



National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# Goddard News

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## Joseph H. Rothenberg named Goddard Center Director

Joseph H. Rothenberg is the new Director of the Goddard Space Flight Center, NASA Administrator Daniel S. Goldin announced on July 27. Rothenberg had been the Center's Deputy Director since rejoining NASA from industry in April of this year.

In making the announcement, Goldin said, "Since returning to NASA, Joe Rothenberg has proven himself to be one of our most capable managers. I am very proud that he will be leading Goddard, our center of excellence for space and Earth sciences."

Rothenberg rejoined NASA from Computer Technology Associates, Inc., Space Systems Division, McLean, Va., where he was executive vice president. From 1990 to 1994, he was Associate Director of Flight Projects for the Hubble Space Telescope (HST) at Goddard. In this position, he directed the development and execution of the successful first servicing mission of the HST.

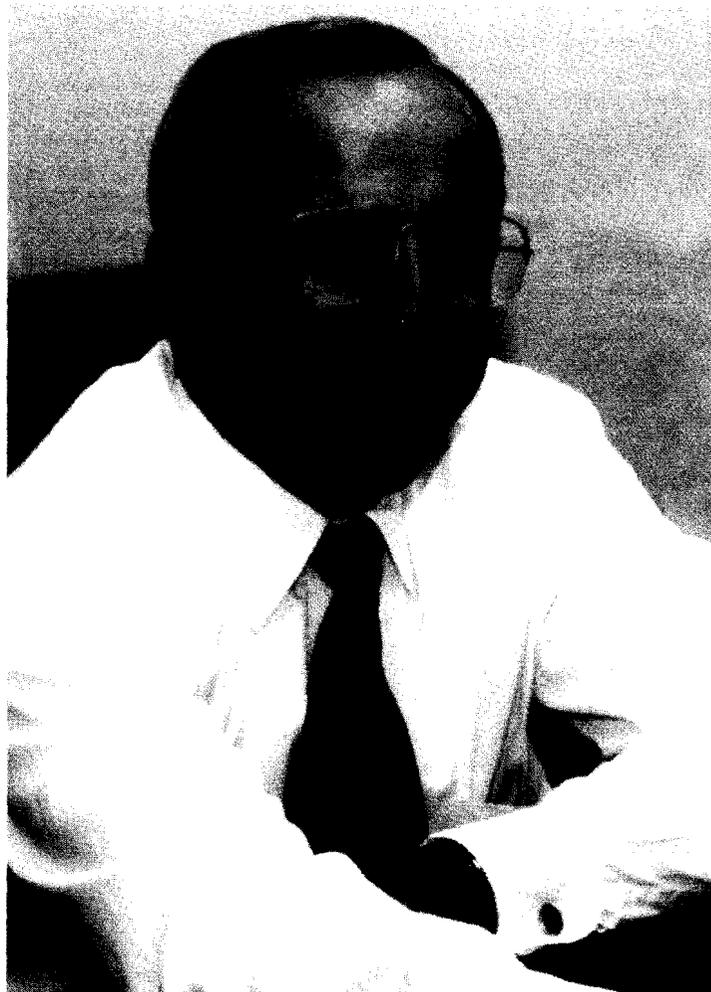
The new director began his career with Grumman Aerospace in 1964, ultimately serving as staff project engineer to the director of engineering for test and operations and as Project Manager for Goddard's Solar Maximum Mission.

In 1983, Rothenberg joined Goddard as Operations Manager for the HST. In that position he led the NASA team responsible for developing and conducting orbital operations of the HST.

In April 1987, he was appointed Chief of Goddard's Mission Operations Division. In September 1989, he was appointed Deputy Director of Mission Operations and Data Systems, followed by his appointment in 1990 as Associate Director for Flight Projects for the HST.

Rothenberg holds a bachelor of science degree in engineering science and a master of science degree in engineering management both from C.W. Post College of the Long Island University. He is a member of the American Institute of

Aeronautics and Astronautics (AIAA) and past president of the Long Island Section of the Instrument Society of America. He was the recipient of a Presidential Rank Award in 1995, NASA's Distinguished Service Medal in 1994, Senior Executive Service Meritorious Executive Award in 1994, the AIAA's Goddard Astronautics Award and the National Space Club Goddard Memorial Award in 1994, the Collier Trophy in 1993, and NASA's Exceptional Service Medal in 1990.



