



National Aeronautics and  
Space Administration  
Goddard Space Flight Center

# Goddard News

Greenbelt, Maryland / Wallops Island, Virginia

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## Goddard Seizes the Future through Commitment to Excellence

### Goddard is 1 of 9 finalists for the President's Quality Award

Out of nearly 40 competitors, Goddard was one of nine federal government organizations chosen to receive a "site visit". It is very rare for a federal government organization to receive a site visit on its first attempt - *Congratulations Goddard. We were selected on our first application. The site visit is expected on January 14-16, 1997.*

by Mitch Brown, Engineering Directorate

The environment in which Goddard works has drastically changed over the last few years. This is perhaps best demonstrated by the budget and workforce/hiring constraints that are impacting us all and the way we are now pursuing new work. To meet today's challenges and ensure Goddard continues as a premier science and technology organization, *Joe Rothenberg* has laid the foundation for change, and is building upon it through such initiatives as the development of a new strategic implementation plan, training for

the Center's senior management in process reengineering, redesign of several key Center processes, and of course, the overall reorganization of the Center to more effectively meet our customers' needs. In the last year, Rothenberg also chartered a team to prepare an application for the President's Quality Award (PQA) Program.

The PQA Program recognizes Federal organizations that have improved their overall performance and demonstrated a sustained, positive trend in providing high quality customer service. This program was patterned after the prestigious private sector Malcolm Baldrige Quality Award and includes a review of an organization's leadership, management of information, strategic planning, human resource development, process management, business results, and customer satisfaction. The program's primary goal is to promote the structured evaluation and improvement of an organization's processes in all of these areas.

Goddard applied for this award for several reasons. First, it was an opportunity to document Goddard's achievements and best practices and for the Center to be recognized for its many successes. The Center's products, your products, are truly exceptional and we must do a better job of spreading the word. It was also an opportunity to evaluate the Center in the context of an accepted standard, to better understand our strengths and weaknesses, and to help us prioritize and focus our improvement efforts to get the "most bang for the buck."

The President's Award Application Team worked for ten months and submitted the application in October. A team of evaluators will

**Quality Award Continued on Page 8**

### The Spirit of Giving at Goddard

As we enter this Christmas season, it is quite evident that the spirit of giving is alive and well at Goddard. Our recently completed Combined Federal Campaign (CFC) raised in excess of \$444,000 for worthy charities in our community. *This represented the highest amount ever raised at the Center by more than \$10,000.*

We had nine employees who were double eagle award winners which means they gave in excess of 2 percent of their salaries. Another 115 people earned eagle awards by donating in excess of 1 percent of their salaries. GSFC can be proud of this year's accomplishments for CFC.



### Two Spacecraft Pass One Year on Orbit

by Jim Sahli, News Chief, Public Affairs Office

Two space science spacecraft that Goddard scientists are involved in surpassed one year on orbit in December. The Solar and Heliospheric Observatory (SOHO) and Rossi X-Ray Timing Explorer (RXTE) were both launched in December 1995 and continue to conduct excellent science operations. Both spacecraft are being controlled from separate control centers located in Building 3/14.

SOHO, a joint project of the European Space Agency and NASA, was launched on Dec. 2, 1995 from Cape Canaveral Air Station in Florida aboard an ATLAS II rocket. RXTE, a Goddard-managed science mission, was launched from the same launch site on Dec. 30 aboard a Delta II rocket.



# Goddard Employees at Their Best

## Lifetime Achievement Award for Don Friedman

by Lynn Jenner, Office of Public Affairs



**Don Friedman**

research for public benefit. "What the award meant to me was that I was recognized by my peers. It was about the highest compliment you can get." And anyone that knows Don knows that he is a most deserving recipient.

Donald S. Friedman was born and raised in Brooklyn, New York. He received his degree in industrial engineering from Washington University in St. Louis, and his graduate degree in engineering administration from George Washington University. Don joined the Air Force in 1952 and was stationed in Florida where he became a project officer for one of the missile programs—his entry into the space program. After this stint in the Air Force, Don went to work for the Martin Company (now known as Lockheed Martin) on the Vanguard program—one of NASA's earliest programs. Don came to work for NASA in 1963 on the Nimbus project and in 1972 he became the Technology Utilization Officer. In 1985 the Office of Commercial Programs was formed.

