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INSIDE

Compton Gamma-Ray Observatory getting orbit boost

by Michael Finneran

The Goddard-managed Compton Gamma-Ray Observatory is receiving a scheduled boost to a higher orbit so that it does not reenter the Earth's atmosphere.

The observatory is being nudged higher in two phases using computer commands sent from Goddard to onboard rocket thrusters.

"The reboost is necessary to compensate for orbit decay, which is the result of solar activity slowly pushing the satellite toward Earth over a period of time," said Goddard's Tom LaVigna, the former deputy project manager for the observatory who has retained management responsibility for the reboost. "This was a known occurrence and was taken into consideration in the design of the observatory."

The first phase of the reboost began Oct. 4 and was scheduled to go to Oct. 17. As of Oct. 13, six thruster burns had been completed successfully.

The second phase is scheduled from Nov. 22 to Dec. 3, LaVigna said. The first phase was to lift the 2-year-old satellite to 280 miles (450 kilometers) at its apogee, or highest point in orbit. The second phase will circularize the orbit by boosting the spacecraft's perigee, or lowest point, to the same elevation.

As of late September, the spacecraft was 217 miles (345 kilometers) above the Earth in an orbit that follows the equator. Below 180 miles (290 kilometers), the satellite could lose the stability required for reboost, LaVigna said. If the observatory was not reboosted, he said, it would reach that altitude in late April of 1994.

The October-November reboost follow an attempt that began June 15 but was terminated the same day because of a problem with one of the thrusters on the satellite. NASA officials discovered that the B2 attitude control thruster was performing well below the other thrusters on the "B" side of the observatory, making it difficult to properly control the spacecraft. While the B2 thruster performance remains low, it has been taken into account for the reboost.

"Extensive analysis and simulations have been performed to develop the plan for reboost," LaVigna said.

The observatory has eight attitude control thrusters and four larger orbit adjust thrusters, with half of each split between the "A" and "B" sides of the spacecraft. The B-side attitude control and orbit adjust thrusters are being used for both phases of the reboost. During the previous reboost attempt, only the attitude control thrusters were planned for use.

Science operations on the observatory are being suspended only during the actual reboost operations.

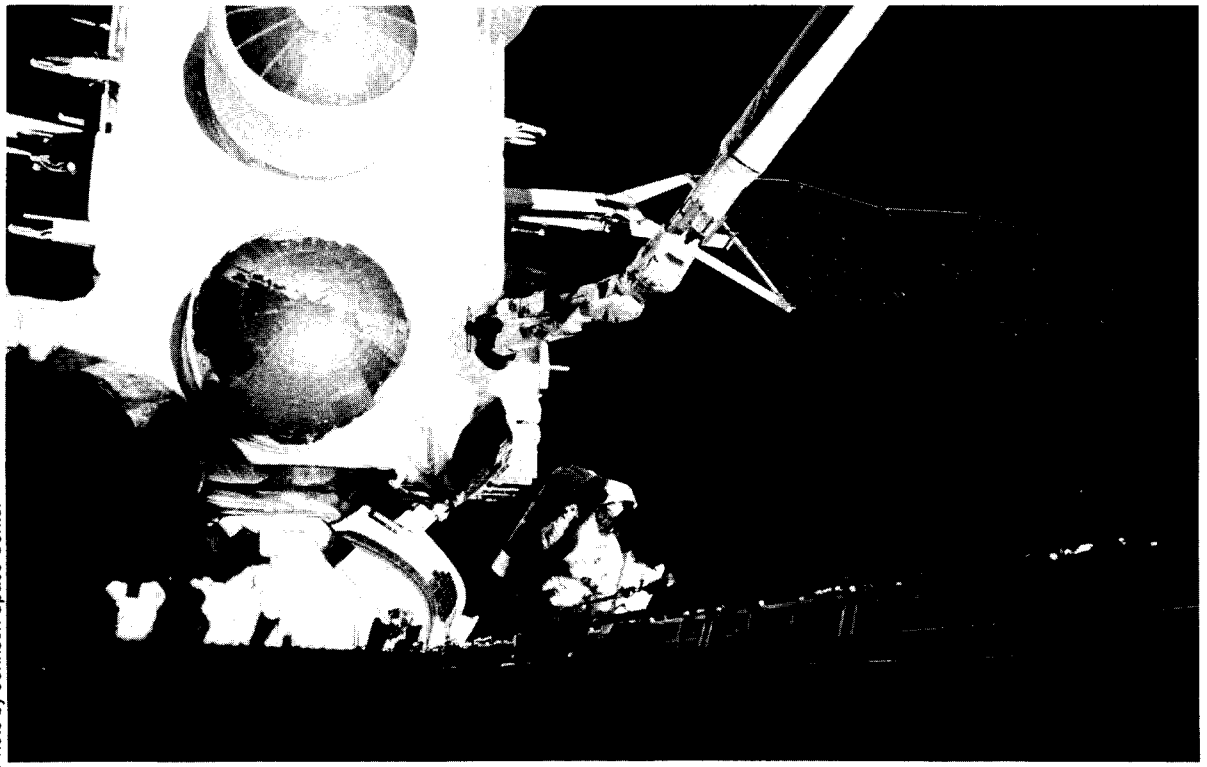
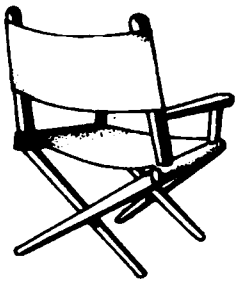