**Joe Rothenberg**

Photo by Mark DeBord

# Director's Dialogue



**Q:** To help further reduce costs, would you consider allowing employees (especially those with critical skills) the option of part-time work.

**A:** Over the past 10 years, the Center has employed approximately 30 to 50 part-time employees each year. Although part-time employees represent only a small percentage of the Center's total

population, the number of part-time employees each year has been increasing. Excluded from these numbers are many cooperative education students who, because of work/education schedules, also are employed part-time. Part-time schedules generally range from 16 to 32 hours per week.

Any employee who is interested in part-time employment is strongly encouraged to first discuss the matter with their personnel management specialist. A change to part-time employment impacts employee benefits, leave accrual and status.

Next, the employee should discuss the possibility of part-time employment with their immediate supervisor. Although the Center has traditionally attempted to accommodate employee requests, in some instances work requirements may not be conducive to a part-time tour of duty. Once endorsed by the employee's management, the Office of Human Resources will then process the employee's request for a part-time tour of duty.

**Roger Jenkin, Director,  
Human Resources, Code 110**

## How the Congressional budget process works

### The Budget Process and Timeline\*

by Donna Drelick

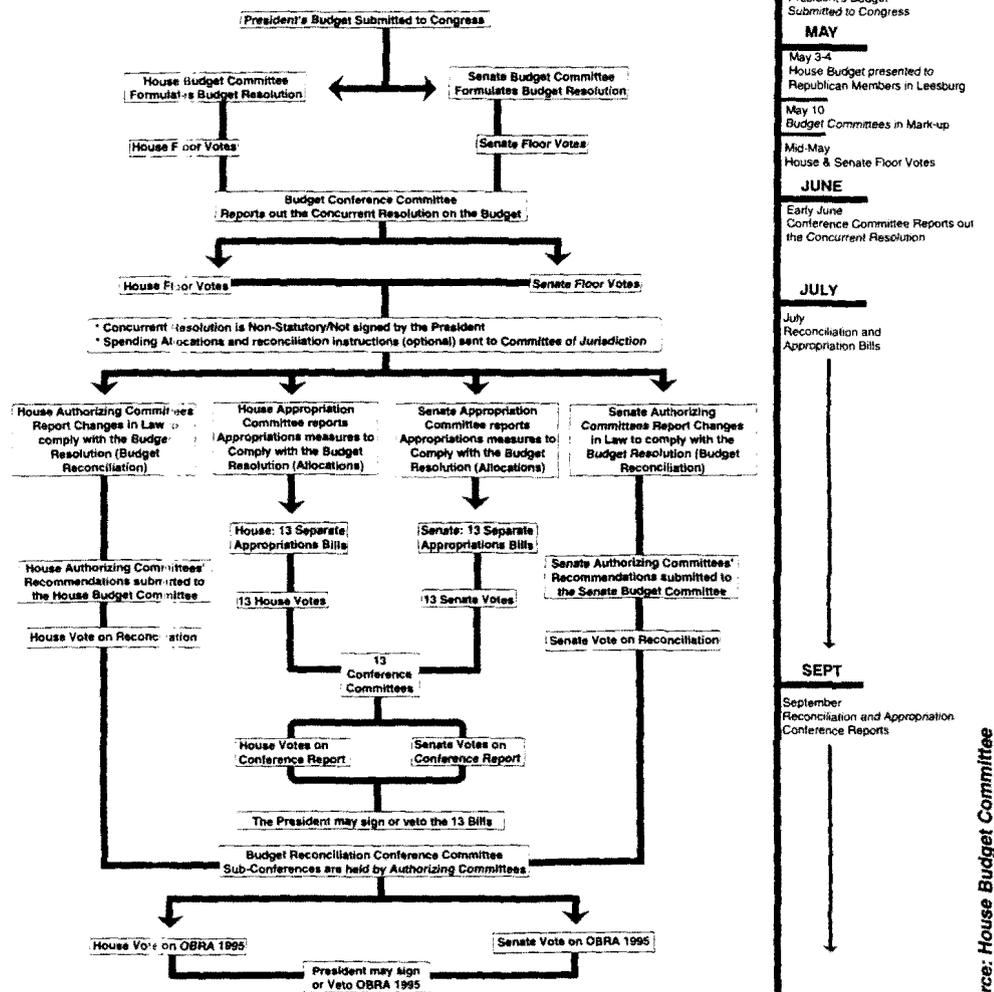
If Goddard's budget battle in Congress this year has you confused, you are not alone. Although the annual federal budget process has always been a complex scenario, NASA's funding cycle for fiscal year 1996 has proven to be particularly complicated, political and down-right mind boggling.

