. Snack Bar: chicken filet, egg salad sandwich.

FRIDAY: Manhattan clam chowder, filet of fish dinner, chicken Italienne casserole, Polish sausage w/ kraut. Snack Bar: 1/4 lb. cheeseburger, sausage pizza.

Week of July 13-17

MONDAY: Three bean soup, chopped steak, Cajun fried chicken, fried ravioli w/ tomato sauce. Snack Bar: Chicken filet, pizza supreme.

TUESDAY: Minestrone soup, baked Italian lasagna, meat loaf w/ gravy, sea trout almondine. Snack Bar: 1/4 lb. cheeseburger, steak & cheese sub.

WEDNESDAY: Fresh vegetable soup, fried chicken dinner, blackened fish, beef liver & onions. Snack Bar: Ckicken filet, grilled ham & cheese.

THURSDAY: Chicken noodle soup, chicken chow mein dinner, beef enchiladas, broccoli & cheddar quiche. Snack Bar: 1/4 lb. cheeseburger, chicken fajita sandwich.

FRIDAY: Bull Island clam chowder; filet of fish dinner; beef, macaroni & tomatoes; boneless chicken breast teriyaki. Snack Bar: chicken filet, hot Italian sausage.

NASA
National Aeronautics and
Space Administration

Langley Research Center

Volume 1, Issue 1 July 17, 1987

News Researcher

Bi-weekly Employee and Contractor Publication

NASA Scientist Believes a 10th Planet Exists

A tenth planet may exist beyond the known solar system. If it does, it must travel in an orbit nearly at a right angle to the orbits of the known planets and lie so elongated that it only nears the Sun and known planets every 700 to 1000 years, according to NASA scientist Dr. John Anderson.

His conclusion was first put forward in a book, "The Galaxy and the Solar System," published by the University of Arizona Press. It follows examination of long-term astronomical measurements, together with the absence of gravitational effects of a tenth planet on the Pioneer 10 and 11 spacecraft. Pioneers 10 and 11 are in the far outer solar system. The two Pioneers represent a uniquely sensitive measuring system for gravity effects. Anderson, of NASA's Jet Propulsion Laboratory, Pasadena, Calif., is principal investigator in celestial mechanics for the Pioneer spacecraft, which is managed by NASA's Ames Research Center, Mountain View, Calif.

Hampton Salutes Langley

Because of the close working relationship that has existed over the years between the City of Hampton and the Langley Research Center, the City passed a Resolution in honor of Langley's 70th Anniversary.

Resolution

WHEREAS, the City of Hampton, Virginia, is the home of the National Aeronautics and Space Administration (NASA) Langley Research Center; and

WHEREAS, NASA Langley Research Center occupies 787.5 acres of Government- owned land in the City of Hampton, Virginia; and

WHEREAS, official groundbreaking ceremonies for the facility were held on July 17, 1917, when the first aeronautical research laboratory of the National Advisory Committee for Aeronautics (NACA) was established, and later called NASA Langley Research Center; and

WHEREAS, NASA Langley Research Center is the United States Government's oldest, most prolific and most honored aerospace laboratory; and

WHEREAS, the first United States manned space program–Project Mercury– had its beginning at NASA Langley Research Center in 1958; and

WHEREAS, five (5) NASA Langley Research Center facilities are designated as Historic Landmarks by the Department of the Interior; and

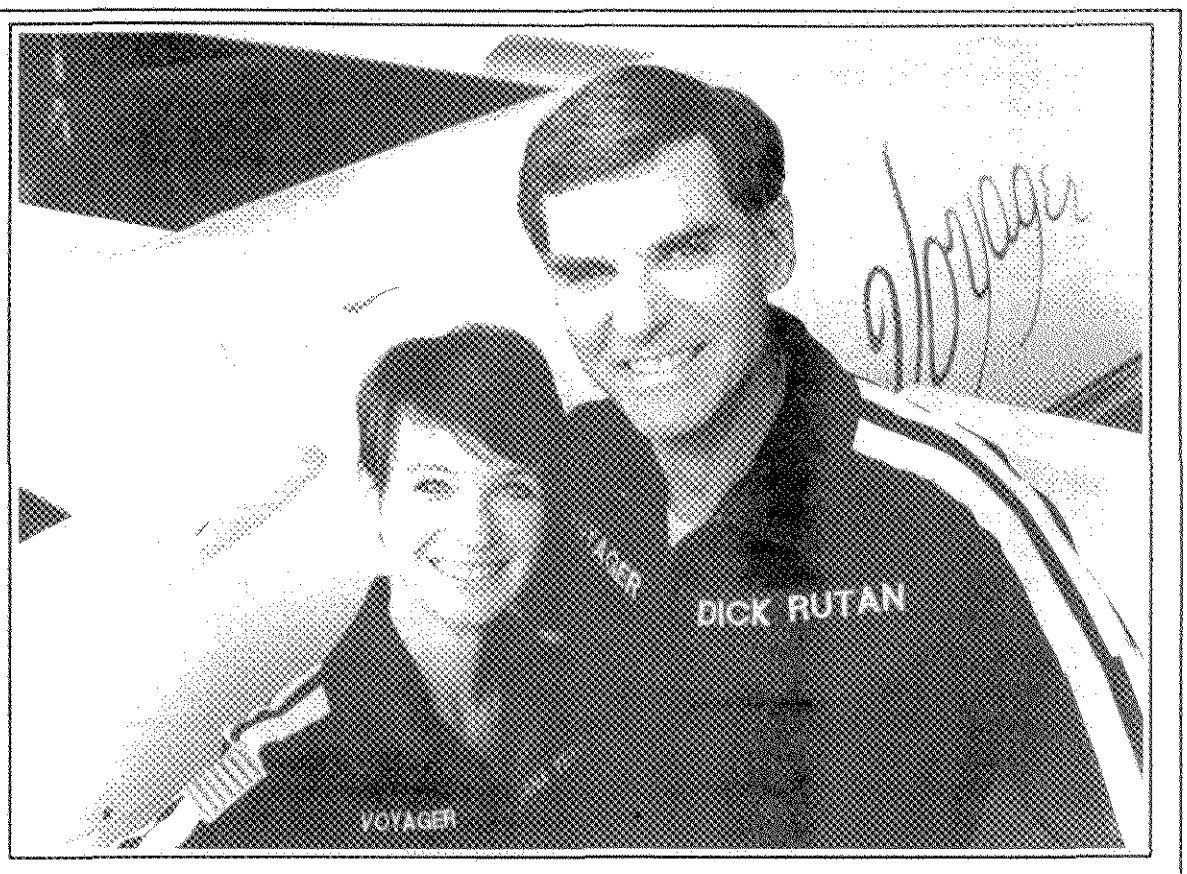
WHEREAS, NASA Langley Research Center is a national leader in research, analysis and long-range testing for practical solutions of the problems of air and space flight; and

WHEREAS, from its inception, people have been NASA Langley Research Center's most important resource; at the present time approximately 2,800 civil servants and approximately 2,500 contract personnel, university researchers and United States Army helicopter research personnel work at NASA Langley Research Center.

NOW, THEREFORE, BE IT RESOLVED that the City of Hampton, Virginia, does herewith salute NASA Langley Research Cente as it celebrates its 70th Anniversary on July 17, 1987, and continues its work toward shaping our Nation's and our world's future.

BE IT FURTHER RESOLVED that this Resolution be spread upon the minutes of the Council meeting held July 8, 1987, and that a copy of this Resolution be signed by the Mayor, attested by the Clerk, and presented to the NASA Langley Research Center.

JAMES L. EASON
MAYOR



Voyager Crew Highlights Langley's 70th Anniversary Celebration

Voyager crew members Dick Rutan and Jeana Yeager, who made the first non-stop, unrefueled flight around the world, will be special guest speakers at today's anniversary celebration. They, along with Burt Rutan and their team of volunteers, recently received the Collier Trophy, awarded annually for the greatest achievement in aeronautics or astronautics in America. Other program participants include Dale D. Myers, NASA's Deputy Administrator, and Dr. Raymond S. Colladay, NASA's Associate Administrator for Aeronautics and Space Technology, both from NASA Headquarters, Washington, D.C. The Headquarters Tactical Air Command Honor Guard and the U.S. Army 76th Division Training Band will share in saluting Langley on its 70th anniversary. The celebration will be held in the hangar, building 1244, at 2 p.m. All employees, contractors, and retirees are invited to attend.

Engineering Deans Conference Held at Langley

For the first time in the history of the agency, NASA has brought together the leadership of engineering education with the decisionmakers of one of its research centers. Forty deans of the college of engineering from colleges and universities across the United States gathered at Langley on July 9-10 to participate in the first Engineering Deans Conference organized by NASA.

Initiated by Chief Scientist Jerry South, the conference brought together academia and Langley senior staff to exchange ideas about engineering manpower, interdisciplinary research, research funding, and new degree programs. The main impetus of the two-day meeting addressed the question of how to increase the number and quality of engineering PhD's that seem to be declining in this country. Researchers and educators alike recognize that the engineering graduate is sorely needed by federal research laboratories, the aerospace industry, and the world of higher education as faculty members.

Dr. Samuel Massenberg, Head of the Office of University Affairs, sees this meeting as an opportunity for the leaders in engineering education and NASA decisionmakers to look ahead at what is possible in terms of engineering manpower in the next ten years. Each sector is able to investigate and discuss the present and future needs, the problems that have to be addressed and possible solutions, especially in terms of curriculum changes.

Presentations by Langley senior staff and a tour of the center with emphasis on flight simulation, structures, advanced transport operating systems, and the National Transonic Facility highlighted day one of the conference.

A Deans Forum, moderated by Dr. J. Chester McKee, headlined the itinerary for the final day of the conference. McKee is the Director of Associateship and Fellowship Programs for the National Research Council/National Academy of Sciences. Forum discussions were predicated on two current National Science Foundation reports: "The Science and Engineering Pipeline" and "Future Cost of Research–The Next Decade for Academe."

Massenberg plans to compile formal proceedings from the meeting from which recommendations will be drawn that will suggest a plan of action. An additional outcome of this program, Massenberg suggests, may be a Science Deans Conference in the future.

Happy Anniversary, Langley

News Briefs

HEADQUARTERS, Washington D.C. — **EHL NAMED DEPUTY ASSOCIATE ADMINISTRATOR FOR SRM&QA.** James H. Ehl has been named Deputy Associate Administrator, Office of Safety, Reliability, Maintainability and Quality Assurance effective July 5. Ehl comes to Headquarters from Marshall Space Flight Center where he was chief of the Process Engineering Division.

LOCKHEED SELECTED FOR SPACE STATION SOFTWARE SUPPORT ENVIRONMENT. NASA has announced the selection of Lockheed Missiles and Space Co., Astronautics Division, Sunnyvale, Calif., for negotiations leading to the award of a contract for the design, development and implementation of a Space Station software production capability called the Software Support Environment (SSE). The SSE, when implemented in a computer facility, will provide the support capability to be used by the Space Station Program for the life-cycle management of Space Station.

AARON NAMED ACTING ASSISTANT ADMINISTRATOR FOR OFFICE OF EXPLORATION. John W. Aaron has been named as Acting Assistant Administrator for Exploration and will succeed Dr. Sally K. Ride who is leaving NASA in early autumn to join Stanford University. Aaron, currently Special Assistant to the Director of the Johnson Space Center, will report to Headquarters August 5.

NASA SELECTS GRUMMAN FOR SPACE STATION PROGRAM SUPPORT CONTRACT. NASA has selected Grumman Aerospace Corp., Space Station Program Support Division, Bethpage, N.Y., for negotiations leading to the award of a cost-plus-award-fee Space Station Program Support Contract (PSC). The contract provides for Space Station systems engineering and integration in addition to a broad base of management support to the Space Station Program Office.

NASA REPORTS ON IMPLEMENTATION OF COMMISSION RECOMMENDATIONS. NASA Administrator James C. Flethcher has submitted to the President a report on the current status of NASA's implementation of the recommendations of the Presidential Commission of the Space Shuttle Challenger accident ("Rogers Commission"). The report describes the ongoing Shuttle recovery effort relative to the nine Rogers Commission recommendations, as well as other related activities for the safe return to flight. Copies of Fletcher's report are available in the library.

JOHNSON SPACE CENTER, Houston, Tex. — **NASA EXTENDS CONTRACT FOR SHUTTLE FLIGHT SIMULATOR SUPPORT.** The Johnson Space Center has recently completed negotiations with the Singer Company, Link Flight Simulations Division, extending the contract for support of the Space Shuttle flight simulaion complex. The work includes development support and upgrades to the complex in which astronauts train to fly the Space Shuttle. Value of the cost-plus-award-fee extention is $15,485,337.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017.

NASA Remains Committed to Teacher in Space

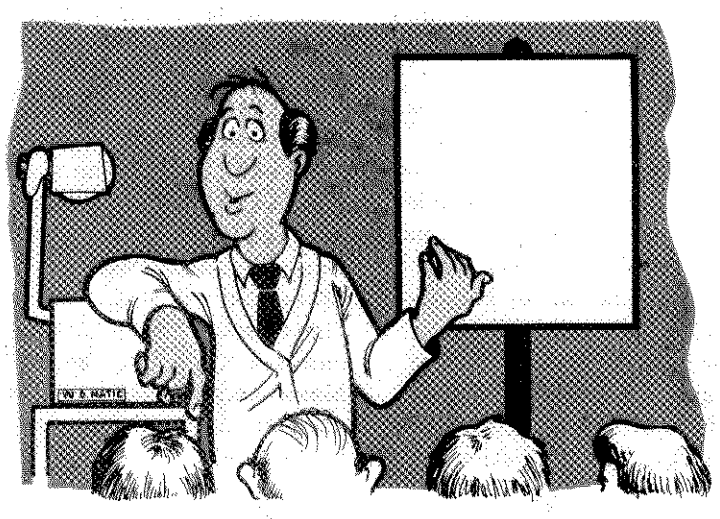
Dr. Robert Brown, Director of Educational Affairs, confirmed recently that NASA remains firmly committed to the Teacher in Space Program. This program represents an amplification of NASA's educational goals.

The Teacher in Space (TIS) Program originally consisted of three components: to fly a teacher on Shuttle to conduct lessons and experiments; to provide work experience for the eight TIS finalists at NASA centers and to develop NASA educational products; and to provide training and information to the 103 Space Ambassadors (state finalists) to be used in their classrooms, school systems, and state programs.

Brown reported on the status of each of these components. Once Shuttle flights resume, the first civilian passenger will be a teacher and Barbara Morgan has accepted this opportunity. Most of the finalists are returning to their school systems as planned. The Space Ambassadors will continue to carry on their activities as they have in the past.

Niki Wenger, the Teacher in Space finalist assigned to Langley, is as yet uncertain of her plans for next year. She is presently evaluating her options. Having become a strong advocate of the space program, Wenger "feels an obligation to take the experience and knowledge gained in the past two years and share it with as many people as possible."

Lankley



Correction

Carnival Monarch contestants Cheryl Pruitt and Tina Forrest were incorrectly indentified in the last issue (July 3, page 6). Apologies to Cheryl and Tina. See corrected listing on page 8. Remember to vote for the contestant of your choice by buying a Carnival ticket.

To increase center-wide communications, distribution of the **Researcher News**, our updated center publication, has been increased to include non-civil servants. The staff hopes that you will enjoy the new format and invites comments, story ideas, and suggestions.

Editorials

Langley

Headquarters Forum

"Shaping Tomorrow" is the theme we have chosen to celebrate the 70th anniversary of the Langley Research Center. I think it describes, in a phrase, Langley's reason for being.

Work began seventy years ago on the first buildings of the Langley Memorial Aeronautical Laboratory. Since that modest beginning, the aviation industry in the United States has grown into a major force in our society. The industry employs close to one-and-a-half million people, it had a trade surplus in 1986 of almost $12 billion and more than 75 percent of the airplanes sold around the world are built in this country. The industry strongly supports the development of advanced military aircraft that have made this country premier in airpower.

Since 1958, when Langley became a part of NASA, the United States has undertaken a space program that will command a major place in history. Humans have landed on the moon, sent complex machines millions of miles from Earth to explore the planets and the universe, revolutionized communications, closely studied the environment, and inspired millions of people with the possibilities of the future.

Langley has been at or near the center of all this growth and achievement during the past seventy years, earning an international reputation for innovative, high-quality research. Early highlights include the NACA engine cowling that won Langley its first Collier Trophy, the systematic analysis and cataloging of airfoil shapes that provided manufacturers with precise information on wing forms, and icing protection for aircraft. Langley researchers proved the feasibility of swept-back wings for high-speed flight. The first U.S. hypersonic wind tunnel was built at Langley in the 1940s, and the first slotted-throat transonic wind tunnel, completed a few years later, enabled shock waves to be absorbed to allow more accurate measurement of scale models.

Langley was deeply involved in the development and testing of the X series of experimental aircraft, leading to the first supersonic flight in 1947. The experimental series continued through the X-15 aircraft, which reached the very edge of space in its record-setting flights.

The slotted-throat wind tunnel led directly to development of the area rule design that eliminated the obstacles to high-speed flight. Research into variable-sweep wings was tested and proven here.

The supercritical airfoil pointed the way to major increases in efficient cruising speeds for aircraft. Energy-efficient engines were studied and winglets were developed to improve aerodynamic efficiency and handling qualities.

By the time the National Aeronautics and Space Administration was established in 1958, Langley research had been widely recognized with a great many honors and awards, including a total of five Collier Trophies.

Langley was the birthplace of Project Mercury, America's first manned space program. After the Space Task Group left Langley, the Center continued its strong involvement in the new space venture. Support of the Gemini Program included the development and testing of techniques for rendezvous and docking spacecraft in orbit.

Researchers here proved the practicality of lunar-orbit rendezvous for the Apollo Program, and we managed the five Lunar Orbiter spacecraft that mapped the moon's surface in preparation for manned landings.

Continued on page 6.

News Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

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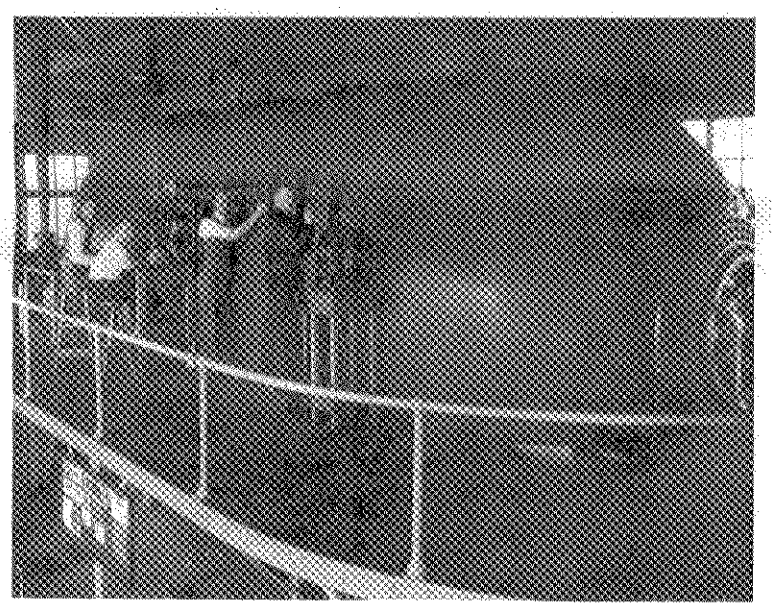
Langley Celebrates 70 Years of Research

Since its beginning as the Langley Memorial Aeronautical Laboratory, the NASA Langley Research Center has been a major aeronautical research facility—exploring the endless challenges of flight. This year, Langley celebrates 70 years of "Shaping Tomorrow" through innovative research and scientific achievements in both aeronautics and space technology.

Langley's scientific endeavors began in July 1917, during World War I, when ground was broken for the laboratory. Langley's research programs have continually evolved, yet its basic mission to increase the knowledge and capability of the United States in aeronautics and space technology has never changed.

Over the years, Langley has advanced from a small laboratory, established to conduct basic scientific investigations in aeronautics, to a larger and sophisticated facility equipped for research in acoustics and noise, computer science, atmospheric sciences, electronics, information systems, materials and structures, physics and chemistry, optics and instrumentation, space transportation systems and flight systems technology.

Dr. Henry J. E. Reid, Engineer-in-Charge and Director of Langley from 1926-1960, admires Langley's first Collier Trophy in 1955, 26 years after the NACA won it for the development of the low-drag engine cowling.



The Variable Density Tunnel became the primary source of accurate aerodynamic data for a growing aviation industry.

Aviation began in the United States when the Wright Brothers, contemporaries of Langley's namesake–Samuel P. Langley–achieved the first successful powered flight at Kitty Hawk, North Carolina. Not until 12 years later was the National Advisory Committee for Aeronautics (NACA), the predecessor to NASA, created by Congress.

Despite the Wright Brothers' achievement and the use of airplanes during World War I, worldwide attention was not drawn to the potential of the airplane until Captain Charles Lindbergh made the first solo flight across the Atlantic in 1927.

By that time NACA and its Langley research laboratory were on their way to significant discoveries in flight research. In the 1920s and 1930s, engineers all over the globe were proclaiming the technological superiority of the Langley facility, especially in reference to its wind tunnels.

The first wind tunnel at Langley began operation in 1920. It was followed three years later by the Variable Density Tunnel, which became the primary source of accurate aerodynamic data for a growing aviation industry; a series of tunnels followed that helped develop some of the best airplanes in the world.

At the end of the 1920s, Langley researchers had developed a simple, yet remarkable, improvement in aeronautics research–the engine cowling. The cowling fit over an engine's cylinders, decreasing air friction and improving performance.

The cowling won Langley the first of five Collier Trophies. The Collier Trophy is an annual award presented by the aviation industry for the greatest accomplishment in aeronautics and astronautics.

In the late 1920s and early 1930s, Langley was beginning to move into more complex research. Biplanes were replaced by all-metal, single-wing craft that are the predecessors of today's airplanes.

Langley scientists also pioneered ice formation research in the same period, and they began the first of Langley's hydrodynamic test tanks that served the needs of sea-plane and amphibious airplane designers.

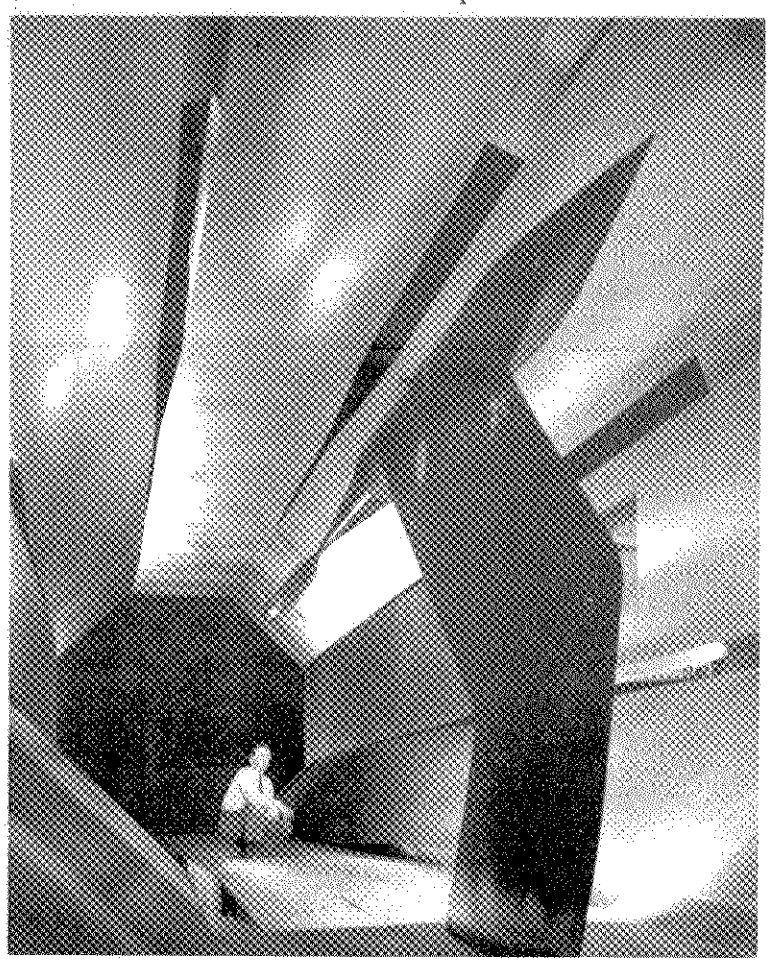
The urgency of World War II dictated the programs of Langley's third decade. The center turned its attention to solving aerodynamic and structural problems in military aircraft already in production and to increasing the speed and altitude of combat aircraft on the drawing boards.

Langley researchers even crash landed a highly instrumented B-24 bomber near the Langley center in the James River. They were studying ways to make such landings safer for air crews that had to "ditch" their planes in water.

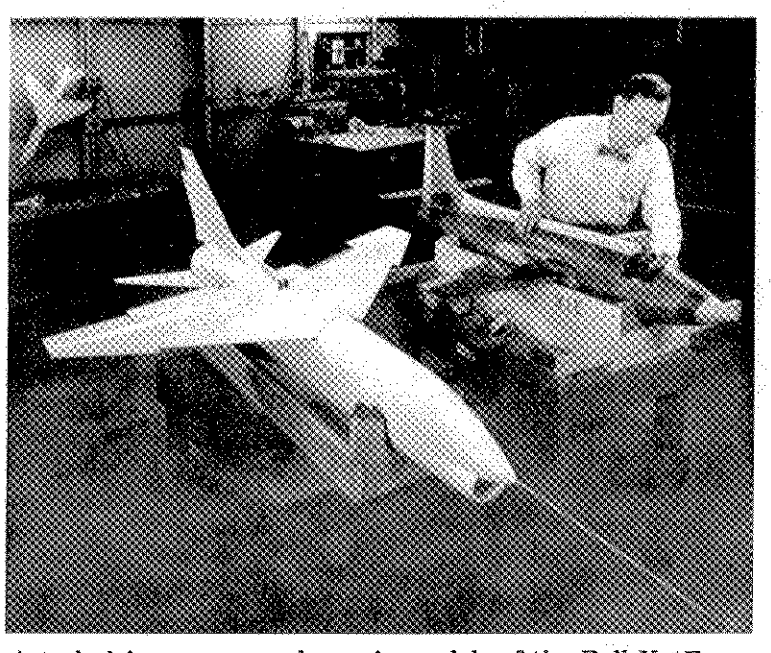
As new and more modern technologies developed, three other NACA laboratories were built. From the Langley model came the Ames and Lewis research centers in California and Ohio, respectively, and the Wallops Flight Facility in Virginia. Langley's involvement in flight testing also led to the establishment of the Dryden Flight Research Facility, also in California.

By the end of World War II, Langley had helped test and re-design at least 115 different military airplanes.

With the ever-growing complexities of Langley research, there came a need to expand the boundaries of the facility and to increase its capabilities. The center staff increased from 524 employees in 1939 to 3,200 by the end of World War II.



The test section of the 16-Foot High Speed Tunnel after the installation of slotted walls.



A technician prepares dynamic models of the Bell X-1E and the Vought XF-8U Crusader for wind tunnel testing in 1957. The Crusader was then the Navy's fastest aircraft–maximum speed Mach 1.75 at 35,000 feet.

A series of experimental aircraft–the X-series–pioneered the way to supersonic flight. Captain Charles Yeager piloted the Bell the X-1 research aircraft faster than the speed of sound in October 1947. The X-series culminated in the hypersonic X-15. Its design was proven in the wind tunnels at Langley, and the X-15 provided Langley engineers with valuable information about high speeds and high-altitude flight as it was maneuvered close to the fringes of space.

Langley assumed much of the responsibility for getting Project Mercury off the ground. The Mercury space capsule was tested in the center's Full-Scale Tunnel in January 1959.

Interest increased in the early 1950 s to form a national civil space program. In 1958 President Dwight Eisenhower signed the National Aeronautics and Space Act, which officially created the National Aeronautics and Space Administration (NASA). The NACA research centers became a part of NASA.

Langley, because of its experience in early rocket research for pilotless aircraft, was chosen as the birthplace of America's first manned space program. The Space Task Group was formed at Langley to manage Project Mercury. Langley contributed to the design and testing of the Mercury, Gemini and Apollo spacecraft and was the training site for the original seven astronauts.

After the nucleus of astronauts and space researchers moved from Langley to Houston to establish the Johnson Space Center, Langley continued its work in space research. Researchers developed ECHO, an automatically inflating balloon that was the first passive communications satellite. Rendezvous and docking techniques were developed and tested by Langley researchers for the Gemini and Apollo programs.

Lifting bodies, such as the HL-10, were designed and flight tested. These experimental craft were forerunners to today's Space Shuttle. The Lunar Orbiter series of five spacecraft that orbited and mapped the surface of the moon in preparation for the landings of the Apollo program were also managed by Langley.

Langley's most ambitious space program was the Viking Project, which landed two automated laboratories on the surface of Mars. Today, Langley is evaluating future manned missions to the red planet and also to the moon.

Langley has performed research on the Space Shuttle, including orbiter aerodynamics, configuration, wind tunnel tests and orbital flight tests. The center did studies of the thermal protection system (heat-resistant tiles), is now testing Shuttle tires and brakes, and is participating in an investigation and redesign of the solid rocket boosters since the Challenger accident.

An example of Langley's atmospheric research is the Earth Radiation Budget Experiment. Three sets of measurement instruments are now in operation aboard orbiting satellites. The instruments are providing scientists with valuable information that will greatly increase knowledge of Earth's climate and weather systems, particularly how climate is affected by the heat of the sun.

Langley develops concepts and hardware for the construction of space structures, and scientific experiments and instruments that are tested and placed in Earth orbit aboard spacecraft. One major contribution to space technology is called the Assembly Concept for Construction of Erectable Space Structure (ACCESS), which was designed and developed at Langley. ACCESS, the first construction in space experiment, demonstrated the concept that large structures can be assembled, tested, repaired, manipulated and disassembled in Earth orbit.

Langley has a major role in research responsibilities for the National Aero-Space Plane Program, an important national effort. The center is helping to determine the Aero-Space Plane's overall aerodynamic configuration, testing its propulsion system and developing materials and structures that can withstand the high temperatures and stresses the plane must endure.

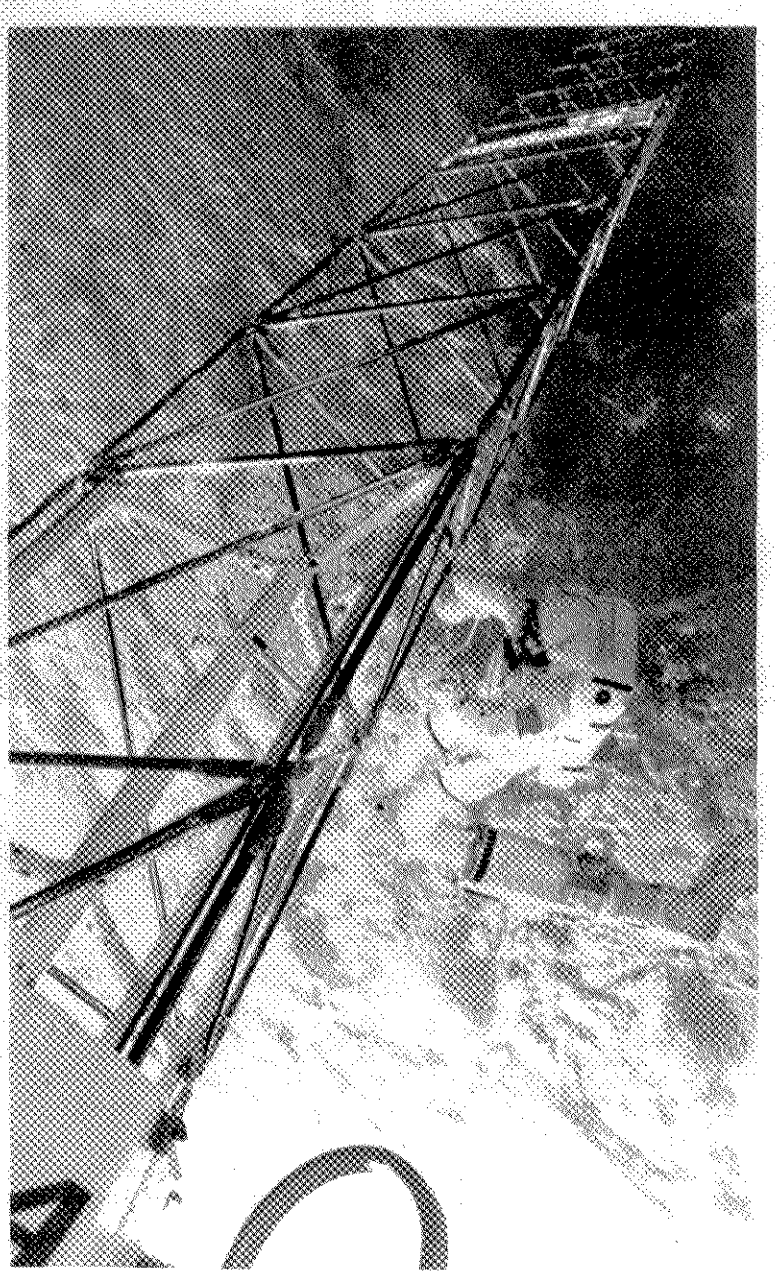
As envisioned, the Aero-Space Plane would take off and land on conventional runways, fly hypersonically within the Earth's atmosphere and/or accelerate to speeds up to 25 times the speed of sound to achieve low Earth orbit.

The Space Station is another major activity occupying the time and talents of many Langley scientists and technicians. The center is responsible for developing advanced technologies and investigating how the station should evolve during the next several decades.

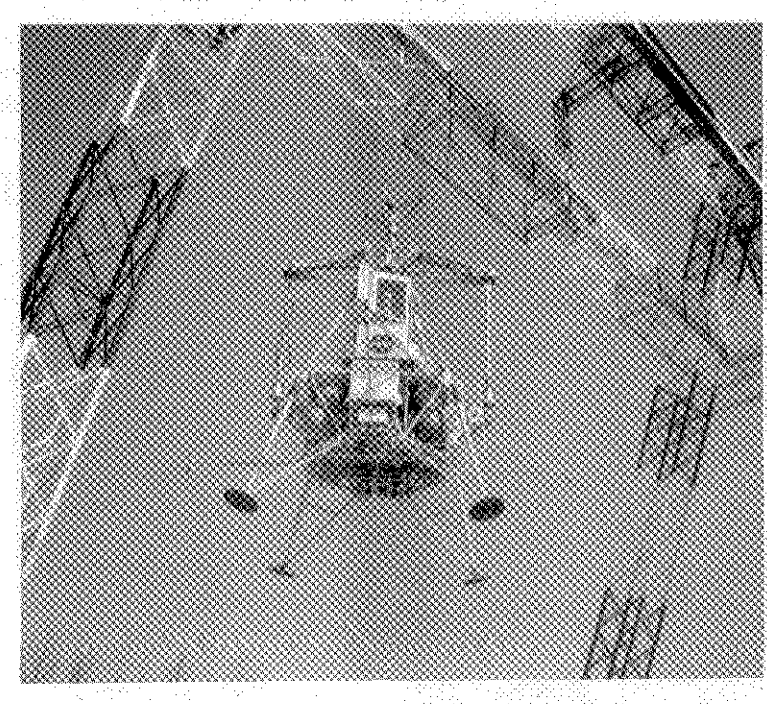
Langley has long been known for its transonic wind tunnel testing. Today, Langley houses the most advanced wind tunnel in the world, the National Transonic Facility (NTF), which is helping the United States maintain its leadership in high- performance commercial and military aircraft.

The NTF is one of 35 wind tunnels operating at the center. It can use super-cold nitrogen gas instead of high-pressure air to test models of advanced aircraft and spacecraft that fly in the transonic speed range. It makes possible the practical use of temperatures as low as minus 300 degrees Fahrenheit in a research concept that was developed and proven at Langley.

'People are the heart of our research and keep the center at the forefront in the area of experimental research.'

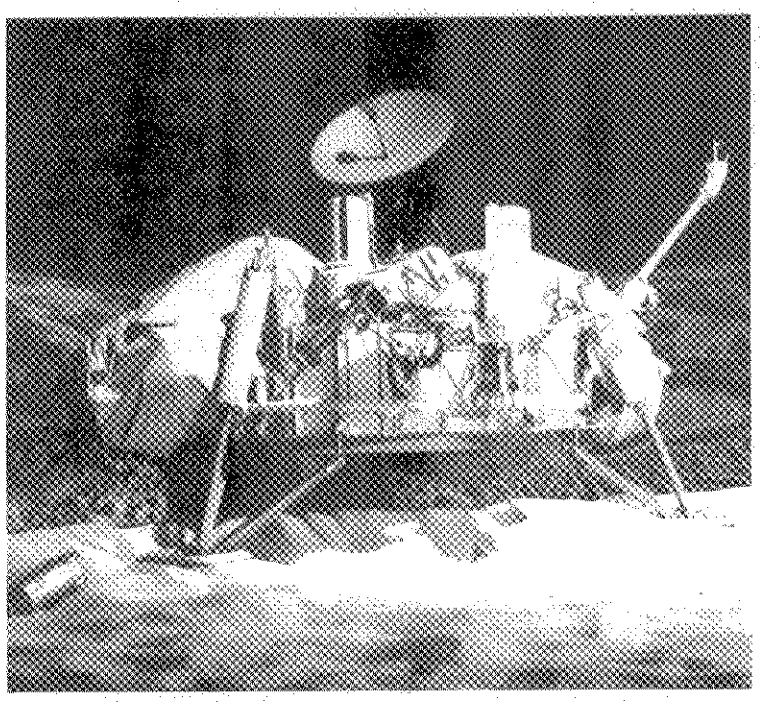


The ACCESS experiment in November 1985 aboard the Space Shuttle Atlantis tested the ability of astronauts to assemble structures in space.



Langley engineers and technicians tested Apollo lander descents to the Moon's surface, where gravity in only one-sixth that on Earth. Cables from a traveling bridge, located on a 250- foot high, steel structure, supported five-sixths of the training module's weight.

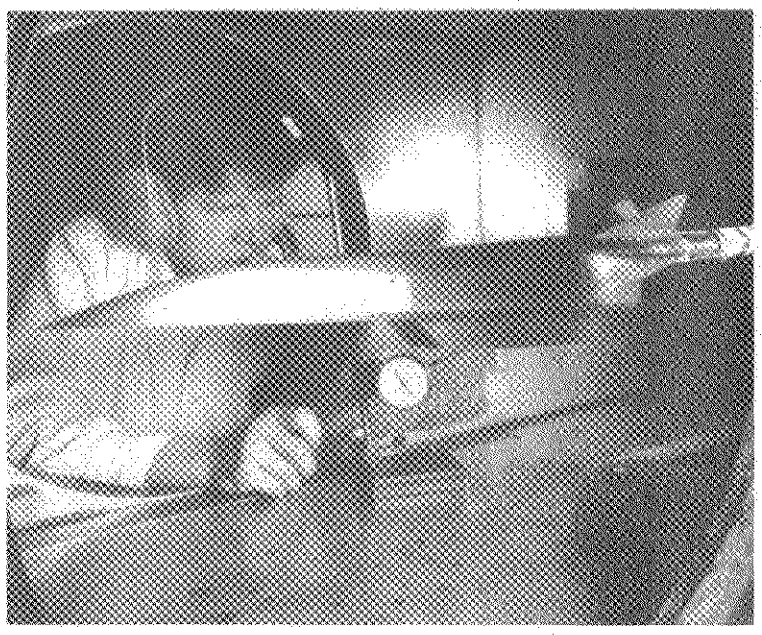
Shaping Tomorrow



THE SEARCH FOR LIFE ON MARS. The American bicentennial Viking mission to Mars consisted of two unmanned NASA spacecraft which reached the red planet in 1976. Viking landers, such as this model, scooped up Martian soil, analyzed the samples in miniature laboratories inside the spacecraft and transmitted the results back to Earth by dish antennas.

Langley aerospace scientists and engineers are among the best in the world, as indicated by the thousands of awards and trophies they have received during the past seven decades. The Presidential Rank of Meritorious Executive Award, the Virginia Outstanding Scientist Award, the Lawrence Sperry Award, the Arthur Flemming Award and the H.J.E. Reid Award are just a few awards presented to Langley researchers and managers during 1987.

In addition to the basic research conducted by NASA and contract employees at the center, Langley strongly supports colleges and universities through grants, cooperative education, graduate study and other programs, and maintains good relationships with industry through contracts and special on-site research programs. National and area universities, such as George Washington, Virginia, Old Dominion, Norfolk State, William and Mary and Thomas Nelson, benefit from the research opportunities offered to institutions of higher learning.



The Langley Research Center is in a good position to help the nation explore hypersonic flight, having conducted more than 20 years of related studies and wind tunnel experiments. Here, a researcher prepares an early hypersonic model for test in Langley's 20-Inch Mach-6 Wind Tunnel.

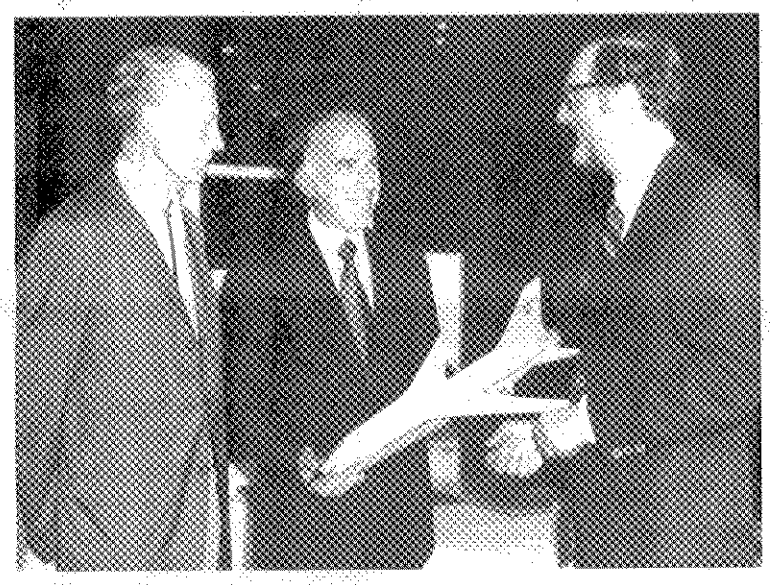
In addition, the NTF is used to test Space Shuttle configurations, advanced aircraft and Department of Defense test models. Even a Trident submarine was recently tested for the U.S. Navy.

A newer testing tool is the large-scale scientific computer. Langley uses hundreds of computers, from desk-size personal models to a gigantic central computer complex that is one of the largest and fastest in the world.

Computers have by no means replaced wind tunnels, but they have made possible much quicker analysis of information gathered from wind tunnel tests. Computers also help Langley researchers visualize designs in new ways, help assure the accuracy of mathematical models and create relatively new areas of research, such as improving our understanding of the physics of air flow over a complete aircraft and through the internal passages of turbine engines.

Langley's research also concentrates on special fields that support and complement its general aeronautical and space technology work.

Structures and materials experts study and develop new materials, especially composites that are often stronger, yet lighter, than conventional aluminum and steel; electronics experts develop new instruments and flight experiments and oversee the operation of Langley's entire computer complex; and flight systems experts continually improve guidance and control systems for aircraft and spacecraft, and study large antenna designs and automation technology.



Floyd L. Thompson (left), former center Director retired since 1968, and Edgar M. Cortright (middle), outgoing Director, welcome Donald P. Hearth as the new Director and fifth Engineer-in-Charge of Langley in August 1975.

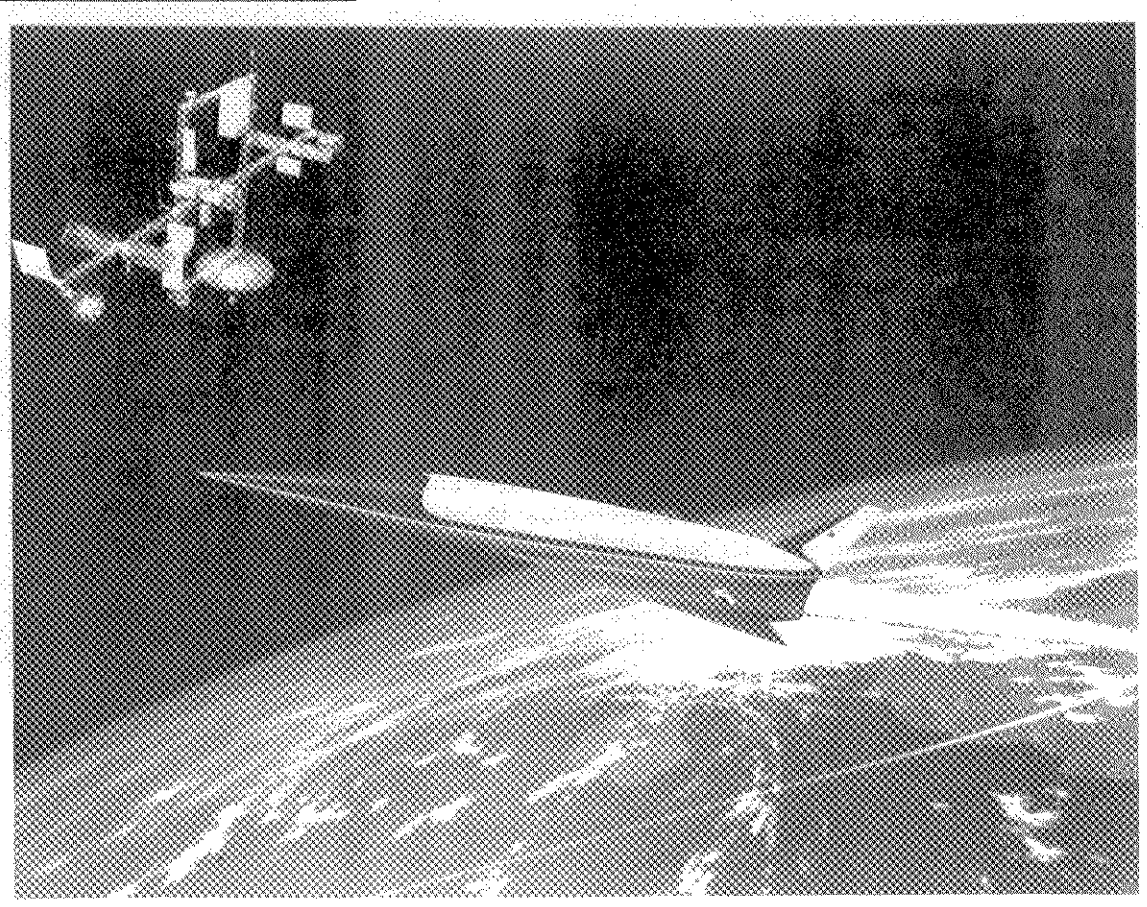
While Langley's buildings and state-of-the art research equipment are valued at $1.5 billion, the heart of the center is its people. Langley Director Richard Petersen said, in his most recent state-of-the-center address, "People are the heart of our research and keep the center at the forefront in the area of experimental research."

With over 2,800 NASA employees and 1,700 contract workers, the center provides a research environment that fosters innovation, productivity and professional growth. Langley has a highly motivated, skilled workforce needed to accomplish current and future research programs. This workforce has allowed Langley to maintain its position as a premier research center and to be a role model for laboratories around the world.

Langley produces valuable information through technical publications and reports on research conducted by its scientists and technicians. This information is made available to industry, colleges and universities, technical societies and other government agencies, helping Langley to fulfill one part of its mission statement: "to assure timely transfer of technology to aerospace customers."

The Langley Research Center is a name that has been respected for the past 70 years. The center will continue to pursue the highest standards of excellence on its quest for more knowledge to keep the United States a leader in aeronautics and space technology in the future–"Shaping Tomorrow."

1917 70 Shaping Tomorrow NASA Langley Research Center 1987



PIONEERING NEW TECHNOLOGY. The National Aero-Space Plane program provides the technology for advanced hypersonic cruise aircraft and spacecraft. A Space Station, similar to the configuration shown, is the next logical step in space. It will enhance capabilities for space science and applications, stimulate advanced technologies, promote international cooperation, develop further the commercial potential of space and provide options for future space endeavors.

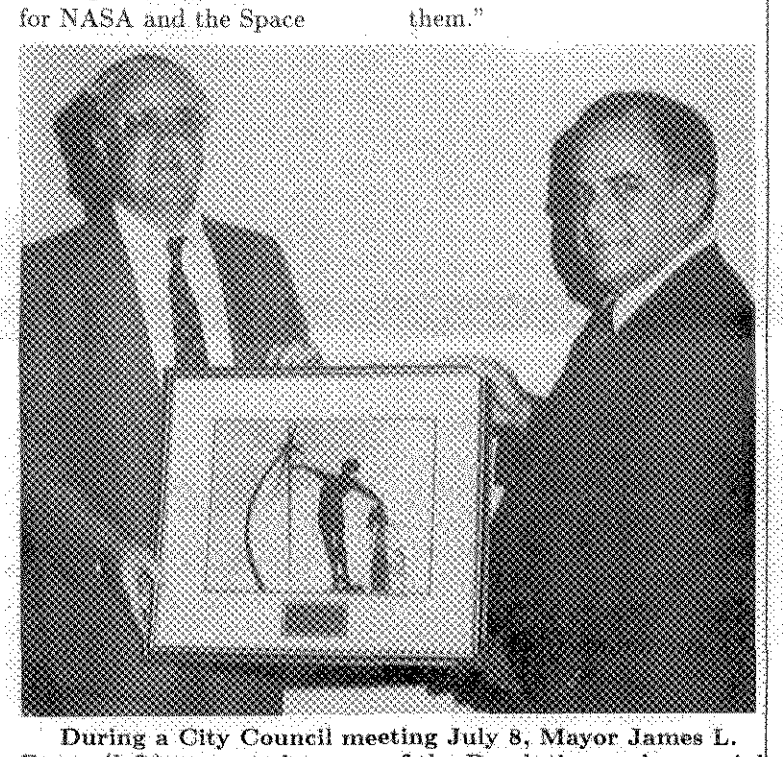
Hearth Proud to be Part of Langley History

Dr. Donald P. Hearth, former Langley Director, sent the following letter regarding Langley's anniversary to Director Richard Petersen. It is shared with you on this festive occasion.

"Joan and I regret that we are unable to attend the 70th Anniversary Reception at Langley on July 17. We recall fondly the 60th Anniversary and wish we could attend the 70th.

"Langley has had a long and distinguished history since its founding in 1917. I am proud to have been a part of it for nine years. To repeat myself - it has been the Langley people that made the Center great. I know the same is true today. During these difficult times for NASA and the Space Program in general, I am confident that Langley will continue to prosper and lead the way to a brighter future. Why? Because of the quality and dedication of the people of Langley.

"Our best regards to Langley on the Center's 70th Anniversary. Please say hello for me to our many friends and share my sentiments with them."



During a City Council meeting July 8, Mayor James L. Eason (left) presented a copy of the Resolution and a special photograph of the City's statue, "First From the Sea, First to the Stars," to Deputy Director Paul F. Holloway. The resolution, drafted by the City of Hampton on the occasion of Langley's 70th Anniversary, is reprinted on the front page.

Headquarters Forum Continued from page 2.

In the past decade, we successfully orbited and landed spacecraft on Mars, gathering a tremendous amount of valuable information about a sister planet of Earth. Several scientific instruments and experiments are now at work in Earth orbit, measuring various aspects of the atmosphere.

Today we are still busy "shaping tomorrow" through research on the possibilities of a National Aero-Space Plane that is designed to meet the challenges of the 21st century. We are deeply involved in development of the Space Station, the next logical step in space exploration and exploitation.

There is a single overriding reason for Langley's impressive contributions during the past seventy years: its people. I know that the four Langley Directors who preceded me would agree with that thought. A research laboratory can have the best facilities and equipment in the world and Langley has those but the tools aren't worth much without the right kinds of people to use them. Through seventy years, the nation has benefited from the contributions of many rare and dedicated individuals, working in all the various jobs that make Langley such a special place.

Today's anniversary celebration highlights Langley's past. I hope you will join me in honoring that past, and then look forward to where we might be in another seven decades.

Richard Petersen

Anniversary Year Marks Other Major Events

This month we celebrate the 70th anniversary of the Langley Research Center. Seventy years ago, in July 1917, in the midst of the First World War, construction of Langley Field began. Three years later, in June 1920, the Langley Memorial Aeronautical Laboratory, the original field station of the National Advisory Committee for Aeronautics (NACA), began formal operations. From humble beginnings, it soon became a world leader in the development of the science and technology basic to the advancement of flight, both civilian and military.

This leadership helped the United States achieve victory in the air during the Second World War and played a primary role in boosting the country into space. Even before the creation of the National Aeronautics and Space Administration (NASA) in 1958, the old NACA laboratory had gotten deeply involved in space-related research. When NASA was created, with the NACA as its nucleus, Langley immediately became one of the foremost national centers for planning and conducting the first manned and unmanned missions into the unknown reaches of our universe.

Given these significant accomplishments, the 70th anniversary of the Langley Research Center is well worth celebrating.

Coincidentally, 1987 marks the anniversaries of several other landmark events in aerospace history. In May 1927, ten years after Langley's creation, Charles Lindbergh made his famous solo flight from New York to Paris in The Spirit of St. Louis. "Lucky Lindy's" flight enthralled and energized the aviation community, and the American public, as no other had done before, or has done since. The 60th anniversary of Lindbergh's pioneering flight is being commemorated in 1987 in this country and in Europe.

Another major aerospace feat being remembered this year is the supersonic flight of the Bell X-1. In October 1947, with Air Force test pilot Charles "Chuck" Yeager at the controls, the X-1 became the first vehicle to break the mythical "sound barrier." Langley has a direct connection with this accomplishment because high-speed research conducted here made possible the conceptualization and refinement of the X-1 aircraft. Moreover, a team of flight researchers dispatched from Langley to the NACA's High-Speed Flight Station at Muroc Dry Lake, California, where the X-1 was flown, was responsible for technical direction of the test program that resulted in Yeager's Mach 1 flight.

Besides these two events, there is also the 30th anniversary of Sputnik to remember. In October 1957, the Soviet Union launched Sputnik 1, the first man-made satellite, into Earth orbit. This accomplishment, which to many contemporaries meant that the Russians had taken technological leadership away from the Americans, triggered a major crisis in the United States.

One result of the Sputnik crisis was the abolishment of the NACA and creation of NASA in its place. Langley made the transition from NACA to NASA very successfully, and before long it was spearheading the U.S. effort to get a manned satellite, the Mercury capsule, into orbit.

Four years after Sputnik, but still in reaction to the Russian challenge, President John Kennedy committed the nation to landing men on the moon before the decade of the 1960s was over. Thanks in part to ideas generated at Langley, particularly the idea of lunar-orbit rendezvous, Kennedy's commitment was met in the summer of 1969 when Apollo 11 astronauts Neil Armstrong and Edwin "Buzz" Aldrin set foot on the moon's surface.

Without the Sputnik challenge, the bold U.S. manned space programs of the 1960s might never have happened. Thus Sputnik is a watershed event worthy of commemoration, a major turning point in American aerospace history with enormous implications for the history of Langley.

There are other aerospace anniversaries that might also be remembered, not all of them happy memories:

Eighty years ago, in 1907, the U.S. military services let their first contract for an airplane.

Fifty years ago, in May 1937, the great German airship Hindenberg exploded at its mooring in Lakehurst, New Jersey, ending perhaps forever the romantic age of the great lighter-than-air craft.

Twenty years ago, in January 1967, we experienced the tragic loss of astronauts Virgil Grissom, Edward White II and Roger Chaffee in a sudden fire that swept through the Apollo command module at the Kennedy Space Center. At the head of the board that investigated the Apollo fire was Dr. Floyd Thompson, Langley's director. Ten months later, in November 1967, after extensive redesign of the Apollo spacecraft, Apollo 4 was successfully launched into Earth orbit. This mission marked the first flight of the Saturn V, the powerful rocket whose structure and aerodynamics had been tested extensively at Langley that two years later would launch the first astronauts to the moon.

Finally, ten years ago, in August 1977, the first Voyager spacecraft was launched on its way to explore the outer planets Jupiter, Saturn and Uranus.

Langley's 70th anniversary is important in itself; but when it is understood, as it should be, alongside these other major events in aerospace history, then we will better appreciate Langley's achievements in the wider realm of things.

Dr. James R. Hansen

Visitor Center Features Historic Photo Exhibit

In commemoration of Langley's 70th anniversary, the Visitor Center is featuring a historic photo exhibit and slide program during July and August.

The slide program guides viewers through outstanding moments in the history of aviation and Langley's history. The first flight of the Wright Flyer at Kitty Hawk, outstanding examples of aviation research, the success of the X-15 hypersonic research aircraft, the development of NASA after the launch of Russia's Sputnik, the manned space program, the Viking Mission to Mars, and the U.S. Space Station are a few of the events highlighted.

The photo exhibit identifies, through more than 100 pictures, seven decades of achievement: 1917-1927: The Early Years; 1928-1937: The Laboratory Grows; 1938-1947: Supporting the War Effort; 1948-1957: The Threshold of Space; 1958-1967: NACA Becomes NASA; 1968-1977: Birthplace of the Future; 1978-1987: Langley Today.

People & Places

Positions Open

The following Competitive Placement Positions are currently open:

87-46: AST, Reliability and Quality Assurance, Aerospace Engineer, GS-861-12 or 13, Systems Safety, Quality and Reliability Division, Systems Assurance Branch, Flight Systems Assurance Section. Closes July 29.

87-48: Supervisory Aerospace Engineer, AST, Navigation, Guidance, and Control Systems, GM-0861-14 or 15, Office of Director for Flight Systems, Flight Management Division, Vehicle Operations Research Branch. Closes July 24.

87-51: Engineering Technician, GS-0802-9 or 10, Systems Engineering Division, Systems Development Branch, Systems Development Support Section. Closes July 21.

87-52: AST, Technical Resources Management, GM-0801-13 or 14, or **Program Analysis Officer**, GM-0345-13 or 15, Management Operations Directorate, Programs and Resources Division. Closes July 31.

Riblet Inventor Michael J. Walsh Speaks at Visitor Center

"Riblet" is the term for a new drag reduction technology initially developed at Langley. Although the practical application of riblets could save the airline industry millions of dollars each year, riblets achieved their greatest attention to date when they were used in an event of international prominence – the America's Cup yacht races.

Michael J. Walsh, inventor of riblets, will discuss this technology at noon on Wednesday, July 22, in the Visitor Center main theater. This lecture is the seventh in the Guest Lecture Series on Aerospace Sciences co-sponsored by the Visitor Center and the AIAA-Hampton Roads Section Student Branch.

Riblet technology was developed during the energy crisis of the 1970's when Langley researchers sought to reduce aircraft fuel consumption. Methods were explored to reduce surface friction, which comprises up to 50 percent of the total drag on an aircraft. Walsh developed the idea of riblets, working with other Langley researchers.

This technology involves covering surfaces of an aircraft with tiny parallel micro-grooves, similar to those found on a record album. These microscopic grooves direct air flow and reduce surface friction.

This theory was first tested in Langley wind tunnels with grooves etched into flat aluminum surfaces. In these tests, riblets reduced surface friction drag up to ten percent, which could translate into fuel savings for the airlines of $200-$300 million a year.

Riblet technology was further advanced when the 3M Company proposed the idea of molding the grooves into thin sheets of plastic. This plastic film is lightweight, easy to apply, and easy to replace.

This development led to the most publicized use of riblets to date. A coating of this plastic film, grooved with riblets, was put on the underwater surface of the America's Cup winner, the yacht Stars & Stripes. Riblets provided the American team with a technological advantage and gave the crew a psychological boost as well.

In his lecture at the Visitor Center, Walsh will discuss the development of riblet technology and give an update on the status of international research on riblets. He will also explain the different applications of riblet technology, including the effect of riblets on the performance of the Stars & Stripes.

Walsh is a senior research engineer in the High Speed Aerodynamics Division. He is the prime researcher in the development of riblet drag reduction technology and has received several Langley awards for outstanding contributions in the area of turbulent drag reduction research.

Notes of Thanks

Archie Norton writes: "I would like to thank my friends who honored me with a picnic and gifts after my retirement. My wife and I enjoyed it very much. We wish all of you well."

John L. Price writes: "I want to express my thanks to each of you for my retirement gifts. I am especially thankful to those who took time to celebrate with my family and me at my dinner. It was a joyful time which I will remember the rest of my life."

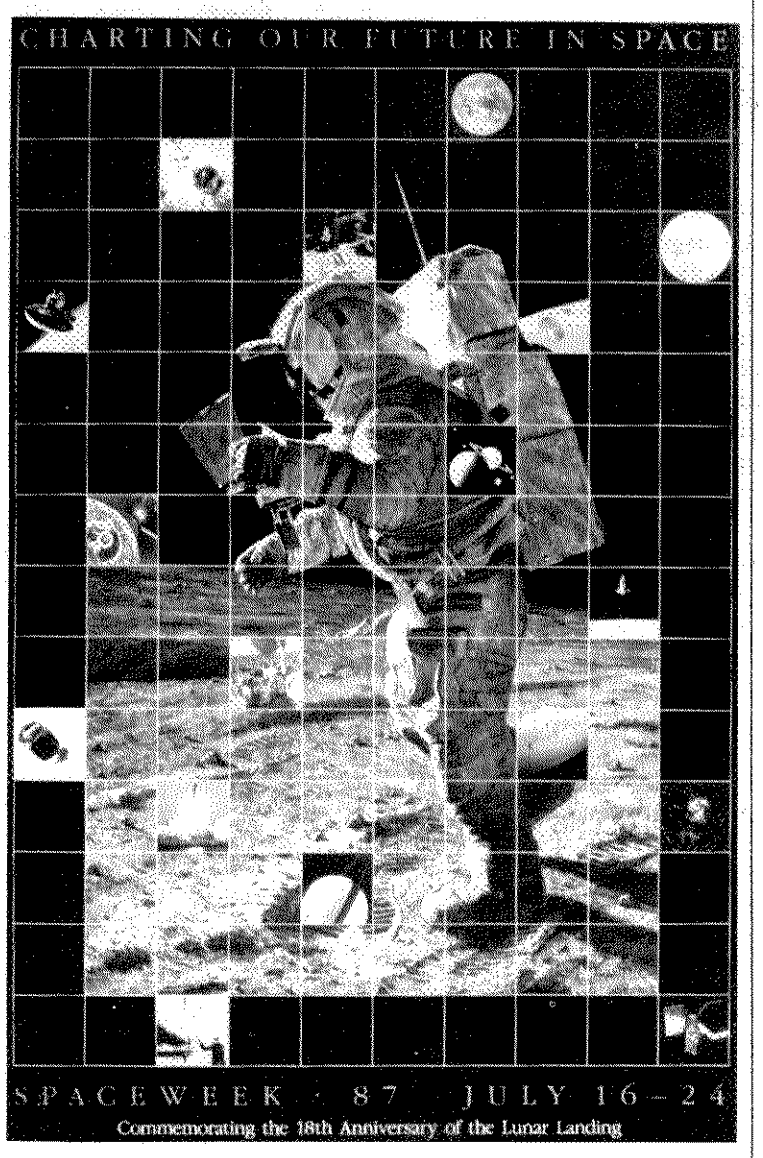
Spaceweek Salutes the Space Station Era

Spaceweek, an annual national celebration of mankind's exploration of the "next frontier," kicked off in Houston on Thursday, July 16.

The Spaceweek Banquet for American Space Leaders addressed the '87 theme: "Charting Our Future in Space." Leaders of aerospace industry, government officials and interested citizens participated in the event.

Philip E. Culbertson, NASA's Associate Administrator for Policy and Planning, delivered the keynote address. Culbertson, a key NASA executive for 22 years, was recently placed in charge of NASA's future planning effort.

Spaceweek honors major landmark events in the history of U.S. space exploration, such as the 18th anniversary of the first footsteps on the Moon by U.S. astronauts, the ninth anniversary of Viking I's touchdown on Mars, and the tenth anniversary of the first East-West handshake in space between U.S. and Soviet crews. Held from July 16-24, Spaceweek is a 70-city salute to American accomplishments in taming "the final frontier."



This official poster celebrating Spaceweek '87, features the painting "Galactic Navigator" by space artist Alan Bean, former Apollo 12 astronaut. Spaceweek is celebrated from July 16-24.

America's Cup Update

The Competition is Over but the Challenge has Just Begun

Many Americans regard sailing as a sport, a hobby, a pastime. Some see it as a business. Still others look at sailing as pure science.

Time magazine describes this year's America's Cup competition as "the culmination of a three-year high-tech battle that involved corporate fundraising, sailing strategy worthy of a war room, computer-designed boats tuned to fighter-plane perfection and crews conditioned to the physical and psychological preparedness of commandos."

The clear cut victory of Stars & Stripes was again the result of a major technological effort. Skipper Dennis Conner has repeatedly praised the now famous NASA riblets as one of the drag reduction concepts that provided his yacht with the winning edge. Some designers claim it is the American equivalent of the radically-designed winged keel, which enabled Australia to capture the cup in 1983.

What's in store for the next competition? Dennis M. Bushnell, Head of the Viscous Flow Branch and unpaid consultant to the American effort in the area of viscous drag reduction, recently attended a meeting held at the Massachusetts Institute of Technology (M.I.T.) to review technology for the next cup defense. Attendees at the two-day review included officials from the Sail America Corporation, M.I.T., several Navy labs, industrial concerns, University of Michigan, and Grumman Aerospace Corporation. Britten Chance, chief designer of Stars & Stripes was also in attendance.

Bushnell gave a summary of drag reduction possibilities and reported on possible design approaches. When asked about riblets, Bushnell reports that this technology is now standard procedure. The effort now is to combine riblets with ablative polymers to reduce further skin friction drag.

A major concern at this point hinges on the location of the next challenge. The very different water and wind conditions to be found in San Diego and Hawaii, the two leading options, make the decision of WHERE paramount to any discussion of how to proceed with the design. If San Diego is chosen as the next site, the team will delve into an investigation of laminar flow on the keel. Should the rougher waters of Hawaii draw the bid, the design strategy will have to take a different tack.

Once the site is confirmed, Bushnell contends the crux of the next defense boils down to the question of whether to take an evolutionary or revolutionary approach to the competition. Will the team be content to whittle seconds off this year's winning effort or will we see a truly revolutionary design?

Happenings

LAA Social. The Langley Activities Association will sponsor a social in the Activities Center, Friday, July 24, from 4 to 6:30 p.m.

CARNIVAL TICKETS are now on sale for the LAA Carnival, August 21 and 22. Individuals interested in selling tickets should call the Activities Office, ext. 3139. Two tickets to Busch Gardens will be given to each of the five individuals who sell the most tickets.

TOASTMASTERS. NASA Toastmasters will meet on Wednesday, July 22, at the Activities Center. The regular meeting format will be followed. Visitors are always welcome to attend. Call Steve Yaros, ext. 2673, for informtion.

BINGO. LAA Bingo is held every Thursday night beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, please contact Eugene Hicks, ext. 3737.

ATLANTIC CITY. The LAA is sponsoring a trip to Atlantic City, October 23-25. Cost: Single/$241; Double/$146 each; Triple/$124 each; Quad/$113 each. Fifty percent deposit is required by Aug. 31. Balance is due Sept. 21. For more information, call Frankie or Margaret at the LAA office, ext. 3139.

DANCE. The Country-Western Dance Club will hold a dance at the Activities Center, July 18, 7:30-11:30 p.m. Ballroom and round dancing enthusiasts, those just learning to dance, and guests are welcome.

BLOODMOBILE. The Red Cross Bloodmobile will visit Langley, Wednesday, July 22, from 9 a.m. to 3 p.m. in the Activities Center. Participate in this worthy cause. The pint of blood you donate may save someone's life. For more information or to make an appointment, call the Medical Center, ext. 2246, or Virginia Jones, ext. 2605.

ARTS AND CRAFTS. Anyone interested in displaying arts and crafts at the LAA Carnival, Friday and Saturday, August 21 and 22, should call Betty Hughes, ext. 3264.

ENTERTAINMENT NEEDED. LAA is looking for dance groups, bands, and other performers to volunteer their time and talents for the Carnival. Contact Eugene Hicks, ext. 3737.

MEMORABILIA. The Visitor Center Souvenir Counter has 70th Anniversary items – mugs, patches, buttons, T-shirts – for sale. A Speciality Shop featuring these items and more will be available in the cafeteria July 13-16.

swap and shop

FOR RENT

MOTOR HOME: 23' mini Winnebago, self contained, sleeps 6, 4kw generator, dual air, $300 week, daily/weekend rates available. Call 599-5408 after 5 p.m. for details.

Retirement Parties

A retirement bash for **Dr. Edwin C. Foudriat** will be held Friday, July 31, from 4:30 to 6:30 p.m. at the Activities Center. Dr. Foudriat wishes to honor his friends on this special occasion; thus, there is no charge. For reservations, contact Judy Cottle or Joann Woodcock, ext. 2233, or Linda Rowell, ext. 2077.

James W. Lynch will be honored with a retirement luncheon at 11:30 a.m., July 28 in the private dining room of the Langley cafeteria. Refreshments will be served after attendees purchase and have eaten lunch. Cost is $3/person or $4/couple for gift and refreshments. Contributions of $2 for the gift only are welcome. Please R.S.V.P. to Lew Bryant, Mail Stop 238, ext. 3483, by July 23.

Attention Former NACA/NASA Langley Employees

Since February a group of former Langley employees has been working with the Office of External Affairs to establish a Langley Research Center Alumni Association (LaRCAA).

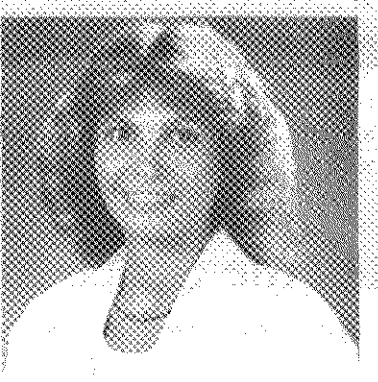
This organizational effort has resulted in the drafting of bylaws, selection of a preliminary Board of Directors, and the formation of several committees. The Acting Chairman of the Board is William J. (Bill) Boyer. The committees and their Acting Chairmen are: Finance—Edmund A. (Ed) Brummer; Membership— Domenic J. Maglieri; Nominating—Charles B. (Charlie) King; Program—Donald H. (Don) Ward; Social—Abraham (Abe) Leiss. These officers will serve until January when the Annual Membership Meeting and election will be held.

LaRCAA's purpose is to develop, maintain, and enhance relationships among former employees of Langley Research Center and to provide a mechanism for the Center to maintain contact with its former employees. It also will provide an organized way for members to support special events at the Center.

Eligible for membership are all former NASA/NACA employees of LaRC/LMAL. Former employees of contractors who had 5 or more years of continuous direct support to the Center are also eligible. Dues have been set at $5 per year. Membership applications may be obtained from the LaRCAA booth at the 70th Anniversary celebration on July 17 or write the LaRCAA Membership Committee, Mail Stop 154. Include your name and address, and an application will be mailed to you.

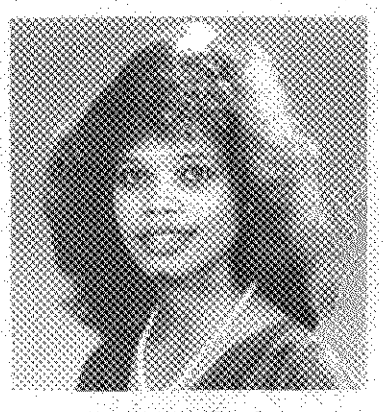
LaRCAA columns are planned monthly. Don't miss them.

Carnival Monarch Contestants



Tina Forrest
Klate Holt

Cheryl Pruitt
High-Speed Aerodynamics



Patricia Jackson
Operations Support

Nancy Murawski
Acquisition

The Senior Management Research Review will be held Monday, July 20, 1987, in Building 1219, Room 225, from 9 a.m. to 11 a.m. Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

TIME	TITLE OF TALK	SPEAKER
9:30	Analysis of Lateral Stability for X-29 Drop Model Using System Identification Methodology	David Raney (Flight Systems/GCD)
9:45	Developed Prototype Onboard Fault Monitoring and Diagnosis Expert System	Kathy Abbott (Flight Systems/FLMD)
10:00	BVI Noise Reduction Concept Demonstrated	Earl Booth (Structures/ACOD)
10:15	COFS-I Analyses Show Adequate Actuator Performance for Baseline Design	Lucas Horta (Structures/SDD)
10:30	Spin Tunnel Tests of Effect of Landing Gear Deployment on F-4 Spin Recoveries	Raymond Whipple (Aeronautics/LSAD)
10:45	Circular Pipe Flow Visualization	Robert Costen (Space/SSD)

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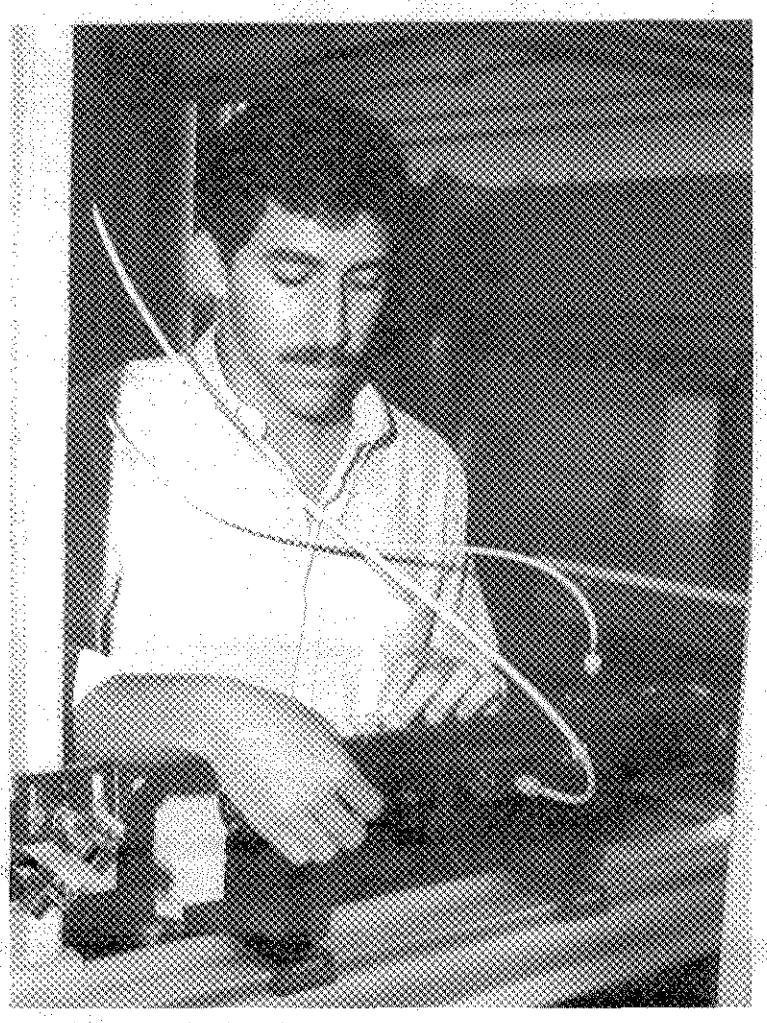
Langley Research Center

News Researcher

Volume 1, Issue 2 July 31, 1987

Bi-weekly Employee and Contractor Publication

College/University Students Team up with Langley Scientists for Research



Basil Hassan, LARSS participant from North Carolina State University, is shown with a laser velocimeter, a device used to measure flow direction and separation. Under the direction of Langley mentor Dennis Bushnell, Hassan is working in the Viscous Flow Branch investigating tail configurations to ascertain the optimum design for drag reduction.