Photo by Johnson Space Center

The Compton Gamma-Ray Observatory is deployed from the Space Shuttle Atlantis with the help of astronaut Jerome Apt two days after its April 5, 1991, launch. The observatory now is the process of being reboosted to higher orbit.



Directors' dialogue

Q: Cafeterias at other NASA centers seem to provide more variety, tastier food, and lower prices. I believe these other centers subsidize their cafeterias, thereby improving the quality of daily life. It is my understanding that GEWA opts to subsidize Christmas parties, picnics, and other special occasions, at the expense of quality cafeteria service. Making it necessary to go off center for lunch is neither good for productivity nor lunch-time traffic congestion. Can someone explain the logic behind this choice?

A: While all NASA Centers provide cafeteria services, they are for the most part run differently. Some are managed by the Center, some by the Center along with a contractor, and some are run by their Exchanges. None however, subsidize their cafeterias. The GEWA Cafeteria Chairman and Co-Chairman, work together with Canteen to provide a wide-variety menu at the lowest possible prices. We are continually working with Canteen management to improve the quality and cost of food. Our two cafeterias serve approximately 1,900 employees daily. Obviously, we are not equipped to provide cafeteria services to all Goddard employees. Each year, based on the population of each directorate, GEWA provides a fixed dollar amount for each employee. Directorates may choose to subsidize their holiday parties, picnics, or other special events with these funds, as long as these functions are open to everyone in the directorate.

Goddard's GEWA Council is made up of representatives from each directorate, who on a voluntary basis work very hard behind the scene to improve the quality of life at Goddard. These individuals are listed in the back of the GSFC telephone directory; feel free to contact them if you have a specific problem. They will be glad to help you.

Sherry Foster, director, Management Operations Directorate, Code 200.

Questions for Directors Dialogue may be sent in to Directors' Dialogue, Code 130, with or without identification. Due to space limitations, not all questions can be answered. Questions are sent to the appropriate directorate office as written but may be edited for space and clarity before being printed. Some questions may be answered outside of this forum.

Hispanic Heritage Month activities at Goddard

by Dan Krieger

Each year September 15 to October 15 marks Hispanic Heritage Month, an opportunity to recognize the culture and contributions that Hispanics have made in all areas of American life. Many Central and South American nations celebrate their independence during this time.

