

Intelsat launch links 74 nations

On Monday, January 25, after three one-day holds because of high winds aloft, Lewis launched Intelsat IV on an Atlas/Centaur from Cape Kennedy. The mission was the fourteenth for Lewis' Atlas/Centaur program.

The International Telecommunications Satellite Consortium (INTELSAT) is a 74-nation organization sponsoring the global communications network with satellite links. The COMSAT Corporation is the United States affiliate firm and manages the program. Intelsat IV is the fourth generation of commercial satellites designed to provide expanded global communications for member nations. To date, twelve Intelsats have been launched, mostly by Delta boosters. This launch is the first of four to be launched by Atlas/Centaurs, and is the first time a commercial firm (COMSAT) has operated a satellite launched by Lewis.

The Atlas/Centaur launch vehicle places the Intelsat IV spacecraft on a transfer ellipse, with a solid rocket motor on the spacecraft circularizing the orbit to nearly synchronous.

Managing the launch at Cape Kennedy were Center Director Bruce Lundin, Director of Rockets and Vehicles Dr. Seymour Himmel, Launch Vehicles Division Chief Edmund Jonash, and Intelsat Project Engineer Jerry Stribling. Other launch team members are Russell Dunbar, Carl Wentworth, Richard Flage, Martin Braun, Charles Kerrigan, Andrew Leavitt, Henry Synor, Edmund Ziemba, John Nechvatal, Andrew Gordan, Joseph Nieberding, Robert P. Miller, Kenneth Adams, Omer Spurlock, John Quitter, Donald Garman, Herbert Ledyard, Donald Zelten, Eugene Fourney, Clifford Arth, John Staskus, Dale Pope, John Bulloch, Richard Heath, Russell Corso, and Hugh Harris. Intelsat IV was designated Atlas/Centaur 25.

**LEWIS RESEARCH CENTER
CLEVELAND OHIO
January 29, 1971**

Spurlock earns Master's

O.i Frank Spurlock of the Advanced Systems Division earned a Master's degree in mathematics from Cleveland State University at its commencement ceremonies held last month.

After earning a Bachelor's degree from the University of New Mexico, Spurlock started at Lewis in 1962. In the Advanced Systems Division, he is involved in work connected with determining the payload capability for a given mission.

A bachelor, Spurlock lives in Brooklyn, Ohio.

He received aid from Lewis' Training Branch while studying for his advanced degree.

July 2, 1971i

Up the ladder

September 9, 1983

Charles W. Slaughter has been selected as Chief of the Fabrication Branch in Lewis' Fabrication and Support Technologies Division.

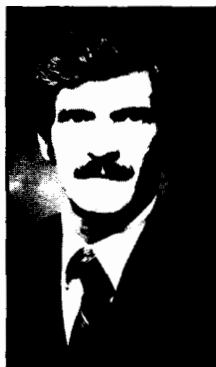
Since beginning his NASA career 28 years ago as an apprentice model maker, Slaughter has served in a number of capacities including his recent post as Section Head of the Machining and Metal Processing Section.

Duties of his new job include supervising the work of more than 100 technicians involved in fabrication and procurement of wood and metal research hardware.

In addition, Slaughter will manage the development of a state-of-the-art ultra-precision machining area which will provide the Center with in-house capability of lathe and drill operation measured in millionths of an inch. Dimensions that precise are crucial to a number of experiments underway at Lewis which may fly aboard the Shuttle.

The new chief of the Test Installation Division's Tunnels, Altitude Chambers and Flight Branch at Lewis is **Victor T. Hudach**.

In his new post, Hudach will guide the efforts of nearly 100 electrical and electronic technicians and research lab mechanics responsible for the integration of research hardware in the Center's primary wind tunnels, altitude chambers and flight



Slaughter



Hudach

operations test facilities.

He joined the lab in 1962 as an apprentice aerospace mechanic, and has worked in a variety of posts since then, including his prior position as Head of the Energy and Spacecraft Section.

Hudach has been active in the Supervisor's Club at Lewis, having formerly served as club treasurer, vice president and president.

Omer F. Spurlock has moved up to Head of the Mission Design and Performance Section, Space Transportation Engineering Division, after serving as an aerospace engineer in that section for 21 years.

His new responsibilities include managing trajectory mission design analyses for the Center's Atlas-Centaur and Shuttle-Centaur launch vehicles.

Matching specific mission requirements with the capabilities of each vehicle, the section is involved with preparations for Galileo -- the Jupiter probe -- and the International Solar Polar Mission, both scheduled for launch in 1986 and both of which will rely on the Shuttle-Centaur as the upper-stage booster.

Awards to Lewis staffers total \$71,825

At Special Achievement Awards ceremonies held recently at the Center, 314 Lewis staffers received citations and shared cash awards totaling \$71,825.

There were 55 individual award recipients and 25 group awards.

"The purpose of these ceremonies is to publicly and monetarily recognize specific Lewis staffers for their important contributions to the Center's mission," said Director Andy Stofan.

"The Special Achievement Awards are granted for performance exceeding normal job requirements over an extended period of time or for special acts or services that involved overcoming unusual difficulties or resulted in significant economies to the Center."

And in a letter to each award recipient, Stofan wrote:

"I feel strongly that our Center must use all available means to show its appreciation to those who make notable contributions, and I am pleased that we are able to provide cash awards to recognize outstanding efforts.

"For this reason, it is my sincere pleasure to present you with this check. You have my thanks on behalf of the Center and NASA for your exceptional performance and accomplishment."

Individuals who received awards are:

Joyce E. Bergstrom, Robert F. Lawrence, Judy Montfort, Robert A. Sparks, Burdell L. Detterman, William T. Pinter, Jean A. Chapman, Peggy L. Evanich, Robert Steinberg, James F. Soeder, Charles E. Towne, Steve Gonczy, Francis J. Paulovich and Harold W. Schmidt.

Also Diane M. Klein, Thomas H. Bond, Cynthia S. Szanca, Loretta M. Shaw, Lawrence G. Oberle, Robert R. Tacina, Roger A. Svehla, Kerry L. McLallin, Bruce M. Shuman, Ted W. Nyland, Miles O. Dustin, William E. Frey, Lawrence A. Thaler and Elaine A. Mauro.

Also Marton Forkosh, Margaret Benko, Warren F. Davis, Edward A. Maskowski, Arthur N. Curren, Robert E. Post, Raymond F. Lark, James R. Winemiller, Dale A. Wolfe, Robert F. Roman, Barry Stephenson, Norman S. Melnyk, Leroy L. Saracco and Christopher Teodecki.

Also Frank L. DeAngelo, William F. Gross, John J. Juhas, Joseph A. Nedoh, Frank V. Slam, Leland E. Anderson, Charles G. Moon, Roland B. Allen, Peter W. Weber, Edward J. Takacs, Arthur E. Sprungle, John E. Zeman and Arthur M. Trout.