The Center's workforce was given a crash course in federal budgeting on June 11, 1995, when newspaper headlines announced that a House of Representatives Appropriations Subcommittee voted to close Goddard and two other NASA centers. The surprise vote caught most off-guard, including Maryland lawmakers. The vote to close Goddard was later overturned by the Full Appropriations Committee. However, the event heightened employee awareness of the precarious budget battles.

The process, outlined in figure 1, began with the submission of President Clinton's budget to Congress in February. The Republican "Contract with America" promised to balance the annual federal budget, not an easy task considering 64 percent of the budget is mandatory spending which can not be touched. Mandatory spending includes entitlement programs such as Social Security, and interest on the national debt. A very small portion of the budget (less than 20 percent if defense is excluded) is discretionary spending. This portion is the pool which appropriators have been targeting for cuts.

NASA appropriations initiated in the House Veterans Affairs, Housing and Urban Development and Independent Agencies

Continued on page 8



\* Timeline is subject to change

Figure 1

# New name for NASA's employee motivational program announced

by Ed Campion

One of NASA's most popular and recognized programs is adopting a new name. Formerly known as the Manned Flight Awareness (MFA) program, the agency effort designed to impress on NASA and industry employees the importance of their work, will now be known as the Space Flight Awareness (SFA) program.

NASA Associate Administrator for Space Flight J. Wayne Little gave several reasons for the new name. "The title is clear, concise and establishes SPACE as the focal point," Little said.

While the name is changing, A. T. Dannessa, the Program Manager of the SFA effort, stresses the scope and objectives of the program remain very much the same. "SFA will continue to be a focal point for motivation by impressing on NASA and contractor employees the importance of their efforts on flight systems and other critical mission support efforts that contribute to safe space flight," Dannessa said.

NASA's employee motivational program has a rich and full history, having been in existence for over 30 years. Created in the early 60s, the

MFA played an integral and increasingly forceful role in the Mercury, Gemini, Saturn, Apollo, Skylab and Apollo-Soyuz projects by infusing the space program with a strengthened consciousness of quality and safety.

The SFA program accomplishes its objectives through a variety of awards and activities. The "Silver Snoopy" is probably the best known SFA award and symbolizes the intent and spirit of the program. The Silver Snoopy is presented personally by the astronauts to employees for outstanding performance, and receiving it is considered a very special honor.

The SFA program also is responsible for the Flight Safety Award. The purpose of this award is twofold: to serve as a symbol, a continual reminder of what is riding on every human space flight, and to acknowledge the people whose personal efforts above and beyond their job commitment have resulted in significant, direct contributions to flight safety. Every government and industry employee supporting NASA's space flight effort is eligible for this award.

The SFA program is not just about awards, however, SFA effort also involves such things as astronaut visits to NASA and contractor facilities to meet with employees. The Astronauts stress the importance of their employees' work, answer questions and update them on program highlights. This establishes a personal connection and everyone develops a greater understanding of how important their job is to astronaut safety and mission success.

The SFA name may be new, but the goals and objectives of the program remain the same — "that flight safety comes first and excellence in job performance makes it happen."



## Goddard Pegasus launches put on hold

by Ernie J. Shannon

NASA has decided to await the results of the next launch of the Pegasus XL before deciding what to do with a backlog of satellites awaiting launch this year and next.

The NASA headquarters decision is a follow-on to a Goddard - directed team's recommendation to still try and fly at least three of the waiting satellites on a refurbished Orbital Sciences Corporation Pegasus XL. The team had also recommended that the agency "aggressively pursue" the Russian Cosmos rocket as a possible launch vehicle for the Fast Auroral Snapshot (FAST) Explorer. However, headquarters officials rejected that idea meaning FAST will not launch until next summer.

The team, called the Small Payload Launch Capability Assessment Team and chaired by Goddard's Vern Weyers, Director of Flight Projects and Acting Center Deputy Director, conducted the study in the wake of the second

Pegasus XL failure in June. That airborne launched vehicle had to be destroyed by Air Force range safety officers at Vandenberg Air Force Base in California after it developed problems shortly after launch. Almost exactly one year ago, a similar Pegasus XL also had to be destroyed after it veered off course after launch at Vandenberg.