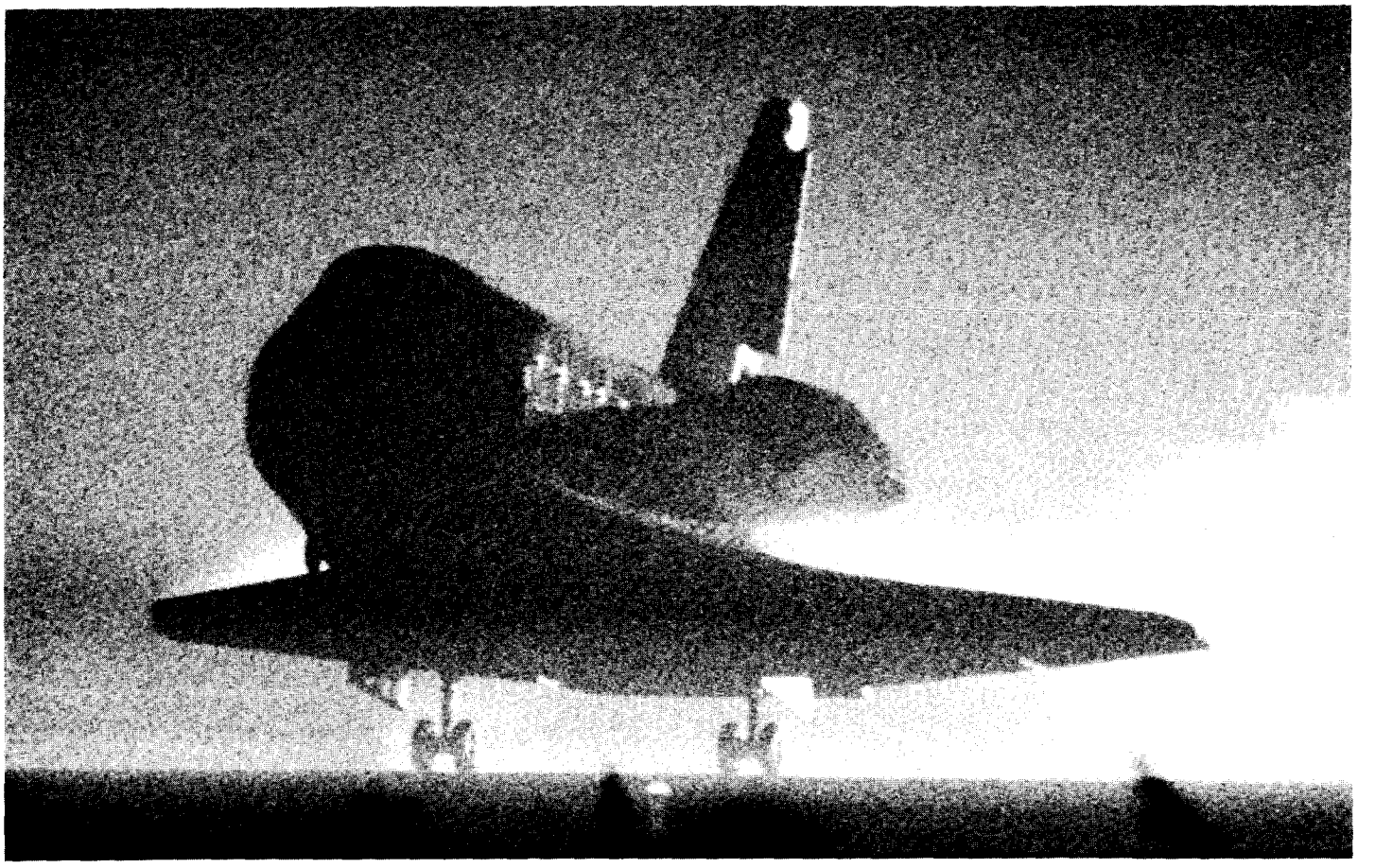
Goddard's Hispanic community together with the Equal Employment Opportunity Office (EEO), planned activities open to all center personnel and their families. Together the Hispanic Advisory Committee for Employees (HACE) and the Goddard Hispanic Heritage Club sponsored a luncheon on September 21. The keynote speaker was Representative Esteban Torres (D-California) who was introduced by Astronaut Franklin Chang-Diaz. Approximately 170 people attended the luncheon, including 50 Hispanic students from High Point High School in Beltsville and Montgomery College in Takoma Park. A Puerto Rican poster exhibit was featured along with Mexican and Salvadoran food from a local restaurant.