Don served as the Technology Utilization Officer at Goddard for 23 years managing some of the most exciting technology transfer applications that have ever occurred at NASA. His relationship with the Johns Hopkins Applied Physics Laboratory produced such technologies as the Implantable Rechargeable Pacemaker, still in use almost 25 years later; the implantable nerve stimulator which removes intractable pain; and the implantable defibrillator system, which is implanted in well over 100,000 people and has been documented to have saved over 50,000 lives. But the one technology most dear to Don is the insulin pump, soon to be approved by the FDA, which will manage a patient's insulin level via an implantable unit. Don has diabetes in his family and such a device will make the painful injections a diabetes patient must live with daily a thing of the past. The technology used to make the insulin pump was pure space—the microvalve used on the pump is based on the microvalves used on a Mars mission spacecraft.

Don is married and has three children, three stepchildren, and seven grandchildren with an eighth due at the end of December. "We keep pretty busy with all of them." But for all Don's incredible knowledge of technology and his uncanny ability to marry space

**Friedman Continued on Page 8**

## Hansen Receives Nordberg Award

by Denise Konopka, Office of Public Affairs

*Dr. James E. Hansen*, Chief of Goddard Institute for Space Studies (GISS) in New York, received the William Nordberg Memorial Award Nov. 15 for his Earth science research. Hansen is the third recipient since the Goddard honor was introduced in 1994.

The award was presented during the Annual William Nordberg lecture. This year's Nordberg speaker was Professor Mario J. Molina, Massachusetts Institute of Technology in Cambridge, Mass., who shared the 1995 Nobel Prize in Chemistry.

Hansen was recognized for his pioneering efforts in research about global warming and the "greenhouse" effect of trace gases in the atmosphere. In the last 15 years, he has worked on studies and computer simulations of the Earth's climate for purposes of understanding humans' potential impact on global climate.

**Hansen Continued on Page 8**

## Cynthia Stoltz Receives Contract Specialist of the Year Award



**(l.to r.) Joe Rothenberg, Cindy Stoltz, and Mike Lodomirak**

On Dec. 2, Joe Rothenberg, presented *Cynthia Stoltz* of the Procurement Operations Division, Code 210, with the Contract Specialist of the Year award. This award is a high honor which is recognized throughout the Agency as well as the professional community.

Stoltz was selected for her outstanding leadership of the

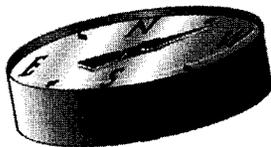
NASA Integrated Financial Management Project (IFMP) procurement. IFMP will establish a standardized financial management capability to meet standards and policies for Federal Financial Management.

Cindy has been at GSFC since Nov. 84 and in Procurement for the duration. Prior to coming to Goddard she worked as a special education teacher and for NIH. Cindy is on detail to ADP as the IFMP Contracting Officer, Business Management Committee Chairperson, and Code 200's Representative on the Source Evaluation Board (SEB).

Cindy's thoughts about receiving the award, "I deeply appreciate this recognition, as this procurement has been more complex than any other I have been involved in. As there are so many persons involved, it has also provided me with an opportunity to work with many NASA personnel who have also invested an enormous amount of time and effort into making this project happen. So, for me to be singled out is a honor!!!"

# PARTNERSHIPS

## LEWIS AND CLARK ARE READY FOR NEW ADVENTURE



by Donna Drelick, Office of Public Affairs

"LEWIS" and "CLARK", two innovative 19th Century American explorers, are the name sakes of two innovative advanced technology demonstration satellites of NASA's Small Spacecraft Technology Initiative (SSTI).