Also William H. Crell Jr., Charles W. Putt, Phyllis A. Geffert, John R. Brasty, Janice M. King, Joseph P. Joyce, Neal D. Rowe, Albert Kaufman, Robert E. Cunningham, Thom A. Coney, Steven R. Winegar, and George R. Sharp.

Also Gary D. Sagerman, James Magrini, Everett C. Armentrout, Shirley A. Joseph, Ralph P. Kuivinen, Gregory W. Schade, Phillip M. Kall, James F. Gaffney, James Mierzejewski, John J. Logan Jr., Carl W. Richter and Ronald A. Dawson.

Group awards were made to these individuals as grouped:

Procurement: Robert E. Freed,



Lawrence Ross, Director, Space Flight Systems Directorate, congratulates Centaur Secure Computer group member Annie Easley.

Joan M. Oravec, Charles W. Putt, Richard B. Canright Jr., Patricia A. Cataldo, Daniel Cica, David A. Remaklus, Theodore H. Sheridan, David C. Hopkins, Glenn R. Cowgill, Norbert L. Seidel, Patricia A. DiSiena, Kevin P. Coleman, Henry T. Knurek, Jerome E. Rodak, Lamont T. King, Carolyn S. Suddreth, Anthony W. Hackenberg, Allan R. Bishop, Leo F. Donovan, Karin E. Huth, Ernest Roberts Jr., Glen A. Boltz, Robert P. Jones, John E. Zeman, Neel D. Fauber, Roger J. Trivisonno and Kimberly Destro.

Data Acquisition: Philip Z. Blumenthal, Martin F. Ginley, John E. Moss Jr. and Robert P. Keeney.

Laser Anemometer Measurements: Anthony J. Strazisar, Robert J. Schroeder, Michael Hathaway, Michael Pierzga, James Densham, Charles Hnatek, Edwin Pocta, Richard Spangle and Clyde Albergottie.

HPLC Fuels: Gary T. Seng and Dumas A. Otterson.

Navy Low Pressure Turbine: Warren J. Whitney, Roy G. Stabe, John R. Schwab, Thomas P. Moffitt and Jack Chargo.

AWT Research, Operations, Advocacy, Planning: Bernard J. Blaha and Roger Chamberlin.

RSRA/X-Wing: Kaleel L. Abdalla, Joseph D. Eisenberg, Jack G. McArdle, James F. Sellers, Anthony J. Strazisar and Douglas Rohn.

Quasi Three-Dimensional Flow Code and Verification: Theodore Katsanis, Robert J. Boyle and Jeffrey Haas.

AMDAHL Procurement Installation: Allan R. Bishop and Leo F. Donovan.

ADPE and Equipment Section: Dianna H. Corso, Karin E. Huth, Robin M. Strohacker, Erick N. Lupson, Michelle A. Mader, Anne M. Fedro, Joann G. McGuire and Jo Ann M. Mayer.

Conversion of Letter of Credit Funding for Grants: Darlene A. Hemmerich, Carolyn B. Podway, Helen C. Monroe, Willie P. Wagasky, Mary J. Hoyman, Mary W. Jonic and

John J. Morley Jr.

40 KW Fuel Cell: Francis O. Driscoll, Julio C. Acevedo, James E. Calogeras, Rudolph A. Duscha, Roy L. Pickrell, Stephen N. Simons, Marvin Wareshay and John R. Reagan.

Materials Division Best Paper: David L. McDanel and Robert A. Signorelli.

S&MT Division Best Paper: Gary R. Halford, Michael A. McGaw, Michael J. Verrilli and Robert C. Bill.

National Ceramographic Award: Sunil Dutta and Bruno C. Buzek.

Single Crystal Furnace: Darrell J. Gaydosh, Michael V. Nathal and Grant M. Brown.

Electronic Scanning Pressure System: Leonard Abbott III, Charles J. Boros, Curtis B. Carl, Nicholas J. Cerino, David B. Diamond, Ronald L. Emerson, Thomas C. Fuller, Ernest A. Gray Jr., Michael R. Johnston, Ralph M. Joyce, David E. Justavick, Edward J. Kostyack, John C. Lewis, Gary C. Meyer, Charles A. Sako, Jack D. Schuerger, Lawrence C. Schultz, Timothy K. Shaltens, Kent A. Smith, William T. Spilker, Gary W. Thomas and Paul Antozak.

Escort III Team: Chi Chiu Wypasek, Juan Rivera, Michael A. Robertson, John H. Snead, Donna L. Miller, Luann J. Palley, William T. Dedula, Otis D. Anderson, John P. McAlea, Gerald P. Buchar, Eugene Brattoli, Otho W. Artis, Bernard K. Cieslak Jr., Steven R. DeBarr, Vance Farrow, Richard A. Fulton, David J. Hubeny Jr., Johnny C. Huff, William J. Kundtz, Thomas J. Marino Jr., Charles J. Stauffer, Dennis G. Raible, Ernest Bertone II, Robert D. Takac and Lawrence Turske.

10 x 10 Supersonic Wind Tunnel: Richard C. Booth, Frank Slovak, Dennis M. Thompson, Richard M. Herrlich, William M. Korhely, Thomas J. Marino Jr., Dominic J. Ruccella, Henry R. Smith, Walton Howes, Orlando Ugucini and Kenneth Baskin.

Central Air Systems Project: Charles C. Giamati Jr., Lawrence M. Hibben, John A. Webb Jr., Eugene J.

Cieslewicz, John A. Mihevic, Donald R. Canfield, William F. Schwarckopf, James A. Dutka, Jose M. Vega, Joseph J. Pishkula and Donald Cooksey.

Automation of C of F Budget Request: Kathryn A. Kahl, Norma L. Nead, James R. Davis, Deborah L. Thompson, Carol L. Cooksey and Nancy N. Larson.

PSL No. 4 Exhaust: Juanita L. Williams, John E. Combs, John J. Carroll and Donald Cooksey.

Centaur Secure Computer Facility: Joan M. Oravec, Glenn R. Cowgill, David A. Remaklus, Arthur D. Brenza, Donald C. Braun, Kevin P. Coleman, Burdell L. Detterman, Henry T. Knurek, Pamela Kotlenz, Robert J. Weigand, George L. Banker, Andrew F. Corcoran, Rita M. Turske, Dianna H. Corso, Anne M. Fedro, Karin E. Huth, Robin H. Strohacker, John J. Nieberding, Omer F. Spurlock, Timothy J. Wickenheiser, James D. McAleese, Kelly S. Carney, Paul Manos, Annie J. Easley, Paul G. Choma, Robert A. Meyer, Erwin M. Lauffer, Robert A. Noel, Paul Panasik and Neel D. Fauber.