On October 7, a Paella Night was held. A Spanish paella was prepared for approximately 100 employees and their families. Paella, the national dish of Spain, consists of saffron rice, seafood, chicken, and peppers simmered together in a special pan.

On October 14, Lynda Lopez, a reporter from Channel 4 News, was the Hispanic Heritage Club's guest speaker at the club's monthly meeting.The club sponsored a Flamenco dance exhibition in the Building 3 auditorium on October 19. Flamenco dancing is native to southern Spain, and features costumed dancers dancing to Spanish guitar music.

To find out more about the Goddard Hispanic Heritage Club and future club events contact club president Gilberto Colon at X62113 or Roberto Aleman at X6-6762.

Participants enjoy take part in a sampling of Mexican and Salvadoran food at the Hispanic Heritage Month Luncheon.



Discovery descends from the night sky

The touchdown of the orbiter Discovery at the Shuttle Landing Facility marked the first night landing at the Kennedy Space Center for the Space Shuttle Program. The landing occurred at 3:56:07 a.m. EDT, bringing to a close the highly successful STS-51 mission.

During the nearly 10-day flight, the five-member crew deployed the Advanced Communications Technology Satellite, and deployed and retrieved the free-flying Orbiting and Retrievable Far and Extreme Ultraviolet Spectrograph/Shuttle Pallet Satellite.

Discovery's crew also conducted a spacewalk and successfully tested tools that will be used during the Hubble Telescope First Servicing Mission scheduled for November 30. Several of the tools tested during the mission were developed at Goddard.

What's up? October 1993

Compton Gamma-Ray Observatory
Days in orbit: 860

NASA's Compton Gamma-Ray Observatory has yielded three major breakthroughs, two of which will enable scientists to unmask hidden supernovae — the remnants of exploded stars — buried deep in the center of the Milky Way. The third discovery pinpoints a source of the mysterious cosmic rays in this galaxy that have puzzled researchers since the rays first were detected more than 80 years ago. The findings were made by the Imaging Compton Telescope (COMPTEL), one of four instruments on the observatory, managed by Goddard. Two of the COMPTEL discoveries were the detection of Titanium 44 and Aluminum 26 emissions called gamma-ray lines. Titanium 44 and Aluminum 26 were radioactive isotopes which, when they decayed, left an interstellar trail of crumbs that COMPTEL scientists traced to the supernovae that produced the emissions long ago. COMPTEL's third discovery was to identify the Orion nebula, an area of molecular clouds and star-forming regions, as a source of cosmic rays.

Hubble Space Telescope
Days in orbit: 1,162

Day-to-day operations and science observations are proceeding on a normal schedule with training and simulations for the First Servicing Mission launch being run in parallel. during the month, scheduled spacecraft time efficiency for science reached a high of 46.5 percent, due mainly to refinements in observing and planning procedures. The processing for the HST First Servicing Mission payload at Kennedy Space Center, Fla., has been proceeding on schedule and the decision was made to move the launch date forward from December 2 to November 30.

Upper Atmosphere Research Satellite
Days in orbit: 747

Goddard's Upper Atmosphere Research Satellite (UARS) celebrated its second birthday on September 15, 1993. Following more than 24 months on orbit, UARS continues to collect data on the chemistry, dynamics and radiative inputs to the upper atmosphere. The observatory is in backward flight, viewing the northern hemisphere and performing nominally supporting full instrument operations. On September 17, the UARS solar array drive experienced some slippage following a yaw maneuver. On September 21, the drive was "rocked" three times, reverse to forward to reverse, and then engaged. From then until September 30, the array performed without slippage. On September 30, however, an anomalous periodic behavior became apparent in the solar array tracking. As of October 6, tests were being performed to determine the cause of this behavior. Both the slippage and the periodic anomaly are believed to be caused by debris. Battery performance remains satisfactory and some instruments have continued collecting data in spite of the solar array problem.