Sixty-one students from 35 colleges and universities across the United States are doing research at Langley this summer under the Langley Aerospace Research Summer Scholars (LARSS) Program. Each student is working on a research project under the supervision of a Langley researcher who acts as a mentor for the summer. More than 50 Langley employees are involved in the program as mentors.

The LARSS program was established in 1986 for the benefit of undergraduate seniors as well as first year graduate students who are pursuing careers in aerospace disciplines. The eight-week summer program is intended to motivate high caliber engineering and science students to pursue and earn graduate degrees and to enhance their interest in aerospace research by giving them an opportunity to conduct research in a federal laboratory.

Twenty talented students were selected for the pilot program in 1986. The success of the LARSS program is evidenced by the 200 per cent increase in program participation this year. In addition to the individual research project, the program includes lectures on current topics of aerospace research, career development seminars and a tour of the center.

At the conclusion of the program, each student will present a paper on the topic of his or her research.

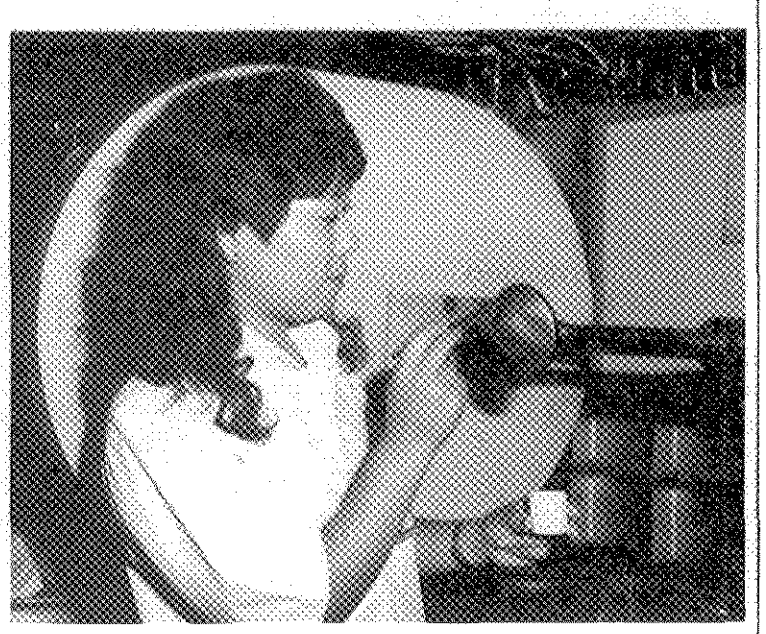
The LARSS program is jointly managed by the George Washington University JIAFS Program and the Office of the Chief Scientist. Langley coordinator Dr. Samuel Massenberg hopes that the future will find a number of these young people as employees of the Langley Research Center.

The program participants and the schools they represent are Jim Allen, Oklahoma State University; Matthew Areford, Hampdon-Sydney College; Fred Bergen, Susan Stolarski, and Karen Studebaker, Virginia Tech; D. Bichey and William Kleb, Purdue University;

Ann Black, Kathleen Brosemer, Miles Duquette, Angela Harris, Sharon Jones, Heather Rose and Michael Yadlowsky, UVA; Donna Boyd, Sonya Hopson, and Rufus Sykes, Norfolk State; James Anderson, Karlton Butts, Francis Flores, Anita Flowe and Vicki Forbes, North Carolina A&T State University;

Christyal Chamblee, Lincoln University; Tinya Coles, Sabrina Johnson, Rhonda Jones, Stacy Lewis and Todd Pilot, Hampton University; Chet Dominik and James Wallace, Rose-Hulman Institute of Technology; Jack Edwards, Basil Hassan, John Meyer, Mark Morton and

Continued on page 6.



-photos by Don Ward

University of Michigan graduate student and LARSS participant Susie Mishima applies an oil base coat to the surface of an aero-assisted flight experiment (AFS) model in preparation for a coating of an oil of specified viscosity containing white opaque ink which, when tested in the wind tunnel, makes streamlines visible. Mishima is working with Langley mentor Clyde Edwards in the Experimental Aeronautics Branch of the Space Systems Division. The objective of her research at Langley this summer is to assist in the creation of a data base for AFE.

-photo by William Salyer

NDE Groundbreaking Kicks off Anniversary Celebration

Breaking ground for the Non-Destructive Evaluation (NDE) laboratory are (L to R) Langley Director Richard H. Petersen, Dr. Joseph S. Heyman, Head of the Materials Characterization Instrumentation Section, and George Rodney, Associate Administrator for Safety, Quality and Reliability, NASA Headquarters. (See additional Anniversary Celebration photos on pages 3 and 4.)

Langley Supports Oshkosh '87

More than 25 Langley employees will travel to Oshkosh, Wisconsin, to support the NASA exhibition at the 35th Annual Experimental Aircraft Association's International Fly-In Convention and Sport Aviation Exhibition, July 31-August 7. This year's exhibit, "Flight Path to the Future," focuses on advances in aeronautical technology that have brought aviation to the threshold of a new era.

A highlight of the NASA exhibit is the "Cockpit of the Future," jointly developed by Langley and the Lockheed Georgia Company. Beginning in the 1990 s, pilots will be controlling their aircraft in a new kind of environment. Gone will be the conventional massive arrays of dials, switches and knobs. Replacing them will be space-saving, clutter-free instrumentation. During a simulated landing, visitors can see how tomorrow's pilots will use color-coded graphic displays and computers to monitor such things as flight path and speed, wind and weather conditions and obstacles.

Also on exhibit is a scale model of Langley's National Transonic Facility (NTF), the largest cryogenic wind tunnel in the world. Inside the four-year old NTF, supercold liquid nitrogen evaporates and is pushed by fans over scale models of aircraft at up to 1.2 times the speed of sound.

Samples of composite materials tested at Langley are also on display. Visitors can see first-hand how these new concepts in materials and structures will make aircraft of the 21st century lighter and, thus, more fuel efficient.

Engineering technicians from Langley, representing such areas as metal fabrication, model development and operations support, will demonstrate model building and repair techniques. The technicians will show products of metal spinning techniques, large space structures assembly and composite materials used in model fabrication.

Drag reduction concepts like the now famous riblets, V-shaped grooves developed at Langley, will be discussed. Riblet tape on the hull of the U.S. yacht **Stars & Stripes** helped skipper Dennis Conner and his crew win the 1987 America's Cup race.

Visitors may inspect aircraft tires that have undergone tests at Langley's Aircraft Landing Dynamics Facility and may tour the AEROVAN and the SARSAT van, traveling exhibits managed at Langley.

Among Langley staff supporting NASA's "Flight Path to the Future" at Oshkosh '87 are Robert Baals, Patterson Biggs, Roger Breckenridge,

Continued on page 2.

News Briefs

LEWIS RESEARCH CENTER, Cleveland, Ohio — NASA returns to Oshkosh, Wis., July 31-Aug. 7, as a principal exhibitor at the 35th Annual Experimental Aircraft Association International Fly-In. Of special interest to air travelers and pilots will be exhibits and models of NASA's advanced fuel- saving propeller system call "propfan." Another highlight of the NASA exhibit will be the "Cockpit of the Future." Three NASA aeronautics field centers supporting the exhibit are Lewis, Langley, and Ames Research Centers.

KENNEDY SPACE CENTER, Fla. — NASA has announced the formation of a board to investigate the July 13 vehicle handling mishap which resulted in extensive damage to the Centaur stage of the Atlas Centaur 68 launch vehicle. The team will investigate the accident and report its findings and recommendations by Aug. 14 to RADM Richard H. Truly, Associate Administrator for Space Flight, who will forward the report to the NASA Administrator. Chairman of the board is James B. Odom, Director, Science and Engineering Directorate, Marshall Space Flight Center.

AMES-DRYDEN FLIGHT RESEARCH FACILITY, Edwards, Calif. — The experimental, forward-swept-wing X-29 aircraft has completed the first phase and moved into the second phase of its flight research program at Ames-Dryden. During the second flight phase, researchers will further investigate the forward-swept-wing structural divergence tendencies and the overall aerodynamic performance of the wings and canards. The second phase program is expected to be completed by the summer of 1988.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017. Request information by release number. See Current News Release information box on page 5.

Langley Hosts Governor's School for the Gifted

Twenty-four Virginia high school student have spent the past six weeks at the Langley Research Center performing "real life" science and engineering tasks under the direction and guidance of NASA mentors.

Beginning June 22, 15 boys and nine girls arrived at Langley to participate in the Governor's School for the Gifted. These rising juniors and seniors possess a high level of ability in mathematics and science and have demonstrated outstanding achievement in these areas.

This is the sixth summer Langley has served as a host to the Governor's School, sponsored by the Virginia Department of Education. The NASA program is based on a mentor-model. Each student is selected by a NASA scientist or engineer and works under the direction and guidance of that individual. One of the objectives of the program is to offer "real life" career exploration to bright students who are considering careers in science or engineering.

GOVERNOR'S SCHOOL. Participants are (front row) Chris Cole, Steve Michener, Andrew Seamons, Scott Case, Anju Batra, Amy Ridge, Alison Peck, Tessie Albo, Un Mi Ko, Jennifer Rogers, Rita Barksdale, Sharon Parsons, Nancy Kent, Coordinator; (back row) Jack King, Steve Bush, Patrick Smith, Mark Pioli, Jamie Sluss, Steve Broderick, Brian Kraje, Isaac Wilson, Bob Blem, Bambi Faivre, Karen Strock and Norman Grogin.

The NASA mentors are the key to the success of the program. They are volunteers who have participated in orientation sessions relating to the personality characteristics and psychological needs of gifted high school students. Each mentor serves as a role model for the students and has a tremendous impact upon the future of his or her protege.

Langley employees serving as mentors this year were Dr. F. Farrasat, Cecil Nichols, Mark Shipham, Don Cahoon, Greg Manuel, Charlie Cockrell, Wes Goodman, Dr. Raymond Montgomery, Bruce Fisher, Paul Stough, Lamont Poole, Frank Quinto, Dr. Ruth Pater, Warrem Kelliher, Irvin Miller, Charles Folwell, Lin Hartung, Dennis Bushnell, Dr. Robert Smith, Guy Kemmerly, Dr. Allan Zuckerwar, Pam Davis, Thomas Sutter, Chris Rumsey and Dewey Smith.

Lankley

Oshkosh '87

Continued from page 1.

Lenwood Clark, Robert Buckley, Chris Christensen, Douglas Garner, Richard Hellbaum, Keith Henry, Bruce Holmes, Greg Manuel, Clifford Obara, Merle Ott, Paul Vijgen, Michael Chambers, Earl Mathis, Daniel Murri, David Robelen, Long Yip, Ellwood Peele, Robert Pegg, Lindy Perkes, Mary Sandy, Ann Suit, John Thompson, Mike Walsh, Bob Wright, Robert Daugherty, and Langley alumnus Jim Hassell. Langley's involvement in this year's EAA Fly-In is being coordinated by Cathy Schauer.

Editorials

Langley

Headquarters Forum

The bumper sticker read "Space in the Place" and that place has been, is, and always will be NASA's Langley Research Center. The "Mother Center" by definition should be in the lead, upfront, laying the groundwork for the nation's space programs of the future. It really only depends on how far in the future you want to look. The effect a Manned Mission to Mars or a Lunar Base Mission will have on the Space Station at the turn of the century is being analyzed by Langley, as well as the advanced Space Station for 2025. Advanced concepts for space transportation of the future and the distant future are also being analyzed by the nation's best – Langley's people, software and facilities.

From the next Shuttle and advanced launch systems to bringing payloads back from geosynchronous and planetary orbits and emergency return from the Space Station, the details of the designs are being conceived here at Langley. The National Aero-Space Plane is a prime example of a futuristic aero and space vehicle that draws upon Langley's talents in several organizations across the board to lay the technology groundwork. It's FUN being in the forefront, especially when you have the ability and the capability to conceive and create the future designs.

Another space-related area that was conceived here at Langley is the specialty field we selected for Atmospheric Sciences. From the initial investigations of concern for the possible ozone-destroying exhaust gases from advanced aero and space transportation, a research activity has evolved into one the nation is proud of. This, too, is at Langley and is at the forefront of some very exciting and important investigations that will provide an understanding of our own atmosphere in the not too distant future. Langley has the nation's experts, has developed the one-of-a-kind software, and has developed and is "flying" the state-of-the-art instruments that will bring us the data we need to model this very complex atmosphere.

Ten years ago I remember "preaching" to NASA Headquarters, OMB and Congress about the need to send probes to Venus in order to study a less complex planetary atmosphere in hopes of someday better understanding our own. Now, here at Langley, we are able to take on that complicated task of studying our own atmosphere, because we now have the technology, the computer programs and, most importantly, the scientists who can use these tools to interpret the complex dynamics of the Earth's atmosphere and climate. Someday we might even be able to talk about what can be done to control it.

NASA's space technology program has had setbacks and has had trouble competing for the required funds, but with OAST's recent success in the budget process with the Civil Space Technology Initiative (CSTI) and its follow-on Pathfinder, there is a bright light "at the end of the tunnel." The excitement of pushing the state of the art, developing new technology and being on the forefront will build again here at the "Mother Center." And the bottom line, which I feel is ultimately important, is that it's going to be one heck of a lot of FUN.

R. R. "Skip" Nunamaker
Director for Space

GWU Courses

The George Washington University's (GWU) School of Engineering and Applied Science at Langley plans to offer a new set of courses leading to the Master of Engineering Administration degree beginning in the Fall Semester 1987. Interviews at Langley will be arranged on Thursday and Friday, August 13-14. For further information, call the GWU-NASA office at 865-3124.

News Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

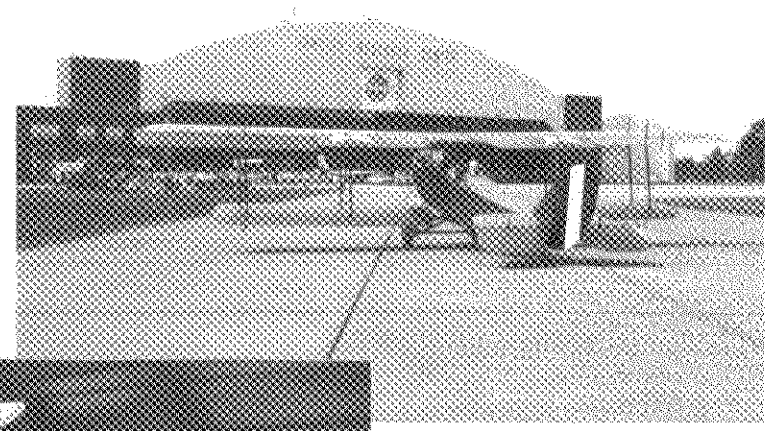
The privilege of advertising articles in this publication is restricted to the staff of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

Langley Anniversary

Langley Director Richard H. Petersen (right) hosts distinguished guests (L to R) Dr. Raymond S. Colladay, Associate Administrator for the Office of Aeronautics and Space Technology, and Dale D. Myers, Deputy Administrator, both from NASA Headquarters, Washington, D.C., and Voyager crew members Jeana Yeager and Dick Rutan.

'What would have happened to aeronautics, indeed to history, if Langley had not existed and the work here not been done?'

-Dale D. Myers



A restored JN-4 "Jenny" biplane lands on the NASA airstrip and was on exhibit for the Anniversary celebration. The "Jenny" was one of the first aircraft tested at Langley.

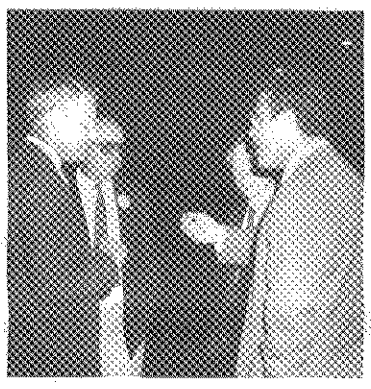
Kenneth Hyde (left) of Warrenton, Va., has spent the past ten years restoring the "Jenny." It made its first appearance away from home at the Langley celebration. Hyde is accompanied by copilot Charles A. Kulp (right).

'You must treat Langley with respect, it is a holy place....'

-Dale D. Myers quoting James Michener's Space

'In the beginning, Langley....'

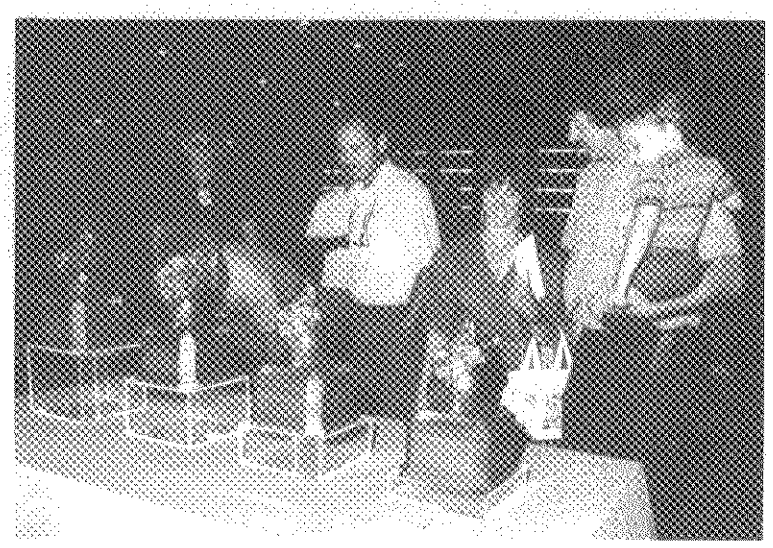
-Raymond S. Colladay



Petersen and Associate Director Sidney F. Pauls speak with Colladay and Lewis Research Center Director Dr. John M. Klineberg following the ceremony.

NASA Deputy Administrator Dale D. Myers (center left) comments on a Space Shuttle display to Dr. Raymond S. Colladay (center right), NASA's Associate Administrator for the Office of Aeronautics and Space Technology as anniversary guests look on.

Petersen (center) presents models of the National Aero-Space Plane to Voyager crew members Jeana Yager and Dick Rutan.



Guests admire four of the five Collier Trophies which have been awarded to Langley. The Collier Trophy is awarded annually for the greatest achievement in aeronautics and astronautics in America.

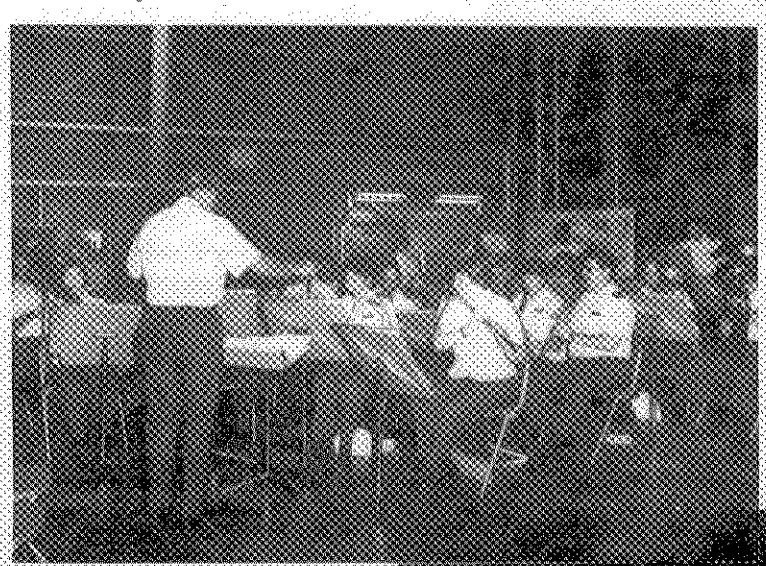
Shaping Tomorrow

Lewis Research Center Director Dr. John M. Klineberg presents Langley Director Richard H. Petersen with an anniversary memento from Lewis.

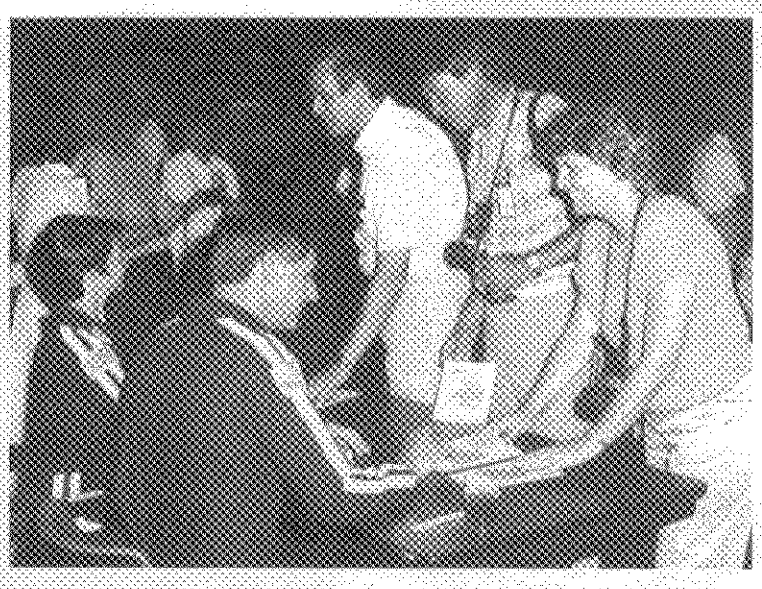
'We can do a lot more than we think we can do...just about everybody underestimates themselves.'

-Dick Rutan

Members of the local media question Rutan and Yeager on their round- the-world, unrefueled flight for which the Voyager team was awarded the Collier Trophy.



The U.S. Army 76th Division (TNG) Band, under the direction of Chief Warrant Officer 3 John J. Turek, provided musical entertainment prior to and during the ceremony.



Jeana Yeager and Dick Rutan please anniversary guests with autographs.

'If you can dream it, you can do it.'

-Jeana Yeager

Hampton Mayor James L. Eason shows Petersen a rendering of the proposed Virginia Air and Space Center.

'If you can see further than others, it's because you are standing on the shoulders of giants.'

-Raymond S. Colladay quoting Isaac Newton and referencing Langley

-photos by William Salyer, Melanie Evans, Hubert Lloyd and Paul Bagby

Petersen (center right) and Myers (center left) join anniversary guests to examine a display of aeronautical configurations following the formal ceremony.

'Let's add seventy years to where we are today and imagine what will be happening in 2057!'

-Dale D. Myers

Jeana Yeager and Petersen talk with Laura Bateman and Congressman Herbert H. Bateman at a special anniversary reception held at the Visitor Center.

1917 Shaping Tomorrow 70 NASA Langley Research Center 1987

'We fully expect to continue Shaping Tomorrow as we look to the 21st century.'

-Richard H. Petersen

Congressman and Mrs. Herbert H. Bateman (right) speak with Ned Cooper, Delegate Shirley Cooper and former Hampton Mayor Ann Kilgore in the Space Gallery of the Visitor Center.

People & Places

Positions Open

The following Competitive Placement Positions are currently open:

87-53: AST, Technology Utilization, GM-1310-14, (Temporary assignment NTE 1 year), Space Directorate, Space Station Office. Closes August 7, 1987.

87-54: AST, Basic Properties of Gases, GM-1310-13, 14 or 15, (Temporary assignment NTE 1 year), Space Directorate, Space Systems Division, High Energy Science Branch. Closes Aug. 5.

87-55: Supervisory Aerospace Engineer, AST, Navigation, Guidance and Control Systems, GM-0861-13 or 14, Flight Systems Directorate, Guidance and Control Division, Aircraft Guidance and Control Branch. Closes August 14.

87-56: AST, Facility Systems Safety, GS-0801-11, 12 or 13, Systems Safety, Quality and Reliability Division, Safety Engineering Branch. Closes August 6.

87-57: Lead Engineering Technician, GS-0802-10 or 11, Operations Support Division, Tunnels Operations Branch, Technical Support Section "D". Closes August 7.

Positions Filled

Samuel S. Harris, Jr. has been selected Supervisory Electronics Technician, Electronics Packaging Development Section, Electronics Technology Branch, Fabrication Division, under CPP 87-37.

Samuel Dollyhigh has been selected Supervisory Aerospace Engineer, Systems Analysis Branch, Advanced Vehicles Division, under CPP 87-39.

David S. Miller has been selected Supervisory Aerospace Engineer, Supersonic/Hypersonic Aerodynamics Branch, High-Speed Aerodynamics Division, under CPP 87-40.

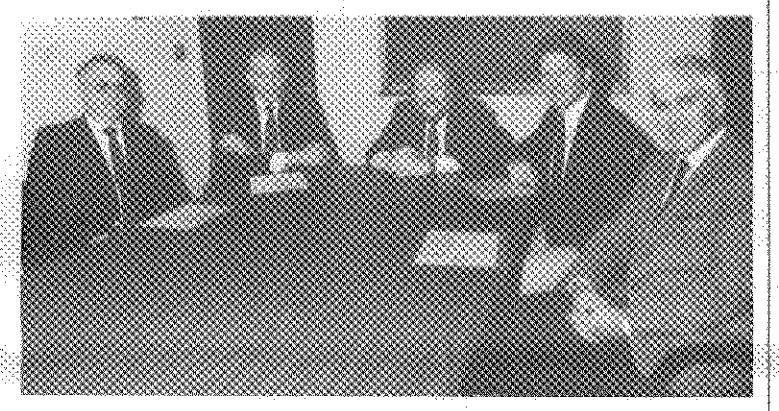
Jeanne D. Covington has been selected Contract Price/Cost Analyst, Acquisition Operations Branch, Acquisition Division, under CPP 87-45.

Retirement Luncheon

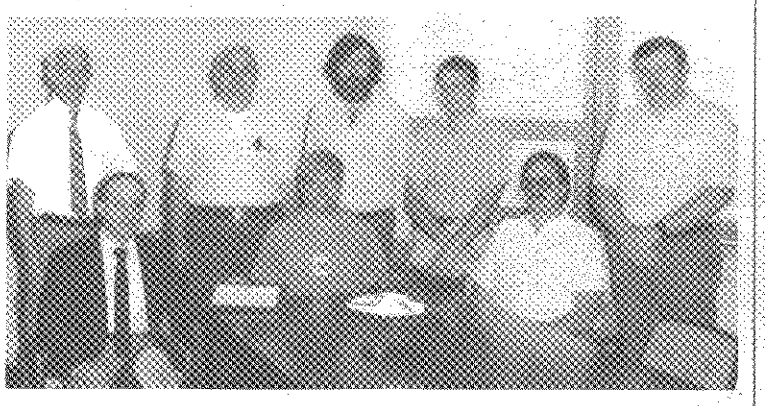
Nancy Johnson will be honored with a retirement luncheon Tuesday, August 18 at 11:30 a.m. in the Activities Center. Cost is $7.50/person including gift. Contributions for gift only are gladly accepted. Please make reservations by forwarding check to Brenda Spencer, Mail Stop 381, by August 14.

NASA Tech Brief Awards

William D. Mace (standing, right), Director for Electronics, presented NASA Tech Brief Awards to Frank H. Supples, Jr. (seated, left) and Ping Tcheng (not pictured) for their work on "A Miniature Remote Deadweight Calibrator;" Jag J. Singh (seated, center) for "Measurement of Viscosity of Gaseous Mixtures of Atmospheric Pressure;" Patricia A. Paulin (seated, right) for "Pretreatment of Platinum/Tin Oxide Catalyst;" Donald R. Bennington (standing, left), for "Real- Time Simulation Clock;" and Joseph S. Heyman (standing, center) for "Acoustophoresis–A New Separation Concept."



Charles P. Blankenship (second from left), Director for Structures, presented NASA Tech Brief Awards to Harold G. Bush (left) and Martin M. Mikulas (not pictured) for "Mechanical End Joint for Structural Column Elements;" and Paul J. Jensen (second from right) and Paul M. Hergenrother (right) for "Polyarylene Ethers With Improved Properties." Hergenrother was also cited for his works on "Polyphenlquinoxalines Containing Alkylenedioxy Groups" and "Polymides Containing Carbonyl and Ether Connecting Groups." Also pictured is Dr. Michael F. Card (center), Chief, Structures and Dynamics Division.



Wayne R. Mantay (seated, left), Chief, Aeromechanics Division, ASTD, presented a Special Achievement Award for Group Accomplishment to the Rotor Inflow Investigation Research Team. The group award was given for outstanding innovation and technical excellence in the design of specialized equipment and the development of novel experimental procedures leading to the first comprehensive mapping of inflow of an advanced-technology rotor model in forward flight. Shown are (standing, L to R) John C. Wilson, Head, Rotorcraft Aerodynamics Office, ASTD; John R. Holsinger and Alvin Clark, Wyle Laboratories; John D. Berry and Danny R. Hoad, ASTD; (seated L to R) Mantay, Joe W. Elliott, ASTD; and Richard H. Sailey, PRC/Kentron. Not pictured are Susan L. Althoff and Timothy E. Hepner, ASTD.

Current News Releases

To receive a copy of one of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-111.....NASA Features Advanced Turboprop, Cockpit of Future at Convention

87-112.....Board Named to Investigate Atlas Centaur 68 Vehicle Mishap

87-113.....Experimental Aircraft Enters Second Phase of Flying

Wyle Labs Selected for NASA Instrument Support Contract

Wyle Laboratories of Hampton has been selected for negotiation of a contract to provide instrument support services to the Langley Research Center.

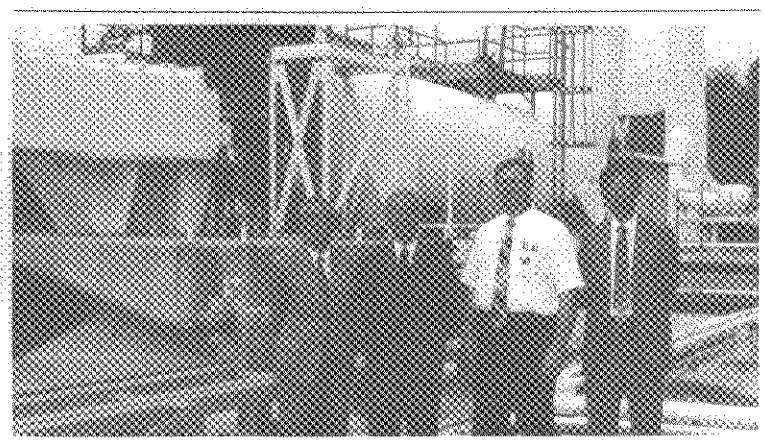
The cost-plus-award-fee contract is expected to begin October 1. The basic 5-year contract is valued at $49 million. The contract includes options for additional hours and materials proposed at $9.5 million.

Wyle support services will include repair, calibration and maintenance of instruments and instrument systems; application of transducers; design and modification of data acquisition systems; preventive maintenance and on-site emergency repair; evaluation of measurement requirements, instruments and systems; analysis of measurement data; documentation of test results; maintaining instrument service history records; providing a systematic preventative maintenance and calibration program on specified instruments and systems; operating an instrument loan pool; and inspection of new instruments purchased by the government.

The work will be accomplished at Langley and the contractor's Hampton facility.

Harvey's Selects Crew of Month

Harvey's Janitorial Service, Inc. employs approximately 80 individuals who strive to keep the appearance of our facilities at Langley in tip-top shape. John M. Huckless, contract manager, has announced a Crew of the Month program that recognizes employee teams who have excelled on their Facility Evaluation Reports. Shown above are (L to R) Paul Hunt, Cathy E. Thomas and Richard Saunders who have been selected Crew of the Month for July. This team obtained an Average Facility Evaluation score of 93 out of a possible 95 points.



A group from the People's Republic of China recently toured Langley and Ames Research Centers during their stay in the U.S. Shown in front of the LaRC Landing Loads Facility are (L to R) Wang Shusheng, Vice-Chairman of the Science and Technology Committee of the Ministry of Space Industry; Ren Xinmin, Director-General of the Commission for Science and Technology, Ministry of Astronautics; John Tanner, Impact Dynamics Branch; and Huang Zuwei, Research Fellow of the Systems Engineering Research Center, Ministry of Astronautics.

In Memoriam

Sympathy is extended to the family of **S. R. Marshburn** on the death of his wife Ruby who passed away June 13 in Bartow, Florida. Marshburn retired in 1973.

Sympathy is extended to the family of **Joseph G. Daniels**, who died June 21. Daniels, an Engineering Technician in the Operations Support Division, was a NASA employee for over 30 years. Al Bell, Unit Head, said, "Joe was well like by his fellow workers and will be sorely missed."

Happenings

LAA SOCIAL. The Langley Activities Association will sponsor a social in the Activities Center, Friday, August 7, from 4 to 6:30 p.m.

LAA BOARD MEETING. The Langley Activities Association Executive Board will hold its August meeting, Tuesday, August 11, at 10 a.m. in the Activities Center.

BAY DAYS' RAFT RACES. If your secret dream is to build and pilot your own vessel, then the Hampton Bay Days' Raft Races are for you! Races will take place on Saturday, September 12, from noon to 2 p.m. on the Hampton River. For registration information and rules, please call 727-6197.

CARNIVAL VOLUNTEERS. Volunteers are needed to work children's booths. Call Vernell Robinson, ext. 2691, if interested.

CARNIVAL TICKETS. Tickets are now on sale for the LAA Carnival, August 21 and 22. Individuals interested in selling tickets should call the Activities Office, ext. 3139. Two tickets to Busch Gardens will be given to each of the five individuals who sell the most tickets.

ARTS AND CRAFTS. Anyone interested in displaying arts and crafts at the LAA Carnival, Friday and Saturday, August 21 and 22, should call Betty Hughes, ext. 3264.

BINGO. LAA Bingo is held every Thursday night beginning at 7 p.m. at the Langley Activities Center.

AA AND AL-ANON. Are you concerned about someone's drinking? AL-ANON and AA meetings are held every week during lunch time at Langley. For information call the Clinic, ext. 2246, or the Health Office, ext. 2605.

CEBAF SEMINAR. Philip H. Pile (Brookhaven) will discuss "Investigation of Hypernuclei Using the (π^+, K^+) Reaction" at 11 a.m., Monday, August 17, CEBAF, Room 53. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

BOWLING. Anyone interested in bowling with the NASA Tenpin League please contact Pat Gates, ext. 2058.

Fitness Tips from Franki

Exercising in Hot Weather

Exercising in the heat can be safe, but remember to:

- Replace lost fluids every 15-20 minutes during the workout to prevent muscle cramps and dehydration.
- Drink cold water 15-20 minutes before exercising.
- Avoid salt tablets or adding salt to food.
- Avoid plastic sweat suits or heavy clothing which prevents the body's cooling process.
- Decrease intensity of exercise workout.

-Franki Robbins-Pivarnik is the Coordinator of the Langley Fitness Center.

MEMORABILIA. The Visitor Center Souvenir Counter has 70th Anniversary items – mugs, patches, buttons, T-shirts – for sale.

Introducing the NEW Pat Gates!

Langley scientists, students team up

Continued from page 1.

Stan Smeltzer, North Carolina State University;

Wanda Gay and Cynthia Holston, Virginia State University; Shelley Gruber, Morris Brown College; Robert Harvey and Karen Stephens, Christopher Newport College; Patricia Harvey and Charlotte Williams, College of William & Mary; Luther Jenkins, Brown University;

Agus Julianto, University of Nebraska; Tony Laituri, Michigan Tech University; Susie Mishima, University of Michgian; William Morokoff, New York University; Pixey Mosley, Texas A&M University; Andrew Nelson, St. Olaf College; Mai Ngo and Cherise Wright, Old Dominion University; Bryan Pelham, Santa Clara University;

Jim Reich, MIT; Robin Robinson, University of Illimois; Michael Smith, University of Iowa; Robert Stuever, Christopher Voth and Michael Watson, Wichita State University; Can Back and Jeffrey Wright, University of Florida.

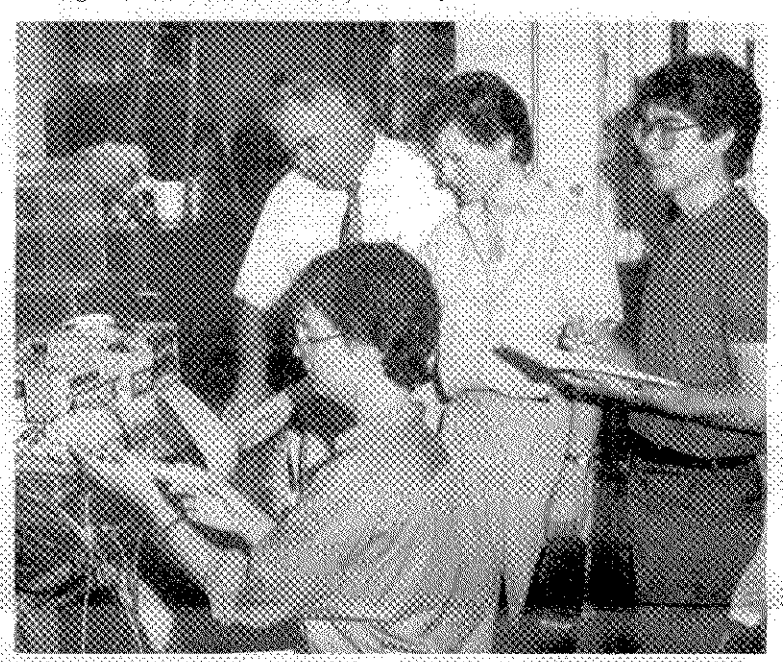


photo by Don Ward

LARSS students Kathleen Brosemer (seated), UVA, and Susan Stolarski (standing center), VPI, assisted by Atmospheric Sciences Division research chemist Wesley R. Cofer III (standing left) and Edward Winstead (standing right), ST Systems, use gas chromatograph to measure atmospheric levels of nitrous oxide. Nitrous oxide, an environmentally significant gas, impacts ozone in the upper atmosphere and affects climate. Brosemer and Stolarski are working with Langley mentor Joel Levine.

lost and found

LOST. Ray-Ban sunglasses, color changers with gold rims, in the area of the cafeteria. REWARD. Call Jim Gayton, ext. 2400.

FOUND. Two watches have been found in parking lot B-1200. If you have lost a watch, call the Security Office, ext 2452, and give a description to claim.

DIRECTIVES NUMBER	TITLE	DATE	T.S.#	DATE DISTR
REVISED:				
LMI 3296.1	"Clearance Procedures for Employees Terminating Employment"	5-20-87	1535	6-11-87
LMI 1410.1	"Langley Research Center Directives System"	5-20-87	1536	6-11-87
–	LaRC Management Manual - Transmittal (TS) Checklist, 1553-1744	–	–	6-11-87
NEW:				
LMI 2400.3	"Langley Research Center (LaRC) Computer Networks for Data Communications"	6-24-87	1537	7-15-87
CANCELLED:				
LMD 1200.11	"Delegation of Authority to Approve Presentation and Publication of Scientific and Technical Papers and Reports for Professional Audiences"	6-26-87	1538	7-15-87
REVISED:				
LMD 1200.15	"Delegation of Authority to Designate Employees to Act in Miscellaneous Financial Matters"	6-26-87	1539	7-15-87
LMD 1200.20	"Power and Authority – To Approve Distribution of NASA Computer Program"	6-26-87	1540	7-15-87
LMD 1200.2	"Redelegation of Procurement Authority, Grants Authority, and Related Matters"	6-26-87	1541	7-15-87
LMI 2300.1	"Signature Authority for Level Two Project Management Information and Control System (MICS) Reports and Construction of Facilities Reports"	6-26-87	1542	7-15-87

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Space Administration
Langley Research Center

Researcher News

Volume 1, Issue 3 August 14, 1987
Bi-weekly Employee and Contractor Publication

SMILES AND APPLAUSE emanate from the Orbiter Processing Facility as Discovery is powered up to support processing for launch of STS-26. The once- dark "vehicle powered" sign glows with energy.

Barnwell Chosen Langley's Chief Scientist

Dr. Richard W. Barnwell has been selected as the Chief Scientist at the Langley Research Center. He replaces Jerry C. South Jr., who is now Head, Analytical Methods Branch, Low-Speed Aerodynamics Division.

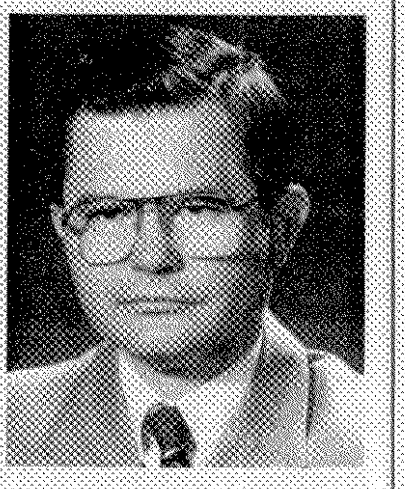
As Chief Scientist, Barnwell administers the university research programs and is the principal adviser to the Director and Deputy Director on the needs and attitudes of the Langley research staff. He has operating responsibility for the Director's Discretionary Fund, the Distinguished Research Associate Program, the Fund for Independent Research, the Floyd L. Thompson Fellowship Program, the Peer Review Program and the selection of the H.J.E. Reid Award recipient.

Barnwell began his NASA career in July 1964 as an aerospace technologist in the Theoretical Aerodynamics Branch. In 1978 he became leader of the Airfoil Research Group in TAB and in 1980 he was appointed branch head. He was named Head, National Transonic Facility Aerodynamics Branch, when it was formed in 1981. In that position, he directed and conducted research in transonic aerodynamics and was responsible for the research program for the NTF.

From January 1986 until July 1987, Barnwell served as Assistant Chief, High-Speed Aerodynamics Division, where he directed research in supersonic aerodynamics, hypersonic propulsion, viscous flow and computational fluid dynamics.

Before joining NASA, Barnwell was an engineering co-operative education student at the U.S. Army Redstone Arsenal in Huntsville, Ala., from 1957 to 1958.

Barnwell received a bachelor of science degree in engineering physics in 1961 and a master of science degree in physics in 1962, both from Auburn University.



He received his doctorate in engineering mechanics from Virginia Polytechnic Institute in 1967.

The author or co-author of over three dozen technical papers, Barnwell received the H.J.E. Reid Award, Langley's highest honor, for writing the outstanding scientific paper for 1976 and a NASA Exceptional Scientific Achievement Medal in 1983. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

Langley Experiments Part of Expedition

Science Agencies Investigate Ozone Hole Over Antarctica

Scientists from around the globe are preparing to embark on an expedition to better understand the nature of the Antarctic ozone hole.

NASA, the National Oceanic and Atmospheric Administration, the National Science Foundation and its National Center for Atmospheric Research, and the Chemical Manufacturers Association are participating in the cooperative investigation.

The interagency scientific program also involves scientists from Harvard University, the University of Denver and the University of Washington and the governments of Argentina, Chile, France, New Zealand and the United Kingdom. Panama, Peru and Ecuador also are cooperating by allowing aircraft overflights of their countries.

The Airborne Antarctic Ozone Experiment will fly specially instrumented NASA-ER-2 and DC-8 aircraft into the Antarctic ozone from August 17 through September 29. The timing of the flights coincides with the onset of the ozone hole in the atmosphere over the Antarctic and with the advent of temperature and sunlight conditions required for the aircraft flights. The Antarctic ozone hole begins at the end of winter in the Southern Hemisphere and lasts through spring.

This investigation is prompted by recent observations showing a dramatic and unexpected downward trend in the amount of ozone in a column of air over the Antarctic in the period between late winter and early spring. A column of air is the air which would be encountered along a straight line from the ground and continuing up through the atmosphere.

Three experiments from the Langley Research Center's Atmospheric Sciences Division will be flown on the aircraft as part of the ozone expedition. A remote sensing ozone detector will be operated by Dr. Edward V. Browell, a research scientist in the Chemistry and Dynamics Branch. This detector uses a laser ranging system to measure laser backscatter and thereby determines the profile of ozone above the DC-8.

The airborne differential absorption lidar (DIAL) system consists of four lasers which beam simultaneously four wavelengths of light through a roof-mounted quartz observation window on the DC- 8. The system provides real-time color plots of ozone and aerosol/cloud distribution.

Dr. Gerald L. Gregory, a research scientist in the Field Experiments Branch, will conduct a direct sample experiment which draws an outside air sample into a chemiluminescent ozone detector and then uses a chemical reaction between ozone and ethylene to measure the concentration of ozone.

The ozone-ethylene reaction is chemiluminescent and occurs on a molecular basis and is extremely precise. This chemiluminescence is observed by photo-multiplier tubes which then provide a direct readout of the concentration of ozone. The aparatus is accurate to within five parts per billion and can detect as few as two parts per billion ozone.

Dr. Michael P. McCormick, a research scientist in the Aerosols Research Branch, will conduct a Stratospheric Aerosol and Gas Experiment (SAGE II), which will provide data on the abundance of aerosols and consequently the polar stratospheric clouds, nitrogen dioxide and ozone. Data from this satellite experiment will be used in conjunction with the aircraft data to assist in analyzing the distribution of aerosols and other chemical species.

Beginning in 1979, the amount of ozone reduction which has been observed up to 1986 has been about 40 percent of the previous historical late winter-early spring monthly mean. This observation has been reported by scientists from the British Antarctic Survey and confirmed by satellite observations taken with the Total Ozone Mapping Spectrometer aboard the Nimbus 7 spacecraft and further confirmed by a joint NSF/NASA/NOAA/CMA scientific investigation.

The 1986 Antarctic National Ozone Expedition (NOZE-1) was conducted

Continued on page 2.

Hudson Receives ASTM Award of Merit

C. Michael Hudson, head of the Fracture Mechanics Engineering Section, has been named a 1987 recipient of the American Society for Testing Material's (ASTM) Award of Merit.

Hudson received the award at Committee E-24's National Symposium in Bethlehem, Pa. He was honored for his distinguished leadership in advancing the use of voluntary standards on fracture mechanics technology in industry, and for his exceptional service as chairman of a Subcommittee on Fracture Mechanics Applications.

The recipient of numerous awards, Hudson has worked with NASA since 1958.

As head of the Fracture Mechanics Engineering Section, he directs research, design and recertification of wind tunnels, pressure vessels, and piping facilities.

A native of Washington, D.C., Hudson received a bachelor's degree in civil engineering in 1958 and a master's degree in engineering mechanics in 1963 from Virginia Polytechnic Institute. In 1972, he earned a doctorate in materials engineering from North Carolina State University.

News Briefs

HEADQUARTERS, Washington, D.C. — NASA has completed negotiations with Rockwell International, Downey, Calif., to build the replacement Space Shuttle orbiter. Under terms of the contract, Rockwell will fabricate, assemble, test, check out and deliver the orbiter within 45 months. Using existing structural spares, the new vehicle will feature the latest upgrades and modifications and will incorporate all new technology evolving from the current return-to-flight activities.

GODDARD SPACE FLIGHT CENTER, WALLOPS FLIGHT FACILITY, Wallops Island, Va. — Goddard Space Flight Center has selected New Mexico State University's Physical Science Laboratory at Las Cruces, New Mexico, to negotiate a contract for the operation and support of the National Scientific Balloon Facility and for engineering support of NASA's balloon program. The 3-year contract is valued at $26.1 million with two 1-year hard options valued at $9.5 and $9.9 million respectively.

HEADQUARTERS, Washington, D.C. — NASA has announced the selection of seven new teams to conduct pioneering research into areas promising to the commercial development of space. The year's selection of new Centers for the Commercial Development of Space (CCDS) includes the first to specialize in the disciplines of space propulsion, space power, life sciences and materials for space structures.

HEADQUARTERS, Washington, D.C. — Astronaut Jon A. McBride has been named Acting Assistant Administrator for Congressional Relations, NASA Headquarters, effective September 1. He succeeds John F. Murphy who has been appointed Chief, Office of External Affairs, NASA Ames Research Center, Mountain View, Calif. McBride will be responsible for the agency's relationship with Congress. In this position, he also will coordinate and direct all Headquarters and field centers' communications with Congressional support organizations.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017. Request information by release number and headline. See Current News Release information box on page 3.

Ozone Hole Investigated

Continued from page 1.

from late August through early November and involved ground-based and balloon-borne atmospheric measurements carried out at McMurdo Station by teams from the NOAA Aeronomy Laboratory, the State University of New York at Stony Brook, the University of Wyoming and the Jet Propulsion Laboratory. The NSF coordinates and provides operational support for all ground-based U.S. research in Antarctica.

Attempts by a large number of scientific organizations to correlate the ozone depletion with other atmospheric observations has produced a mixed set of results. Three prevailing theories held that the ozone hole phenomenon was caused by 1) human-caused chemical changes in the atmosphere; 2) naturally induced solar- caused chemical changes in the atmosphere; or 3) a change in the dynamic circulation patterns in the Antarctic area.

The evidence obtained in the NOZE-1 campaign indicates that the ozone hole is not caused by changes in solar activity. Highly disturbed chemistry consistent with, but not definitive proof of, the human-caused chemical change theory was found. The major theories to be tested by this year's experiments are chemical and dynamics.

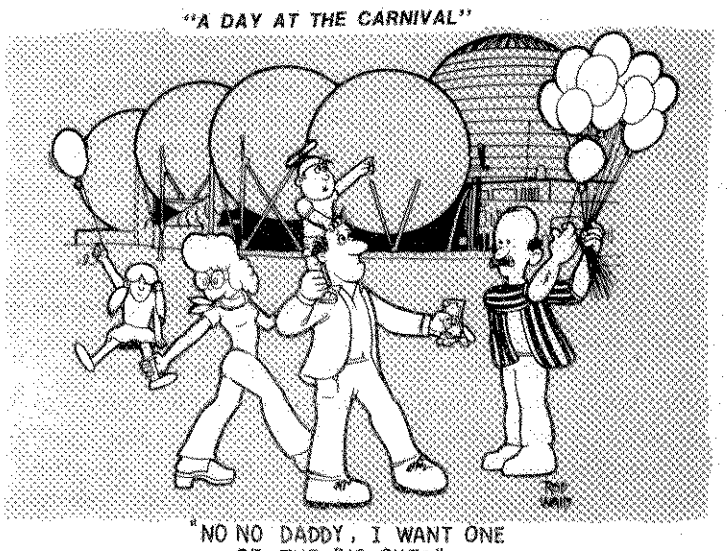
The experiments have been designed not only to test existing Antarctic ozone hole theories but to provide for a wide base of high quality atmospheric data in the event that none of the current hypotheses proves to be adequate. Although the data from the various experiments will undergo preliminary analysis in Punta Arenas, the rigorous analysis and modeling of the data will not be done until completion of the aircraft experiment. A preliminary interpretation of the findings is expected to be available to the scientific community around May of next year.

The mission is organized and managed by NASA's Office of Space Science and Applications in Washington, D.C., with substantial contributions from NOAA and with the cooperation and involvement of NSF, CMA and various U.S. universities and selected European meteorological organizations. Scientists and engineers from NASA, NOAA, NCAR and the universities will be stationed at Punta Areas, Chile, for the duration of the aircraft flights. Other NASA centers participating in the ozone experiment are the Jet Propulsion Laboratory, Ames Research Center and Goddard Space Flight Center.

In Memoriam

Sympathy is extended to the family of Louise Lee, who died July 11. She retired from the Hypersonic Propulsion Branch in 1977.

Lankley



Editorials

Langley

Headquarters Forum

Some folks are very sensitive about their age—they watch with increasing chagrin as birthdays come and go, usually beginning with the 40th, then the 50th, and then, golly gee whiz—it can't be 60 already.

To you, I say beware—nothing gets to you like a 40-year pin. I got one the other day, and it wasn't long before the shock passed; then it was natural, I guess, to think back over the period and reflect on thoughts, like—you were only gonna stay five years or so—what happened?

That's when I made an observation that I would like to share with you. It goes like this. I am satisfied that I stayed, not only because I got caught up in the work we do—but because of the way we do it . . . as a team.

It seems to me that very little worthwhile has come out of Langley that was not the result of team effort. The team approach has been practical for so very long, that it is an important part of our culture—and I like that. It naturally follows that all of the team share in what follows the effort—kudos or barbs depending upon how much success.

This brings me to my point. This is the season for Center/Headquarters award nominations and ceremonies; the time when particular team members are recognized for their outstanding performance, or accomplishment, or whatever. In any case, those individuals recognized have done more than their share to ensure the success of their team activity.

It's been my experience that, at the conclusion of the ceremony, the recipients have been congratulated for their insight, innovativeness, or whatever—and this is fine. Beyond that, though, I feel obliged not only to congratulate them, but also to thank them—since, as a team member, I, too, benefit from their accomplishment.

William D. Mace
Director for Electronics

Teacher Says Goodbye

The Teacher in Space Program will continue beyond 1987, but in a diminished mode until Barbara Morgan, the next teacher to fly, is scheduled for her mission. Therefore, at the end of this month I will be moving back to my home and my classroom in Parkersburg, W.Va.

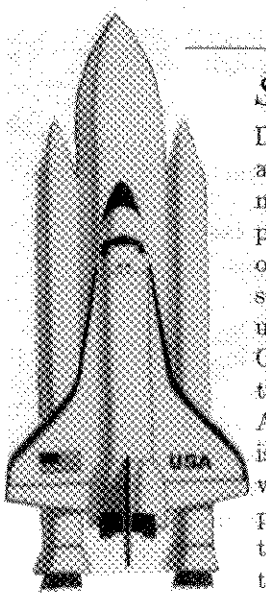
Despite the happiness I feel about returning to my students and family, I am very, very sad at leaving Langley. This has been my home away from home for the last two years and being here at the "mother center" has been an incredible experience for me.

I feel very honored to have had the opportunity to work with so many wonderful people. I've learned so much from each and every individual that I've touched, and I feel a deep gratitude for the caring, dedication, and willingness to share of themselves that makes Langley folks so special. I will miss you very much.

I would like to say to everyone: thank you and keep up the good work. Please come and personally say goodbye before I leave August 21. I'm in building 1153, second floor.

The dream is alive!

Niki Wenger
Teacher in Space Finalist



Space Shuttle Update

DISCOVERY: Shuttle Processing teams accomplished power-up, one of the first milestones in preparing for STS-26. Initial power-up operations included testing of the orbiter's electrical system, flight control sensors and controllers, a mass memory unit, and cycling of the nose landing gear. Continuing are air frame inspections and the crew escape modifications.

ATLANTIS: Removal of window 10, which is foggy and will be replaced. While the window is out, technicians have access to perform water loop inspections. About 30 tiles are being removed to allow access for the wing spar modification.

News Researcher

The Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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

Retirement Party

B. Ann Bell will be honored at a retirement party Saturday, September 12, at the Activities Center. A cash bar will begin at 6 p.m., followed by a steamship round dinner at 7 p.m. Cost is $11/person. Please send reservations to Nettie Orie or Frank Quinto, Mail Stop 286, by September 4. Contributions for gift only are welcome. For more information, call ext. 3611.

Now We'll Be Easier to Find

The Virginia Department of Transportation has upgraded the state highway signs which direct traffic to LaRC. New signs have been installed on I-64, Route 17, Route 171, and Route 134.

Summer Faculty Fellows Contribute to Langley's Research

For almost a quarter of a century NASA and the American Society for Engineering Education (ASEE) have co-sponsored the NASA/ASEE Summer Faculty Fellowship Program.

On June 1, Langley welcomed 41 faculty members from over 30 colleges and universities. This year's participants were chosen from a field of over 120 applicants.

The purpose of the program is to emphasize actual research experiences at NASA laboratories.

The faculty fellow spends ten weeks working with a Langley associate on a research project of mutual interest. Lectures and programs on topics of current interest, such as microburst (windshear), space station, and the National Aero-Space Plane, are planned to keep the educator abreast on areas of general interest as well. The program is designed to give the college and university faculty members a rewarding personal experience as well as a profitable professional experience that can be, upon their return, introduced into the university classroom.

Dr. Samuel Massenberg, Head of the Office of University Affairs, feels the program provides a valuable network for the educators. A number of first year fellows return, by invitation, for a second year of research. Many keep in contact with their NASA colleagues and encourage their students and their peers to participate in NASA programs. Still others continue their research studies under NASA grants.

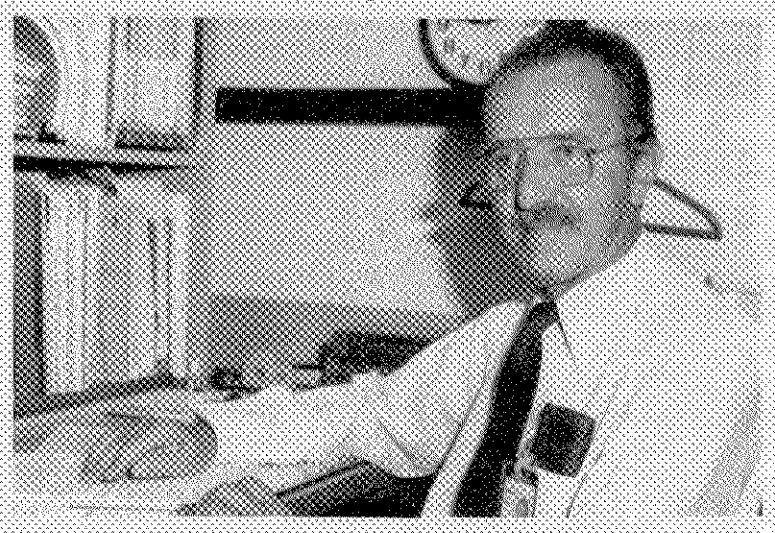


photo by Don Ward

Dr. Nenad Kondic, Professor of Mechanical Engineering, University of Puerto Rico, and ASEE participant comments on the program. "Besides being well organized, the program gives us a message: 'The applied sciences are alive and well and here to stay.' We understand the shifts and changing priorities, but continuous R&D work is what counts." Kondic has been working for the past ten weeks on the diffusion of super-critical oxygen into high pressure air under the mentorship of J. J. Singh, Instrument Research Division.

Langley Trains Students in SHARP Program

1987 SHARP STUDENTS AND MENTORS. Kneeling (L to R): C. F. Ng, Felicia Cofield, Dr. Sheila Long, Stephanie Gray, Kathryn Taylor, Chemene Pope, Crystal Garland, Nicole Vogelsang, Janet Goodwin, Mohamed Noor. Standing (L to R): Zanette Larrimore, Walt Darden, Geoffrey Tennille, Michael Mitchell, Debbie Nguyen, Mark Portanova, Cynthia Lach, John Franke, Ann Davis, Dr. Edward Long, Tracy Miller, Allan Taylor, William Scallion, Myong Chong, Jeanne Murphy, Gordon Bullock, Dr. Edward Taylor, Anthony Glover, Mark Iacobucci, Martin Palmaz, Allan Esposo, Thomas Holden, Michael Chapman, Victor Albea, S. J. Bavuso, Stephen Armstrong, Long Yip, Viet Ngo, Melvin Ferebee, John Cox. Not pictured: Dr. Joseph Heyman, Dr. Burnell McKissick, Sharon Perez, David Schryer, Dr. Charles Byvik.

Twenty high school students are participating in an eight-week intensive science and engineering apprenticeship program at the Langley Research Center this summer.

The Summer High School Apprentice Research Program, which was started in 1980 by the Public Affairs Division at NASA Headquarters, Washington, D.C., is designed for high school students who have demonstrated aptitude for and interest in science and engineering careers. Students who live within commuting distance of a participating NASA center, are U.S. citizens and will be 16 years old by the time the program begins in June are eligible to apply. The students selected are assigned to a mentor, who is a NASA scientist or engineer.

As apprentices, the students learn and earn. They participate in an orientation process that provides them with an overview of the NASA center's mission and the activities necessary to accomplish the center's goals and objectives.

During their apprenticeship, the students complete designated assignments, prepare written reports, make oral presentations, and participate in a variety of enrichment activities under the careful supervision of the SHARP program staff and mentors.

SHARP is a feeder program that is being used to build a resource pool of potential applicants for future NASA employment in the fields of science and engineering. SHARP is specifically designed to attract and serve minorities and women who are under- represented in the NASA scientific and engineering workforce. The program provides them with first-hand experience and information that will help them make decisions about a career in science, engineering or mathematics. Since the program began, 112 students have successfully completed the apprenticeship at Langley.

Ceremony Moved

Langley's Honor Awards Ceremony, previously held in the fall of each year, will be held in May 1988. At that time, NASA's and Langley's most prestigious honor awards will be presented to a number of selected individuals and/or groups who have distinguished themselves by their outstanding contributions. The callout for the NASA Honor Awards was issued to organizations June 30. Nominations for the Langley Honor Awards will be requested in early January.

LAA Carnival Special Events

In addition to game booths, arts and crafts, children's entertainment and the casino, the following special events are planned for this year's LAA Carnival:

Friday, August 21

6 p.m.: 1987 Carnival Monarch Coronation
7 p.m.: Brian McDonald, sax and vocal sync
8 p.m.: "Caravan East," mid-east dance group
9 p.m.: Music Group
10 p.m.: $1200 Grand Prize Drawing

Saturday, August 22

10 a.m.: 5-Mile Run
12 noon: Carnival Opens
1 p.m.: 4x440 Relay
5 p.m.: "Two Stepping Panhandlers," western dancers
8 p.m.: "Troop Amun-Ra," mid-east dancers
9 p.m.: Music Group
10 p.m.: $1500 Grand Prize Drawing

The Carnival will be held from 5 to 10 p.m. on Friday and from 12 noon until 10 p.m. on Saturday. Bingo is scheduled from 6 to 10 p.m. on Friday and 4 to 10 p.m. on Saturday. The casino will remain open until 11 p.m. both evenings. Prize drawings will be held every half-hour each day.

Competition Winner Tours Langley

photo by Terry Shepard

Geoffrey D. Considine, National Winner in NASA's Space Science Student Involvement Program (SSIP) Wind Tunnel Competition, visited Langley recently. Assigned to the Flight Dynamics Branch under the leadership of Joseph Johnson, Considine spent two weeks with Langley researchers, gathering information on advanced airfoil designs and making valuable contacts. A 1987 graduate of Watauga High School in Boone, N.C., Considine will be attending Georgia Institute of Technology in September where he plans to pursue a career in aeronautical engineering.

Current News Releases

To receive a copy of one of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-114.....Science Agencies to Investigate Ozone Hole
87-115.....NASA Selects New Centers for Commercial Development of Space
87-116.....Astronaut Jon McBride Named to Congressional Relations Post
87-117.....NASA Awards Contract for Replacement Shuttle Orbiter

Happenings

LAA SOCIAL scheduled for Friday, August 21 has been cancelled due to the Carnival. Join the fun at the Carnival Friday evening and all day Saturday. There are great prizes to be won!

LAA OFFICE CLOSED, except for Carnival business, Friday, August 21, and Monday, August 24.

TOASTMASTERS. NASA Toastmasters will have their regular semi-monthly meeting Wednesday, August 26, at 11:30 a.m., in the private dining room of the cafeteria. Guests are encouraged to call Steve Yaros, ext. 2673, for information.

RUNNERS CLUB will hold two races on Saturday, August 22, during the LAA Carnival. A 5-mile race begins at 10 a.m. on Doolittle Road and is open to all NASA and Contractor employees, family members, and friends. A 4x440 relay begins at 1 p.m. and is open to 4-person teams from each directorate or contractor. To enter relay teams or for more information, call Bill Woods, ext. 3984.

VPI/UVA BUS TRIP. A bus trip to the VPI/UVA football game on Saturday, Sept. 19, is being sponsored by the Peninsula Chapter of Va. Tech Alumni. Avoid the Scott Stadium traffic jam! $13/person includes transportation and snacks. Send your check payable to "Peninsula Chapter" to Heidi Derby, 1134 Willow Green Dr., Newport News, 23602, or call Joe Drewry at ext. 4933.

WASHINGTON, D.C. TRIP. A fall bus trip to the National Theater to see **Sweet Charity** has been planned for Oct. 10-11, with overnight accommodations at the Marriott. Bus pickups are scheduled for Hampton, Newport News, and Williamsburg. Plenty of time for sightseeing and shopping. Costs range from $85/person/quad to $165/person/single, and includes transportation, hotel, and orchestra theater seat for the Sat. matinee. Retirees and contractors are welcome. Contact Donna Speller, ext. 4002, for information. Deadline for reservations is Friday, Sept. 18.

CEBAF SEMINAR. A. C. Fonseca, Universidade Le Lisboa, will speak on "Faddeev-Born-Oppenheimer Equations for Molecular Three-Body Problems: application to H_2^+," Wednesday, August 19, 11:30 a.m., in CEBAF Room 53. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

swap and shop

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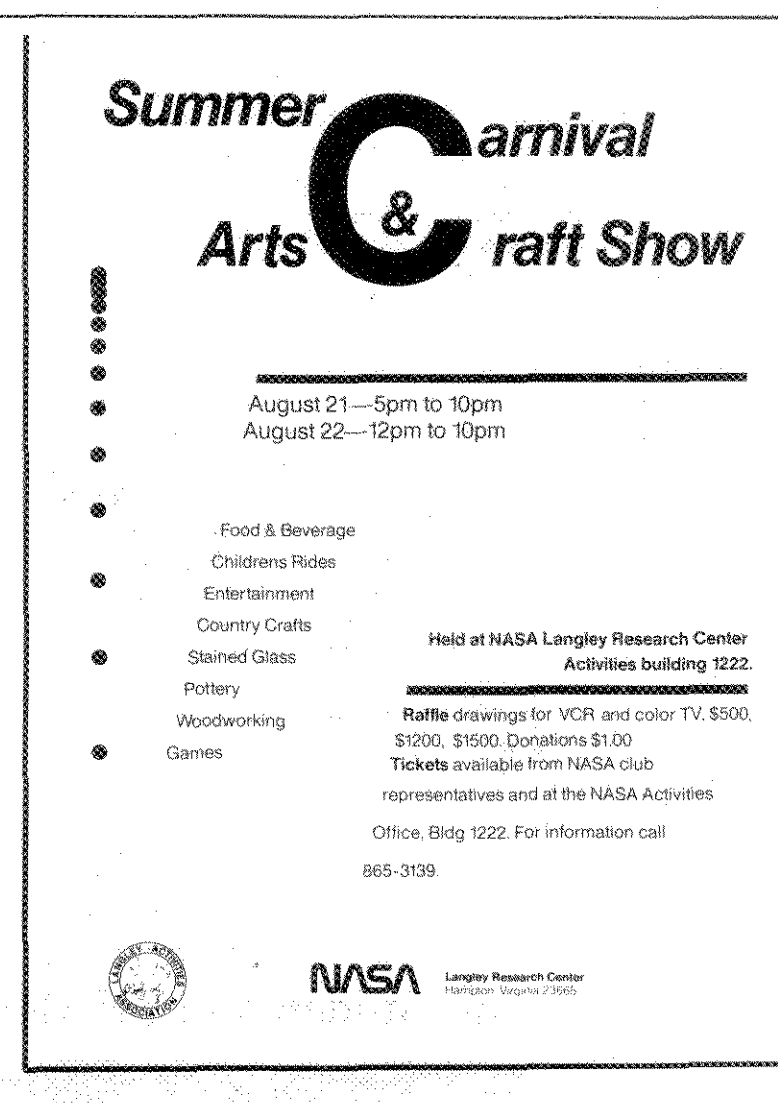
GENERATOR. Like new 1000 watt Onan portable generator. Weighs 58 lbs. $330. Call 826-6941.

HOME in Denbigh. 2-story, 3 BR, 1 1/2 bath, den, dining area, appliances, AC, on cul-de-sac. Owner anxious to sell. Will pay $1,000 in closing costs. Assumable. $77,900. Call 874-2246 after 5 p.m. weekdays.

ROOM/ROOMMATE

New female employee desires room for rent or roommate to share expenses. Starts mid-September. Call E. Lee, (205) 826-6039.



The Carnival is the biggest fund-raiser sponsored by the LAA. Support your Activities Association by participating in the weekend events. There will be fun and games appropriate for every member of the family and plenty of food and beverages.

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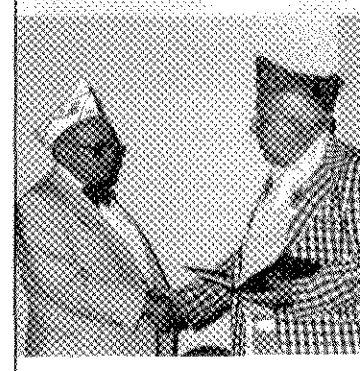
Due to problems with the typesetter, printing of this issue was delayed. We apologize for any inconvenience. -Editor

Leiss Leads War Veterans



Alan Laskoe (right), of the National Executive Committee of the Jewish War Veterans, inducts Abraham Leiss (left) as commander of the Jewish War Veterans of Virginia and North Carolina. Leiss retired from the SCOUT Project Office in February 1980.

Harvey's Selects Crew of Month

Harvey's Janitorial Service, Inc. recognizes employee teams who have excelled on their Facility Evaluation Reports. Selected as Crew of the Month for July are (standing, L to R) John Hitchcock, Elliott Burgess, Joe Ann Foster, Barbara Morton, and (seated) Daisy Brown and Sandra Bennett. This team obtained an Average Facility Evaluation score of 92 out of a possible 95 points.

The Senior Management Research Review will be held Monday, August 17, 1987, in Building 1219, Room 225, from 2 p.m. to 4 p.m. Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

TIME	TITLE OF TALK	SPEAKER
2:30	High-Power, Continuously Solar-Pumped, and Q-Switched Iodine Lasers	Ja Lee (Space/SSD)
2:45	Shortwave Radiation Models for the Earth-Atmosphere System	John Suttles (Space/ASD)
3:00	Viscous Induced Drag	George Greene (Aeronautics/HSAD)
3:15	A Fast Oxygen Monitoring and Control System for 8'-HTT	Jag Singh (Electronics/IRD)
3:30	Structural Optimization of an Alternate Design for the Space Shuttle Solid Rocket Booster Field Joint	Jean-Francois Barthelemy (Structures/IRO)
3:45	Multi-Computer Performance Simulation	Nicholas Murray (Flight Systems/FLMD)

NASA
National Aeronautics and Space Administration
Langley Research Center

News Researcher

Volume 1, Issue 4 August 28, 1987
Bi-weekly Employee and Contractor Publication

Langley Plans Combined Federal Campaign; Sets Goal at $250,000

CFC COMMITTEE CHOSEN. Langley's Combined Federal Campaign committee for 1987-1988 has been named by Director Richard H. Petersen. Dr. Ralph J. Muraca (center), is Chairman. Assisting him are (seated) H. Milton Holt, Co- Chairman; JoAnn Belsches, Secretary; (standing) Ben J. Schlichenmayer, American Federation of Government Employees Union; Jean Drummond Clough, Publicity Chairman; Roscoe C. Edge, NASA-Union Liaison; Frances Hartman, Financial Chairman; and Thomas Vranas, Pattern Makers Union. Absent from the photograph are Sue Wilder, Langley Alumni Association, and A. Gary Price, Langley representative to the Peninsula CFC.

The Langley Research Center is in the midst of planning the Combined Federal Campaign for 1987-88. Director Richard H. Petersen has appointed a campaign committee, headed by Dr. Ralph J. Muraca, Chief, Systems Engineering Division, to help the center meet its challenging goal of $250,000.

Langley will conduct a one-day centerwide solicitation Wednesday, **October 14**, preceded by a kickoff meeting for division chairmen, key solicitors and new employees Thursday, **October 8**, from 2 to 3 p.m. in the Activities Center.

Langley has always exceeded the goal set by the director and the campaign committee. Petersen has asked that Langley continue that tradition and support the campaign as the center has in the past. Langley's goal of $250,000 represents a 2 percent increase over last year's contributions and a 6 percent increase over last year's goal. This goal will provide a real challenge for Langley, but Petersen and the campaign committee are confident that the center will rise to the occasion on this our 70th Anniversary.

The CFC is not a charity drive. It is an opportunity for the Langley family to help improve the way of life on the Peninsula and in the communities. The Peninsula CFC goal is a tremendous $1.1 million, but that goal is attainable with the help of each Langley staff member. Most of the money contributed to the CFC is used directly to make the Peninsula a better place to live. Keep in mind, the money **you** give this year may some day help a member of your own family. Statistics show that one out of every three contributors receives help from an agency participating in the campaign.

Langley Contributes to Redesign of Solid Rocket Booster

-by Felicia D. Walker

The redesign of components for the Space Shuttle's solid rocket boosters and other elements continues to have a high priority for the Langley Research Center.

Since the Challenger accident in January 1986, there has been a total NASA effort to get the Shuttle operational again. Langley and other NASA centers have participated in many of the Shuttle- related projects.

In the structures area, Langley's first effort was to identify and evaluate the deficiencies of the original tang/clevis joint which contributed to the failure of Challenger's solid rocket booster. These field joints connect the five sections of the solid rocket booster case. Research done on these joints by the Marshall Space Flight Center led to the development of a new "capture feature" which is to be used as part of the new joint design. The capture feature is an addition to the old joint design. It uses more material on the inside of the tang which fits into another component of the joint, the clevis arm. Motion of the inner clevis arm is restricted and stress on the joint is reduced.

Langley also was a key participant in analyzing the newly selected joint design for the Shuttle. Langley researchers showed that some modifications of the original concept for the joint were deficient, and designers at Marshall and the Johnson Space Center subsequently modified the design to include the "capture feature" that employed an interference fit within the joint.

Langley's next major contribution to the redesign of the solid rocket boosters included analyzing the joints proposed for development, and later, designing an alternate solid rocket motor joint of its own for consideration.

Langley's alternate joint design is now being pursued for use in what is called the Block II studies, which involves research that calls for the design of a totally new solid rocket booster.

In reworking the Space Shuttle, NASA is taking the opportunity to improve many other parts of the booster/orbiter system. Over a billion dollars will have been spent to enhance the safety of the Shuttle system by the time the shuttle is launched again.

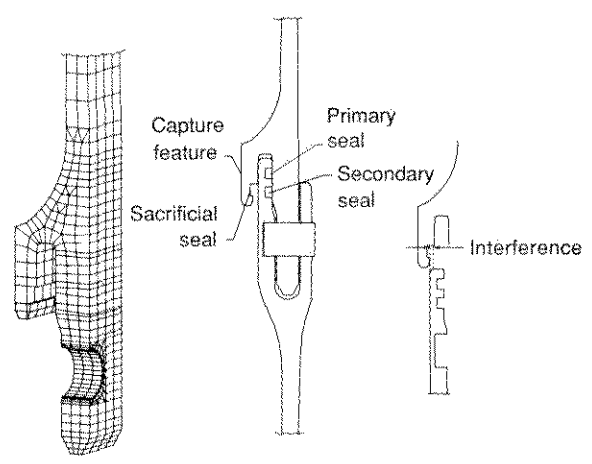
As part of this effort, Langley redesigned a tapered external tank attachment ring for consideration by Marshall. The external tank contains the propellants for the Shuttle's main engines and forms the backbone of the system before its launch. The tank attachment ring partially encircles the solid rocket booster shell and supports fittings that attach it to the external tank.

The current design of the tank attachment ring has had difficulty with bolt failures due to water impact after launch. The new design should eliminate the bolt failure problem and will weigh less than the original design.

Dr. Michael F. Card, chief of the Structures and Dynamics Division, will join the Marshall staff in early October to begin more research on the solid rocket booster.