Quality increases were also granted to 67 employees for above average achievement and high quality work performance: Patricia A. Furfaro, Reinhold Mohr, Kathleen T. Dorsey, Daniel Cica, William L. Naiman, Joan M. Oravec, David C. Hopkins, Sasi K. Pally, Mona K. Marchetti, Mark A. Copfer, Harold Broderson, Gary L. Schuldnt, Glenn Cowgill, Bruce R. Canright, Debra L. Greist, Shirley L. Livingston, Leo A. Burkardt, Robert J. Baumbick, Dale J. Arpasi, Paul L. Burstadt, Richard L. Barth, Thomas J. Benson and Chi-Rong Wang.

Also Jacob Martin, Ronald W. Sepesi, Theodora S. Ruth, Mary R. Palfy, Agnes M. Quint, Kathryn L. Ferrini, Carol J. Madey, Robert J. Stochl, Peter J. Staiger, Russell E. Hart, Mark A. Hoberecht, Long V. Truong, James R. Gaier, Lorra L. Rieker, Theodore W. Wright, Nancy A. Horansky, Katherine Harris, Gene Schwarze and Harold Neustadter.

Also Judy Y. Auping, Eliseo DiRusso, Edward R. Generazio, Wilfredo Morales, Patricia A. Parker, Bruce M. Steinetz, Marjorie M. Trujillo, Raymond D. Vanucci, Samuel A. Alterovitz, John M. Bullöch, Margaret M. Schuler, Richard C. Braley, Joseph L. Fiala, Thomas M. Klucher, John P. Riehl, Jack F. Lekan, Judith L. Symons, Jerry Smetana, Wallace D. Williams, John A. Mihevic, William F. Hyde, Charles E. Yesberger, David A. Bender, Jose M. Vega and Carol L. Cooksey. □

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Editor James Francescangeli

Students Enjoy Opportunity To Tackle Real Problems, Explore Career Options

The solutions to problems in the "real-world" aren't found at the end of a chapter in a textbook as they are in the classroom. That's one thing college students from around the United States are discovering during their twelve-week summer internships at Lewis. Coordinated by the Office of University Affairs, the internships also give students a valuable opportunity to explore career options in science and engineering.

Jean Seurer, a chemical engineering major from Texas A&I in Kingsville, TX, is working with Wilfredo Morales of the Surface Science Branch of the Materials Division. She has been using high pressure liquid chromatography (HPLC) to analyze the results of chemiluminescence tests.

"It's the kind of experience I had hoped I would be getting," said Seurer. She plans to pursue a career in research and says she has always wanted to work for NASA.

"I can't believe I'm here; it's a dream come true," says Seurer. She read about NASA internships in a magazine published by the Society of Women Engineers.

"I'm having a wonderful time," adds Seurer. She was lucky enough to get tickets to the sold-out musical "Cats" downtown, enjoys the on-site Jazzercise classes, and has join-

ed fellow interns for a trip to Cedar Point.

An Exciting Atmosphere

Mary Jo Meyer, a Ph.D. candidate in nuclear engineering at the University of Missouri in Rolla, is working with Barbara McKissock of the Nuclear and Thermal Systems Office of the Power Technology Division. Meyer is helping implement software for comparative analyses of heat exchangers for the SP-100 Program. Although she is uncertain about her ultimate career goals, her work here at NASA is reaffirming her interest in heat and mass transfer.

She learned about internships at Lewis from Joe Sovie, chief, Nuclear and Thermal Systems Office, who sent her faculty advisor information about the program.

"I didn't even know that Lewis Research Center existed," said Meyer, "I was surprised that it was so big and there was so much going on. There's a lot of fascinating work being done here. It's an exciting atmosphere."

Accustomed to living in a relatively small town, she's had to adjust to Cleveland traffic. But Meyer says she is impressed by Cleveland's art museum and enjoys bike riding in the Metroparks.

Tim Swanson, who is majoring in mathematics and economics at Wake Forest University, is doing basic mathematics and computing of eigen values in the Computational Fluid Dynamics Branch, Internal Fluid Mechanics Division. His proctor is Dr. Meng-Sing Liou. Swanson plans to go to graduate school and hopes his experience at Lewis will help him decide whether to pursue mathematics or economics.

"I'm learning that real world mathematics are very different from what's taught in the classroom," says Swanson. "The basic concepts are the same, but the problems you work at the end of the chapter are nothing like what I'm doing here."

He learned about internships from his favorite professor, who is spending his second summer here as a faculty fellow.

Swanson believes that Cleveland's bad image is undeserved but said he wouldn't want to visit here in the winter.

"In the South you hear that Northerners are not as friendly," says Swanson. He learned that wasn't true when he had to spend three days in a Cleveland hospital a few weeks ago.

In his spare time he plays golf and goes to baseball games with fellow interns, works on his home computer, or visits his girlfriend in Akron.



"It's the kind of experience I had hoped I would be getting," says Jean Seurer, a chemical engineering major from Texas A&I. She has been using high pressure liquid chromatography to analyze the results of chemiluminescence tests.

"At first, I was kind of in awe about working at NASA," says Swanson, but he has since found it to be a relaxed and comfortable place to work.

Making New Friends

Roque Martin is majoring in electrical engineering with an option in computer science at the University of Miami in Florida. Under the guidance of Jim Sovey of the Auxiliary Propulsion Branch, Space Propulsion Technology Division, he is writing a data acquisition program for life testing of the resistojet propulsion system for the Space Station.

Although he's undecided whether he'll seek a job immediately after graduation or go on to graduate school, he believes that, "Wherever I go, working at a place as prestigious as NASA will obviously help me."

He is also pleased with his assignment, "I feel like I'm contributing. It's something I can be proud of."

Martin learned about the internship program from a letter from Judy Montfort of the Office of Equal Opportunity Programs published in "Minority Engineering" magazine.

"I'm really impressed with the sheer quantity and quality of the scientific research going on here and the willingness of people to talk about their work," said Martin.

A native of Miami, Martin has found the Cleveland area to be a little more industrial than he is used to: "The architecture is different and I'm not used to driving by a Ford plant on my way to work."

He's rooming with another student intern Chris Lindell in a house in Brookpark. They like to lift weights at Tri-C and have been to Parties in the Park, the Flats, Cedar Point, and other Cleveland attractions.

Chris Lindell is a mechanical engineering major at the University of Wisconsin at Madison and member of the Air Force ROTC.



Engineering students Roque Martin, (left) from the University of Miami in Florida, and Chris Lindell, from the University of Wisconsin at Madison, have become friends since renting rooms in the same house in Brookpark.



Tim Swanson, who is majoring in mathematics and economics at Wake Forest University, hopes his experience at Lewis will help him decide which field to pursue in graduate school.



Most of the students working at Lewis this summer had a chance to get acquainted during a social June 3 at the Guerin House. ABOVE LEFT: (Left to right): David London, of Purdue University, Erik Beard, of Tennessee State University, and Gregory Mitchell, of Rensselaer Polytechnic Institute. ABOVE RIGHT: (Left to right): Sharon Houck, from Miami University, Christi Gau, from Iowa State University, and Gene Wagner, from the University of Illinois.