"The Small Spacecraft Technology Initiative will open the door to new remote-sensing science and commercialization opportunities by flying the first two hyperspectral imaging radiometers for space, and, it will demonstrate a host of new technologies that shorten system development time and provide advancements in components, instrument technology and flight operations," said **Roger Avant**, Project Manager for SSTI experiments. "In addition, the project demonstrates a new approach to partnership between NASA and industry, the integrated product development team, that enables government and industry engineers to work side-by-side in developing advanced technology for rapid infusion into the flight configuration."

SSTI was created to advance the state of spacecraft technology while reducing the costs associated with design, integration, launch, and operation of small satellites. The program is uniquely designed to promote partnerships between NASA and industry while infusing new state-of-the-art technology rapidly into science and commercial missions. The program works within an extremely short time table. The entire contract process for LEWIS and CLARK - from final announcement to contract signing - was completed in just 70 days. The LEWIS satellite was developed to 'ready for launch' in just two years.

Goddard has two major instruments and six experiments on the SSTI spacecraft. Goddard's contributions include: Global Positioning System Attitude Determination and Control Experiment, Code 712; Goddard Electronics Module, Code 735; Spacecraft Launch and Acoustics Module, Code 723; Advanced Solar Cell Experiment, Code 733; Data Compression Module, Code 737; Metal Matrix Composite Heat Strap and the Aero Heating Payload, Code 722; and Linear Etalon Imaging Spectral Array, Code 693.

In total, LEWIS and CLARK will carry 55 new technologies plus seven major instruments. Both LEWIS and CLARK are scheduled for launch in early 1997 via a new low-cost commercial launch vehicle currently under development by Lockheed Martin.

Many of the technologies used in SSTI have been developed by Goddard and will be incorporated into major programs in the future — not only Earth science, but also Planetary Exploration and Commercial Programs as well. "Our hyperspectral imager, LEISA, represents a leap in miniaturized technology. Our innovative approach enabled us to reduce an instrument's volume by a factor of 15 while achieving performance not previously possible. This instrument is now being further advanced to be used by the NMP EO-1 to provide atmospheric correction of LANDSAT imagery," said Goddard's **Don Jennings**, Code 693.

The potential applications of data from LEWIS and CLARK are numerous and wide ranging. For instance: agriculture may benefit by using data to assist in crop management; environmentalists will have the capability to monitor waterways for signs of pollution and wetland degradation because of SSTI data; commercial land developers and urban planners can use the data to assess existing infrastructures and determine growth pat-

**Lewis&Clark Continued on Page 8**

## FIRST ANNUAL TECHNOLOGY SHOWCASE

by Lynn Jenner, Office of Public Affairs

Goddard held its first annual Technology Showcase on Nov. 14. Center Director **Joe Rothenberg** was on hand as the exhibition opened to tour the Technology Showcase, and was seen interacting with every exhibitor in the exposition. He commented, "I'm extremely pleased with the turnout of the Technology Showcase. It went well beyond my expectations and was a tremendous success!"



The showcase entitled "From Idea Concept to Scientific Resolve" was developed from the idea that the old adage of the right hand not knowing what the left hand was doing was true of Goddard's scientists and engineers. These dedicated workers oftentimes did not know what those outside their own code or directorate were working on. As such, it was imperative that some sort of communication be set up whereby the technologies being developed by Goddard could be shared across all directorate lines. Thus, the advent of the Technology Showcase; a show about Goddard for Goddard.

The strategic planning team set out to realize the mission statement for this project "to communicate technologies available to support the development of instrument, spacecraft, and ground systems to the GSFC community." By all accounts of the rave reviews received after the Technology Showcase, that mission was realized and then some.



The day of the showcase coincided with the first snowfall of the season, but that did not deter the more than 200 Goddard exhibitors from setting up their booths, nor did it keep away the inquisitive Goddard crowds. All phases of technology development were represented from initial concept development through the end product of data analysis. The exhibited technologies were grouped into one

of the following areas: Science Ideas and Concepts; Concept Formulation; Definition; Design; Development; Launch; Operations; Data Reduction and Analysis; and Basic Research and Technology.