Understanding cultural diversity

by Tammy Jones

As the 21st century approaches, America's workforce will become more culturally diverse. Experts agree that any company or organization that does not prepare for this change will fall short of meeting the needs of the workforce and optimizing organizational performance.

In its effort to keep pace with this inevitable change, NASA envisions a highly skilled workforce that is representative at all levels of America's diversity. Goddards Center Director John Klineberg recently sent correspondence to all directors of, encouraging them to develop a strategy to achieve cultural diversity. "Goddard is a Center with proud traditions and a past full of great accomplishments. However, our triumphs are diminished if they do not touch, inspire and include a cross section of America," Klineberg said.

Goddard's initiative is consistent with the recommendation of a Headquarters Review Team led by Lewin Warren, deputy associate administrator for Equal Opportunity Programs, that all Centers develop a multicultural diversity plan by the end of FY 94.

The Multicultural Educational Program (MCEP) Advisory Group at Goddard, has drafted goals for the diversity plan and is working on its finalization. The advisory group's goals were established by representatives from Equal Opportunity, Human Resources, senior and line management and representatives from each Equal Opportunity Program Office Advisory Group.

Klineberg has made several recommendations for consideration in cultural diversity planning. They include an evaluation of management policies, practices, systems and procedures that may serve as barriers to achieving cultural diversity.

He stresses that the cultural diversity plan "should not be confused with the Center's affirmative action plan, and that it does not impact the Center's goals for hiring underrepresented minorities. Rather, a cultural diversity plan should promote the acknowledgment, appreciation and full use of all of Goddard's human resources, regardless of gender and cultural differences."

Richard Keegan, chief of the Institutional Procurement Division, Code 240, and Chairman of the MCEP Advisory Group, emphasizes the differences between multiculturalism, Equal Opportunity (EO) programs and Affirmative Action. While EO addresses current discrimination, and affirmative action programs focus on representation by certain groups in specific positions, multiculturalism focuses on the potential of each individual contributing to the organization. It involves learning about and valuing the differences among employees and realizing these differences as strengths. "Diversity is value added. Diverse groups come up with better outcomes," said Keegan.

New viewpoints contributing innovative and non-traditional thinking to solving problems should be encouraged, said Dillard Menchan, chief of the Equal Opportunity Program Office, Code 120. "This can best be realized when a gender and culturally diverse workforce has access to the decision making process," said Menchan.

The Goddard management team wants to send a clear message that multicultural diversity is congruent with total quality management and continuous improvement. Its focus is on maximum utilization of the talents of the workforce.

So far, the MCEP Advisory Group has provided cultural diversity training for all supervisors and managers at Goddard. There also is a plan to provide the same training for all employees by 1995. The purpose of this training is to make managers and others more sensitive to the cultures of diverse groups of people.

CFC: "You make it happen"

The National Capital Area Combined Federal Campaign (CFC) officially kicked off the 1993 campaign on Friday, September 24. With over 2,100 agencies qualifying for assistance through CFC and a goal of $38 million, this years theme is "You Make It Happen".

David Carter, of Code 924, is the Goddard CFC Coordinator. He is urging every Goddard employee to "think of CFC as an opportunity to extend a helping hand to our neighbors and friends in our community, country and world."

Goddard's kick-off was Tuesday October 19. The campaign runs to November 12. Goddard's goal this year is $380,000, a 8.3 percent increase over last year's goal.

The CFC makes it easy for federal employees to donate. Participants have two options to choose from, the first being to have the donation taken directly out of their pay check each week, or secondly by making a one time donation by cash or check.

According to Carter, Goddard has a tradition of generously giving to CFC. "We can be proud of our past record, and let's ensure that the 1993 CFC continues our great tradition," he said.

NASA encourages community service

by Nina Desmond

A NASA Management Instruction has been issued which establishes NASA's Community Service Program and provides a framework for encouraging federal employees to volunteer. "Our nation is facing many social problems and each of us has a responsibility to get involved," said Administrator Daniel S. Goldin. In addition, he says "NASA, as a member of the Federal community, must do its part to foster the spirit of community service."