"I was surprised that Lewis was so big. There's a lot of fascinating work being done here," says Mary Jo Meyer (above left), a Ph.D. candidate in nuclear engineering at the University of Missouri at Rolla.

Stan Crow, an aeronautical engineering major at the Air Force Academy, spent six weeks at Lewis as part of the Academy's Cadet Summer Research Program. After leaving Lewis June 26, he returned to Colorado to instruct a parachuting course.

After graduation, he plans to attend flight school and become an Air Force pilot. Eventually, he would like to fly some of the advanced aircraft currently being developed by the Air Force and NASA or the Space Shuttle.

Lindell, whose proctor is Dr. Joseph Savino, Nuclear and Thermal Systems Office of the Power

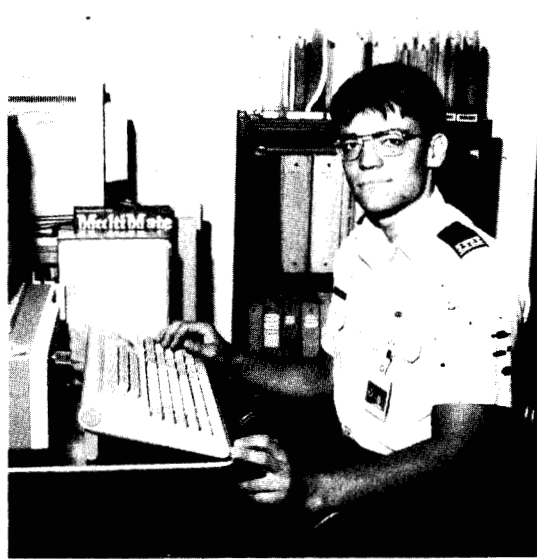
Technology Division, is working on a computer program to model a thermal energy storage system experiment that may be flown on the Space Shuttle. Lindell also has done some materials studies for the collector of the Space Station solar dynamic power system.

He learned about internship opportunities when Matthew Melis, of the Structures Division, ad-

ressed a group at the University of Wisconsin.

"When I talked with Melis afterwards, I was impressed by his knowledge of advanced aircraft and involvement with hypersonic technology," says Lindell, "So I decided to apply for an internship here."

In addition to partying with roommate Roque Martin, Lindell



enjoys running after work with a group from the Air Force Systems Command Liaison Office including Lt. Col. Jerry Vanden Bosch.

Also included in that group until recently was Stan Crow, a cadet from the Air Force Academy in Colorado Springs. An aeronautical engineering major, Crow spent six weeks at Lewis as part of the Air Force Academy's Cadet Summer Research program.

With the support of Frank Spurlock, chief of the Systems Analysis Branch of the Advanced Space Analysis Office, and guidance from Allan Willoughby of Analex, Crow worked on a computer program on the visibility of satellites.

The biggest benefit of working here, according to Crow, was the opportunity to see what kinds of positions are available in research and engineering.

"I'm most impressed by the quality of the people who work here—they're highly educated, which is what you'd expect from NASA," said Crow.

In his spare time Crow made weekend trips to Canada and Niagra Falls and has gone

"I'm impressed by the sheer quantity and quality of the research going on here."

parachuting. Originally from Boise, ID, he said his assignment at Lewis was his first real trip east of Colorado. He was impressed by the size of Lake Erie and the sight of ocean-going ships so far inland.

Crow's last day at Lewis was June 26. After visiting family in Nebraska and Idaho, he planned to return to Colorado and instruct a course in parachuting.

Better Than The Typical Summer Job

Although it's impossible to publish the impressions of all the students working at Lewis this summer, it's likely that many of them share similar views about their experience at Lewis.

Tim Swanson probably summed up the feelings of many when he said, "Last summer I worked in a drug store in Greensboro. This is definitely more interesting than working in a drug store."



Advanced Space Analysis Office Asks Lewis Experts To Help Formulate Future NASA Initiatives

What if NASA established a base on the moon? How much power would be needed and what type of power system would be best?

- What if NASA planned a manned mission to Mars early in the next century? If the journey would take many years today, could that time be cut with new propulsion technologies?

- What if NASA needs to build an on-orbit cryogenic fuel depot? What kinds of technologies must be developed first?

- What if expendable launch vehicles were used instead of the Space Shuttle to carry supplies to the Space Station? What kinds of ELV's would be most appropriate and what types of supplies could be transported and returned?

These are just a few of the many questions being addressed by the Advanced Space Analysis Office (ASAO) formed at Lewis in the fall of 1986.

The primary goal of the ASAO is to make sure that Lewis expertise is actively involved and recognized in formulating future NASA initiatives.

Currently the ASAO is involved in more than 60 activities for six different Codes at Headquarters. The 42 Lewis and contractor employees assigned to the ASAO are supported in their work by teams of scientists and engineers from throughout the Center.

Changing The Center's Image

"Lewis has traditionally not been viewed as having a focused advanced planning effort in space," says ASAO Chief Joe Nieberding. Although a focused advanced planning effort has existed in the Aeronautics Directorate's Advanced Planning and Analysis Office for years, this same type of effort for space programs was not

focused in one organization and was performed throughout the Space Flight Systems, Space Station Systems, and Aerospace Technology Directorates.

At senior management's request, a committee chaired by Tom Cochran studied the need for a more centralized focus for advanced planning for space programs. The committee recommended the formation of an advanced analysis and planning office, now known as the ASAO. The committee believed that having an office provide such a focus would benefit Lewis technology programs through closer alignment with the evolving NASA missions.

Although it is a Division-level Office located in the Space Flight Systems Directorate, the ASAO also works closely with the Space Station Systems and Aerospace Technology Directorates and draws support from many other groups at the Center, such as the Engineering Directorate.

Many of the ASAO's studies are for the Office of Exploration (Code Z) at Headquarters which was formed in 1987 to define and analyze missions proposed to achieve the goal of expanding human presence in space. Code Z is focusing on broad studies of potential lunar and Mars initiatives and working with other Codes to identify the prerequisite investments in science and advanced technology.

Code Z depends heavily on the ASAO here and similar groups at other Centers to provide the required technical support. In general, Code Z has given each Center specific assignments; Lewis has been named Code Z's special assessment agent for power and propulsion.

For example, a related precursor mission to a possible manned mission to Mars might be an un-



The Advanced Space Analysis Office is led by: Joe Nieberding, chief; Tom Miller, deputy chief; and Dick Lancashire, assistant chief for programs. The Office includes 39 other Lewis and contractor employees assigned to two Branches. The Mission Assessment and Applications Branch focuses on assessing mission plans and requirements, identifying options, and advocating Lewis involvement; the Systems Analysis Branch conducts the system analyses required to determine which options are best for Lewis involvement.