Goddard showcased such cutting-edge technologies as the SMEX LITE and Explorers programs, Visualization and Analysis of Geophysical Datasets Using the Interactive Spreadsheet (highlighting pictures of Hurricanes Fran and Hugo), and many EOS and Mission to Planet Earth booths. Even a weather balloon from Wallops swayed outside Building 8 in the wind and snow.

Enthusiastic comments heard around the halls confirmed the earliest

**Showcase Continued on Page 8**

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## the mission

NASA's 82nd Space Shuttle flight will be significant for Goddard. It means the hundreds of employees and contractors who have spent the last several years planning for and working on instruments for the Hubble Space Telescope will start to see the fruits of their labor. The irony of that date is that it will be beginning of many more years of work for hundreds of others, like those who work in the Space Telescope Operations Control Center and the scientists and astronomers, who will analyze Hubble data.

Discovery is scheduled to lift off from Kennedy Space Center, Cape Canaveral, Fla, February 1997. This ten-day mission will consist of 4 days of spacewalks. During that time, astronauts will install in the Hubble two new instruments, the Space Telescope Imaging Spectrograph (STIS) and the Near-Infrared Camera and Multi-Object Spectrometer (NICMOS). They also will install a new state of the art tape recorder, and a fine guidance sensor.

This second servicing mission will render HST more powerful scientifically than ever. HST will see even deeper into our universe revealing the evolution of galaxies and black holes, and providing clues to the ever so puzzling question — when did it all begin?

## cool stuff to know

### Other HST Benefits

Besides rapidly advancing our understanding of the universe, the HST is making direct contributions to the health, safety, and quality of our lives through a variety of technological spinoffs.

A new, non-surgical breast biopsy technique using a device originally developed for HST's Imaging Spectrograph, is now saving women pain, scarring, radiation exposure, time and money. This technique, called stereotactic automated large-core needle biopsy, enables a doctor to precisely locate a suspicious lump and use a needle instead of tissue for study. This precise process is possible because of a key improvement in digital imaging technology known as a Charge Coupled Device or CCD.

# HUBBLE

by Tammy Jones, Office of Public Affairs

Project folks have been working really hard since the First Servicing Mission to prepare for the Second Mission in February. We also have been building software (Vision 2000) and hardware (Solar Array III, Advanced Camera, Advanced Computer, batteries, etc.) for the 1999 Servicing Mission 3. Work has gone on after hours, weekends, and during furloughs to make sure the job gets done. Everyone in the Project has been pulling together for a very long time: civil servants, contractors and scientists. Included are the instrument teams, hardware development teams, software and operations teams, mission management teams and on and on; people from all over the country. My thanks go to each and every person.

A broader thanks is due to the Center, however. Every time we had a problem (and there were lots!): software, hardware, logistics, personnel, procurement, you name it; the Center organization was there to help us. There is a difference between being assigned to the Project long term and having your own work interrupted to help out

HST on a moment's notice. So, I would like to offer a special thanks to the non-Project folks (civil servants, contractors, scientists) who were there when we needed them. These are people from Codes 100, 200, 300, 400, 500, 600, 700, and 900. Surprised that Code 900 Earth Science should be on the list? Well, when we needed Code 900's Cray computer for critical structural analysis, it was immediately made available to us. It's hard to find an organization on the Center which *hasn't* helped us get ready. The Second HST Servicing Mission is truly a Center effort and everyone associated with the Center should feel pride in contributing to one of NASA's most important programs.

Thanks to the thousands of people who helped: we are ready to fly. We are ready for more discoveries. We are ready to continue working the public about exploration and science.

**John Campbell,**  
Associate Director for HST



Final touches on NICMOS & STIS instruments

<b>Payload:</b>	HST SM-2
<b>Launch Date:</b>	Feb. 1997
<b>Landing Date:</b>	Feb. 1997
<b>Orbiter:</b>	OV-103 Discovery (Flight 22)
<b>Inclination:</b>	28.45 degrees
<b>Rendezvous Altitude:</b>	Approx 320 nautical miles

# SPACE TELESCOPE

# SECOND SERVICING MISSION



The Crew visits Goddard

## the crew

The seven-member crew selected for this mission includes: Spacewalkers; Mark C., Lee, Gregory J. Harbaugh, Steven L. Smith and Joseph R. Tanner. Other crew members are, Commander, Kenneth D. Bowersox; Pilot, Scott "Doc" Horowitz; and Mission Specialist, Steven A. Hawley.