The Pegasus XL had been selected by NASA to launch FAST, the Total Ozone Mapping Spectrometer Earth Probe (TOMS/EP), the Submillimeter Wave Astronomy Satellite (SWAS) and the SAC-B, an Argentine/U.S. satellite project.

As of now, NASA officials will await the next launch of the Pegasus XL, which could occur yet this year. If successful, the agency will consider flying TOMS/EP followed by SWAS, SAC-B and maybe FAST on the Pegasus XL, but not necessarily in that order. If the Pegasus proves

unsuccessful, then NASA must decide on a host of possibilities that include both domestic and foreign launch vehicles.

During the Goddard team's study, a number of U.S. launch vehicles were closely looked at including the Titan II, Titan IV, Atlas, Delta, the Lockheed Martin LLV, the EER Conestoga, and derivatives of the Minuteman system. The team also considered the Space Shuttle, but learned that manifest and compatibility problems would preclude a near-term flight. The Space Shuttle, however, remains an option should other opportunities not come to fruition.

In addition to the Russian Cosmos, the team also considered such foreign programs as the European Ariane, the Japanese H-series vehicles and the Chinese Long March rocket series. These proved unviable for a number of reasons.

# XTE project comes in under cost and 8 months ahead of schedule

by Jim Sahli

Goddard's X-ray Timing Explorer (XTE) spacecraft is undergoing final checks at Cape Canaveral Air Station, Fla. At press time project officials said XTE is scheduled to be launched from Launch Complex 17 on Sept. 15 pending resolution of launch vehicle issues.

"Final preparations continue to look good," said Dale Schulz, XTE project manager in the Explorers Project, Code 410. "We should roll the launch vehicle out to the pad two weeks before launch and have a final launch simulation about 10 days before the launch.

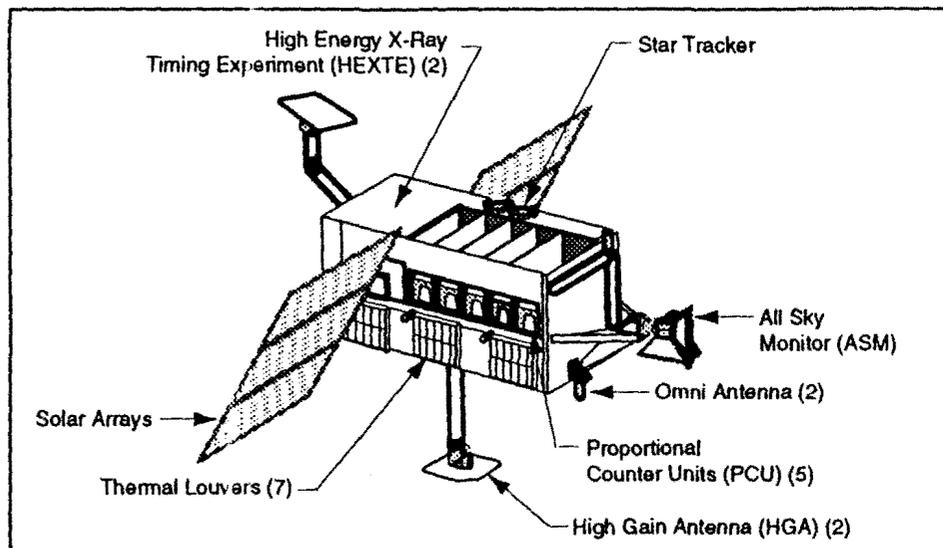
"The XTE science, operations and launch teams continue to work hard to make sure everything flows toward a successful liftoff. We have many Goddard folks in Florida working toward this goal," said Schulz.

Explorers officials said that the XTE project has been accelerated by eight months from its original April 1996 commitment date and is projected to cost \$40 million less than its planned budget.

"We believe the key to our financial success was stringent schedule planning and management as well as robust designs that enabled workarounds to correct for inevitable glitches," said Richard Weiss, deputy project manager of the Explorers Project. "The XTE team had an unconditional commitment to the success of XTE. From the very start, it was recognized that a day lost in the beginning of the program was as important as a day lost at the end of the program."

"Another intangible factor in the financial success of XTE was an environment of trust and partnership between the Project Office and the various internal Goddard organizations that was fostered at the start of the program and continued to grow and improve," said Weiss.