The Mission Assessment and Applications Branch is led by Don Palac, chief, and Dr. Robert Stubbs, deputy chief. The Systems Analysis Branch is led by Frank Spurlock, chief, and Joseph Nainiger, deputy chief.

Shown above: (seated, left to right) Tom Miller, Joe Nieberding, and Dr. Robert Stubbs; (standing, left to right) Dick Lancashire, Joseph Nainiger, Frank Spurlock, and Don Palac.

manned sample acquisition and return mission. For this study, the ASAO suggested that Lewis expertise in power, propulsion, communications, mechanisms, and transportation could be used to enhance the mission. More power, for example, could expand the range of the Mars rover vehicle.

The ASAO is also working with the Headquarters Offices of Commercial Programs (OCP), Space Science and Applications (OSSA), Space Flight (OSF), Aeronautics and Space Technology (OAST), and Space Station (OSS) on a variety of tasks (See chart below.)

Specific tasks include:

- Projecting the power and propulsion needs of advanced space missions, ranging from evolutionary Space Station missions to complex lunar or Mars missions;
- Assessing the broad range of technologies required for an orbiting fuel depot;
- Establishing and maintaining a comprehensive data base on the capabilities and characteristics of all the different types of expendable launch vehicles in the world;
- Studying the Centaur as a possible upper stage for the NASA heavy lift launch vehicle; and
- Assessing the feasibility of launch payloads on a variety of expendable launch vehicles.

In addition, the ASAO provides mission design support to the Launch Vehicle Project Office for Atlas and Titan missions.

Making Smart Choices

Lewis has joined other Centers in recognizing the benefits of having an overall planning office for advanced space activities; most of the other Centers have similar offices, ranging in size from a few employees to more than 100. The Lewis ASAO is working to build a rapport with advanced planning offices at Marshall, Johnson, Goddard, Langley, Ames, Kennedy, and JPL and with similar groups in the Air Force. ASAO representatives have also met with senior managers at the various Codes at Headquarters to promote the capabilities at Lewis.

Nieberding says advanced planning is an excellent mechanism for fostering better cooperation among the Centers and providing a very broad view

of the space program as a whole.

He notes that gaining such a broad perspective can be valuable in helping the Center make smart strategic choices in the future. Not only is involvement in NASA planning a good way to identify opportunities, but it also is a good way to help the Center focus on research and technology that might be needed and applied in the future.

In terms of advocating Lewis' involvement in future projects, Nieberding emphasizes that, "A lot of the roles we advocate are not necessarily lead roles. In many cases, the ASAO advocates supporting roles, such as in space communications, where Lewis has developed a group of experts in the ACTS Project Office and Space Electronics Division and through its work on past programs."

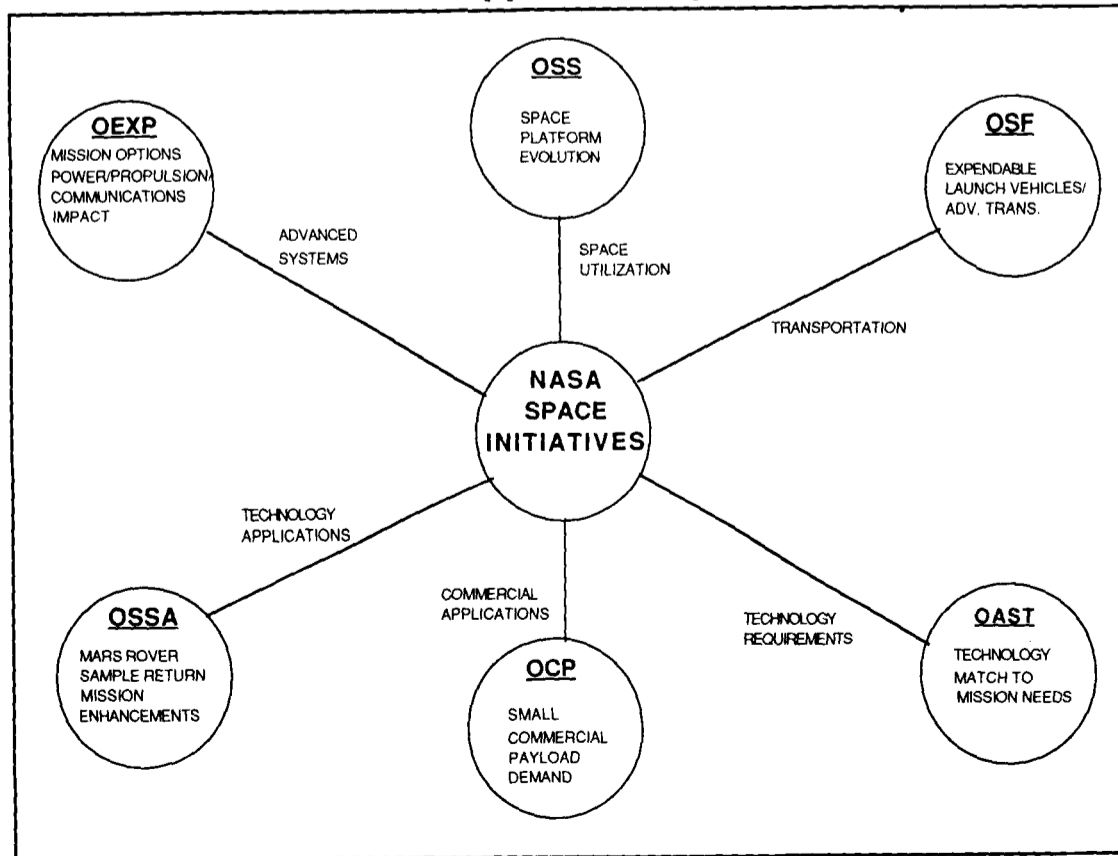
Substantial Progress

Although the ASAO has been in operation less than two years, it has made an impressive start, as evidenced by its growing number of responsibilities and the increasing recognition of Lewis capabilities.

Part of the group's success can be attributed to its balanced blend of skills and experiences. The ASAO staff comes from a wide variety of Lewis organizations, including: the Space Experiments, Power Technology, and Space Electronics Divisions; the Launch Vehicle Project Office; the Space Station Systems Directorate; and the Air Force.

With the continuing support of the Divisions throughout Lewis, the ASAO team is committed to ensuring that the special expertise developed at Lewis over the years is put to maximum use in strengthening NASA's future.