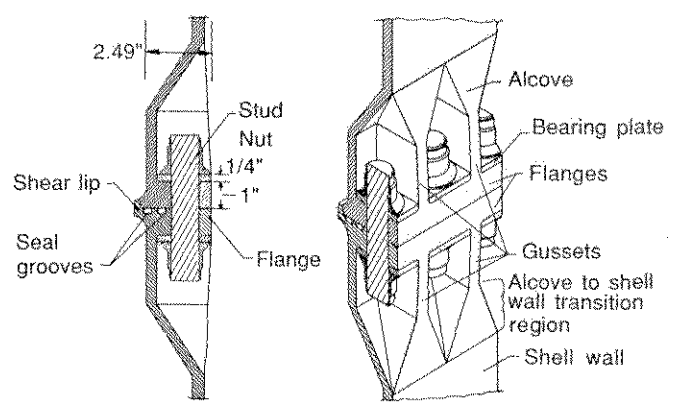
Card will work at Marshall for a year in the Science and Engineering Directorate. He will be working to create a cooperative project between Marshall and Langley involving research on a filament wound solid rocket motor case. The case is designed to be made of composite materials that have been proven to be stronger and lighter than conventional rocket motor case materials. The idea of this new technology is to wind the solid rocket booster case segments with this material. Because the case would be wound with composite materials, the configuration would be lighter than its predecessors, permitting larger Shuttle payloads.

CAPTURE-TANG CONCEPT



This illustration shows the new SRB "capture feature" which will be used in addition to the tang/clevis joint. The capture feature restricts motion of the inner clevis arm and reduces stress on the joint.

BOLTED JOINT CONCEPT



Langley's bolted joint concept calls for new forgings for the SRB pressure vessel segments and is being pursued for use in the Block II studies.

News Briefs

AMES-DRYDEN FLIGHT RESEARCH FACILITY, Edwards, Calif. — Following conclusion of a successful first phase, the Advanced Fighter Technology Integration (AFTI) F-111 aircraft, with its Mission Adaptive Wing (MAW), is entering its second phase of research flying at Ames-Dryden Flight Research Facility. The aircraft's wing has been modified so that the curvature of both the leading and trailing edges can be varied in flight. This enables the airplane to fly with optimum wing curvature at subsonic, transonic, and supersonic speeds, thus offering the potential for greater efficiency of flight.

HEADQUARTERS, Washington, D.C. — NASA recently announced it would initiate a study of a heavy lift launch vehicle that could use the engines, solid rocket boosters, external fuel tank, and launch facilities of the present Space Shuttle. The Shuttle orbiter could be replaced by an unmanned cargo element. The chief purpose of the study is to determine whether the vehicle–tentatively known as Shuttle-C (for cargo)–would be cost effective in assembling and operating the Space Station.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — Marshall Space Flight Center has awarded contracts to five aerospace firms for design and definition studies for an advanced solid rocket motor for the Space Shuttle. The 9-month contracts, not to exceed $3.3 million each, were awarded to Aerojet Solid Propulsion Company, Sacramento, Calif.; Atlantic Research Corporation of Alexandria, Va.; Hercules Aerospace Company's Aerospace Division of Salt Lake City, Utah; Morton Thiokol, Inc., of Brigham City, Utah; and United Technologies Chemical System Division of San Jose, Calif. These same firms performed conceptual studies of alternative solid rocket motor designs from September to December 1986.

HEADQUARTERS, Washington, D.C. — Effective August 24, Dr. Noel Hinners will serve as the NASA Chief Scientist in addition to his responsibilities as Associate Deputy Administrator/Institutions. Dr. Frank McDonald, who has been Chief Scientist since September 1982, will return to the Goddard Space Flight Center as Associate Director/Chief Scientist. As NASA Chief Scientist, Dr. Hinners will be the principal advisor to the Administrator and to senior management on agency-wide aspects of NASA's scientific activities.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — The deadline for amateur astronomers to submit proposals for observing time on NASA's Hubble Space Telescope has been extended from 1987 to June 1988 announced Stephen J. Edberg, Chairman of the Hubble Space Telescope Amateur Astronomer Working Group. Linking the deadline to the resumption of Space Shuttle operations, now scheduled for June 1988, will give amateur astronomers extra time to submit their proposals.

JET PROPULSION LABORATORY, Pasadena, Calif. — With one of its two spacecraft enroute to distant Neptune and the other exploring the outer solar system, the Voyager mission celebrated the 10th anniversary of its launch on Aug. 20. Voyagers 1 and 2 have logged billions of miles over the past decade, executing flybys of Jupiter, Saturn and Uranus. The two unmanned craft have relayed a staggering amount of data on each of the planetary systems, in the process discovering such phenomena as new moons, rings, and the first active volcano in space. After Voyager 2's encounter with Neptune in August 1989, the two spacecraft will continue out of the solar system in search of the heliopause.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017. Request information by release number and headline. See Current News Release information box on page 4.

Telemail become NASAMAIL

Attention Telemail Users

Currently, the intercenter electronic mail service, NASAMAIL, is provided with a subscription to Telenet's Telemail service. Since the account was established, the number of users has grown from a few people to over 5,000. Users access their NASA-sponsored Telemail mailboxes from NASA centers, contractor sites, and universities, both domestically and internationally.

In order to continue to provide the service cost effectively, a plan is underway to migrate all the users on the NASA account to a NASA-dedicated system. The dedicated system will use the "Telemail" application software; therefore, all user profiles, messages, files, and distribution lists will be transferred. As such, the impact on users will be minimal.

Since NASA users will actually be accessing a different computer, the access procedure will change somewhat. Users accessing their mailboxes through the NASA Packet Switched System (NPSS) will simply enter a different service name, "NASAMAIL" Those users now accessing mailboxes through Telenet will need a network ID to access the NASAMAIL host, which will be on the NASA network, NPSS.

It is anticipated that the cutover to the NASA dedicated Telemail system, NASAMAIL, will occur over the Labor Day weekend. As additional informaion is available, it will be posted on the NASA bulletin board and distributed to the NASA Telemail administrators. If you have any questions, please contact the LaRC Telemail Administrator Charles Yokum, ext. 4348, or Janis Yates, ext. 4434.

Lankley

LANKLEY TAKES A VACATION

Editorials

Langley

Headquarters Forum

The national news media continue to monitor the progress being made to return the Space Shuttle to flight status. Both praise and criticism are leveled at Shuttle officials on the progress of the recovery and on the planned engineering modifications. Amidst all of this national attention, Langley research teams–in their usual quiet and dedicated manner–analyze structures, test materials, modify designs, fabricate test articles, conduct tests, burn up thousands of CRU's and work weekends–just to provide answers to some of the key technical questions of the Shuttle recovery.

Last week, Tanner's team completed the 100th test of the Shuttle orbiter's tires at Langley's Aircraft Landing Dynamics Facility (ALDF). Shuttle landings at KSC are simulated, using ALDF's 200 mph capability and 3,000-foot runway test strip with the proper surface texture. Cindy, Mickey, and Scott completed their 200th test of the dynamic response of 'O' ring seals, simulating the conditions of the Shuttle's Solid Rocket Booster (SRB) field joint. Their unique test methods are adopted by the Marshall Center and Morton-Thiokol to evaluate SRB 'O' ring materials. Mike, a member of the National Research Council's SRB Design Oversight Committee, leaves the center to participate in the fourth committee meeting–with 57.4 pounds of design data. Harold and Jim use the structural testing machines in Building 1148 to validate Marty's idea to reduce bolt loads on the SRB-External Tank Attachment Ring. Butler's team reduces Marty's idea to engineering reality–50 precise engineering drawings and specifications. Amazingly, we took metal out of the ring and reduced the bolt loads. Bill and Norm use the IMAT capability to analyze the 'O' ring gap clearances for the new capture-tang design of the SRB field joints. An alternate field joint design concept lights up in the minds of Don and Carl. Engineering analysis is completed and a full-scale model segment appears from Langley's model shop.

Meanwhile, back at the 1229 computer room, Ron and Norm fire up the VAX and tune in their satellite fix on the Ames Cray XMP supercomputer. Structural load parameters are fed to the 80,000 DOF finite element model of the full-scale SRB on the XMP. The Langley shell analysis code (STAGS) cranks out answers to the eccentric loading associated with the Shuttle "twang" on lift-off. This is the largest structural analysis problem ever attempted by Langley. The Fab Shop completes its precision machining of fracture toughness specimens from SRB parts recovered after the Challenger accident. Jim and Tracy conduct fracture toughness tests of these samples.

With a rubber bungee, Sandy and Vern propel their 1/30-scale orbiter model across the floor in 1262 and into an arresting net made from Granny's fishing tackle. These subscale tests provided the baseline data for design of the arresting systems to be placed at alternate Shuttle landing sites in Benguerir, Morocco, and Zaragoza, Spain.

Bud, Larry, Huey, and Sandy revisit the 1975 orbiter water ditching loads data from scale-model tests run in Langley's tow tank. Johnson Space Center has the answers promptly to their requests for structural loads on a water ditching scenario. Precision Shuttle scale model tests take priority in the busy schedule of Langley's Unitary Wind Tunnel. George says we're looking for answers to questions like, "Can the astronauts safely eject from the orbiter during ascent?"

This is only a part of the story of the real people and the real events taking place at Langley. We are involved. We take great pride and satisfaction in the Langley response to the Shuttle recovery.

Charles P. Blankenship
Director for Structures

Support the Combined Federal Campaign by giving, generously, your fair share.

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

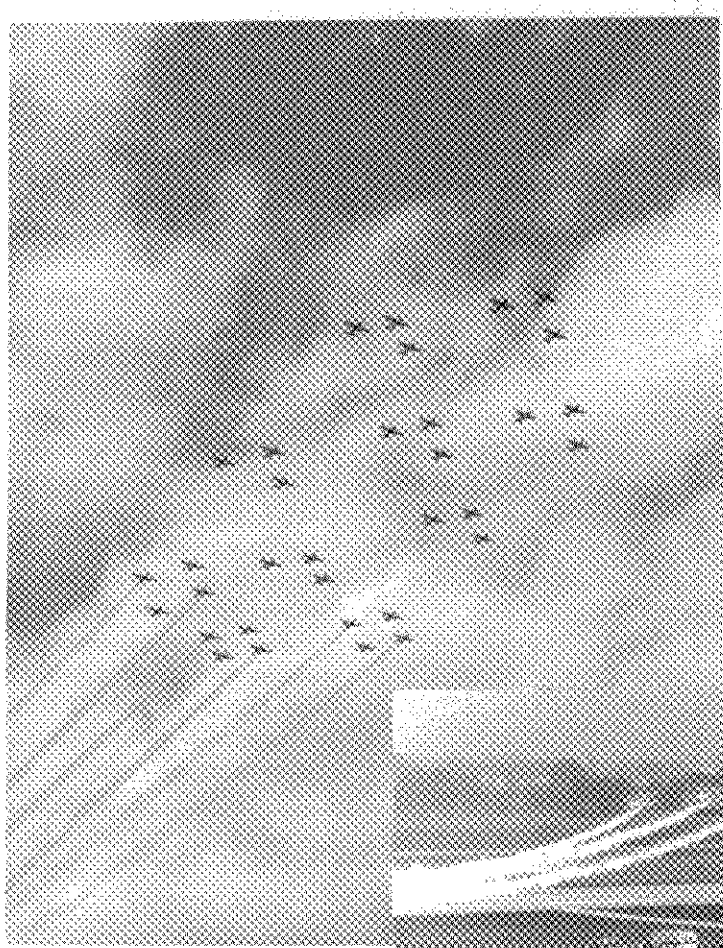
Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

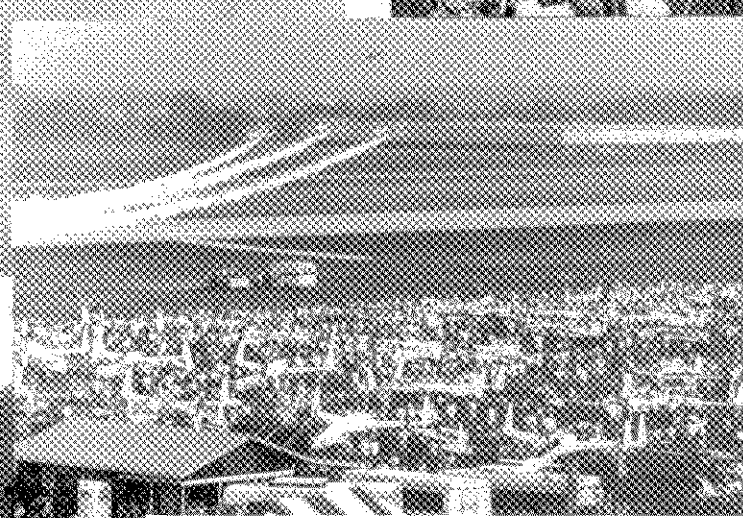
Photographs . . . . . Photo Lab

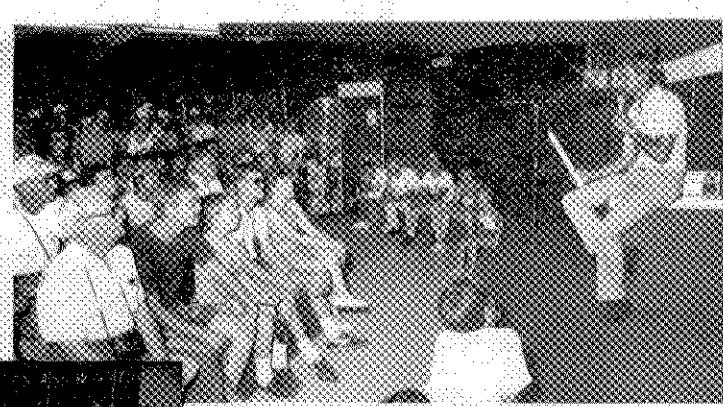
The privilege of advertising articles in this publication is restricted to the staff of the Langley Research Center. Articles advertised here must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

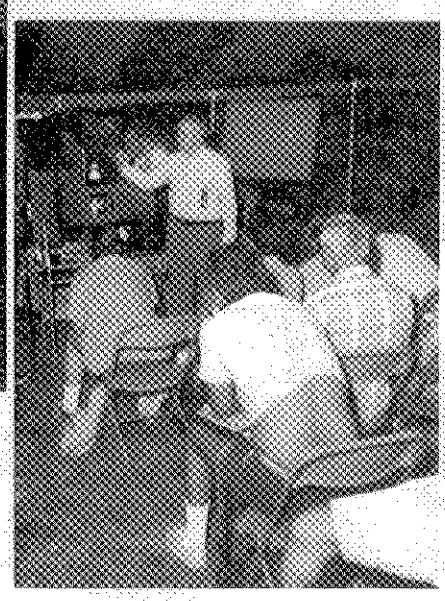
OSHKOSH '87



-photos courtesy of Donald C. Huber, Lewis Research Center







The 'Spirit' of Aviation: Oshkosh '87

From July 31 through August 7, 1987, Oshkosh, Wisc., was, once again, the aviation capital of the world. During those eight days, Wittman Field parked more airplanes and experienced more takeoffs and landings than any other airport in the world. Oshkosh became home to aviation enthusiasts from every state in the union and nearly 75 foreign countries.

This affinity between people and airplanes is the main attraction at Oshkosh. The friendly exchange of information characteristic of Oshkosh makes the EAA Annual Convention the world's largest outdoor classroom.

Again this year, NASA was a major exhibitor and a major contributor to the "learn from the experts" forum program. The NASA exhibit, entitled "Flight Path to the Future," showcased technologies for substantially faster, safer, quieter, more fuel efficient, and more maneuverable aircraft.

Langley was well represented at Oshkosh '87. Through the enthusiasm captured in these photographs, you are invited to catch the "spirit" of aviation that is Oshkosh.

Astronaut Speaks at Visitor Center

On Friday, August 28, at 7 p.m., the Visitor Center will kick off its fall evening lecture series with a special presentation by astronaut Byron K. Lichtenberg. Dr. Lichtenberg, a payload specialist astronaut on the first spacelab mission, will discuss his experiences in space.

He flew on Space Shuttle Columbia in November, 1983, and conducted over 70 experiments in astronomy, physics, biology, and materials science.

Lichtenberg will describe his experience through a narrated movie showing the many different aspects of space flight. In addition, he will describe the current and future roles of humans in space with reference to the Space Station. Finally, a short tour of Earth as viewed from space will emphasize the changes in perspective that space travelers experience regardless of background or nationality.

Lichtenberg has combined a distinguished career in aerospace, mechanical, and bioengineering with more than 2,100 hours of flight experience. He received a master's degree in mechanical engineering and a doctorate in biomedical engineering from Massachusetts Institute of Technology. He has received numerous medals, including the NASA Spaceflight Medal. Lichtenberg spent four years as a U.S. Air Force fighter pilot; during a tour in Vietnam, he was awarded two Distinguished Flying Crosses and eleven Air Medals. In June 1978, Lichtenberg was selected to train for the Spacelab 1 mission as one of two

U.S. payload specialists.

Lichtenberg is now president of Payload Systems, Inc., a spaceflight consulting firm assisting commercial, university, and foreign government research and development efforts in space. In the future, Lichtenberg will be returning to space as a payload specialist aboard the Atlas-1 mission.

Alumni News and Views

The Board of Directors of the LaRC Alumni Association met on July 29 and is pleased to report that the Social and Program Committees have some good things planned during October and November.

A motion by Abe Leiss, Social Chairman, that the Alumni Association proceed in planning a banquet honoring the Center prior to the October 24 Open House was unanimously approved. The date selected is October 17 – keep this date open and watch for a mailing including full details.

Don Ward, Program Chairman, and his committee are planning a breakfast or a luncheon meeting during November featuring a briefing to update alumni on a major NASA project/program. Watch for further details.

The Membership Committee reports the addition of 50 members since mid-July. Membership applications will be included with the mailing concerning the banquet.

Currently, we are seeking those willing to help with the CFC drive; in particular, help receiving and recording pledges and donations. Anyone willing to spend a few hours a week, contact Frances Hartman, 865-2159.

Remember to save the evening of October 17 to join us at the Williamsburg Hilton in honor of Langley's 70th Anniversary.

Current News Releases

To receive a copy on one of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-118.....Second-Phase Flight Tests Set for Mission Adaptive Wing
87-119.....NASA Initiates Heavy Lift Launch Vehicle Study
87-120.....NASA Awards Advanced Solid Rocket Motor Study Contracts
87-121.....Hinners Named NASA Chief Scientist
87-122.....Space Telescope Amateur Astronomers Receive Proposal Extension
87-123.....Voyager Spacecraft Mark 10 Years of Exploration

PRC Kentron Awarded Mod to Technical Support Contract

The Aerospace Technologies Division of PRC Kentron of Hampton, has been awarded a modification to an existing contract at the Langley Research Center. The contract modification allows the company to exercise the option of providing technical support for aerospace research and development for the final two years of the contract.

Under the terms of the contract modification, PRC Kentron will provide technical support for most of Langley's aeronautics and space research programs, including low, transonic and high-speed aerodynamics; electronic flight dynamics and control, instrument measurements, flight electronics and control systems; space systems and atmospheric sciences; acoustics and noise reduction, materials, loads and aeroelasticity, structures and dynamics; projects involving multi-disciplinary aerospace systems; and systems and facilities engineering.

The cost-plus-award-fee modification has a dollar value of approximately $57.8 million. Most of the work will be done at the company's Hampton facility with special jobs performed at Langley.

Patent Awarded to Langley and DEI Engineers

An aerospace engineer at the Langley Research Center was recently awarded a patent, along with a Dynamic Engineering, Incorporated engineer, for work on an advanced airplane concept with potential for major improvements in fuel efficiency.

Joseph L. Johnson, Jr., head of the Flight Dynamics Branch, worked jointly with Dynamic Engineering's E. Richard White, program manager of Experimental Aeronautics in the Technology Division. White and Johnson came up with the invention when White was with Kentron International. They used recent technologies found in aerodynamics and propulsion research to create the new concept.

Johnson and White's new type of aircraft incorporates an over- the-wing propeller design. This type of design places the engines and enclosing shelters for the engines (nacelles) above the wing. Wind tunnel tests have proven that there is a considerable improvement in the plane's cruise performance and its rate of climb. The new propeller placement causes an increase in aircraft lift and a reduction in drag.

Langley Directives Distributed

DIRECTIVES NUMBER	TITLE	DATE	T.S.#	DATE DISTR
REVISED:				
LHB 1740.4	"Facility System Safety Analysis and Configuration Management"	June 1987	—	7-22-87
LHB 1710.15	Change 1, "Wind Tunnel Model Systems Criteria"	6-17-87	—	7-23-87
LMD 1200.23	"Appointment of Langley Research Center (LaRC) Metrication Coordinator"	7-10-87	1543	8-10-87
LMD 1200.22	"Processing of Monetary Claims (General)"	7-10-87	1544	8-10-87
LMD 1200.17	"Redelegation of Authority to Take Certain Actions Under the NASA Privacy Act Regulations"	7-10-87	1545	8-10-87
LMD 1200.6	"Power and Authority to Review Committee Functions and Membership"	7-10-87	1546	8-10-87
LMI 3510.1	"Position Classification Program"	7-10-87	1547	8-10-87
LMI 1420.1	"Forms Management Program"	7-10-87	1548	8-10-87
LMI 2200.1	"Requests from Foreign Countries for Reprints and Unclassified NASA Reports"	7-13-87	1549	8-10-87
LMI 3733.1	"Political Activitiy of Federal Employees"	7-13-87	1550	8-10-87
LMD 1200.24	"Delegation of Authority to Establish and Maintain Records for all Top Secret Information"	7-30-87	1551	8-12-87
NEW:				
LMI 1800.2	"Langley Research Center (LaRC) Physical Fitness Program"	7-30-87	1552	8-12-87
REVISED:				
LMD 1200.9	"Redelegation of Authority to Act on Grievances	7-30-87	1553	8-12-87
LMD 1200.5	"Delegation of Authority to Take Disciplinary and Adverse Actions"	7-30-87	1554	8-12-87
LMI 2230.2	"Langley Research Center's (LaRC's) Guidelines for the Transfer of Scientific and Technical (S&T) Information (Document Availability Authorization (DAA))"	7-30-87	1555	8-12-87
LMI 2200.4	"NASA Langley Research Center (LaRC) High-Numbered Technical Memorandum"	7-30-87	1556	8-10-87

NOTE: Directives are available for review in each organizational office. Extra copies may be obtained from the Directives and Forms Management Office, ext. 3511.

People & Places

Positions Open

The following Competitive Placement Positions are currently open:

87-58: Supervisory Personnel Staffing and Classification Specialist, GM-0201-13 or 14, Management Operations Directorate, Personnel Division, Placement and Position Management Branch. Closes Sept. 18.

87-60: Program Analysis Officer, GS-0345-12 or GM-13, Systems Engineering Division, Engineering Analysis Branch, Schedule Analysis and Control Section. Closes August 31.

87-61: Communications Resources Assistant, GS-0303-5 or 6, Fabrication Division, Electronics Technology Branch, Fabrication Support Unit. closes August 31.

87-62: Production Controller, GS-1152-9 or 10, Fabrication Division, Resources and Contracts Branch, Contractual Resources Section. Closes September 2.

87-63: AST, Aerospace Flight Systems, Aerospace Engineer, GS- 0861-14 or 15, Systems Engineering Division. Closes Sept. 11.

87-64: AST, Fluid and Flight Mechanics Program Management, GM-0861-14 or 15, Aeronautics Directorate, High-Speed Aerodynamics Division. Closes September 9.

The following Army Merit Promotion position is currently open:

A87-2: Secretary (Typing), GS-318-5, Aerostructures Directorate, Research Support Division. Closes September 4.

Positions Filled

James F. Watson, Jr. has been selected AST, Electrical Equipment Supervisory Electrical Engineer, Facility Automated Controls Section, Electronic Systems Branch, Facilities Engineering Division, under CPP 87-43.

William R. Kivett has been selected Procurement Officer, Acquisition Division, under CPP 87-44.

Take Note:

On September 11, 1987, at 2:30 p.m., F.Y.1987 will officially end for all stock issues and turn-ins and all F.Y. 1987 Job Orders will be closed for stock transactions. Any issues or turn-ins received against F.Y. 1987 job orders after this time will be rejected. Any transactions received against valid job orders after this time will be processed in F.Y. 1988.

Club News

Study Oriental Martial Arts at Langley

The mere phrase "Martial Arts" evokes visions of violence performed by persons expressing or forcing their points of view upon others. This vision is generally not the case for the majority of those studying the martial arts.

In early oriental history, the martial arts were developed to aid in the survival of passive and physically weak people. Today the situations which require those defensive-survival tactics of the past are almost non-existant. So the obvious question arises: "Why study the martial arts today?"

Cardiovascular exercise, self-defense for all, mental discipline, and holistic body training are but a few answers to that question. Knowledge of marital arts technique can help in many daily life situations, especially in making split-second decisions to avoid injury. The Arts Club (LOMAC) can provide this type of training and is different from most karate establishments.

LOMAC studies a newly developed style of martial art called "Cuong Nhu," which means "hard and soft" and combines techniques from Vietnamese, Chinese, Japanese, and boxing martial arts. This combination allows the student to learn the particular techniques which suit his/her physical limitations and opens the mind for several avenues of growth.

Classes currently being taught range from beginner to black belt candidates. New students will be accepted between September 9-30.

Classes are held Mondays and Wednesdays from 5-6:30 p.m. in the NASA gym. For more information, contact Roy Albang, ext. 3737, or Guillo Gonzalez, ext 4621.

Langley Director Richard H. Petersen (right) presents a certificate of appreciation to Langley Teacher in Space Finalist Niki Wenger "for her outstanding effort and enthusiasm as an advocate of NASA Science and Technology Programs to the educational community and the general public." Wenger is returning to Parkersburg, W. VA., and the classroom after a two-year leave of absense during which she has been assigned to the Office of Public Services.

Radio Training Classes Offered

The Southern Peninsula Amateur Radio Klub (SPARK) will offer a course in amateur radio intended for anyone interested in becoming an FCC licensed "ham" radio operator. Classes will begin on Tuesday, September 8 and extend Tuesdays and Thursdays through November 24. The classes will meet from 7 to 9 p.m. at St. Luke's Methodist Church, 46 Ella Taylor Road, Grafton. Pre-registration is required. The class is offered as a public service of SPARK; there will be a cost for textbooks and other materials. for further information and registration, call 898-3774 or 898-8031.

The Williamsburg Amateur Radio Club will offer an amateur radio novice course in cooperation with the Special Programs Office of the College of William and Mary. This course is designed to prepare beginners for the FCC Novice Exam; no background in electronics is required. The ten-week class will meet on the W&M campus from 7 to 9:30 p.m. on Mondays, beginning September 21. Course fee of $20 provides the classroom; instructors are volunteers. Textbook fee is $15; books will be ordered at the initial class. To register, call the W&M Special Programs Office, 253-4084 or 253 4047. For information about course content, call Andy Swanson, WJ4X, 253-2811.

Celebrating 70 Years of Research

Langley's Research Lab Takes to the Air

Aft flight deck of the Terminal Configured Vehicle, now called the Transport Systems Research Vehicle (TSRV). The modified Boeing 737 is a flying laboratory. Inside the cockpit are James Patton (left), former Head of Flight Operations, and Perry Deal (right), retired Research Pilot.

This 1973 photo shows the state-of-the-art technology of that era. Watch for information on the upgraded TSRV, a vehicle of the ATOPS (Advanced Transport Operating Systems) program, in the next issue.

CEBAF Announces Fall Lecture Series

Professor J. Dirk Walecka, Scientific Director, CEBAF, will begin a series of graduate level physics lectures targeted to the scientific/engineering community.

These lectures will be divided into three blocks of ten weeks each with two lectures per week. The lectures will be held on Tuesdays and Thursdays from 12 noon until 1:30 p.m. in CEBAF Room 53.

The first session will start on September 29 and will continue through December 10, 1987.

For additional information contact Walecka at 875-7883.

New Horizons Honors Langley

Edwin J. Prior (right), Technical Assistant to the Chief Scientist, accepts a plaque on behalf of NASA Langley Research Center from Cecil Phillips, (right), Chairman of the Board of Trustees for New Horizons Technical Center. The plaque was presented to Langley for the commitment and outstanding partnership NASA has displayed to New Horizons since 1985. Twenty-eight Langley engineers and scientists served as mentors to New Horizons' students during the 1986-87 academic year.

Happenings

LAA SOCIAL will be held Friday, September 4, from 4 to 6:30 p.m. in the Activities Center.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, September 8, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

ATLANTIC CITY. The LAA is sponsoring a trip to Atlantic City, October 23-25. Cost: Single/$241; Double/$146 each; Triple/$124 each; Quad/$113 each. Fifty percent deposit is required by Aug. 31. Balance is due by Sept. 21. For more information call Frankie or Margaret at the LAA office, ext. 3139.

DANCE. The Country-Western Dance Club will hold a dance at the Activities Center, September 11, 7:30-11:30 p.m. Taped music by Chuck Kessler. Bring food for the community table and bring a friend.

FORBIDDEN BROADWAY, off-Broadway's long running musical spoof, is at the Wells Theater through August 30. For schedule of performances, call 627-1234.

RUGBY. Newport News Rugby Club is seeking interested players. No experience necessary. Practice held at Warwick High School, Tuesdays and Thursdays, 7 p.m. For more informatons, call Gene Whitney, 875-0570, after 6 p.m.

WASHINGTON, D.C. TRIP. A fall bus trip to the National Theater to see **Sweet Charity** has been planned for Oct. 10-11, with overnight accommodations at the Marriott. Bus pickups are scheduled for Hampton, Newport News, and Williamsburg. Plenty of time for sightseeing and shopping. Costs range from $85/person/quad to $165/person/single, and includes transportation, hotel, and orchestra theater seat for the Sat. matinee. Retirees and contractors are welcome. Contact Donna Speller, ext. 4002, for informations. Deadline for reservations is Friday, September 4.

MARTIAL ARTS classes are held Mondays and Wednesdays, 5-6:30 p.m., in the NASA gym. Contact Guillo Gonzalez, ext. 4621, for club membership information.

PICNIC. All current and former employees of Financial Management/Fiscal Division are invited to a picnic Sunday, September 13. If you have not been contacted, call Renee Wallace, 865-3174 for reservations.

A.S.M. BARBECUE. American Society of Metals Fall Barbecue, Monday, September 14, 5 p.m.-?, Activities Center grounds. Come renew acquaintances at the A.S.M. picnic. For more information, contact Cindi Lach, ext. 2338.

BINGO. LAA Bingo is held every Thursday night beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, please contact Eugene Hicks, ext. 3737.

swap and shop

FOR SALE

WOODSTOVE. Fisher Grandma Bear. Used approx. 3 yrs. $350. Call N. W. Reynolds, 868-9219.

lost and found

TWO GOLD CHAINS lost in parking lot behind 1149. One chain has a dollar sign charm and the other a garnet stone charm. Much sentimental value. If found, PLEASE call Benita Mitchell, ext. 2605, mail stop 293.

wanted

CAR POOL MEMBER wanted from Williamsburg to West Area on 8 a.m. shift. Call Carl Pearson, ext. 3423.

ASME Meeting

The American Society of Mechanical Engineers (ASME) will present Professor Art Koblasz of Georgia Tech who will discuss "Human Factors in Engineering - - Stationary Exercise Games" on Wednesday, September 23. The program will cover devices being developed by Georgia Tech faculty and students for rehabilitation applications, with emphasis on a semi-reclining, computer-controlled exercise bike.

The meeting will be held at the Port Arthur restaurant, 11137 Warwick Blvd, Newport News and begins with a cash bar at 6 p.m. followed by dinner ($12/person) at 6:45 p.m. Non-members are invited to attend.

Please make reservations by September 18 by contacting Gail Warner, 688-9946, or Laura O'Connor, 865-4440.

Visitor Center Announces Fall Program Schedule

Man has used his ingenuity in design and engineering to adapt to many difficult and challenging environments. This fall, the Visitor Center will look at what is perhaps man's greatest challenge to date – the construction of large structures in space and the establishment of a permanently manned Space Station. A special series of monthly evening lecture programs will be featured.

In keeping with the theme "Construction in Space," the focus for fall programming will be:

September....Hard Hats in Space

October.....Robotics: Human vs. Machine

November.....Space Station: The Next Step

Heard Discusses Space Construction

September's programs will focus on new types of structures and building techniques designed to accommodate the unusual conditions of the space environment.

On September 10, at 7 p.m., the Visitor Center will present a special program on building in space. The speaker will be Doug Heard, an expert on space construction techniques who has spent more than 50 hours in simulated zero gravity studying these techniques.

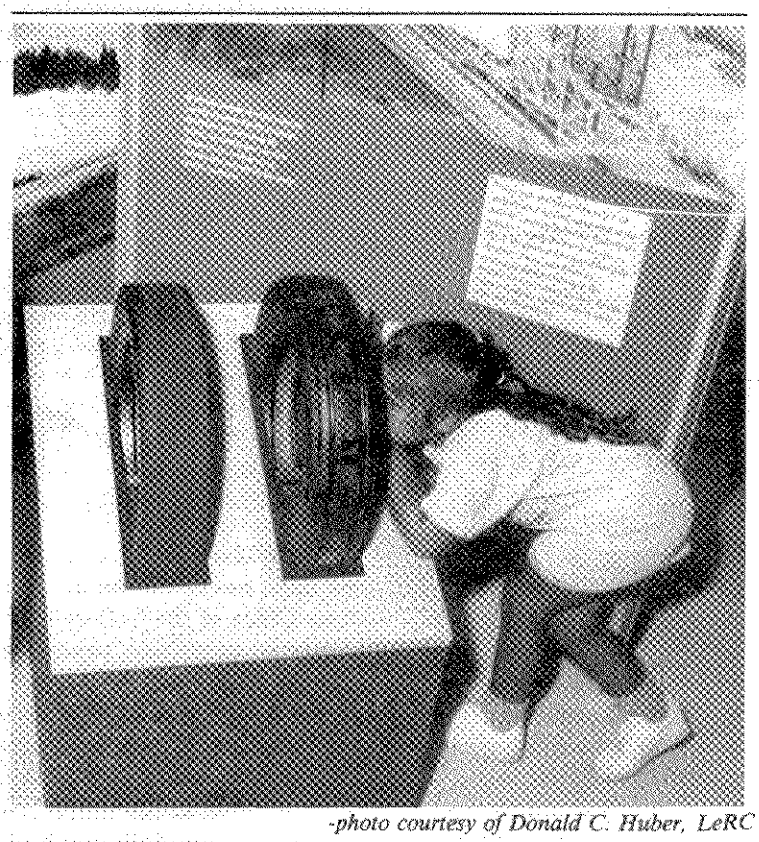
Through the month, a large section of NASA's proposed Space Station structure will be on display with a video demonstrating how this structure was developed. In the Visitor Center theater, a film featuring two astronauts assembling the ACCESS structure in space will be shown daily at 11 a.m. and 3 p.m.

Engineer in Charge Now Available

A limited number of autographed copies of **Engineer in Charge: A History of Langley Aeronautical Laboratory, 1917-1958** by James R. Hansen are available at the Visitor Center Souvenir Counter. This publication is a history of the organizational growth and research activities of Langley Aeronautical Laboratory, from its founding in 1917 until 1958, when NACA became a part of the newly formed NASA.

Former Director Donald P. Hearth writes: "Langley has only just begun to be called upon by the aerospace community for the things only Langley can provide. NASA has called upon James R. Hansen for an accurate rejuvenation of Langley's living memory."

Hansen is Historian-in-Residence at Langley. **Engineer in Charge** is the product of over four years of research.



-photo courtesy of Donald C. Huber, LeRC

There was something of interest for everyone at Oshkosh '87. See photographic insert, the "Spirit of Aviation," page 3.

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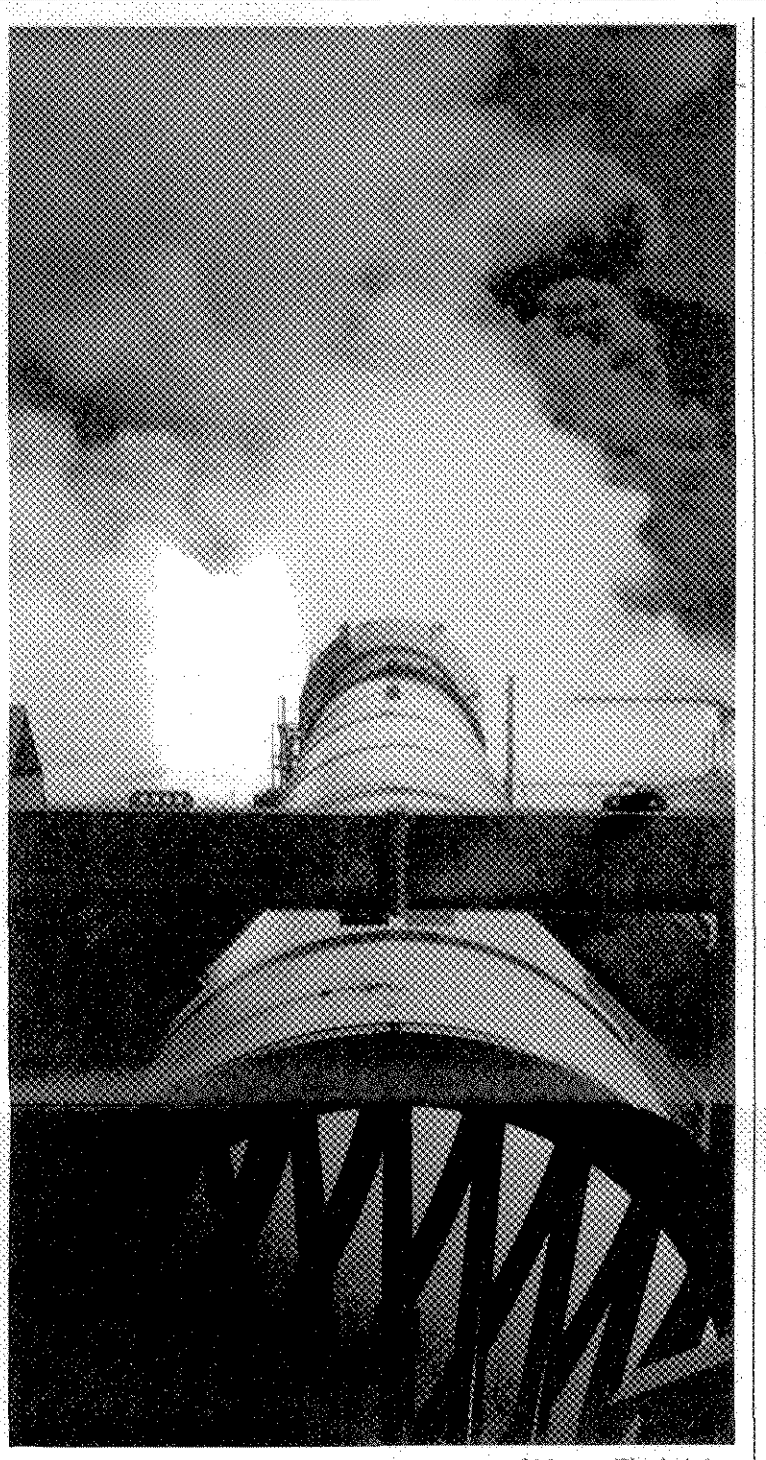
NASA
National Aeronautics and
Space Administration

Langley Research Center

Volume 1, Issue 5 September 11, 1987

News Researcher

Bi-weekly Employee and Contractor Publication



-photo courtesy of Morton Thiokol, Inc.

FIRE! After several aborted attempts, the redesigned Space Shuttle solid rocket motor DM-8 roared to life in a successful two-minute test firing on August 30. The motor was the first to contain all the features of the redesign program, including bonded internal insulation, capture feature, added O-ring and joint heater on each of the three field joints, and the radially- bolted case-to-nozzle joint.

Kivett to Head Acquisition Division

William R. Kivett has been selected as Chief, Acquisition Division, at the Langley Research Center. In this position since August, he is responsible for managing the center's procurement program and advising center management on acquisition-related matters.

Formerly the assistant division chief, Kivett has been with Langley since January 1964. He has served as Head, Contract Administration Section; Assistant Head, Research and Technology Contracting Branch; and Head, Contracts Branch.

Before joining the Langley staff, Kivett worked for Western Electric Company in Burlington, N.C. He served in the U.S. Navy from May 1946 to March 1948.

A native of Burlington, he received a bachelor's degree in business administration from Elon College in 1951. He is a certified professional contract manager, a Fellow in the National Contract Management Association and a member of the National Council of Fellows.

Kivett and his wife, Margaret, live in Hampton. They have two daughters.

CFC Chairman's Message

Langley is 'Shaping Tomorrow' in Many Ways

1987 marks Langley's 70th Anniversary. During the last 70 years, Langley has made some of the most revolutionary contributions to aeronautics and space technology...contributions which have provided the decisive advantage for our military aircraft, made air travel safer and more efficient, allowed space to be explored, and also improved the quality of life on Earth. The theme for our anniversary celebration is "Shaping Tomorrow," and it is certainly appropriate as the research and technology going on today will have a dramatic impact on the future.

There is another way in which the people of Langley are shaping the future. That is through their support of the Combined Federal Campaign. Since 1953, Langley has been contributing to the needs of the people in the communities in which we live through a coordinated fund-raising drive. First, it was the Community Chest, then the United fund, and now the Combined Federal Campaign. So, as Langley celebrates its 70th birthday, it also celebrates its 34th anniversary of contributing to the needs of others. The theme for the CFC drive could also be "Shaping Tomorrow," and the Langley people can take equal pride in their contributions to this effort.

The funds contributed to the CFC find their way through many agencies to finally help the less fortunate in the communities in which we live. How many lives have been affected, how many futures have been shaped, because help has been available to people in need? Unlike our technical accomplishments, we will never be able to answer these questions and it is really not important that we do. What is important is that we continue to support the CFC to the greatest extent possible.

In this our 70th Anniversary year, we have set a goal of $250,000 for the CFC campaign. This represents a significant increase over last year's goal, but we are confident that the people of Langley, in their traditional fashion, will rise to the challenge.

Ralph J. Muraca
Chairman
1987-88 CFC

AMF Replaces SATO

Ask Mr. Foster Travel Services Arranges NASA Travel

Effective August 31, 1987, Ask Mr. Foster Travel (AMF Travel) will provide travel services to Langley employees. AMF Travel replaces SATO which has served the travel needs of the Agency since 1965.

A 1986 decision led NASA to competitively acquire travel services for the Agency. A formal request for proposals (RFP) was issued in the fall of 1986.

A NASA procurement evaluation committee evaluated 40 proposals and awarded a contract to Ask Mr. Foster for all NASA centers except Kennedy, reported Jim Ogiba of Langley's Financial Management Division.

Ogiba noted that the contract was structured to ensure quality service. Because it employs a variable rebate concept, it is to the contractor's advantage to provide the best service possible. NASA will periodically evaluate the services rendered and will adjust the commission shared with the travel contractor accordingly.

Travel agencies earn their revenues on commissions received from airline, motel, and rental car companies. Under the contract, NASA will pay nothing for the services rendered, but will allow the travel contractor to earn commission on the Agency's $20 million worth of annual travel.

Ask Mr. Foster is the largest independently owned travel agency in the U.S. They provide government, business, and vacation services from over 460 offices throughout the nation. In addition to making airline reservations, AMF Travel will provide total travel cost estimates, rental vehicle reservations, international travel services, lodging reservations, seminar and meeting arrangements, and emergency travel services outside regular business hours. Personal travel services will also be available.

Traci Knoepfel is the on-site manager and will be assisted by a staff of four. Ask Mr. Foster is located in Building 1192 and will be available Monday through Friday, 8 a.m. to 4:30 p.m., ext. 2134. After-hours emergency travel service is also provided.

You are cordially invited. . .

All Langley employees are invited to attend the 70th Anniversary Banquet and Dance sponsored by the Langley Alumni Association at the Williamsburg Hilton (Kingsmill) on October 17, 1987.

A fun evening is planned beginning with cocktails at 6:30 p.m. (cash bar). Dinner is at 7:30 and, following a program in honor of Langley's anniversary, dancing to the music of Charlie Johnson's Band will conclude the festivities. The cost is $16 per person. Tables can be reserved for groups of 10.

Send a check for reservations to Mrs. Betty Joyner, c/o Eagle Engineering, Inc., Tower Box 77, 2101 Executive Drive, Hampton, VA 23666, by October 1. To reserve a table send all reservations at one time and indicate your desire to sit together. Seating is limited, only the first 800 can be accommodated.

News Briefs

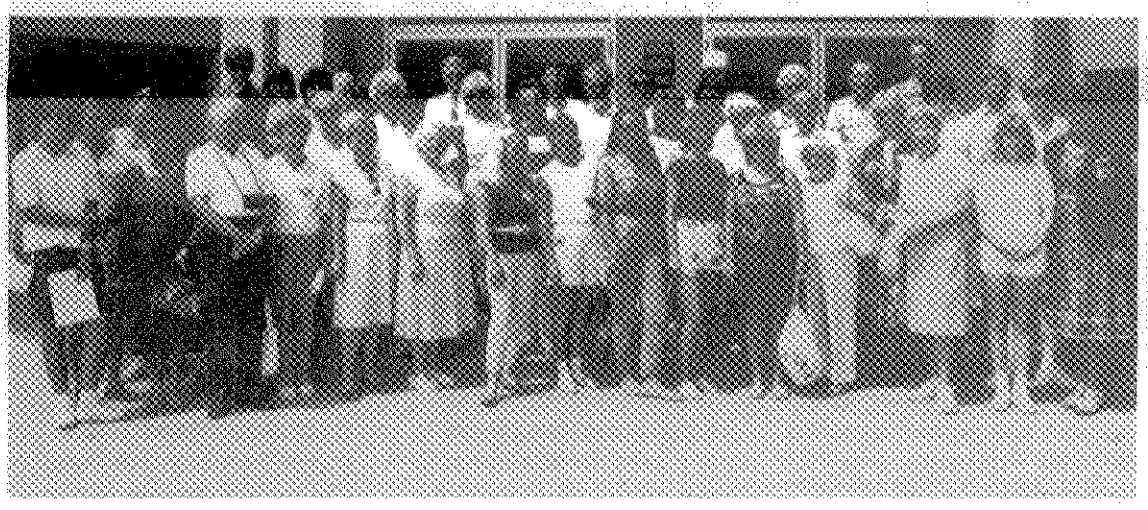
LEWIS RESEARCH CENTER, Cleveland, Ohio — A Mod-5B wind turbine, part of a U.S. government program to investigate the capability of large wind turbines, went on line July 28 as a new renewable source of electric power on the Hawaiian Electric Company grid. During utility operation at the Kahuku site, the Mod-5B is expected to generate more than 13 million kilowatt hours of electrical energy annually. This represents as much energy as would be used by 1300 typical single family homes.

HEADQUARTERS, Washington, D.C. — Isaac T. Gillam IV, NASA Assistant Administrator for Commercial Programs, retired September 1 after a distinguished 34-year career of federal service. Gillam was named to head NASA's newly created Office of Commercial Programs in September 1984 and has led the agency's efforts to expand U.S. private sector investment and involvement in civil space-related activities. Lawrence Herbolsheimer, Deputy Assistant Administrator in the Office of Commercial Programs, has been named Acting Assistant Administrator.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — NASA has issued a request for proposals inviting industry to compete for two phase systems definition study contracts for Shuttle-C. Shuttle-C will use the propulsion elements of the current Space Shuttle with the orbiter being replaced by a cargo element. Shuttle-C would provide an additional payload capability to that of the Shuttle orbiter fleet. The most immediate value of the Shuttle-C would be for Space Station assembly and logistics. It would also be available for future science missions, especially missions to the outer planets.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — A solid rocket motor being developed for NASA's Delta launch vehicles failed during a ground performance test firing at the Redstone Arsenal at Huntsville, Ala. The Castor IVA rocket, under development for NASA by Morton Thiokol, experienced a failure in the steel forward dome approximately five seconds into a 58-second test. The incident caused failure of the hold-down restraints and allowed the rocket to escape the test stand. It skidded along the ground and came to rest approximately 100 yards away without further incident. A review team is being established to determine the cause of the test failure.

HEADQUARTERS, Washington, D.C. — NASA and the Department of Defense recently announced that the engine technology development portion of the joint National Aero-Space Plane (NASP) Program will proceed into the next phase. The Rockwell International Corp., Rocketdyne Division, and the United Technologies Corp. Pratt & Whitney will proceed from the conceptual design phase to the subsystem fabrication and test portion of the effort to demonstrate the ability of airbreathing engines to power a horizontal take- off and landing vehicle capable of sustained hypersonic flight or direct, single stage ascent into orbit. The approximate value of each contract is $85 million.



-photo by Paul Bagby

FRIENDSHIP FORCE TOURS NASA. Members of the Friendship Force of Southeastern Virginia recently hosted families from West Berlin, West Germany. During their stay in Virginia, the participants toured NASA with stops at the Impact Dynamics and Aircraft Landing Dynamics Facilities. The West Berliners and their host families are shown prior to their tour of the Visitor Center. The visit was coordinated and hosted by Peggy Hewes.

The Friendship Force is an international, interdenominational people-to-people organization. The Tidewater chapter has been in existence for three years and has 75 members who arrange travel opportunities on a family-to-family basis.

Lankley

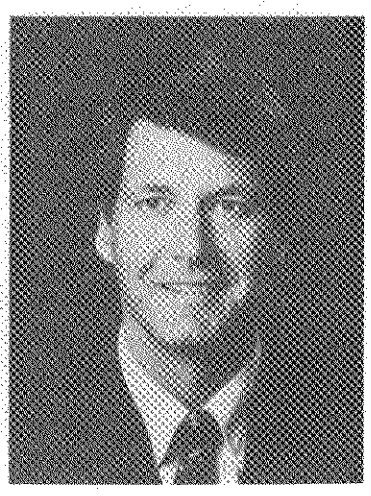
MR. LANKLEY, I HAVE SOME GOOD NEWS AND SOME BAD NEWS. THE GOOD NEWS IS YOUR BAGS WENT TO N.Y.. THE BAD NEWS IS N.Y. SENT THEM TO LIBYA.

In Memoriam

Condolences to the family of Col. Richard L. Long who died August 31 in Richmond. Long was director of the Army Structures Lab at Langley from 1980 to 1984.

Langley Colloquium and The Sigma Series

Stars and Stripes Navigator to Discuss Feat



Bringing home America's Cup took more than sailing. It took dedication, diligence, experience and teamwork to accomplish this spectacular feat.

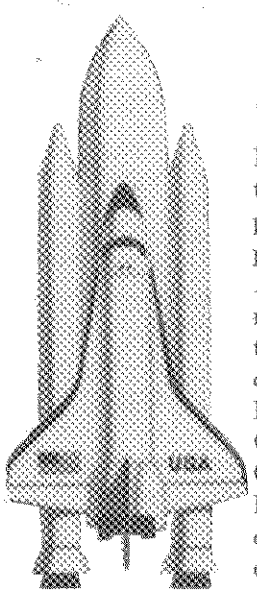
Peter F. Isler, navigator of the Stars and Stripes, Dennis Conner Sports, will discuss "Bringing Home the America's Cup," Monday, September 21, in the Activities Center. The lecture will be held at 2 p.m., followed by a question and answer session and an informal discussion.

That evening, Isler will give the same lecture at the Radisson Hotel Hampton at 7:30 as part of The Sigma Series. The Sigma Series is a series of free public lectures sponsored by the Langley Research Center, the City of Hampton and the Daily Press, Inc.

According to Isler, days began at 5:45 a.m. with aerobic and weight workouts, followed by breakfast and working on the boat. Then came sailing followed by dinner at 8 p.m. and, finally, lights out at 9. Behind this routine were years of individual experience welded into the split-second teamwork of a handpicked crew. So successful was this crew that they have been invited back for the 1990 Cup Race.

A large part of the results of the Cup Series depends on things the crew cannot control–the design, computers, construction and advanced technology, such as riblets. The excitement over the Cup will mean even more money in future races. Isler says the Japanese will spend $100 million toward the Cup next time.

Isler, 31, is ranked number one in the world of matched racing. He attended Yale University where he met his wife Jennifer Fetter, a contender in 1988 Olympic sailing. At Yale, Isler rose to world-class racing status and was named Sailor of the Year for 1976—the Heissman trophy of sailing. In addition to world-wide competition, he lectures and teaches sailing programs and is the developer of the American Sailing Association.



Space Shuttle Update

DISCOVERY: Retest of modified systems continuing. Leak checks of main propulsion system scheduled. Start of flight processing.

ATLANTIS: Helium tanks are being removed to allow access for RTV modifications and structural inspections. Removal of various black boxes for installation of RTV heat absorbing strips continuing.

COLUMBIA: Transfer of orbiter to Orbiter Maintenance and Refurbishment Facility. Deservicing and drying of water coolant loop 1 and inspection of body flap cove seal.

Scout Project Celebrates Anniversary

In commemoration of the anniversary of the Scout Project, a Langley program which has been in existence for 30 years, a reunion will be held in Reno, Nevada, October 29-November 2.

The site was selected because of its proximity to the Western Test Range, NASA and the Scout contractors.

Special arrangements include accommodations at the Peppermill Hotel, meals, floor shows, tours of local attractions, ground transportation, gifts and door prizes. The cost of this Reno package is $398/person. Discount airfare is available on Eastern and Continental Airlines.

For complete information, contact Abe Leiss, (804) 877-2939.

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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

Alumni News and Views

All systems are "GO" for the Banquet and Dance on October 17 honoring Langley's 70th Anniversary. The speaker for the evening will be James R. Hansen, Langley's Historian-in-Residence. Seating is limited, so don't delay. See the invitation on page 1 for all the details.

Watch your mail the week of September 14 for further information and an application for membership in the Alumni Association.

Don't sit at home alone wondering what to do on October 24. Volunteers are needed to help at Langley's Open House. Contact Cathy Schauer, 865-3159, or Ann Suit, 865-3967, if you would like to help. Assistance is needed in many areas including serving as bus guides and staffing exhibits. You can set your own schedule – a.m. or p.m. Give them a call.

Hispanic Heritage Observed at Langley

Hispanic Americans have been an integral part of American life since the beginning of our nation. Today, 26 Hispanic Americans are employed at NASA's Langley Research Center, contributing their talents to research in aeronautics and space technology.

Americans will be called upon to recognize the contributions of Hispanic Americans during National Hispanic Heritage Week, September 13-19. During the week-long observance, Langley will pay tribute to Hispanics by serving special foods in the cafeteria. In addition, informational handouts will be available for interested employees by calling the Equal Opportunity Programs Office, ext. 3487.

The Hispanic roots in the Southwest and Southeast are as old as the pilgrim roots in New England and the English settlements in Virginia. In the 1980's, the Hispanic Americans constitute the youngest segment of our population, a very significant and important influence in our country's future.

Celebrating 70 Years of Research

Langley Research Pilot In a Spin Again

Chief research pilot Jim Patton flew this modified Grumman Yankee into dozens of intentional spins in the late 1970s as part of the center's aircraft stall/spin program.

Note the parachute mounted beneath the horizontal tail. Later pictures of the plane show rows of tiny parachutes on the side of the fuselage, representing each time the parachute had to be deployed to regain control.

Position Open

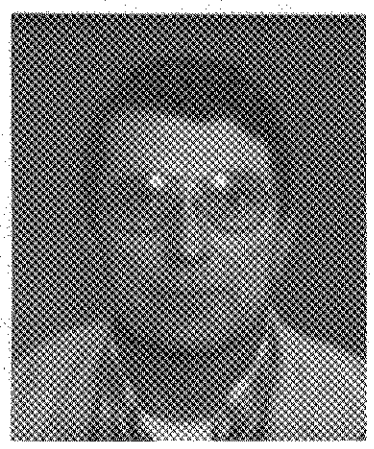
87-67: Administrative Officer, GS-0341-7 or 9, Aeronautics Directorate. Closes Sept. 22.

Special Thanks

The Carnival Monarch Competition raised over $10,000 in ticket sales for the LAA. 1987 Carnival Monarch Nancy Murawski sold 5,618 tickets – the highest number of tickets sold by any contestant in the history of the competition.

Nancy writes: "Another LaRC Carnival has come and gone, but before all the excitement fades, I'd like to express my gratitude to each and every supporter. Yes, I put forth quite an effort, but without all of you, it would have been futile. Special thanks to my campaign managers Walter Murawski, Richard Moore, Al Shearin, Glen Parker, and Bill Sanders and all those 'rafflees.' It was definietly a memorable experience and I'm glad I participated."

In Memoriam



Sympathy is extended to the family of **Charles R. (Ronnie) Booth** who died August 21. Booth, a photographer in the Research Information and Applications Division, joined Langley in 1955. Alton T. Moore, Head, Photographics Section, remembers Ronnie as "an outstanding scientific and technical photographer. He devoted more than 31 years of his life to his career and to NACA/NASA. He was well liked by his associates and he will be greatly missed by all of us."

Constitution Two Hundred Years Old

Constitution Week, September 17-23, commemorates the signing of the Constitution of the United States. It is the oldest constitution still in active use in the world today and is the basic document of our Republic. The Daughters of the American Revolution urge all Americans to be worthy of its protection.

Klate Holt Contract Manager Earns Recertification

Walter L. Sykes, Contract Manager, Klate Holt Company, Facility and Equipment Maintenance Support Services, and a Certified Plant Engineer (CPE), recently earned recertification status from the American Institute of Plant Engineers (AIPE). To be recertified, a CPE must gain eight credits over a period of five years in AIPE-approved professional development activities.

AIPE Certification, established in 1975, has become a standard of excellence for the plant engineering profession. The initial process of certification requires either a combination of engineering education and experience or a passing grade on a comprehensive seven-hour written examination. Once certified, successful applicants may use the CPE designation after their names.

Sykes is a member and founder of AIPE's Tidewater Chapter No. 159. He has also served as chapter president and Region 8 Vice President for AIPE national.

Sykes has been manager of the Klate Holt Facility and Equipment Maintenance Contract at Langley since 1978.

To receive a copy of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext 3017.

87-124.....Wind Turbine Generator to be Dedicated in Hawaii
87-125.....First Redesigned Shuttle Rocket Motor to be Test Fired
87-126.....Assistant Administrator Isaac Gillam to Retire from NASA
87-127.....NASA Issues RFP for Shuttle-C Contracts
87-128.....Booster Rocket Incident
87-129.....Aero-Space Plane Reaches Engine Technology Milestone

Retirement Parties

Robert Earl (Bob) Williams will be honored at a retirement dinner, Saturday, September 19, at the Activities Center. A cash bar will begin at 6 p.m., followed by a steamship round dinner at 7 p.m. Cost is $11/person, $20/couple. Please make reservations with Dave Crockett, Mail Stop 166A, ext. 2592, by September 11. Contributions for gift only are welcome.

Dr. John L. Gilbert will be honored at a retirement party Saturday, September 26, at the Activities Center. A cash bar will begin at 6 p.m., followed by a steamship round dinner at 7 p.m. Cost is $10.50/person, $19/couple. Please contact Annabelle Durand, Mail Stop 442, ext. 4534, for reservations or gift contributions by Monday, September 21.

George W. Johnson writes: "I would like to thank my friends for helping me celebrate my retirement. My appreciation for the many gifts, the memories of a great time, and my love for you would overflow the hard drive, if it were possible to load it."

A retirement social for **Maurice Parker**, Head, Office of Public Affairs, will be held Saturday, September 26, at the Marlbank Cove Club House in Yorktown from 7 to 10 p.m. The price per person is $12, including heavy hors d'oeuvres and gift; contributions of $3 for gift only will be graciously accepted. A cash bar will be provided. Please respond by sending a check, payable to Jean Drummond Clough, to her at mail stop 115, no later than September 21.

Happenings

LAA SOCIAL will be held Friday, September 18, from 4 to 6:30 p.m. in the Activities Center.

ATLANTIC CITY. The LAA is sponsoring a trip to Atlantic City, October 23-25. Cost: Single/$241; Double/$146 each; Triple/$124 each; Quad/$113 each. Fifty percent deposit is required by September 11. Balance is due by Sept. 21. For more informtion, call Frankie or Margaret at the LAA office, ext. 3139.

VPI/UVA BUS TRIP. A bus trip to the VPI/UVA football game on Saturday, Sept. 19, is being sponsored by the Peninsula Chapter of Va. Tech Alumni. Avoid the Scott Stadium traffic jam! $13/person includes transportation and snacks. Send your check payable to "Peninsula Chapter" to Heidi Derby, 1134 Willow Green Dr., Newport News, 23602, or call Joe Drewery at ext. 4933.

BLOODMOBILE. The American Red Cross will sponsor a Bloodmobile in the Activities Center Wednesday, September 23, from 9 a.m. to 3 p.m.

ASM DINNER MEETING. Prof. Art Koblasz, Georgia Tech, will discuss "Human Factors in Engineering," Wednesday, September 23, at Port Arthur Restaurant, Newport News. Cash bar/dinner begins at 6 p.m. Cost is $12/person. For reservations contact Gail Warner, 688-9946, or Laura O'Connor, 865-4440, by Sept. 18. Nonmembers welcome.

TOASTMASTERS. NASA Toastmasters will meet Wednesday, September 23, 11:30 a.m. at the Activities Center. Come and see how to help yourself overcome your shyness about public speaking. Call Steve Yaros, ext. 2673, for details.

STORYTELLING. Renowned Folktellers from the Great Smoky Mountains will perform at Hampton Public Library, September 29, 7 p.m. FREE tickets are available at the library information desk at 4207 Victoria Boulevard. A workshop will be conducted for those interested in learning more about the art and tradition of storytelling, September 28, 7 p.m. For more information, please contact the Hampton Public Library , 727-6234.

CEBAF SEMINAR. Dr. Robert Wagner, Fermilab, will discuss "The CDF Detector and its Central Tracking Chamber," Friday, September 18 at 11 a.m. in CEBAF Room 53. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

CRUISE. This is the last call for the 12-day, 8- ports-of-call Caribbean cruise, departing from Newport News November 2. There are a few choice cabins available at group rates. If interested, please call Ernie Greene, 838-0567 or ext. 2312, for details.

HISTORY SEMINAR. Colonial Williamsburg sponsors its first annual forum on American history, "Constitution Makers: Master Craftsmen of Government," Nov. 19-21. Registration is $175/person. For additional information, call 220-7255.

BINGO. LAA Bingo is held every Thursday beginning at 7 p.m. at the Langley Activities Center. Anyone interested in working Bingo, please contact Eugene Hicks, ext. 3737.

Carnival Monarch and Court

Nancy Murawski, Acquisition Division, was crowned 1987 Carnival Monarch by Deputy Director Paul Holloway during carnival activities on Friday, August 21. Murawski sold 5,618 raffle tickets to win top honors. This is the highest number of tickets ever sold by a Carnival Monarch contestant. As Carnival Monarch, Murawski received $300, a plaque, and two tickets to Busch Gardens.

photos by Paul Bagby

Other winners were (L to R) Patricia Johnson, Operations Support Division, first runner up; Cheryl Pruitt, High-Speed Aerodynamics Division, third runner up; and Tina Forrest, Klate Holt, second runner up. As Carnival Monarch court members, Johnson received $150; Forrest, $100; and Pruitt, $75. All contestants received two tickets to Busch Gardens.

swap and shop

FOR SALE

HONEY, Mountain variety, $13/gal.; $3.50/qt.; $2/pt.; $1.60/lb. bottle; $1.30/12 oz. honey bear. Call R. H. Caldwell, 723- 5558/9116.

Note of Thanks

Elizabeth L. Doneson writes: "Thank you to all the friends and co-workers of my late husband Tom. I am very grateful for the blood donated in my name at the recent bloodmobile. As always, the people of NASA are there when you need help."

Culture Key Available Through LAA

Use the Culture Key to unlock an endless array of enjoyable places and events and discover the best of Hampton Roads.

The Culture Key, offered by the Culture Alliance of Hampton Roads, is a discount card which allows up to a 50 percent discount to the holder at arts and cultural events throughout Hampton Roads. A 10 percent discount is also available at many of the area's finest restaurants. In addition to the card, the holder will receive a packet containing an area hotel/restaurant guide, a resource directory of cultural organizations, an area map, and a calendar of events.

For a limited time, discount card applications for Center employees and contractors will be available at the LAA window in Bulding 1222. The price is regularly $10/year; the limited offer to Center employees is $5/year.

Senior Management Research Review

The Senior Management Research Review will be held Monday, September 21, 1987, in Building 1219, Room 225, from 9 to 11 a.m. Following the Director's comments and program directors' status reports, program accomplishments will be given by Langley scientists.

TIME	TITLE OF TALK	SPEAKER
9:30	Identification of Wind Shear Hazard Index Provides Cornerstone for Design of Alerting and Warning Systems	Roland Bowles (Flight Systems/FLMD)
9:45	An Evaluation of the Viscous Model in a Navier-Stokes Code	Naomi McMillin (Aeronautics/HSAD)
10:00	A Flux-Splitting Approach for Euler Equations with Real Gases	Bernard Grossman (Aeronautics/VPI)
10:15	Development of Airborne Laser Instrumentation for In Situ, Fast Response Trace Gas Measurements	Glen Sachse (Electronics/FED)
10:30	Shuttle Crew Escape Study	George Ware (Space/SSD)
10:45	Geodesic Compression Panel 3 Percent Lighter Than and More Damage Tolerant Than Stiffened Skin Compression Panel	Marshall Rouse (Structures/SDD)

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Researcher News

Volume 1, Issue 6 September 25, 1987

Bi-weekly Employee and Contractor Publication

Employees Urged to 'Stretch' to Meet CFC Goals

It is the very nature of the Langley Research Center that each new initiative requires a technical "stretch" beyond previously established boundaries. The "stretch" can come about by a change in direction and/or an increase in complexity, size, and speed (productivity) in some aspect of the project or study. For the most part "playing it safe" rarely enters into our thinking.

This latter characteristic is also in evidence when one looks at the goals set for the Combined Federal Campaign (CFC) over the past decade, vis-a-vis, the amount of money collected in the preceding years. Nevertheless, in true Langley tradition, we have always been up to the challenge and never failed to exceed the goal.

Your CFC committee, headed up by Ralph Muraca, has given us an unusually stiff challenge for the upcoming campaign - a $250,000 goal. This is $15,000 more than last year's goal and $5,000 more than the amount collected. To be successful each of us will have to "stretch-a-little" his monetary commitment to the less fortunate, the distressed, the elderly, and our youth. Beyond that we particularly need those who have not given previously, or only given token amounts, to take a new look at the incredible work that the CFC agencies are doing to increase the quality of life in our home towns. There is not one of us who does not benefit, in some way, from his own contribution, as well as those of his colleagues.

The theme that Ralph has borrowed from our 70th Anniversary celebration and attached to the CFC campaign, "Shaping Tomorrow," is appropriate. Certainly our contributions play a large role in "Shaping Tomorrow" in our communities and make that "Tomorrow" one that increasing numbers can look forward to with anticipation rather than dread.

Your "key people" will be contacting you in a few weeks to solicit your gift during the one-day CFC drive on October 14. If you are short on cash, remember that payroll deduction is easily noted on your card. If you want a specific agency (or agencies) to receive your gift, remember, you can designate it (or them) on the card. In any case, let's support our CFC committee and the large

number of volunteers who work to make the campaign a success with a generous gift. I am certain we are up to the challenge once more and, in true Langley tradition, will go over the top again.

Percy J. Bobbitt
Chairman
1986 CFC

Scout Launch Proves Near Perfect

A Scout vehicle carrying a Navy payload was successfully launched Wednesday, September 16, at 3:16 p.m. EDT from Vandenberg Air Force Base, California.

Jim Ward of Langley's Scout Project Office said it was one of the most accurate Scout launches since the program started in 1960. Predicted spacecraft parameters were: apogee, 630 nautical miles; perigee, 560 N.Mi.; and inclination of 90 degrees. First look parameters were: apogee, 633 N.Mi; perigee 550 N.Mi; and inclination, 90.32 degrees.

The primary objective of the Navy payload, Stacked Oscars on Scout (SOOS) 2, is for the stacked OSCAR spacecrafts to take their places in the Navy Navigational Satellite array. The SOOS- 1 spacecrafts were placed in orbit by Scout August 3, 1987.

There are currently three satellite configurations in the Navy Navigational Satellite System: OSCAR, NOVA, and the dual OSCAR or SOOS. These satellites are used by navigators for position fixing and surveying.

NASA Responds to NRC Committee Report on Space Station

NASA has reviewed the report by the National Research Council (NRC) on the Space Station and agrees with most of the findings and recommendations. NASA is extremely pleased that, upon reviewing alternative configurations for the Space Station, the committee judged none to be as satisfactory as NASA's Block 1 baseline and recommended that it be adopted as the initial Space Station configuration.

However, NASA questions the committee's findings regarding program risk and cost.

NASA does not agree that deployment of the Space Station with the current Space Transportation System (STS) will be "risky." This finding does not reflect the current state of Space Station planning.

Secondly, NASA believes the committee's estimate, that up to $3.9 billion may be needed for backup hardware and test program enhancements, is much too high. NASA does agree that additional backup hardware may be needed. However, the contingency hardware would cost approximately $200 million.

Ray Hook, Head of Langley's Space Station Office, adds that much of the analysis work for the NRC Committee was completed here at Langley. The Committee acknowledged the cooperation and support of NASA in the preface to the report.

Antarctic Ozone Project Reports Progress

NASA and other scientists involved in the Airborne Antarctic Ozone Project report that at the approximate mid-point in the mission everything is working extremely well and the science data being acquired is excellent.

Dr. Robert Watson, NASA ozone project chief scientist, who just returned from several weeks at the aircraft mission operations base in Punta Arenas, Chile, reports that the 21 instruments and both aircraft are performing excellently and that the mission science team is quite pleased with the quality of the data being returned by the instruments.

The mission involves two NASA aircraft, a specially modified flying-laboratory DC-8 and an advanced high-altitude ER-2. Seven of the instruments are on the DC-8 and 14 of them are on the ER- 2. NASA is serving as the overall mission manager for a complex and sophisticated science investigation involving NASA, the National Oceanic and Atmospheric Administration, the National Science Foundation, the Chemical Manufacturer's Association, U.S. and foreign scientists in Chile, satellites in Earth orbit and computer prediction centers in different countries.

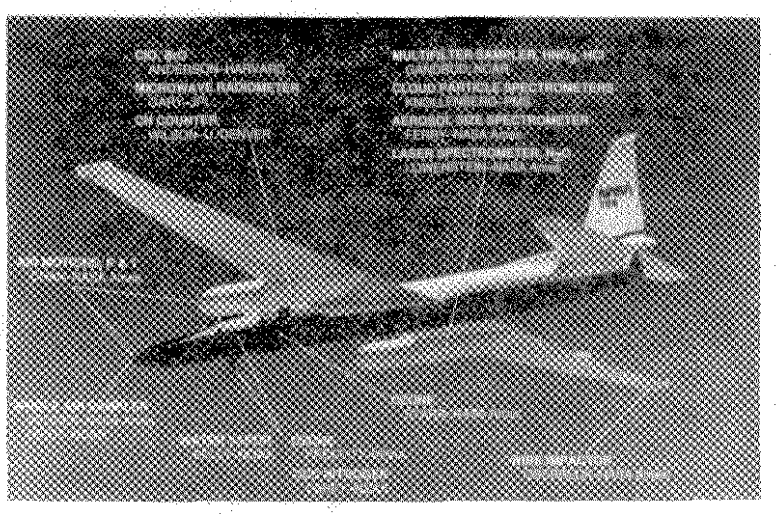
The goal of the research activity is to come up with an understanding of the cause and nature of an annually occurring depletion in the ozone layer above the Antarctic region every Spring (the "Antarctic ozone hole") in the Southern Hemisphere since 1979.

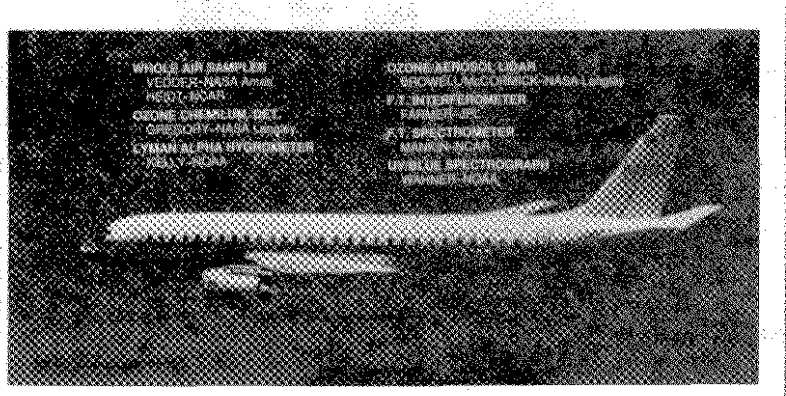
Data obtained by the two aircraft will provide critical clues as to the chemical and dynamical nature of the ozone hole and how it might relate to other climatic conditions in the same area at the same time. The aircraft use a variety of sensors including direct particle collectors and remote laser optical scanners.

So far, the ER-2 has flown on eight separate occasions, all extremely successful. The DC-8, a flying laboratory where the scientists can control their instruments in person, has flown for a total of six separate flights, including one over the South Pole. Many DC-8 flights have been coordinated with ER-2 flights and several were flown in tandem with the ER-2.

The instruments on each aircraft complement each other, as well as provide redundancy, in the event a sensor on one of the aircraft is malfunctioning. So far, the instruments, aircraft, and various science teams in Chile, the U.S., France and England have experienced only modest problems.

A preliminary report is expected from the scientists at the conclusion of the mission, still currently scheduled for the end of September. A full report of the findings and analysis of the mission's experiments are expected to be available in Spring 1988.





These photographs show the specially instrumented NASA ER-2 and DC-8 aircraft that are flying into the Antarctic ozone hole as part of the Airborne Antarctic Ozone Experiment.

News Briefs

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — Acceptance testing has begun on the first of three Space Shuttle main engines earmarked for use on the June 1988 launch of STS-26. The engines incorporate several improvements made as a result of an extensive and on-going test program. These changes include improvements to the electronic controller, valve actuators, temperature sensors, main combustion chamber and various modifications to the turbopumps to improve life and operating margin.

JOHNSON SPACE CENTER, Houston, Tex. — NASA has selected McDonnell Douglas Astronuatics Co., Houston, for negotiations leading to award of an applications and analysis support contract (AASC) to be performed at Johnson Space Center and adjacent facilities. AASC is a new contract representing a consolidation of efforts currently performed under five existing support contracts. AASC covers a wide range of computer software development and software performance analysis for JSC's Mission Support Directorate.

HEADQUARTERS, Washington, D.C. — A ten-year agreement which permits NASA to launch scientific sounding rockets from Woomera, Australia, was signed by representatives of the U.S. and Australian governments in Canberra on Sept. 1. The first priority under the new agreement will be to conduct a campaign of five or six rocket launches to study Supernova 1987a during November/December 1987. This supernova, or exploding star, is the closest observable supernova in over 400 years.

NATIONAL SPACE TECHNOLOGY LABORATORIES, Miss. — NASA is assisting fire fighters in northern California by providing remotely sensed data, taken from a specially equipped jet aircraft, which shows where fires and other "hot spots" are located in large areas of the burning forests. So far, NSTL's Learjet has acquired images covering more than 10,800 square miles over the fire areas. Data from the aircraft is being delivered to NASA scientists at Ames for immediate viewing so that fire fighting efforts can be directed as required.

HEADQUARTERS, Washington, D.C. — Seven high school students have been selected to present proposals for space station experiments as national winners of the 7th Annual Space Science Student Involvement Program (SSIP). These seven students and three other national student winners and their teacher/advisors were honored during the NASA/NSTA National Space Science Symposium held earlier this month.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — Two NASA scientific satellites are expected to create fireballs as they reenter Earth's atmosphere only two minutes apart over South America, September 26. ISEE-1 and ISEE-2 were launched on a single Delta rocket in 1977. At reentry, the spacecraft will have studied the near-Earth environment for almost 10 years, greatly surpassing their designed lifetime of three years.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — NASA has selected General Dynamics, San Diego, Calif., and Martin Marietta, New Orleans, La., to negotiate for conceptual design studies of liquid-fueled rocket boosters proposed for use on the Space Shuttle and future launch vehicles. The two contracts, each valued at approximately $2.5 million, will involve nine-month parallel studies of both pressure-fed and pump-fed liquid fuel rocket boosters.