"The XTE team worked very closely with our spacecraft component vendors. Goddard technical experts were used at virtually every major component or instrument supplier to resolve technical problems before the problems became insurmount-



Goddard's XTE Spacecraft

able. In several cases where product performance did not measure up, our in-house team developed alternate products to protect schedule and performance," Weiss added.

The 6,700-pound (3,045-kilogram) spacecraft will be launched into a 360-mile low-Earth orbit by a Delta II Expendable Launch Vehicle. The spacecraft will spend at least two years gathering data about X-ray emitting stars and other systems within the Milky Way Galaxy and beyond. The satellite was shipped to the Cape Canaveral Air Station launch site in May on an Air Force C-5 aircraft from Andrews Air Force Base.

The Delta Launch Vehicle that will be used to launch XTE features a new electronics upgrade. This significant upgrade features the Redundant Inertial Flight Control Assembly (RIFCA), a new Power and Control Unit and new batteries. RIFCA (one unit) replaces the DRIMS and DELCO Guidance computer. The vehicle also will fly new Ordnance Thrusters and Extended Nozzles on the Air-lit Graphite Epoxy Motors (GEM's) for the first time, according to Code 470 officials.

XTE will carry three instruments into orbit for studies of the variable X-ray sky: the Proportional Counter Array, the High Energy X-ray Timing Experiment and the

All Sky Monitor. The instruments are being provided by science and engineering teams at Goddard, the University of California at San Diego, and the Massachusetts Institute of Technology.

"The science teams working on the instruments and operations are eager to have the spacecraft in space," said Dr. Jean Swank, XTE Project Scientist, Code 666. "Once we launch XTE, that's when the years of hard work start paying off for the scientific community. Scientists from many universities are anxious to begin working on the data XTE will acquire and transmit."

Observations of specific targets to be studied with XTE are proposed by scientists from the United States and abroad. The observations selected will be implemented by scientists at the XTE Science Operations Center (SOC) in Building 3. XTE will transmit data via NASA's Tracking and Data Relay Satellites, which will then relay the data to a ground station in White Sands, N.M. and then to the SOC. Scientists will be able to monitor observations at the SOC. Data then will be sent to the scientists' home institutions for detailed analysis.

Goddard manages the X-ray Timing Explorer for the Office of Space Science at NASA Headquarters in Washington, D. C.

# Hubble sheds light on the “faint blue galaxy” mystery

by Tammy Jones

International teams of astronomers using NASA's Hubble Space Telescope have solved a 20-year-old mystery by showing that a class of galaxy once thought to be rare is actually the most common in the universe.

Analyzing some of the deepest images ever taken of the heavens, the astronomers conclude that small irregular objects called “blue dwarfs” were more numerous several billion years ago, outnumbering the spiral galaxies like our Milky Way and giant elliptical galaxies as well. This means the blue dwarfs are a more important constituent of the universe and figure more prominently in the evolution of galaxies than previously thought, researchers say.

The discovery was made by the international Medium Deep Survey team, led by Richard Griffiths of the Johns Hopkins University, Baltimore, and extended by a deeper survey with the Hubble Space Telescope by a team led by Rogier Windhorst of Arizona State University, Tempe.

“The new results have overturned the conventional picture of a universe dominated by giant grand design spiral systems and elliptical galaxies,” said Griffiths. “Instead, we’re going to have to come up with a new way of understanding the distorted galaxies we see in huge numbers, which seem to have formed later than the giant galaxies.”

However, they say it is not clear whether these small irregular systems are indeed the building blocks of galaxies like the Milky Way, or have simply faded into obscurity.

“Most of these faint objects are visibly blue in color, a strong indication that they are undergoing a brief, rapid burst of star-formation. At larger distances, such systems may well have been the building

blocks of today’s giant spiral and elliptical galaxies,” said Windhorst, who along with William Keel of the University of Alabama, conducted a separate survey of remote galaxies.

These faint galaxies were randomly imaged as part of a key Hubble Space Telescope project, called the “Medium Deep Survey.” The survey uses Hubble’s Wide Field/Planetary Camera-2 (WF/PC-2) to search for unexpected objects in uncharted areas of the sky. This highly efficient and cost-effective survey is conducted in “parallel mode” where the WF/PC-2 takes detailed pictures while a “primary” instrument, such as a spectrograph, collects data from a predetermined celestial target.

For the past 17 months, Griffiths and co-investigators from the United States, (Richard Green, John Huchra, Garth Illingworth, David Koo, Kavan Ratnatunga, Tony Tyson, Rogier Windhorst) and the United Kingdom (Richard Ellis, Gerry Gilmore) have studied more than 50 random snapshots containing high resolution information for a total of tens of thousands of galaxies.