The crew has four extra vehicular activity (EVA) days scheduled. A fifth day is available if needed. Training for this mission began nearly two years prior to launch. Astronauts train extensively at the Johnson Space Center in Houston, Texas in its 25-foot deep Weightless Environment Training Facility; at the Marshall Space Flight Center in Huntsville, Ala., in a 40-foot deep Neutral Buoyancy Simulator; and here at Goddard in a 12,500 square-foot cleanroom.

## public affairs services

Publications (Fact Sheets, Lithos, etc) - Deanna O'Donnell x6-0918  
Viewing of Launch & EVA's for Employees @ Goddard - Jennifer O'Connell x6-7646  
Car Passes for Launch Viewing @ KSC - Michelle Jackson x6-8955  
Mission Updates  
Recorded - 286-NEWS (6397)  
Dateline  
Internet: <http://www.gsfc.nasa.gov/> Choose FLASH  
Around-the-clock Newsroom Operation (301)-286-0697

## the instruments

The primary objectives of the Second Servicing Mission are: install two new scientific instruments, the Near Infrared Camera and Multi-Object Spectrometer (NICMOS) and the Space Telescope Imaging Spectrograph (STIS); replace a degraded Fine Guidance Sensor (FGS) with an upgraded spare; and replace two failing tape recorders, one with a spare and the other with a state-of-the-art Solid State Recorder (SSR).

NICMOS will expand Hubble's observing range to infrared light. STIS will replace the two spectrographs from the original payload, providing more efficient spectroscopy and discovery potential. The FGS is part of the pointing control system for the observatory and is also used for scientific observations. The spare FGS replaces a unit that is degrading and predicated to fail before 1999 (the next scheduled servicing).

The new SSR will have 10 times the storage capacity of the old tape recorders and because it is solid state, it has no moving parts to wear out.

## the future

The HST was designed to operate for 15 years. Many of NASA's other observatories have exceeded their projected operating years so, HST will likely deliver new science for a long time. So far, two more reservicing missions are planned for 1999 and 2002 to improve its scientific capability and efficiency.

## editor's notes

### INTERNET

Goddard Homepage <http://www.gsfc.nasa.gov>  
Office of Public Affairs FLASH homepage <http://pao.gsfc.nasa.gov/gsf/newsroom/flash/flash.htm>  
Office of Public Affairs Hubble Facts [http://pao.gsfc.nasa.gov/gsf/service/gallery/fact\\_sheets/fsheet.htm](http://pao.gsfc.nasa.gov/gsf/service/gallery/fact_sheets/fsheet.htm)  
Latest HST pictures <http://www.stsci.edu/pubinfo/Latest.html>  
STIS homepage <http://www.ball.com/aerospace/hst.html> NICMOS homepage <http://www.ball.com/aerospace/hst.html>  
Shuttle homepage (for current news during Mission) <http://shuttle.nasa.gov/>

### OTHER

Public Affairs Specialist Tammy Jones, 301-286-5566  
Space Telescope Science Institute, Office of Public Outreach 410-338-4707  
NASA TV, Channel 9 (on Center), Spacenet 2, Transponder 5, 69 deg W 388.0 MgH, Audio 6.8 MgH



by **Robert Gabrys, Education Officer, Office of Public Affairs**

Working on a CD intended for educators? The following structure should be helpful to you for both development assistance and distribution. Contact the GSFC Education Office at 301-286-7205. They will gladly assign a specialist to work with you from the beginning in order to ensure teacher input, teacher reaction, and a support system to your effort.