Community service means participation by NASA and or its employees in activities directly benefiting the community. Participation may include, among other things, involvement in activities and initiatives designed to address problems such as drug abuse, crime, homelessness, illiteracy, AIDS, hunger and problems associated with low-income housing, education, health care and the environment, as well as youth services.

A NASA-wide Community Service workshop attended by representatives from NASA headquarters and field centers was held in St. Louis, Mo., in September. The workshop focused on developing plans to implement Community Service Programs throughout the agency.

1993 fall community day fair attracts over 1,000 visitors

Photo by Pete Baltzell

Visitor Center Volunteer Mark Erganian helps several guests try on an astronaut's suit.

Goddard's Community Day on September 19 offered a multitude of activities for visitors of all ages. Special events included a presentation, to a standing-room only crowd, by Astronaut Ronald A. Parise on "The Flight of Astro-1," spacesuit demonstrations by Visitor Center Volunteer Mark Erganian, musical entertainment by the MAD Jazz Band and model rocket launches which delighted hundreds of onlookers. The Engineering Fair, showcasing the work of Goddard's world renown engineers was the highlight of the day for many visitors. The fair exhibits included robotics, fiber optics, thermal systems, solar cars and instruments from space shuttle missions.

From crime fighter to graphic artist

by Fred A.Brown

Photo by Jane Semeraro

Ron Moltere

In a time when lots of people are in careers doing jobs that are different from those that they trained for, or dreamt about doing, count Ron Moltere as one of the lucky few who are doing the job they hoped for. Moltere, head of Goddard's Photographic Services Section, Code 253.3, began his career at GSFC in 1966 as an illustrator. He was born in Clearwater, Fla., and attended the Maryland Institute College of Art, Baltimore, Md., where he studied graphic arts.

Moltere spent his first twenty years at Goddard as an illustrator, then he became a group leader, charged with running the general operations for the graphics section. He did that for about three years before moving into his present position.

As a Goddard illustrator, Moltere did satellite and line art renderings, and brochure art. "It was strictly traditional graphics," he said.

"It was kind of an exciting time, because at that time most of the things that NASA was doing were a first. It was the first time that we saw the Earth from a 22,000-mile (35,406-km) synchronous orbit. I remember being in awe after seeing a color photograph of the entire Earth," Moltere said.

According to Moltere, those type of photos are taken for granted today, but back then no one had ever seen pictures like that before. He says Goddard was different then as well, "Goddard worked more as a team, I think a little more so than today. You didn't care about the hours, sometimes we would work half the night on a project, go home for a couple of hours and come back and work some more."

Moltere says he always has had an interest in photography, in fact "you have to be pretty well- rounded to be a graphics illustrator," he said. A graphics person must have an understanding of photography, printing and publications, because they create the final product.

It was the challenge of leading a group of such versatile people that prompted Moltere to apply for his position. "I'm pretty proud of my photographers. Their versatility and skills still amaze me. I've built a great respect for their capabilities over the past couple of years."

Before joining Goddard and settling into his chosen profession Moltere had a stint as a crime fighter—he was a deputy sheriff with the Prince George's County Sheriff Department while still in college. From that experience Moltere learned that he "definitely didn't want to make law enforcement a career."

"I think it is a very thankless job, and until you're in the position of walking up to a vehicle on a traffic stop, where the person could be a sixty-year old woman, the sweetest person in the world, who is very nervous because she was speeding, or someone who just robbed a bank and is going to pull out a gun and blow you away, you don't realize the tension. Most people that are not in law enforcement don't realize that, they don't see that part of it," Moltere said.

Moltere feels a different type of tension at Goddard. It comes from the excitement of being in on the ground floor of new technology. According to Moltere, the Goddard photo section is about to enter the digital age. "The digital photo storage system we're getting will expedite the way we handle our photography. Eventually we'll have a jukebox system and we'll have all of our photographs digitized the size of a thumbnail at low resolution on a compact disc that can store up to 6,000 images. We'll have about 50 discs in that jukebox," he said.