“We were immediately struck by the large numbers of irregular and peculiar galaxies in these HST random images,” Griffiths said.



R. Windhorst (AZ State Univ.) NASA

An additional, deeper Hubble image obtained by Windhorst and Keel, and analyzed by Simon Driver, Windhorst, and associates, has further extended these results.

“At last Hubble has allowed crystal clear images of these extremely faint objects, and we find that our universe is dominated by distorted systems of stars,” said Driver of Arizona State University. At the faintest limits more than half the galaxies seen are such systems.

In the July issue of the Goddard News the headline on page 4 read “UIT provides ground-based imaging of the starburst galaxy NGC4736.” It should have read, “UIT and ground-based telescope take images of galaxy NGC4736.”

Also, the photos shown on page 4 were switched. The upper image of M94 was taken with a ground-base telescope. The lower image showing the starburst ring of M94 was taken by Ultraviolet Imaging Telescope.

# Rising to the challenge

by Karen W. Davis



**Namrita Kapur**

Namrita Kapur, a design engineer in the Space Power Applications Branch, Code 734.2, was born in India and moved to the United States when she was two years old. Born deaf, Kapur was surrounded by a world filled with many challenges. Later she would learn that the challenges would serve to make her stronger and more determined to conquer them.

"I try to think positively at all times. I am very determined and persistent, and I motivate myself by setting high goals," Kapur says. She grew up with her family in Maryland, and currently resides in Bethesda. Kapur attended Rockville High School, where she participated in a special program for the deaf. Her hobbies include visual fine arts, oil paintings, drawings, aerobics, reading, movies, and ice skating.

In May 1993, Kapur became the first deaf woman to graduate from the Rochester Institute of Technology (RIT) with a bachelor of science degree in electrical engineering. Her first co-op job was at Digital Equipment Corporation in Maine, where she assisted with the enhancement of the processes used in manufacturing of printed circuit boards for computers. During 1991, Kapur participated in a summer internship program at Goddard called the NASA Technical Explorer Selected Students (NTESS), which was sponsored by Galludet University. She developed several programs

for an image compression project at the Flight Data Systems Branch using MatLab and C programming language.

"I always loved working with things, building things and working with my hands. I enjoyed working in laboratories with equipment and tools. That is why I decided to pursue a career in electrical engineering. I also wanted to have a challenging career that involves many different skills and plenty of job opportunities," she added.

In the Fall of 1991 and Summer of 1992, Kapur co-oped in the Space Power Applications Branch, assisting with power supply designs. "When I co-oped at that branch, I learned that I was much more interested in the hardware designs of power supplies than any other field I have experienced during my college years," she said.

Her engineering courses at RIT provided a strong foundation for her current specialty. Kapur learned that the industry demanded more engineers and technicians for technology development. However, her motivation for entering the predominantly male-populated field came from a strong determination to succeed, as well as successful, professional parents. Her mother is a physician and pathologist and her father is a biomedical researcher and medical school professor.

"My parents, especially my mother, have been my role models for most of my life. They encouraged me to work hard and do well in school. Most importantly they emphasized that education is the key to success in a career," Kapur says.

Kapur's main responsibilities are to design and develop power supplies for spacecraft. One of her most significant accomplishments was designing an ultra-low noise power supply intended to be used on the Astro-E spacecraft.

"This design offered excellent performances beyond the conventional levels. It was my project for the Professional Intern Program (PIP) Level II. I wrote a formal report and gave an oral presentation on this project. I completed PIP last spring and got promoted," said Kapur.

She also is participating in the NASA

part-time graduate study program to develop technical knowledge in electronics and control systems for power supply designs. She is attending the John Hopkins University pursuing a master's degree in electrical engineering.

Kapur continues to make successful advances in her career development. Working at Goddard has opened a whole world of endless possibilities to explore. She does not see her deafness as a hindrance but rather a motivational tool to pursue goals and lead by example. "I want to be a role model for deaf people, especially women interested in pursuing engineering as a career. I can show others that being deaf does not matter. We all have the ability to be anything we want to be," Kapur says.

Being the only deaf engineer who is fluent in sign language is probably the most challenging part of her job. But for the most part, she receives nothing but encouragement and support from her colleagues.