JOHNSON SPACE CENTER, Houston, Tex. — NASA has announced five crew members for STS-27, a Department of Defense Space Shuttle mission targeted for early fall, 1988, aboard the orbiter Atlantis. Crew members are Robert L. Gibson (Cdr., USN), commander; Guy S. Gardner (Lt. Col, USAF), pilot; and mission specialists Richard M. Mullane (Col., USAF), Jerry L. Ross (Lt. Col., USAF) and William M. Shepherd, (Cdr., USN).

Visitor Center Features Robotics During October

During October, the Visitor Center will look at the important part automation and robotics may play in the construction and operation of the Space Station. Robotics technology can relieve astronauts from both routine and hazardous tasks aboard the Station.

On October 15, at 7 p.m., the Visitor Center will present a special program highlighting the latest advances and future projects involving robotics. The speaker, Walter Hankins, is an expert in automation technology who has been at Langley for 22 years.

A short film, shown daily, contrasts the current Hollywood depictions of robots with the realities of modern NASA robotics research. Throughout the month, there will be a display on the Orbital Maneuvering Vehicle, designed to act as a "space tug" which will perform a number of activities in space.

Lankley

MR. LANKLEY, YOUR BLOOD PRESSURE IS DOWN THIS WEEK; YOUR STOCK MUST BE DOING BETTER OR YOUR BRANCH HEAD MUST BE ON LEAVE.

To Set the Record Straight

Carnival Monarch contestant Patricia JACKSON was incorrectly identified in the last issue (Sept. 11, page 4). Apologies and congratulations to Patricia, Operations Support Division, who was first runner-up in this year's contest.

Also, the 70th Anniversary Banquet and Dance sponsored by the Langley Alumni Association on October 17 will be able to accommodate groups of 12 per table rather than 10 as previously reported.

Editorials

Langley

Headquarters Forum

In the months since the Challenger tragedy, Congress and the media have emphasized the word "safety" in discussions related to NASA. While these comments have focused on Shuttle, it has been clear that the concerns were equally applicable to Langley's aeronautics and space research programs.

Langley has always understood and accepted that "safety" is an inherent part of individual job responsibilities. Certainly we have continuously emphasized safety awareness, and, over the last 15 years, we have dedicated sizeable resources to assure a safe work environment. But what do we really mean when we refer to our safety awareness?

Safety awareness is a philosophy . . . a state of mind. It starts with a conscious recognition that every task can involve risks and that those risks must be first identified and, then, either eliminated or controlled. We accept that safety is part of every employee's responsibility. It is NOT a function that the "other fellow" will worry about and handle.

No task can ever be totally "safe." Mechanical, electrical, or PEOPLE problems will always present potential risks. Research and development activities, by their very nature, require "risk taking." The key to successful risk taking is "risk management." In risk management, we identify, to the best of our ability, the risks and work for their elimination or control.

As we learned recently from a ground incident with the Centaur upper stage at KSC, the hazard may be as obvious as the presence of an electrical cord laying in the work area; or it may be as deceptive as a material flaw in a pressure vessel. It may be as unpredictable as the oversight of a critical procedural step or as unexpected as that momentary lapse of mind when we attempt to accomplish a "two person" job . . alone.

The success of Langley's safety efforts can be traced, in part, to the Langley attitude towards safety awareness, but we have also implemented programs and procedures to insure heightened sensitivity to safety and mission assurance.

In the facilities area, we have performed safety analyses, established standard operational procedures, implemented configuration management, emphasized training, pursued regular review and inspection programs, implemented licensing of potentially hazardous functions, and vigorously insisted on correcting any deficiencies or hazards uncovered by these efforts. We have recognized, sought, and gained the benefits of involving our unions in these activities, and we have established mechanisms which afford our research and operations personnel an opportunity to be active participants in defining our safety policies.

The initial reactions to a few of these efforts has been "Why? We don't need this requirement! We are aware of our safety role." But subsequent response has generally been positive and the formality of the "safety" tasks has certainly helped maintain a productive research environment.

To paraphrase an old friend and distinguished Langley alumnus, Max Faget, "there is nothing more costly in dollars and schedules, than an accident." While this principle is now evident in a program like Shuttle, it is equally applicable to Langley and its research programs.

In the months ahead we may need to extend our safety requirements. There continue to be mishaps and near-misses that are the result of complacency in our self-imposed discipline. Our goal is zero mishaps. We must learn from our errors and move forward.

Continued on page 6.

NASA Fosters Airborne Technology for National Airspace System

-by H. Keith Henry

NASA is exploring technology which could enhance the safety of air travel and reduce the frequent flight delays travellers are experiencing at major terminals around the country.

The Langley Research Center is conducting this research in cooperation with the Federal Aviation Administration.

Called the advanced transport operating systems (ATOPS) program, the ultimate goal is to provide a technology base for the development of airborne automation aids by industry that complement evolving ground-based air traffic control (ATC) concepts for improved safety, communications and traffic flow.

Finding the ideal marriage of evolving ground-based and airborne technologies promises significant improvements in the efficiency of safety and operations for the nation's fleet of commercial transport carriers. Even the most promising concepts for improved aircraft operations, like improved flight path definition and performance, must be accommodated by the ATC system before these gains can be realized.

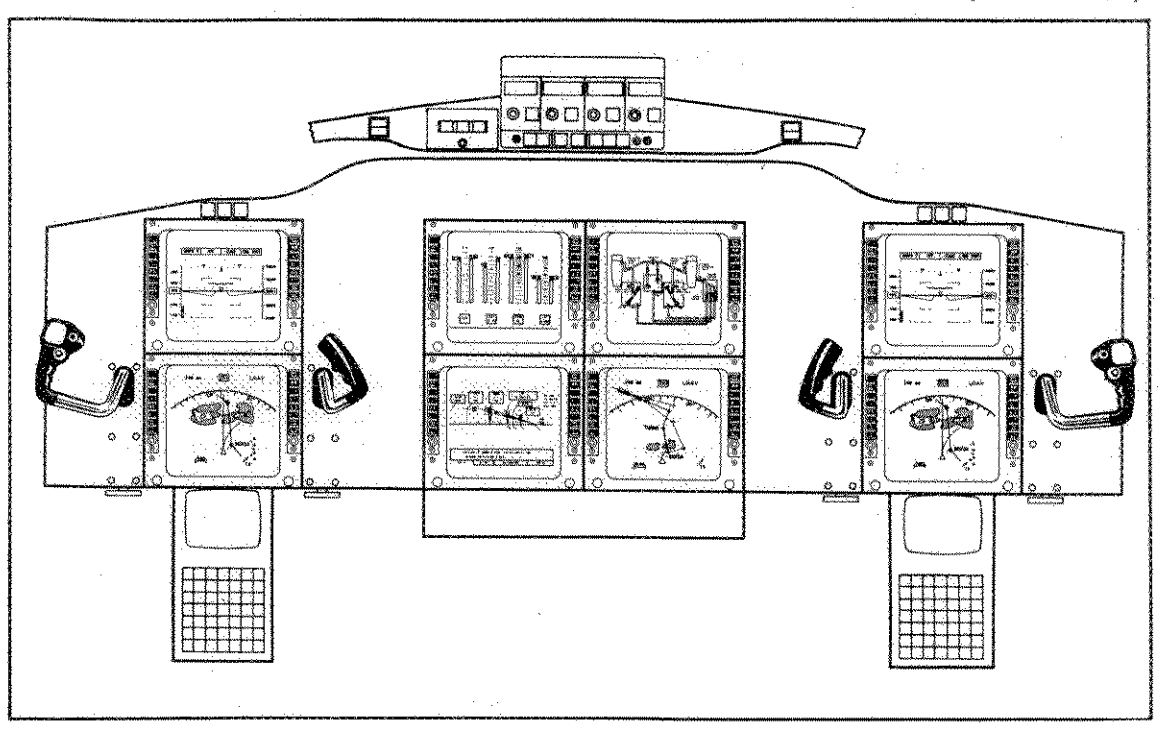
To accomplish this goal, the ATOPS program employs the operation of several complementary flight and ground research facilities at Langley which have recently been upgraded.

The most comprehensive upgrading has been to a flying laboratory called the Transport Systems Research Vehicle (TSRV), a specially instrumented Boeing-737. New capabilities include color cockpit displays and advanced experimental avionics.

By installing new computer-driven systems in the completely overhauled TSRV, Langley is committed to expanding work begun in the early 1970s when fuel costs grew to a larger percent of airline direct operating costs and increased air traffic was beginning to demand greater efficiencies.

The TSRV has two flight decks – a conventional B-737 flight deck provides operational support and safety backup and the fully operational research flight deck, positioned in the aircraft's cabin, provides the capability to explore innovations in display formats and content and in aircraft operations.

This "all glass" research flight deck presents information to the crew via eight newly-installed 8-inch-square electronic displays representative of the technology to become available in commercial transports in the 1990s. The state-of-the-art color displays are driven by new on-board computers and, most importantly, specially-developed computer software. These new technologies make it possible to more clearly display information presented only partially or in scattered locations on existing electromechnical and first-generation electronic displays in today's aircraft.



As part of a major upgrade of ATOPS research facilities, the Transport Systems Research Vehicle (TRSV), a specially-instrumented Boeing 737, has received a new all-electronic display flight deck similar to this artist's concept. Its displays have replaced virtually all of the traditional round display indicators and will enhance flight performance. The TSRV serves as a flying laboratory to investigate technology options for modern aircraft flying in the evolving national airspace system.

In addition to video concepts for primary flight and navigation displays in front of both pilot and copilot, center panel displays provide the capability to monitor engine and system status and to manage aircraft systems operation. The latter should result in considerably reduced workload. The center panel displays will permit research on how additional information can be displayed and used to improve situational awareness, ATC communications, flight management options and traffic awareness.

The TSRV has a backlog of impressive experiments. Two different experiments will demonstrate concepts for precision arrival times, a key to improving airport capacity. One, based on airplane speed changes, is set in a simulated air traffic control environment and will have the airplane arrive at specific way points at specific times. In the second, arrival time is managed through flight path changes. The latter work is a joint venture with DFVLR, West Germany's equivalent to NASA. The two separate experiments are expected to take about four months total.

A very different experiment will hitch a ride on the airplane next year. The TSRV will be fitted with a ring around its fuselage – a small airfoil standing several inches from the surface – designed to reduce turbulent drag. This basic aerodynamic concept for improving fuel economy will be tested in flight on a transport aircraft for the first time on the TSRV.

An experiment that will make full use of the aircraft's new display generation capability for safety of flight is the Langley-developed "takeoff performance monitor system," scheduled for the first part of next year. The system is designed to help prevent the type of accident that occurred in Washington, D.C. a few years ago when a commercial jetliner did not have enough power to take off and crashed in the Potomac River.

One of the TSRV's display screens will use a combination of symbols, numbers and words to graphically present all of the information critical to the pilot during takeoff. All this information is available to pilots today in various places in the cockpit in some form or another, but not pulled together in one system and displayed in such an easy-to-use format.

The runway and the airplane's position on the runway are displayed, along with key performance indicators. On-board computers predict at what point the airplane will take off and at what speed. If takeoff performance is less than what it should be, a warning is sounded to the pilot and he or she can take appropriate action.

'. . .enhance safety of air travel and reduce flight delays. . .'

Long range plans for the TSRV include cooperative tests with the FAA in the Raleigh-Durham, N.C., area using an advanced terminal-area radar concept for converging approaches to adjacent runways. If the concept proves feasible, approach and landing capacity for our nation's airports could be increased.

Another long-range test teams the TSRV with the FAA and the Ames Research Center, Mountain View, Calif. They will meet at Denver in the summer of 1989 to evaluate a time-based air traffic control concept. These "real world" tests will follow up simulator-based tests now being conducted using the TSRV and ground facilities at Langley and the Goddard-Wallops Flight Facility, Wallops Island, Va.

-photo by William Salyer

Members of the Advanced Transport Operating Systems (ATOPS) Program recently celebrated with their families the completion of the major upgrade of the Transport Systems Research Vehicle (TSRV). Seated in the cockpit of the TSRV is PRC Kentron flight control system analyst Bill Lynn (left) and his wife Karen (right) who look on as their son Matthew and daughter Jennifer take over the controls. Director for Flight Systems Jerry Creedon and Program Manager Bill Howell echoed one another in referring to the flying laboratory as "the best facility of its kind in the world."

Awards

NASA-Langley Earns Two IR-100 Awards in 1987

-by H. Keith Henry

Three Langley employees and a researcher from the University of Kansas have received awards in the 1987 IR-100 competition for developing two of the 100 most significant new technical products of the year.

Leonard M. Weinstein, a Langley aerospace engineer in the Viscous Flow Branch, has developed a device which detects and measures the thickness of ice accumulation on the outside of aircraft.

David Middleton, an aerospace engineer in the Aircraft Controls Branch, **Lee Person**, Langley research pilot, and **Raghavachari Srivatsan**, an aersoapce engineer working at Langley under a NASA grant with the University of Kansas, Lawrence, Kan., have developed a device called a takeoff performance monitoring system (TOPMS).

The IR-100 award is presented annually by Industrial Research and Development magazine to 100 scientists and engineers who have contributed the most significant products for advancing science and technology during the year. Selections are made by a panel of scientists and engineers after studying new technology around the world.

In the past 20 years of NASA's participation in the IR-100 competition, 73 NASA developments have been selected, contributing significantly to the recognition of NASA as one of this country's centers of technical excellence. Langley has earned 15 of NASA's 73 awards.

This year's IR-100 winners will be honored at an awards banquet at the Museum of Science and Industry in Chicago on September 17.

Ice Thickness Detector

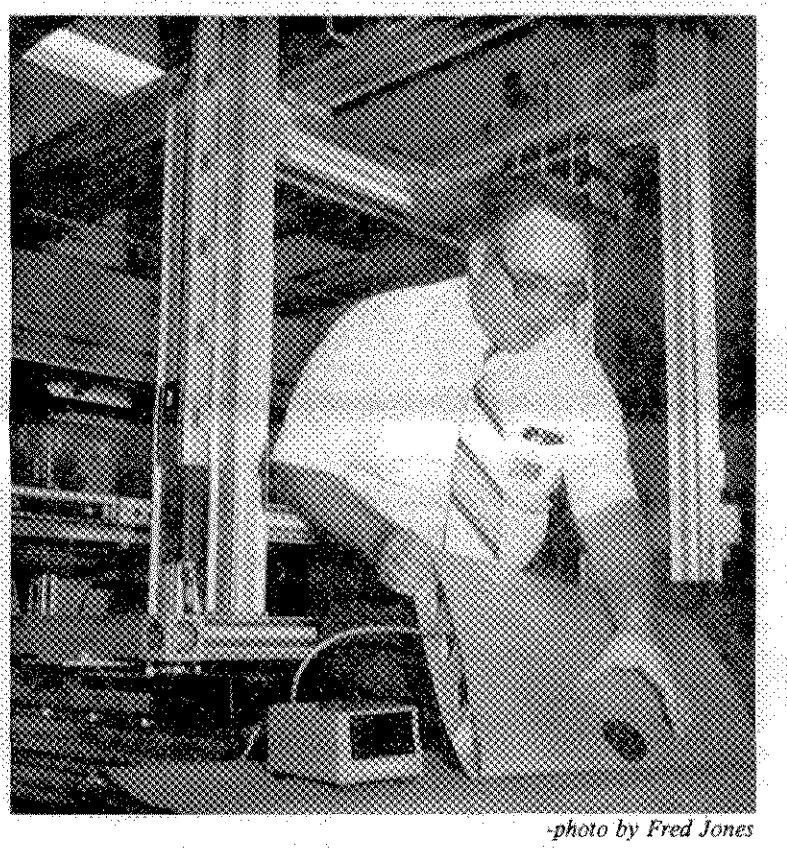
Ice thickness is critical to aircraft safety and performance. In addition, there are other cases where ice thickness information is needed, as on runway and other ground facilities, refrigerators, freezers, and on ships.

Dr. Weinstein has developed a capacitive ice thickness detector, which detects and measures ice thickness accumulation on the outside of aircraft. This information is required to determine whether efforts to remove the ice – such as heating or a change in flight speed or elevation – should be initiated.

No other available technique gives direct surface ice thickness measurements. Current technology provides only indirect evidence of ice thickness or may only give ice content of the air, not surface thickness. An ultrasonic approach is being developed that will provide actual ice thickness but is far more complex and expensive.

According to Dr. Weinstein, the capacitive ice thickness detector is very fast (with a milli-second response) and relatively inexpensive.

Complementary measurements are taken by the three surface-mounted gages. One detects the presence of water or ice, another determines whether the temperature is above or below the freezing level, and the third measures the thickness of any ice detected. Presence and thickness of ice are sensed by changes in electrical signals between small conductors for each of the two relevant gages. A layer of pure water or ice on the surface of an aircraft or other object will result in a relatively stronger signal. Built-in circuits work in harmony to process all the sensed data and indicate ice thickness.



-photo by Fred Jones

IR-100 winner Dr. Leonard M. Weinstein inspects an ice thickness detection gage used during laboratory development of the device. In application the gage could be near the leading edge of the wing, as represented here, or curved around the leading edge. The instrument at left would be in the cockpit and could be set to give the pilot an indication of when ice had accumulated to a pre-set thickness or provide a continuous reading.

Aircraft Takeoff Monitor

Researchers from NASA and the University of Kansas have joined forces to develop an award-winning invention that may one day help airline pilots take off and land more safely.

Middleton, Person, and Srivatsan developed the aircraft takeoff monitoring system (TOPMS) to predict where on the runway important takeoff events will occur and to indicate the options the pilot has at each point. TOPMS is an algorithm/sensor driven airplane cockpit display that provides numeric and graphic advisory information relative to continuing or rejecting a takeoff.

For example, with the help of the research airplane's flight management computer, the TOPMS algorithm predicts where the airplane will reach decision speed, rotation speed, and where it can still be braked to a stop. Predictions are made prior to beginning the takeoff based on best available data for ambient conditions, loading, runway surface, and other conditions.

These predictions are shown to the pilot on an electronic screen, like a cathode ray tube (CRT), as symbols and numbers superimposed on a scaled graphic of the runway being used. The predictions are updated in "real time" based on sensed conditions and performance during the takeoff roll.

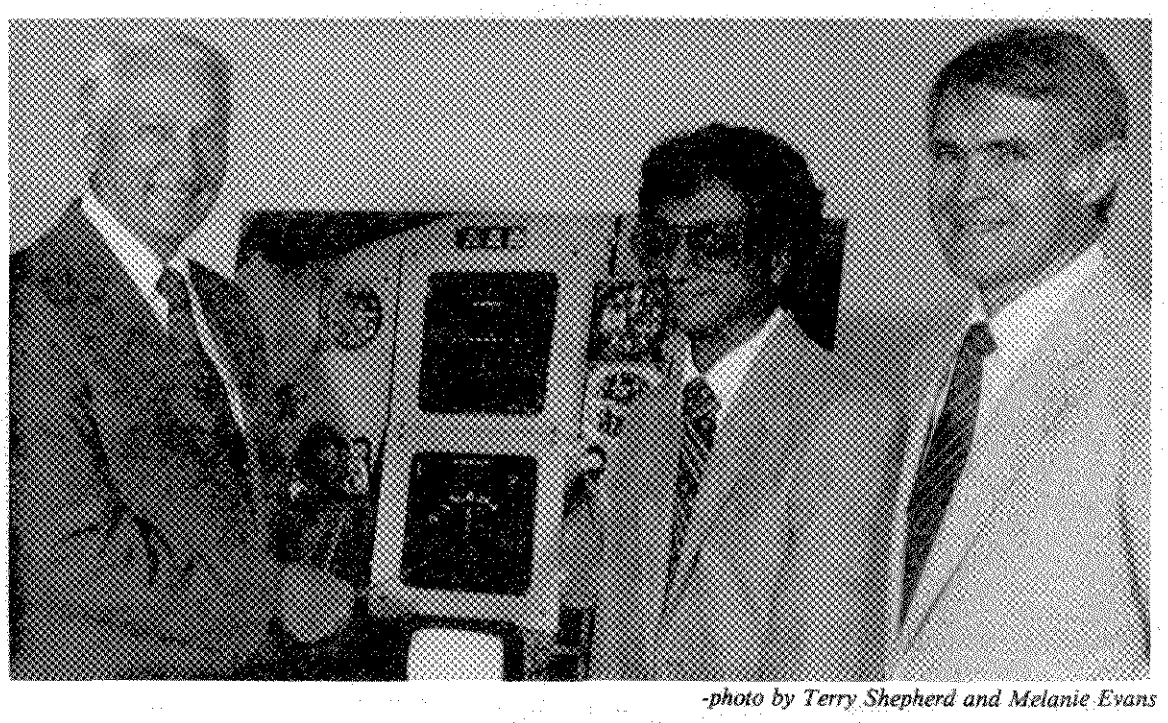
The display also includes engine failure flags and an overall "situation advisory flag" which recommends continuation (green) or termination (red) of the takeoff based on criteria related to the predictions and established constraints.

This technology is intended for possible use on the next generation of transports. Except for advanced aircraft like the 757/767 and the A-300 series, current aircraft do not have electronic primary displays where TOPMS- type graphics can be presented. Some of the data are available in other forms in most aircraft, but not all of it. Today, the pilot could predetermine some of the takeoff parameters, but they would not be updated during takeoff based on actual performance except through the pilot's judgement and "gut" feeling.

The NASA researchers believe that the takeoff monitor concept could significantly enhance flight safety during takeoff. About 12 percent of aircraft accidents are associated with takeoff. Most of them are attributable to a performance deficiency that the pilot was not aware of until it was too late to abort safely. The accident rate in other phases of flight has decreased in recent years but has remained steady for the takeoff phase because no new safety aids have been provided.

Former Langley IR-100 Award Winners

1968 **Ray Lovelady** and **John C. McFall**, Underwater Location Aid
1974 **Dr. Joseph S. Heyman**, Continuous Wave Ultrasonic Microemboli Monitor
1976 **Dr. Joseph S. Heyman**, Rous Bolt Monitor
1978 **Dr. Joseph S. Heyman**, Acoustoelectric Transducer
1979 **Dr. John Buckley**, **Robert A. Fox**, and **Robert J. Swain**, Toroid Joining Gun
1979 **Dr. Terry St. Clair**, LaRC 160 Polyimide Matrix Resin
1981 **Dr. Joseph S. Heyman**, Geodynamic Accumulated Strain Sensor
1981 **Anne St. Clair** and **Dr. Terry St. Clair**, LaRC-TPI Thermoplastic Polyimide
1983 **Harlan K. "Bucky" Holmes**, Non-Contacting Suction Force Generator
1983 **Charles Camarda**, Heat-Pipe Sandwich Panels
1986 **Daniel J. Crawford** and **Richard O. Staib**, Model 9450 Data Acquisition and Control System
1986 **H. Douglas Garner**, "Smart Compass" Electronic Compass
1986 **Charles Knox** and **Daniel Vicroy**, Flight Descent Management Software



-photo by Terry Shepherd and Melanie Evans

IR-100 awards winners (L to R) David Middleton, Raghavachari Srivatsan, and Lee Person pose before a photo enlargement illustrating how their takeoff performance monitoring system could be incorporated into a cockpit of the future. Middleton is pointing to the TOPMS display screen at center. A computer-generated airplane symbol, runway graphic, and other indicators provide the flight crew with an easy-to-read information format to aid in decision making before takeoff.

Special Act or Service Awards Granted to 228 Langley Employees

A Special Act or Service Award is a lump-sum cash award based on superior performance of a one-time special act, service or achievement connected with official employment. During the past six months, over 200 Langley employees have been granted such special achievement awards. The following individuals can take pride in knowing that they have substantially contributed to accomplishing Center missions.

ANALYSIS AND COMPUTATION DIVISION

Donald F. Booth
John T. Bowen
Ernest L. Green
Alton C. Hall
R. Kenneth Holmes
Jacob A. Houck
Kemper S. Kibler
Jules J. Lambiotte
Joseph D. Nolan
D. Edward Phillips
Kurt Severance
Harold I. Simmons

INSTRUMENT RESEARCH DIVISION

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John M. Franke
W. M. Humphreys, Jr.
Patrick H. Johnston
Stephen B. Jones
Joseph W. Lee
Bradley D. Leighty
Eric I. Madaras
Donna L. Martin
David R. Mason
James E. Rammell
David B. Rhodes
Courtney E. Russ, Jr.
Carol H. Satterwhite
William P. Winfree

STRUCTURES AND DYNAMICS DIVISION

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Jer-Nan Juang
Paul E. McGowan
Michael P. Nemeth
Richard S. Pappa
Marvin D. Rhodes
Martha P. Robinson
Mark J. Shuart
Thomas R. Sutter

CONTROL OF FLEXIBLE STRUCTURES PROJECT OFFICE

Patricia A. Holland
Marva J. Mabry
Denna B. Zacharias

BUSINESS DATA SYSTEMS DIVISION

Henry S. Ogiba
Sheila Vanada
Janis C. Yates

INDUSTRY RELATIONS OFFICE

Howard R. Puckett, Jr.

LOADS AND AEROELASTICITY DIVISION

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Robert M. Bennett
Kim S. Bey
Samuel R. Bland
Herbert J. Cunningham
John G. Davis, Jr.
Clinton V. Eckstrom
Michael G. Gilbert
Bryce M. Kepley
Barbara V. Murphy
Richard L. Puster
Maynard C. Sandford
James Wayne Sawyer
Stephen J. Scotti
David A. Seidel

INTERDISCIPLINARY RESEARCH OFFICE

J.-F. M. Barthelemy

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Paul M. Hergenrother
Cynthia Lach
Charmaine G. McLean
James C. Newman, Jr.
Dreamie Newsome
Edward P. Phillips

ACOUSTICS DIVISION

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Otis S. Childress, Jr.
Sherry R. Ellis
Ruth M. Martin
John G. Shearin
Richard J. Silcox
William L. Willshire, Jr.

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John K. Molloy
Patricia R. Whitehead

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A. B. Blair, Jr.
Aubrey M. Cary, Jr.
Theodore R. Creel, Jr.
Pamela F. Richardson
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Carl A. Trexler
Ralph D. Watson
Richard M. Wood

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Michael G. Burroughs
Susan K. Carpenter
Ralph G. Dooley
Bruce D. Fisher
Carl L. Gentry, Jr.
Scott O. Kjelgaard
Elbert W. Lee
Nadine E. McHatton
Jacqueline P. Miller
Marilyn E. Ogburn
William L. Sellers III
Barbara S. Trippe
Long P. Yip

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Wesley C. Easley
Major C. Lee

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Robert P. Rhinehart

INFORMATION SYSTEMS DIVISION

L. Keith Barker
Salvatore J. Bavuso
Herbert D. Hendricks
Sally C. Johnson
Gerard E. Migneault
Felix L. Pitts
Glenn A. Woodell

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Michael D. Williams

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Richard F. Harrington
Suresh M. Joshi
Carroll D. Lytle
David B. Middleton
Curtis L. Shriver

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Lawrence E. Gupton
Susan L. Lilly

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Charles D. Bailey
John B. Callis
Scarlett E. Coffey
Paul L. Custis
Robert L. D'Agostino
Ronald W. Deans
Jeffrey L. Deaver
David T. Fahringer
Daniel W. Fisher
Edward M. Folts
Alan W. Frizzell
Alton W. Grimes, Jr.
Warren S. Hartraft
David F. Johnston
Mark S. Lindsey
Michael M. Mahler
Jimmy L. McRae
W. W. Midgette, Jr.
Edward L. Moore
Frank G. Reaves, Jr.
David O. Roberts
Lee J. Scaife
Edward C. Taylor
Peter Vasquez
Ronald L. Weber
Ben Wilson, Jr.

SYSTEMS ENGINEERING DIVISION

Douglas F. Auvil
David C. Beals
Robert J. Buehrle
David H. Butler
Christopher M. Cagle
George C. Firth
Stephen C. Irick
V. Scott Laney
Maria Vallas Mitchum
Alvah S. Moore, Jr.
Gordon Owsley
Wendy F. Pennington
Joseph R. Phillips
Edward J. Roberts
Homer F. Rush, Jr.
Michael R. Sorokach
John H. Stadler

RESEARCH INFORMATION AND APPLICATIONS DIVISION

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Paul R. Bagby
Deborah S. Carroll
Ricky L. Hoff
Frederick D. Jones
William B. Kluge
R. Thayer Sheets
Marvin E. Whitney
Earl E. Williams

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Robert L. Huffman, Jr.
Jean R. Migneault

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Floyd N. Ayres
Sheridan R. Barringer
James T. Davis
James D. Ferrell
Bertie S. Garrett
Evelyn B. Goodrich
Susan J. Lemon
Charles E. McCormick
John Q. Mulqueen
Marion E. Richie
John L. Singleton
Ronald E. Willinger
Davis B. Wright, Jr.

OPERATIONS SUPPORT DIVISION

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Robert B. Askew
Spencer D. Boullianne
James H. Carmines
James A. Clark
F. Dolan Clontz
Edgar L. Collier, Jr.
Randolph F. Culotta
James M. Curro
William E. Felty
Manford R. Groves
Roderick D. Harvey
Donald C. Hinson
William L. Jones
Craig Kornegay
Robert H. Kyle
Charles M. McClish
Linda F. McKnight
Thomas G. Muse
H. Craig Neal
Ted W. Noland
Floyd A. Phaup
Bryan S. Pierce
Stephen R. Robbins
Fred L. Rudolph
Raymond C. Scholz
John L. Simmons
Ernest Sutton, Jr.
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Teresa L. Wallace
Ronald L. White

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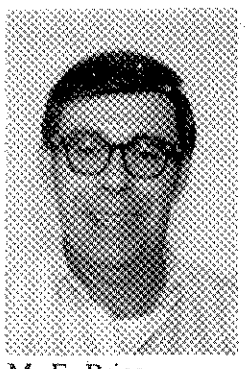
Lisa A. Creech
Margaret T. Hall
Edith K. Spritzer

SYSTEMS, SAFETY, QUALITY AND RELIABILITY DIVISION

Charles E. Mercer
H. Frank Williams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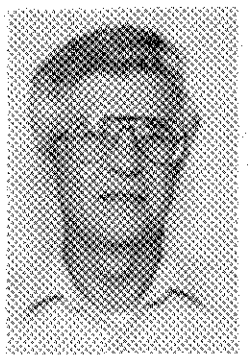
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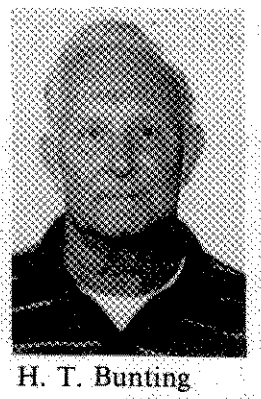
P. J. Johnston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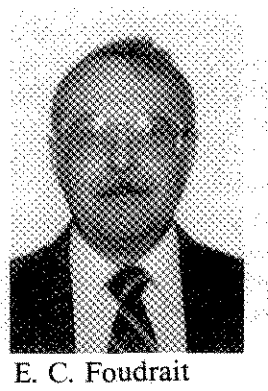
L. A. Stilley

P. C. Stainback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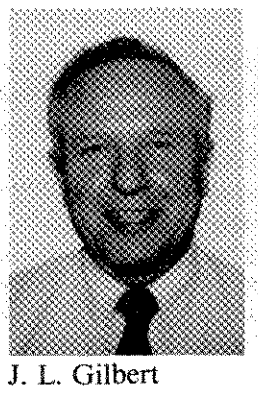
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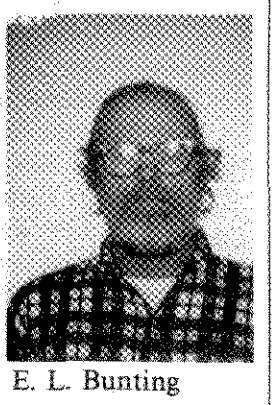
N. S. Johnson

T. C. Whiteman

R. E. Williams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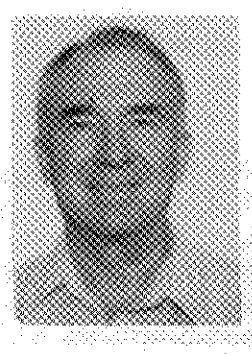
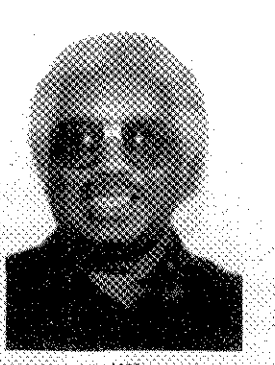
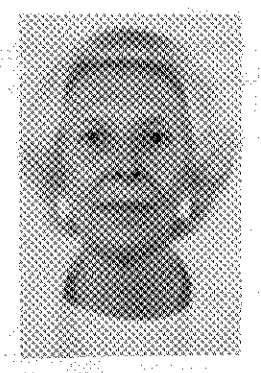
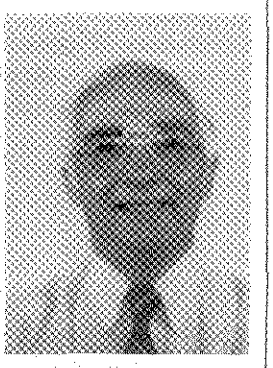

J. W. Lynch


F. A. Williams

Recent Retirees


B. A. Bell


F. G. Reaves, Jr.

Elizabeth W. Bierie, Advanced Vehicles Division, and **Paul W. Jones, Sr.** and **Archie V. Norton**, Operations Support Division, retired May 1.

Mark E. Price, Guidance and Control Division, retired June 2.

Donald G. Eide, Space Systems Division, and **James E. Rammell**, Instrument Research Division, retired June 3.

Ernest W. Millen, Flight Management Division, retired July 1.

Patrick J. Johnston, High-Speed Aerodynamics Division, retired July 2.

Henry T. Bunting and **Lyman A. Stilley**, Fabrication Division; **P. Calvin Stainback** and **William D. Beasley**, Transonic Aerodynamics Division; **Vernon K. Moore**, Operations Support Division; and **Louis P. Buldain**, Financial Management Division, retired July 3.

Edwin C. Foudriat, Information Systems Division, and **John L. Gilbert**, Facilities Engineering Division, retired July 31.

Nancy S. Johnson, Management Support Division, **Thomas C. Whiteman**, Fabrication Division, and **R. Earl Williams**, Operations Support Division, retired August 3.

Eugene L. Bunting, Operations Support Division, **Bernice A. Barrack**, Transonic Aerodynamics Division, **Kenneth E. Glover**, Low-Speed Aerodynamics Division, and **James W. Lynch**, Instrument Research Division, retired May 29.

Frank A. Williams, Research Information and Applications Division, retired August 30.

Barbara A. Bell, Aerodynamics Division, and **Frank G. Reaves, Jr.**, Fabrication Division, retired September 3.

Headquarter's Forum

Continued from page 2.

In this regard, I should emphasize that from a "personnel injury" perspective, the Langley achievements have been particularly outstanding. Several years ago, MSFC established an agency record of 4,799,799 civil service work hours without a lost time incident. That equates to approximately 230 consecutive work days at Langley. As all of you realize, we are now approaching that record achievement. We need another three months of mishap-free operations before we can claim the record, but working together, we can surpass the MSFC record. Let's set that as a goal and make Langley first in safety. We would all be justified in taking great pride in establishing a new Agency record as 1987 comes to a close . . . and we can even extend it into 1988!

Safety is not just a word we use; it is part of our 70 years of tradition, and it will be a key element in SHAPING TOMORROW.

Paul F. Holloway
Deputy Director

Positions Open

The following Competitive Placement Positions are currently open:

87-66: AST, Project Management, GM-0801-14 ir 15, Term Assignment NTE 2 years; Facilities Engineering Division, Telecommunications Project Office. Closes October 2.

87-69: Supervisory Aerospace Engineer, GM-861-13 or 14, AST, Fluid and Flight Mechanics Program Management; Aeronautics Directorate, Transonic Aerodynamics Division, Theoretical Aerodynamics Branch. Closes September 30.

87-71: Administrative Officer, GS-0341-9 or 11; Aeronautics Directorate. Closes September 29.

AIAA Sponsors Trip to Surry Nuclear Power Plant

The Hampton Roads Section of the AIAA is sponsoring a trip to the Surry Nuclear Power Plant, Wednesday, October 28, from 11:30 a.m. to 5:30 p.m.

The Virginia Power officials at the Surry plant will brief the Section on the recent steam accident which resulted in several deaths. The "Lessons Learned" briefing will include a discussion of the design problems, metallurgy, heat transfer problems, and operational considerations. Members will also be given a tour of the turbine area.

Anyone who plans to attend the program will be required to have a security check. Virginia Power reserves the right to reject any visitor.

All attendees must wear hard sole leather shoes, slacks (no dresses), must have photo ID and will be subject to a hands-on body search at the plant. Those who plan to attend will be sent an application form.

The bus will leave at 11:30 from the Activities Center. Lunch will not be provided; however there will be sodas and beer on the bus.

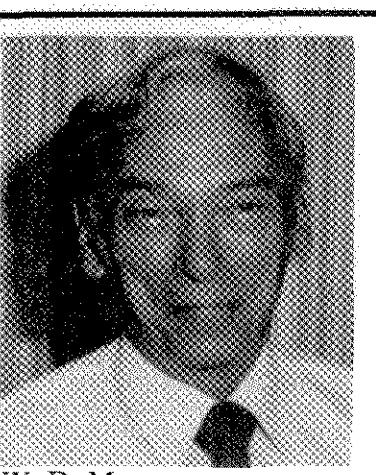
For reservations, call Duane Melson, 865-2627 or 898-4620 or Linda Bangert, 865-2673 or 877-2237. Deadline for reservations is October 9.

Langley Employees Earn 40-Year Service Awards

Eight Langley employees recently received awards for 40 years of federal service. Center Director Richard H. Petersen presented the awards to **Nadine J. Batkins**, technical information specialist, and **Taylor C. Fraser, Jr.**, visual information specialist, Research Information and Applications Division; **William D. Mace**, Director for Electronics; **Kenneth N. Cole**, Chief, Operations Support Division; **Frederick J. Hines, Jr.**, Head, Electrical Support Branch, and **Paul W. Jones**, retired, Operations Support Division; **Frank G. Reaves, Jr.**, engineering technician, Fabrication Division; and **Anna J. Lockard**, industrial property specialist, Management Support Division.

N. J. Batkins

T. C. Fraser, Jr.


W. D. Mace

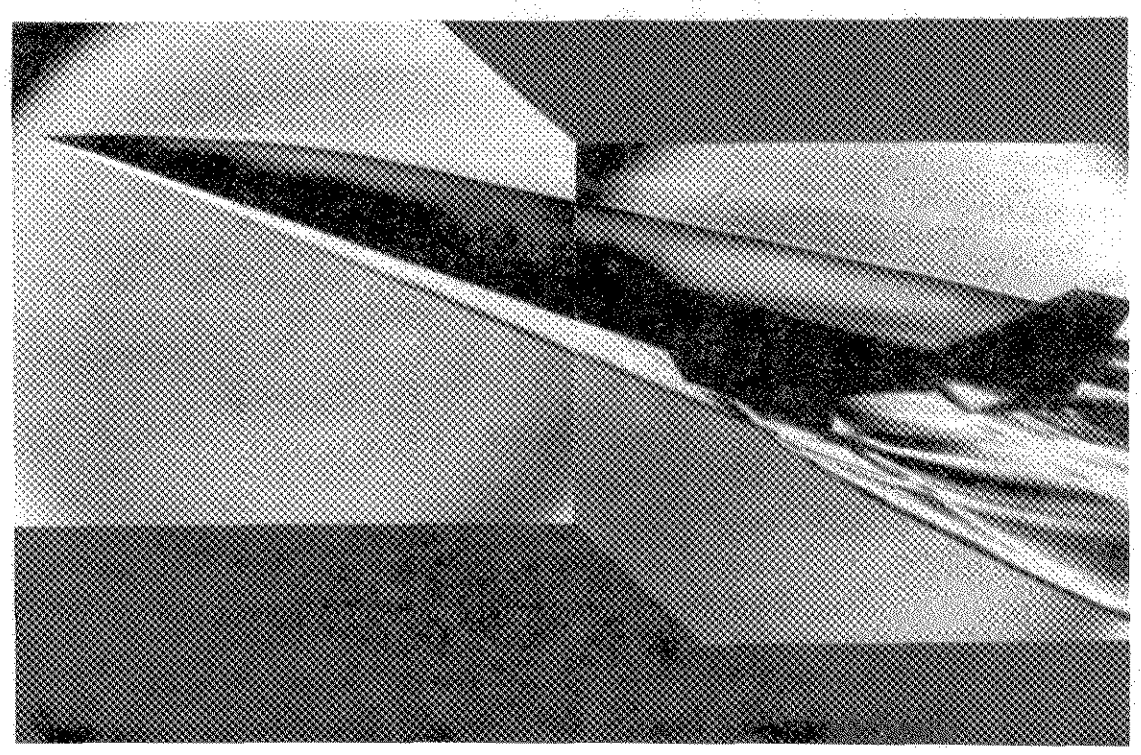
People & Places

Vigyan NASA's Minority Contractor of the Year

Vigyan Research Associates, Inc., of Hampton has been selected as NASA's Minority Contractor of the Year. The NASA award recognizes a minority business owner who has made an outstanding contribution to NASA. Vigyan, Langley's nominee for the award, provides the center with services in the area of aerospace and research development.

October 4-10 has been designated by the President as Minority Enterprise Development Week to honor the nation's minority entrepreneurs and the outstanding contributions to the economy.

A special feature during MED Week will be a formal presentation to Vigyan by Dr. Dale Myers, NASA Deputy Administrator, on October 6 in Washington, D.C. Vigyan will be involved in a national competition for the Federal Minority Contractor of the Year Award which will also be presented during MED Week activities in Washington, D.C.



Celebrating 70 Years of Research

Langley Ponders the Puzzle of Flight

This test conducted in the 20-Inch Mach 6 Wind Tunnel in the 1970's is one of a series of aerodynamic tests that investigated the concept of engine-body blending for hypersonic aircraft. Mounting a row of scramjet engines to the underside of this research model keeps the engines within the aircraft's bow shock wave, increasing aerodynamic pressure for better engine performance.

In this photo mosiac, schlieren photography was used to help researchers visualize the complex flow around the configuration.

Club News

Runners Club Race Results

Langley Runners Club top finishers in the Carnival 5 Mile race held August 22 are:

1 Pete Earls	31:22	1 Mary Drozdowski	36:24
2 Gale Harvey	32:03	2 Anne Drozdowski	37:13
3 Eric Thorsen	32:59		
4 Bob Fergus	33:55		
5 Al Graham	34:14		

Tennis Players Win Honors

Several members of the Langley Tennis Club finished in the top eight in the Peninsula-wide PTPA Junior Veterans (JV) Grand Prix and qualified for the JV Masters Tournament held August 27-30 at Back Creek Park in York County.

Bowling Stats

The NASA Tenpin Bowling League bowls every Tuesday night at Victory Lanes in Grafton. Current standings are:

	September 8	September 15
Team High Game	921 **ACD**	936 **Thunderbolts**
Team High Series	2657 **ACD**	2570 **Thunderbolts**
Male High Game	239 **Alan Frizzell**	236 **Davis Wright**
Male High Series	584 **Dick Jones**	643 **Lynn Curtis**
Female High Game	235 **Marilyn Aldrich**	185 **Ruth Frizzell**
Female High Series	601 **Marilyn Aldrich**	495 **Marilyn Aldrich**
Most Pins	+74 **Alan Frizzell**	+85 **Davis Wright**
over Average	+66 **Marilyn Aldrich**	+71 **Lynn Curtis**

SIGART Meeting

The new Hampton Roads chapter of the ACM Special Interest Group for Artificial Intelligence (SIGART) will have an introductory meeting Wednesday, September 30, in the Chesapeake Room of the Sheraton Hotel, Mercury Blvd. across from Coliseum Mall.

The featured speaker will be Nancy Sliwa of NASA who will speak on automation requirements for a lunar outpost, a concept that is currently under consideration by NASA as a major new initiative.

Cocktails and hor d'oeuvres will be available at 6:30 p.m., and the meeting will begin at 7 p.m. HRSI-GART members $1, non-members $3 or a new membership ($10 or $5 with student ID). Contact Nancy Sliwa, ext. 3871, for more information.

Harvey's Chooses Crew of Month

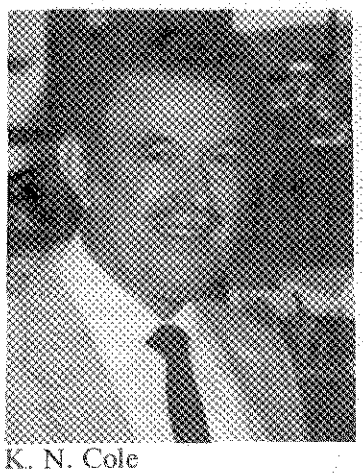
Harvey's Janitorial Service, Inc. recognizes employee teams who have excelled on their Facility Evaluation Reports. The Award Committee convened on September 1 and selected Crew #8 as Crew of the Month for August. Shown (L to R) are Sylvia Debroux, Walter Terry, Shirley Sheppard, Thelma Kirby, and William Jones. Not pictured is crew member Malik Salahuddin. This team obtained an Average Facility Evaluation score of 93 out of a possible 95 points.

In Memoriam

Sympathy is extended to the families of:

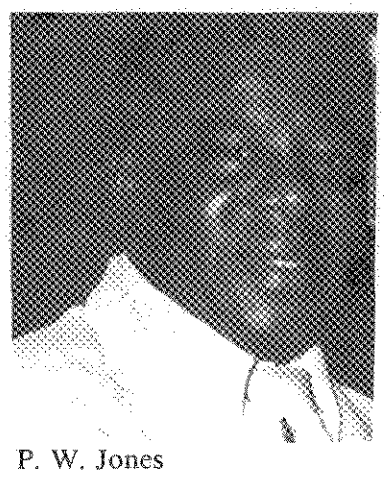
Marvin G. Taylor, who died September 1. Taylor retired from the Operations Support Division.

William Gracey, who died August 30. Gracey retired in January 1969 from the Flight Research Division after 33 years of service to NACA/NASA.



K. N. Cole

F. J. Hines, Jr.



P. W. Jones

F. G. Reaves, Jr.

A. J. Lockard

Happenings

LAA SOCIAL will be held Friday, October 2, from 4 to 6:30 p.m. in the Activities Center.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, October 13, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

NASA INTERCENTER RACES will be held between Sept. 26 and Oct. 25. The 10 KM races will be on Sept. 28, Oct. 7, 13, 22; the 2-mile races will be on Sept. 30, Oct. 6, 15, 19. All races start at 5 p.m. on Doolittle Road, except the 2-mile race on Oct. 6 which will be on the Bethel HS track at 12 noon. All NASA employees, retirees, on-site contractors, and co-ops at work earn points for Langley by participating. Walkers are welcome at all races. For more information, call Richard Shearer, ext. 4508.

WANTED: Vanpool members between Williamsburg and NASA area. Please call Leonard Melfi, ext. 3718, or Ginger Cordle, ext. 3887.

DINNER-DANCE. 70th Anniversary Banquet and Dance sponsored by the Langley Alumni Assn. will be held October 17 at the Williamsburg Hilton. Cost is $16/person. Seating is limited, so make reservations now. Public is welcome. Get a group of 12 together and reserve a whole table! Contact Betty Joyner, Eagle Engineering, Inc., Tower Box 77, 2101 Executive Dr., Hampton, 23666.

REUNION. The 1967 graduating class of the Langley Apprentice School will hold a 20-year reunion dinner October 19 in the Activities Center. Non-1967 graduates are also invited. Contact Scott Laney, ext. 4621, for further information.

ANNIVERSARY. The Scout Project will hold its 30-year reunion in Reno, Nev., Oct. 29-Nov. 2. For details on special arrangements, contact Abe Leiss, 877-2939.

HELP. The Technical Library is trying to locate a missing portable microfiche reader (ECN No. 419663). If anyone has borrowed it, please contact Effie Nicosia at ext. 2630.

CEBAF SEMINAR. Bernd Bassalleck, University of New Mexico, will discuss "Searches for the Doubly-Strange H-Dibaryon," at 11 a.m., October 5, in CEBAF Room 53. The CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

PRAYER BREAKFAST open to all NASA employees and contractors every Wednesday at 6:30 a.m. in the new section of the cafeteria. Breakfast, purchased individually, is the only cost. Sign up not necessary. Format will include reading a short devotional from the Bible, breakfast, and sharing/praying for needs brought up in the group. Meeting will conclude by 7:30.

EXERCISE CLASSES. Suellen Seabrook, fitness columnist for the **Daily Press** and **Times-Herald**, conducts exercise classes on Mondays and Wednesdays at 5 p.m. in the Activities Center. Enroll now for the high intensity workout-low impact exercise classes. For details, call Suellen, 877-6967.

MISPLACED: One "Motorcycle Parking Only" sign. Yellow with black letters. Last seen attached to fence in front of Bldg. 1265. Sign apparently broke loose from its bindings sometime during the week of Sept. 1. If seen roaming the field aimlessly, please call Dennis McMillan, ext. 3421.

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National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23665-5225

Official Business
Penalty for Private Use $300

swap and shop

FOR SALE: 1977 Plymouth Volare station wagon. 115,000 miles, automatic, PS, PB, AC (needs repair). Runs well. Call Jim Martin, 693-4241/4964.

FOR SALE: 1980 Mark VI Lincoln Continental, 4-door sedan w/ coach roof. 70,000 mi./one owner. Radio w/cassette, CB radio, all factory installed. New tires. $6,996 firm. Financing available. Call 599-3076.

HOUSE FOR SALE. Hpt./Sanlun Lakes. 2-story colonial, 3 BR, 2 1/2 BA, formal LR and DR, FR w/FPL, Kit. w/DW, W/W carpet, central AC/HT, Att. Gar., fenced yard. $93,500 or $19,300 & assume 9.5% VA w/reinstatement. Call 827-0198 after 4 p.m.

Alumni News and Views

The Center really needs the help of our very talented and generous alumni to assist with the Open House on October 24. Please call Cathy Schauer, 865- 3159, or Ann Suit, 865-3967, if you can spare a few hours on that day.

The menu for the 70th Anniversary Banquet – see Happenings – will be as follows: salad, top round of Beef Bordelaise, baked potato, peas, rolls, sherbet, and beverage. Get those reservations in soon. Invite your friends and neighbors to celebrate with us. Act now, don't be left out.

"Augustine's Laws"

Video at Visitor Center

The AIAA/Visitor Center Aerospace Lecture Series presents "Augustine's Laws," a set of humorous observations about the foibles of aerospace projects in the 1980's, on Wednesday, September 30, at 12 noon, in the Visitor Center Theater. Although treated in a sometimes tongue-in-cheek manner, the problems Augustine addresses in this video are both real and deserving of attention.

Current News Releases

To receive a copy of these NASA news releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-130.....Acceptance Tests Begin on Shuttle Main Engines for STS-26 Launch
87-131.....McDonnell Douglas Selected for JSC Support Contract
87-132.....NASA and Australia Sign Agreement
87-133.....NASA Fosters Airborne Technology for National Airspace System
87-134.....NASA Assisting Fire Fighters in California
87-135.....NASA Responds to Report by NRC Committee on Space Station
87-136.....National Student Winners Present Space Station Proposals to NASA
87-137.....Two NASA Scientific Spacecraft to Reenter Over South America
87-138.....NASA Selects Contractors for Liquid Fuel Rocket Booster Studies
87-139.....Space Shuttle Mission STS-27 Crew Named

CHRISTMAS IN AUGUST. Children at the YMCA in Newport News; H. Milton Holt, Co-Chairman of Langley's Combined Federal Campaign; Rockey Edge, NASA-Union Liaison Officer; and Don Avery, Technical Assistant to the Director for Space, decorate a Christmas tree in August to encourage everyone to celebrate Christmas all year long–by giving to and sharing with one another. This, too, can be applied during the Combined Federal Campaign, when each Langley employee, contractor and retiree is called upon to give generously to the campaign, to help improve the quality of life for each person on the Peninsula. As each of you gives to agencies like the "Y," the agencies, in return, can give the love and care to those in need all year long. With the funds received from the campaign, the YMCA can offer many youth activities, such as swimming; field trips to the zoo, circus, fossil pit and sand pool; and a variety of sports throughout the year. The center has just begun full-time day- care services, with transportation in the afternoon from the local public schools to the center.

NASA
National Aeronautics and
Space Administration

Langley Research Center

Volume 1, Issue 7 October 9, 1987

Bi-weekly Employee and Contractor Publication

News Researcher

Langley Celebrates 70th Anniversary with Open House

The final event commemorating Langley's 70th anniversary will be an Open House Saturday, October 24. More than a dozen unique research facilities will be open to the public from 9 a.m. to 4 p.m.

Langley's anniversary theme, "Shaping Tomorrow," acknowledges Langley's contribution to this country's achievements in aeronautics and space. The mark of Langley research can be found on nearly every aircraft and spacecraft that the United States has ever flown.

Visitors can share in this history and take a glimpse into the future on open house day. At research facilities not normally open to the public, demonstrations and displays will be supplemented by people prepared to answer questions about that facility's research.

At the aircraft hangar, airplanes and helicopters will be on display. Included will be general aviation airplanes used in stall-spin flight testing, a delta-wing fighter which is purposely flown into thunderstorms to get struck by lightning, a transport modified for testing the latest in electronic cockpit controls and displays, and an Army-style airplane modified for natural laminar flow studies. Also at the hangar will be scale models of advanced aircraft representing commercial transport, military weapons systems and general aviation concepts.

One area in the hangar will house an historical exhibit commemorating Langley's 70th anniversary, a technology utilization exhibit and a life support system used by research test pilots and crew members.

In the atmospheric sciences area, aircraft and Shuttle-launched spacecraft experiments will be highlighted. Langley is a leading center of research into how man and nature affect the relatively thin, and sometimes fragile, atmosphere that blankets the earth.

In another location, aircraft cockpit simulators will be featured. The hydraulically-actuated "visual motion simulator" will be demonstrated, and a simulator for testing the handling qualities of fighter-type aircraft will be open for inspection. Visitors will also see an "advanced concepts simulator," which hints at the appearance of transport cockpits of the mid-1990's. Displays from the center's instrument research division will relate to flow visualization (for wind tunnels) and a speech synthesizer, among others.

At the center's aircraft noise reduction laboratory, visitors will be able to witness rotorcraft noise demonstrations in the External Effects Room. The noise demonstration will make it possible for the visitors to see how new technology has led to quieter helicopters. A McDonnell Douglas 500-E helicopter, on display in the parking lot behind the building, will be used in explaining some of the rotorcraft research that Langley has performed.

Visitors to the Quiet Flow Facility will see hardware used for conducting a jet noise study. In another area, a graphite model of an airplane fuselage will be displayed along with a static demonstration of the model. For the first time, the physics area will be open to the public. This area will display the transmission loss apparatus and the active noise control apparatus.

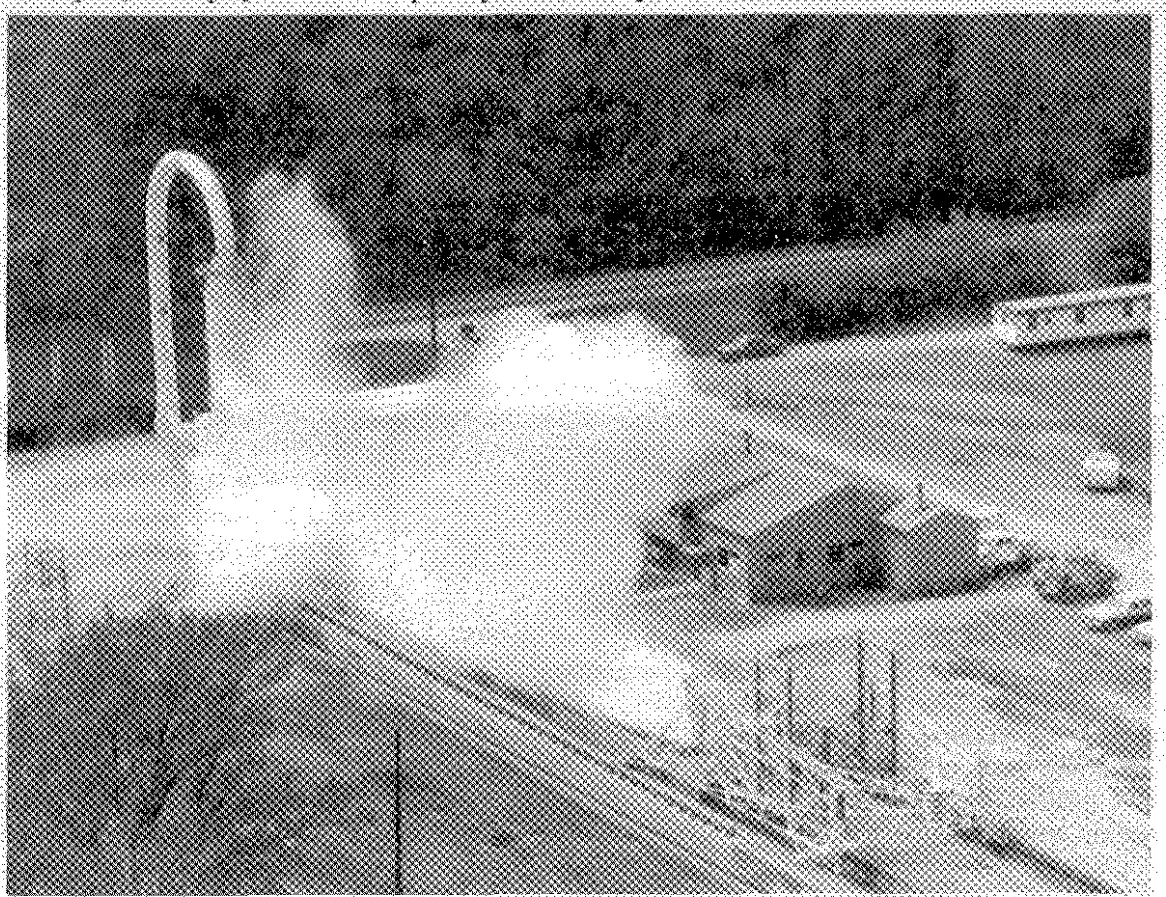
One of the highlights in the machine shop/fabrication area is the cutting of space hardware samples which may someday be used in construction of a space station. A numerical control machine will machine the parts, which visitors will have the opportunity to handle. A series of manned displays will present the work of each branch of the fabrication division. Topics will include "tech briefs," patent application and spins offs from space technology. A separate display manned by the personnel division will provide information on the center's apprenticeship program.

In the materials and structures lab, displays will offer a glimpse of construction concepts for various large space systems, like space station and other candidates for earth orbit. Graphite fiber composites and experimental metallic alloys are tested in this lab. These and other materials-processing concepts for advanced aircraft and spacecraft will also be on display.

The spacecraft controls laboratory experiment facility will feature static displays showing the different kinds of hardware used for validating control systems for flexible space structures. Oral presentations are planned that will describe the hardware.

One facility, open to the public for the first time, is the Aircraft Landing Dynamics (ALDF) Facility, a unique national test facility which evaluates a variety of aircraft landing gear systems and components under closely controlled conditions. The facility was recently upgraded to double the carriage's speed capability to 250 miles per hour. Researchers at the facility will conduct three data-gathering runs of the carriage at 11 a.m., 1 and 3 p.m. for the public to witness.

In addition to the ALDF runs, visitors will be able to tour the shop area. The old landing loads track carriage will be available for visitors to see, as well as a number of Shuttle orbiter tires, a model of the new test carriage, a 1/27-scale Shuttle model used for the net assessment tests, and a video tape presentation of carriage runs and Shuttle tire tests.



The Aircraft Landing Dynamics Facility (ALDF), a unique national test facility, evaluates a variety of aircraft landing gear systems and components under closely controlled conditions. During Langley's Open House, researchers at the facility will conduct three test runs for the public to see.

Wind tunnels of various size and description will be open. The tunnels are unique facilities for testing subscale models of aircraft and spacecraft. When in operation, their wind speeds range from a stiff breeze to many times the speed of sound.

At least one wind tunnel tour will include walking inside its tunnel shell to see its large drive fan. The 14- X 22-Foot Subsonic Tunnel will also have various wind tunnel models on display. This subsonic tunnel routinely tests new aircraft concepts ranging from helicopters to fighters to advanced transports.

In one building, visitors are offered an extensive look at two high-speed wind tunnels. The 31-Inch Mach 10 Tunnel will feature a model display and tour through the test section and control room. In the test section, a computerized model injection/attitude control system will be demonstrated. In the larger Unitary Tunnel, visitors will see a display in the shop area of tunnel models with instrumentation. Another high-speed model will be mounted in the test section. For those who can navigate a few steep and grated steps, an optional part of the tour includes an escorted side trip to the tunnel control panel and main drive area.

A much smaller, but very high-speed tunnel is the Helium Tunnel, recognized by the giant spheres that have become a Langley landmark. Demonstrations, displays and videos will tell the story of Mach 20 testing of Shuttle for atmospheric reentry, of spaceplanes and other extremely high-speed vehicles.

A space station computer aided design simulation will share display space in the Helium Tunnel. Space station configurations are illustrated and a display will show drawing-to-model creation of a space station. A simulated computer aided design facility, made up of several computer graphics terminals with dynamic displays, will depict design and analysis of space station concepts.

In the Langley Activities Center, the video tape produced for the 70th anniversary will be shown throughout the day. Langley contractors will feature static displays and representatives will be available to answer questions about their work at the center.

At the Langley Visitor Center special programs will include a 70th anniversary slide presentation on the history of the center. Aeronautics and space technology and open house exhibits will also be featured. NASA souvenirs will be for sale at the souvenir counter, including special items ordered bearing the 70th anniversary logo. Because of the open house, the Visitor Center will open at 9 a.m. on October 24 and close at 4:30 p.m.

Ample free parking and on-center bus transportation will be provided, with special bus service for the disabled.

News Briefs

HEADQUARTERS, Washington, D.C. — NASA has announced that secondary payloads for the next Space Shuttle mission will include five microgravity experiments; life science, atmospheric sciences, and infrared communications experiments as well as two student experiments. The primary payload to be carried aboard the orbiter Discovery on STS-26, scheduled for launch in June 1988, is NASA's Tracking and Data Relay Satellite.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — NASA officials, U.S. astronauts, designers, and potential domestic and international users of the permanently manned Space Station met at Marshall on Oct. 2 for an early look at Space Station modules. Although the Space Station will not be operational until the mid 1990s, attendees of the Space Station Laboratory Workshop were able to enter full-scale engineering mock-ups of the U.S. laboratory and habitation modules to see first-hand what living and working will be like in Space Station.

HEADQUARTERS, Washington, D.C. — The organization of the new NASA Office of Communications has been completed. The office is in charge of agency relations with the general public and the mass media. It is also responsible for television development, employee and other internal communications, and Freedom of Information Act activity.

JET PROPULSION LABORATORY, Pasadena, Calif. — Researchers at JPL have successfully tested an antenna design expected to play a key role in the agency's mobile satellite experiment (MSAT-X) program. The newly developed antenna, designed to be mounted on the roof of a passenger vehicle, uses mechanical steering to track an Earth-orbiting satellite while the vehicle is in motion. It and other technologies developed in the program are intended to pave the way for an eventual mobile satellite communications system.

HEADQUARTERS, Washington, D.C. — NASA recently announced the selection of James T. Rose to serve as Assistant Administrator for Commercial Programs. In his new position Rose will be responsible for NASA programs to encourage the commercial use of space by the U.S. private sector, facilitate the use of NASA technology by American industry, and support innovative research by small business firms. Rose replaces Isaac T. Gillam IV, who retired on September 1.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail stop 146, ext. 3017. Request information by release number and headline. See Current News Release information box on page 3.

ROLM Selected for Telecommunications System Contract

ROLM of Vienna, Va., has been selected by NASA for a contract to install a new telecommunications system at Langley Research Center, Hampton, Va. The 52-month, $12.9 million, fixed-price contract, will begin in early October.

ROLM will install and test an on-site, private automatic branch exchange (PABX) digital switching system for voice and data. The system will replace and upgrade both the current Centrex service supplied by the local telephone company and a Micom Micro 600 based low-speed data network.

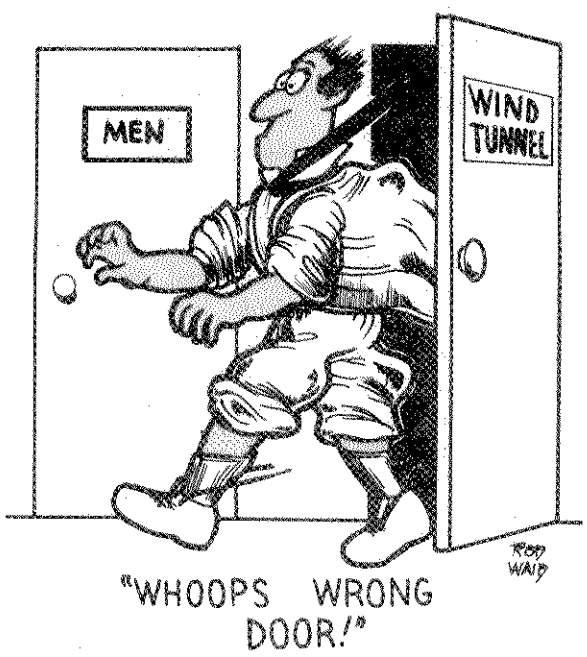
The new PABX will access the local public telephone network and will interface with the Langley Business Data Systems Network, numerous intra-center communications and monitoring networks and the NASA Program Support Communications Network.

The system will have the capacity to meet anticipated requirements for at least 10 years. Where possible, system components, such as the wiring plant, will have longer usable life spans. The system also will include an Automated Communications Management Facility for centralized management and control.

Two new cable plants also will be installed. The Telecommunications Cabling System will be dedicated to the Langley Telecommunications System. The totally independent Peripheral Cabling System will support other requirements such as center-wide monitoring and alarm circuits.

The work includes training for Langley employees and support contractor personnel.

Lankley



Note of Thanks

Nancy S. Johnson writes: "A special thank you to all my friends at NASA who made my retirement party a really super affair. I will remember every smiling face as I am sitting in my boat using my very special gift. Gone fishing . . . ."

Flu Shots Given

Again this year "flu shots" will be given to civil service employees at the Occupational Medical Center from 8 a.m. to 4 p.m. Influenza vaccines used in recent years have generally been associated with only a few reactions; fewer than one-third of vaccinees have been reported to develop local redness or swelling at the site of the injection for more than one or two days. People allergic to eggs, chicken, chicken feathers, or chicken dander should not receive the vaccine. Also, people who have received another type of vaccine in the past 14 days should see a physician before taking this vaccine. A consent form must be signed.

Editorials

Retirees Accept CFC Challenge

Once again it's time for all Langley Research Center employees and retirees to share their blessings with those less fortunate.

During October, the center will be participating in the combined Federal Campaign (CFC), the federal government's single drive to raise funds for United Way organizations, National Health Agencies, National Service Agencies, and Internation Service Agencies.

The LaRC Alumni Association is pleased to have been invited to help in planning and conducting this campaign. Sue Wilder and Fred Schmidt of the Alumni Association Board of Directors have worked closely with the center's campaign team. They have personally visited several of the recipient agencies to see first-hand how our contributions are working in our own communities. They report that they are much impressed with the management of the funds received and with the good work that has been accomplished.

The center's 1987 goal of $250,000 represents approximately a six percent increase over last year's target. Of this total, $22,000 has been assigned as the retirees' goal. This does not include an increase; last year 253 retirees contributed $22,021. Considering that there are approximately 1700 retirees, I believe that if we all help we can easily surpass that goal.

Shortly each retiree will be mailed a package including a donation card (retirees cannot pledge) and campaign literature. I urge my fellow retirees to respond to these worthy organizations with their characteristic generosity. Those of you who occasionally lunch at the NASA cafeteria will be able to monitor the progress of our giving – this year retirees will be listed along with center divisions and directorates. Let's make a good showing.

Bill Boyer

Langley Colloquium

Spitzer to Show 'Snapshots of Planetary Exploration'

United States' spacecraft have been exploring the planets for 25 years, returning pictures and data that have both dazzled and confused planetary scientists and the public alike. Some of the best photographs will be presented and interpreted at a Langley Research Center colloquium Monday, October 19.

Cary R. Spitzer, Manager of Program Plans and Contracts in the Advanced Transport Operating Systems Program Office, will present "Snapshots from Planetary Exploration," at 2 p.m. in the Activities Center. Following the presentation, a question and answer session and an informal discussion will be held in the Langley Room.

In his lecture, Spitzer will discuss the vast range of discoveries made by the Pioneer, Mariner, Viking and Voyager spacecraft. Among the many snapshots he will share with the audience are dust devils and snow on Mars, "ropey" terrain on satellites of Jupiter and Saturn, the atmosphere of Titan (the only moon in the solar system with an atmosphere) and the fractured and reaccreted Miranda, a moon of Jupiter.

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865-3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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

Call for Papers

The theme for the 25th Space Congress will be "Heritage, Dedication, and Vision." Proposed topics for the Technical Papers Sessions will include:

Commercial Aspects of Space Research/Tech.
Commercial Space Enterprises
The Business of Space Business
Systems Automation
Artificial Intelligence Applications
Robotics
Space Station Technologies
Launch Vehicles of the Future
Lunar Base Development
Mission to Mars Concepts

NASA personnel wishing to offer papers on these and related subjects are invited to submit a 200-word abstract to Bill Martin, NASA, Code PT-PMO, JFK Space Center, FL, 32899.

Deadline for abstracts is Nov 20, 1987. Papers in final form are due January 31, 1988.

Upcoming Conferences

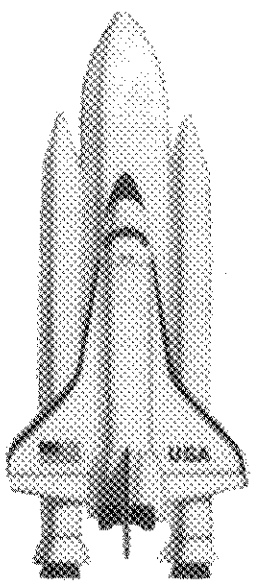
Hampton Roads Chapter Classification and Compensation Seminar will be held October 20 at the Activities Center. The speakers, some from the Office of Personnel Management Central Office, will provide the latest information concerning legislative proposals affecting Federal employee pay, classification, and qualifications. For more information, contact Donald S. Petrine, Mail Stop 174, ext. 3007.

Electromechanical Actuation Technology Program Workshop will be held October 14-15 in Building 1218. Contact Howard W. Stone, Mail Stop 365, ext. 4960 for more details.

Magnetic Suspension Technology Workshop will be held October 27-29 at the Radisson Hotel, Hampton. Specialists from NASA, DOD, academia, and industry will attend. For further information, contact Claude R. Keckler, Mail Stop 161, ext 4591.

Lewis Research Center, Cleveland, Ohio, will host an International Workshop on Aircraft Icing Technology, November 4-6. Focus of the workshop is the state-of-the-art in aircraft icing. Contact Robert J. Shaw, Deputy Chief, Icing & Cryogenic Systems Technology Branch.

Space Shuttle Update



DISCOVERY: Main propulsion system helium regulator test is continuing. Test simulates main engine demands during flight and will validate the regulators. Airframe inspections, processing of orbital maneuvering system pods and forward reaction control system continuing.

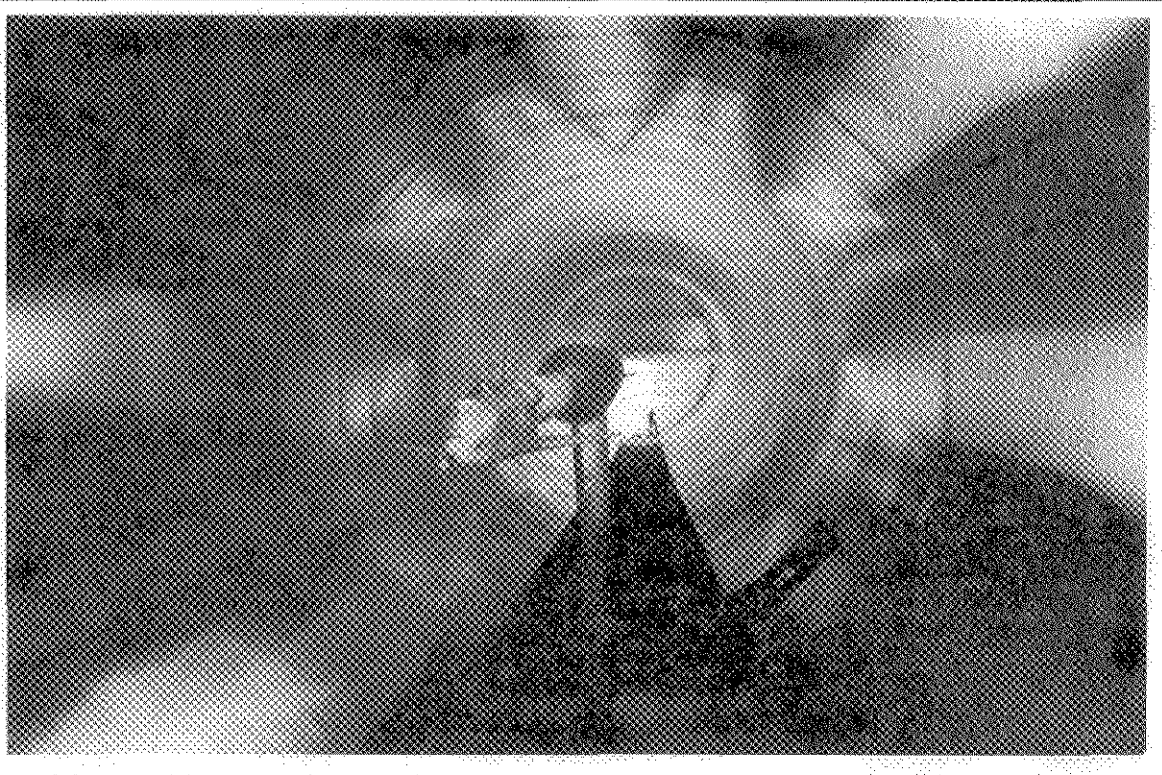
ATLANTIS: Installation of thermal control blankets on left hand payload bay door is underway, after which radiators can be installed. About 13 modifications are in various stages of work and inspections are continuing.

COLUMBIA: Technicians continue to remove small diced tile from orbiter's right and left hand sidewalls and will replace them with thermal blankets. Columbia is scheduled to be transferred to a different set of jack stands to allow access to the crew compartment.

Current News Releases

To receive a copy of these NASA news releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-140.....NASA Selects Boeing for Major Aeronautical Flight Experiment
87-141.....Users to View Space Station Modules
87-142.....Organization of NASA Office of Communications Completed
87-143.....Passenger Vehicle Satellite Antenna Tested
87-144.....Secondary Payloads Announced for Shuttle Discovery Mission
87-145.....James Rose Named Assistant Administrator for Commercial Programs



Celebrating 70 Years of Research

Shuttle Re-Entry Simulated at Langley

What may appear at first glance to be a swimming shark is a wind tunnel model of the Space Shuttle Orbiter.