It will take several years before the system will be available center-wide. When it is, Moltere says "customers will be able to go into the system, pull up the photographic digital library, look at a thumbnail size photos from their directorate, give us the file number and we'll make them a print." There are many advantages to the new system according to Moltere, in the meantime customers on Center can continue to rely on Moltere and his team for outstanding service.

Goddard Manned Flight Awareness honorees view shuttle launch

Goddard's latest group of Manned Flight Awareness (MFA) honorees witnessed the September 12 morning launch of STS-51 from the Kennedy Space Center, Fla. The group took part in five days of activity that included a VIP tour reception in their honor with astronauts, high level NASA officials and industry management. The trip also included a visit to the Merritt Island Spaceflight Tracking and Data Network Tracking Station and the presentation of their MFA pin and certificate by astronaut Winston Scott.

The MFA launch honoree award is the highest and most prestigious award available to employees of the NASA/industry shuttle/payloads team. The award is given as recognition of exceptional dedication to quality work and flight safety to the shuttle/payloads program.

Pictured from left to right are: seated: Leroy Henry, AlliedSignal Technical Services Corp. (ATSC), Nerses Armani, Martin Merietta Services Inc., (MMSI), Louiz Bashar, MMSI, Gregory Mauchamer, ATSC, Ha Chau, Computer Sciences Corp., (CSC). Second row: William Ochs, Code 441, David Baysinger, Loral AeroSys, Peter Pataro, Jr., Lockheed Technical Operations Company, Inc., Michael Madden, CSC, Ervin Summerfield, Code 542. Third row: Gregory Blaney, Code 534, Kenneth Clark, ATSC, Craig Bickford, ATSC, Roger Chadwick, ATSC, Donald Squier, CSC. Not available for photo; Robert Jenkens, Code 712.

Center employees receive awards

In recent months employees from various center directorates have been recognized for making outstanding contributions to Goddard and their areas of endeavor. The following is a sampling of employees who have received awards.

In August, G. Ernest Rodriguez, an engineer in the Space Power Applications Branch, Code 734, was recognized by the American Institute of Aeronautics and Astronautics (AIAA) for his contributions toward the advancement of state-of-the-art in spacecraft electrical power systems and power system electronic technology.

Rodriguez was presented with the AIAA Aerospace Power Systems Award. The AIAA also presented Donald Krueger, Chief, Electrical Engineering Division, Code 730, with the AIAA Space Systems Award. The award is presented for outstanding achievements in architecture, analysis, design, and implementation of space systems. The AIAA is the largest professional technical society, principal voice, and information resource devoted to the progress of engineering and science in aviation and space.

Dr. James Abshire, Code 924, received the Annual Moe I. Schneebaum Memorial Award for Engineering for his outstanding contributions in the application of laser systems to problems in Earth and planetary science at the September 13 Engineering Colloquium.

Thirty groups comprised of more than 1,000 Goddard employees received Centerwide Group Awards in presentations on October 7. Approximately 540 employees recieved cash awards and 460 contractors also were recognized.

Dr. Compton Tucker, Code 923, received the National Air and Space Museum Trophy for Current Achievement on October 22. The award recognizes extraordinary service in air and space science and technology.

Goddard colloquia fall series

The Goddard Employee Colloquium fall series is in full swing. The next presentation in this non-technical series, intended for all employees will be conducted November 18, from 3:30 to 4:30 p.m. in the Building 3 auditorium. Nona Minnifield, Commercial Research Manager, Commercial Program Office, will lead the presentation entitled "Technology Transfer: Spin-Off Products from Space R&D."

The presentation will explain why NASA transfers technology, what resources are available for transferring technology, what new technologies are being transferred from Goddard, how Goddard's scientific and technical staff can participate in the Technology Transfer Program and how the national economy benefits from the transfer of technology.

There are three scientific colloquiums scheduled for November:

November 5—Robert Adair of Yale University will present "The Physics of Baseball"

November 12—Seth Stein of GSFC and Northwestern University will present "New Models of Contemporary Plate Motions"

November 19—Wally Broecker of the Lamont-Dorherty Geological Observatory will present "What Do Paleoclimatic Data Tell Us About Expected Future Climate Change?"