"I refuse to let my deafness obstruct me from doing what I want to do. I always make sure that I am getting the same opportunities and equal access as other non-disabled employees do here at Goddard. Electronic mail and fax are very important to me as they help me communicate and keep in touch with my colleagues and others. Relay services for the deaf and Telecommunication Device for the Deaf (TDD) equipment assists me with phone calls to hearing people as well as many services from manufacturers outside GSFC. I also use sign language interpreters provided by Goddard for group meetings, training classes, presentations and other activities that require personal interaction," says Kapur.

Kapur says that she really enjoys engineering, but it requires a lot of hard work and patience. It can be frustrating, but her determination to succeed far outweighs anything else. "I am not really clear about the future yet. I have only been at Goddard two years, but my career goals are to achieve an expertise in the development and design of power supplies and to advance into a supervisory or management position within the next 10 years. I may eventually move into private industry, teach engineering and mathematics for deaf college students, or even start a new business," concludes Kapur.

# Recent Goddard personnel moves and organizational changes

## Personnel Moves



**Dr. Richard R. Vondrak** has been appointed the Chief of the Laboratory for Extraterrestrial Physics, Code 690 in the Space Sciences Directorate. He assumed this position July 24.

Before being assigned to the Space Sciences Directorate, Vondrak was the Director of Space Physics at the Lockheed Palo Alto Research Laboratory in California. While at Lockheed, he served as Principal Scientist on several research contracts for NASA, the National Science Foundation, and the United States Air Force. Vondrak also held scientific positions with the Stanford Research Institute in California, Rice University, Texas and the Royal Institute of Technology in Stockholm, Sweden.

He received a bachelor of arts degree in physics from the University of California at Berkeley in 1966. He was awarded a Ph.D. in Space Physics and Astronomy from Rice University (Houston) in 1970.

Vondrak has published approximately 85 papers in scientific journals and 40 technical reports. He was honored as an AIAA Fellow in 1994 and has received several NASA and Department of Energy Awards.

**Dr. Mary L. Cleave** has been appointed Manager of the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) Project in the Laboratory for Hydrospheric Processes in the Earth Sciences Directorate at the Goddard Space Flight Center. She assumed the position Aug. 7.

Cleave comes to this new assignment after working for four years in various Earth Science projects including SeaWiFS. Before coming to Goddard, Cleave served

as a mission specialist on two Space Shuttle missions, STS-61B in November 1985 and STS-30 in May 1989. During STS-30, she deployed the Magellan Venus exploration spacecraft, which subsequently mapped almost the entire surface of Venus starting in August 1991.

Before her assignment as a mission specialist which began in 1980, Cleave held graduate research, research psychologist and research engineer positions in the Ecology Center and the Utah Water Research Laboratory at Utah State University in Logan, Utah from 1971 to 1980.

Among the awards Cleave has received throughout her career are: Outstanding Young Women of America, 1980; Utah State University Distinguished Alumna Award, 1986; and NASA Space Flight, Exceptional Service and Exceptional Achievement medals.

She is a graduate Great Neck N.Y. High School, and earned a bachelor of science degree from Colorado State University. Her advanced degrees in microbial ecology and civil and environmental engineering were obtained at Utah State University.

### More Recent Appointments:

**Alan Selzer**, Code 822.4 of the RF Tracking and Digital Systems Section, has been appointed Head of the Engineering Division.

**John Azzolini**, Code 704 of the Systems Engineering Office, has been appointed Associate Chief of the Systems Engineering Office.

**Brent Robertson**, Code 712.4 of the Project Support Section, has been appointed Head of the Space Technology Division.

**Donald Carson**, Code 740.1 formerly Mission Manager within the Spartan Project, has been appointed Spartan Project Manager.

**Michael Hagopian**, Code 723.4 of the Controls Engineering Section, has been appointed head of the section.

**R. Jane Hardman**, Code 603 has been appointed Chief, Space Sciences Administration and Resources Management Office.

**Gustave Comeyne**, Code 301 of the Systems Review Office, has been appointed

Chief of the Systems Review Office. Comeyne formerly served as a senior systems Review Manager.

**Norman Rembert Jr.**, Code 227.3 of the Plant/Site Operations and Maintenance Branch, has been appointed Head, Central Power Plant Section.

### Recent Reorganizations:

The Assurance Technologies Division has been reorganized as follows: Code 310A, the NASA Parts Program Office, has been disestablished and its functions and personnel realigned to Code 311 the Parts Branch - and Code 312 — the Electronic Packaging and Processing Branch. **Jack Shaw**, formerly Head of the NASA Parts Program Office, is now Head, Electronic Packaging and Process Branch.