Current Lewis Support For Space Initiatives

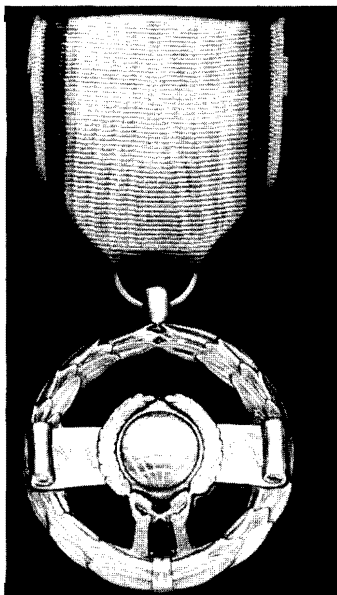


By working with a variety of Codes at Headquarters, the Lewis Advanced Space Analysis Office (ASAO) is gaining a very broad perspective of the space program and future NASA space initiatives. Currently, the ASAO works closely with six Headquarters Offices: the Office of Exploration (OEXP); the Office of Space Station (OSS); the Office of Space Flight (OSF); the Office of Aeronautics and Space Technology (OAST); the Office of Commercial Programs (OCP); and the Office of Space Science and Applications (OSSA).

1990 Honor Awards Recipients

DISTINGUISHED SERVICE MEDAL: *John M. Klineberg*, director of LeRC, for technical direction and leadership of research and technology programs.

EXCEPTIONAL SERVICE MEDAL: *Kenny E. Aguilar*, deputy chief of Human Resources Management Division; *Armen S. Asadourian*, deputy chief of the Instrumentation and Data Systems Branch; *Gerald J.*



EXCEPTIONAL SERVICE MEDAL

Barna, deputy of Integration of the Center's Space Station Freedom Directorate and chief of the Systems Engineering and Integration Divisions; *Peter G. Batterton*, chief of the Supersonics and Powered Lift Branch; *Kenneth W. Baud*, aerospace engineer serving as a technical advisor to the chief of the Launch Vehicle Project Office; *Thomas H. Cochran*, deputy director of the Space Station Freedom Directorate; *James H. Diedrich*, chief of Aerodynamics, Icing, and Flight Branch; *Richard T. Gedney*, manager of the Advanced Communications Technology Satellite (ACTS) Project Office; *Howard D. Jackson*, heading Advanced Communications Technology Satellite (ACTS); *Richard B. Lancashire*, Mission Assessment and Applications Branch; *Carl F. Lorenzo*, Advanced Control Technol-

ogy Branch; *Carl E. Lowell*, deputy chief of the Materials Division; *William J. Middelndorf*, chief of the Electronic and Control Systems Division; *Harold E. Neustadter*, chief of the Information Systems Service Branch in the Operations Division; *George A. Pinkas*, chief of the Structural Systems Branch; *James R. Ramler*, chief of the Space Electronics Division; *Joseph A. Saggio*, Comptroller of Lewis Research Center; *Jack A. Salzmann*, chief of the Microgravity Science and Technology Branch of the Space Experiments Division; *Francis J. Shaker*, deputy chief of the Structural Systems Dynamics Branch; *Robert J.*

"It's the people who make things happen. It is you folks here today that are the kind of people that make NASA tick,"—NASA Deputy Administrator J.R. Thompson.

Shaw, deputy chief for Applied Aerodynamics, Propulsion Systems Division.

EXCEPTIONAL ENGINEERING ACHIEVEMENT MEDAL: *Thomas J. Benson*, deputy chief of the Computational Methods Branch; *Lawrence J. Bober*, deputy chief of the Propeller and Acoustics Technology Branch; *Rodrick V. Chima*, acting head of the Turbomachinery Technology Branch; *Irving G. Hansen*, Power Technology Division,

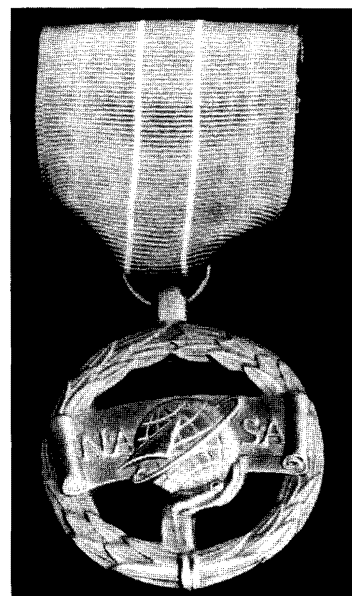


EXCEPTIONAL SCIENTIFIC MEDAL

Electrical Components and Systems Branch; *Theodore W. Porada*, Electronic and Control Systems; *Erwin V. Zaretsky*, Structures Division.

EXCEPTIONAL SCIENTIFIC ACHIEVEMENT MEDAL: *J. Anthony Powell*, Engine Sensor Technology Branch, for pioneering research and innovation in the development of silicon carbide.

OUTSTANDING LEADERSHIP MEDAL: *David C. Byers*, Space Propulsion Technology Division, Low Thrust Propulsion Branch, for leadership in low-thrust propulsion technology; *J. Stuart Fordyce*, director of Aerospace Technol-



EXCEPTIONAL ENGINEERING MEDAL

Couch, *Kenneth DeLaat*, *Augustine Delaney*, *Annie Easley*, *Robert Edwards*, *David Evans*, *Ronald Everett*, *Walter Fenning*, *Richard Flage*, *Wilson Ford*, *Randall Furnas*, *Lawrence Gentile*, *Gary Golinski*, *Theresa Goodwin*, *Scott Graham*, *Vincent Grebe*, *Frank Greco*, *William Groesbeck*, *Klaus Gumto*, *Nancy Horton*, *Rudolph Inglesias*, *Rill Ingle*, *Robert Jabo*, *Thomas Jentner*, *Richard Kalo*, *Harold Kasper*, *Michael Kinkelaar*, *Martin Kisel Jr.*, *William Klein*, *John Klineberg*, *Paul Kuebeler*, *Ralph Kuivinen*, *Raymond Lacovic*, *Vincent Lalli*, *Raymond Lacovic*, *Vincent Lalli*, *Raymond Lark*, *Kuan Lee*, *Michael Makenin*, *William Mason*, *James McAleese*, *Robert Metroka*, *William Middendorf*, *Robert Miller*, *Theodore Mockler*, *Carl Monnin*, *Edwin Muckley*, *Thomas Niezgoda*, *Donald Noga*, *Cecil O'Dear*, *Richard Oeftering*, *Richard Orzechowski*, *Donald Perdue*, *Clarence Pierce*, *David Plachta*, *Edwin Procasky*, *Debra Rak*, *John Reagan*, *David Repas*, *William Rice*, *Jean Rogers*, *Robet Robal*, *Dennis Rohn*, *Francis Rooker*, *Lawrence Ross*, *Harold Sample*, *Rafael Sanabria*, *Noel Sargent*, *Lois Scaglione*, *George Schaefer*, *Eugene Schiopota*, *William Schoren*, *Margaret Schuler*, *Thomas Seeholzer*, *Karen Sherman*, *Jack Shinn*, *Michael Skor*, *Robert*

Smith Jr., *Gerald Snyder*, *Isadore Sonkin*, *Earl Sprague*, *Cynthia Stepka*, *Margie Studley*, *Steven Szabo Jr.*, *Andrew Szaniszlo*, *Thomas Tokmenko*, *Dennis Vanco*, *Mary Kay Varholick*, *Vernon Weyers*, *Ulrich Wiedenmannott*, *Lynne Wiersma*, *Stephen Wiersma*, *Joseph Wikete*.