Working with the Education Office from the beginning of your project can also facilitate distribution since a distribution plan can be developed at the front end of the project, including budget implications, cost estimates for production, and an adequate number of copies of materials for distribution. With early involvement the Education Office can work with Headquarters to facilitate distribution in additional ways to your own plans for distribution. We can

arrange for a relationship with Headquarters that can: a) advise all NASA Centers, the Center Teacher Resource Laboratories/ regional teacher resource centers, and the national network of Aerospace Specialists of the development and use of your product, and even possibly provide workshops on the material; and b) coordinate linkages with NASA Core whereby multimedia materials can be advertised and accessed by the national and international educational community through direct contact with a distribution body for a nominal service fee. This effort can save you major amounts of time that would have been spent on "administrivia" related to the activity and allow you to spend more time on the education product and your own science, engineering, technology job expectations.

All of the above becomes possible by a single EARLY telephone call to your GSFC Education Office at 301-286-7205.

On other education fronts the Education Office is establishing a support linkage with each of the education/outreach proposals funded through the GSFC Director's Discretionary Fund. A collaborative arrangement has been established with **Dr. Gerald Soffen** to create such a linkage in support of the efforts of the DDF Team.

Lunar Sample Training was a success for approximately 70 educators from throughout the Northeast. Special thanks to **Dr. Peter Wasilewski** from the Laboratory for

Extraterrestrial Physics, **Dr. Patrick Taylor** of the Laboratory for Terrestrial Physics, **John Speargas** of Security, and **Lynda Matys** and **Shane Keating** of the Teacher Resource Laboratory for major presentations and tours. Additional thanks to **Stephanie Stockman** of SSAI, and **Dr. James Garvin** of Code 921, for serving as Lunar Activities Consultants for the hands-on portion of the program. Thanks also to **Kevin Boone** and his colleagues from the Education Office for developing a substantive hands-on program that had all of the participants making complimentary comments about the program's utility for the classroom.

**Chan Park**, Engineer and Education Specialist, has been coordinating the development of a GSFC response to requests for Science Fair judges—one more effort that should relieve scientists and engineers from the "administrivia" or such requests and allow them to provide direct assistance to schools and children in the metropolitan area.

**Elaine Lewis**, Teacher-on-Loan in the Education Office, is coordinating this year's JASON program. Training for participating teachers has begun. This year's program relates to Yellowstone and Iceland and the Journey to the Center of the Earth. Additional information can be accessed through: <http://www.jason.org>. <http://pao.gsfc.nasa.gov/gsfceduc/educ.htm>

## Procurement Reform has Achieved Results!

by **Rex Elliott, Linda Kelley, and Carol Bleile**

"The Government has historically had very vague ideas of what it wants its contractors to accomplish, and it has made up for this lack of clarity by micromanaging how its contractors do things," said Dr. Steve Kelman, the Administrator of the Office of Federal Procurement Policy (OFPP). On November 13, 1996, in GSFC's Building 3 auditorium, Dr. Kelman exhorted a town-hall gathering of approximately 100 procurement, technical, and resources personnel, including **Michael J. Lodomirak**, GSFC's Procurement Officer, and **Deidre A. Lee**, NASA's Associate Administrator for Procurement, to be leaders of change in the field of Government acquisition. "No Government agency has been



**Dr. Steve Kelman hosts Town-Hall gathering at Goddard**

more aggressive than NASA in pushing performance-based contracting (PBC), and this is especially impressive since so much of what NASA does is R&D".

From the audience, Dr. Kelman drew a number of success stories in reforming NASA's acquisition system. **Tom Russell**, the Procurement Manager for the X-Ray Timing Explorer, described the 8 months in schedule savings XTE achieved through innovative contracting practices. **Richard Tagler**, an Associate Director of Code 500, reported significant cost reductions, consolidations, and re-engineering of processes in the Consolidated Network Mission Operations System (CNMOS). **Susan Sparacino**,

**Continued on next page**

## Researchers' Accurate Predictions of Forest Age Will Aid Study of Ecosystems

The extensive old-growth forests of western Oregon have been subjected to widespread cutting during the past 45 years creating patches of clear cuts and second-growth stands. Understanding the changes of forest fragmentation through time is important for assessing alterations in ecosystem processes (forest productivity, species diversity, nutrient cycling) and wildlife habitat.