The Parts Engineering Section Code 311.1 and the Parts Technology Section Code 311.2 have been disestablished and their functions and personnel assigned to Code 311. **Ronald Chinnapongse**, formerly Head, Parts Technology Section, was appointed to the newly-established position of Assistant Head, Parts Branch.

The System Safety Branch Code 302.A has been disestablished and its employees have been realigned into Code 302, the System Reliability and Safety Office. Code 228, the Wallops Facility Engineering Branch and the Wallops Plant Operations and Maintenance Branch Code 229 have been merged to form the Wallops Facilities Management Branch Code 228. The sections of the two former branches have been abolished and several informal groups were established within the new branch. **Reed McDowell**, formerly head of the Facility Engineering Branch, and **William Phillips**, formerly head of the Plant Operations and Maintenance Branch, have been reassigned as assistant Branch Heads. **Phil Holloway**, Associate Chief of the Facilities Management Division, presently serves as Acting Branch Head.

Code 714, the Robotics Branch, and the Photonics Branch Code 715 have been disestablished. All personnel have been reassigned to positions within the Space Technology Division Code 710.

# Back in business



Recently the Building 1 cafeteria was the scene of a gala grand re-opening. The cafeteria was re-opened after significant improvements were made to the facility by Brown and Root and the incorporation of a space theme designed by Alan Binstock. A new menu featuring Chinese food has been added. The cafeteria also continues to serve a variety of foods including salads, sandwiches, rotisserie chicken and selected entrees. The

daily menu is available by dialing 286-4899. Larry Watson, Goddard Chief Counsel, Code 140 Tina Frizzel-Jenkins, Code 224.2, and Krista Paquin, Code 200, are seen here cutting the ribbon to officially reopen the facility.

Also on hand was Ron Parise, Goddard's astronaut in residence, who signed autographs and talked about his experiences on the Space Shuttle.

Continued from page 2

Subcommittee, chaired by Congressman Jerry Lewis, (R-Calif.). Lewis sent shock waves when his subcommittee voted to close Goddard, Langley, and Marshall Space Centers, moving many of their functions to the Jet Propulsion Laboratory in California. Although the subcommittee vote was only the first step in a long and winding road

on Capitol Hill, Maryland lawmakers reacted quickly.

The proposal to close Goddard and the other centers was overturned by the full House Appropriations Committee. However, the Appropriations Committee markup cut \$332 million from the Mission to Planet Earth Program. With the first round of the budget process completed, the process continues in the House and after that the Senate.

## Shuttle Mission STS-69 delayed

Following a briefing by a special assessment team, NASA managers decided to postpone the Aug. 5 launch of Space Shuttle Endeavour on Mission STS-69 in order to finish a review of flight hardware associated with O-rings in a nozzle joint of the Reusable Solid Rocket Motor (RSRM).

Launch of Endeavour is now targeted for no earlier than mid-August.

The inspection team was formed to address an issue which came out of a post-flight assessment of boosters used for the last two Shuttle launches.

During their inspections, engineers found that a gas path in the RSRM nozzle internal joint number

3 had extended from insulation in the motor chamber to, but not past, the primary O-ring. While gas paths to the primary O-ring have been observed in previous nozzles, the last two flights saw the gas path result in a slight saw the gas path result in a slight heat affect to the primary O-ring seal.

After reviewing several different aspects of the RSRM system, the team has concluded that there are no concerns with the design of the nozzle joint. While there are no design issues, the team is looking at a procedure which would allow inspection and minor adjustments to the application of athermal barrier, referred to as RTV, or Room Temperature Vulcanizing, which may further reduce the possibility of a gas path reaching the primary O-ring.

"This review has been a first-rate effort from the entire space flight team," said Brewster Shaw, Director, Space Shuttle Operations at Johnson Space Center. "We've had good representation and coordination between the various NASA organizations and Thiokol and this issue is being thoroughly reviewed. While the hardware at the launch pad would probably operate just as expected during launch, we are going to take the time to ensure the Shuttle is in the absolute best condition for flight. Safety has been, is, and will remain our top priority with this program."

Shuttle managers plan to wait until the assessment team has concluded its efforts before determining a new launch date for Endeavour.

# Goddard News

National Aeronautics and Space Administration

Goddard Space Flight Center



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