DISTINGUISHED PUBLICATION AWARD: *Khairul Zaman*, *Daniel J. McKinzie*, *Christopher L. Rumsey*, in recognition of their publication "A Natural Low-Frequency Oscillation of the Flow Over an Airfoil Near Stalling Conditions."

FIFTY-YEAR SERVICE EMBLEM; *C. Robert Morse*, Operations Engineer, Aero-propulsion Facilities and Experiments Division.

FORTY-FIVE-YEAR SERVICE EMBLEM: *Richard H. Cavicchi*, aerospace engineer, Internal Fluid Mechanics Division; *Roger W.*



EXCEPTIONAL LEADERSHIP MEDAL

Luidens, aerospace engineer, Aero-propulsion Analysis Office.

FORTY-YEAR SERVICE EMBLEM: *Robert W. Graham*, chief of Technology Assessment Office, Office of Interagency and Industry Programs; *Arthur E. Sprungle*, mechanical engineering Technician, Propulsion and Fluid Systems Division.

History Lessons



Photo by Marty Brown

The New Employee Orientation Program (NEOP) recently held the first of a series of presentations aimed at introducing employees to the history of aeronautics and astronautics in general and relating to NASA. John DeLaat, Advanced Controls Technology Branch (right), was one of the volunteers who led the presentations. He is pictured with Marsha Krob, Test Installations Division (left), and Edmond Wong, Advanced Controls Technology Branch (middle). They were among the employees, hired between 1989-1990, who attended the event. Those who volunteered to lead the presentations included: Helen Kourous, Mike Ciancone, David Robinson, Donald Palac, and Frank Spurlock.

Shaland helps construct cultural bridges to understanding

By Doreen B. Zudell

IRENE Shaland, a member of Lewis' Library Branch, is building bridges. Through her unique background and experience, Shaland is helping Americans better understand Russian culture.

"I saw a need to understand who the people are on the other side of the table," said Shaland, who lived in Leningrad most of her life. In addition to her role as reference librarian, Shaland has worked as a facilitator/mediator during numerous discussions on both space and aeronautics-related issues.

From her work with the Telemedicine Space Bridge, to the space station redesign efforts, to the latest teaming to explore planets and launch solar probes, Shaland has employed her personality and professionalism to help Lewis form international alliances.

"It was soon apparent that Irene's skills went considerably beyond simple interpreting. By helping us understand the Russian people and they us, she's enabled us [Lewis] to be more productive than ever before in our discussions," explained Frank Spurlock, deputy chief for Systems Analysis, Advanced Space Analysis Office.

That translating of "culture" as well as language prompted Michael Ciancone, Safety Assurance Office, to approach the Office of Human Resources Management to develop a Russian culture class for Lewis employees. "Using our in-house talent [Irene] rather than off-site contractors saved Lewis money and enabled us to gain the insight necessary to work professionally with the

Russians," Ciancone said.

What resulted is a unique 20-hour course, taught by Shaland on Monday mornings, covering Russian history, politics, art, science, education, and psychology. "I don't teach a traditional cultural studies class," Shaland said. "I provide personal insight into Russians as human beings, and how they see the world."

According to Vanessa Webbs-Thurman, Office of Human Resources Development, Shaland's Russian culture class has been well received since it first began in January 1994. "Formal evaluations of the class indicate high approval," Webbs-Thurman said. "People love it."

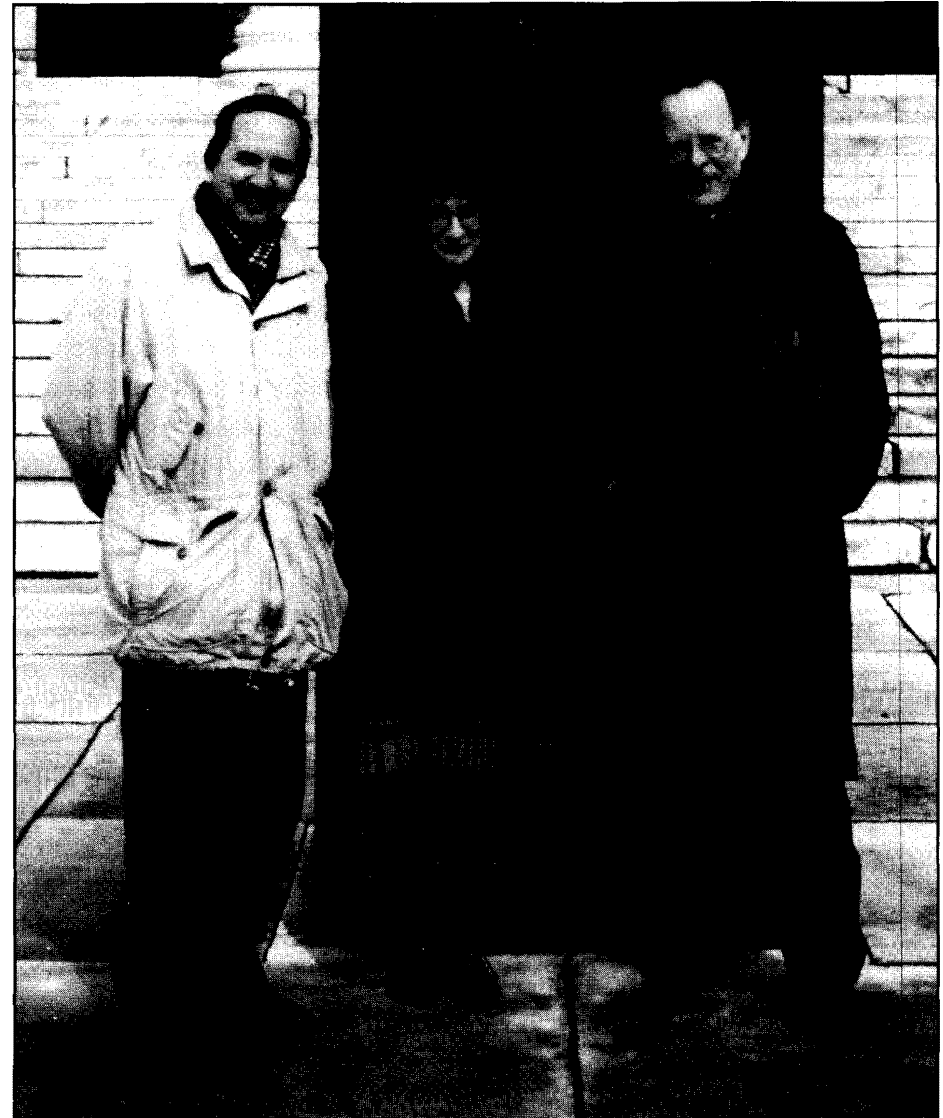
Shaland has completed three 20-hour courses and will begin a fourth in the near future. Classes are on a volunteer basis, and are attended by employees of varying backgrounds. In addition, Shaland's classes are expanding to other NASA centers. She will be conducting a condensed Russian culture training course at the Jet Propulsion Laboratory, Pasadena, CA, and Goddard Space Flight Center, Greenbelt, MD.