Inside Langley's 16-foot Transonic Wind Tunnel in 1978, the model simulates Orbiter re-entry into Earth's atmosphere, when it must fly through transonic speed range – the range that crosses the sound barrier.

Position Open

The following Competitive Placement Position is currently open:

87-73: Offset Press Operator, WG-4417-9 or 10, Research Information and Application Division, Visual and Printing Services Branch, Publications Section. Closes October 14.

Positions Filled

Weaver Willard has been selected AST, Basic Properties of Gases, High Energy Sciences Branch, Space Systems Division, under CPP 87-54.

George G. Steinmetz has been selected Supervisory Aerospace Engineer, AST, Navigation, Guidance and Control Systems, Vehicle Operations Research Branch, Flight Management Division, under CPP 87-48.

Sandra S. Duncan has been selected Computer Programmer, Personnel Division, under CPP 87-47.

Retirement Party

Carl B. Smith will be honored at a retirement party on Friday, Nov. 6, at the Fort Monroe Officers' Club. Cash bar will be held at 6:30 p.m.; prime rib dinner begins at 7:30. Cost is $12/person or $21/couple. Contributions to gift only will be gratefully accepted. Respond to Jane Everett, Mail Stop 233, ext. 2801, by Oct. 30.

LAA Holds 1987 Elections

The Langley Activities Association (LAA), a branch of the Langley Exchange, is responsible for the majority of employee welfare and morale activities at the center. Election of five of the ten members of the LAA governing board is now underway.

The positions of Vice-President, Treasurer, and Chairpersons of the Social, Arts & Crafts, and Publicity Committees will be filled this fall.

Nomination forms are available in the LAA Office and must be signed by the nominee's supervisor and division chief. Deadline for return of nomination forms is October 29.

Candidate profiles will be published in the November 6 issue of the **Researcher News**. Ballots will be distributed to center personnel on November 9 and are due by close of business on November 24.

In order for the LAA to remain a viable and dynamic part of Langley, it is important that interested and qualified individuals accept the challenge issued by the LAA and agree to run in the fall's elections.

Bowling Stats

The NASA Tenpin Bowling League bowls every Tuesday night at Victory Lanes in Grafton. Current standings are:

	September 22	September 29
Team High Game	958 ACD	984 Spare Change
Team High Series	2796 ACD	2758 Spare Change
Male High Game	267 **L. Curtis**	233 **L. Curtis**
Male High Series	644 **L. Curtis**	616 **B. Beasley**
Female High Game	203 **F. Boninu**	212 **B. Whitehurst**
Female High Series	501 **B. Williams**	557 **R. Frizzell**
Most Pins	80 **L. Curtis**	73 **B. Whitehurst**
over Average	80 **W. Higgs**	65 **A. Lusk**

Volleyball Leagues Forming

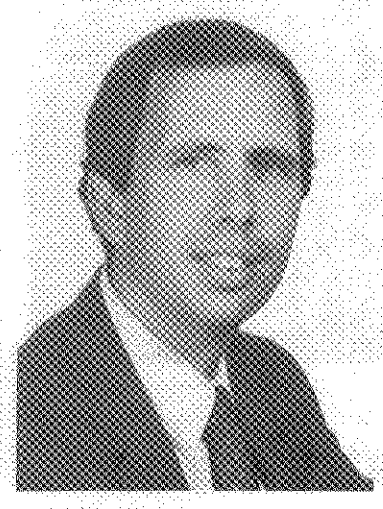
Avoid end of summer slump;
Sign up to spike, set, and bump.
Sixteen co-ed teams will play
In three leagues: C, B, and A.
Games will be on Wednesday night,
The new gym will be the site.
The fall league will soon begin,
So hurry, get your name in.
All you have to do is call
Our new president, Jim Hall.
-BvO

Call Jim Hall, ext. 3280, or Bill von Ofenheim, ext. 3434, for more information.

Apprentice Graduation

Templin, Keynote Speaker at Today's Ceremony

Dr. Robert G. Templin Jr., President of Thomas Nelson Community College, will be the guest speaker for the apprentice graduation ceremony at 1:30 p.m. today.



Templin became TNCC president in 1986, following eight years as dean of instruction, Piedmont Virginia Community College, Charlottesville. Previously he was a visiting associate professor at the Center for the Study of Higher Education, and assistant professor of education and continuing education, University of Virginia, Charlottesville; dean of the college, Somerset Community College, Somerset, Kentucky; a fellow and research associate, department of adult and community college education, North Carolina State University, Raleigh, N.C., and coordinator of community relations at Harford Community College, Bel Air, Md.

He is a member of the American Association for Adult and Continuing Education, Council for the Advancement of Experimential Learning and the Council of Universities and Colleges of the American Association of Community and Junior Colleges.

Woodell Elected Class Speaker

Apprentice Accomplishments are Many

The Langley Research Center Apprentice School graduates 23 engineering technicians today. Seventy percent of the Class of 1987 is graduating with honors.

The Forty-third Annual Completion Exercises for Engineering Technicians will be held in the Activities Center. Frederick M. Thompson, Coordinator of the Apprentice Program, Personnel Division, will present the certificates. Music will be provided by the U.S. Continental Army Band, directed by Sergeant First Class Don Williams.

Twenty-one of the apprentices entered the program with at least two years of college and were given two years' credit toward graduation. Fourteen of the apprentices have associate of applied science degrees in mechanical engineering technology, five have associate of applied science degrees in electronics engineering technology, two have bachelor of science degrees in industrial technology and two are from the Growth Opportunity (GO) Program. The GO Program is a program that enables secretaries to become engineering technicians.

*** **Glenn A. Woodell** was elected by his classmates as Speaker for the Class of 1987 and will address the commencement assembly today.

Graduating summa cum laude and tied for first place rank in his apprentice class with a 4.0 average, Woodell graduated cum laude from Thomas Nelson Community College (TNCC) with an associate degree in mechanical engineering technology; he has also completed undergraduate courses at Old Dominion Univeristy (ODU) in chemistry.

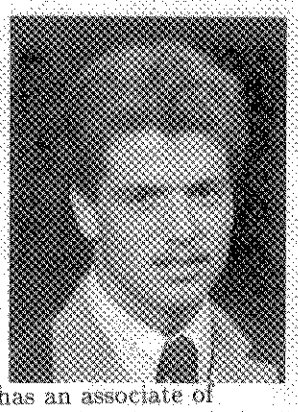
In recognition of his work at Langley, Woodell has received two Special Achievement Awards. He was cited for exceptional job performance of assigned duties while working in the machine shop. Assigned to the Information Systems Division (ISD), he has been recognized for his contributions to the rapid post-flight calibration of the Materials Experiment Assembly (MEA) Space Shuttle crystal growth furnace.

Langley Apprentice Class of 1987

*** **James K. Charnock**, an Engineering Technician Designer (Mechanical) in the Facilities Engineering Division (FENGD), graduated summa cum laude from TNCC with an associate degree in mechanical engineering technology. He is working toward a bachelor of science degree in math from Christopher Newport College.

Charnock has received an Outstanding Performance Award for his work in the Fabrication Division (FD) and a Special Achievement Award for "contributions to the successful completion of the 16-foot laser velocimeter and the 6 x 19 inch test section redesign" in FENGD.

Charnock resides in Newport News with his wife, Angelique.



* **Ronald W. Deans** is an Engineering Technician (Models and Materials Technology Branch) in FD. A former co-op student from TNCC, Deans has an associate of applied science degree in mechanical engineering technology.

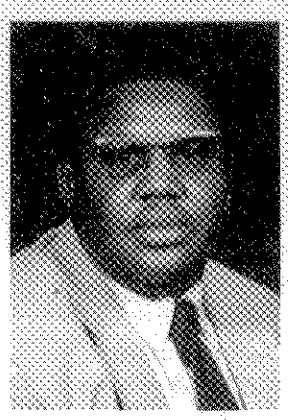
His contributions include extensive work on the EA6B model for which he received a Special Achievement Award, and work on the Compact Radar Range Reflector System and the Force Test Aero-Space Plane.

* **Kenneth A. Deyerle** is an Engineering Technician (Models and Materials Technology Branch) in FD. He has contributed to the Compact Range Reflector project, the 16-foot Fan Blade Rebuild project and, most recently, the Advanced Technology Space Station Concept. He has been credited for extensive repairs on the X-29 Drop Model while working in the Composite Model Development Section,

Deyerle has received a Group Achievement Award, several letters of commendation, and a Certificate of Appreciation from the Presidential Commission investigating the Shuttle Challenger accident.

Janet L. Edmondson, a Poquoson resident, is an Engineering Technician (Mechanical Development) in FD. She is the first woman in FD to complete an apprenticeship through the Growth Opportunity (GO) Program. She is one of the first two women to graduate from the Advanced Machining Development Section at Langley.

Edmonsdon has received a letter of commendation for research activities on carbon-carbon composites, Certificates of Appreciation from 16-foot Fan Blade Rebuild and the HALOE projects, and a Special Achievement Award for support of the National Transonic Facility (NTF).

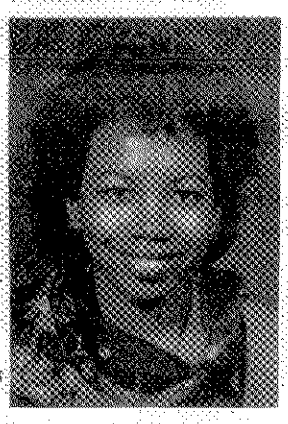


James Fields, Jr., a former co-op student and native of Charleston, S.C., graduated from Elizabeth City State University with a bachelor of science degree in industrial technology. He is an engineering technician in FD (Mechanical Development).

Fields has served as a Quality Circle member and a member of the National Assiciation of Industrial Technology. He has received a letter of commendation for the ACCESS project, and Certificates of Appreciation for the 16-foot Fan Blade Rebuild and the HALOE projects.

* **David L. Giltinan**, an Engineering Technician in FD (Composite Model Development Section), has associate degrees in electronics and mechanical engineering technology. He has contributed to several NASA projects including the Advanced Turbo Prop model and the NTF Fan Blade Rehab Project.

Giltinan and his wife, Lois, reside in Newport News.



C. Diane Griffin is a Mechanical Technician (Laboratory Operations Branch) in the Operations Support Division (OSD). Griffin is the first black woman to graduate from the Growth Opportunity (GO) Program.

She has received Certificates of Appreciation for her outstanding support involving the Presidential Commission Investigation of the Space Shuttle Challenger accident.

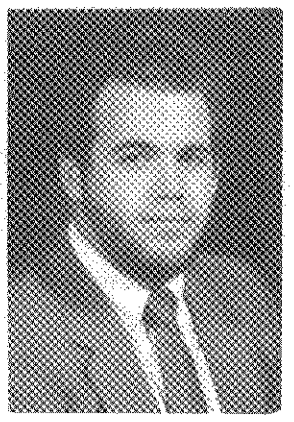
She and her husband, Willis, live in Hampton. They have one daughter.

PHOTO NOT AVAILABLE

Joanne J. Herring, a former co-op student, graduated from Elizabeth City State Univesity with a bachelor of science degree in industrial technology. She is the first female Engineering Technician to graduate in the Metals Technology Development Section.

Herring has received a letter of commendation for her contributions to the refurbishment of the 16-foot Fan Blade Project and a Group Achievement Award for her work on the F-106 project.

Engineering Technicians



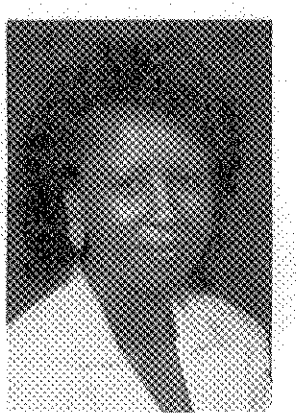
** **Jeffrey C. Hyle** is an Electronics Technician (Electrical Drives and Systems Operation) in OSD. He performs maintenance on control systems for wind tunnel drives.

Hyle, a former co-op student, has an associate of applied science degree in electronics. He has received a Special Achievement Award for outstanding performance at Langley.

James L. Leuci, an Electronic Technician (Digital Data Acquisition Section) in the Instrument Research Division (IRD), has an associate of applied science degree in electronics.

He has received a Special Achievement Award and a Certificate of Appreciation for his work on the HALOE project. He is also the recipient of a Ten-Year Service Award.

Leuci and his wife, Susan, live in Newport News.



* **Mary D. Liggins** entered NASA through the TNCC co-op program, where she graduated with an associate degree in mechanical engineering technology. She is one of the two females in the history of the LaRC apprentice program to graduate from FD.

Liggins has supported NASA projects including the Lidar Atmospheric Sensing Experiment and Lidar In-Space Technology Experiment.

She has received a Certificate of Appreciation for support of the 16-foot Fan Blade Rebuild project and a letter of commendation for outstanding performance on the 8-foot HTTM project.

** **Cynthia A. Love**, an Engineering Technician Designer (Mechanical) in the Facilities Engineering Division (FENGD), graduated cum laude from TNCC with an associate degree in mechanical engineering technology. She is currently pursuing a bachelor of science degree in mechanical engineering from ODU.

Love has received a Group Achievement Award and a letter of commendation for her contribution to the Laminar Flow Supercritical Airfoil Experiment in OSD. She has also received a Certificate of Appreciation for "support on refurbishing the 16-foot fan blades" while working in FENGD.

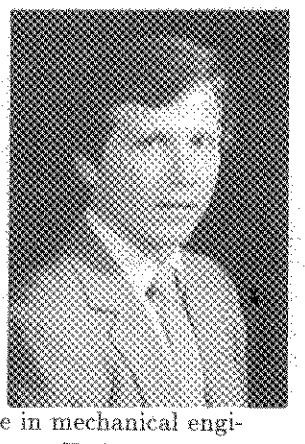
*** **Gail S. McQuigg** entered the apprentice program through the co-op program at TNCC, where she graduated cum laude with associate degrees in mechanical engineering technology and drafting and design.

An Engineering Technician in OSD (Research Facilities Operation), McQuigg has received a Certificate of Appreciation for her work on the Shuttle accident investigation at the Aircraft Landing Dynamics Facility.

She and her husband, Richard, live in Hampton. They have two sons.

** **Edward W. Morris**, an Engineering Technician (Research Facilities Operation) in OSD, is assigned to the 16-foot Transonic Tunnel. During his rotation through facilities, Morris designed and implemented several mechanisms to improve safety, ease, and speed of installation of various hardware needs for tunnel operation.

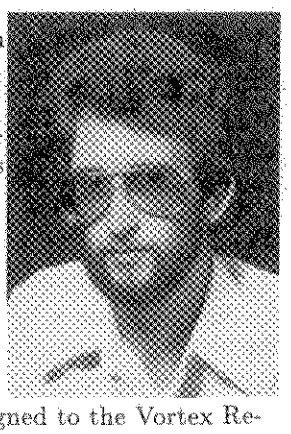
Morris entered NASA through the co-op program at TNCC, where he graduated cum laude with an associate degree in mechanical engineering technology. He is pursuing a bachelor of science degree in mechanical engineering at ODU.



* **James E. Price** is an Engineering Technician Designer (Mechanical) and former TNCC co-op. He graduated magna cum laude from TNCC with an associate degree in mechanical engineering technology. He is pursuing a bachelor of science degree in mechanical engineering.

Price began his apprenticeship in OSD. After three years he was selected as a mechanical designer apprentice in the Systems Engineering Division (SED).

He has received Group Achievement Awards for his contributions to the HALOE project in SED and for exceptional performance in the NTF while with OSD.



** **Stephen R. Robbins**, an Engineering Technician (Research Facilities Operation) in OSD, entered the apprentice program through the co-op program at TNCC.

Robbins is assigned to the Vortex Research Facility where he is qualified at all stations for tunnel operation. He also assists in training the apprentice and co-op employees that rotate through the facility.

He has received a letter of commendation and a Special Service Award for his support to the Vortex Flow Facility.

Melvin H. Sawyer, a former co-op, has an associate of applied science degree in electronics from TNCC. He is assigned to Electrical Drives and Systems Operation in OSD.

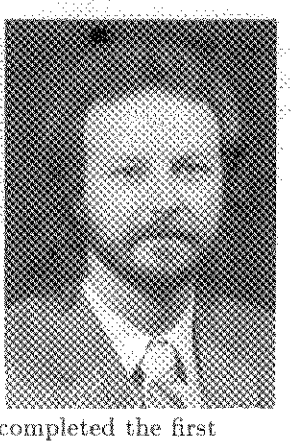
Sawyer has received a Group Achievement Award for his work at NTF.

He and his wife, Kim, live in Denbigh. They expect their first child in December.

** **Edward N. Scearce, Jr.**, a graduate of the TNCC co-op program, has an associate of applied science degree in mechanical engineering technology.

Scearce is an Engineering Technician in the Composite Model Development Section and has supported Langley research projects including the Advanced Concept Twin Boom Fighter Force Test Model, F-14 Airfoil Check Templates, and the X-31 Free Flight Model.

He has received a Special Achievement Award for his contributions of excellence and dedication in the support of the Spin Tunnel facility.

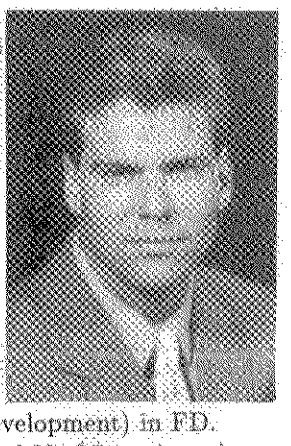


** **Kevin G. Vipavetz**, a magna cum laude graduate of TNCC, has an associate of applied science degree in electronics and is a Phi Theta Kappa member at TNCC. He has completed the first year of computer science at TNCC and has been training with the VAX computer system.

Vipavetz is an Electronic Technician (Flight Instrumentation Branch) in the FED. He has received a Special Achievement Award for his work in the Research Aircraft Ground Station.

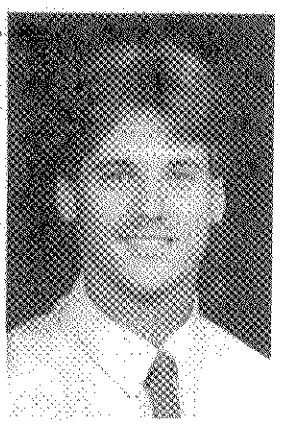
** **Laura J. Wallace** entered NASA through the co-op program and is the first woman apprentice to graduate in the Information Systems Division (ISD).

A magna cum laude graduate, Wallace has an associate of applied science degree in electronics from TNCC. She is assigned to the Fault Tolerant Research Project (Airlab Operation Section) in ISD.



*** **R. Scott Williams**, summa cum laude graduate and tied for first place rank in his apprentice class with a 4.0 average, is an Engineering Technician (Mechanical Development) in FD. He has supported NASA projects including Measurement of Air Pollution from Satellites (MAPS), LTPT Scan System, and the Advanced Hypersonic Concept Model.

Williams has received five letters of commendation, a Special Achievement Award, a Certificate of Appreciation, and a Certificate of Outstanding Performance resulting in a Quality Increase.



Christopher W. Wright is an Engineering Technician (Research Facilities Operation) in OSD assigned to the Thermal Acoustic Fatigue facility.

His contributions to Langley include work on the spray injection test for which he received a Group Achievement Award and the installation of the hoop column antenna.

Wright entered the apprentice program through the co-op program at TNCC, where he earned an associate degree in mechanical engineering technology.

Honor Graduates

**** Summa cum laude*

*** Magna cum laude*

** Cum laude*

-photos by Terry Shepard

CFC...

Langley Begins Combined Federal Campaign

Employees' Pledge to CFC: A Well-Kept Secret

This week one of the best-kept good secrets on the Peninsula will make its annual appearance.

Over 45,000 federal employees, representing the 46 military bases and federal offices on the Virginia Peninsula, will give over a million dollars to help people–a million dollars for local, national and international human care service agencies.

Known as the Peninsula Combined Federal Campaign, the CFC is quite a phenomenon of caring...quite a show of American citizenship.

The Langley Research Center will support the Peninsula CFC by holding its one-day solicitation Wednesday, October 14. During the day, each employee will have an opportunity to contribute or pledge, through payroll deduction, their fair share.

This is the only time during the year that civilian and military employees of the government are asked to consider the needs of others by contributing to many worthy health, welfare and community service organizations. The funds provided to these agencies permit them to relieve suffering; provide care for the young, aged, homeless and hungry; 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.

The Peninsula Combined Federal Campaign goal for this year is $1.1 million. The Langley Research Center, the second largest CFC contributor on the Peninsula, has a goal of $250,000. The money will be distributed among the Peninsula United Way, Williamsburg United Way, National Health Agencies, National Service Agencies and International Services Agencies. Each of these organizations distributes its funds directly to subsidiary agencies.

If you are paid by the federal government, consider joining this best kept good secret. When the key person in your division gives you your pledge card, please help the less fortunate, perhaps by even increasing your pledge this year. **It's Your Way to Help!**

You are the best reason for getting involved with the United Way.

Since almost all of the money given to the United Way goes right back into our community, you are covered should you ever need any of the services offered under the United Way's umbrella: health care, family counseling, American Red Cross, YMCA, drug and alcohol prevention and treatment programs. . . 44 agencies, in all.

In fact, there are tens of thousands of United Way-supported programs and services in cities and towns across the country. That means help right at hand, wherever you are.

The programs are so commonplace that is is easy to take them for granted. Without the United Way, cancer and heart disease would lose any ally in their search for cures. Children may go hungry. Illiterate adults and victims of violent crimes would not be able to find help. And the list goes on.

There may come a day when you need help yourself. And that is why you should lend a hand now.

REMEMBER:

The United Way counts totally on voluntary contributions. Even if the Peninsula meets its goal, there are still going to be unmet needs. That is why every single pledge is important.

United Way dollars are budgeted to agencies which serve the people with the greatest need. The budgeting is done by volunteers who represent all facets of community life, so you know your money is helping the right people.

We all have pet charities, but there are some community problems which cannot be solved by hit or miss giving. Only a program of skilled, coordinated planning can most economically and efficiently meet our area's total needs.

United Way contributions are tax deductible.

Thanks to you. . .it works. . .for ALL OF US.

Lend a Hand to United Way

Sharing: A Langley Tradition Through CFC

As autumn approaches, we are reminded of the many traditions of the season-football, the new harvest, thanksgiving. We are also reminded of the opportunity to continue the tradition of sharing with others through the Combined Federal Campaign.

Our gifts, working through the many agencies that the CFC supports, touch every element of our society. Our CFC gifts provide help that can be characterized in three ways.

o First, they provide continuing assistance to the hungry, homeless, elderly, abused and emotionally disturbed, and create a healthy recreational and learning environment for many youth during their formative years.

o Second, our gifts, by diminishing the problems of less fortunate members of our society, help to create a better environment for us all.

o Third, our gifts bring happiness to us as givers, for we have the wonderful satisfaction of having shared our good fortune with others.

On Wednesday, October 14, the Langley Research Center will conduct its one-day Combined Federal Campaign drive. Langley employees have generously supported the CFC in the past by following the tradition as written by James Hansen in the "Engineer in Charge" of "bringing everything to bear on solving the problem of the moment." Your support on Wednesday will continue the Langley tradition of generosity and, as a consequence, reaffirm our commitment to making the Tidewater area a better place to live.

This year's goal of $250,000 is significantly higher than last year's and must be achieved if we are to help the member agencies meet their increasing needs. With your continued support we are certain to meet this most challenging goal.

H. Milton Holt
Co-Chairman, CFC

Next week, Langley will hold its annual fund drive for the Combined Federal Campaign. You will be asked to participate, and I urge you to do so. We have always been a CFC leader on the Peninsula and a leading center within NASA.

The CFC is our opportunity to help those who need our help, and I believe that we all share a responsibility to provide that help. The money we give through the CFC to the United Way, National Health Agencies, International Service Agencies and the National Service Agencies help to improve the quality of life not only on the Peninsula but around the world.

This year, the committee and I have set a goal of $250,000, a goal intentionally selected to be a challenging one in this our 70th anniversary year. Please consider the less fortunate on October 14 when the CFC key person in your division gives you your pledge card. Help Ralph Muraca's team raise more than our goal, which has been Langley's tradition.

Remember, the CFC is the one campaign which helps people–our families, friends, and neighbors–all year long.

Richard H. Petersen
Langley Director

to care, to help, to give

Unions Urge CFC Support

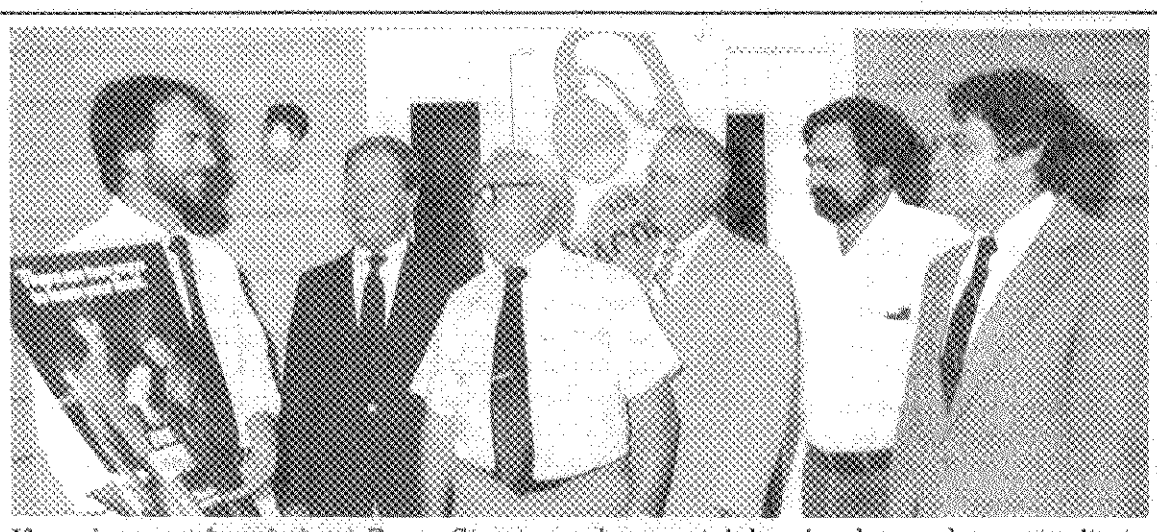
The American Federation of Government Employees and the Pattern Makers League of North America strongly urge members to participate in the Virginia Combined Federal Campaign.

The money received through the CFC provides assistance for youth activities, substance abuse rehabilitation and other volunteer health and welfare needs. One of these organizations is the union-founded and union-supported City of Hope, which treats major ailments without cost to the patient.

We encourage your support of these organizations so they may continue to provide quality service to the people in need. Those of us who enjoy the richness of a happy and healthy family may one day fall into difficult times and require assistance from one of the CFC organizations, but, only if we continue our generousity in supporting these agencies will they be available to help.

The union strongly urges the members to designate their money to the agency of their choice. The unions work closely with the CFC Federal Coordinating Committee to assure your designated funds go to the organization of your choice.

AFGE/PMLNA



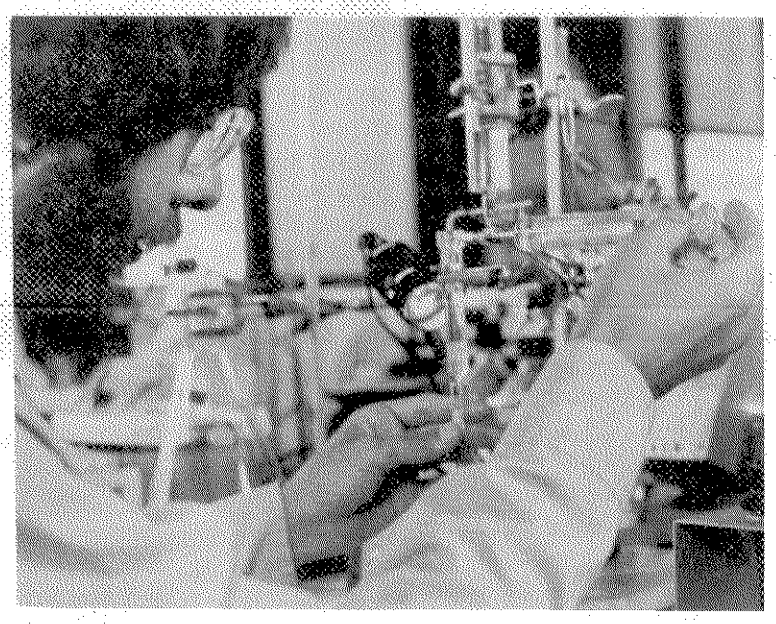
If you have not heard about Bacon Street, you have certainly missed a good opportunity to learn about a non-profit corporation dedicated to ending teenage drug and alcohol abuse. Bacon Street provides consultation, outreach, individual intervention and group education programs for the treatment and prevention of substance abuse for the adolescent populations of Poquoson, York County, James City County and Williamsburg. The organization is licensed and certified as an outpatient substance abuse center by the Virginia Department of Mental Health and Mental Retardation. It is a member agency of both the Greater Williamsburg United Way and United Way of the Virginia Peninsula, agencies supported by the Combined Federal Campaign. Sandy Fagan (left), director of Bacon Street, gives an overview of the program to Langley staff members Robert P. Moore, Assistant Director for Management Operations; Fred Schmidt, Langley retiree; James R. Dinkins, Assistant for Management and Resources, Office of Director for Systems Engineering and Operations; Thomas L. Vranas, Pattern Makers Union; and H. Milton Holt, Co-chairman of Langley CFC and Assistant Chief, Information Systems Division.

International Service Agencies help children like these who suffer from hunger, poverty and disease. Your contribution of $15 will provide seed for a community vegetable garden, $20 will prevent vitamin A deficiency blindness in 80 children annually, $25 will immunize 200 Third World children against measles, $50 will provide sight-restoring surgery for a village mother, $75 will provide enough food to feed 1500 refugees for one day, and $100 builds an all-weather roof and a cement floor for one family home. Contributions to ISA can make a world of difference.

NHA Needs Your Help to Fight Disease

The National Health Agencies provide services to millions of Americans who suffer the ravages of illness and disease. Americans depend on the expertise and knowledge of those people who continue to search for the treatments, cures and preventives for some of the devastating and life threatening diseases.

Your CFC dollars make it possible for the National Health Agencies to continue their vital medical research programs, provide community and patient services and materials to those suffering from illnesses and disease, and continue their public and professional education programs.



Research has become vitally important to the National Health Agencies who participate in the Combined Federal campaign. Every dollar contributed to CFC brings researchers that much closer to finding cures for the diseases that kill or leave people permanently disabled.

NSA Assists Special Needs

The National Service Agencies are national voluntary organizations that provide specialized help to assist citizens to achieve their basic human rights and/or human welfare needs. These needs include areas such as parks and recreation, medical, blind, black funds and seamen services. You may designate your contribution to any organization listed in the brochure you will be provided during the campaign.

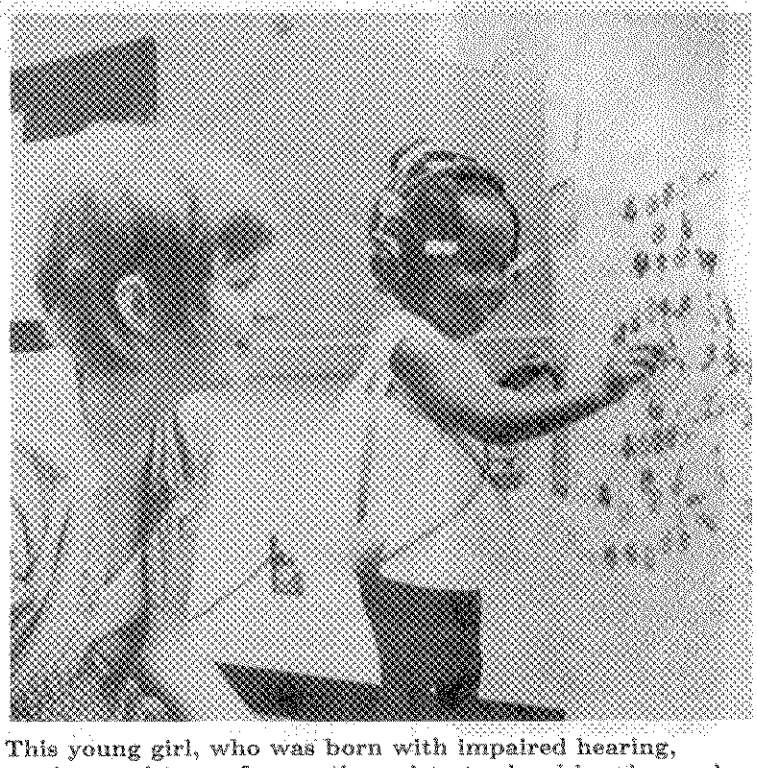
ISA: Making a Mark on World

The International Service Agencies are a group of distinguished and well established nonprofit, tax-exempt American charitable organizations providing health and welfare services and emergency assistance around the world.

ISA member agencies conduct "self-help" programs designed to help the world's poorest people break the cycle of poverty, hunger, disease and fear to build new lives and better, more stable futures.

Few of us can go to Somalia or Thailand or Haiti to give personal aid, but through ISA's member agencies, each of us can reach across the barriers of distance, language and culture to help others help themselves.

Every project is life saving and every dollar spent relieves the human misery. ISA is making a mark on the world every day. You can make a world of difference through ISA.



This young girl, who was born with impaired hearing, receives assistance from a therapist at a local hearing and speech center. Thanks to the therapy the child will receive at the center this year, she will be able to clearly hear the world around her for the first time. Your gift to the United Way will help make this possible. And, your gift will also go toward helping thousands of others in your community who need help. That's the way the United Way works. One gift, one time each year, helps millions of people all year long. Tens of thousands of different, good causes in communities all across the country, including yours!

With the help of individual members of the armed forces and the many civilian federal employees in this area, NHA is better able to serve the Peninsula and Williamsburg. Although all of the agencies conduct separate fund-raising campaigns among the general public, only federal workers have the privilege of contributing to all of them–or any one in particular–through payroll deductions.

CFC dollars play a vital role in continuing research; providing Americans with improved health care, better facilities and the essential equipment needed to help them live comfortably; and offering education programs to those in need.

Your contribution will make a difference. Please support the National Health Agencies through the Combined Federal Campaign.

Happenings

LAA SOCIAL will be held Friday, October 16, from 4 to 6:30 p.m. in the Activities Center.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, October 13, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

RUNNERS AND WALKERS needed for NASA intercenter races. The 10 KM races will be on Oct. 13 and 22; the 2 Mile races will be on Oct. 15 and 19. All races start at 5 p.m. on Doolittle Road. NASA employees, retirees, on-site contractors, and co-ops at work earn points for Langley by participating. For more information, contact Richard Shearer, ext. 4508.

VIRGINIA STAGE CO. opens its ninth season with Eugene O'Neill's AH, WILDERNESS at the Wells Theatre. Runs from Oct. 16-31 with previews Oct. 13-15. Call 627-1234 for tickets and information.

DINNER-DANCE. 70th Anniversary Banquet and Dance sponsored by the Langley Alumni Assn. will be held October 17 at the Williamsburg Hilton. The award-winning Menchville High Show and Jazz Choir will entertain during dinner. Dancing to the music of Langley retiree Charlie Johnson's band will conclude the festivities. Cost is $16/person. Seating is limited, make reservations now. Contact Betty Joyner, Eagle Engineering, Inc., Tower Box 77, 2101 Executive Dr., Hampton, 23666.

AA and AL-ANON meetings are held on-center. For more information, call the Health Office at ext. 2605 or the Occupational Medical Center at ext. 2246.

CEBAF SEMINAR. Larry E. Antonuk, Univ. of Michigan, will discuss "Measurement of t_2 with e.d. Elastic Scattering at MIT/BATES," at 11 a.m., October 16, in CEBAF Room 53. CEBAF seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

SCI-CON. Tidewater's oldest and largest Science Fiction Convention will be held Nov. 6-8 at the Sheraton Beach Inn, Va. Beach. Featured guests will be Larry Niven, author of RINGWORLD and FOOTFALL, and P. Craig Russell, illustrator of KILLRAVEN. Convention membership: $18 per weekend. One day rates available. For more info, call John Kaiser, ext 2146, or Butch Allen, ext. 2311.

CINDERELLA, performed a New York professional company, will be presented live Sunday, October 25, at 1 and 3:30 p.m. at the Denbigh H.S. Auditorium. Tickets are $2.50 in advance, $3 the day of the performance. Call 874-8634 or 874-2715 for reservations and information.

EXERCISE CLASSES. Suellen Seabrook, fitness columnist for the **Daily Press and Times-Herald**, conducts exercise classes on Mondays and Wednesdays at 5 p.m. in the Activities Center. Enroll now for the high intensity workout-low impact exercise classes. For more information, call Suellen, 877-6967.

TOASTMASTERS. NASA Toastmasters will meet Wednesday, October 14, 11:30 a.m. at the Activities Center. Our goal is to help you improve your public speaking skills in a supportive environment. Guests are always welcome – shy people especially! Contact Steve Yaros, ext. 2673, for details.

swap and shop

FOR SALE: 1979 Datsun 210 Station Wagon, A/C, low mi., good tires. Needs carburetor. $900. Call 850-2729 after 5 p.m.

FOR SALE: 1965 Plymouth Valiant, 4-door sedan. Auto. trans., slant-6 engine. Runs well. $250. Call 595-1575 after 5:30, except Mon. or Thurs.

WANTED: Vanpool members between Williamsburg and NASA area. Please call Leonard Melfi, ext 3718, or Ginger Cordle, ext. 3887.

Visitor Center Announces Aerospace Programs

In a continuing effort to bring information on the cutting edge of aerospace technology as well as historical insights to Langley employees and the general public, the Visitor Center announces the following free illustrated lectures:

Aviation Pioneer Visits

When Edna Gardner Whyte first took a fancy to flying, women did not yet have the right to vote. When she finally found an instructor willing to teach a woman to fly, she had to promise to take lessons at dawn, wear men's clothes, and cover her hair with a hood. She was close friends with Amelia Earhart and had dinner with her just before her ill-fated attempt to circle the globe. Whyte shared an airplane hangar with the Lindberghs and, in the early 30's, had to make a crash landing right into the rock garden of the Woolworth estate in Long Island. She's courageous, intelligent, and a true pioneer in the field of aviation. Edna Gardner Whyte will discuss her career as an aviatrix at noon on Tuesday, October 13, in the Visitor Center theater.

Fighter Pilot Discusses 'Top Gun' Image

The F-15 Eagle can break the sound barrier flying vertically. Its radar can detect targets 100 miles away and it can reach speeds of Mach 2.5 – about 1700 miles per hour. It is one of the Air Force's top fighter planes – similar to the Navy's F-14 flown in the Hollywood film "Top Gun." Lt. Peter Jahns, an F-15 fighter pilot stationed at Langley Air Force Base, will be a guest speaker at the Visitor Center on Wednesday, October 14 at noon.

Jahns' lecture will include film clips of an F-15 intercepting a Russian bomber off the East Coast and actual F-15 dogfights. He'll discuss the performance and purpose of the F-15, fighter pilot training, and the actual career of a fighter pilot compared to the portrayal in "Top Gun."

Robots in Space

The primitive ancestors of "Star Wars'" R2D2 are alive and well at Langley, where state-of-the-art research in robotics is conducted. Langley is currently researching the role of robotics in building large space structures. What can these robots do? Senior engineer **Walter Hankins** will discuss robots as space construction workers capable of handing repetitious or dangerous tasks at 7 p.m., Thursday, October 15, in the Visitor Center.

Notes of Thanks

Bernice Barrack writes: "With all my heart, I thank my special friends at NASA for the retirement luncheons and surprise party, for the gifts, and for the joy of knowing you. Whatever port my ship may take, kind thoughts of you will fill its wake."

Paul W. Jones, Sr. writes: "Thank you to all who took time out of your busy schedules to attend my retirement party; it was one of the most memorable events of my life. Thanks for the gift which I will cherish, hopefully, for years to come. May God bless you all."

DIRECTIVES NUMBER REVISED:	TITLE	DATE	T.S.#	DATE DISTR.
LHB 1710.10	"Safety Clearance Procedures (Red Tag)"	AUG 1987	—	9-22-87
LHB 1420.1	"Forms Index"	AUG 1987	—	9-22-87
LMI 1100.7	"Langley Space Station Steering Committee"	8-28-87	1557	9-23-87
LMI 1050.1	"Interagency Agreements"	8-28-87	1558	9-23-87
LMI 3351.1	"Reduction-in-Force (RIF)"	8-28-87	1559	9-23-87

NOTE: Directives are available for review in each organizational office. Extra copies may be obtained from the Directives and Forms Management Office, ext. 3511.

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National Aeronautics and
Space Administration

Langley Research Center

Volume 1, Issue 8 October 23, 1987

News Researcher

Bi-weekly Employee and Contractor Publication

Langley Colloquium and The Sigma Series

Chana to Address Lindbergh's Aviation Accomplishments

William F. Chana, aviation consultant and member of the board of directors of the San Diego Aerospace Museum stands in front of a replica of the Spirit of St. Louis. On November 9, Chana will present two lectures focusing on Lindbergh's historic flight from New York to Paris 60 years ago.

This year is the 60th anniversary of Charles A. Lindbergh's historic flight from New York to Paris. His successful flight in May 1927 provided a stimulus to the aviation industry that exceeded any event since the Wright Brothers' first manned flight.

William F. Chana, a member of the board of directors of the San Diego Aerospace Museum, will present a lecture, "The Spirit of St. Louis – Design, Construction and Flight Testing," Monday, November 9, at the Langley Research Center. The lecture will be held in the Langley Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

That evening, Chana will address "A Challenge for Inspiration – Lindbergh's Historic Flight " at the Radisson Hotel Hampton at 7:30 p.m. as part of The Sigma Series. The Sigma Series is a series of free public lectures sponsored by the Langley Research Center, the City of Hampton and the Daily Press, Inc.

In his lectures, Chana will not only discuss the design and construction of The Spirit of St. Louis, but will also address the importance of what happened after the flight – the encouragement of aviation through the financial support of Lindbergh's subsequent national tour and through various prizes and awards established by such people as Bendix and Guggenheim.

Chana is a former test pilot for the Consolidated Aircraft Corporation in San Diego, where he played an active role in the flight testing of the B-24 Liberator, the first delta wing fighter and other aircraft. During the 1960's, he shifted to missiles and during the 1970's founded a company specializing in the design and marketing of aviation programs. He made a presentation on Lindbergh's flight at the AIAA's 60th anniversary celebration of that event held in San Diego in May 1987.

Internal Communications Division Established

NASA Opens Lines of Communication with Employees

In the wake of the reorganizations and reforms undergone by NASA over the past 18 months, the agency has been concerned not only with the image it has in the eyes of the public but, and very importantly, with the perception of its 22,000 employees.

At the request of NASA Administrator James C. Fletcher, a study of the overall organization and management of the agency was undertaken. The NASA Management Study Group, led by Samuel C. Phillips, was asked to evaluate the effectiveness of the NASA organization.

The study noted as its principal finding "that NASA is fundamentally a sound institution, with many outstanding people with strong dedication to the success of NASA and its programs." On the negative side, the Phillips study pointed, among other things, to inadequacies in communication within NASA. The dearth of misinformation following the Challenger accident signalled a need within the agency for improved communication with employees.

As a result, within the newly instituted Office of Communications, the Internal Communications division was established. Headed by James F. Kukowski, the goal of Internal Communications is to provide information to NASA employees from within the agency.

Recent surveys indicate that throughout the agency employees prefer to be informed by NASA management rather than local news media. Kukowski is striving to initiate quick and effective means of communication within NASA.

When asked how he would proceed, Kukowski stated that his would be a multi- media approach. The plan includes providing center newspapers with timely information; reviving NASA Update, the recently cancelled weekly headquarters TV program, in a more streamlined format; providing printed/electronic bulletin board information to centers;

Continued on page 2.

Open House

commemorating

Langley's 70th Anniversary

Saturday, October 24

9 a.m. to 4 p.m.

- Ten research facilities will be open.
- Food and beverage items will be sold at the Cafeteria and Activities Center picnic grounds.
- Shuttle buses will provide transportation to each facility.
- Bring your family and friends to see the Center.

Gathered in Washington D.C. for presentation of the NASA Minority Contractor of the Year Award to Vigyan Research Associates, Inc., of Hampton, on October 6 were (L to R) Jerome T Foughner, Jr., Transonic Aerodynamics Division; Archer V. Vann, Jr., Acquisition Operations Branch; William R. Kivett, Acquisition Division; Burnett W. Peters, Jr., Office of Equal Opportunity Programs, Sudhir C. Mehrotra, President, Vigyan Associates; Dale D. Meyers, NASA Deputy Administrator; Dhanvada M. Rao, Vice President, Vigyan Associates; and Paul F. Holloway, Deputy Director. See related story on Vigyan Research Associates, Inc. on page 7.

News Briefs

HEADQUARTERS, Washington, D.C. — NASA and the Department of Defense have announced the selection of three firms to continue the vehicle technology development portion of the National Aero-Space Plane (NASP) program. Awarded a 36-month, fixed-price contract valued at $25.5 million each were the General Dynamics Corp., Ft. Worth Division, Ft. Worth, Tex.; McDonnell-Douglas Corp., McDonnell Aircraft Co., St. Louis, Mo.; and Rockwell International Corp., North American Aircraft Operations, Los Angeles, Calif.

AMES RESEARCH CENTER, Moffett Field, Calif. — More than 50 NASA-sponsored scientists from Ames and universities throughout the nation are involved directly in 27 major joint experiments aboard Cosmos 1887, the Soviet biosatellite mission launched Spetember 29. This cooperative effort is taking place as one of the 16 agreed projects under the US/USSR Space Agreement signed in Moscow in April. The experiments are investigating the effects of space flight on the major body systems, the effects of microgravity on the immune system, and studying growth hormone.

HEADQUARTERS, Washington, D.C. — The U.S. Air Force and NASA have signed an agreement establishing policies for DOD flights on the Space Shuttle and NASA flights on DOD-procured expendable launch vehicles. The "quid pro quo" arrangement is based on the principle that NASA and DOD each maintain launch capabilities that can be used by the other in assuring access to space at minimal additional cost. Therefore, these same services are provided to each other in exchange for receiving similar launch services from the other agency.

JOHNSON SPACE CENTER, Houston, Tex. — NASA has selected Computer Sciences Corp., Houston, for negotiations leading to award of a contract for operations support to the Mission Support Directorate, JSC, and adjacent facilities. The JSC Mission Support directorate is responsible for space mission planning such as trajectory design and timelines, onboard spacecraft computer software design, flight and institutional data processing and development of computer hardware and software for flight and the Mission Control Center in Houston.

HEADQUARTERS, Washington, D.C. — NASA and the German federal minister for research and technology (BMFT) have signed a cooperative Earth observation memorandum of understanding in Bonn, Federal Republic of Germany. Under this agreement, BMFT, in cooperation with Italy's National Space Plan of the National Research Council, will provide an X-band synthetic aperture radar, which is planned to fly at least twice with the space borne imaging radar-C on the Shuttle. Later, an advanced X-SAR is expected to fly in combination with the NASA Earth Observation System on a NASA polar platform.

HEADQUARTERS, Washington, D.C. — NASA, in cooperation with the Department of Defense and the Department of Commerce, is supporting a commercial initiative to make the sophisticated computer language Ada and associated technology widely available to American industry and business. This high-level computer language is believed to have substantial potential for enhancing U.S. economic competitiveness through applications in manufacturing, such as industrial automation. Ada is presently being used in a variety of defense and aerospace programs and has been selected for use aboard the U.S. Space Station.

Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017. Request information by release number and headline. See Current News Release information box on page 8.

Internal Communications a Priority at NASA

Continued from page 1.

and, if requested, providing audio reports to Centers in a "two-minute news" format.

Admittedly an evolutionary rather than a revolutionary program, Kukowski and his staff of two consultants are still investigating what employees want. They have already initiated a daily news-in-brief service to be used internally. This summary of what the media are saying about NASA will keep top management and public affairs officers abreast of the latest information reported about the agency around the world.

The major issue of timely news dissemination to employees may be an unattainable goal because Kukowski insists that NASA cannot deal in speculation, a factor that does not prohibit news media. NASA and the Internal Communications division must deal in official news. Employees will be assured of accurate reports, but not "scoops."

"It's a real challenge for the agency to communicate directly and efficiently with its employees," Kukowski admitted. "We had taken for granted for so many years that we were doing just that."

Editorials

Langley

Headquarters Forum

NASA is in the process of establishing a drug testing program that will comply with the Executive Order signed by President Reagan on September 15, 1986. Legislation establishing the goal of a drug-free federal workforce was passed by Congress on July 11, 1987. All government agencies are being asked to implement programs in the next year.

Although we realize the program will be controversial, Langley will support the Agency in this effort. Because of our concern for safety and security, we have a special obligation to guard against illegal drug use in the workplace. Therefore, I feel this new initiative is appropriate.

We are currently identifying those civil service positions which will be subject to random drug testing on an annual basis. This is being accomplished by an exhaustive review of positions by Personnel, Security, Safety, Occupational Health, and line management. Criteria for inclusion in the program will be those positions which impact safety, health, and national security, especially those positions in which the actions of an individual can affect the life or well-being of someone else.

There are many unknowns in the Agency program since it is still under development. I understand, however, that employees not in positions that require testing will not be subject to drug testing. I can also assure you that confidentiality of both sample taking and test results will be maintained.

NASA plans to begin implementing the drug testing program on May 1, 1988. All Langley civil service employees will receive a special notice from NASA headquarters around March 1 regarding the implementation of the Agency drug testing program. Center employees whose positions have been identified for inclusion in the program will be notified in early April.

Because of the sensitivities to drug testing, we plan to keep you well informed on the details of the program as it develops.

Richard H. Petersen
Director

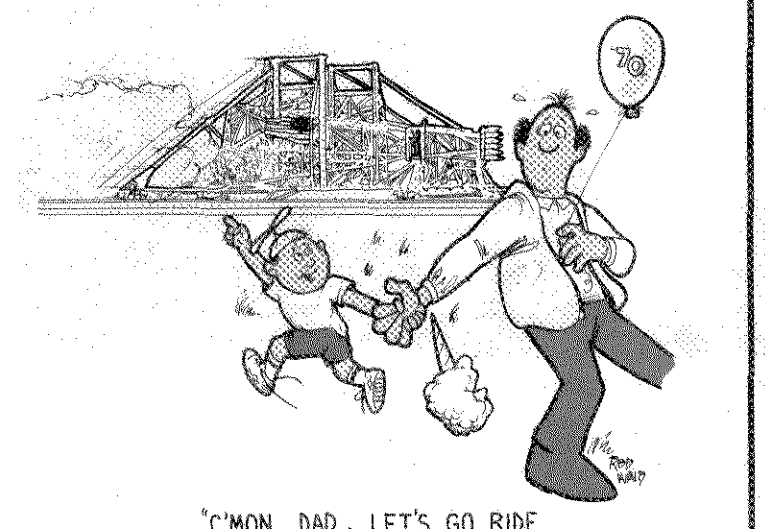
Upcoming Conferences/Workshops

Fiber-TEX '87, jointly sponsored by NASA and the Advanced engineering Fibers Laboratory of Clemson University, will be held Nov. 3-5 at the Hyatt Regency, Greenville, SC. for more information, contact John D.Buckley, ext. 3131.

Second Workshop on Design and Fabrication of Cryogenic Wind Tunnel Models will be held Nov. 3-5 in Building 1209, Room 180. Contact Dr. C. P. Young, ext. 4508 for details.

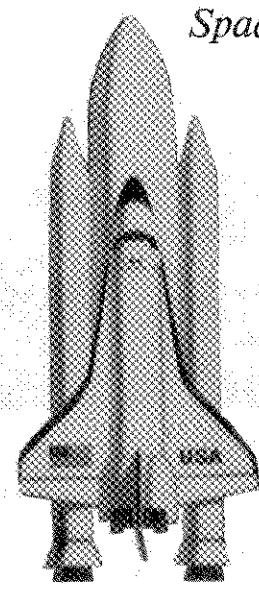
The Magnetic Suspension Technology Workshop announced in the previous issue has been rescheduled to Feb. 2-4.

Lankley



"C'MON DAD, LET'S GO RIDE THE CARRIAGE"

Space Shuttle Update



Flight configuration of the redesigned solid rocket motor (SRM) will be tested in mid- to late-December in the firing of the development motor-9 (DM-9). This is later than originally projected because of complications encountered in the nozzle fabrication process.

The third acceptance-test of the Shuttle main engine number 2027 was conducted Oct. 10. Initial data following the 520-second test indicated the engine performed normally. During routine post-firing checkout of the engine, indications of a potential leak were discovered in the oxidizer heat exchanger. Unless it turns out to be a generic condition affecting other engines, this problem is not expected to impact the STS-26 launch schedule.

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Able though disabled

DOD Director of Civilian Equal Opportunity Policy Speaks at Langley

Claiborne D. Haughton, Jr., Department of Defense Director of Civilian Equal Opportunity Policy since 1979, will be guest speaker at Langley's annual Disabled Employees Program at 1:30 p.m. on Thursday, October 29. Haughton will speak on "Making Employment a Reality."

In his present position, Haughton develops policy and has program oversight for all federal civil rights laws and regulations affecting DOD's civilian employees worldwide and which cover DOD Federally Assisted Programs.

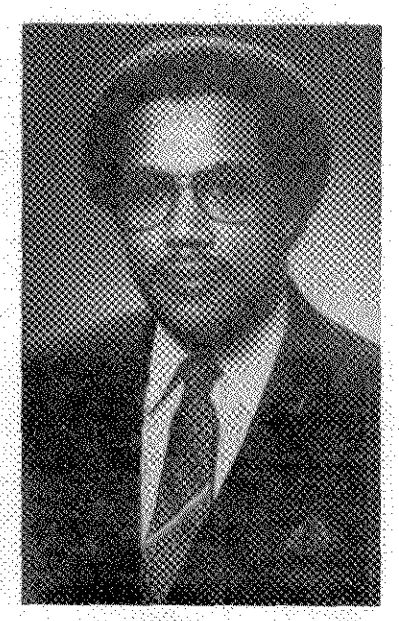
Haughton was born in July 1945 at Thibodaux, Louisiana, with cerebral palsy and blind in one eye. He was a ward of Blundon Orphanage in Baton Rouge for twelve years. He began his federal government career in June 1967, as a GS-5 Quality Assurance trainee with the Defense Logistics Agency.

In September 1972, he became an Equal Employment Opportunity (EEO) specialist in the DOD Contractor Compliance Program. In this and subsequent management poisitions, he gained national prominence for his work in enforcing Federal Affirmative Action Plan requirements. In January 1977, Haughton was appointed DOD's Deputy Director for Contractor Employment Compliance in the Pentagon. In July 1979, he was appointed by the President as a Charter Member of the DOD Senior Executive Service.

From February to September 1981, Haughton served as Acting Deputy Asistant Secretary of Defense (Equal Opportunity) during the transition between Administrations. He was the principal staff advisor to the Assistant Secretary of Defense on all equal opportunity matters affecting DOD military and civilian personnel worldwide and exercised staff supervision over the Defense Equal Opportunity Management Institute.

During this period he developed the separate EO and EEO policy statements for military members and civilian employees and the first DOD policy statement prohibiting sexual harrassment in both the military and civilian sectors. He also developed the first DOD directive to prohibit discrimination against disable persons in DOD federally assisted programs.

In February 1983, Haughton developed the Secretary of Defense Certificate of Merit program, which provides for annual awards to be given to DOD components for outstanding efforts to employ persons with disabilities. Currently, he is co-chairman of the DOD Dr. Martin Luther King, Jr. Military Involvement Committee and chairman of the Defense Equal Opportunity Council's Civilian EEO Review Board.



Haughton is married to the former Linda Nixon of New Orleans, Louisana. They have two sons, Alexis and Akili, and live in Arlington, Virginia.

Presidential Committee Recognizes Workers with Disabilities

What do Francisco Goya, Elizabeth Barrett Browning, Helen Keller, Franklin Delano Roosevelt, Ludwig van Beethoven, Thomas Alva Edison, Sarah Bernhardt, John Milton and Henri Toulouse-Lautrec have in common? These noted individuals overcame disabilities to make important contributions to the world. Think what the world would have missed had they not had an opportunity to develop and share their genius.

"Making Employment a Reality" is the theme chosen for National Employ the Handicapped Week (NETH) which began October 4. In Virginia, Governor Baliles has declared the entire month of October as a time to give special emphasis to the employment of persons with disabilities.

The goal of National Employ the Handicapped Week is to insure that American citizens with disabilities are able to live and work to their fullest potential.

"Not working" is the truest definition of what it means to be disabled in America today concludes the Louis Harris and Associates recent study "Disabled Americans Self-Perceptions."

NETH Week and its month-long activities are sponsored by the President's Committee on Employment of the Handicapped and pay tribute to the accomplishments of workers with disabilities and to employers who hire them.

Advisory Committees Promote Awareness of Abilities of the Disabled

The Langley Research Center Handicapped and Disabled Veteran Workforce Program Advisory Committee, chaired by William D. Mace, Director for Electronics, provides assistance and advice to center management on the development and implementation of Langley's program for employees with disabilities.

Reports of a survey conducted two years ago reflect that the Langley staff is highly aware, accepting, and supportive of the disabled members of our family. The focus this year, then, is to export our awareness and concern to the support contractor portion of the Langley community. At the same time, the Committee is continuing its oversight of Langley activities principally in the areas of recruiting, facilities, and training.

The Employee Satellite Committee, chaired by Lawrence B. Cooper, an engineering technician in the Fabrication Division, strives to promote the development of positive attitudes toward people with disabilities by increasing employee awareness.

A display of pamphlets and brochures on disabilities and health-related literature will be on display in the cafeteria the week of October 26-30.

Sparrer 'Sees' the World in a Broader Light

Trained at Newport News Shipbuilding as a boiler maker, by the Navy as an electrician, and by NASA in the apprentice program as a wood model maker, **James W. Sparrer** does not make his living by any of his three trades. Since June 1954, he has worked in Langley's photo lab operating a black and white versamat processor.

Jimmy Sparrer is blind and says he is perfectly suited to his work in the darkroom.

Blinded in a hunting accident in New York State three years after coming to Langley and less than a year after his marriage, Sparrer remarks he is "now working on his second 40-years of government service."

Alton Moore, head, Photographics Section, finds Jimmy's work truly remarkable. "He's learned to operate the processors without ever having seen the machines, and there have been at least three different processors that I know of we've used."

Sparrer credits his independence to the rehabilitation program at Kecoughtan Veterans Hospital. Those who know him credit Jimmy's independent status to a positive attitude and determination. At Kecoughtan he underwent therapy for 11 weeks to learn Braille, typing, handicrafts, and "cane travel."

The eight hours he spends at Langley is his work, not his life. His life is centered around his family – his wife, the former Kathleen Carmines, and his son Preston, now a medical student at the University of Virginia. Sparrer reminisces, "The thing that helped me the most when I lost my sight was the realization that my family and friends were only going to feel as good about me being blind as I did." With that thought as a driving force, Sparrer went about the job of living his life.

Continued on page 4.

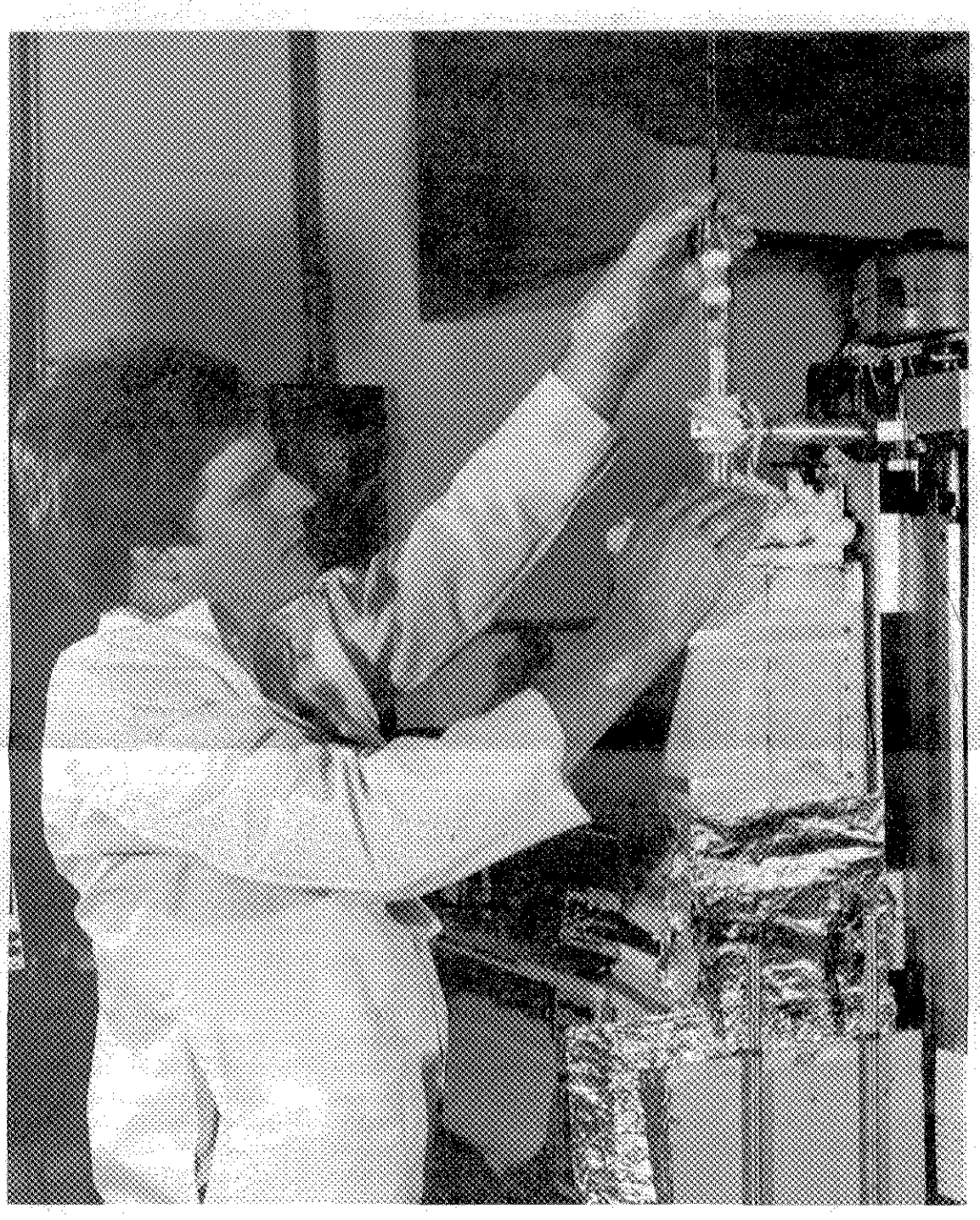
-photo by Terry Shepard

Jimmy W. Sparrer, laboratory photographer, gathers negatives he has just processed in Langley's photo lab. Sparrer has worked in the Photographics Section for over 30 years.

Woodell Likes to Explore Better Ways of Doing Things

Glenn A. Woodell has recently been singled out as Speaker of the 1987 Apprentice Class and graduate summa cum laude with a 4.0 average. That's about all the special attention Woodell wants or will stand. But there is a more complex story that makes his academic accomplishment routine in a life filled with challenges that are viewed as opportunities to be met with calm acceptance and the determination to excel.

Having a background in chemistry from a year-and-a-half study at ODU, Woodell found his way to NASA through the TNCC co-op program. Initially assigned to the Fabrication Division, Woodell worked in the machine shop. Transferred to the Information Systems Division, he is now an engineering technician in the Information Processing Technology Branch and works on micro-gravity crystal growth.



Glenn A. Woodell, engineering technician, Information Processing Technology Branch, loads a lead-tin-telluride sample into a Bridgeman crystal growing furnace in the micro-gravity sciences lab.

Dr. Archie Fripp, aerospace technologist, finds Glen a real pleasure to work with. "He not only gets the job done on time and at a high quality level, but he also seems to make others around him happy and more enthusiastic about their own work."

He has been recognized for his contributions to the rapid post- flight calibration of the Materials Experiment Assembly (MEA) Space Shuttle crystal growth furnace. Woodell designed a system that would take voluminous amounts of data and plot it on graphs in about three hours. This eliminated the need for hours and hours of manually inputting data. "While I don't mind typing," Woodell admits, "if there's a better way to do something, I think it should be explored." And that's just what he did.

It is obvious from his tone that Woodell is enthusiastic about his work at NASA. His determination to explore better ways of doing things seems not to have been dimmed by the tragedy that struck four years ago.

A head-on collision severed his right leg just above the knee. Taken by Nightingale to Norfolk General, he spent 15 days in the hospital the first six under scrutiny to ward off infection. Then, on day seven, he was fitted with a temporary prosthesis and therapy began.

"You don't realize what goes into walking, until you have to learn to walk all over again," Woodell reminisces. But his determination and persistent search for a better way of doing things led him to an extremely competent prothetist who designed a leg that was much more comfortable than the first Woodell had worn for two years and twice fixed himself in the machine shop.

Asked if the accident has changed his life, Woodell admits that he is "more cautious now and I don't take things for granted." But as far as activity is concerned, his hobbies haven't been curtailed. In fact, he went roller skating the night after he was released from the hospital. "I didn't do well, though, on crutches," Woodell admits, "and I couldn't skate backwards."

The Newport News resident enjoys walking. He and his wife, Angela, walk a mile nightly. He walked six miles in Newport News Park recently. When finished he was tired, just like anyone would be, but he was not uncomfortable.

One hobby he looks forward to getting back to is wind surfing. He has not been participating in that sport because of reluctance to get his prosthesis wet. He's getting an "extra" leg soon, just for that purpose. When asked if he'll take any precautions, he remarks, "I'll give is a good rinse afterward to prevent corrosion of the joints, and I'll probably use a tether so, if I take a spill, I won't lose it."

When one mentions his wonderful sense of humor and positive attitude, he's quick to put things in perspective: "When you spend 15 days in an orthopedic ward, and you can walk out, you're thankful."

Perhaps one's attitude is governed by the perspective taken.

Sparrer 'Sees' the World and Enjoys Life

Continued from page 3.

Sparrer likes to fish, go clamming in the summer, rabbit hunting in the winter, and "on occasion I've gone sitting in a duck blind."

He also makes furniture, builds beautiful cabinets, and does electrical work. Perhaps his most amazing feat is the boat he built. He didn't fashion the hull, but did all the metal work under it, put on the entire cabin, and did all the finishing.

It's difficult for him to explain how he uses tools. His tools have no protective devices or safeguards for the blind. "You just have to respect them. I had to learn to do commonplace things all over again; to see things in my mind's eye. I've probably lost acres of skin on my hands in scrapes and pinches over the years, but have not had a serious accident since I've been blind."

Most of all Sparrer like to "read." It took me a minute to realize he was referring to the "talking books" he gets through the Library of Congress. He also gets special editions of many magazines like **Readers Digest** and **National Geographic**.

Many of the books he "reads" are on music – perhaps his greatest love. He is lead singer in the Lighthouse Chorus, an interdenominational gospel group in York County. He learns new songs just from listening. "Even pieces I've never heard, I can pick up the tune after just one run-through."

As you might suspect, Sparrer's working area in the photo lab is neat and clutter-free. When he walks into the darkroom, he hangs up his cane for the area is home to him. There are Braille markers on the machine settings, a place for everything, and everything in its place. He's even got the same pair of scissors he has used for the past 30 years – and woe to anyone who "borrows" them.

Sparrer brags about a timer the electronics shop made for him to check the speed of the processor he runs. When asked for a demonstration, Sparrer is agreeable and, suddenly, the roles are reversed. In the working darkroom, Sparrer functions with no barriers and it is the interviewer who becomes disabled.

Shouting out instructions for me to follow, he makes a dramatic point. One's life can change in a split second – like when someone turns out the lights – and then one is faced with an adjustment and the rest of his life.

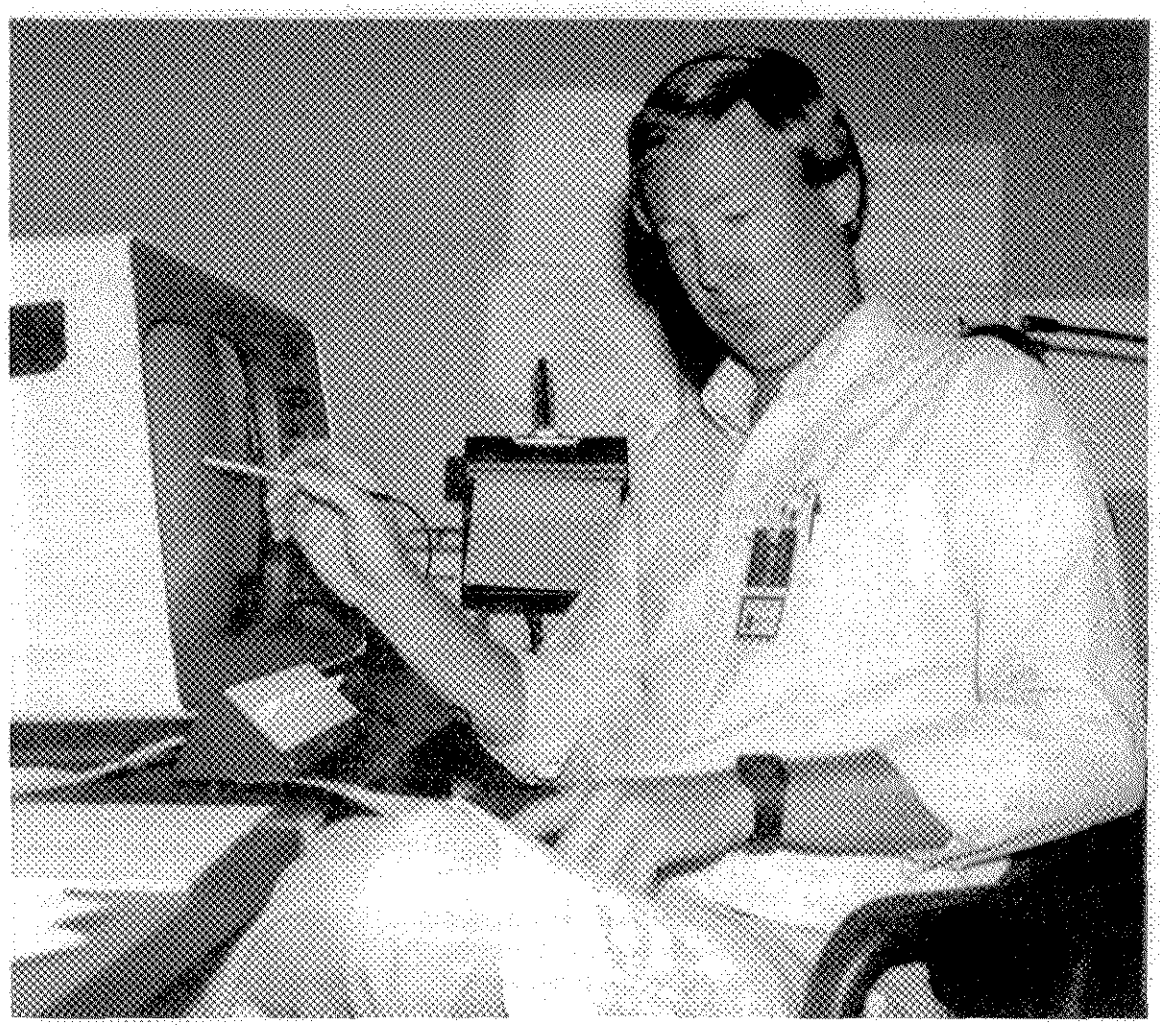
There comes a time in every life when you face that ordeal you must endure and overcome all alone, because there are some battles in life that you have to fight all by yourself. It comes right down to who you are and what you are made of.

-Allan C. Hanrahan

Vance is Rising Star at NASA

-by Jean Ingham, NTID Focus

Editor's note: Langley's Bill Vance, Fabrication Division, was recently featured in NTID Focus, a publication of the Rochester Institute of Technology, Rochester, New York. The three-times-yearly magazine spotlights successful graduates of its National Technical Institute for the Deaf. Permission was happily granted by NTID for this Researcher News reprint.



FOLLOW THAT LINE. Using a light pen, Bill Vance designs a chassis on a computer.

"Smile pretty," says a co-worker, poking his head into an office where William Vance is being photographed.

"Way to go, Bill," cheers another, giving Vance the thumbs up sign.

Vance grins goodnaturedly at this attention. His winning personality makes him a popular employee at Langley. Vance is an electronics technician, creating electronic packages and printed circuit boards for spacecraft, aircraft, and ground support.

Currently, he is working on a chassis for computer boards that measure stress caused by air pressure on airplanes and space vehicles. The stress measurements, obtained from gauges in a wind tunnel, are converted by the computer boards to data used by engineers, who work to increase a vehicle's stability.

Vance uses an engineer's schematics to work up chassis drawings on a computer and then transforms them to working prototypes. In 1985, he was honored by Langley for "excellence in electronics packaging development."

Vance graduated from the National Technical Institute for the Deaf (NTID) at the Rochester Institute of Technology with an associate degree in Electromechanical Technology. Although at the time he was well prepared for his job, computer- assisted manufacturing capabilities had not been developed when he joined Langley in 1979. These skills he has picked up on the job.

"He amazes me," says Larry Harvey, Vance's supervisor. "He has no problems dealing with people.

"If he doesn't understand a project, he will seek out the engineer, discuss the situation, and work it out. It doesn't matter that he may never have met the person."

Much of Vance's self-confidence, "is the result of family influence," says his mother, Betty Greenwood. "His sisters and I worked hard with him to make him self reliant."

Vance's education began when his mother enrolled in the John Tracy Clinic correspondence course that provides guidance to parents for the education of preschool deaf children. By age 16, he had attended four schools — the Clarke School for the Deaf in Northhampton, Massachusetts; the Maryland School for the Deaf in Frederick, Maryland; the Texas State School for the Deaf in Austin; and the Model Secondary School for the Deaf (MSSD) in Washington, D.C.

"While attending MSSD," Greenwood reminisces, "Bill developed a keen interest in repair and maintenance of TDD machines. Because of this, he was selected to spend two summers learning TDD repairs at Stanford University in Palo Alto, California. Stanford then hired Bill to maintain the TDD equipment at MSSD."

After graduating from MSSD, Vance attended St. Petersburg Junior College in Clearwater, Florida, where he developed his love of sailing. He lost "sailing time" while attending NTID, but made up for it during his summer co-op work experience at NASA. Today, he and his wife, Cheryl, are trophy-winning Hobie Cat racers.

"One year," he relates, "we were scheduled to race against friends in a state championship. But the weather was bad and the women didn't want to sail. So my friend and I raced my Hobie and won."

Vance also sails on "Jonathan," a racing boat owned by his friend, William Gibbings. They sail at least once a week, from April to December, out of the Hampton Yacht Club.

Richard Johnson, a longtime friend of Vance's, is another member of that crew.

"Bill works hard on the boat," Johnson says. "He has worked his way from small jobs to one of the hardest and most demanding — trimming the mainsail."