In a recent study, Goddard scientists explored the feasibility of predicting forest age of clear cut areas in western Oregon using Thematic Mapper (TM) spectral bands and topographic information. The relationship between the age of the forest since clear cut and the TM spectral return, elevation, slope and as-

pect is very complex. Neural networks were chosen as the method to predict forest age because they have the ability to learn complex relationships in large data bases. The network maps inputs (TM bands 1-7, elevation, slope, aspect) to the desired output by learning the mathematical function underlying the system.

**REFERENCE:** Recently published by Remote Sensing of Environment is "Extracting Forest Age in a Pacific Northwest Forest from Thematic Mapper and Topographic Data," by D. Kimes, B. Holben, J. Nickeson, and A. McKie, Vol. 56:133-140, 1996.

For further information contact:  
 Dr. Dan Kimes, (301) 286-4927,  
 dan@pika.gsfc.nasa.gov

### Procurement Reform Continued from Page 6

the Procurement Manager of the Hubble Space Telescope Project, noted the incentive fee provisions of HST Advanced Camera contract show promise of achieving performance-based contracting in an R&D area.

Dr. Kelman supports those who work directly in the field of procurement. "It is especially important for the procurement personnel to get involved at the early stages of defining the requirements. By asking the right questions and facilitating the process, procurement personnel can demonstrate real value. We should be seen as experts in how to get a good deal for the Government." However, some in the audience expressed concern with how tolerant senior management will be of the mistakes which will inevitably be made as a result of the new processes. Dr. Kelman reassured them by stating, "Every contracting professional has the right to demand that if they take a prudent, reasoned risk, they will be backed-up. Risk is inherently a part of what you do, so there will naturally be some failures. That's why it's so important that we pub-

licize some of our success stories, to counter-balance when we fail."

One of several stories Dr. Kelman told concerned a small information technology company which does about 30% of its business with the Government. The president of this firm candidly admitted that he typically charges his Government customers twice what a commercial firm is charged. According to him, commercial customers are usually quite clear about the results they expect from the company, but they leave the firm alone so that it can accomplish those results. With the Government, just the opposite is usually the case. The Government is more concerned with who's working on the contract, specifying the experience of the workers. With the commercial customers, the firm can use recent graduates of universities, who often produce better results than those whom the Government specified.

Dr. Kelman closed this gathering by giving everyone his fax number (202) 395-3242, stating that he reads every fax sent to him. He also provided his e-mail address, which is Kelman\_S@a1.eop.gov.

**Dr. John C. Mather**, Study Scientist for NGST, recently was named a fellow the American Physical Society. This honor is given to 1 in 200 of the members of the APS.

**James L. Green**, Chief, Code 630, was awarded the Kotani Prize for his outstanding achievements in data accessibility and management for the science community.

Feedback on the Goddard Homepage: "Just had to tell you that your web site is certainly one of the most out of this world sites in the universe. The information you provide to amateurs like me, presented in a format that even I understand, is really appreciated. I will spend DAYS in this site, and can't wait to show it to my grandchildren. Thanks again.  
**Paul Hoffman.**

From "NEWS IN BRIEF, NATURE, vol. 384 (28 Nov 1996), p. 303

**TOP ASTRONOMY CITATIONS** - The NASA-Goddard Space Flight Center in Maryland and Britain's Royal Observatories have emerged at the top of the league tables for astronomy and astrophysics research. Papers from NASA (the US National Aeronautics and Space Administration) received 2,521 citations between 1993 and 1995, according to an analysis of 1,359 papers by the Philadelphia-based Institute for Scientific Information. This was 339 citations more than the second-placed institution, the Harvard-Smithsonian Centre for Astrophysics. The Space Telescope Science Institute came third.

...NASA's high citations are explained in part by the impact of the COBE mission, which looked at thermal radiation from the Big Bang, and the Compton Gamma Ray Observatory, "which opened a window on the highest energy sources in the Universe".