There are five engineering colloquium on tap for November:

November 1—"The Chemical Stimulation of Nuclear Change," by Dr. John Bockris of Texas A&M University

November 8—Dr. Science-"I Know More Than You Do...," by Dan Coffey of Duck's Breath Mystery Theater

November 15—"Developments in Pediatric Neurosurgery," by Benjamin Carson, M.D., of John Hopkins University Hospital

November 22—"Fossils of the Gobi Desert," by Dr. Michael Novacek of the American Museum of Natural History

November 29—"Scientific Literacy," by Dr. James Trefil of George Mason University

Satellite data get new lease on life from software boost

by Michael Finneran

New software is giving researchers a remarkably improved look at data from NASA's 15-year-old International Ultraviolet Explorer (IUE), the agency's longest-running astronomical satellite in orbit.

Called the New Spectral Imaging Processing System (NEWSIPS), the software uses algorithms — mathematical instruction codes — that reveal previously hidden information in the IUE data, according to scientists at Goddard.

"With this new software, we can revisit our old data and find all sorts of things in there that we never could have seen before," said Dr. Andrew G. Michalitsianos, Code 684.1, head of the Observatory Section at Goddard, which built and manages IUE. "Who knows what we'll turn up."

The new system subtracts fixed-pattern noise from the IUE data, Michalitsianos said. Noise is an underlying and unwanted signal that can mar data quality, much like scratches on a record album, hiss on a tape or poor reception on a TV. The IUE noise comes from the ultraviolet detector on the spacecraft.

The software was developed jointly by Goddard and the European Space Agency's Villefranca Satellite Tracking Station in Spain. Such software was not available when the spacecraft was launched in January 1978. Since then, IUE has beamed a prodigious volume of data back to Earth. Now scientists can review past findings and, using the new software, enhance the quality of the data three to four times, said Michalitsianos.

Photo by Michael Finneran

Dr. Andrew G. Michalitsianos: "We can revisit our old data and find all sorts of things ... that we never could have seen before."

Michalitsianos said the new software works particularly well on data from faint objects in the galaxy. As a test of the new system, he said, researchers reprocessed data gathered by IUE in 1978 on an object in space known as the gravitationally lensed binary quasar 0957+561.

A quasar is a quasi-stellar object that emits strong radiation, which may become faint if it is very far from us. A gravitationally lensed binary quasar is a quasar whose light has been bent by a galaxy positioned between it and the Earth. The intervening galaxy's gravitational field acts like a lens to curve the quasar's light around it. Seen from Earth, the quasar appears as a double image due to the splitting of its light above and below the object's actual position.

Using NEWSIPS to reprocess IUE data on the quasar, scientists discovered previously undetected spectral features that suggest the presence of an extremely hot X-ray-emitting gas, Michalitsianos said. Spectral features describe the amount and type of energy emitted from an object at a specific wavelength in the electromagnetic spectrum.

"This is the first test of NEWSIPS that has borne scientific fruit," Michalitsianos said, "and it's an important demonstration of the capabilities of the software."

The results of the quasar data reprocessing are scheduled to appear in a paper in the Nov. 10, 1993, issue of "The Astrophysical Journal," said Michalitsianos, the lead author. Also contributing were Demosthenes Kazanas,Code 665 Yoji Kondo, Code 684, and Stephen Maran, Code 680 of Goddard; Joy Nichols-Bohlin, Thomas Meylan, Mario Perez, Michele De La Pena and Randy Thompson, of Computer Sciences Corp.; and Fred C. Bruhweiler, of the Catholic University of America in Washington, D.C.

About 100,000 other IUE spectra stored at Goddard's National Space Science Data Center are being reprocessed with NEWSIPS, Michalitsianos said. In a few months, he added, reprocessed data will begin to be released to the scientific community.

"It's very exciting," said Michalitsianos. "This is really exploiting the full capability of the satellite. You're really realizing the full investment of the mission."

Goddard News

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Deadline for submitted material is the tenth of each month. For additional information contact Fred Brown (301) 286-7277, TDD (301) 286-8955.