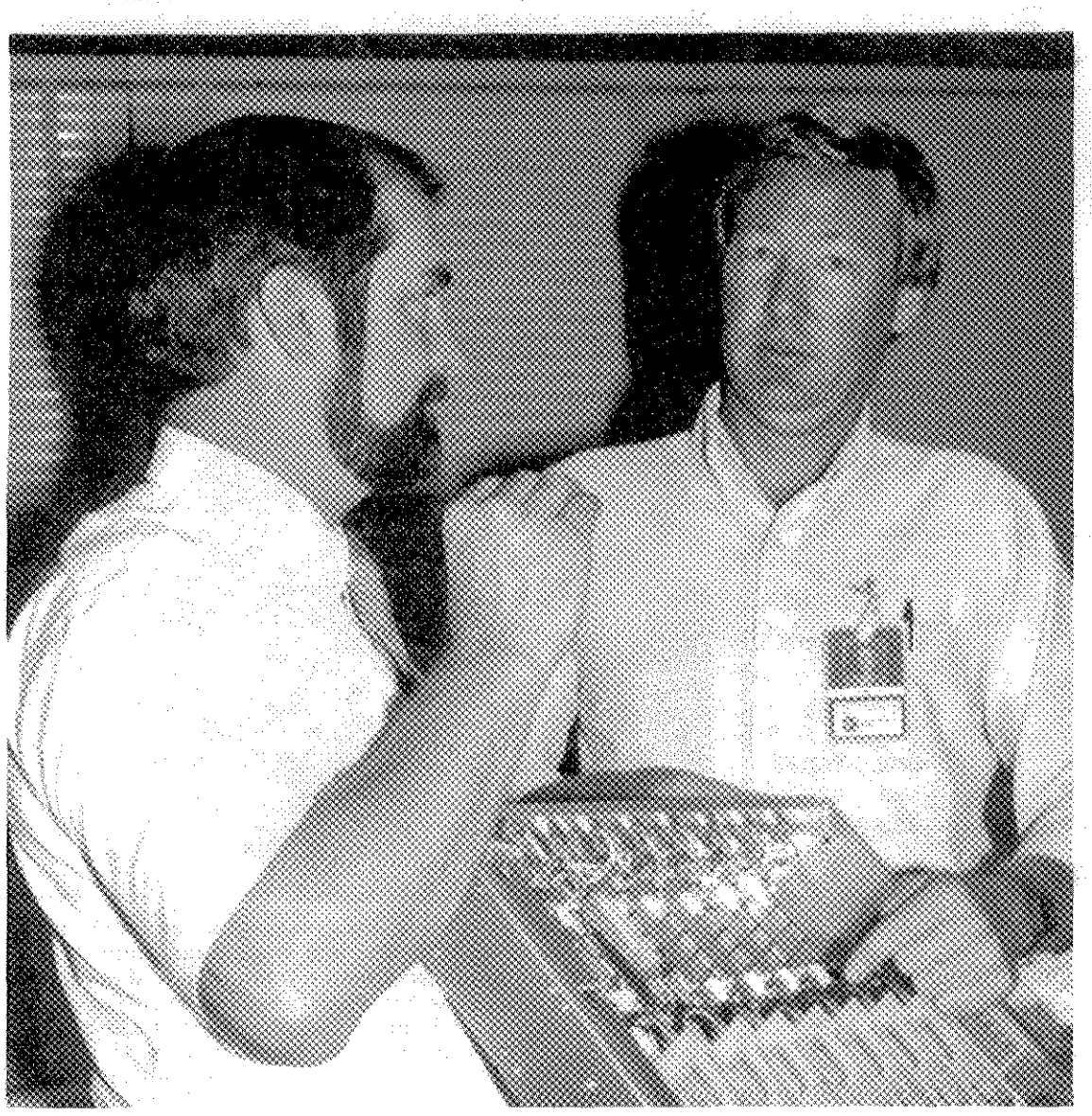
When he's not out on the water, Vance concentrates his energies on several committees. He is a member of the Employee Satellite Handicapped Workforce Committee, which is composed of and managed by handicapped Langley employees. He also serves on the Handicapped and Disabled Veterans Workforce Committee that is staffed by Langley directors and managers.

Randy Manning, (former) handicapped coordinator for Langley Research, says that Vance's "viewpoint and contributions are valuable. He is active on both committees."

Clarence Bailey, who has worked "across the desk" from Vance for seven years, says, "We get along just fine. Bill does lots of little things for the people he works with. He often works in the computer room, so he hooked up a flashing light and connected it to his TDD. Now I don't have to let him know when he has a call. He's a very considerate fellow."

Asked about his future plans, Vance displays a picture of his daughter, Kathleen Ann, born in October 1986.

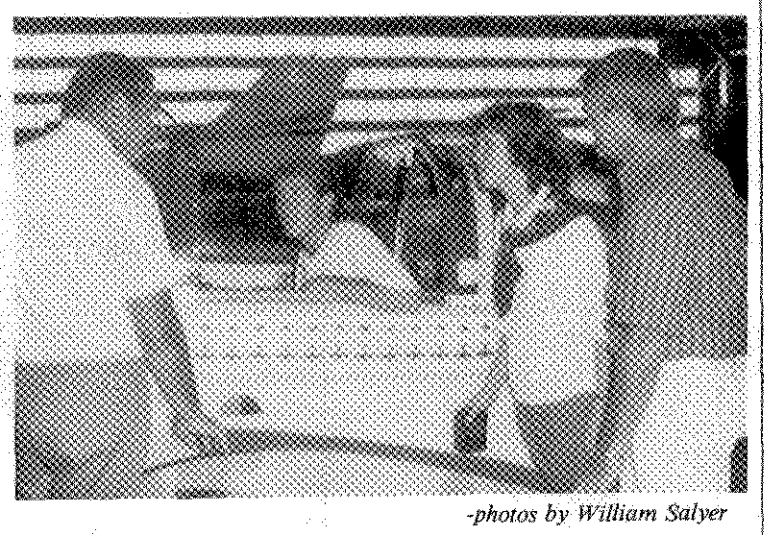
"My only plan now," he says proudly, "is to be the best father I can possible be."



Vance (right) explains a chassis function to Supervisor Larry Harvey.

International Science Fair Winner Tours Langley

Richard N. Hill, first place winner in the 1987 International Science and Engineering Fair held in Puerto Rico last spring, visited Langley recently. Hill was welcomed by Associate Director Sidney F. Pauls.



-photos by William Salyer

Richard Hill, first place winner in the 1987 International Science and Engineering Fair, sits in the cockpit of the Yankee and talks with Joseph Stickle, Chief, Low-Speed Aerodynamics Division, as his teacher/advisor Emily Clem and research pilot Lee Person look on.

Hill's research project, "Propeller Dynamics," tested a new type of propeller designed to vary its pitch angle by torsional flexing of the blades in a planned manner proportional to load. To prove the concept was feasible, Hill designed and built a vertical wind tunnel.

While at Langley, Hill toured several wind tunnels, including the spin tunnel, and the acoustics facility, ALDF, and the visual display and flight simulators.

Hill attends Athens High School is Athens, Alabams. Named to the International Aerospace Hall of Fame, Hill is the recipient of numerous awards, among them a Department of Energy award, Naval Air System Command award and London Youth Science Fortnight award. He plans to pursue an engineering career upon completion of high school.

In Memoriam

Benjamin T. Updike

Condolences to the family of **Benjamin T. Updike** who died September 18. Updike, a mechanical engineering technician in the Facilities Engineering Division, came to Langley in September 1956. Sammie D. Joplin considered Benny "an energetic person with an irrepressible personality. He used his energy and ability to pull people together to design and build research facilities at Langley."

Sympathy is extended to the family of **Frank V. Olinger** who died September 26. Olinger, an aerospace engineer in the Advanced Vehicles Division, joined Langley in June 1967. Frank S. Kirkham, Head, Military Vehicles Branch, remembers Frank as "an unusually talented and inventive engineer. He was highly respected by his colleagues at NASA and in the aircraft industry."

SIGART Meeting

The Hampton Roads chapter of the ACM Special Interest Group for Artifical Intelligence (SIGART) will meet Monday, Oct. 26, at the Peninsula Graduate Center in the Hampton Roads Center/Armada-Hoffler Building, at the intersection of Rt. 143 and Butler Farm Road.

The featured speaker will be Dr. David Livingston of Old Dominion Univeristy speaking on neural networks, an exciting technology that has recently become very popular in the AI community.

A social gathering will begin at 6:30 p.m., and the meeting will begin at 7. HRSIGART members $1, non-members $3 or a new membership. Contact Nancy Sliwa, 865-3871, for more information.

FORM NO. REVISED	TITLE	DATE
LF2	Forms Supplies Requisition (previous edition is usable)	June 1987
LF33	Drawing Record Card (previous edition is usable	Aug. 1987
LF44B	Hazardous Material — Reissue Card (previous edition is usable)	Aug. 1987
LF 48	Routing Form for NASA (High Numbered) Technical Memorandums (previous edition obsolete)	July 1987
LF49	Routhing For for NASA Formal Reports (previous edition obsolete)	Sept. 1987
NF 1592	Manager and Supervisory Performance Appraisal. April 1983 edition is usable if submitted with page 4 of 1986 edition. Revision pending for 1987 per NASA Headquarters	Aug. 1986
SF 1038	Application and Account for Advance of Funds NASA LaRC overprint Rev. Aug. 1987 (previous edition usable)	Aug. 1987

Positions Filled

Scarlett E. Coffey has been selected Communications Resources Assistant, Fabrication Support Unit, Electronics Technology Branch, Fabrication Division, under CPP 87-61.

Frederick R. Morrell has been selected Supervisory Aerospace Engineer, AST, Navigation, Guidance and Control Systems, Aircraft Guidance and Control Branch, Guidance and Control Division, under CPP 87-55.

Judy L. Shinn and **David McDougal** have been selected AST, Technology Utilization, Systems Engineering and Integration Office, Space Station Office, under CPP-87-53.

Willard R. Weaver has been selected Acting Assistant Head, High Energy Sciences Branch, Space Systems Division, under CPP 87-54.

Charles D. Bailey has been chosen Engineering Technician, Systems Development Support Section, Systems Development Branch, Systems Engineering Division, under CPP 87-51.

Ruth A. Koren has been selected Lead Mail and File Clerk, Correspondence and Records Management Section, Institutional Support Branch, Management Support Division, under CPP 87-59.

Carol P. Jackson has been selected Secretary (Typing), Aerostructures Directorate, Research Support Division, under A87-2.

Positions Open

The following Competitive Placement Positions are currently open:

87-75: Secretary (Stenography), GS-0318-07, Office of Director for Aeronautics. Closes October 26.

87-76: Secretary (Stenography), GS-0318-06 (Potential GS-07), Office of the Director. Closes October 26.

Retirement Parties

Carl B. Smith will be honored at a retirement party on Friday, Nov. 6, at the Fort Monroe Officers' Club. Cash bar will be held at 6:30 p.m.; prime rib dinner begins at 7:30. Cost is $12/person or $21/couple. Contributions to gift only will be gratefully accepted. Respond to Jane Everett, Mail Stop 233, ext. 2801, by Oct. 30.

Frank A. Williams will be honored at a retirement dinner on Friday, Nov. 20 at the Activities Center. Cash bar will be held at 6 p.m.; dinner begins at 7. Cost is $11/person or $21/couple. Contributions to gift only are welcome. RSVP to Chris Ryan, Mail Stop 180, by Nov. 6.

Note of Thanks

Ann Bell writes: "Thank you to those who helped to make my retirement party so very special. I appreciate the nice gifts and will cherish them as well as the great memories of having the opportunity to work with you. You are very special people and I treasure your love and friendship."

Harvey's Names Crew of Month

Harvey's Janitorial Service, Inc. recognizes employee teams who have excelled on their Facility Evaluations Reports. The award committee convened on October 1 and selected Crew #9 as Crew of the Month for September. John M. Huckless, Contract Manager, is especially proud to announce that this team received a perfect score–95 out of a possible 95 points–on their Facility Evaluations. Team members are (L to R) Joyce Johnson, Clara Challenger, Betty Ball, and Pimja Webb. Not pictured is team member Theresa Hill.

People & Places

Langley Employees Support Recent Bloodmobiles

A total of 368 Langley employees, retirees and contractors donated pints of blood at the July 23 visit of the American Red Cross Bloodmobile.

Achieving gallon status were:

13 gallons — Richard Holt, Robert Davis, John Brown;

10 gallons — Roger Amick;

9 gallons — John Kovtum, Donald Babe;

7 gallons — Don Ward, James H. Monteith, Vernie Boyd;

6 gallons — Charles Davidson, Warner Smith, Jr., Joseph Guy;

5 gallons — John Treier;

4 gallons — Charles Nichols, Frank M. Plott, Edward Kerlin; Erby Harris; Fred Beissner;

3 gallons — Edgar L. Collier, William E. Malone, Bobby M. Earnest, Robert Kudlinski;

2 gallons — Joan Oster, Michael Barsky, Lonnie Combs, David Johnson, Robert Turner;

1 gallon — Kevin Johnson, Mary T. Brown, Scott B. Williams, Thomas J. Skalski, James O'Bryant, Jerry Harris;

1st Timers — Julie Timmons, Robert Patterson, Jr., Joe Melzer, Lisa Turax, Malcolm Simmons, Morton Boston, Elaine Crawford, Floyd McWilliams, Kevin Rivers, and Carolyn Grantham.

A total of 367 pints of blood were donated by Langley employees at the September 23 American Red Cross Bloodmobile held at the Activities Center.

Achieving gallon status were:

11 gallons — James L. Leiffer;

8 gallons — Harvey W. Murray;

7 gallons — John M. Haines;

6 gallons — William F. Adkins, Ann E. Bare, Wilbur B. Fichter, Charles P. Share;

5 gallons — Kathryn E. Wurster, Clarence M. Cole, Michael G. Fleck;

4 gallons — Ernest C. Burt, James C. Ellison;

3 gallons — Arizona White, Brian S. Luoto, Michael L. Carr, Thomas R. Levin, Robert K. Sleeper;

2 gallons — Joseph L. Japp, Arthur R. Hayhurst, Richard N. Zacharias, Franklin K. Harris, Cindy W. Albertson, Larry L. Minter;

1 gallon — Kenneth A. Deyerle, Norman F. Willey, William E. Larson, Ronnie W. Sterling, Charles L. Stanley, Jeannette Kurtz, Vickie J. Baker;

1st Timers — Michelle Cook, Barton Bacon, John Summers, Detlef Manski, Charles Sibley, Jerome Harris, Leslie Heaslet, David Boerschlein, Stephen Bollman, Francis Greene, Richard Thompson, Neil Cheatwood, and Calvin King.

NASA coordinator for the Bloodmobile visits was Annette L. Forrest; Redcross coordinator was Barbara Thomas.

The next Bloodmobile will be held November 25.

Bowling Stats

The NASA Tenpin Bowling League bowls on Tuesday nights at Victory Lanes in Grafton. Current standings are:

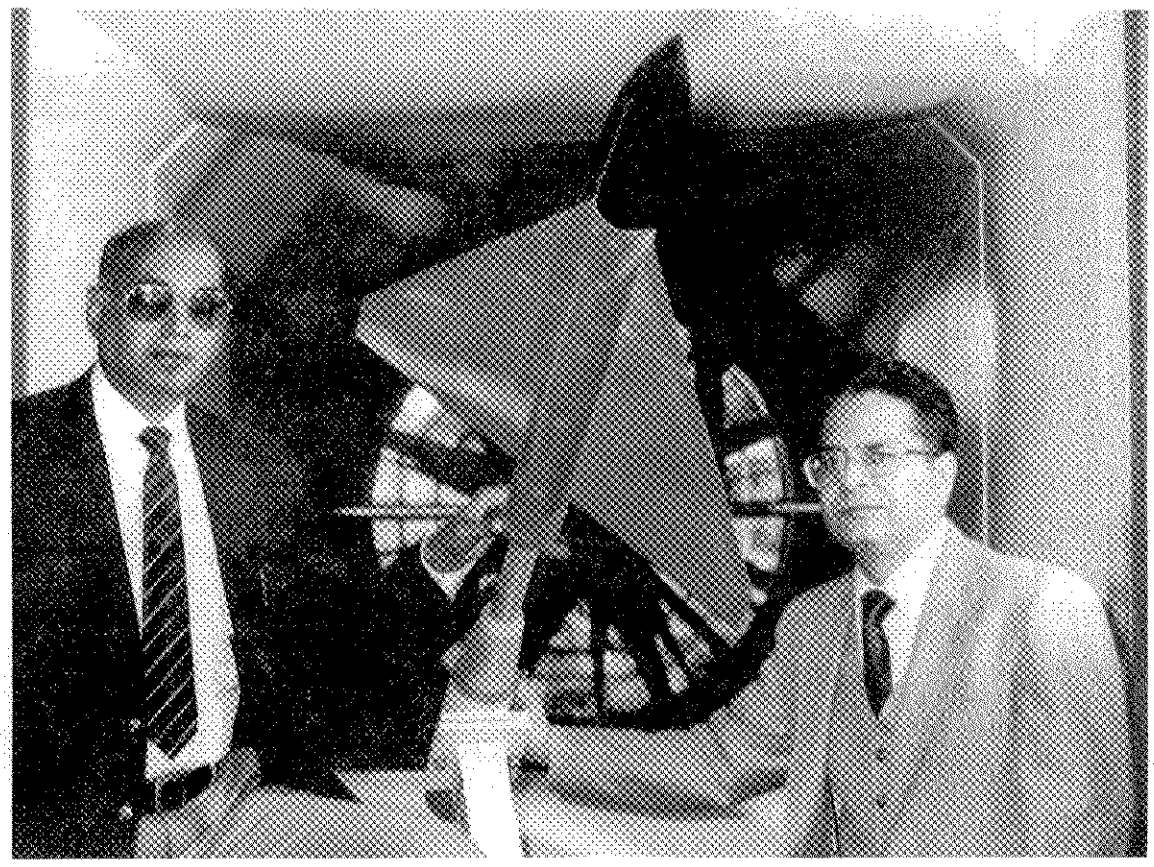
	October 6
Team High Game	910 Spare Change
Team High Series	2588 Thunderbolts
Male High Game	224 **Geoffrey Tennille**
Male High Series	620 **O. J. Cole**
Female High Game	196 **Barbara Williams**
Female High Seies	543 **Ruth Frizzell**
Most Pins over Average	69 **Thomas E. Ezell, Jr.**
	56 **Dan Vicroy**

CFC Update

At **Researcher News** press time, Langley personnel and NASA affiliated organizations had donated $31,649 to the 1987 Combined Federal Campaign. This figure represents a 12.66 percent of Langley's $250,000 goal.

Of the amount donated, $14,339 had been contributed by 166 retirees–a wonderful showing from our former employees.

Langley has a long history of outstanding participation in community activities, especially in times of community need. The CFC is the one time each year when that community need is made known to us. Please consider the needs of our community and make your pledge if you haven't already done so. Your contribution will help Langley meet its goal and, in turn, will help our community.



-photo by Terry Shepard

Sudhir Mehrotra (right), president, and Dhanvada Rao, vice president of Vigyan Research Associates, Inc., stand in the wind tunnel designed by Rao. This resource, unique under private ownership, gives Vigyan researchers the ability to test and validate new aeronautical concepts economically, rapidly, and safely.

Vigyan Minority Contractor of Year

Small Firm Big in NASA's Eyes

Sudhir C. Mehrotra and Dhanvada M. Rao come from hometowns less than 200 miles apart in India, but met for the first time in 1975 at Langley where they worked as researchers assigned to the same branch.

Their association at Langley and their mutual desire to continue their professional careers in the United States led the two to form Vigyan Research Associates, Inc., in Hampton.

Incorporated in 1979, Vigyan was certified by the Small Business Administration as a minority-owned company in 1984. On October 6, 1987, Mehrotra, Vigyan's president, and Rao, vice president, traveled to Washington, D.C., to accept an award from Deputy Administrator Dale D. Myers as NASA's Minority Contractor of the Year. In a national competition for Federal Minority Contractor of the Year, Vigyan placed very high.

The NASA award and national recognition serve to mark the pace of this fast-growing aerospace research firm. Established on a limited budget the company that initially employed three researchers now boasts a staff of 65 – among them researchers from the Netherlands, West Germany, Egypt, Taiwan, Thailand, Turkey, and Morocco.

Vigyan does an annual business of nearly $2 million, mainly in contract support to Langley. Vigyan researchers are involved in computational and experimental aerodynamics, control systems, structural analyses, material and environmental sciences.

Located less than a mile from the Center, Vigyan is unique in that its facility houses its own wind tunnel. Rao grins as he makes it clear that Vigyan is not competing with NASA in the wind tunnel area – not now. Designed by Rao and built under his supervision, the 3- x 4-foot wind tunnel, an unusual resource under private ownership, is used by the innovative researchers at Vigyan to test and validate new aerodynamic concepts economically, rapidly, and safely.

"Wind tunnel accessibility allows us to screen out concepts that are not practical and concentrate on those that show promise," Rao explained. Government support is then sought for further test and development of promising ideas.

"Our wind tunnel capability allows us to offer a package of idea plus hard data that makes a decision on the part of the government supporter less risky," Mehrotra added.

Vigyan, a sanskrit word for science, is an appropriate name for a company that sells innovative scientific ideas. Expertise and intuition are our marketable quantities, explained Mehrotra.

Their marketing success is evidenced by the Small Business Innovative Research (SBIR) contracts they have won. "We're particularly proud of the eight SBIR Phase I contracts we've been awarded because it's such a highly competitive area, based entirely on the merit of an idea," remarked Mehrotra with obvious pride. Three of the eight have already been funded for Phase II and Vigyan has submitted seven more proposals for 1987 competition.

This record sets Vigyan apart as a company that consistently produces winning ideas and carries them to successful research products.

NATIONAL HEALTH AGENCIES

ISA

NSA

Happenings

LAA SOCIAL will be held Friday, October 30, from 4 to 6:30 p.m. in the Activities Center.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, November 10, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

FILM FESTIVAL. The Langley Activities Association will begin the Walt Disney Film Festival Sunday, November 1. The first movie of the season will be "The Lady and the Tramp." Movie time is 2 p.m. and cost is $1 per person. Popcorn and drinks will be available. For more information, call Vernelle Robinson, ext. 2691.

TIME SHARE MEETING. There will be a business mmeting of the NASA Seascape Time Share Owners Assoc. on Sunday, October 25 at 1:30 p.m. in the Activities Center. Call Dick Kurtz, ext 4141, for details.

TOASTMASTERS. NASA Toastmasters will meet Wednesday, October 28, 11:30 a.m. at the Activities Center. We meet the second and fourth Wednesdays of every month. We are always interested in welcoming those people who want to develop their public speaking skills. Contact Steve Yaros, ext. 2673, for information.

CEBAF SEMINAR. Hiroshi Ito, Hampton University, will discuss "Elastic Electron Scattering from the Deuteron Within the Quark Cluster Resonating Group Method," at 11 a.m., Wednesday, October 28, in CEBAF Room 53. CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

STORYTELLING WORKSHOP will be held at 7 p.m. on November 15 at the Hampton Public Library for those interested in learning more about the art and tradition of storytelling. Call 727-6234 for more information.

STORYTELLING. The Hampton Library will feature Michael Parent, renowned performer of folktales, at 7 p.m. on Monday, November 16. Accompanied by guitar, ukulele, and jaw harp, he entertains all ages with a mixture of oral history and traditional stories. FREE tickets are available at the Library information desk at 4207 Victoria Boulevard.

STUDENT NIGHT. Thomas T. Bales, LaRC senior research engineer, will be the speaker for ASM's special Students' Night meeting on Nov. 9 at Steve's Steak House. Bales will discuss materials used for aircraft applications and various techniques and procedures employed for failure analysis. For reservations call Keith Bird, ext. 2212.

TURKEY SHOOT. The Langley Activities Association will sponsor their annual Turkey Shoot Saturday, November 7, from 9 a.m. to dusk. Food will be for sale during the day.

FOR SALE

Powhatan Plantation: Timesharing condo, unit 23, 43rd week, 3 BR, sleeps 8, LR, DR, kit, 2 ba, hot tub, AC, fireplace, deck, beautifully decorated, price negotiable. Call 898-1671.

DRIVERS: Up to three alternate drivers from the James-York Playhouse, Williamsburg, to the LaRC West Area on the 8-4:30 shift are needed. Prefer safety-oriented, non-smoking, prompt person with an air-conditioned, dependable vehicle. Contact C. M. Hudson, ext. 4631, or R. Henk, ext. 4637.

VANPOOL members needed between Gloucester and NASA on 7:30 a.m. shift. Please call Ken Williams, ext. 2771 or 693-3967.

CARPOOL members wanted. Virginia Beach Expressway area. 7:30-4 shift. Call Dave Terray, ext. 4621, or Bill Lynn, ext 4756.

SKI CANADA. Mont Tremblant, 75 miles of trails, French cuisine, Europe in North America for only $319. Trip includes 6 day lift pass, 5 nights lodging, breakfast, dinner, shuttle service, and transportation. Contact Norman Willey, ext. 3987.

Correction

The telephone number for Suellen Seabrook's EXERCISE CLASSES held on Mondays and Wednesdays at 5 p.m. in the Activities Center was incorrect in the Sept. 25 and Oct. 9 issues of the **Researcher News**. The correct phone number is 877-6067.

To receive a copy of any of these NASA news releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-146.....Soviet Biosatellite Mission Underway with U.S. Participation
87-147.....Air Force and NASA Sign Pricing Agreement
87-148.....Computer Sciences Corp. Selected for JSC Contract
87-149.....NASA and West Germany Sign Earth Observa- Experiment Agreement
87-150.....National Aero-Space Plane Program Selects Three Firms
87-151.....NASA to Test Flight Configuration Solid Rocket Motor
87-152.....NASA to Support Commercial Access to Ada Software Technology
87-153.....Space Shuttle Main Engine Heat Exchanger Leak

FOR SALE: Full/queen all wood headboard ($40), desk chair, adjustable height ($75), and large end table lamp ($25). Call 898-8463 after 7 p.m.

IT'S YOUR WAY TO HELP–the CFC Way. Children enrolled in the Downtown Hampton Day Care Center do benefit from the money you contribute to the Combined Federal Campaign. Here they are showing their appreciation with smiles and enthusiasm as they share "tea time" with members of the Langley staff. The children are joined by (from left) William D. Mace, Director for Electronics; Charles P. Blankenship, Director for Structures; H. Milton Holt, Chief, Information Systems Division and Co- Chairman of Langley's CFC; (seated) Sue E. Wilder, Langley Alumni Association representative to CFC; and Richard M. Boykin Jr., Assistant Chief, Systems Engineering Division. The center is licensed by the State of Virginia to keep 30 3-to-5-year-old children from low-income families on the Peninsula. Tuition is based on income and includes care from 7:30 a.m. to 5 p.m. and a hot lunch. Transportation is also provided as many of the families do not have automobiles; however, the van used to transport the children is in very poor condition. This year, the center hopes to receive funds to replace the van; other priorities include outside playground equipment for the children and a small freezer. Your contributions will be well spent–helping your neighbors at the Downtown Hampton Day Care Center and other agencies within the scope of the CFC.

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NASA
National Aeronautics and Space Administration
Langley Research Center

Volume 1, Issue 9 November 6, 1987

Bi-weekly Employee and Contractor Publication

News Researcher

Astronaut to Speak at Visitor Center

Jerry Ross puts a whole new slant on the term "world traveler." He's circled the globe – 108 times in 165 hours. He's watched spectacular sunsets – once every 90 minutes. He's gone for long walks – while floating 200 miles up in space. Astronaut Jerry Ross, selected as mission specialist for Shuttle Mission 27, will speak at the Visitor Center on Thursday, November 12. Two lectures are scheduled, at noon and 7 p.m.

Ross will discuss the November 1985 Shuttle mission and show film clips of the spectacular night launch, the space construction experiments, and the deployment of three communication satellites.

During his distinguished Air Force career, Ross has compiled an impressive list of accomplishments and honors. He was selected as a astronaut in 1980 and received the NASA Space Flight Medal in 1985. He has flown 21 different types of aircraft. Ross is scheduled to return to space in September 1988 on a mission for the Department of Defense.

NASA Broadcasts Videoconferences for Teachers

NASA's Educational Affairs Division, Washington, D.C., through its Educational Technology Office and Oklahoma State University, has begun to broadcast, via satellite, a series of educational videoconferences discussing NASA's current and future projects. The conferences feature NASA project personnel and educational specialists and, in some cases, will highlight certain NASA field centers.

These "live" 1-hour videoconferences are designed to update classroom teachers on NASA programs, demonstrate aerospace activities for the classroom and announce new programs, products and activities available to classroom teachers.

The first videoconference featured Dr. David R. Skillman, senior systems engineer at the Goddard Space Flight Center, who presented the Hubble Space Telescope. It is estimated the more than 20,000 educators in 47 states participated in this initial conference.

Additional videoconferences on the schedule include:

Space Shuttle Flight Status – November 18, 1987

Space Station – February 16, 1988

Launch Vehicle Preparation – March 16, 1988

Educators in Langley's five-state area have been advised of the NASA educational programs and been given transponder information for their participation. NASA personnel can view the events on NASA select television.

NASA Issues Mixed Fleet Manifest

NASA has issued a new, mixed fleet manifest reflecting primary payloads for Space Shuttle missions through 1990 and expendable launch vehicles (ELV) through 1995.

The manifest reflects the high priority assigned to major science payloads. In 1989, five NASA science missions, some with international cooperation, will be launched. Four will fly on the Shuttle.

The four Shuttle missions include – Magellan, which will map Venus with a high-resolution radar, in April; Hubble Space Telescope, one of NASA's highest priorities and a cooperative project with the European Space Agency (ESA), in June; ASTRO-1, a Shuttle-borne ultraviolet observatory, also in June; and Galileo, a cooperative project with Germany to make the first comprehensive survey of Jupiter and its moons, in October.

In addition, the Cosmic Background Explorer, a mission to investigate cosmic background noise, is planned for launch on a Delta in February 1989. NASA also will accelerate deployment of other space science missions by fully utilizing ELVs.

For example, the Roentgen Satellite is planned for launch on a Delta in February 1990, and the Extreme Ultraviolet Explorer is planned for launch on a Delta in August 1991.

In October 1990, the cooperative ESA/NASA Ulysses mission, to observe the polar region of the sun, is scheduled to be launched on the Shuttle.

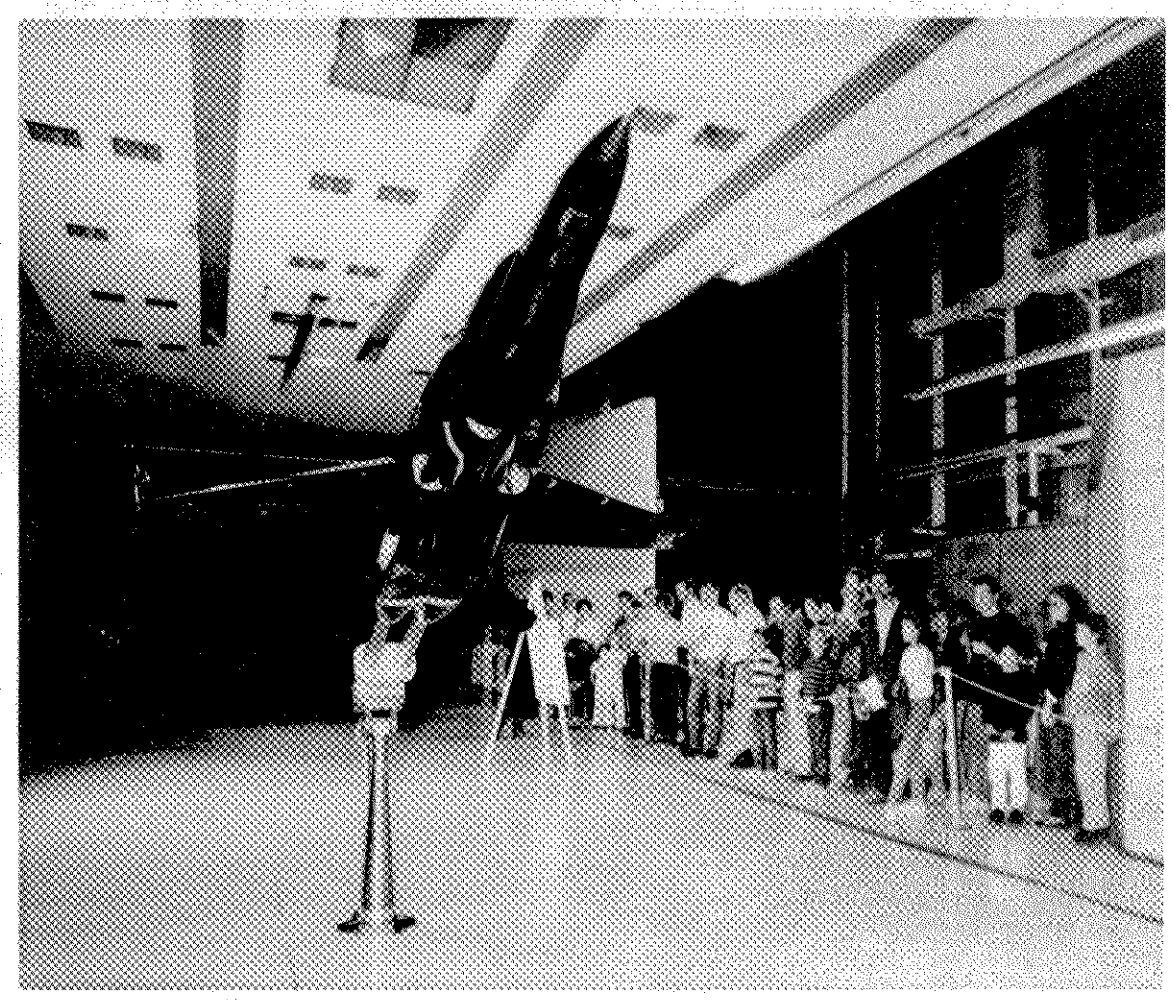
The reformatted launch schedule includes Space Shuttle missions through STS- 44; projected ELV flight assignments; flight histories for the Shuttle and ELVs; and a summary of payload requests for flight assignments.

The ELV payload flight assignment schedule projects the target launch date, class of vehicle and, if assigned, designated vehicle. It also includes the required orbit and inclination, launch site and payload. Since ELV flights are projected through 1995, some are included which have yet to receive formal budget approval.

The previous flight section reflects histories for Space Shuttle missions and Atlas Centaur, Delta and Scout launches.

Secondary payloads, including some commercial activities, will be added to the launch schedules as they are formally assigned.

A manifest for Space Shuttle flights beyond 1990 will be issued following decisions regarding lauch vehicle assignments for certain DOD payloads compatible with both Space Shuttle and ELVs.



-photo by Paul Bagby

70th Anniversary Open House Draws Over 12,000 Visitors

On Saturday, October 24, Langley Research Center held Open House, the final event commemorating our 70th Anniversary. Ten research facilities, not normally open to the public, were on display. Many Langley employees were on hand to share the history of the center as well as give a visitors a glimpse into the future of aerospace research. See a photographic review of Open House activities on pages 4 and 5.

Shown above is a wind tunnel model of an F-18 being readied for testing in the 14 x 22 foot subsonic tunnnel. The tests, run this week, will compare flow visualization data gathered in the tunnel with in-flight data.

News Briefs

HEADQUARTERS, Washington, D.C. — Deputy Administrator Dale Myers will formally present the space agency's Excellence Award for Quality and Productivity to IBM Corporation's Federal Systems Division, located near Johnson Space Center, Houston, and Martin Marietta Manned Space Systems, at Michoud Assembly Facility, New Orleans. The award is designed to recognize the highest standards of performance among NASA contractors, subcontractors, and suppliers who are members of the aerospace industry. NASA is also seeking nominations for the 1987 excellence award; deadline for initial application is Nov. 1.

HEADQUARTERS, Washington, D.C. — NASA and the Department of Commerce recently announced the selection of General Dynamics Space Systems Div., San Diego, for negotiations leading to award of a contract for expendable launch vehicle (ELV) transportation services for the department's National Oceanic and Atmospheric Administration (NOAA) meteorological spacecraft GOES I, J and K. GOES spacecraft provide near-continuous, high- resolution visual and infrared imaging of weather systems over large areas of Earth.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — Scientific studies of Supernova 1987a, discovered in February from observatories in the Southern Hemisphere, will be continued from Australia and New Zealand. The studies will use sounding rockets, scientific balloons, and one of NASA"s research aircraft – a converted C141 jet cargo aircraft known as the Kuiper Airborne Observatory. The purpose of the campaign is to develop a more thorough understanding of what happens following the explosion of a star.

HEADQUARTERS, Washington, D.C. — NASA has announced the selection of 206 research proposals for immediate phase I award negotiations in the 1987 Small Business Innovation Research Program (SBIR). Included are 169 small, high technology firms located in 29 states.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — NASA has announced the selection of Martin Marietta Manned Space Systems, New Orleans, La.; Rockwell International, Space Transportation Systems Division, Downey, Calif.; and United Technologies Corp., USBI Booster Production Company, Inc., Huntsville, Ala., for negotiations leading to parallel contract awards to perform the first of a two-phase systems definition study for a proposed unmanned, cargo-carrying launch vehicle. The new vehicle, named Shuttle-C for cargo, would have a lift capability of 100,000 pounds to low-Earth orbit, giving the U.S. space program a launch vehicle with two to three times the payload capability of the present Space Shuttle.

HEADQUARTERS, Washington, D.C. — The prototype of a comet penetrator probe, an integral part of NASA's Comet Rendezvous Asteriod Flyby (CRAF) mission, has been tested successfully at the Sandia National Laboratory, Albuquerque, N.M. The full-scale aluminum prototype of the planned 5-foot-long titanium probe proved it could penetrate rock-hard ice, even when impacting at the worst possible angles. The comet penetrator is an instrument-bearing missile designed to pierce a comet's surface to a depth of approximately three feet or more.

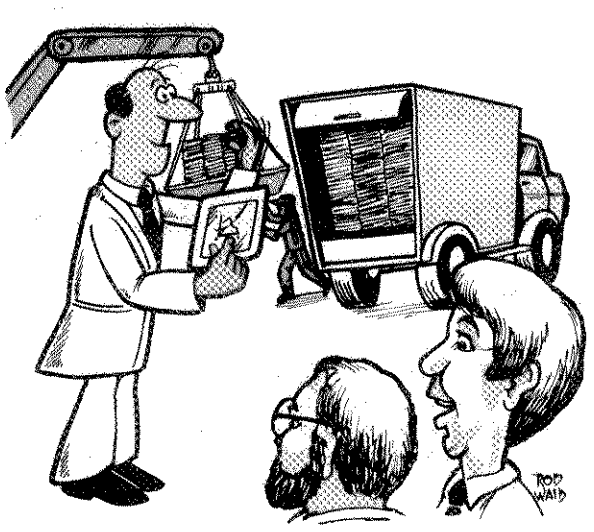
Editor's note: Recent surveys locally and at the Headquarters level indicate that our readers are interested in NASA News Releases summarized here. Copies are available by contacting Edith Watts, Mail Stop 146, ext. 3017. Request information by release number and headline. See Current News Release information box on page 6.

Langley Directives Distributed

DIRECTIVES NO.	TITLE	DATE	T.S.#	DATE DISTR.
—	LaRC 'Handbook Location Record'	9-14-87	—	10-7-87
REVISED				
LHB 1047.1	"Disaster Control Data-Hurricanes and High Tides-LaRC Buildings and Equipment"	AUG 1987	—	10-14-87
LMI 1400.5	"Information Reproduction Management Program"	9-16-87	1560	10-1-87
LMI 1700.6	"Control of Hazardous Materials"	9-22-87	1562	10-15-87
LMI 1551.1	"Langley Research Center Standard Distribution Lists (SDL) Systems"	9-25-87	1563	10-26-87
NEW				
LMI 1100.16	"Langley Multidisciplinary Research Advisory Committee (MRAC)"	9-21-87	1561	10-1-87

NOTE: Directives are available for review in each organizational office. Extra copies may be obtained from the Directives and Forms Management Office, ext. 3511.

Lankley



"THOSE ARE LANKLEY'S VU-GRAPHS FOR HIS TALK THIS MORNING."

In Memoriam

Sympathy is extended to the families of:

Tandy B. Powell, Jr., who died September 12. Powell retired in 1980 from the Systems, Engineering and Operations Division.

Albert R. Philips, who died September 20. Philips retired in 1977 from the Systems, Engineering and Operations Division.

Dora L. Perry, who died October 3. Perry retired in 1977 from the Management Operations Division.

Editorials

Langley

Headquarters Forum

The Langley Research Center has a long history of important contributions to U.S. aeronautical technology. In fact, aeronautical research has been the mainstay of the Center's research programs from its beginning 70 years ago to its modern-day role in both aeronautics and space. Today, about 60 percent of the Center's efforts is devoted to aeronautical research.

Along with our sister aeronautical research centers at Ames and Lewis, Langley has been a major factor in the success that U.S. aircraft manufacturers have had for over 50 years in dominating the world airline fleet and providing military aircraft second to none. The results of our research are readily applied to industry designs, and their success has paid off handsomely to both the U.S. economy and national defense.

Now, for the first time since World War I, the U.S. is in danger of losing its lead in both civil and military aircraft. Our foreign competitors have been steadily increasing their investment in aeronautical research, and their share of the world civil aircraft market has been rapidly increasing. Soviet military aircraft are being produced at a rate ten times that of the U.S. and their performance capabilities are, for the first time, approaching ours.

The White House Office of Science and Technology Policy (OSTP) has stated that "the technical margins that have long defined U.S. aeronautical preeminence have narrowed significantly in recent years as foreign competition has increased. This trend, if allowed to continue, will evolve into a major national weakness substantially increasing the vulnerability of America's position in world affairs."

Aeronautical researchers at Langley are today working hard to lay the technical foundation needed for the U.S. to successfully compete with this increasing foreign competition. Langley is also taking the Agency-lead in proposing bold new aeronautical initiatives which can assure this nation's aeronautical leadership will continue into the 21st century.

Basic research using Langley's world-class experimental facilities and the new generation of supercomputers at Langley and Ames is providing a better understanding of the physics involved in pushing today's frontiers of flight. Technologies are being explored at Langley and Lewis that can increase the efficiency of subsonic transport aircraft by as much as 50 to 100 percent.

We at Langley are advocating a new initiative to provide the technical know-how to develop near the turn-of-the-century a 7,000-mile range, Mach 3 to 5, civil transport. The National Aero-Space Plane Program, in which we are heavily involved, is focused on providing the capability for hypersonic and transatmospheric aircraft in the next century. Super agility, supersonic cruise, stealth, and short-field takeoff and landing (STOL) are military technologies being pursued which can provide revolutionary new military aircraft for the future.

As the U.S. faces a major challenge to its world leadership in aeronautics, researchers at Langley are keeping their 70-year-old tradition of innovation, systematic study, and the pursuit of practical solutions to the problems of flight that will provide the technical foundation for continued U.S. leadership in aeronautics into the 21st century.

Roy V. Harris, Jr.
Director for Aeronautics

"You cannot do a kindness too soon, for you never know how soon it will be too late."
-R. W. Emerson

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115, telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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 at 95 Percent of Goal

CFC Contributions Mounting

As of **Researcher News** press time, Langley personnel and affiliated organizations have donated $237,872 to the 1987-88 Combined Federal Campaign. This figure represents 95 percent of Langley's $250,000 goal.

In previous years, we have always met and exceeded our goal. I urge each one of you to please consider donating to the campaign if you have not already done so. This is the one time each year that we have the opportunity "TO HELP PEOPLE" in our local area and in other parts of the world by donating to the CFC.

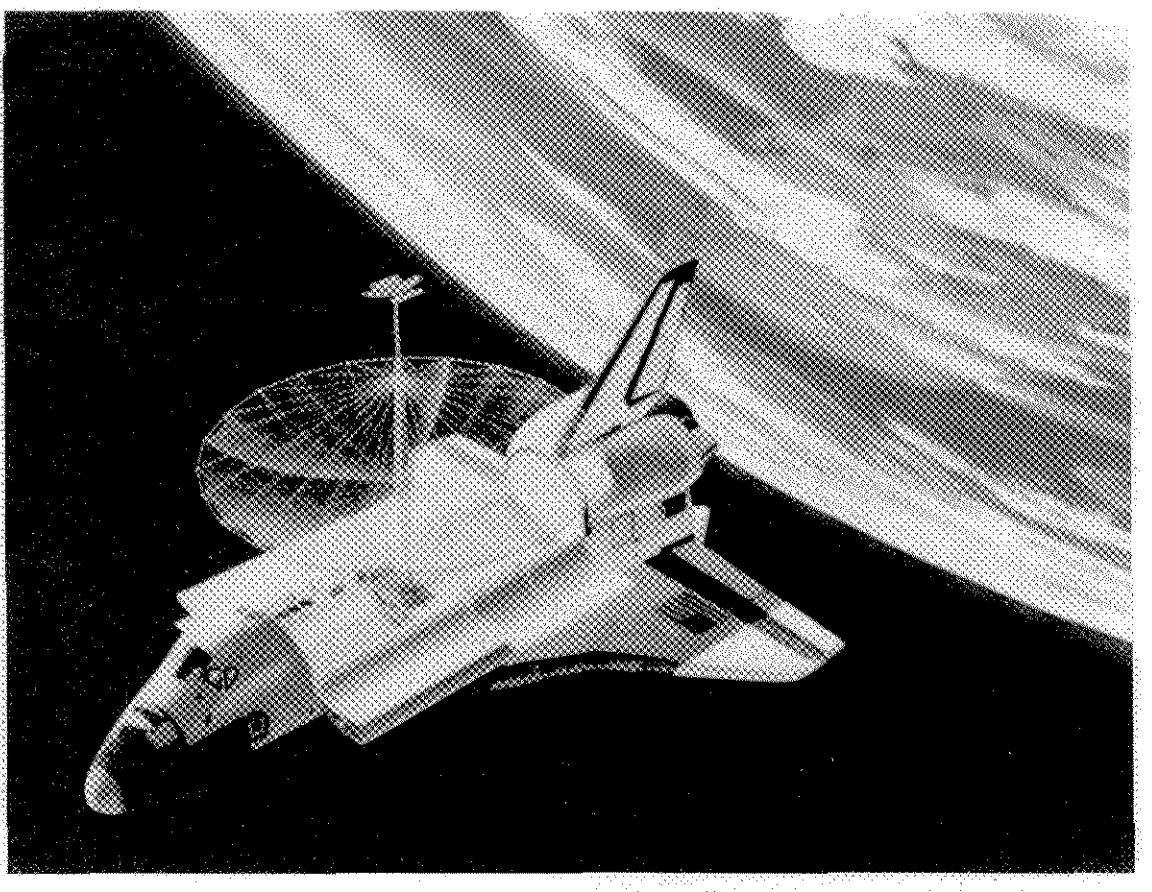
I know that I can count on each of you to help us not only meet our goal but to exceed it as we have done in the past. Thanks for your support.

Ralph J. Muraca
Campaign Chairman

Taxes and Investments

Malcolm G. Fries, Certified Financial Planner, will speak at an after-work meeting of the Hampton Roads Section of the AIAA on November 17 at 4:30 p.m. The after-work meeting will be held in the Activities Center. Fries will present an overview of tax law changes in effect for 1987 and investment opportunities to take advantage of these changes. The program is designed to help members make important financial decisions.

Fries is a Registered Investment Advisor, Certified Financial Planner from the College of Financial Planning and a member of the Institute for Certified Finanical Planners. He has a master's degree in business and is president of his own financial organization. Fries also hosts a radio show on WNIS-Norfolk on financial planning.



Celebrating 70 Years of Research

Large Space Antennas Unfold from Langley Concept

This artist's drawing illustrates how a concept for a large space antenna could be tested in the Space Shuttle cargo bay.

The hoop column antenna, developed at Langley in the mid-eighties, would unfold umbrella-style from a small package only a few feet long. Based on this concept, antennas as large as a football field could be deployed in geosynchronous orbits for dramatically improved communications and other applications after the turn of the century.

Employees Take Note:

Effective December 1, 1987, the blue rectangular NASA automobile decals will become obsolete and will not be honored by LaRC or area military installations. NASA Security has made every effort possible to issue new decals to all qualified NASA employees and contractor personnel. If you have not received your new decal, please contact the Badge and Pass Office at extension 3212 or 4611.

Deadline Change

Due to the Thanksgiving holiday, deadline for the December 4 issue of the **Researcher News** will be Wednesday, November 25.

Transonic Tunnel Repair Enters Assembly Stage

The refurbishment of the 7 x 10 foot tunnel, underway since the catastrophe that took out the entire set of fan blades in 1985, is about to take on a very visible phase.

Up until now the exacting task of getting the high-speed tunnel back on line has been taking place in diverse areas . . . on engineers' drawing boards; in the machine, fab, and model shops on center; in Richmond where the tunnel motor was repaired; even as far away as Gloucester, England, where the fan blades were fabricated.

Ray Spaulding, project manager for repairs to the 7 x 10 foot tunnel, has orchestrated the tunnel rehabilitation since the decision was made to repair the facility. Spaulding credits the impending reassembly of the fan aparatus to the "excellent cooperation of everyone in the Systems, Engineering and Operations and the Acquisition Division."

Now that all the precision elements are being gathered together, the physical assembly is about to begin. The repaired tunnel motor has been dropped back in place through the portion of the roof that was cut away to remove it after the accident. Now in place, it stands ready for the attachment of the hub that will be brought in through a hole in the side of the tunnel and mounted vertically on the new motor shaft.

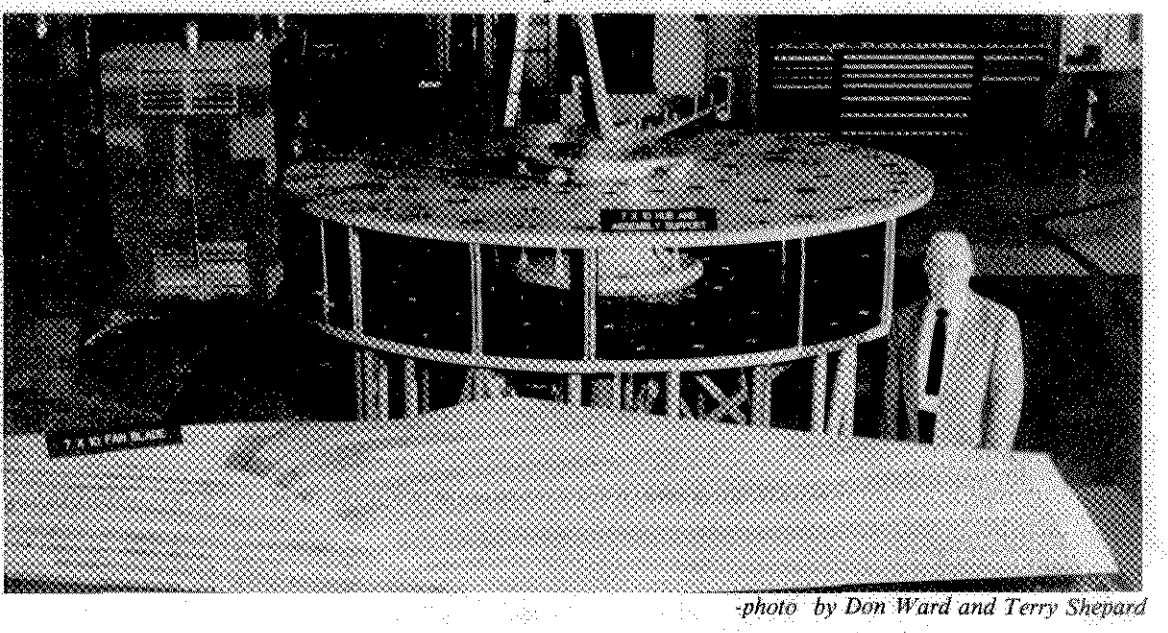
The hub is now supported in a horizontal position in Building 1225 where the critical assembly of the fan blades will take place over the next 10-12 weeks.

The blades, fashioned out of sitka spruce, were fabricated in England by Permali Gloucester Limited, a subcontractor for Russell Plastics of Long Island. "Permali was low bidder, but as it turns out," Spaulding explains, "in my opinion, they are the Cadillac of blade builders as well."

Sitka spruce is the material out of which all fan blades on center are made. Spaulding explains it is selected because it is strong, has straight grain, and is relatively free of knots.

Once the blades have been fitted to the hub, they will be disassembled and then reassembled under contract in a vertical position in the tunnel. To accomplish this, the 18 blades will be dropped, individually, by a crane through a hatch in the tunnel roof and then bolted to the hub. The reassembly process is expected to take approximately eight weeks.

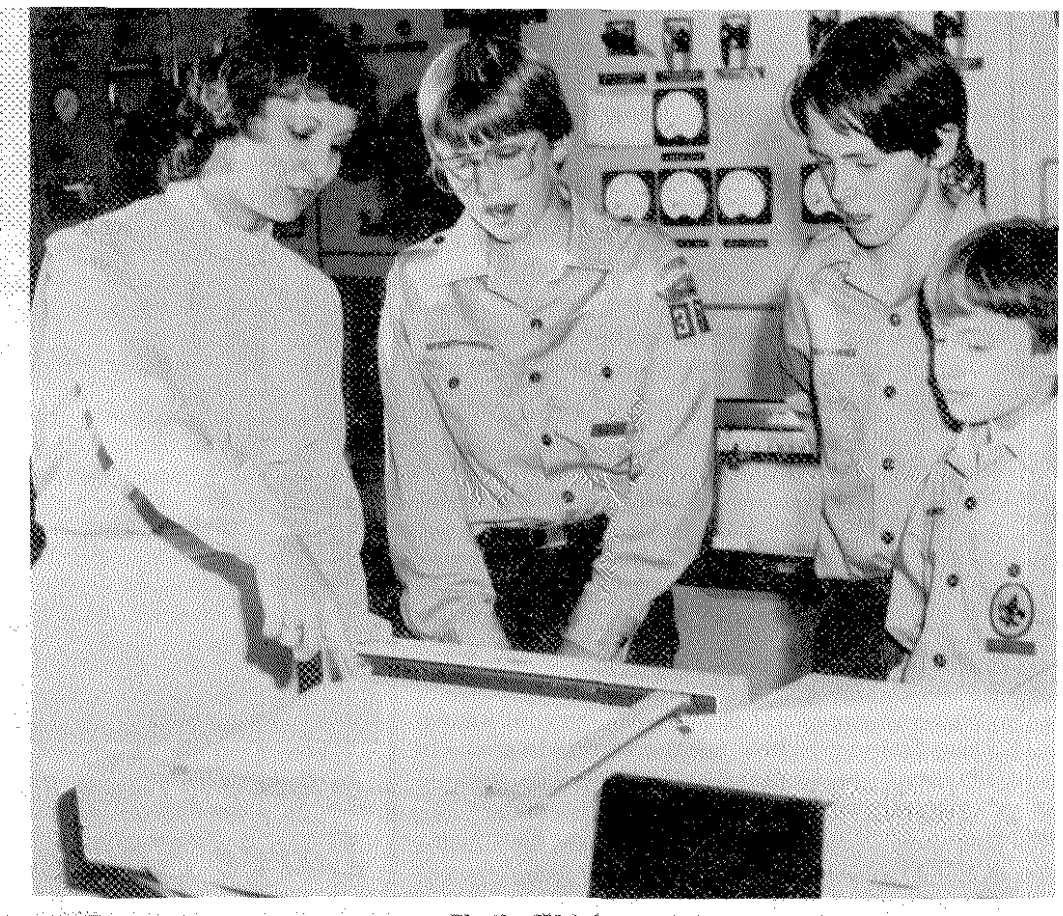
After a thorough checkout of the system, Spaulding, who has been involved in the procurement of all fan blade sets since 1964 when they started to be built under contract rather than on center, expects the tunnel to be operational around the first of May.



-photo by Don Ward and Terry Shepard

Project Manager Ray Spaulding stands between one of the 18 fan blades and the refurbished hub now ready for reassembly in the repair operation of the 7 x 10 foot high-speed tunnel.

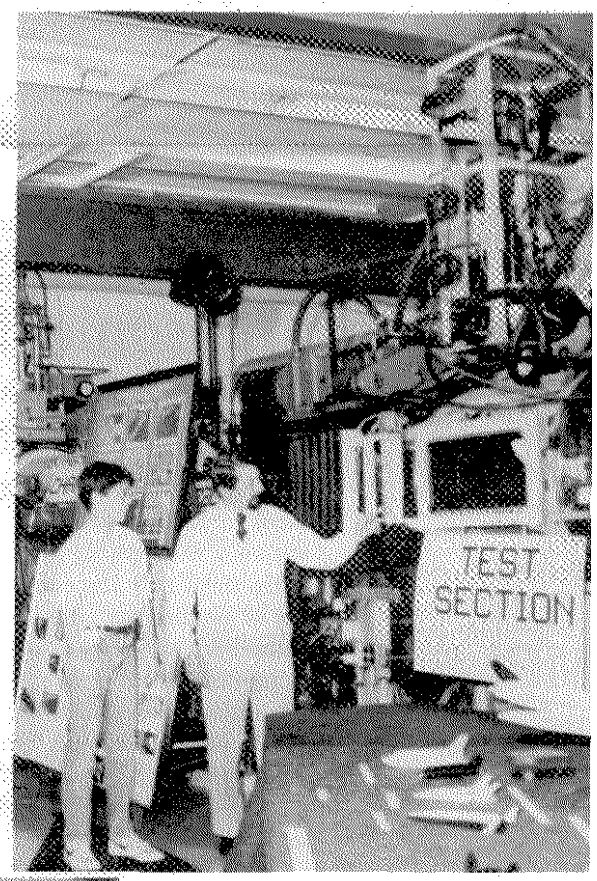
Kemper Kibler Sr. lets his son, Kemper Kibler Jr., try his hand at the controls of a cockpit simulator.



Sheila Wright explains control room procedure t
of boy scouts visiting the high-speed tunnel.

Retiree Wallace Nelson points out the jet engine of NASA 515 as Mrs. Nelson looks on.

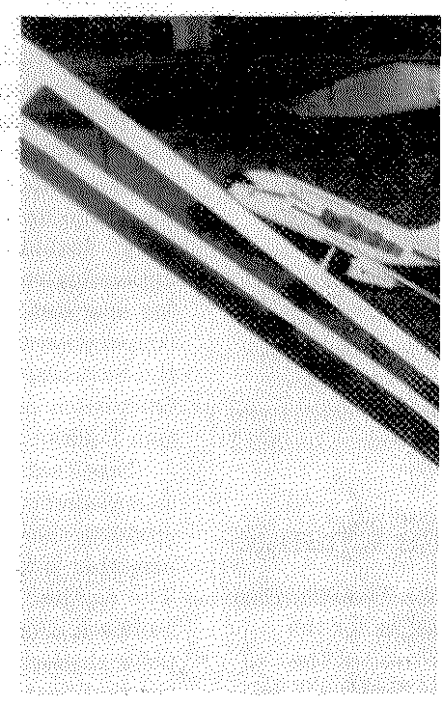
Bob Huston pleases two young visitors with a close-up look at an experimental helicopter on display.



Ron Harvey points out the test s
22 inch helium tunnel to Scott H

A mother explains to her sons why Ray Wright had to wear this diving suit when working in the pressurized test chamber of a wind tunnel.

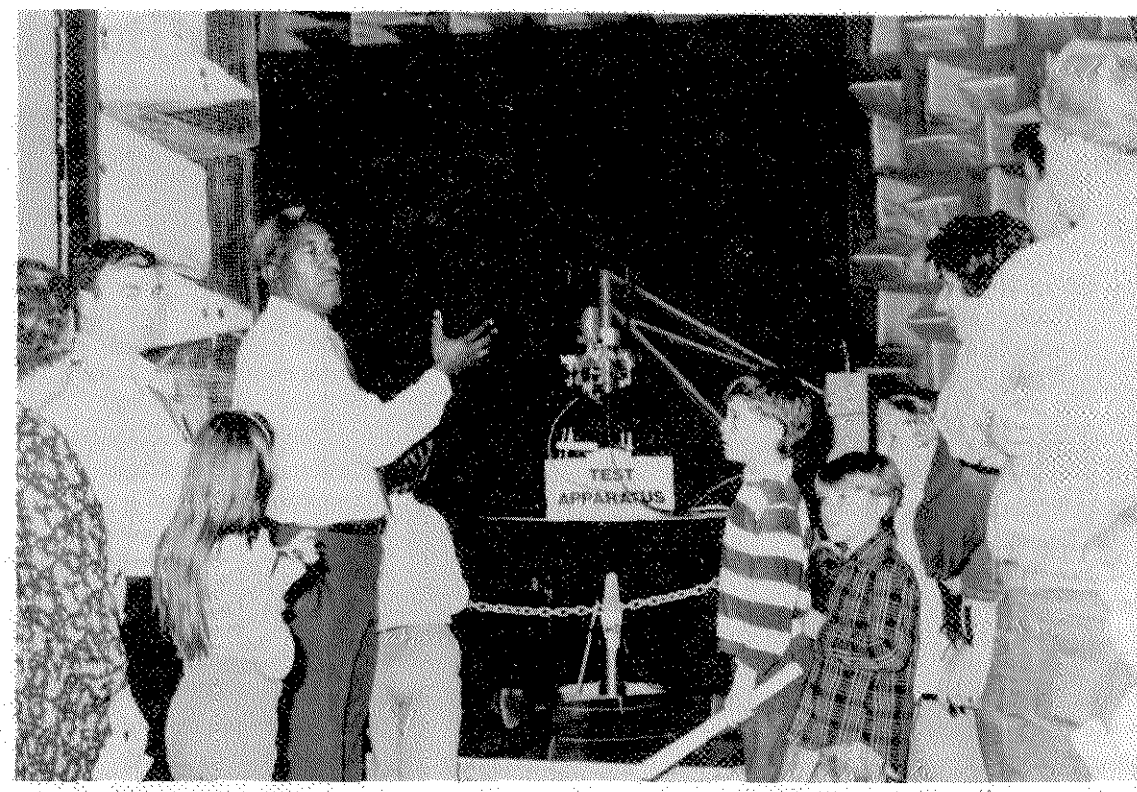
Bill Hinson shows an advanced single-stage-to-orbit configuration to two visitors to the 30 inch Mach 10 Wind Tunnel.



Paul Pfeffer (foreground) greets

Open House

Preliminary space shuttle designs fascinate visitors to the fabrication shop.

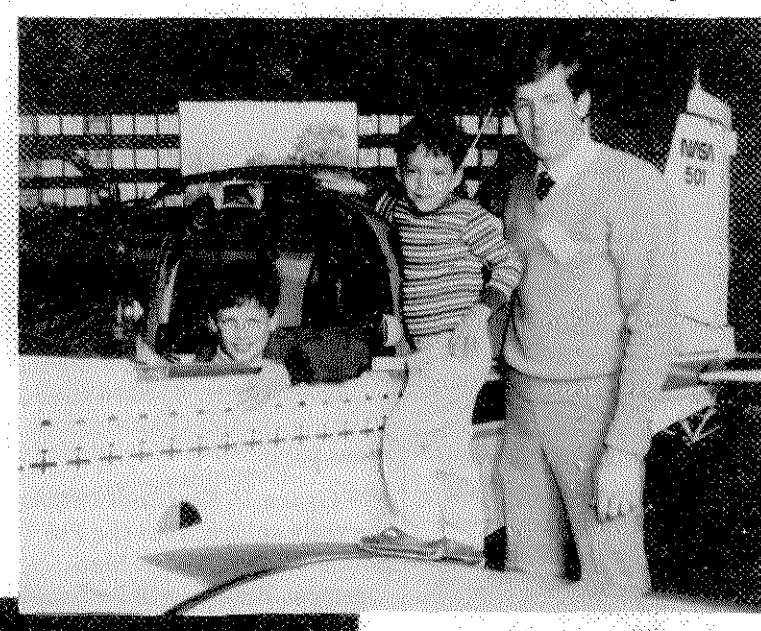


Lorenzo Clark explains the role of the acoustic wedges in the Quiet Flow Facility.

Scott Kenner answers a visitor's questions about the nestable columns on display in the structures lab.

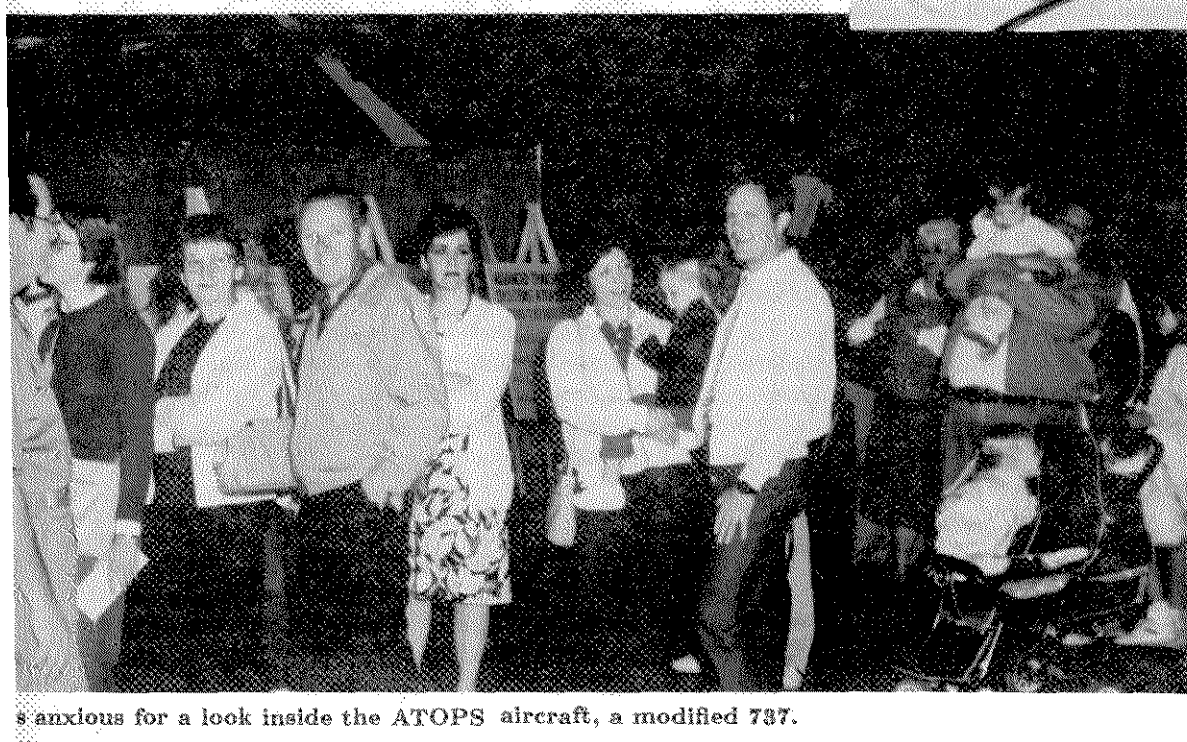
Gary Johnson answers question about materials on display in the fabrication shop.

Dave Robelen demonstrates a vertical spin tunnel on display in the hangar to a group of interested visitors.

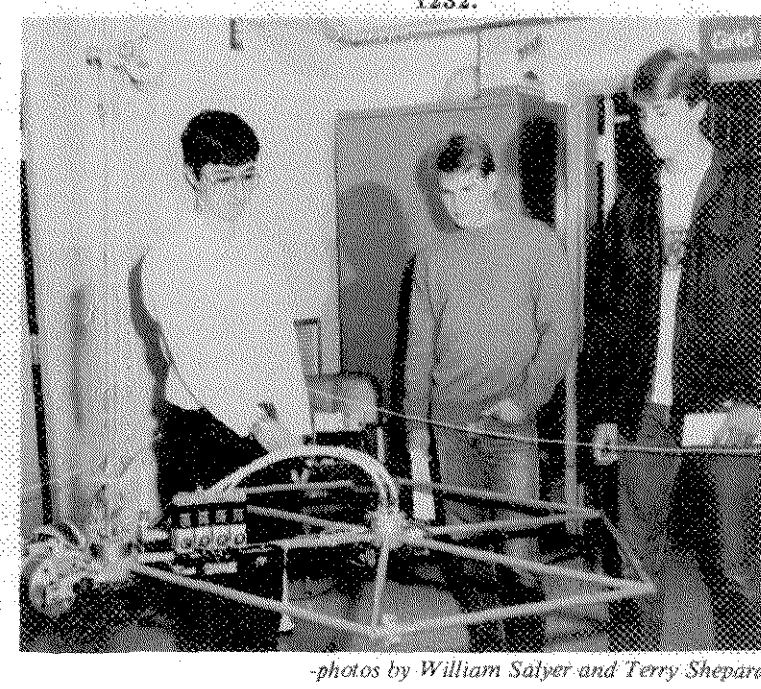


Paul Stough surprises Michael and Moshe Katz-Hyman with an invitation to board the Yankee.

Dean Sparks explains SCOLE (Spacecraft Control Laboratory Experiment) to two visitors to Building 1232.



s anxious for a look inside the ATOPS aircraft, a modified 737.



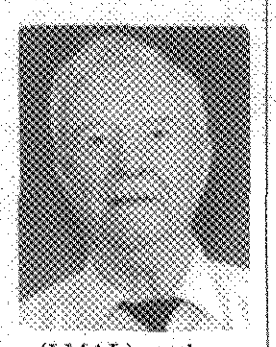
-photos by William Salyer and Terry Shepard

LAA Executive Board Candidates Named

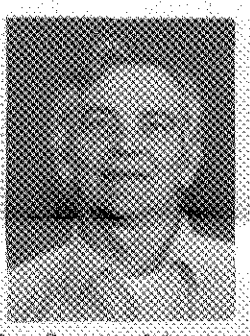
-by Allan C. Hanrahan

Five offices on the Langley Activities Association (LAA) Executive Board will be filled in the upcoming election, November 9-24. Running unopposed for the offices of Vice President, Treasurer, Arts and Crafts Committee Chairman and Publicity Committee Chairman are, respectively, **Albert H. Bell, Patricia F. Gates, Betty B. Hughes** and **Jean W. Clough**.

The candidates for Social Committee Chairman are **D. Eugene Hicks** and **Jim Post**.



Gene Hicks is a senior electronic technician/simulation lab facility coordinator in the Analysis and Simulation Branch, ACD, and has been a NASA/NACA employee for almost 48 years. He is the incumbent Chairman of the LAA Social Committee, presently serving his third term. He is a charter member of the LAA, known previously as the Langley Morale Activities Association (LMAL), and began his service as a division delegate, serving for a number of years in that capacity. He has also served as the Chairman of the LAA Activities Committee. He has served in such fraternal and civic offices as charter member and Secretary of the Chesapeake Lions Club, as well as a charter member – and volunteer fireman – of the Buckroe Beach volunteer Fire Department. In addition, he is a long-term member of the Civil Air Patrol and has served that organization as Deputy Commander for the State of Virginia.



Jim Post is an electrical engineering technician in the Laboratory and Plant Electrical Section, OSD. A NASA employee for 22 years, he served the LAA as a division delegate for approximately ten years. He has served in such civic and fraternal offices as director of the Jaycees, various offices in the American Legion and has held – over a period of 18 years – almost every adult office in the Boy Scouts of America, including scoutmaster. He is a union steward for the AFGE and, as a member of the Peninsula Ski Club, has served as trip captain.

Current News Releases

87-154.....NASA to Satellite Broadcast Videoconferences for Teachers
87-155.....NASA Presents Excellence Awards, Seeks Nominees for 1987 Honors
87-156.....General Dynamics Selected for GOES Launch Services
87-157.....NASA to Continue Supernova Studies from Australia and New Zealand
87-158.....NASA Issues Mixed Fleet Manifest
87-159.....NASA Selects Shuttle-C Study Contractors
87-160.....NASA Selects Small Business Research Proposals
87-161.....Comet Penetrator Prototype Tested Successfully

Klate Holt Company FEMSS Contract Manager Walter Sykes (left) recently presented the Quarterly Suggestion Award to Insulator Paul Charnick. Charnick's suggestion was to use an available airless paint sprayer to apply water mist and encapsulation coatings during asbestos removal in Building 1250. Previously, limited capacity chemical spray tanks that required constant refilling were used. Charnick's idea netted him $100.

Take A Breather

The Great American Smokeout, sponsored by the American Cancer Society, is a lighthearted event with the serious purpose of encouraging smokers to give up cigarettes for 24 hours. Held yearly the Thursday before Thanksgiving, this year's event will be observed on November 19, 1987.

The goal of the American Cancer Society's Great Ameican Smokeout is to get at least one in every five smokers to give up cigarettes from midnight to midnight on November 19. A successful 24-hour quitting experience can lead to a permanent decision to kick the habit.

Last year's smokeout was a special tenth anniversary celebration which set an all-time record for participation. More than 23 1/2 million of the nation's 54 1/2 million smokers were smoke-free for the day.

Nonsmokers can adopt a smoker on Smokeout Day and offer moral support, encouragement, and incentives to help the smoker get through the day – and hopefully longer.

Together smokers and nonsmokers can work towards the goal of a smoke-free environment. "Take a Breather" and consider participation in the eleventh annual Great American Smokeout on November 19.

Positions Open

The following competitive placement positions are currently open:

87-78: Supervisory Aerospace Engineer, AST, Fluid and Flight Mechanics, GM-0861-14, Space Directorate, Space Systems Division, Experimental Aerodynamics Branch. Closes November 6.

G87-2: Contract Specialist, GS-1102-05 or 07, Management Operations Directorate, Acquisition Division, Purchase Branch. Closes November 13.

87-82: Lead Engineering Technician, GS-0802-10 or 11, Operations Support Division, Tunnels Operations Branch, Technical Support Section D. Closes November 12.

Retirement Parties

Frank Reaves will be honored at a retirement party on Monday, Nov. 9, at the Activities Center. Cash bar will be held at 6:30 p.m.; prime rib dinner begins at 7:30. Cost is $13.50/person which includes gift. Respond to Tom Vranas, Richard Chattin, or Bill Conkling, ext. 2651.

Grace P. Gardner, who recently retired from the Position and Placement Management Branch, will be honored at a retirement luncheon on Wednesday, December 16 at 11:30 a.m. in the Activities Center. Cost, including gift, is $7.50. Contributions for gift only are welcome. For reservations, contact Carolyn Kurtz, ext. 3007.

Claude F. Burge, Jr. will be honored at a retirement social, Wednesday, December 9, from 5 to 7 p.m. in the Activities Center. There will be a cash bar and heavy hors d'oeuvres at a cost of $7.50/person, including gift. Contribution of $2 for gift only will be graciously accepted. Please send check by Dec. 4 to Sallie Harvey, Mail Stop 126, ext. 3322.

Upcoming Workshop

Langley/Lewis Computational Structural Mechanics Workshop will be held Nov. 18-20 in the Activities Center. Contact W. Jeff Stroud, ext. 3939, for further information.

Club News

Bowling Stats

The NASA Tenpin Bowling League bowls on Tuesday nights at Victory Lanes in Grafton. Current standings are:

	October 20	October 27
Team High Game	864 Scramjets	904 Thunderbolts
Team High Series	2472 Thunderbolts	2623 ACD
Male High Game	222 **J. Halley**	222 **L. Curtis**
Male High Series	570 **B. Guillotte**	609 **L. Curtis**
Female High Game	200 **B. Williams**	200 **M. Aldrich**
Female High Series	532 **S. Ziehmann**	532 **M. Aldrich**
Most Pins	70 **H. Gerringer**	50 **L. Marks**
over Average	68 **T. Smith**	47 **M. Jones**

Tennis Results

1986-87	Winner	Runner-up
Fall/Winter Ladder	**R. Ramki**	**S. Mangalam**
Women's Ladder	**C. Wieseman**	**C. Wilson**
Men's Ladder	**D. Bartlett**	**C. Bryant**
All Players' Ladder	**B. Daugherty**	**J. Zalameda**

The 1987 Fall/Winter Ladder began in October and will continue until April 1988.

Tennis Club members pictured are (seated, L to R) Carol Wieseman, Carol Wilson, Charles Bryant, Joe Zalameda, (standing) Siva Mangalam and R. Ramki.