## SHARP Applications due 2/28/97

Summer High School Apprenticeship Research Program (SHARP) is a research based mentorship program that is specifically designed to attract and increase underrepresented students' participation and success rates in mathematics and science related courses. It is also designed to encourage career paths that help build a pool of underrepresented science and engineering professionals in the workplace. Applications deadline is February 28, 1997. Contact Tiffany Thornton on 301-286-7205.

**Quality Award Continued from Page 1**  
be making a "site visit" in mid-January to further evaluate the Center.

As we prepare for the upcoming site visit, we will be looking for ways to apply what we've learned, communicate in more effective ways, and lead the Center in product and process improvement. Key to our success is your proactive involvement. Employees have received copies of the PQA application and the Center's new Strategic Plan. Please take the time to read each one and focus on those areas where your contributions are of greatest importance. By involving yourself in improving the Center, you will help ensure Goddard's future as a vital and effective National resource.

**Friedman Continued from Page 2**  
technology and industry he still admits, "My five-year-old granddaughter teaches me how to use the computer, and makes me feel kind of obsolete."

Don retired from Goddard after a 30 year career, but still comes to work at Goddard every day in the Office of Commercial Programs as a consultant for Futron. He commented, "It was a great career at Goddard,

being given the freedom to be able to do many of the things I've talked about. But I always emphasized the projects over the paperwork." Where there was a need, Don found the aerospace technology solution and an interested manufacturer, and found a way to help lives, to save lives. And for all that hard work, heart-felt work, and dedication the technology world recognized Don's invaluable contribution on October 30 by presenting him with the Lifetime Achievement Award. But, to Don, the most amazing part of it was "my wife keeping a secret about Futron giving me a surprise luncheon to commemorate my award." Even NASA hasn't found the technology to do that!

**Hansen Continued from Page 2**  
Dr. Hansen's work exemplifies that of Dr. Nordberg's own career. Nordberg, who was the Director of Space Applications at Goddard, and a pioneer in using remote sensing to investigate Earth and its environment. The William Nordberg Memorial Award for Earth Science is presented annually to a Goddard employee who best exhibits qualities of broad scientific perspective, enthusiastic programmatic and tech-

nical leadership on the national and international levels, wide recognition by peers, and substantial research accomplishments in understanding Earth System processes.

Hansen began his NASA career in 1967 as a National Research Council Resident Research Associate for GISS. He joined GISS full-time in 1972 as a space science researcher. In 1981, he was appointed as Chief of GISS. He has served as principal and co-principal investigator on several planetary missions including the Galileo (Jupiter Orbiter) Deep Space Probe. Most recently, he has specialized in the broad study of global change on earth.

This spring Hansen was elected to the National Academy of Sciences. He received a public service award from the National Wildlife Federation and has received numerous NASA awards.

Hansen is also an adjunct professor at Columbia University in the Department of Geological Sciences.

A native of Denison, Iowa, Hansen graduated from the University of Iowa in 1963, in Iowa City, where he received a bachelor of science degree (with the highest distinction) in physics and mathematics, a masters of science in astronomy in 1965, and a Ph.D. in physics in 1967. Hansen and his wife, Anniek, live in New Jersey and have two children.

**Showcase Continued from Page 3**  
suspicions that the state-of-the-art technologies at Goddard were not widely known by our own community. These comments also lead to the conclusion that this showcase should most definitely be an annual event for Goddard. Because of its success, the Technology Showcase served to erase that old concept of "the right hand not knowing what the left hand was doing," and by doing so we are now able to grasp firmly Goddard's technology with both hands today to realize our vision of tomorrow.

**Lewis & Clark Continued from Page 3**  
terns; the forestry industry may determine the health and variety of tree species; and disaster management teams may use the SSTI data to assess damage inflicted by floods, tornadoes, earthquakes, and other natural disasters.

LEWIS was developed by TRW, Inc., Redondo Beach, Ca. Leading the integrated product development teams were GSFC, LaRC, LeRC, JPL, and various university and industry members. CLARK, developed by CTA, Inc., Rockville, Md., will carry the Goddard developed Advanced X-ray Spectrometer. Both spacecraft are scheduled for launch from Vandenberg Air Force Base in early 1997.

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