Advocates of the Russian culture class realize there is criticism at Lewis of training that is other than technical, but they know from personal experience that courses such as this can be just as important. "Training in these 'soft' subjects can increase the overall productivity of the Center and significantly improve our working atmosphere," Spurlock said. Like Spurlock, many class participants have put their knowledge to use during visits to Russia.

To Shaland, gaining knowledge and

understanding of other cultures is a necessity in today's world. "We live in a global village," Shaland said. "There's no such thing as local conflict anymore. What happens to them [Russians], happens to us."

Shaland does not view her role as simply an interpreter, however. "I bring people together and make things happen," she said. ♦



Irene Shaland, a member of Lewis' Library Branch (center), has helped Lewis host numerous Russian dignitaries during United States visits. She is pictured in front of the Cleveland Art Museum with Dr. Sergei Shaevich (left) and Professor Vlagdimir Karrask (one of the fathers of the Russian space industry), both from the Khrumichev Center, Moscow.

Buyouts move NASA towards FTE reduction goal

FIFTY NASA Lewis civil servants took buyout options as of Jan. 3, 1997. Please note that while most employees wanted their names and photographs featured, some requested that their information be withheld from publication. Retirements as of Feb. 3, 1997, will be featured in the March issue of the Lewis News.

Henrikas Bankaitis (not pictured), Office of Safety, Environmental & Mission Assurance, retired with 34 years of NASA service.

Kenneth Baumeister, Structures and Acoustics Division, retired with 37 years of NASA service.

Joyce Bergstrom, Community and Media Relations Office, retired with 17 years of NASA service.

Laszlo Berke (not pictured), Structures and Acoustics Division, retired with 18 years of NASA service.

Earl Bloam, Engineering Design & Analysis Division, retired with 35 years of NASA service.

Frank Brady (not pictured), Engineering Design & Analysis Division, retired with 34 years of NASA service.

Charles Calvert, Financial Management Division, retired with 31 years of NASA service.

Ronald Chucks, Engineering Design & Analysis Division, retired with 35 years of NASA service.

John Collins, Engineering Design & Analysis Division, retired with 34 years of NASA service.

Harry Davison, Aeropropulsion Research Program Office, retired with 33 years of NASA service.

Richard Edkin, Microgravity Science Division, retired with 32 years of NASA service.

Joseph Etzler, Test Installations Division, retired with 31 years of NASA service.

James Faddoul, Aeronautics Directorate, retired with 33 years of NASA service.

Fredric Goldberg, Computer Services Division, retired with 40 years of NASA service.

Katherine Harris (not pictured), Engineering Design & Analysis Division, retired with 25 years of NASA service.

Suzanne Hembly (not pictured), Logistics & Technical Information Division, retired with 26 years of NASA service.

Thomas Herbell (not pictured), Materials Division, retired with 35 years of NASA service.

Robert Horansky, Facilities & Test Engineering Division, retired with 39 years of NASA service.

Robert Jabo (not pictured), Office of Safety, Environmental & Mission Assurance, retired with 35 years of NASA service.

Richard Knoll (not pictured), Launch Vehicle & Transportation Project Office, retired with 37 years of NASA service.

Curt Liebert (not pictured), Instrumentation & Controls Division, retired with 42 years of NASA service.

Fay Maldari (not pictured), Facilities & Test Engineering Division, retired with 6 years of NASA service.

Linda Mazure (not pictured), Logistics & Technical Information Division, retired with 33 years of NASA service.

Robert Miner, Materials Division, retired with 27 years of NASA service.

Allan Moore, Facilities & Test Engineering Division, retired with 34 years of NASA service.

Royce Moore, Aeropropulsion Research Program Office, retired with 34 years of NASA service.

Edwin Muckley, Launch Vehicle &

Transportation Projects Office, retired with 33 years of NASA service.

Eric Olsen, Engineering Design & Analysis Division, retired with 35 years of NASA service.

John Power, Power & Onboard Propulsion Technology Division, retired with 36 years of NASA service.

William Prochazka (not pictured), Manufacturing Engineering Division, retired with 10 years of NASA service.

Charles Robertson, Facilities & Test Engineering Division, retired with 35 years of NASA service.

Ronald Schertler, Space Communications Office, retired with 33 years of NASA service.

John Shannon, Structures & Acoustics Division, retired with 43 years of NASA service.

John Smithrick (not pictured), Power & Onboard Propulsion Technology Division, retired with 35 years of NASA service.

Adolph Spagnuolo (not pictured), Facilities & Test Engineering Division, retired with 34 years of NASA service.

Omer Frank Spurlock (not pictured), Systems Engineering Division, retired with 35 years of NASA service.

Robert Stochl (not pictured), Turbomachinery & Propulsion Systems Division, retired with 35 years of NASA service.

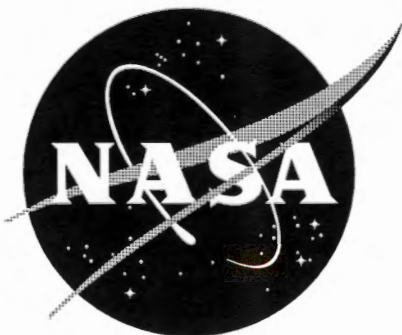
Fred Teren, Research and Technology Directorate, retired with 35 years of NASA service.

Wayne Thomas, Facilities & Test Engineering Division, retired with 33 years of NASA service.

Carl Weegman (not pictured), Office of Safety, Environmental & Mission Assurance, retired with 31 years of NASA service.

Donald Wiese, Institutional Safety Office, retired with 21 years of NASA service.

Dale Wolfe (not pictured), Test Installations Division, retired with 33 years of NASA service. ♦



More Than a Memory

JULY 2014

O. Frank Spurlock, 74, a 1997 retiree with 35 years of service, died May 29. Former deputy chief for Systems Analysis, Advanced Space Analysis Office, Spurlock was a respected supervisor, mentor and mathematician supporting NASA's launch vehicle program. He wrote the 3D computer program used to calculate performance and trajectories for Atlas Centaur and Titan Centaur launch vehicles for almost 30 years. A memorial mass is scheduled for Saturday, July 12, 11 a.m. at St. Thomas More Church, 4170 North Amber Drive, Brooklyn, Ohio 44144.



Spurlock