Gear Up for Basketball

The 1987-88 NASA Basketball Association season will get underway soon. If you are interested in starting a new team, please contact Bill Larson at ext. 3446, or Tom Brinkley, ext. 3325, before November 13. Teams will be accepted on a space available, first come-first serve basis.

Basketball Officials Needed

The NASA Basketball Association is looking for individuals interested in officiating C & D League games during the upcoming season. Some experience is helpful but not necessary. A clinic will be taught for successful applicants. Interested persons should contact Bill Larson, ext. 3446, or Tom Brinkley, ext. 3325, by November 13.

People & Places

Langley Staff Members Receive Advanced Degrees

Seventeen NASA Langley Research Center staff members have received advanced degrees through the center's Graduate Study Program.

The program, established in the late 1940's, provides Langley scientists, engineers and administrators an opportunity to improve their proficiency in aeronautical and space research and earn advanced degrees while working at Langley. Approximately 1,200 employees have been awarded master of science or doctoral degrees through the program.

Five employees received doctoral degrees through various universities. Lamont R. Poole, Atmospheric Sciences Division, received the Doctor of Philosophy in Atmospheric Science from the University of Arizona; J. Philip Drummond, High-Speed Aerodynamics Division, the Doctor of Science in Mechanical Engineering from George Washington University;

David H. Rudy, High-Speed Aerodynamics Division, the Doctor of Philosphy from the University of Illinois; Thomas Strganac, Systems Engineering Division, the Doctor of Philosphy in Engineering Mechanics from Virginia Polytechnic Institute and State University; and Allan R. Wieting, Loads and Aeroelasticity Division, the Doctor of Philosophy in Mechanical Engineering from Old Dominion University.

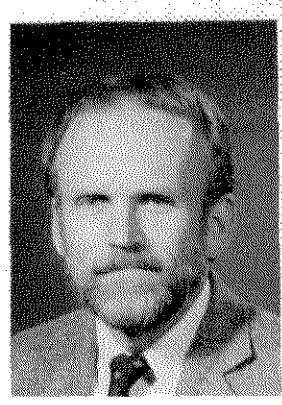
Master of Science degrees were awarded to the following 12 employees: Lawrence F. Rowell, Space Systems Division, the Master of Science in Aeronautics from George Washington University; Dan D. Vicroy, Flight Management Division, the Master of Science in Mechanical Engineering from George Washington University; Susan Althoff, Low-Speed Aerodynamics Division, the Master of Science in Aeronautical Engineering from George Washington University; Zachary T. Applin, Low-Speed Aerodynamics Division, the Master of Science in Aeronautics from George Washington University;

Kenneth Brenter, Acoustics Division, the Master of Science in Aeronautics from George Washington University; David E. Hahne, Low-Speed Aerodynamics Division, the Master of Science in Aeronautical Engineering from George Washington University; Peter F. Covell, High-Speed Aerodynamics Division, the Master of Science in Aeronautics from George Washington University; Glenn S. Diskin, High-Speed Aerodynamics Division, the Master of Science in Aeronautics from George Washington University;

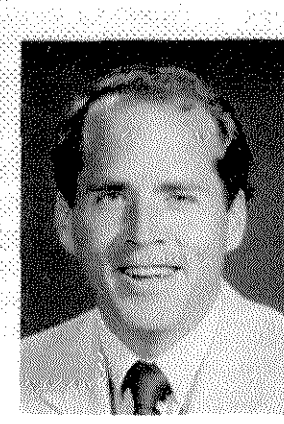
Ronald E. Williger, Facilities Engineering Division, the Master of Science in Engineering Mechanics from Virginia Polytechnic Institute and State University; Pamel S. Phillips, Transonic Aerodynamics Division, the Master of Science in Aeronautics from George Washington University; Louise C. Hamilton, Personnel Division, the Master in Education and Human Development in Human Resource Development from George Washington University; and H. Keith Henry, Office of Public Affairs, Master in Public Administration from Golden Gate University.

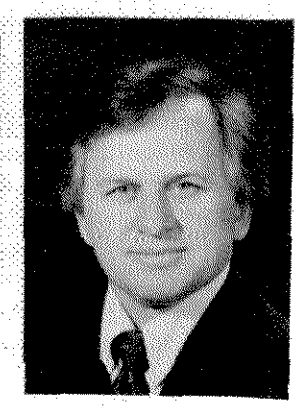
The Employee Development Branch congratulates these individuals for achieving this academic honor. This accomplishment not only brings additional expertise to Langley but also enhances the individual's professional growth and career development.

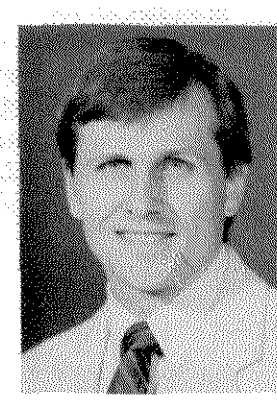
For information on the center's Graduate Study Program, call the Employee Development Branch, ext. 2611.

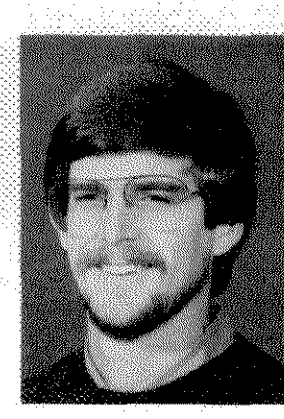

Lamont R. Poole

J. Philip Drummond

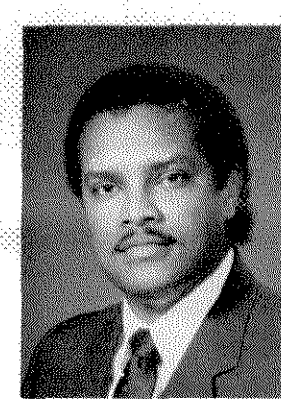

Thomas Strganac


Allan R. Wieting


Lawrence F. Rowell


Dan D. Vicroy

Susan Althoff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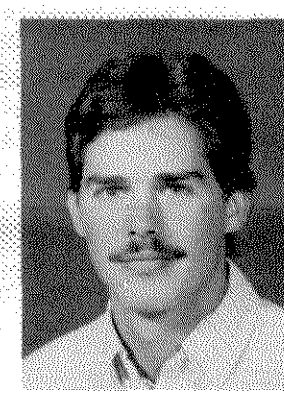
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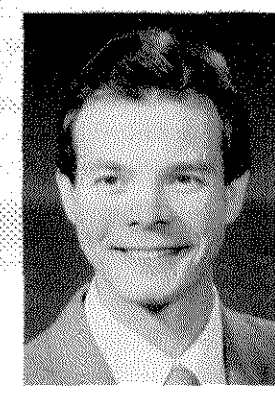
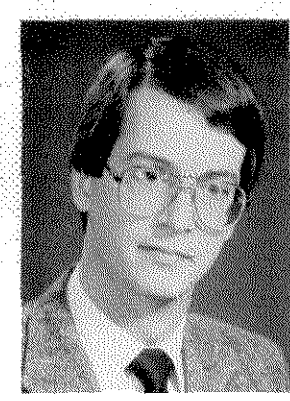
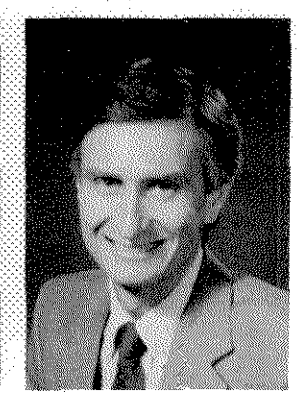

Ronald E. Williger


Peter F. Covell

Pamel S. Phillips

Louise C. Hamilton


H. Keith Henry

Alumni News and Views

The Alumni Association thanks all who attended the 70th Anniversary Banquet on October 17. It was a most enjoyable evening during which a certificate was presented to Center Director Pete Petersen in honor of Langley's 70 years of contributions to the Nation's aeronautics and space research programs. This certificate is on display at the Activities Center.

A luncheon is planned for November 16 at the Activities Center. Please plan to attend. It is open to everyone, not just LaRCAA members. See Happenings for complete details. The reservation deadline is November 9. Get a group together to hear an update on the National Aero-Space Plane Project.

Carnival Prize Winners

Congratulations to the grand prize winners of the 1987 LAA Carnival drawing:

T. Bernache	VCR
W. T. Davis	T.V.
John Hill	$1200
Max Williams	$1500

Langley Stocked Forms Announced

NEW		
LF 81	Routing Form for NASA Conference Publications (CP)	Sept. 1987
CANCELLED		
LF 12	Job Orders, Daily Log (Employee Record)	Sept. 1987
LF 24	Job Order Record, Monthly	Sept. 1987
LF 59	NASTRAN — Data Coding Form	Sept. 1987
LF 73	Slide Form for Lantern Slide Roughs and Va-Graph Originals, Millimeter	Sept. 1987
LF 74	Slide Form for Lantern Slide Roughs and Va-Graph Originals, 10 x10 to the 1/2"	Sept. 1987
LF 75	Slide Form for Lantern Slide Roughs and Va-Graph Originals, test or sketches	Sept 1987
LF 90	Computer Operation Control Slip	Sept. 1987
LF 99	Fabrication and Qualification Index	Sept. 1987
LF 112	Non NASA Employee Locator File Information	Sept. 1987
LF 176	Static/Dynamic Balance Report	Sept. 1987
SF 50	Notification of Personnel Action (sets with carbon) Manifold with carbon continuous form is still available	Sept. 1987

Happenings

LAA SOCIAL will be held Friday, November 13, from 4 to 6:30 p.m. in the Activities Center.

LUNCHEON. Langley Alumni Assoc. will sponsor a luncheon on Nov. 16, 11:30 a.m., in the Activities Center. Howard T. Wright, NASA Deputy Project Manager, will speak on the National Aero-Space Plane Project. Open to all, not just LaRCAA members. Cost is $6.35 including gratuity. For reservations, call Don Ward, 838-1063, or Bill Boyer, 722-0443, by Nov. 9.

DANCE CLUB. NASA Country-Western Dance Club will hold a dance at the Activities Center, Saturday, November 14, from 7:30 to 11:30 p.m. Dance to continuous music by D.J. Chuck Kessler. Club membership is $5/person per year. Be our guest in November and enjoy the fun.

CLUB MEMBERSHIP. For renewal of Breezy Point Officers' Club Membership, contact Al Shearin at mail stop 222B or ext. 3701 by close of business Nov. 23.

BLOODMOBILE. The American Red Cross will sponsor a Bloodmobile in the Activities Center on Wednesday, November 25, from 9 a.m. to 3 p.m. Participate in this worthy cause. The pint of blood you donate may save someone's life. For more information, or to make an appointment, call the Medical Center, ext. 2246.

CEBAF SEMINAR. Dr. Edward K. McIntyre, Boston University, will discuss "Radiative Kaon Capture and Hyperon Weak Radiative Decay," at 11 a.m., Friday, November 13, in CEBAF Room 47. CEBAF Seminars are technical talks intended for a scientific audience. All members of the CEBAF staff and the public are welcome.

RUN FOR ROBIN. Charity run for Robin Blankenship, injured in bicycle accident on the Colonial Parkway, will be held November 14, at 9 a.m. in Oyster Point Industrial Park. For further information on the 5K and 1 mile fun run, call 877-0112 or 877-1735.

VIRGINIA CHORAL SOCIETY will begin its 1987-88 season with a performance of Rossini's "Petite Messe Solonnelle" (Solemn Mass in contemporary parlence). Concerts will be Nov. 20 at the Chrysler Museum Theater in Norfolk and Nov. 21 at Christopher Newport Theater in Newport News. Both concerts begin at 8 p.m. Admission is $3 at the door.

AL-ANON AND AA meetings are held every week during lunch time at Langley. For information call the Clinic, ext. 2246, or the Health Office, ext. 2605.

THANKSGIVING IN WILLIAMSBURG. Tours, music, dramatic events, holiday meals, and religious worship are all part of a Thanksgiving at Colonial Williamsburg. Visitors enjoy Thanksgiving dinner at midday and in the evening at historic taverns and restaurants. Call 229-1000, ext. 2750 for details.

GRAND ILLUMINATION. This annual celebration of the opening of the holiday season will take place on December 13 at 5:30 p.m. Programs will be held at the Capitol, Magazine, and Governor's Palace.

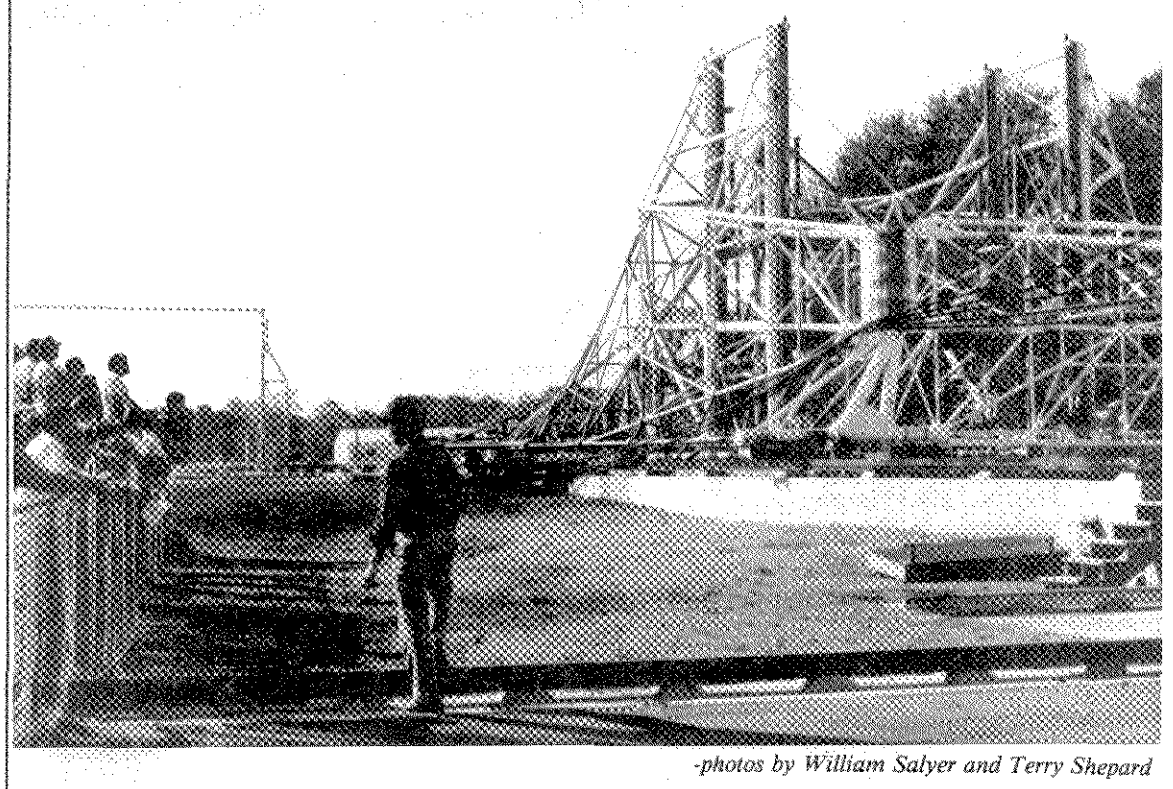
FOR SALE: HOME. Hampton/Sanlun Lakes, 3 BR, 2 1/2 B, 2-story; LR, DR, FR w/FPL, eat-in kit., att. gar., fenced yard. 10 min. from NASA. $93,500 or $19,300 and assume 9 1/2% VA loan. Call 827-0198.

FOR SALE: AUTO. Well-maintained 1972 Nova 4-door sedan in exceptional condition. V8, AC, Cruise, AT, PS/PB. Call 596-8398.

FOR SALE: AUTO. 1980 Honda Civic stn. wgn., 5-speed, AC, silver. Good condition. $2300. Call Brooks, 898-6517, after 6 p.m.

Tom Yager (center speaking through bullhorn) prepares visitors for what to expect during a run of the carriage at the Aircraft Landing Dynamics Facilty (ALDF), a highlight of the 70th Anniversary Open House festivities.

Visitors are amazed at the speed at which the carriage passes by them during a test run to evaluate aircraft landing gear systems.



-photos by William Salyer and Terry Shepard

At rest at the end of the ALDF track, the carriage draws a crowd interested in seeing up close the amazing device capable of traveling 250 miles per hour. This unique national test facility was open to the public for the first time at Open House.

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Langley Research Center

Volume 1, Issue 10 November 20, 1987

Researcher News

Weekly Employee and Contractor Publication

Langley Exceeds CFC Goal

To Help People
CFC
Virginia Peninsula

Once again Langley people have risen to the challenge. We have exceeded our goal of $250,000 for the 1987-88 Combined Federal Campaign. As of November 17, $255,529.37 has been contributed, representing 102 percent of our goal, and contributions are still coming in.

Of the 2,989 active duty civil servants, 86 percent participated in the Campaign. In addition, 348 others (including retirees) also contributed. The overall average gift was $88.92.

On behalf of Langley management and your Langley Campaign Committee, I want to extend sincere thanks to everyone for a job well done. The Langley achievement will go a long way towards helping the Combined Federal Campaign and the United Way reach their respective goals.

Ralph J. Muraca
Campaign Chairman

Juang Named Fellow of American Astronautical Society

Dr. Jer-Nan Juang, senior researcher in the Structures and Dynamics Division, has been elected a Fellow of the American Astronautical Society (AAS). This honor is conferred on Juang in recognition of his significant contributions to astronautics.

The AAS is a non-profit, scientific society dedicated to the advancement of the astronautical arts and science and spaceflight engineering. AAS Fellows comprise the highest ranking members of the Society.

Juang is an international authority in controls and structural dynamic technology as evidenced by his contributions in these fields. In the area of systems identification, Juang developed a unified approach using system realization theory to derive and correlate modal parameter identification for linear systems. His contribution unified, for the first time, the many existing methods of system identification.

In the control area, Juang developed closed-form solutions for tracking problems in finite time. Juang's solutions allow, for the first time, non-interactive control law solutions, opening the door for real-time, on-board implementation. His method is currently being implemented in space station model tests.

Juang has also investigated reliable controller designs with minimum control efforts which can accommodate considerable system uncertainties.

Juang has worked in the structural dynamics and control of large space structures at Langley since October, 1982. Prior to his association with Langley, Juang was senior staff engineer, Martin Marietta, Corporation, Denver, Colorado, and member of the technical staff, Jet Propulsion Laboratory, Pasadena, California. He is the author or co-author of over 100 technical papers.

Newly elected Fellows were presented at the AAS Annual Meeting held recently in Houston, Texas. In addition to Juang, the new AAS Fellows include Dr. Michael I. Yarymovych, Vice President and Associate Director, Strategic Defense Center, Rockwell International Corporation; Peter B. Teets, President, Martin Marietta Astronautics Group; Carl Henrikson, Senior Program Manager, Ball Aerospace System Division; and John J. Quann, Deputy Director, NASA Goddard Space Flight Center.

Carden Receives Flight Safety Foundation's Admiral Luis de Florez Award

Huey D. Carden, research engineer in the Structures and Dynamics Division, has been awarded the 1987 Admiral Luis de Florez Flight Safety Award. The de Florez award, administered by the Flight Safety Foundation (FSF), recognizes individual contributions to aviation safety made through basic design, device or practice.

Admiral Luis de Florez, former president of the Flight Safety Foundation, was one of the outstanding devotees of the 20th century in aviation design, training, computer technology, flight simulation, and aeronautical research and development.

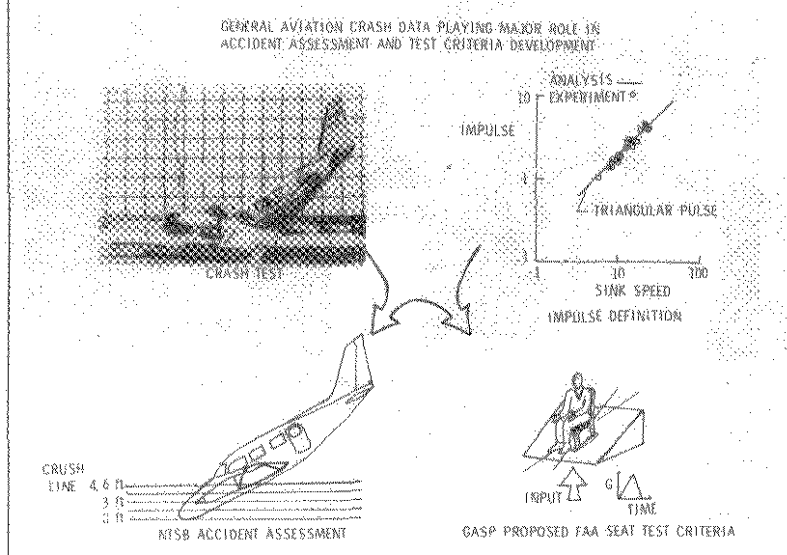
Carden was nominated by NASA Administrator James C. Fletcher for his "extraordinary contribution to the better understanding of the crash behavior of aircraft and human survivability of aircraft accidents." Using data from full scale crash tests to develop impulse-momentum relationships, Carden has provided the essential basis for improved standards for emergency locator transmitters (ELT), improved criteria for dynamic seat tests, and improved crushable subfloor design for light aircraft.

Chosen from an international field of 12 candidates, Carden was presented the award October 28 during FSF's 40th Annual International Air Safety Seminar in Toyko, Japan.

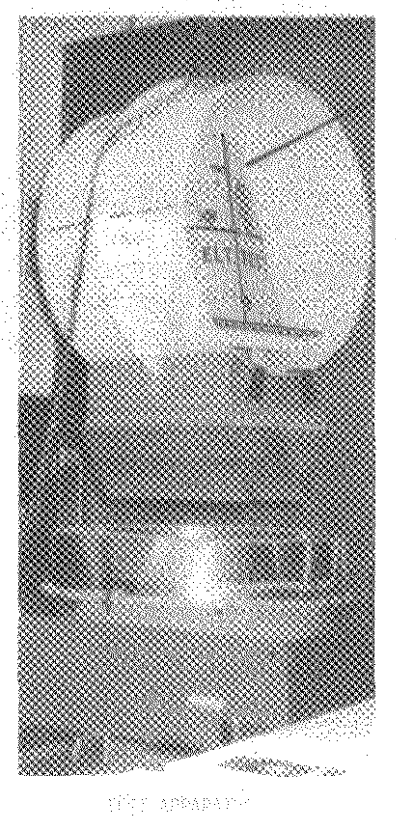
Charles P. Blankenship, Director for Structures, was pleased to submit Carden as Langley's nominee for the prestigious award. "This is a great honor for Huey Cardin. He has made many contributions to aircraft safety in both aircraft structures and design as well as rescue aids. Through his efforts we have developed a better understanding of the response of aircraft structures to the impact dynamics associated with crash situations. He was responsible for improvements in emergency locator transmitters, and improved structural designs for general aviation crash safety."

Carden came to Langley in 1959. In his 28 years with the NASA General Aviation Crash Dynamics Program, he has been the recipient of many honors. Among them are a Special Achievement Award for performance, a Best Paper Award for the Crash Data Correlation work, three Group Achievment Awards, a Tech Brief award on the subfloor research, and a Quality Step Increase in salary. In addition, Mr. Carden has advanced to Group Leader in the Impact Dynamics Branch. Carden has authored or co-authored over 38 papers in various areas of research.

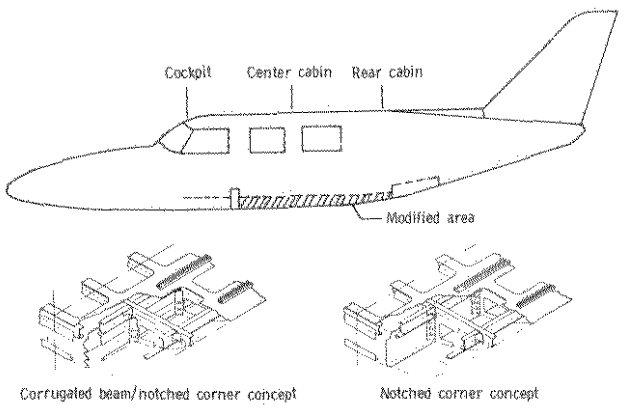
Carden and his wife, Sue, live in Hampton. They have two children; Jeffrey, a senior in Aerospace Engineering, and Deana Ann, a freshman in Accounting, both at Virginia Tech.



Carden's correlation work was heavily relied upon to arrive at dynamic seat test criteria for general aviation aircraft. The requirement for seat tests should greatly enhance survivability and reduce the number of serious injuries to occupants in crashes which are severe but potentially survivable.



Carden determined that inadvertant activations were a leading cause for the failure of Emergency Locator Transmitters (ELT), a device which aids in locating downed aircraft. He designed and built this test apparatus and a low frequency ELT sensor. The implementation of Carden's recommendations and adoption of ELT minimum operational standards greatly enhanced the effectiveness of ELT devices.



Carden was principal investigator in the design and development of general aviation load-limiting airplane subfloor concepts.

News Briefs

AMES RESEARCH CENTER, Mountain View, Calif. — NASA's C-141 Kuiper Airborne Observatory (KAO) left October 31 for Christchurch, New Zealand, for a month-long mission to study the brilliant Supernova 1987a. Four teams of scientists aboard KAO will make a total of eight research flights to study the supernova from November 4 through November 24.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — Scale model tests conducted by Morton Thiokol at their Hunstville, Ala., plant have successfully duplicated a Castor-IVA solid rocket motor failure experienced Aug. 25. The cause of the failure has been determined to be staple holes left in a thin membrane of insulation known as a "stress relief flap" located between the main propellant and the front end of the motor.

HEADQUARTERS, Washington, D.C. — NASA's Office of Aeronautics and Space Technology has selected five organizations for development of space flight technology experiments and 36 additional proposals for definition of possible future space flight technology experiments in its Industry/University In-Space Technology Experiments Program. The program, established to stimulate in-space research, technology and engineering experimentation, represents a $5 million investment by NASA to extend U.S. leadership in space technology development.

JOHNSON SPACE CENTER, Houston, Tex. — NASA JSC has signed a cost-plus-award-fee contract with RCA Government Services of Houston, a subsidiary of General Electric, for science payloads development, engineering and operations. The initial 3-year contract, which began Nov. 1, has an estimated value of $45,923,000. An optional 2-year extension has an estimated value of $33,784,000 for a combined 5-year value of $79,707,000.

HEADQUARTERS, Washington, D.C. — A series of new program initiatives, designed to expand the opportunities for pioneering commercial ventures in space, have been announced by NASA Assistant Administrator for Commercial Programs James T. Rose. The steps will build on earlier commercial development policies and provide for the continued encouragement of private space activities as the Space Shuttle returns to flight.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — Morton Thiokol, NASA's prime contractor for the Space Shuttle solid rocket motor, conducted the sixth in a series of joint environment simulator (JES) tests on Nov. 9 at its Wasatch Operations in Utah. The test is the second in the JES series to use full-size hardware with the capture feature and third O-ring design. The test is part of the Space Shuttle solid rocket motor redesign program.

HEADQUARTERS, Washington, D.C. — NASA Administrator Dr. James C. Fletcher issued a statement in connection with the release of the GAO study of the Space Shuttle solid rocket motor contractor selection process: "I am pleased, but not surprised, at the GAO report...The report sustains NASA's compliance with government regulations and practices, and the investigation found no violations concerning conflict of interest on the part of the source selection process."

Langley Contract Cost Savings Team Members Receive Presidential Commendations

Langley Contract Cost Savings Team members have been commended by President Reagan for their successful efforts to reduce costs under Langley Research Center construction and support service contracts. The efforts of this team have resulted in approximately $3.5 million in tangible savings at the Center. Shown (L to R) are John F. Stokes, Director for Management Operations, Presidential Letter of Commendation recipients Robert L. Huffman, Jr., Sam C. Geiser, Arthur R. Friend, and Howard R. Puckett, Jr., and Center Director Richard H. Petersen.

Editorials

Langley

Headquarters Forum

It is ironic that, in a recent Researcher News editorial, I addressed our Langley safety awareness. I closed that article with emphasis on our excellent record regarding personnel injuries. At that time we had enjoyed about 160 consecutive days without a lost time injury.

Like a broadcaster who comments about a running back who rarely fumbles only to have that very same football player cough up the ball on the next play, within a few days of that article an employee sustained an injury that dropped our "safe days" count to zero. Fortunately the mishap was not major, but an OSD technician sustained a back strain as he bent over to pick up an electrical extension cord.

Our goal of surpassing the NASA record for consecutive civil service work hours without a lost time incident was not met...at least not this time. Still we can all be proud of our FY 1987 achievements.

For the year, we worked 5,754,995 civil service hours with only five lost time mishaps. Further, we closed the year setting a new LaRC record of 179 consecutive days without a lost time accident. We fell just 38 days short of our goal.

The setting of records is incidental to our safety objective. The really important thing is that we had only five lost time injuries in FY 1987, and these resulted in just 32 lost work days. The real purpose of our safety program is the prevention of personal tragedy and that was achieved.

Have we been just lucky? I would be less than candid if I said "No." We have had some close calls, i.e., mishaps that could have been major.

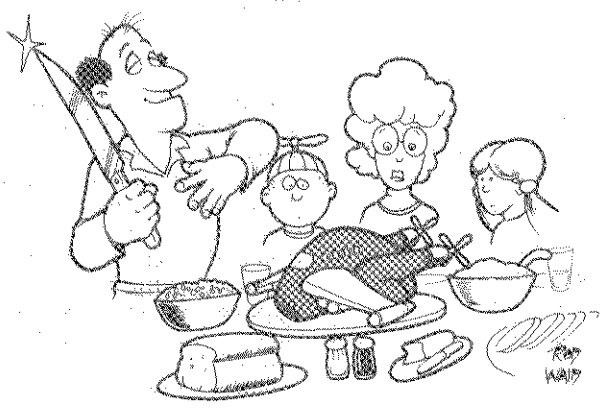
But the record is clear. In 1977, we had 35 lost time injuries resulting in 383 lost work days; in 1976, we had 46 such cases that resulted in 915 lost work days. However, in the last decade, thanks to the safety awareness of all our employees, we have shown continual improvement. Now our annual statistics are consistently among the lowest in the Agency. That achievement is yours, and that took more than just luck.

I don't want to ignore the efforts of the many NPS Contractors either. Over the last six years, their records show the same trend, i.e., NPS Contractor lost time frequency rate has dropped nearly 67 percent.

We have excellent facilities here. Our programs and our research are important to the future of this nation. But our most important asset is our people... each of you. The team of research, engineering, and administrative specialists collected at LaRC...scientists, engineers, technicians, clerks ...white collar and blue collar, that is our real strength. Making your work environment safer will continue to be a top-priority Center goal.

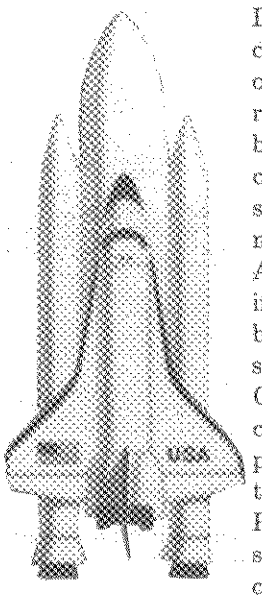
Paul F. Holloway
Deputy Director

Lankley



"Every year on Thanksgiving, Daddy Lankley prepares dinner in his special way"

Space Shuttle Update



DISCOVERY: 17-inch liquid oxygen disconnect valve is being installed. Continuing operations include cleaning of payload bay radiators, installation of thermal control blankets, chin panel modifications, crew escape, pneumatic checks of main propulsion system, tile operation and brake instrumentation modification.

ATLANTIS: Power down operations include installation and inspection of black boxes, leak checks of freon coolant loop system, modifications and inspections.

COLUMBIA: Technicians are removing cracked bellville spring washers from main propulsion system and are performing thermal blanket compressibility checks. Pressurization of the power reactant storage and distribution tanks has been completed. Modifications are continuing.

News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 116, telephone 865-3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor — Jean Drummond Clough
Editor — Marny S. Skora
Photographs — Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Governor Baliles Visits Langley on 'Space Industries Tour'

Governor Gerald L. Baliles visited Langley on Friday, November 6, as part of a day-long "Space Industries Tour," which also included stops at Reston, the site of the NASA Space Station headquarters, and the Wallops Island Flight Facility. The purpose of the tour was to review the impact of the aerospace industry in Virginia.

Baliles lauded Langley as a pioneer in aerospace science and a boon to the state's industrial development hopes. The Governor presented Center Director Richard H. Petersen with a proclamation expressing the admiration and gratitude of the citizens of the Commonwealth for Langley's 70 years of accomplishments. Excerpts from the Governor's comments follow:

-photo by Terry Shepard

Governor Gerald L. Baliles (left) is welcomed to Langley Research Center by Director Richard H. Petersen

"Langley Research Center has an impressive story to tell. The history of Langley is, in many respects, the history of aviation in America.

"The Wright Brothers had just finished working out the bugs on the Outer Banks when the plans for the first Langley facility were developed. It took the Europeans and World War I to demonstrate the real potential of aircraft technology. But that would be the last time another nation showed the way in aeronautics.

"In the 84 years since man's first flight, 70 percent of the aircraft in this country have been designed or tested here at Langley. Aircraft design – the traveling public almost takes it for granted, because of the work done here.

"Today, we have caught a glimpse of how the skies will be made safer still with planes which one day will be lighter, stronger, and more efficient because of new composite materials; with aircraft of the future whose computers can pinpoint the exact moments of arrival, relieve airport congestion, and reduce passenger delays; and with safety devices that will help pull planes out of uncontrolled spins and techniques to help deal with wind shear.

"This is invigorating research and it is taking place right in Virginia's backyard.

"From the Mercury program to the landing on the moon and the exploration of Mars, Langley scientists and engineers have not always been on the front page of the newspaper. But, more importantly, they have been at the forefront of research that has made space exploration possible.

"For example, when NASA was trying to figure out how to land safely on the moon, a scientist here at Langley figured out how to do it. When NASA was looking for new ways to construct a station in space, Langley engineers went to work on designing the building blocks. Today, Langley scientists are working on ways to revolutionize telecommunications – to reduce the satellite dish in the backyard to the size of a baseball and to make Dick Tracy's two-way wristwatch a reality. In short, while other NASA facilities may be getting the ink, NASA-Langley has been coming up with the ideas.

"For 70 years Langley has been a major asset to our Commonwealth providing jobs to Virginians – more than 5,000 of them; and providing grants to universities – almost $6 million a year. But I believe we can do more to support your work.

"I have asked Dr. Ed Davis, Director of Virginia's Center for Innovative Technology (CIT), to examine new possibilities for strengthening our partnership. The CIT has formed an impressive task force chaired by Dr. John McLucas, former Administrator of FAA, former President of Comsat, and former Secretary of the Air Force.

"I have asked Dr. McLucas and his space group to look specifically at several questions. First, what is the potential of the commercial space industry? Second, what steps can we take to ensure that the benefits of an expanding space industry will be realized here in the commonwealth of Virginia? And, third, how can we build new bridges between NASA, Virginia universities and the space industry?

"Virginia is now among the Top Ten space states in the nation and we intend to make the most of it. We have a pyramid of space facilities extending from Northern Virginia, to the Peninsula, and to Virginia's Eastern Shore. Reston is the new headquarters for NASA's space station program. We visited Tom Moser and the NASA team this morning and helped them move in. Langley is one of the most prestigious aerospace research centers in the world and, after my brief tour today, I can understand why. And Wallops is a key international facility for atmospheric research and one of the only three orbital launching facilities in the U.S. These three facilities will make it possible for Virginia to play an even larger part in space exploration. Exploration, after all, is our business.

"A short distance from here, more than 375 years ago, colonists established the first permanent settlement in the New World. That is our legacy and we want to work with the people at Langley to help fulfill it.

"I have often said, as much as I like to read history, I would rather make it. Deke Slayton, John Glenn, and Alan Shepard have made it. And the ideas and the initiatives here at NASA made many of those accomplishments possible.

"On behalf of the citizens across the Commonwealth, I want to congratulate you on 70 years of success."

CERTIFICATE of RECOGNITION

By virtue of the authority vested by the Constitution in the Governor of the Commonwealth of Virginia there is hereby officially recognized

NASA-LANGLEY RESEARCH CENTER

WHEREAS, in 1917, just 12 years after the Wright Brothers achieved man's first successful powered flight, the Unites States Congress created the National Advisory Committee for Aeronautics (NACA) and the Langley Research Center, later renamed the NASA-Langley Research Center, was sited in the Commonwealth of Virginia; and

WHEREAS, the work of the NASA-Langley Research Center has received national and international acclaim, including five Collier Trophies awarded annually by the aviation industry for the greatest accomplishment in aeronautics and astronautics; and

WHEREAS, the NASA-Langley Research Center has played a major role in the United States' successful space program and has helped build an aviation industry in the United States which produces three-fourths of the airplanes sold around the world, and

WHEREAS, Virginia universities have had a long and productive relationship with the NASA-Langley Research Center and the Commonwealth of Virginia has been privileged in being home to this world-renowned research facility for seventy years;

NOW, THEREFORE, I, Gerald L. Baliles, Governor, on behalf of the citizens of the Commonealth of Virginia, do hereby express our admiration and gratitude to the NASA-Langley Research Center for 70 years of accomplishments which have enriched the lives of all mankind.

1917 Shaping Tomorrow NASA Langley Research Center 1987

Langley, ROLM Sign Contract

On October 27, 1987 ROLM and LaRC signed the contract for the Langley Research Center Telecommunications System (LaTS). The 52-month, $12.9 million fixed-price contract started on November 1.

The LaTS is an on-site private automatic branch exchange (PABX) digital switching system for voice and low/medium speed data that will access the local public telephone network and will interface with the Langley Business Data Systems Network, numerous intra-Center communications and monitoring networks, and the NASA Program Support Communications Network. The contract effort also includes training for Langley employees and support contractor personnel.

Signing the Langley Telecommunications System (LaTS) contract are (seated, L to R) Kent D. Fortson, ROLM Regional Manager, and William R. Kivett, Langley Contracting Officer. Key participants in the proposal and procurement process are (standing, L to R) Gary Alpert, ROLM Telecommunications Manager; Michael Burke, NASA Account Manager; David Metz, Government Contracts Manager, Forrest Dickinson, LaTS Project Manager; Asa Shaw, Contract Negotiator, and Kenneth Jacobs, Source Evaluation Board Chairman.

Notes of Thanks

James W. Lynch writes: "I would like to thank all my friends and co-workers for the retirement luncheon and gifts. I am especially appreciative for all of you making my tenure at NACA/NASA so enjoyable."

Frank Reaves, Jr. writes: "Many thanks to all for the wonderful retirement party and gifts. It was a grand evening and the memories will be with me always. Daily association with friends and co-workers will be greatly missed."

Bobby Williams writes: "How sweet it was to see such a large turnout to celebrate my retirement with me and my family. In my more than 42 years with NACA/NASA, I have worked under all five Center directors. I shall always cherish the memory of this fine sendoff and will think often of my many friends from Langley.

Positions Filled

William S. Lassiter has been selected Supervisory Aerospace Engineer, Engineering Analysis Branch, Systems Engineering Division, under CPP 87-65.

Forrest L. Dickinson has been selected AST, Project Management, Telecommunications Project Office, Facilities Engineering Division, under CPP 87-66.

David C. Duxbury has been selected Program Analysis Officer, Schedule Analysis and Control Section, Engineering Analysis Branch, Systems Engineering Division, under CPP 87-60.

Floyd R. Marks has been selected Lead Engineering Technician, Technical Support Section D, Tunnels Operations Branch, Operations Support Division, under CPP 87-57.

Henry M. Goad has been selected Engineering Technician, Instrumentation Support Section, Instrument Application Branch, Instrument Research Division, under CPP 87-72.

Clyde L. W. Edwards has been selected AST, Fluid & Flight Mechanics Program Management, High-Speed Aerodynamics Branch, under CPP 87-64.

Elizabeth F. Buchan has been selected Administrative Officer, Office of the Director for Aeronautics, under CPP 87-71.

Kimberly D. Carter has been selected Supply Clerk, Supply Management Section, Logistics Management Branch, Management Support Division, under CPP G87-1.

James R. Anderson has been selected Offset Press Operator, Publications Section, Visual and Printing Services Branch, Research Information and Application Division under CPP 87-73.

Michael G. Fleck has been selected Production Controller, Contractual Resources Section, Resources and Contracts Branch, Fabrication Division, under CPP 87-62.

On-site AA and AL-ANON Meetings. For more information call the Health Office, ext. 2605, or the Occupational Medical Center, Ext. 2246.

In Memoriam

Sympathy is extended to the families of:

Everett L. Bennink, who died October 12. Bennink retired in 1980 from the Research Information and Applications Division.

Vernon T. Helms, III, who died October 15. Helms, an aerospace engineer, was a member of the Experimental Aerodynamics Branch (EAB), Space Systems Division. Charles Miller, Head, EAB, remembers Helms as "an extremely conscientious and truly unselfish individual who loved Langley and his work. He was exceptionally well liked and respected by his co-workers and will be missed very much."

1988 Calendars Available from Stock

Requests for 1988 calendars can now be submitted to the Stockroom, Mail Stop 382, on NASA Langley Form 55. Stock Numbers for the calendars are listed below:

7510-01-225-9210	Calendar Pad, Flipover; size 3" x 3-5/8"
7510-01-225-9213	Calendar Pad, executive flipover; 3-5/8" x 5-7/8" (ea)
7510-01-172-9692	Wall Calendar, displays 3 months at a time, 11-5/8" x 8-7/8" (ea)
7530-01-228-9702	Looseleaf Appointment Book Refill, daily and monthly calendar sheets, 6-1/2" x 5-1/2" (ea)
7530-01-173-7094	Weekly Appointment Book, features two pages per week, columns for appointments and reminders are marked off in 15-minute intervals, 8 1/2" x 11" (ea)
7510-01-173-1433	Desk Blotter, 17" x 22", monthly sheets rules in square for each day (ea)

Requests for other types of calendars available from GSA (i.e., pocket planning sets, six-ring binder for the looseleaf appointment book) should be submitted on a Purchase Request, Langley Form 125. Each branch secretary should submit branch and section requirements to reduce the number of requests. Other stock supplies SHOULD NOT be ordered on the same request.

Club News

Bowling Stats

	November 3	November 10
Team High Game	950 Strikers	989 Thunderbolts
Team High Series	2611 Strikers	2761 Spare Change
Male High Game	233 J. Halley	236 E. Harris
Male High Series	585 J. Halley	620 E. Harris
Female High Game	212 B. Williams	213 B. Williams
Female High Series	507 R. Frizzell	551 B. Williams
Most Pins over Average	65 D. Gates	89 M. Jones
	63 J. Halley	77 G. Alexander

Harvey's Selects Crew of Month

Harvey's Janitorial Service, Inc., recognizes employee teams who have excelled on their Facility Evaluation Reports. The award committee convened on November 2 and selected Crew #7 as Crew of the Month for October. This crew received a score of 94.10 out of a possible 95 points. Team members are (L to R) Linwood Burgess, Barbara Herbert, Linda Coles, Walter Briscoe, and Selina Lynch.

Personnel Staff Honored

Several Personnel Division employees were recently presented Special Achievement Awards or Quality Step Increases for their accomplishments during the past year. Shown above are (First row, L to R) Patricia M. Borman, D. Elaine Gause, and Janet M. McKenzie; (Second row, L to R) Lahoma L. Hart, Anna H. Jackson, Carolyn T. Kurtz, Annette L. Forrest, and Joseph J. Mathis, Jr.

People & Places

NACA Reunion Planned for 1988

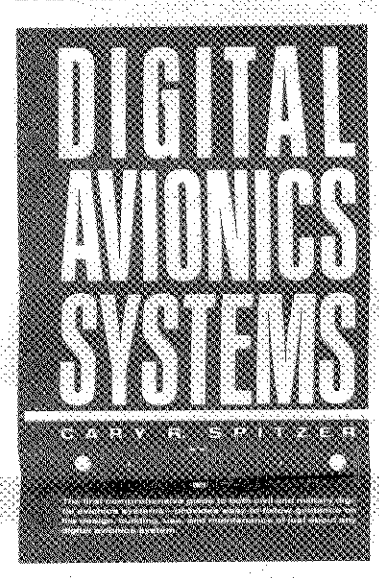
All former employees of the National Advisory Committee for Aeronautics (NACA), principal predecessor organization of NASA, are invited to the fourth NACA Reunion to be held in San Jose, California, September 30 and October 1 and 2, 1988.

Former NACA employees, their spouses and military personnel who were detailed to NACA are urged to consider NACA Reunion IV in making their 1988 vacation plans.

A preliminary announcement regarding plans for the reunion has been prepared by the organizing committee. Persons who would like to receive a copy of the announcement and to be placed on the NACA mailing list may contact Abraham Leiss at 877-2939 or write the organizing committee, NACA Reunion IV, P.O. Box 6-1988, Mountain View, Calif. 94042.

Congratulations

Ever wonder what some Langley managers do after-hours and on weekends?



Congratulations to Cary R. Spitzer, author of **Digital Avionics Systems**, recently published by Prentice-Hall. This book, the first in its field, provides easy-to-follow guidance on the design, building, use and maintenance of both civil and military digital avionics systems.

Spitzer is Manager, Program Plans and Contracts, Advanced Transport Operating Systems Program Office; NASA's representative to the Airlines Electronic Engineering Committee; Senior Member of the Institute of Electrical and Electronics Engineers (IEEE); and a past president and life member of IEEE Aerospace and Electronic Systems Society.

A leading expert in the field of digital avionics for nearly a decade, Spitzer has donated a copy of his newly-published book to Langley's Technical Library.

Current News Releases

To receive a copy of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext. 3017.

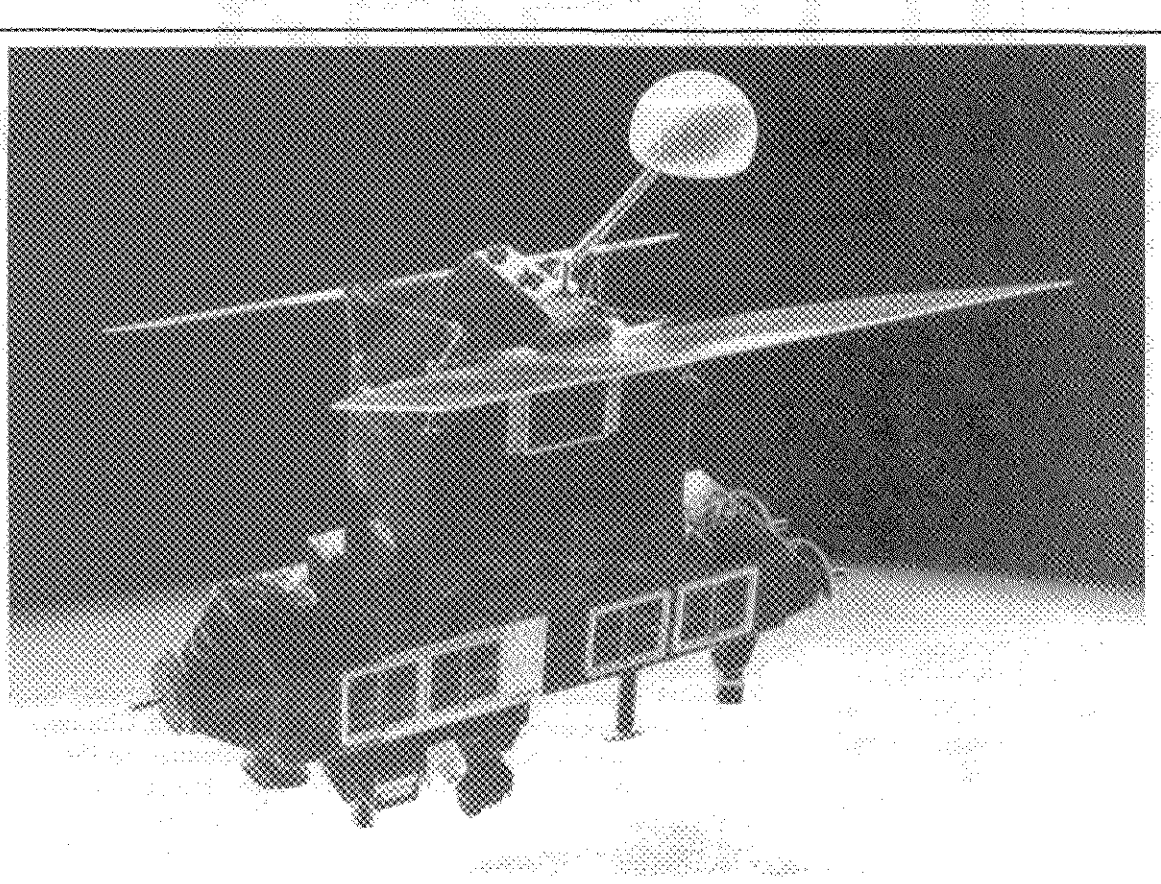
87-162.....Airborne Observatory to Study Supernova Core
87-163.....Castor-IVA Rocket Failure Cause Found
87-164.....NASA Selects Industry/Universities for In-Space Studies
87-165.....New NASA Initiatives Encourage Commercial Space Activities
87-166.....NASA Administrator Comments on GAO/SRM Report
87-167.....Shuttle SRM Joint Test Scheduled

NASA Research Announcements

A new and innovative approach to contracting for basic research is being strongly advocated by the Office of Aeronautics and Space Technology. This approach is a NASA Research Announcement (NRA) which is similar in nature to "Announcements of Opportunity" and "Dear Colleague" letters. The NRA broadly describes a research area in which NASA is interested in receiving a number of proposals from both private and academic institutions.

The solicitation requires the offerers to submit technical proposals which comprehensively describe their approach to some area of the broadly defined research. Evaluation of proposals is accomplished by a peer committee, and selection of offerers is made by the Director for the requiring technical directorate.

The role of the Acquisition Division is minimal until offerers have been selected. Multiple contract awards are usually achieved. Please contact Jim Taylor, ext. 4109, for additional information.



Celebrating 70 Years of Research

Langley Experiments Monitor Atmosphere

The Earth Radiation Budget Satellite (ERBS), the first NASA spacecraft specifically designed for launch by the Space Shuttle, was deployed on Mission 41-G.

Two Langley payloads, the Earth Radiation Budget Experiment and the Stratospheric Aerosol & Gas Experiment, were carried aboard ERBS.

Pre-Management Training Program Completed

A two-year Pre-Supervisory/Management Training Program is offered by Thomas Nelson Community College at Langley after hours. This series of courses is of interest primarily to employees who aspire to become supervisors or who wish to acquire supervisory skills while earning college credit. Those who recently completed the course are (L to R) Cassandra Favor, Bruce Little, Dollie McCown, Jammie Bohlken, Sherri McAdams, Vernelle Robinson, Marjorie Mikula, Cynthia Hutchens, Roy Budd, Head, Center for Human Resource Development, TNCC, and Lisa Harvey. Not shown are Alex Evans and James McMillan.
If you are interested in further information about the program, contact Louise Hamilton, ext. 2611.

Secretaries Study Communication Strategies

These secretaries recently participated in a follow-up program to the Professional Secretaries Education Program. They studied personal methods of communication, and applied this information to handling stress and dealing with conflict. Pictured from left to right are (1st row, seated) Gail Birch, Linda McKnight, Catherine McCargo, Harriett Coombs, Vernelle Robinson; (2nd row, seated) Blanche Johnson, JoAnn Belsches, Janice Edwards, Linda Sutherland, Barbara Eutsler, Charlotte Tyeryar; and (3rd row, standing) Betty Burnes, Louise Hamilton, coordinator, Gail Lanning, Gloria Evans, Doris Forrest, Richard Dall, instructor, Pamela Hucks, Shirley Forrest, Anne Rockey, Jackie Smith, Elaine Gause, and Kathy Hall.

Happenings

LAA SOCIAL. There will be NO LAA SOCIAL on Friday, November 27 due to the Thanksgiving holiday. The next LAA Social will be held on Friday, December 11.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, December 14, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

LAA FLEA MARKET will be held Saturday, Dec. 12, in the Activities Building featuring all NEW merchandise. Baked goods and refreshments will also be on sale. Sale from 8 a.m. to 3 p.m.

DISNEY FILMS. LAA Walt Disney Film Festival will feature "Jiminy Cricket's Christmas" on Sunday, December 13. Movie time is 2 p.m. and cost is $2 per person. Santa Claus will make a special appearance. Popcorn and drinks will be available. For more information, call Vernelle Robinson, ext 2691.

BLOODMOBILE. The American Red Cross will sponsor a Bloodmobile in the Activities Center, Wednesday, November 25, from 9 a.m. to 3 p.m.

TOASTMASTERS. The NASA Toastmasters Club will meet Wednesday, November 25, at 11:30 a.m. in the Activities Center. This will be the only November meeting. Come see how the dreaded "Table Topics" are handled. Call Steve Yaros, ext 2673, for information.

MILITARY MONTH at Colonial Williamsburg. Military/civil service personnel and dependents receive up to $6 discount during November. Call LAA Office, ext 3139, for details.

VIRGINIA CHORAL SOCIETY will begin its 1987-88 season with a performance of Rossini's "Petite Messe Solonnelle" (Solemn Mass in contemporary parlence). Concerts will be Nov. 20 at the Chrysler Museum Theater in Norfolk and Nov. 21 at Christopher Newport Theater in Newport News. Both concerts begin at 8 p.m. Admission is $3 at the door.

VPI RECEPTION for alumni and friends will be held in the Chesapeake Room of the Hampton Coliseum one hour prior to the VPI/Georgetown basketball game, Wednesday, December 9. The event is hosted by the Alumni Association, Peninsula Chapter, and the Peninsula Hokie Club. All proceeds from the sale of refreshments will benefit the Peninsula Chapter Academic Scholarship Fund.

VIRGINIA STAGE COMPANY. David Mamet's GLENGARRY GLEN ROSS, the raw, riveting comedy about Chicago real estate salesmen on the hustle, opens Friday, Nov. 20 at the Wells Theater. Call the VSC box office, 627-1234 for tickets and information.

CHRISTMAS CAR FUN. Virginia's biggest sports car club event - - autocross, road rallye, and car show – will take place on Dec. 6. All proceeds will go to make Christmas merrier for less fortunate children of the area. For more information, call Dave Hinde, ext. 2146.

SCHOOL REUNION. Denbigh High School Class of 1978 is planning its ten-year reunion. If you are a member, or know of somone who is, please contact Mike Mastaler, ext 4541.

CLUB MEMBERSHIP. For renewal of Breezy Point Officers' Club Membership, contact Al Shearin at Mail Stop 222B or ext. 3701 by close of business Nov. 23.

FOR SALE: AUTO. 1981 Ford Escort L Hatchback; standard shift; exc. mech. cond.; w/sun roof, alum. wheels, new tires, new brakes, air, am-fm radio. 85,000 miles. $1800. Call 249-9352 or 838-3235 after 5:30 p.m.

FOR SALE: SAILBOAT. Morgan 28 Sailboat, shoal draft, 1/B Eng., 5 berths, 5 sails, good headroom. Exc. cruising boat, just hauled. Reduced to $12,850. Call 851-0552.

FOR SALE: DIRT BIKE. '86 Yamaha YZ 250. exc. cond.; riding equipment included. $1800. Call 723-6192 after 5 p.m. Ask for Ann or Bart.

Take Note:

Effective December 1, 1987, the blue rectangular NASA automobile decals will become obsolete and will not be honored by LaRC or area military installations. NASA Security has made every effort possible to issue new decals to all qualified NASA employees and contractor personnel. If you have not received your new decal, please contact the Badge and Pass Office at extension 3212 or 4611.

Golf Course Gate

Effective November 16, the Langley Air Force Base will close the "Golf Course" gate at 7 p.m., seven days a week. The Langley Research Center Security Guard Force maintains a key to the gate for use in the event emergency access is required.

Deadline Change

Due to the Thanksgiving holiday, deadline for the December 4 issue of the **Researcher News** will be Wednesday, November 25.

Vote for LAA Executive Board

Langley employees are reminded to cast their ballot for LAA Executive Board members.

Running unopposed for the offices of Vice President, Treasurer, Arts and Crafts Committee Chairman and Publicity Chairman are, respectively, **Albert H. Bell, Patricia F. Gates, Betty B. Hughes** and **Jean W. Clough.**

The candidates for Social Committee Chairman are **D. Eugene Hicks** and **Jim Post.**

-photo by Terry Shepard

Governor Gerald L. Baliles (left) climbs into the cockpit of an F- 106 as Director for Aeronautics Roy V. Harris looks on. The Governor toured Langley as part of a day-long "Space Industries Tour." See related story on page 3.

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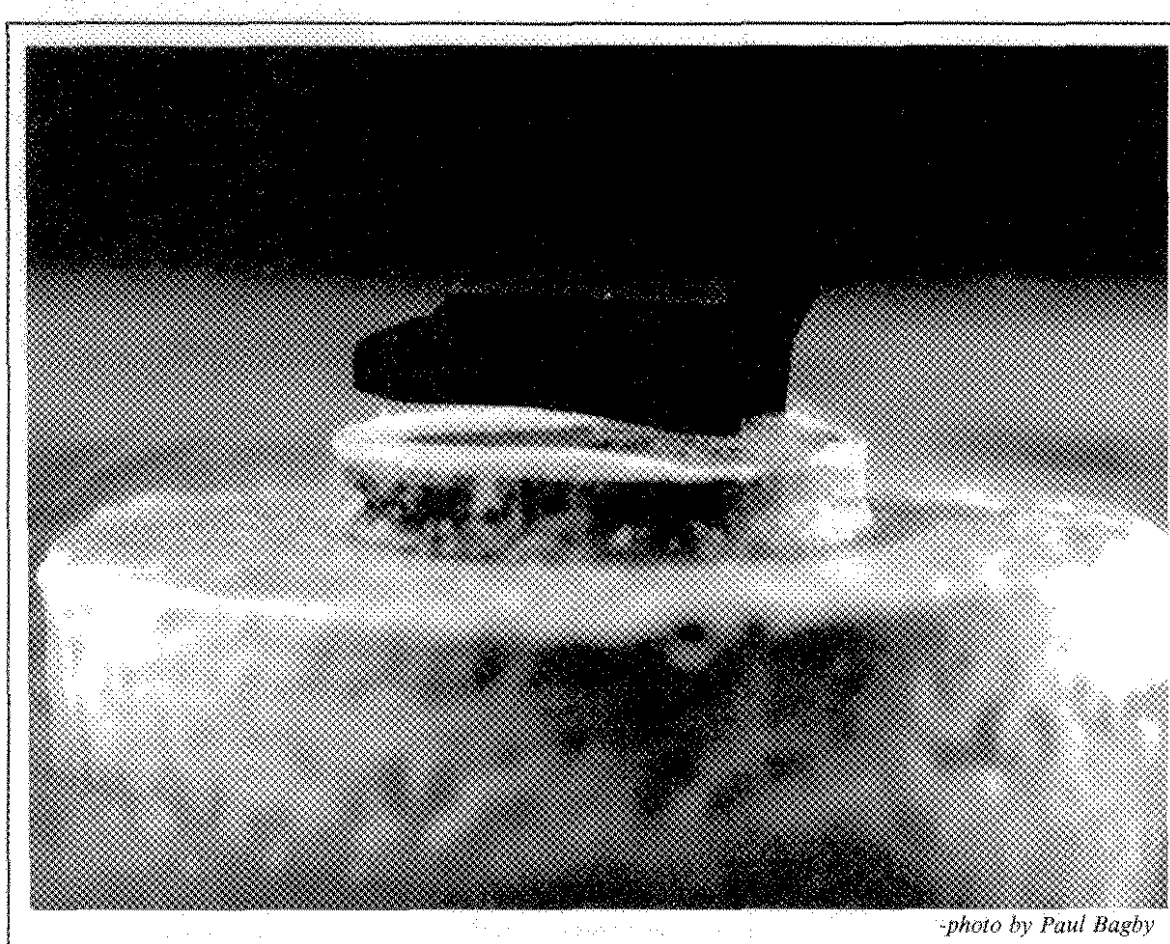
Langley Research Center

News Researcher

Volume 1, Issue 11 December 4, 1987

Bi-weekly Employee and Contractor Publication

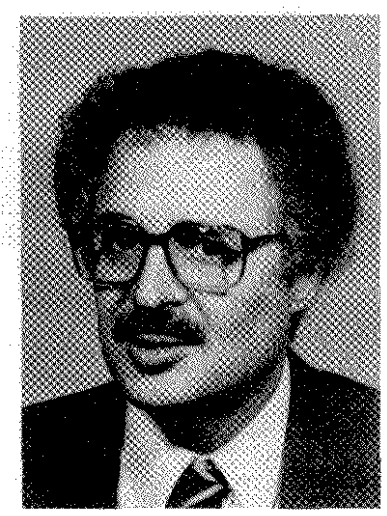


-photo by Paul Bagby

Langley Research Center is investigating one of the hottest and most promising fields in science – superconductivity. Superconductors carry energy without the wasteful resistance found in normal conductors. This illustration shows a model of the Shuttle, carved from a plastic magnet, levitated above a wafer of the barium-yttrium-copper oxide superconductor which loses electrical resistance at 94 degrees Kelvin. The wafer is resting on a copper block set into a bath of liquid nitrogen. Watch for an update on Superconductivity in the next issue.

Langley Colloquium

Maran Discusses the Great Supernova of 1987



Supernova 1987a in the Large Magellanic Cloud is the brightest and nearest supernova since the 17th century. It offers a unique opportunity for astronomers to investigate the explosion of a massive star, the collapse and formation of a neutron star or pulsar, and the creation of heavy elements and radioactive isotopes.

Dr. Stephen P. Maran, Senior Staff Scientist in the Laboratory for Astronomy and Solar Physics a the Goddard Space Flight Center, will discuss the great supernova of 1987 on Monday, December 14, in the Activities Center, Building 1222. The lecture will be held at 2 p.m., followed by a question and answer session and an informal discussion.

Although the most exciting and highly publicized aspects of Supernova 1987a are its powerful outburst of neutrinos–the first ever detected from beyond the sun–and its brilliant accompanying "mystery spot," many other phenomena of the supernova are under study.

Astronomers are using optical and radio telescopes on the ground to study Supernova 1987a, as well as NASA's infrared Kuiper Airborne Observatory, a series of gamma-ray balloon flights, the Internation Ultraviolet Explorer satellite, the Japanese X-ray satellite Ginga, and the U.S.S.R. space station, Mir. X-ray rocket payloads are also being readied for observation of the supernova. Even the first results from this array of instrumentation are revoluntionizing our knowledte of supernovae and stellar evolution.

An investigator of stars, nebulae, and comets, Dr. Maran is currently working on the Hubble Space Telescope and other NASA projects in astronomy and space science. He is the author of over 250 scientific and popular articles and has edited seven books including **A Meeting with the Universe**. He writes an astronomy column, "Sky Reporter," for Natural History magazine and is a consultant to National Georgraphic Society and Time-Life Books.

NASA, New Horizons Partnership Lauded

The NASA/New Horizons Technical Center Adopt-a-School Project has been recognized as the "Best Partnership Program in a Small School District" by the Association of School Business Officials (ASBO) International.

Dr. Patrick M. Konopnicki, New Horizons Principal, accepted the award at the 73rd Annual ASBO International Meeting held recently in San Antonio, Texas. The Hampton partnership was one of three award winners from over 100 entries nationwide.

In December 1984, Langley Research Center formally adopted the New Horizons Governor's School for Science and Technology Program. Dr. Konopnicki points to Shelley Canright, Langley Educational Programs Specialist, as "architect" of the partnership. "Without Canright's efforts the project would not have been possible," says Konopnicki.

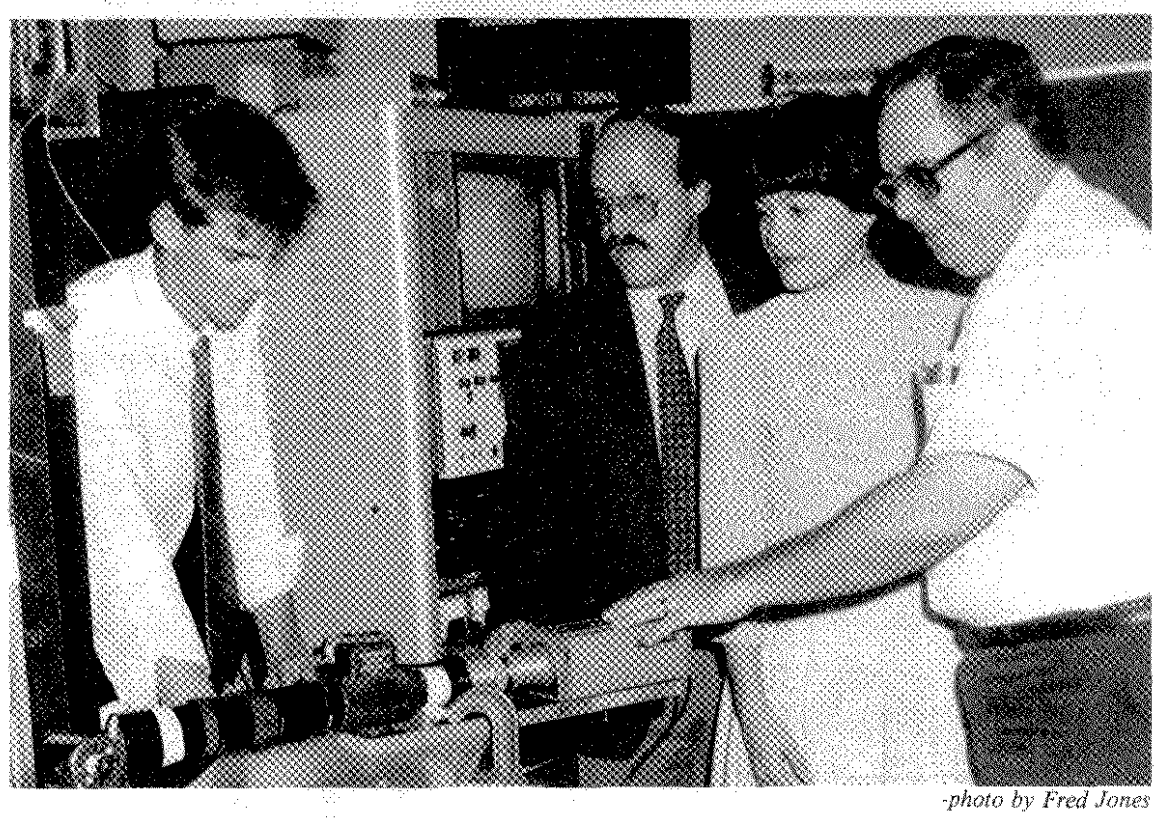
The project provides New Horizons students with challenging state-of-the-art experiences through association with NASA scientists and engineers. To date over 29 NASA researchers have provided mentorships for 86 Governor's School students. The mentorship opportunities have spanned six Langley directorates.

Canright is quick to point out that the partnership has benefitted NASA as well. A second result of the project has been computer-aided design (CAD) training for both NASA engineers and several New Horizons faculty members. The month-long training utilized the Prime computer and CAD terminals located at New Horizons.

And the partnership is still evolving. The project has now expanded to include vocational technical programs in addition to the Governor's School program. Six New Horizons instructors spent three days at NASA this past June to lay the groundwork for 12 technical mentorships that will begin in early 1988. Konopnicki expects this exchange of skills and dialogue to be valuable in the development of New Horizons curriculum as well as for the job readiness/training of the vocational students.

Konopnicki is an advocate of the school/business partnership concept which he refers to as "experiential learning in a scientific research setting unavailable in the traditional classroom."

1917 70 Shaping Tomorrow NASA Langley Research Center 1987



-photo by Fred Jones

New Horizons student Jason Reed (left) and Dr. Leonard M. Weinstein, group leader in the Turbulent Structures and Modeling Goup and a program mentor, (right) explain the bubble-wire apparatus that Reed is using in the vertical translated water tunnel to New Horizons principal Dr. Patrick M. Konopnicki (second from left) and Shelly Canright, Langley Educational Specialist and liason with New Horizons. Reed, a senior at Kecoughtan High School, has been working on the skin-friction drag reduction project since October.

News Briefs

HEADQUARTERS, Washington D.C. — NASA has announced an increase of the allowable end-of-mission landing weight for Space Shuttle orbiters. The allowable landing increase to 230,000 pounds from the previous limit of 211,000 pounds has been made possible by an on-going structural analysis and additional review of forces encountered by the orbiter during maneuvers shortly before landing. This change will allow the Shuttle to carry a cumulative weight in excess of 100,000 pounds of additional payloads into orbit through 1993.

KENNEDY SPACE CENTER, Fla. — A month-long procedures review for stacking and destacking the redesigned solid rocket motors for the next Space Shuttle mission, designated STS-26, began in mid-November. This test of the assembly test article (ATA) will be the first time Shuttle processing technicians at KSC stack the newly designed solid rocket motors using new tools, equipment, and revised procedures. The test will certify the new equipment and procedures, provide training for the ground crews, demonstrate field joint leak check procedures, and gather data to improve the process.

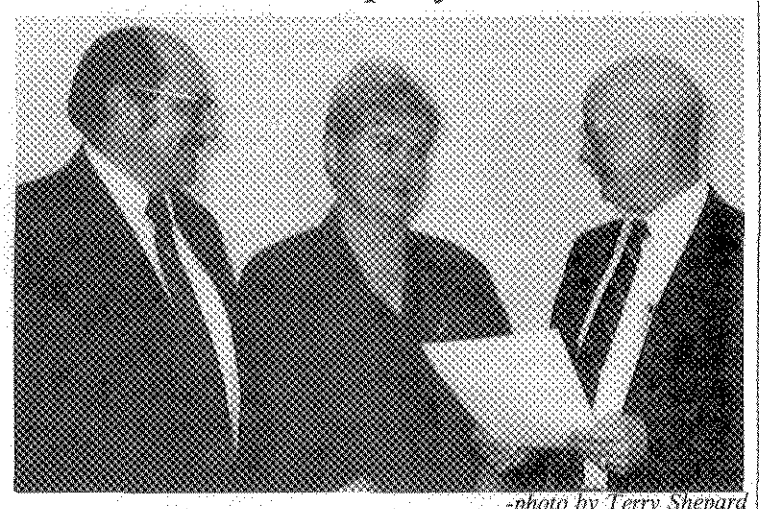
JOHNSON SPACE CENTER, Houston, Texas — Two concepts to provide crew egress capability during Space Shuttle controlled gliding flight are being tested at the Naval Weapons Center, China Lake, Calif. The two escape methods are tractor rockets that would extract the astronauts through the open hatch and a telescoping pole that would extend through the hatch for the crew members to slide down using a lanyard attached to the rod.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — MSFC test fired the first in a series of transient pressure test articles (TPTA) at its East Test Area. The TPTA is a short-stack solid rocket motor consisting of three cast motor case segments, which form two redesigned field joints, a redesigned factory joint and a redesigned case-to-nozzle joint. The 0.6 second test firings are intended to evaluate the effect of ignition pressures on the redesigned Space Shuttle solid rocket motor segments.

AMES-DRYDEN FLIGHT RESEARCH FACILITY, Edwards, Calif. — Successful taxi tests of the Rotor Systems Research Aircraft (RSRA) at Ames- Dryden have cleared the way for flight testing. Flight investigations are aimed at the eventual development of a stoppable rotor X-wing flight vehicle that could cruise at the high speeds of a fixed wing aircraft, yet have the vertical flight capability of a helicopter. Initial flight tests will be made without the X-wing rotor system. Installation of the four-bladed X-wing rotor will occur later this year.

HEADQUARTERS, Washington, D.C. — Space Shuttle main engine 2027, which developed a tiny leak in its heat exchanger during an October 11 post-firing test, will be subjected to additional hot-fire testing in an effort to better understand the leakage problem. The location of the leak is in an area of the heat exchanger where the tubing coil splits from a single piece into two tubes. The leak is in the tubing parent metal and analysis suggests it may have resulted from an impurity in the stainless steel from which the tubing was made.

JLA Selects Employee of Month



-photo by Terry Shepard

J. L. Associates, Inc. of Hampton recently recognized Edith Watts, Public Information Specialist, as J.L.A. Employee of the Month. Presenting Watts with a certificate of merit are Richard E. Mackin (right), Contract Manager and Director of the Langley Visitor Center, and Sigvart Sande (left), J.L. Associates Vice President of Operations. See related story on Langley's Public Mail program on page 4.

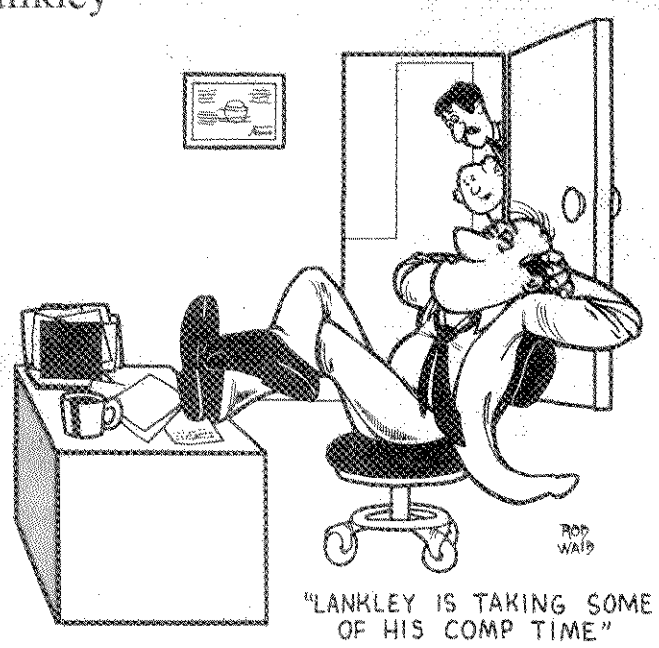
Positions Open

87-85: Supervisory Aerospace Engineer, AST, Aerospace Flight Systems, GM-0861-13 or 14, Systems Engineering Division, Space Systems Engineering Branch, Spacecraft Systems Section. Closes December 7.

87-86: Public Affairs Specialist, GM-1035-13 or 14. Office of the Director, Office of External Affairs, Office of Public Affairs. Closes December 11.

87-88: AST, Facilities Program Management, GS-0801-12 or 13, Facilities Program Development Office, Systems Engineering and Operations Directorate. Closes December 14.

Lankley



News Researcher

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115; telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

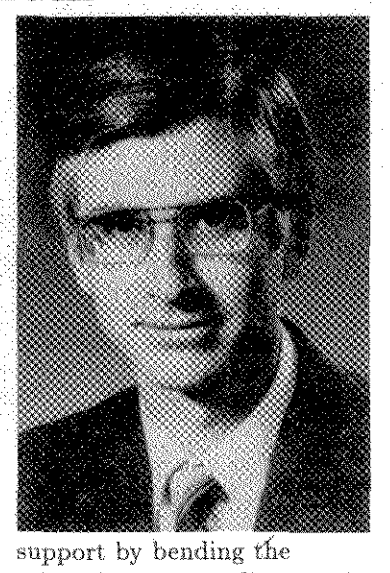
Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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.

Editorials

Langley

Headquarters Forum



Since this is my first opportunity to address the Center in the "Headquarters Forum" column, I will provide my views on the Role of the Management Operations Directorate. Our many functions and responsibilities can be boiled down to the following statement:

Our mission is to effectively and efficiently facilitate the accomplishment of the Center's mission through innovative and flexible resources management and administrative services consistent with applicable laws, regulations, and policies.

The fun part of our job is to support our customers in the accomplishment of the Center's research and institutional objectives. Providing quick response to an emergency procurement request, securing a special training course to meet a technical need, or printing a conference proceedings document overnight are examples of the rewarding part of our work.

As our mission states, we have to provide support consistent with applicable laws, regulations, and policies. This, unfortunately, requires that we exercise a control role which, unlike most other Center organizations, pervades our Directorate. In many functions, control is the visible role, such as in security, travel, and monitoring conflict of interest cases.

Our objective in this dual role is to maintain a balance between support and control, which presents a challenge to all employees of our Directorate. If the balance swings in favor of support by bending the rules, the many auditors and reviewers (Inspector General, Government Accounting Office, Government Services Administration, Office of Personnel Management, and the long list of NASA Headquarters functional managers) will promptly point out the error of our ways. On the other hand, if the balance swings towards control, we quickly hear about it from our customers – the Senior Staff, Division Chiefs, and, many times, directly from the employees.

As we exercise our functional responsibilities, we sometimes have to say "no." When we do, we should also explain why and quickly follow up with "but here is how we may be able to achieve most of your objectives with an alternate approach." The Management Operations Directorate at all levels needs to continually work at this balancing task and we welcome your input on specific cases of success or failure.

John F. Stokes
Director for Management Operations

Langley Technical Staff Praised

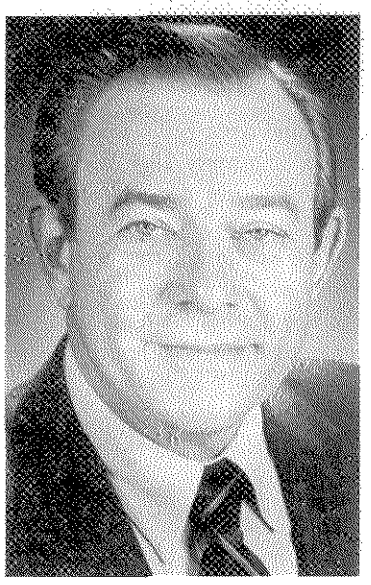
In October of this year, the NASA Headquarters Procurement Survey Team performed a functional audit of the procurement process at Langley. One area of the audit entailed a review of the technical evaluations which are a part of the documentation for each contact and contract modification. At the exit conference, the audit team confirmed Langley Technical Evaluations as the best they had seen.

I knew, from my reviews of certain procurements, that we indeed had very good evaluations, but, not knowing how other Centers performed, I could not calibrate. This was done for me at the Annual Procurement Officers Conference held November 19. The Director of Code HM, responsible for the reviews of all the Agency's procurement organizations, told the assembled Procurement Officers and Headquarters Division Managers that Langley Research Center technical personnel provided the best technical evaluations in the Agency.

Needless to say, it made me feel proud to represent Langley as your Procurement Officer. I want to share that accolade with those of you who performed so well. My personal thanks to all of you in our technical disciplines who do every aspect of your jobs so skillfully, even the paperwork.

Bill Kivett
Chief
Acquisition Division

Federal Women's Program Presents Jim Kincaid



Jim Kincaid, anchorman for WVEC-TV-13, will be the featured speaker for the Fall Federal Women's Program luncheon to be held Friday, December 11, at 11:30 a.m. in the Activities Center, Building 1222. Kincaid will speak on "Women in the News."

Kincaid is well-known in the Hampton Roads area for his "Notes," daily comments on subjects ranging from national politics to the problems of managing a farm at Elam, Virginia.

His varied career as news correspondent began with his affiliation with CBS, at KMOX-TV in St. Louis and WCBS-TV in New York. Assigned to Vietnam in 1968-69 by ABC, Kincaid was among the first American reporters into Cambodia and among the last to leave with the American withdrawal.

Kincaid was reassigned in 1970 to the Midwest Bureau in Chicago as senior correspondent and in mid-1975 to the ABC Washington Bureau as traveling correspondent.

Kincaid came to Hampton Roads in 1978 as WVEC anchorman responsible for the evening and late night news. He has since authored **Notes to My Friends**, **Notes from Elam**, and the recent **Notes on Politics – From Down the Road A Piece**.

All employees are invited to attend, however reservations will be limited to the first 200 who reply. Luncheon cost is $6. Please respond to Ernestine Phillips, Mail Stop 178, ext. 3487 for reservations.

Employees should charge their time to Job Order A-1980.

Parenting Seminar Scheduled

The Langley Research Center Federal Women's Program and the Occupational Health Services will jointly present "Growing Pains of Parenting: The Impact on the Workplace" featuring Dr. Katharine C. Kersey, Chairperson of the Child Study and Special Education Department, Old Dominion University. The parenting seminar will be held from 9 to 11:30 a.m. on Thursday, December 10, in the Activities Center, Building 1222.

This seminar has been designed to demonstrate how working parents can be effective parents. Kersey will point out keys to sensitive parenting from infacy to adulthood with emphasis on the teenage years and will identify strategies intended to give children the inner strength and skills to handle life's challenges and changes. Kersey will also discuss parental coping mechanisms associated with negative outcomes of child rearing.

Attendance is open to employees, contractors, and their family members. The sessions will address whose who are interested in learning how to juggle and balance the demands of family life and a career while functioning in a variety of parenting capacities.

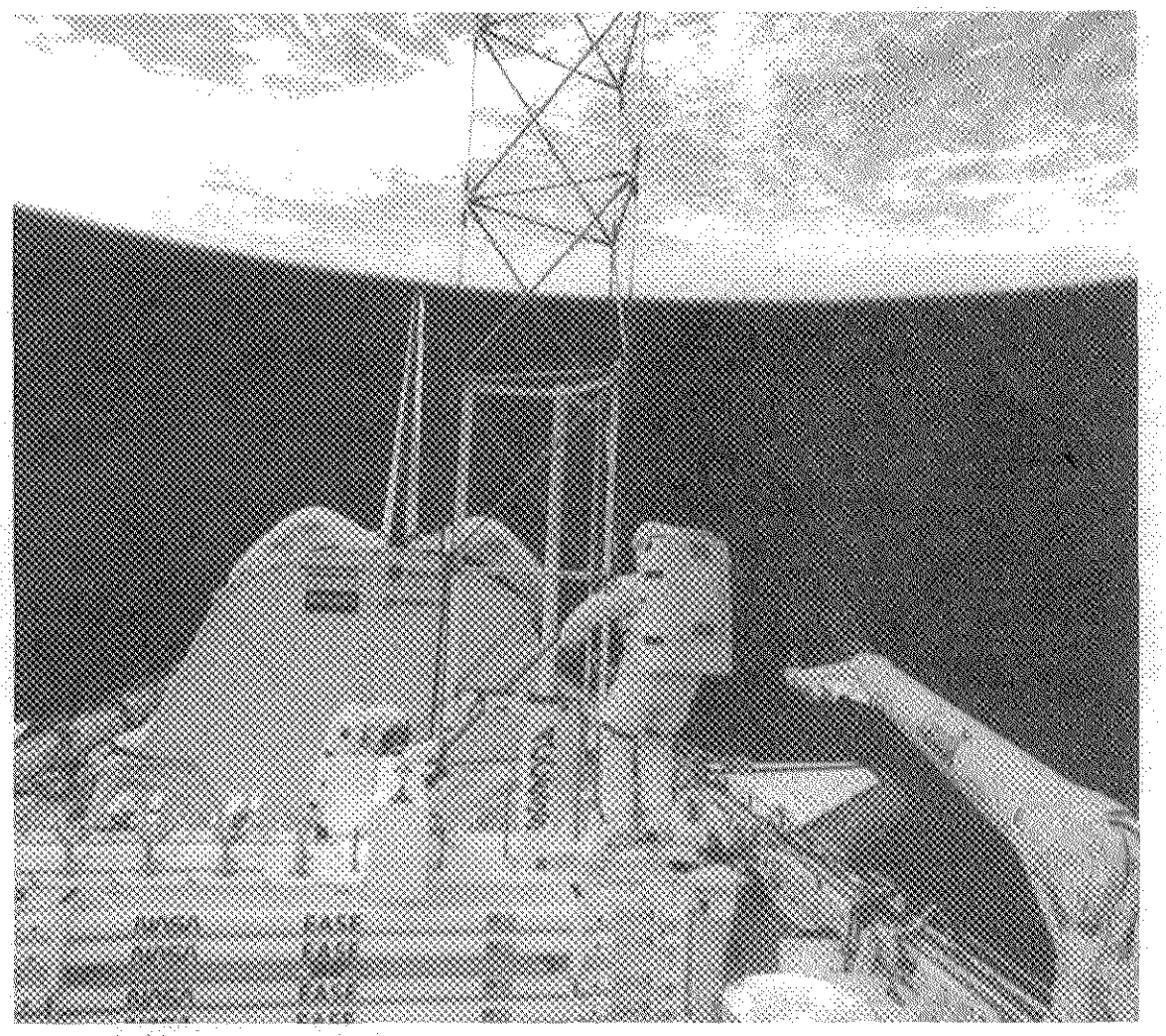
Supervisors are encouraged to permit employees to attend. Employees should charge their time to Job Order A-1619.

For further information, call Nancy Moul, ext. 2246.

Current News Releases

To receive a copy of these NASA News Releases, contact Edith Watts, Mail Stop 146, ext. 3017.

87-168.....Increased Space Shuttle Landing Weight to Relieve Payload Backlog
87-169.....KSC to Practice Assembly of Redesigned Solid Rocket Motors
87-170.....Shuttle Crew Escape Systems to be Tested This Month
87-171.....Shuttle SRM Test Article Firing, with External Loads Applied
87-172.....X-wing Aircraft Concept Flight Testing to Begin
87-173.....Further Testing Slated for Defective Shuttle Engine



Celebrating 70 Years of Research

Langley Provides ACCESS to Space

NASA's Assembly Concept for Construction of Erectable Space Structures (ACCESS) was the first experiment to study orbital construction of space structures. ACCESS flew aboard the Orbiter Atlantis, Space Shuttle Mission 61-B.

ACCESS, designed, developed, and fabricated at Langley, has been a significant step in demonstrating that manual assembly of large space structures is viable.

NASP ECR and ACR Participants Recognized

The National Aero-Space Plane Program has completed the Engine Concept Review (ECR) and the Airframe Concept Review (ACR) which resulted in the selection of two engine contractors and three airframe contractors for Phase 2B.

Langley played a key role in both of these reviews. In addition to key individuals who served as members and advisors of the government teams that evaluated the contractor proposals, the Langley ACR Integrator Team, comprised of individuals from several directorates and Langley contractors, analyzed the airframer configuration concepts.

On November 13, Langley participants in the NASP Airframe and Engine Concept Reviews were honored at a ceremony at the H.J.E. Reid Auditorium. Center Director Richard H. Petersen, Howard T. Wright, the NASA Deputy Program Manager at the NASP Joint Program Office, Wright-Patterson AFB, and Duncan E. McIver, Director of the NASP Office at NASA Headquarters were featured speakers. Petersen and Wright presented certificates of appreciation to 94 Langley employees and contractors for their outstanding efforts in support of ECR and ACR.

The next major milestone in the NASP program will be the Aircraft Design Review (ADR), scheduled for April 1990, marking the end of Phase 2. The objective for Phase 2 is to provide the information and data for the Phase 3 decision to build an experimental NASP vehicle, designated the X-30. Langley will continue to provide strong technical support throughout Phase 2.

-photo by Terry Shepard

Gathered for the NASP ECR and ACR Recognition Program are (L to R) Howard T. Wright, Deputy Program Manager, Duncan E. McIver, Director of the NASP Office, Richard H. Petersen, Larry Hunt, Delmar C. Freeman, and Sharon H. Stack. The program recognized participants from six Langley directorates and seven local contractors.

Watts Answers NASA Langley Mail

Letters, phone calls, and requests from industry, teachers, students, Center personnel, frantic parents, enthusiastic children – all of these are responded to by one individual, Edith Watts, who handles Langley's Public Mail.

"I get requests from all over the U.S. and the world," notes Watts. "From Poland, Israel, and I have gotten an enormous amount of mail lately from Mexico."

Watts singlehandedly responds to 1,200 requests monthly. The majority is for information on the space program or the planets. "I'd say 90 percent of my requests come from students; about 25 percent of them want to be astronauts."

Watts processed over 10,000 requests for information and memorabilia following the Challenger tragedy. She estimates half the requestors were children and the other half adults who wanted someone to know that they were still behind the U.S. space program.

A recent request from a young space enthusiast is the kind that makes Watts smile and know she is fulfilling a need. Young Eric writes:

Dear N.A.S.A.,

I'm a boy that lives in Kentucky. I want to be a Astraught some day. I want to go to Space Camp some day too. I want to go to Space Camp because I think it will be fun. I think space shuttles are neat.

-photo by Terry Shepard

Edith Watts is the unofficial spokesperson for aerospace research to the 1200 individuals and organizations who request information from Langley Public Mail each month.

Well I guess I will let you go because you are very busy.

Sincerely,

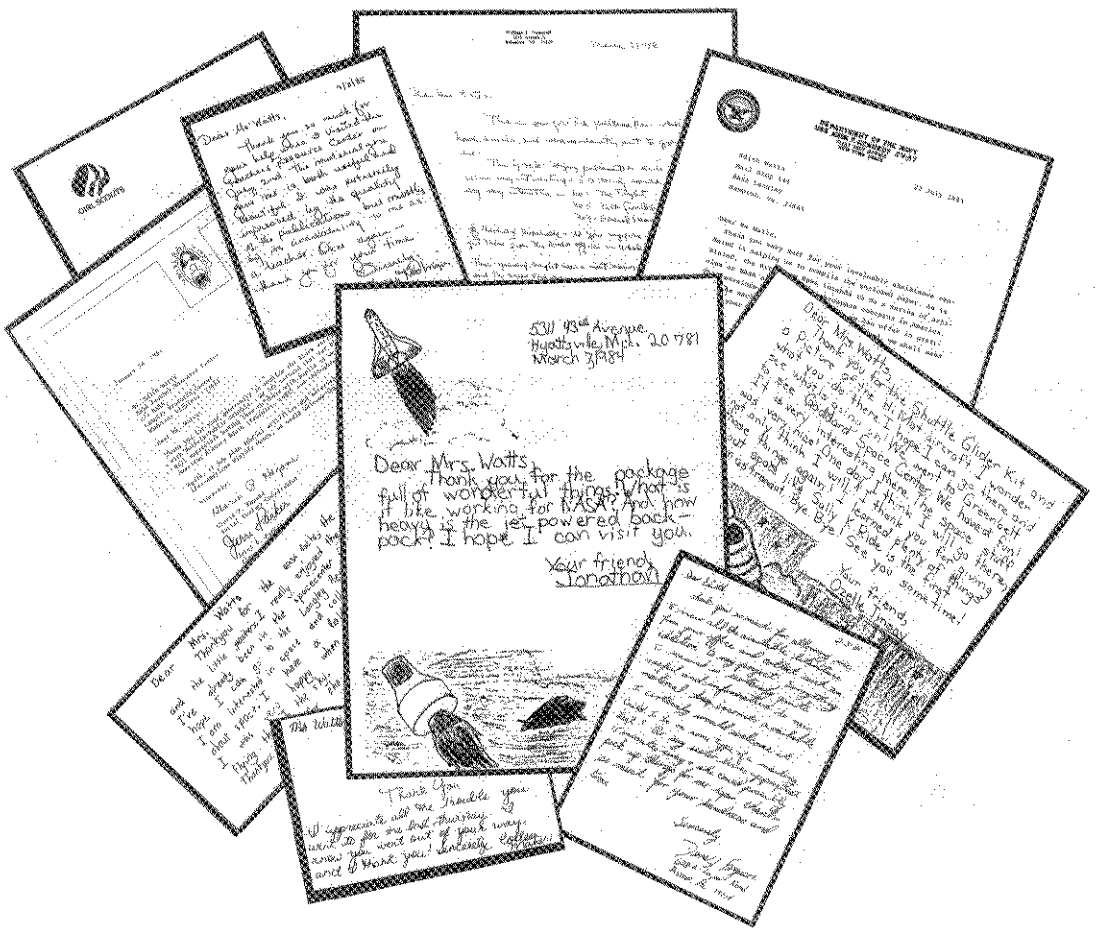
Eric

Though Eric didn't ask for the typical "everything you have on space," Watts sent him information and photographs that will foster his interest in NASA and the space program.

NASA publishes information on a wide variety of aerospace topics as well as NASA programs. "We get bombarded when there's a project going on that makes the news, like a launch," says Watts.

There are restriction on what can be sent to the public free of charge. Although NASA has some publications of a general nature available at no cost, more detailed information and older publications which are out of stock must be purchased from the Government Printing Office in Washington, D.C.

Watts, a J. L. Associates, Inc. employee, has been answering the NASA Langley mail for over 12 years. Though not an official spokesperson, she is the voice of the U.S. aerospace program to the 1,200 NASA enthusiasts who write or call each month.



A tribute to a job well done is seen in this sampling of the numerous thank you notes Watts receives each month. Langley's Public Mail Program reaches industry and civic leaders, teachers, students at all levels, even would-be astronauts.

Emergency Information System

This year, as in past years, Langley's Special Announcement System will be activated whenever weather threatens to alter the work schedule. Call 865- 2111 for regular updates. The number of lines coming into the message service recording has been increased from five to ten to aid in getting through at peak times.

To augment the telephone system, most area radio and television stations will be notified. Approximately 18 FM and AM radio stations will be alerted, including stations on the lower Peninsula, Williamsburg, Yorktown, and southside Hampton Roads. At minimum, the radio stations listed in the front of the Langley telephone directory are contacted.

Every effort will be made to make the appropriate announcement as early as possible. In the absence of a specific announcement, employees are to report to work as usual.

The decision and announcement procedure was neatly summarized in a note distributed to all employees in early October:

1. Any decision to delay work hours or to close the Center will be made as early as possible, but in all instances prior to 5 a.m. on the day in question.
2. A message announcing the decision will be placed on the Special Announcement Telephone System (865-2111) by 5 a.m. The information is also provided to the media (television and radio) for broadcast at this same time.
3. Any **delay** in opening the Center will be for either two hours or four hours from the normal beginning of each work shift. If weather or road conditions change, a second decision concerning delayed work hours may be made, but no more than one change will be made on any day.
4. If a delayed opening of two hours is announced at 5 a.m., that announcement will be updated at 7 a.m. If a delayed opening of four hours is announced at 5 a.m., that announcement will be updated at 9 a.m.
5. In those cases where the weather or road conditions are extremely hazardous, and the decision is made to close the Center for normal operations, the 5 a.m. announcement will not be modified until 12 noon, at which time a decision applicable to second and third work shift personnel will be announced.

Bowling Stats

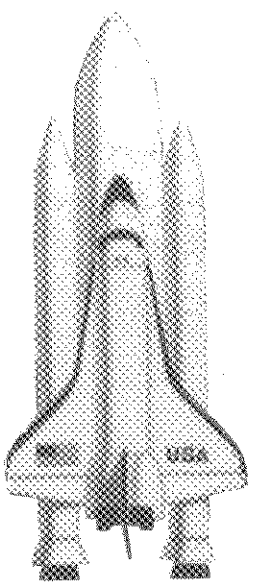
	November 17	November 24
Team High Game	918 Ballers	1035 ACD
Team High Series	2705 Ballers	2799 ACD
Male High Game	234 **E. Mathis**	246 **L. Curtis**
Male High Series	583 **M. Frye**	617 **B. Thaxton**
Female High Game	214 **R. Frizzell**	194 **M. Mayo**
Female High Seies	596 **R. Frizzell**	517 **R. Frizzell**
Most Pins over Average	83 **E. Mathis**	82 **F. Boyer**
	62 **C. Neal**	69 **G. Koren**

Upcoming Workshop

NASP Technology Maturation Program Workshop will be held December 17-18 in Building 1212. Contact Allen H. Whitehead, Jr., ext. 4822, for additional information.

For your information:

Industrial Drives Co. will bring a mobile display to Langley, Wednesday, December 9, beginning at 2:30 p.m. Located in the parking lot adjacent to Building 1212, the van will contain static and dynamic displays of servo motors and accompanying electronic drives and controllers. Contact John Wilson, ext. 2889, for details.



Space Shuttle Update

DISCOVERY: A continuing activities include checkout of main propulsion system, chin panel modifications, communication checks, and configurations of payload bay to support STS-26 mission.

ATLANTIS: Leak checks of freon coolant loops and water loops underway. Goal is to get those systems serviced prior to powering up vehicle now targeted for Dec. 9. Installation of electronic boxes and various comnponents continuing as planned.

COLUMBIA: Inspections of orbiter's airframe scheduled. Three to four modifications continuing.

People & Places

Flag Returned after 42 Years

Kilgore Travels to Japan on Dual Mission

Robert A. Kilgore, Head, Experimental Techniques Branch, spent a month recently in Japan. His mission was two-fold. The first priority was a series of lectures on experimental techniques. The second mission was the culmination of a personal challenge to set an old soldier's spirit to rest.

The main purpose of Kilgore's trip to the East was to present a series of eight lectures on Advanced Experimental Techniques for Transonic Wind Tunnels at the request of Professor Yutaka Yamaguchi of the National Defense Academy (NDA).

Kilgore's aim in his lectures to graduate students at NDA was to "transfer information." To attain this goal, Kilgore worked hard to present the work of his branch –subjects very technical in nature–using words easily understandable by his Japanese audience.

"The challenge was to purge complex words from my lectures and my lecture notes. I used Southern American and got high marks for speaking slowly and simply," Kilgore reports.

Professional mission accomplished, Kilgore and his wife Sarah altered their schedule a little to visit the town of Matsuda in the Kanagawa Prefecture to make a very special presentation.

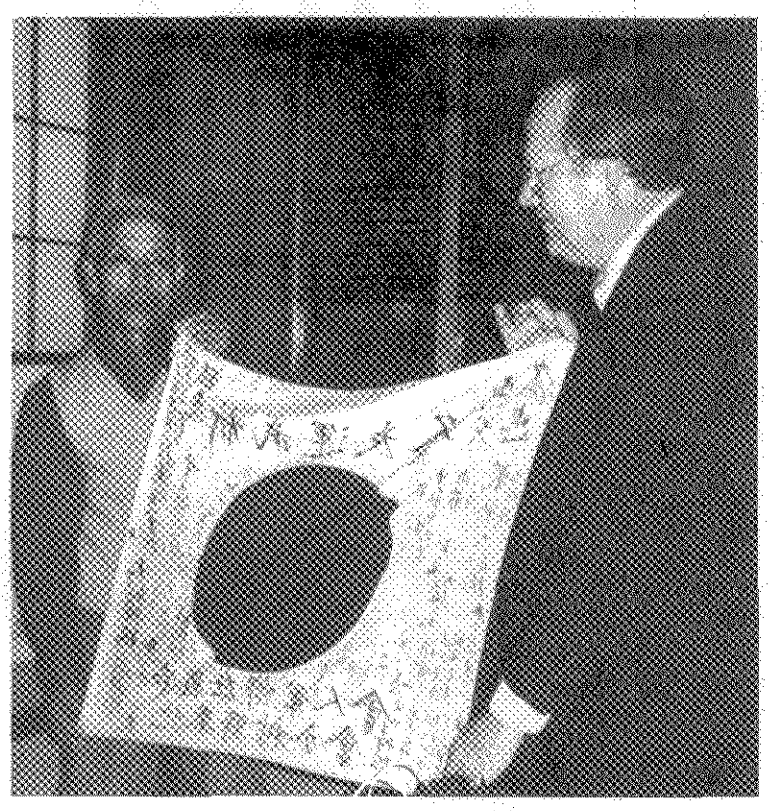
In 1945 Kilgore's uncle, a surgeon and Director of the 43rd Army Field Hospital in the Pacific during World War II, gave him a Japanese soldier's personal national flag. Intrigued by the WWII memorabilia, Kilgore sought to track down the family of the Japanese soldier to which it belonged and return the flag.

To accomplish this, he turned to his friend Dr. Hiroshi Endo of the National Aerospace Laboratory in Toyko. Endo confirmed Kilgore's enthusiasm for finding the rightful owner when he shared the Japanese belief that the spirit of a departed soldier would not find repose until the flag was returned.

Through a network of volunteer "detectives" including a Japanese news reporter, they located the owner of the flag, 67- year old Sueo Kiryu. The flag had been given to the young Kiryu by his relatives and friends, all of whom had autographed it, when he joined the Japanese army in 1940. Kiryu cherished the flag as a charm against misfortune and carried it in his helmet until the day in May 1945 when he was severly wounded.

Elaborate arrangements for the return of the flag were made by local Japanese officials. The Kilgores were "distinguished guests" in the Kiryu home and the flag was indeed returned to its rightful owner.

The diligence and determination that saw the return of the Japanese flag after 42 years is typical of Bob Kilgore, who not only accepts challenges, initiates projects, but prides himself on follow-up.



Robert A. Kilgore, Head, Experimental Techniques Branch, presents a Japanese national flag, given him as a WWII memento, to Sueo Kiryu, former Japanese soldier who lost it after being severly wounded 42 years earlier in a battle of which he was the sole survivor of his unit.

Positions Filled

James A. Morse has been selected Supervisory Personnel Staffing and Classification Specialist, Placement and Position Management Branch, Personnel Division, under CPP 87-58.

Vincent J. Fleck, Jr. has been selected AST, Experimental Facility Development, Mechanical Engineering Section, Facility Systems Branch, Facilities Engineering Division, under CPP 87-80.

Janice Edwards has been selected Secretary (Stenography), Office of the Director, under CPP 87-76.

Kenneth D. Hedgepeth has been selected AST, Aerospace Flight Systems, Aerospace Engineer, Systems Engineering Division, under CPP 87-63.

J. Ray Dagenhart has been selected Supervisory Aerospace Engineer, AST, Fluid and Flight Mechanics Program Management, Fluid Dynamics Branch, Transonic Aerodynamics Division, under CPP 87-74.

Charles G. Miller III has been selected Head, Experimental Aerodynamics Branch, Space Systems Division.

Lillian M. Wentz has been selected Lead Editorial Assistant, Technical Editing Branch, Research Information and Applications Branch, under CPP 87-81.

In Memoriam

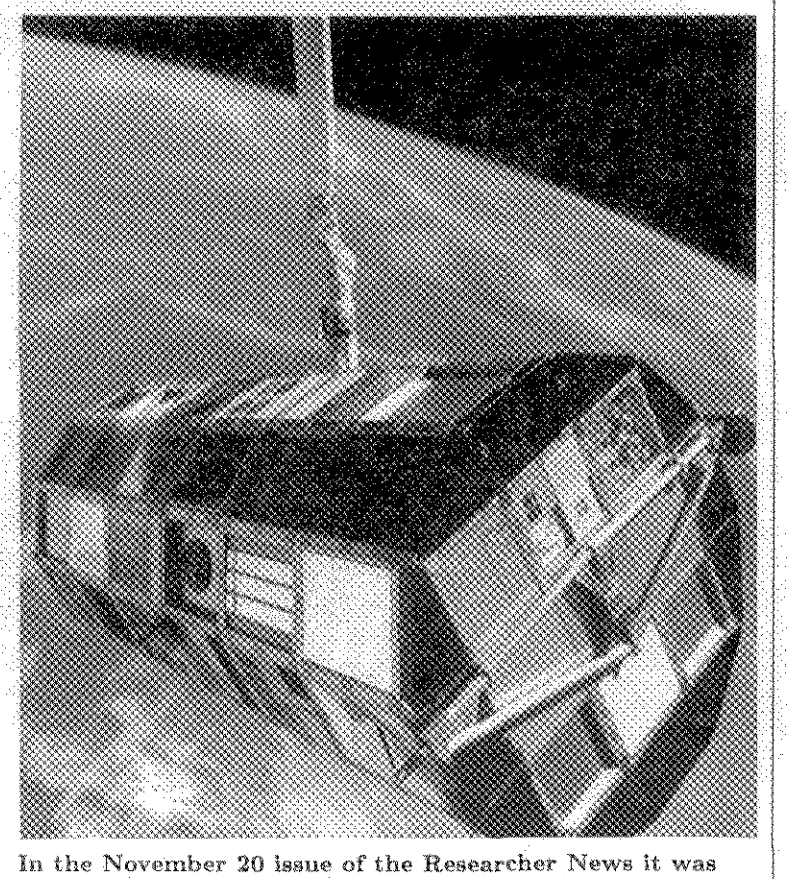
Sympathy is extended to the families of:

Dennis L. Nicholas, who died October 27. Nicholas retired in April 1985 from the Electrical Drives & Systems Operations Section, Electrical Support Branch.

J. Cabell Messick, who died November 3. Messick retired in January 1968 from the Office of Engineering and Technical Services.

John Wallace Quinn, who died November 11. Quinn retired in August 1985 from the Utilities Operation Section, Mechanical Support & Utilities Operations Branch.

To Set the Record Straight



In the November 20 issue of the Researcher News it was reported in error that ERBE was the first NASA spacecraft designed for launch by the Space Shuttle.

The Long Duration Exposure Facility (LDEF), fabricated at Langley, carried 57 experiments on board. LDEF was launched on April 6, 1984. The above photo shows LDEF being deployed in space on April 7, 1984.

From the Wright Brothers to Gigaflops

Visitor Center Announces Winter Programs

Flight research is one common element which links the primitive gliders of a thousand years ago to the most sophisticated spacecraft of the future. Even Leonardo da Vinci and Isaac Newton flight-tested models of their designs before building the actual aircraft.

This winter, the Visitor Center will take a close look at flight and flight- related research, from the Wright Brothers' first attempts at flight to advanced NASA computers which speak in gigaflops – about a billion calculations per second. A special series of monthly evening lecture programs will be featured.

Visitor Center Celebrates First Flight

Crouch Presents Wright Technology of Flight

On Thursday, December 10, at 7:30 p.m. the Visitor Center will celebrate the anniversary of the Wright Brothers' historic flight with a lecure by Tom Crouch of the Smithsonian Institution. He will discuss the evolution of the Wright technology of flight.

During the decade from 1899-1909, the Wrights experimented first with large kites, then gliders, then powered aircraft. Crouch, an expert on aeronautical history, recently completed a biography on Orville and Wilbur Wright.

Crouch has served as curator for both the Smithsonian's National Air and Space Museum and the Division of Engineering and Industry in the National Museum of American History. Currently he is the chairman for the Department of Social and Cultural History at the National Museum of American History.

Throughout December, a full-scale replica of the 1900 Wright Glider will be on display in the Space Gallery. The award-winning film "On the Wing" will be shown daily at noon and 2 p.m., courtesy of the Smithsonian Institution.

Happenings

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, December 8, at 10 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

LAA FLEA MARKET will be held Saturday, Dec. 12, in the Activities Building featuring all NEW merchandise. Baked goods and refreshments will also be on sale. Sale runs from 8 a.m. to 3 p.m.

DISNEY FILMS. LAA Walt Disney Film Festival will feature "Jiminy Cricket's Christmas" on Sunday, December 13. Movie time is 2 p.m. and cost is $2 per person. Santa Claus will make a special appearance. Popcorn and drinks will be available. For more information, call Vernelle Robinson, ext. 2691.

AFGE MEETING. Local 2755 monthly meeting will be held Wednesday, December 16, at 4:30 p.m. in the Union Office, Bldg. 1232B.

LAA SOCIAL will be held Friday, December 11, from 4 to 6:30 p.m. in the Activities Center.

DANCE CLUB. NASA Country-Western Dance Club will hold its monthly dance and Christmas event at the Activities Center, Saturday, December 12, from 7:30 to 11:30 p.m. Dance to continuous must of D.J. Chuck Kessler.

TOASTMASTERS. The NASA Toastmasters will meet Wednesday, December 9, at 11:30 a.m. in the Activities Center. Can you take constructive criticism? Join Toastmasters and learn the art. Call Steve Yaros, ext. 2673, for information.

AIAA MEETING. Visit CEBAF and hear Anthony K. Chargin, Project Manager for CEBAF construction and Associate Director of the Engineering Division, discuss the status of the facility, Wednesday, Dec. 16., 7 p.m. social; 8 p.m. program. Reservations by Dec. 14. to Duane Melson, ext. 2627, or Karen Credeur, ext 3467.

LANGLEY RUNNERS CLUB will hold the Interdirectorate 5 KM road race December 17 starting at 4:45 p.m. on Doolittle Road. Teams of 5 or more may be formed from each directorate or contractor. Contractors unable to form a team may run with the directorate to which they are assigned. Cross country scoring will be used with the top 5 of each team scoring and the others holding positions. For more information, call Richard Shearer, ext. 4508.

ASM Meeting. Hampton Roads chapter will hold a dinner meeting Monday, December 14 at the Hampton Elks Lodge #366. Harvey P. Hack, Acting Head of Marine Corrosion Branch, David Taylor Naval R&D Center will speak on "Corrosion Testing." Dinner at 6:30 p.m.; cost is $7.50/person. Call Keith Byrd, ext. 2212, for details.

Health Insurance Information

In conjunction with the 1987 Health Benefits Open Season, which began November 9 and continues through December 11, it has been noted that there are a few inaccuracies in the 1988 Enrollment Information Guide and Plan Comparison chart you received at the beginning of Open Season. To ensure that you make an informed decision on your health plan, please note the following changes:

- NTEU High Option Plan has been terminated effective January 1, 1988. the correct enrollment codes for the new single option plan are YY1 (self only) and YY2 (self and family).

- Postmasters High Option inpatient and other hospital expenses will be paid at 85 percent. Under the Standard Option, inpatient hospital room and board will be paid at 100 percent, and physicians charges will be paid at 75 percent.

- NFFE High Option, pre-admission approval is required for hospital confinements. Other doctors' charges for inpatient care and charges for outpatient surgery are not subject to any special modifying conditions nor are diagnostic tests subject to a dollar and/or day limit as implied in the footnotes. Under the Standard Option, room and board charges are not subject to any special modifying conditions as implied in the footnotes.

Just a reminder – the individual plan brochures contain the detailed provisions of each plan. Therefore, you should not elect a plan without reading carefully its 1988 brochure. Plan brochures are available in the Employee Services Branch, Building 1195C, Room 243.

—swap and shop—

FOR RENT: MOTOR HOME. 23' Mini-Winnebago. Fully self-contained, sleeps 6, 4 kw generator, dual air. $300/week. Daily/weekend rates available. Call 599-5408 after 5 p.m. for details.

FOR SALE: AUTO. 1983 Plymouth Colt. Excellent condition. A/C, sport instrument cluster New clutch, brakes, battery, tires. One owner. $2795. Call 874-2246 after 5 p.m.

FOR SALE: AUTO. 1965 Plymouth Valiant, 4-dr. sedan. Auto. trans.,slant-6 engine. Runs well. $250. Call 595-1575 after 5:30 p.m. except Mon. or Thurs.

FOR SALE: WOOD-STOVE. Fisher Grandma Bear wood-burning stove, brick-lined, catalytic converter, used very little. VGC. Call 868-9219.

FOR SALE: GO-KART. 3 1/2 hp. Tecumseh go-kart w/fiberglass Camaro Z-28 body. Great Christmas surprise! $325. Call ext. 3707, or 868- 6245 after 6

FOR SALE: 27" 10-speed bicycle, GC. $50; two 27" 10-speed bicycles, good for parts, $15 each. Skis, Hexcel blue lights 175cm, Technica boots size 8, Gese bindings, poles, all for $140. Wall unit and two matching end tables, $150 nego. Call 874-7454 after 4 p.m.

Aerospace Items for Christmas Giving

-photo by Bob Nye

GIFT ITEMS FOR THE AEROSPACE ENTHUSIAST OF EVERY AGE ARE AVAILABLE AT THE VISITOR CENTER SOUVENIR COUNTER. The items shown above range in price from $.05 to $10 and are just a few of those available at the Souvenir Counter. Cece Huffman, counter manager, will set up a Christmas Shop in the cafeteria again this year for the convenience of Center employees. You can shop for those unique items and stocking stuffers from December 8-18 during lunchtime or at the Visitor Center through 4:30 p.m. on Christmas Eve.

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

Langley Emergency Information System 865-2111

402 ON-SITE NON-LARC
SKORA, MARY M.
MAIL STOP 115 BLDG 1219

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23665-5225

Official Business
Penalty for Private Use $300

NASA
National Aeronautics and
Space Administration

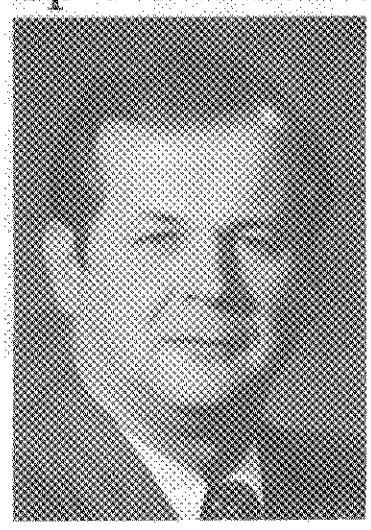
Langley Research Center

Volume 1, Issue 12 December 18, 1987

Bi-weekly Employee and Contractor Publication

News Researcher

Spitzer Named IEEE Fellow



Cary R. Spitzer, Manager, Program Plans and Contracts, Advanced Transport Operating Systems Program Office, has been named a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). This honor is conferred on Spitzer "for technical leadership in the development and application of electrical and electronic systems for aircraft."

The IEEE is the largest professional engineering society in the world. The Institute boasts over 290,000 active members. IEEE Fellows comprise the highest ranking members of the society and less than one in a thousand members are selected as Fellows yearly. The grade of Fellow recognizes unusual distinction in the profession and is conferred upon persons of outstanding and extraordinary qualifications and experience in IEEE designated fields who have made important individual contributions that have been reflected in an improved quality of life for society.

Spitzer is the first member of the Hampton Roads Section to be nominated and selected an IEEE Fellow. He is pleased to be recognized by his peers on this wide scale. "Historically the support disciplines–structures, avionics, and the like–have played a secondary role in aviation. In recent years, avionics and the other support areas have begun to take a more integral part in the design of aircraft. I see my task as bringing together the power of the electron and the majesty of flight. And it's a great job!" Spitzer says.

Spitzer began his NASA career in October 1962 conducting research on thermal sensors for models

Continued on page 2.

Directors' Comments:

Holiday Greetings

1987 was a good year for Langley. We want to thank all of you who work so hard to make Langley great. You make our job easy and rewarding.

1987 was a time of transition for NASA, but that is almost over. 1988 will see the Space Shuttle in orbit again. In the words of Isaiah, "They who wait for the Lord shall renew their strength, they shall mount up with wings like eagles."

We wish each of you and your loved ones a joyful Christmas holiday and blessings in the New Year. "This is the day which the Lord has made; let us rejoice and be glad in it."

Pete Petersen
Paul Holloway
Bill Parks

'Super' Team Assembled

NASA/CNC Scientists Delve into Superconductivity

Dr. Charles E. Byvik, senior research physicist, Flight Electronics Division, has assembled a team—affectionately known on the second floor of Building 1202 as Byvik's Brigade—that has plunged the Langley Research Center into one of the hottest and most promising fields in science ... Superconductivity.

Superconductors carry electrical current without the wasteful loss of energy found in normal conductors. The phenomenon, discovered in 1911, had been considered a laboratory curiosity because of the low temperature (about 20 degrees Kelvin or -427 degrees Fahrenheit) required for its occurrence.

In early Fall of 1986, Georg Bednorz and Alex Muller at the IBM Zurich Research Laboratory discovered a new class of materials, a Barium-Lanthanum- Copper Oxide system, that became superconducting at significantly higher temperatures (about 30K). Bednors and Muller shared this year's Nobel Prize for their discovery.

Shortly after the IBM breakthrough, C. W. Chu, M. K. Wu and their collaborators in the U.S. confirmed superconductivity at temperatures over 90 degrees Kelvin in a Barium-Yttrium-Copper Oxide (BAYCO) system. This group had been supported with Director's Discretionary Funds from NASA Huntsville. The March meeting of the American Physical Society exploded with news of this work and that of several other groups worldwide who were studying the new materials.

-photo by Paul Bagby

Gathered in close to see the tiny Shuttle model react to the superconducting material cooled by liquid nitrogen are Byvik's Brigade: (L to R) Randall Caton, Martin Buoncristiani, Charles Byvik, and Raouf Selim. The NASA/CNC physicists are working on a technique to fabricate current- carrying superconducting wires.

When word of this meeting reached Byvik and Dr. Martin Buoncristiani, a professor of physics on leave from Christopher Newport College (CNC) and serving as a NASA senior research associate at Langley, they realized that it would be possible to fabricate the materials locally.

The two teamed with Dr. Randall Caton and Dr. Raouf Selim, physicists from CNC with expertise in Superconductivity. The union of these four and the enthusiastic support from Center personnel has allowed Langley to get into the research that could lead to incredible savings in energy.

"We started with the single goal of making high temperature superconducting material and reached this goal with BAYCO this summer," reports Buoncristiani.

Following this success, the Brigade accepted the challenge of fabricating current-carrying wires for sensors and superconducting magnet applications. They have joined forces with researchers at Clemson University who have developed a technique for fabricating wires from other ceramic materials.

"One problem we had to face before this new material could be utilized was to develop a good, low resistance electrical contact to allow ceramic superconductors to join with other materials," says Caton. The CNC/NASA scientists tackled this problem and developed a gold bead contact which has resistance in the micro-ohm range and is strongly bonded to the ceramic material to make a very robust mechanical contact.

"This new contact will allow much more current to flow through the BAYCO than previously possible," says Selim. The limiting factor had been the high resistance of the contact which would burn out before the material reached its full current-carrying potential.

Byvik summarizes, "Langley applications of superconductors will include improved sensors in the far infra-red for remote sensing of the atmosphere as well as superconducting magnets for magnetic suspension of models in Langley's wind tunnels." This second capability would eliminate the need for model support stings and the elaborate calibrations necessary due to their presence.

Byvik's Brigade has placed Langley research on the cutting edge of a renewed and potentially invaluable frontier of science and technology . . . Superconductivity.

See information on other events of interest in the field of superconductivity on page 3.

News Briefs

HEADQUARTERS, Washington, D.C. — NASA has released a report on an extended-duration Space Shuttle orbiter. Prepared at the request of the Congress, the report examines key aspects of a program that would allow the Space Shuttle to perform Earth-orbital missions for as long as 16 days. The benefits of an extended-duration orbiter could be significant for space science, technology, applications, and commercial users, both before and during the Space Station era.

AMES RESEARCH CENTER, Mountain View, Calif. — A NASA scientist has made the first accurate measurement of the amount of carbon dioxide flowing from Earth's interior. The finding, by geochemist David Des Marais of Ames, provides insight into climate, plate tectonics, and the evolution of living organisms on the planet. The research supports theories that early Earth had a hot climate when life began.

HEADQUARTERS, Washington, D.C. — NASA has announced the selection of four aerospace firms for final negotiations leading to award of cost-plus-fee contracts to design, develop, test and evaluate, and deliver the components and systems comprising the permanently manned Space Station to be placed into Earth orbit in the mid-1990's. The work to be performed is broken down into four packages, each containing a unique but interdependent portion of the Station. Companies selected for Phase I effort are: Boeing Aerospace Company, Hunstville, Ala., Work Package I; McDonnell Douglas Astronautics Co., Hunington Beach, Calif. and Houston, Tex., Work Package 2; General Electric Company, Astro-Space Division, Valley Forge, Pa. and East Windsor, N.J., Work Package 3; Rocketdyne Division, Rockwell International, Canoga Park, Calif., Work Package 4.

GODDARD SPACE FLIGHT CENTER, Greenbelt, Md. — NASA's Associate Administrator for Space Station, Andrew J. Stofan, has selected Grumman Space Systems, Bethpage, N.Y., and Martin Marietta Astronautics Group, Denver, Colo., for negotiations leading to the award of parallel, firm-fixed- price contracts for definition and preliminary design studies of the Space Station Flight Telerobotic Servicer (FTS). The FTS will be a space robot with automated features that will assist crews in the assembly, maintenance, and servicing of the Space Station and visiting spacecraft.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala. — A series of structural tests on the Space Shuttle solid rocket booster is scheduled to begin at Marshall. The tests will verify the structural integrity of the Shuttle booster's redesigned motor case, redesigned external tank attach ring, and redesigned aft skirt. During testing, maximum loads and internal motor case pressures, simulating those expected during prelaunch and flight of the Space Shuttle, will be applied to the test article.

AMES RESEARCH CENTER, Mountain View, Calif. — The world's two largest wind tunnels became fully operational on December 11 at Ames. The tunnels are housed in the National Full-Scale Aerodynamics Complex, a major resource for aeronautical research and development for the United States.

Spitzer Named IEEE Fellow

Continued from page 1.

being tested in various wind tunnels at Langley. He joined the Viking Project Office in February 1969 as Manager of the Molecular Analysis Investigation for the unmanned Mars Lander. Later he served as Deputy Director for Operations in the Science Analysis and Mission Planning Directorate of the Viking Flight Team and finally as Deputy Viking Project Manager for Langley Research Center operations.

From 1978 to 1985 Spitzer was assigned to the Systems Application Office where he formulated research programs in avionics (aviation electronics) for advanced aircraft and spacecraft.

In his current position, Spitzer maintains industry liaison with airline and aircraft manufacturers and provides definition for future research programs for transport aircraft operations.

Spitzer is past president and life member of the IEEE Aerospace and Electronic Systems Society and is presently Vice President of Publications. He has served on a number of IEEE national boards and committees. In 1984, he received an IEEE Centennial Medal in recognition of his exceptional service to the Institute and to the profession.

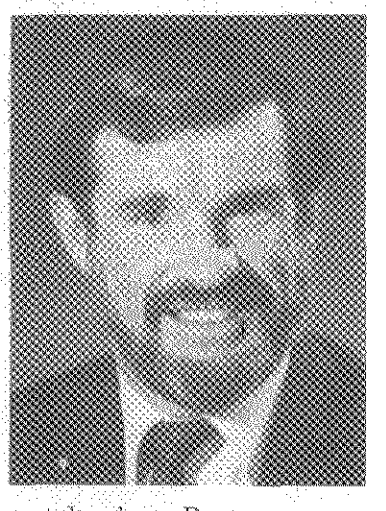
The author of over 35 technical papers, he has two patents and was editor of the book **Viking Orbiter Views of Mars.** He is the author of **Digital Avionics Systems**, recently published by Prentice-Hall.

A native of New Hope, Va., Spitzer received a bachelor of science degree in electrical engineering (communications option) from Virginia Polytechnic Institute and State University in 1958. He received a master of science degree in management engineering from George Washington University in 1970.

Editorials

Langley

Headquarters Forum



In this brief article, I will comment on unique attributes which continue to make NASA-LaRC a great place for aerospace research and development. I want to do this because I think it is often too easy to let some of the problems we face obscure the advantages we share.

The first attribute is our people. People working here are extremely capable, possess an enormously broad range of skills, and have a demonstrated capability to solve technical problems. Thus, when the Federal Aviation Administration asked for help in defining the airborne technology required to help alleviate windshear as a threat to aviation—our people had the knowledge and skills to define the appropriate program and start conducting the research.

This program involves detailed analytical modeling of complex atmospheric phenomena and analysis of forward-looking airborne radar designed to allow aircraft to detect and avoid windshears. It involves experiemental studies ranging from ground-based tests of the effects of heavy rain on the aerodynamic performance of aircraft to flight tests of the performance of radar sensors. It also involves bringing all these elements together with appropriate displays and control systems for evaluation by the pilots.

A second attribute of LaRC is that our facilities permit all of these activities to take place. Because we have these facilities, we can pursue the solution of significant problems from beginning to end—from concept development through analytical and experimental studies to simulation and flight validation.

We also have a significant amount of freedom in defining what we work on and in determining the approach to be used. To be sure, we have to contend with budget constraints, program reviews, and participation in advocating programs to a greater degree than we would like. Despite these contraints, we still enjoy a significant amount of freedom to make important contributions to aerospace science and technology.

Providing the airborne technology to reduce or eliminate the effect of windshear is but one example of how we can use the attributes which make LaRC a great place for aerospace research.

J. F. Creedon
Director for Flight Systems

Missing Camera

Anyone that may have borrowed a Mamiya ZE 50/1.7 35mm camera belonging to photo lab, please call Sal, ext. 3521. Camera inventory number is 473364; serial number is N217376.

Special Thanks

The editor wishes to thank the Photographics and Publications Sections and the Technical Editing Branch for their continued support and generous cooperation throughout 1987.

Lankley

Publication Dates Announced

This is the last issue of the **Researcher News** for 1987. Listed below are the deadlines and distribution dates for the first quarter of 1988.

Deadline	Distribution
January 7	January 15
January 21	January 29
February 4	February 12
February 18	February 25
March 3	March 11
March 18	March 25
March 31	April 8
April 14	April 22
April 28	May 6
May 12	May 20
May 26	June 3
June 9	June 17

Articles should be submitted to the editor, Mail Stop 115, by noon on the deadline date for inclusion in the noted issue.

Researcher News

The Researcher News, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Hampton, Virginia, 23665-5225, is published every other Friday in the interest of all Langley staff. Address contributions to the Editor, Mail Stop 115; telephone 865- 3707. Articles are due at noon on the Thursday following the date of this issue.

Managing Editor . . . Jean Drummond Clough

Editor . . . . . Marny S. Skora

Photographs . . . . . Photo Lab

The privilege of advertising articles in this publication is restricted to the staff 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 Colloquium and The Sigma Series

Crow to Address Superconductivity

There have been few advances in science that have excited the popular press and scientific community more than the recent breakthroughs in superconductivity. Applications of superconductivity, the total loss of resistance to electrical current, have been limited to temperatures in the vicinity of -270 C (-450 F). The recent discovery of a high-temperature superconducting material will enable applications previously inaccessible or expensive. The prospects are high for practical superconducting switches for high-speed computers, superconducting wires for efficient and powerful electric motors and low-loss power transmission.

Dr. Jack E. Crow, Acting Director of the Center of Materials Research at Temple University, will discuss "Superconductivity: Opportunities and Challenges" Monday, January 11, 1988, at the Langley Research Center. The lecture will be held in the Activities Center at 2 p.m., followed by a question and answer session and an informal discussion.

That evening, Crow will give the same lecture at the Radisson Hotel Hampton at 7:30 as part of The Sigma Series. The Sigma Series is a series of free public lectures sponsored by the Langley Research Center, the City of Hampton and the Daily Press.

In his lecture, Crow will explain superconductivity, tell what the new materials are and summarize the potential breakthroughs and how they will impact our lives. Crow says he hopes that "the phenomenon of superconductivity will now move out of the laboratories and become a useful new technology in fields of energy conservation, high-speed transportation, modern high-speed electronics and medical diagnostic areas."

Crow earned his doctorate in physics from the University of Rochester in 1967. He has been active in the field of superconductivity for the past 20 years and has published 90 articles in this field. He has been program director for the Division of Materials Research in the National Science Foundation.

Mark Your Calendar

Upcoming Event of Interest

An AIAA-sponsored lecture series on aerospace applications of High Temperature Superconductivity will be held at Langley on April 13 and 14, 1988.

The focus of the lecture series is to provide participants with the most recent information on the potential applications of new ceramic superconducting materials. Areas to be covered include preparation of thin and thick films and bulk materials, material compatibility issues, and applications in electronics power transmission and new sensors.

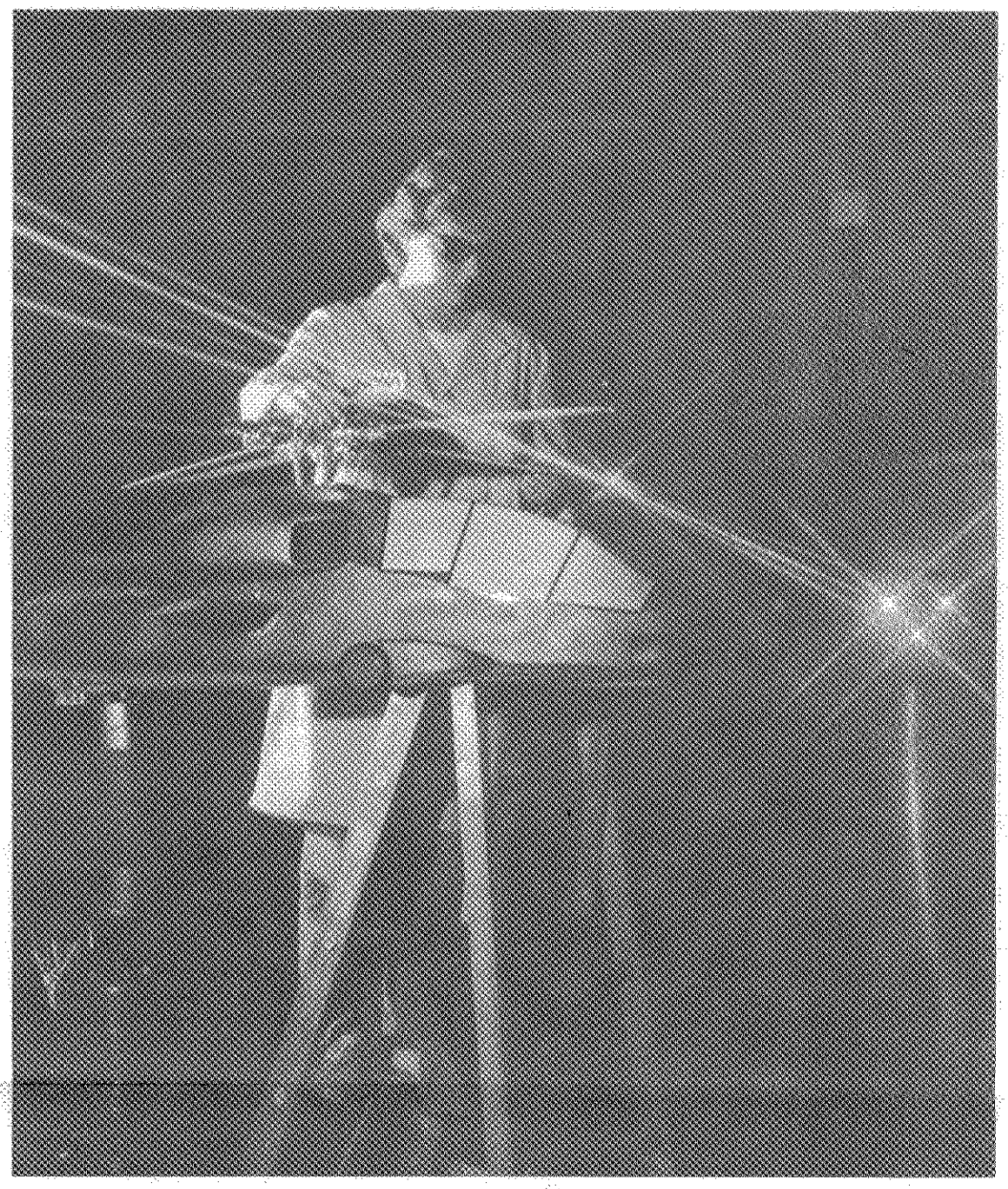
Informal discussion sessions will be combined with the lectures to provide free interchange between participants and nationally recognized experts in superconductivity.

For further information, contact Dr. C. E. Byvik, ext. 2818 or Ian MacConochie, ext. 4963.

NASA Gets ASTM Award

NASA recently received a Certificate of Recognition from the American Society of Testing and Materials (ASTM) in honor of the services of C. Michael Hudson. NASA was cited for supporting Hudson in his work at the center and in the society.

Earlier this year, Hudson received the ASTM Award of Merit and was named a Fellow of the Society for distinguished leadership in advancing the use of voluntary standards on fracture mechanics technology in industry and for exceptional service as chairman of the subcommittee on fracture mechanics applications.



Celebrating 70 Years of Research

Laser Lights the Way

Called a laser velocimeter, this research tool may help designers predict helicopter rotor performance by unobtrusively measuring complex air flows in difficult-to-get-to places.

The model, as tested in Langley's 14 x 22 foot subsonic tunnel, represents one idea for an advanced army helicopter. The work is the first step in a cooperative effort between the Army's Rotorcraft Aerodynamics Office and NASA to develop a comprehensive rotor wake measurement and anyalsis program.

Langley Activities Association Board of Directors

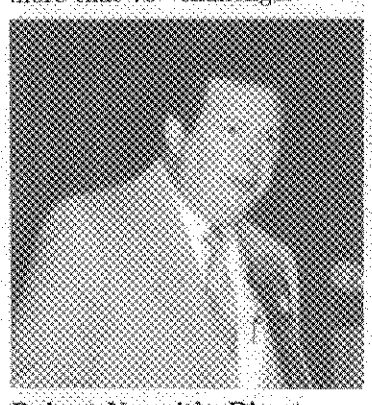
-photo by Don Ward

Langley Activities Association 1988 Executive Board members are gathered for the first board meeting since the election. Shown (seated, L to R) are Geoffrey Tennille, President; Pat Gates, Treasurer; Paula Ware, Secretary; Betty Hughes, Chairperson, Arts and Crafts Committee; Jean Clough, Chairperson, Publicity Committee; Bill Henley, Chairperson, Activities Committee; (standing) Al Bell, Vice President; George Palko, Chairperson, Building, Grounds & Safety Committee; and Eugene Hicks, Chairperson, Social Committee. Not pictured is Vernelle Robinson, Chairperson, Children's Committee.

Quality Circles Celebrate Fifth Anniversary

'Improvement by Involvement' Proven

Langley Research Center is the home of countless "firsts." Appropriately, Langley was the first NASA Center to employ the Quality Circle (QC) concept. Now, five years later, more than 200 employees have been actively involved in solving more that 70 "challenges."



Robert Nysmith, Director for Productivity, NASA Headquarters, addresses Quality Circle members.

Quality Circles solve problems. A form of participatory management, the program gives employees a voice in decisions that directly affect them and their work. The circles are composed of small teams of workers who meet regularly to identify and solve problems that hinder their productivity.

Very often, in the process, the members develop into close-knit teams. Camaraderie and morale are improved, the work environment becomes more agreeable, and members have had the satisfaction of seeing their ideas adopted by Center management.

QC members include technicians, managers, secretaries, clericals, administrative professionals, and contractor employees. Since the inception of the program in 1982, over 230 Langley employees have received training in problem-solving techniques.

Driven by the goals of enhancing communication and developing employee capabilities, QC activities have surpassed this initial challenge. Langley Quality Circles have completed more than 70 projects to date. "Tapping the resources of employee involvement is a sound investment for all concerned," states Bill Williams, Special Assistant for Productivity Improvement, Office of the Director for Management Operations.

C. M. "Skippy" Cole, Langley QC Coordinator, feels "the theme **Improvement by Involvement**, chosen for the fifth anniversary celebration, captures the Quality Circle philosophy. By being **involved**, the members have become team players. Their efforts have been the catalyst for **improvement** in Langley's daily operations."

All current and former QC members were recently honored at an awards ceremony held at the Activities Center. Speakers at the ceremony included Richard H. Petersen, Director; Robert Nysmith, Director for Productivity, NASA Headquarters; and Robert Swain, QC Steering Committee Chairman. Petersen summed up the thrust of the QC program: "It has definitely improved productivity and enhanced the quality of work at Langley."

Quality Circle Representatives Honored at Marshall

Members of Langley Quality Circles were recently honored at a Manned Flight Awareness Program at the Marshall Space Flight Center. Honorees are: (First Row, L to R) Anna Lockard, Leslie Ferguson, Marion Chaltry, Sandra Muraca, Suzanne Scarborough; (Second Row) Philip Glaude, Norman Willey, S. T. Strop, Diane Forrest, Philip Walker, and Everett Brown.

In Memoriam

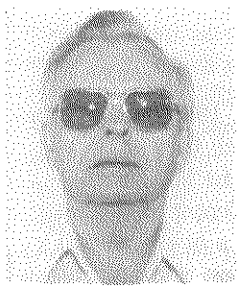
Donn F. Eisele, former Apollo astronaut, died December 1 of an apparent heart attack. He was 57.

Eisele was a crew member on the first successful Apollo spacecraft to orbit Earth. Eisele and two other astronauts blasted off atop a Saturn 1B rocket on Oct. 11, 1968, for the 11-day mission that took them around the world 163 times.

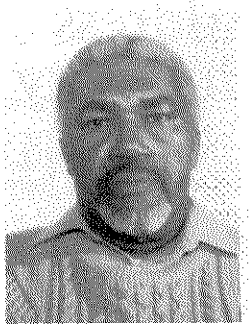
Eisele worked as a consultant at Langley from May 1970 until he resigned from NASA in 1972 to become director of the Peace Corps in Thailand.

Note of Thanks

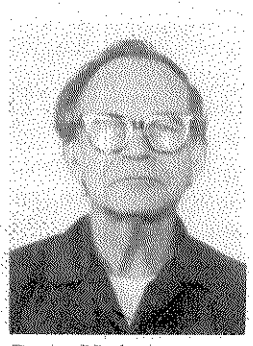
Jean Clough, Public Affairs Office, thanks her many friends for the kind expressions of sympathy received following the death of her mother, Elsie Westphal. "I have been overwhelmed by the visitors, cards, flowers, calls and food my family received, and by the memorials given in Mother's memory. My family joins me in thanking you for remembering us at this time. Knowing you care has helped us tremendously."



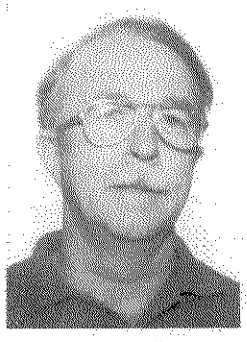
R. C. Redman



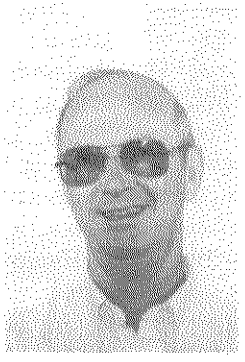
W. R. Fenwrick



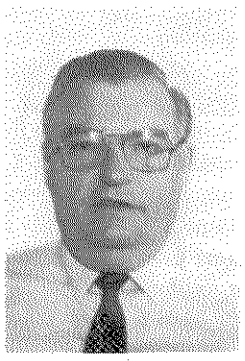
C. A. Holt



G. E. Woodbury

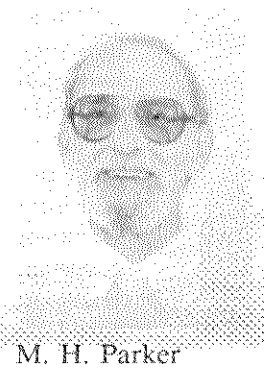


T. A. Blackstock



C. W. Stroud

R. R. McWithey



M. H. Parker

G. P. Gardner

C. B. Smith

C. F. Burge, Jr.

A. S. Wright, Jr.

Recent Retirees

Robert C. Redman, Analysis and Computation Division, retired September 1.

Willie R. Fenwrick, Operations Support Division, retired September 12.

Charles A. Holt, Fabrication Division, and **Gerard E. Woodbury**, Atmospheric Sciences Division, retired September 25.

Thomas A. Blackstock, Space Systems Division, retired September 29.

Columbus W. Stroud, Materials Division, retired September 30.

Robert R. McWithey, Loads and Aeroelasticity Division, retired October 1.

Maurice H. Parker, Office of Public Affairs, retired October 2.

Grace P. Gardner, Personnel Division, and **Carl B. Smith**, Instrument Research Division, retired October 30.

Claude F. Burge, Jr., Acquisition Division; **Harry V. Fuller**, Advanced Transport Operating Systems Program Office; **Richard Shaw**, Research Information and Applications Division; and **Andrew S. Wright, Jr.**, Systems Engineering Division, retired November 30.

Position Open

87-90: Supervisory General Supply Specialist, GS-2001-11, Management Support Division, Logistics Management Branch, Transportation and Warehousing Section. Closes December 28.

Retirement Party

H. L. Bohon will be honored at a retirement party on Friday, January 15, 1988, at the Activities Center. Plans were incomplete at press time. For further details, contact Phil Shore, ext. 2425, or Marva Mabry, ext. 4990.

People & Places

Patent Awarded to NASA Langley/Army Employees

Two Army engineers assigned to Langley Research Center's Low- Speed Aerodynamics Division have been awarded a patent for their work in improving directional control of single-rotor helicopters.

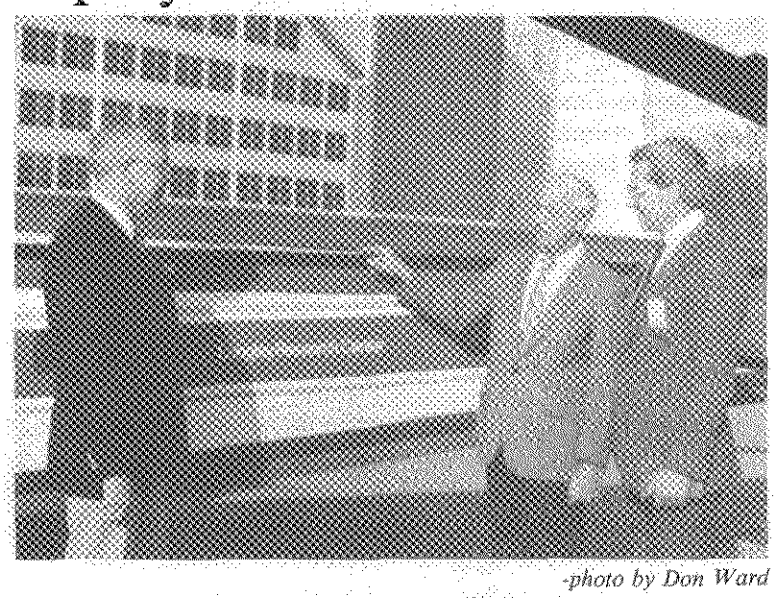
John C. Wilson, Head of the Rotorcraft Aerodynamics Office, and Henry L. Kelley, aerospace technologist, Subsonic Aerodynamics Branch, have proposed the use of a pair of strakes attached to the rear of the fuselage to improve the sideward flight capability of helicopters.

When hovering in crosswinds, helicopter fuselages are subject to twisting and turning pressure, called torque, due to being immersed in the downflow of air from the helicopter main rotor blades. The addition of the strakes, or aerodynamic spoilers, alters the air flow pattern over the tail boom of the helicopter and tends to balance this torque with the tail rotor.

The patented invention, which can be quickly and easily adapted to existing machines, improves helicopter yaw control and reduces the tail rotor thrust required in hovering flight in cross winds. The added controllability will contribute to the safety of helicopters. Kelley and Wilson call the addition of the strake "an application of a tried-and-true concept to achieve a new and novel result."

Wilson has worked at Langley for 17 years. He has received several Army Performance Awards, an Army Research and Development Achievement Award, and is the author of numerous technical reports. The holder of one patent, he has two others pending. Wilson and his wife, Concetta, live in Newport News. They have three children.

Kelley has worked at Langley for 28 years. He has received two NASA Achievement Awards, an Army Research and Development Achievement Award, and is the author of numerous technical reports. He has five patents pending. Kelley and his wife, Louise, live in Newport News. They have four children.



-photo by Don Ward

Henry Kelley (left) and John Wilson (center) point out the patented upper strake that has been attached to the Bell 204B helicopter to John C. Aybar, industrial service representative, Aerospace Research Applications Center. Aybar, under contract to NASA, acts as a liaison between Langley and private industry to initiate technology transfer.

Opportunities for Independent Research

Deadline for Thompson Fellowship Applications Nearing

The Floyd L. Thompson Fellowship, the Center's most prestigious fellowship, is also a challenging opportunity for Langley researchers.

Established in 1977 and named for Langley's second Director, the program is intended to encourage the development of research potential among the Langley staff and to infuse the Center with new ideas from specific fields of research being conducted at other institutions of excellence. Through the program, researchers who have demonstrated continued growth in research may pursue independent study at LaRC or may spend up to 12 months at an educational or research institution.

Fifteen Langley scientists, all from varied fields of study, have thus far been named Thompson Fellows. Dr. Thomas B. Gatski and Hugh P. Bergeron, 1987-88 Thompson Fellows, are currently pursuing independent research off-Center.

Gatski, a research scientist in the Viscous Flow Branch, High- Speed Aerodynamics Division, is spending an academic year at the University of Cambridge in England. He is conducting a numerical investigation of the receptivity of a laminar flat-plate boundary- layer flow of free-stream disturbances.

Bergeron, a senior research scientist in the Vehicle Operations Research Branch, Flight Management Division, is studying the issues and problems of air traffic control in high-density terminal areas at the Massachusetts Institute of Technology and at Ames Research Center. At MIT, he is conferring with controllers at Boston Logan Airport and is working with the MIT air traffic control simulation facility. After analyzing the reasoning and decision-making process used by air traffic controllers in formulating control strategies, he will program the derived strategies on the Ames Symbolics 3670 computer.

An advantage offered by the fellowship is the opportunity to work with renowned researchers. Gatski is working with Professor M. Gaster, a leading international researcher in the stability field at Cambridge. Gaster's experimental research into the physics of boundary-layer receptivity will supplement Gatski's numerical research.

In addition to the growth of the individual, the Center also benefits from the research of the Thompson Fellows. Bergeron hopes his work will result in a core program to be used at Langley, complementing the existing air traffic control simulation at the Center, for researching next generation air traffic control issues and problems.

The fellowship program, named in memory of Dr. Floyd L. Thompson, Langley Director from 1960-1968, is intended for non-supervisory researchers who have a minimum of seven years of service at Langley. While the research effort may last up to two years, no more than one year may be spent in a sabbatical away from the Center.

For those interested in applying for the 1988-89 fellowship, applications are available from George Allison, Employee Development Branch, Mail Stop 309. Applications are due January 15, 1988. One or two Fellows will be selected. The program supports recipients by providing salary, travel and per diem, as well as other general research expenses.

Alumni Association Salutes Langley 70th Anniversary

The Langley Research Center was honored at a 70th anniversary banquet and dance sponsored by the newly-formed Langley Alumni Association. "A Salute to Langley Research Center" paid tribute to the center, which began as an aeronautical research laboratory in July 1917.

Today Langley houses the world's most sophisticated and elaborate collection of laboratories, equipment, and wind tunnels for research in aeronautics and space technology.

The award-winning Show and Jazz Choir of Menchville High School provided special entertainment at the anniversary celebration. Dr. James R. Hansen, Langley historian and author of **Engineer in Charge: A History of the Langley Aeronautical Laboratory** was guest speaker. Attendees danced to the music of Langley retiree Charlie Johnson's band, sponsored by the Langley Exchange Council. The festivities capped a year-long celebration of the accomplishments of the center during the past 70 years.

The purpose of the Alumni Association, formed in February 1987, is to develop, maintain, and enhance the relationship among former employees of the Langley Research Center and to provide a mechanism for the Center to maintain contact with its former employees. The Association also provides an organized way for members to support special events at the Center and other activities of mutual interest.

Acting Chairman of the Board is William J. Boyer. The committees and their chairman are: Finance, Edmund A. Brummer; Membership, Domenic J. Maglieri; Nominating, Charles B. Kind; Program, Donald H. Ward; Attendance, Cornell Burcher; Social, Abraham Leiss; and Publicity, Joyce Wright. Betty Joyner is acting Secretary/Treasurer. Ann Suit and Jean Clough serve as NASA liaison for the organization.

The Alumni Association formal organizational meeting will be held on January 20, 1988, at which the Board of Directors will be elected.

Bill Boyer (right) presents Langley Director Richard H. Petersen with a Certificate of Recognition drafted by the Alumni Association to salute the 70th Anniversary of the Center.

James R. Hansen, Langley Historian and guest speaker for the evening, (right) speaks with former Langley Director Edgar M. Cortright and Mrs. Cortright.

Happenings

LAA OPEN HOUSE. The LAA Christmas Open House will be held December 23 from 10 a.m. to 2 p.m. in the Activities Center. Stop by for light refreshments and to wish your friends Merry Christmas.

NEW YEAR'S EVE DANCE. The Langley Activities Association will hold its annual New Year's Eve Dance in the Activities Center beginning at 9 p.m. December 31. Dance to music by "The Virginia Reelin" and enjoy setups, favors and breakfast for $25. Breakfast includes eggs, sausage, hash browns, biscuits and coffee. Make your reservations early to get a choice table. Tickets are available at the LAA Office.

VIRGINIA STAGE COMPANY presents "Holiday Festival in the Wells Theatre," a series of five events from December 18 through 23 to ring in Christmas Week in Downtown Norfolk. Call 627-1234 for details, reservations and ticket information.

FEDERAL ALMANACS can be ordered for $3.65 at the LAA Office through January 1988.

VIRGINIA CHORAL SOCIETY will present Christmas concerts **tonight**, Dec. 18, at Christ & St. Luke's Church, Olney Rd. in Norfolk; Saturday, Dec. 19 at First Presbyterian Church, Hampton; and Monday, Dec. 21 at Williamsburg Baptist Church in Williamsburg. All concerts begin at 8 p.m. There is no admission charge, but a donation is welcome. For details, call the VCS office at 851-5515.

NELSON HOUSE HOLIDAY. Colonial National Historical Park will sponsor a holiday open house at the historic Nelson House on Main Street in Yorktown, Dec. 19-Jan. 3, from 11 a.m. to 4 p.m. daily except Christmas Day. Admission is free. Call 898-3400 for information.

DISNEY FILMS. LAA Walt Disney Film Festival will feature "Alice in Wonderland" on Sunday, January 10, in the Activities Center. Movie time is 2 p.m. Admission is FREE. Popcorn and drinks available. For more information, call Vernelle Robinson, ext. 2691.

LAA SOCIAL will be held Friday, January 8, 1988, from 4 to 6:30 p.m. in the Activities Center.

LAA BOARD. The Langley Activities Association Executive Board will meet Tuesday, January 12, at 9:30 a.m. in the Activities Center. Concerns to be brought before the board should be addressed to the appropriate committee member.

AL-ANON and AA meetings are held every week during lunch time at Langley. For information call the Clinic, ext. 2246, or the Health Office, ext 2605.

swap and shop

FOR SALE: AUTO. 1978 Chevrolet Nova, 2-door. new tires. Very reliable. $500. negotiable. Call Brian at ext. 3344 or 484-7770.

FOR SALE: HORSES. To good home only. One 11-yr. old quarter horse gelding and one 7-yr. old 3/4 Arab pony gelding. Would prefer to stay together. Call Norma Davis, ext. 2417 or 238-3509 after 5.

Alumni News and Views

The Langley Research Center Alumni Association will hold its formal organizational meeting on January 20, 1988, at 6 p.m. in the Activities Center. A no-host social and dinner will be followed by a meeting to elect the Board of Directors by the attending membership.

A mailing will be sent to the membership shortly with more detailed information concerning the evening's function. Mark this date on your calendar and make plans to attend this important organizational meeting of your alumni association.

Watch the **Researcher News** for further details or call 722-0443 for information.

Ski NASA '88

Jan. 14	Wintergreen
Jan. 21	Bryce
Jan. 28	Massanutten
Feb. 4	Wintergreen
Feb. 11	Bryce
Feb. 18	Massanutten
Feb. 25	Wintergreen
Mar. 3	Bryce

Cost: $39.00
(includes transportation and lift ticket.)

Questions?? Call Bennett at 599-5585.

Bowling Stats

	December 1	December 8
Team High Game	1014 Scramjets	1001 Guys & Gals
Team High Series	2791 Scramjets	2804 ACD
Male High Game	256 **R. Rubrecht**	247 **G. Andrews**
Male High Series	611 **L. Curtis**	644 **R. Muraca**
Female High Game	195 **R. Lord**	193 **B. Williams**
Female High Series	533 **R. Frizzell**	544 **R. Frizzell**
Most Pins over Average	74 **W. Williams**	83 **G. Bayless**
		72 **P. Delozier**

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National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23665-5225

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CLOUGH, JEAN W.,
MAIL STOP 115 BLDG 1219

-photo by Paul Bagby